Illinois Power Generating Company
1500 Eastport Plaza Dr.
Collinsville, IL 62234

January 28, 2022

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: Newton Primary Ash Pond (IEPA ID: W0798070001-01) Annual Consolidated Report

Dear Mr. LeCrone:

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) is submitting the annual consolidated report for the Primary Ash Pond (IEPA ID: W0798070001-01), as enclosed.

Sincerely,

Phil Morris
Senior Environmental Director

Enclosures

Annual Consolidated Report
Illinois Power Generating Company
Newton Power Plant
Primary Ash Pond; IEPA **ID: W0798070001-01**

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) has prepared the annual consolidated report. The report is provided in three sections as follows:

Section 1
1) Annual CCR fugitive dust control report (Section 845.500(c))

Section 2
2) Annual inspection report (Section 845.540(b)), including:

A) Annual hazard potential classification certification

B) Annual structural stability assessment certification

C) Annual safety factor assessment certification

D) Inflow design flood control system plan certification

It should be noted that the drawings and attachments of the certification report were included in the operating permit application submittal.

Section 3
3) Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Section 1
Annual CCR Fugitive Dust Control Report

Annual CCR Fugitive Dust Control Report

for

Newton Power Plant

Prepared for:

Illinois Power Generating Company

Newton Power Plant
6725 North 500th Street
Newton, IL 62448

November 2021

Reporting Year: 4th Quarter 2020 through 3rd Quarter 2021

Completed by: James R. Marshall — Plant Manager

Name — Title

This Annual CCR Fugitive Dust Control Report has been prepared for the Newton Power Plant in accordance with 40 CFR 257.80(c) and 35 I.A.C. 845.500. Section 1 provides a description of the actions taken to control CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken. Section 2 provides a record of citizen complaints received concerning CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken.

Section 1 Actions Taken to Control CCR Fugitive Dust

In accordance with the Newton Power Plant CCR Fugitive Dust Control Plan (Plan), the following measures were used to control CCR fugitive dust from becoming airborne at the facility during the reporting year:

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Management of CCR in the facility's CCR units	CCR to be emplaced in the landfill is conditioned before loading into vehicles for transport to the landfill.
	Apply cover to exposed material in the landfill.
	Wet management of CCR bottom ash and CCR fly ash in CCR surface impoundments.
	Water areas of exposed CCR in CCR units, as necessary.
	Naturally occurring grass vegetation in areas of exposed CCR in CCR surface impoundments.
Handling of CCR at the facility	Wet sluice CCR bottom ash and fly ash to CCR surface impoundments.
	Pneumatically convey dry CCR fly ash to storage silos in an enclosed system.
	CCR fly ash to be emplaced in the landfill is conditioned before loading into trucks for transport to the landfill.

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Handling of CCR at the facility	Load CCR transport trucks from the CCR fly ash silos in a partially enclosed area.
	Load CCR transport trucks from the CCR fly ash silos using a telescoping chute.
	Perform housekeeping, as necessary, in the fly ash loading area.
	Operate fly ash handling system in accordance with good operating practices.
	Maintain and repair as necessary dust controls on the fly ash handling system.
Transportation of CCR at the facility	CCR to be emplaced in the landfill is conditioned before loaded into vehicles for transport to the landfill.
	Cover or enclose trucks used to transport CCR material, as necessary.
	Limit the speed of vehicles to no more than 15 mph on facility roads.
	Sweep or rinse off the outside of the trucks transporting CCR, as necessary.
	Remove CCR, as necessary, deposited on facility road surfaces during transport.

Based on a review of the Plan and inspections associated with CCR fugitive dust control performed in the reporting year, the control measures identified in the Plan as implemented at the facility effectively minimized CCR from becoming airborne at the facility. No revisions or additions to control measures identified in the Plan were needed.

No material changes occurred in the reporting year in site conditions potentially resulting in CCR fugitive dust becoming airborne at the facility that warrant an amendment of the Plan.

Section 2 Record of Citizen Complaints

No citizen complaints were received regarding CCR fugitive dust at Newton Power Plant in the reporting year.

Section 2

Annual Inspection Report (Section 845.540(b)), including:

A) Annual Hazard Potential Classification Certification, if applicable (Section 845.440)

B) Annual Structural Stability Assessment Certification, if applicable (Section 845.450)

C) Annual Safety Factor Assessment Certification, if applicable (Section 845.460)

D) Inflow Design Flood Control System Plan Certification (Section 845.510(c))

ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER 35 IAC § 845.540
(b)(1) The CCR surface impoundment must be inspected on an annual basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR surface impoundment is consistent with recognized and generally accepted engineering standards. The inspection must, at a minimum, include: A) A review of available information regarding the status and condition of the CCR surface impoundment, including files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections); B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures; C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation; D) The annual hazard potential classification certification, if applicable (see Section 845.440); E) The annual structural stability assessment certification, if applicable (see Section 845.450); F) The annual safety factor assessment certification, if applicable (see Section 845.460); and G) The inflow design flood control system plan certification (see Section 845.510(c)).

SITE INFORMATION	
Site Name / Address / Date of Inspection	Newton Power Station Jasper, Illinois 62953 11/4/2021
Operator Name / Address	Luminant Generation Company LLC 6555 Sierra Drive, Irving, TX 75039
CCR unit	Ash Pond

INSPECTION REPORT 35 IAC § 845.540 Date of Inspection 11/4/2021	
(b)(1)(D) The annual hazard potential classification certification, if applicable (see Section 845.440).	Based on a review of the CCR unit's annual hazard potential classification, the unit is classified as a Class II CCR surface impoundment.
(b)(2)(A) Any changes in geometry of the structure since the previous annual inspection.	Based on a review of the CCR unit's records and visual observation during the on-site inspection, no changes in geometry of the structure have taken place since the previous annual inspection.
(b)(2)(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection	See the attached.
b)(2)(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;	See the attached.
b)(2)(D) The storage capacity of the impounding structure at the time of the inspection	Approximately 31,000 acre-feet
(b)(2)(E) The approximate volume of the impounded water and CCR contained in the unit at the time of the inspection.	Approximately 14,000 acre-feet
(b)(2)(F) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit	Based on a review of the CCR unit's records and visual observation during the on-site inspection, there was no appearance of an actual or potential structural weakness of the CCR unit, nor an existing condition that is disrupting or would disrupt the operation and safety of the unit.

INSPECTION REPORT 35 IAC § 845.540 Date of Inspection 11/4/2021	
(b)(2)(G) Any other changes that may have affected the stability or operation of the impounding structure since the previous annual inspection.	Based on a review of the CCR unit's records and visual observation during the on-site inspection, no other changes which may have affected the stability or operation of the CCR unit have taken place since the previous annual inspection.
(b)(1)(G) The inflow design flood control system plan certification (see Section 845.510(c))	Based on a review of the CCR unit's records, the CCR unit is designed, operated, and maintained to adequately manage the flow from the CCR impoundment and control the peak discharge from the inflow design flood.

35 IAC § 845.540 - Annual inspection by a qualified professional engineer.

I, James Knutelski, P.E., certify under penalty of law that the information submitted in this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Illinois. The information submitted, is to the best of my knowledge and belief, true, accurate and complete. Based on the annual inspection, the design, construction, operation, and maintenance of the CCR Unit is consistent with recognized and generally accepted good engineering standards. Based on a review of the records for the CCR unit, the hazard potential classification was conducted in accordance with the requirements of Section 845.440 and the Safety Factor Assessment was conducted in accordance with the requirements of Section 845.460.

James Knutelski, PE
Illinois PE No. 062-054206, Expires: 11/30/2023
Date: 01/05/2022

Site Name: Newton Power Station

CCR Unit: Ash Pond

35 IAC § 845.540 (b)(2)(B)		
Instrument ID #	Type	Maximum recorded reading since previous annual inspection (ft)
B001	Piezometer	501.1'
B003	Piezometer	522.1'
B004	Piezometer	abandoned
B005	Piezometer	506.8'
B006	Piezometer	542.1'
B007	Piezometer	536.6'
B008	Piezometer	529.0'
B009	Piezometer	528.8'
B010A	Piezometer	530.5'
B010B	Piezometer	527.7'
B012	Piezometer	521.9'
B014	Piezometer	509.4'
B015	Piezometer	540.8'
B016	Piezometer	abandoned

35 IAC § 845.540 (b)(2)(C)						
	Approximate Depth / Elevation					
Since previous inspection:	Elevation (ft)			Depth (ft)		
	Minimum	Present	Maximum	Minimum	Present	Maximum
Impounded Water		538			19	
CCR	515		545	33		45

Geosyntec consultants

1 McBride and Son Center Drive, Suite 202
Chesterfield, MO 63005
PH 636-812-0800
www.geosyntec.com

October 11, 2021

Illinois Power Generating Company
6725 North 500th Street
Newton, Illinois, 62448

Subject: USEPA CCR Rule and IEPA Part 845 Rule Applicability Cross-Reference
2021 USEPA CCR Rule Periodic Certification Report
Primary Ash Pond, Newton Power Plant, Newton, Illinois

At the request of Illinois Power Generating Company (IPGC), Geosyntec Consultants (Geosyntec) has prepared this letter to document how the attached 2021 United States Environmental Protection Agency (USEPA) CCR Rule Periodic Certification Report (Report) was prepared in accordance with both the Federal USEPA CCR Rule[1] and the state-specific Illinois Environmental Protection Agency (IEPA) Part 845 Rule[2]. Specific sections of the report and the applicable sections of the USEPA CCR Rule and Illinois Part 845 Rule are cross-referenced in **Table 1**. A certification from a Qualified Professional Engineer for each of the CCR Rule sections listed in **Table 1** is provided in Section 10 of the attached Report. This certification statement is also applicable to each section of the Part 845 Rule listed in **Table 1.**

Table 1 – USEPA CCR Rule and Illinois Part 845 Rule Cross-Reference

Report Section	USEPA CCR Rule		Illinois Part 845 Rule	
3	§257.73 (a)(2)	Hazard Potential Classification	845.440	Hazard Potential Classification Assessment[3]
4	§257.73 (c)(1)	History of Construction	845.220(a)	Design and Construction Plans (Construction History)
5	§257.73 (d)(1)	Structural Stability Assessment	845.450 (a) and (c)	Structural Stability Assessment
6	§257.73 (e)(1)	Safety Factor Assessment	845.460 (a-b)	Safety Factor Assessment
7	§257.82 (a)(1-3)	Adequacy of Inflow Design Control System Plan	845.510(a), (c)(1), (c)(3)	Hydrologic and Hydraulic Capacity Requirements / Inflow Design Flood Control System Plan
	§257.82 (b)	Discharge from CCR Unit	845.510(b)	Discharge from CCR Surface Impoundment

[1] United Stated Environmental Protection Agency, 2015. *40 CFR Parts 257 and 261, Hazardous and Solid Waste Management System, Disposal of Coal Combustion Residuals from Electric Utilities, Final Rule.*
[2] State of Illinois, Joint Committee on Administrative Rule, Administrative Code (2021). *Title 35: Environmental Protection, Subtitle G: Waste Disposal, Chapter I: Pollution Control Board, Subchapter j: Coal Combustion Waste Surface Impoundment, Part 845 Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments.*
[3] "Significant" and "High" hazard, per the CCR Rule[1], are equivalent to Class II and Class I hazard potential, respectively, per Part 845[2].

CLOSING

This letter has been prepared to demonstrate that the content and Qualified Professional Engineer Certification of the 2021 Periodic USEPA CCR Rule Certification Report fulfills the corresponding requirements of Part 845 of Illinois Administrative Code listed in **Table 1**.

Sincerely,

Panos Andonyadis, P.E.
Senior Engineer

John Seymour, P.E.
Senior Principal

2021 USEPA CCR RULE PERIODIC CERTIFICATION REPORT §257.73(a)(2), (c), (d[1]), (e) and §257.82 PRIMARY ASH POND

Newton Power Plant

Newton, Illinois

Submitted to

Illinois Power Generating Company

6725 North 500th Street
Newton, Illinois 62448

Submitted by

Geosyntec consultants

engineers | scientists | innovators

1 McBride and Son Center Drive, Suite 202
Chesterfield, Missouri 63005

October 11, 2021

[1] Except for §257.73(d)(1)(vi).

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EXECUTIVE SUMMARY

This Periodic United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule [1] certification report (Periodic Certification Report) for the Primary Ash Pond (PAP) [2] at the Newton Power Plant (NPP), also known as Newton Power Station, has been prepared in accordance with Rule 40, Code of Federal Regulations (CFR) §257, herein referred to as the "CCR Rule" [1]. The CCR Rule requires that initial certifications for existing CCR surface impoundment, completed in 2016 and subsequently posted on Illinois Power Generating Company (IPGC) CCR Website ([2], [3], [4], [5], [6]) be updated on a five-year basis.

The initial certification reports developed in 2016 and 2017 ([2], [3], [4], [5], [6]) were independently reviewed by Geosyntec. Additionally, field observations, interviews with power plant staff, updated engineering analyses, and evaluations were performed to compare conditions in 2021 at the PAP relative to the 2016 and 2017 initial certifications. These tasks identified that updates are not required for the Initial Hazard Potential Classification. However, due to changes at the site and technical review comments, updates were required and were performed for the:

- History of Construction Report,
- Initial Structural Stability Assessment,
- Initial Safety Factor Assessment, and
- Initial Inflow Design Flood Control System Plan.

Geosyntec's evaluations of the initial certification reports and updated analyses identified that the PAP meets all requirements for hazard potential classification, history of construction reporting, structural stability, safety factor assessment, and hydrologic and hydraulic control, with the exception of the structural integrity of hydraulic structures (§257.73(d)(1)(vi)), which was certified by others. **Table 1** provides a summary of the initial 2016 certifications and the updated 2021 periodic certifications.

[2] The PAP is also referred to as ID Number W0798070001-01, Primary Ash Pond by the Illinois Environmental Protection Agency (IEPA); CCR unit ID 401 by EEI; and IL50719 within the National Inventory of Dams (NID) maintained by the Illinois Department of Natural Resources (IDNR). Within this document it is referred to as the PAP.

Table 1 – Periodic Certification Summary

	CCR Rule Reference	Requirement Summary	2016 Initial Certification		2021 Periodic Certification	
			Requirement Met?	Comments	Requirement Met?	Comments
Hazard Potential Classification						
3	§257.73(a)(2)	Document hazard potential classification	Yes	Impoundment was determined to have Significant hazard potential classification [2].	Yes	Updates were not determined to be necessary. Geosyntec recommends retaining the Significant hazard potential classification.
History of Construction						
4	§257.73(c)(1)	Compile a history of construction	Yes	History of Construction report was prepared for the PAP [3].	Yes	A letter listing updates to the History of Construction report is provided in **Attachment C**.
Structural Stability Assessment						
5	§257.73(d)(1)(i)	Stable foundations and abutments	Yes	Foundations were found to be stable. Abutments are not present [7].	Yes	Foundations and abutments were found to be stable after performing updated slope stability analyses.
	§257.73(d)(1)(ii)	Adequate slope protection	Yes	Slope protection is adequate [7].	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(iii)	Sufficiency of embankment compaction	Yes	Embankment compaction is sufficient for expected ranges in loading conditions [7].	Yes	Dike compaction was found to be sufficient after performing updated slope stability analyses.
	§257.73(d)(1)(iv)	Presence and condition of slope vegetation	Yes	Vegetation is present on interior and exterior slopes and is maintained. [7].	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(v)(A) and (B)	Adequacy of spillway design and management	Yes	Spillways are adequately designed and constructed and adequately manage flow during 1,000-year flood [7].	Yes	Spillways were found to be adequately designed and constructed and are expected to adequately manage flow during the 1,000-year flood, after performing updated hydrologic and hydraulic analyses.
	§257.73(d)(1)(vi)	Structural integrity of hydraulic structures	Yes	Hydraulic structures passing through the embankment were inspected and found to maintain structural integrity [7].	Periodic certification of §257.73(d)(1)(vi) was independently completed by Luminant in 2020 [8].	
	§257.73(d)(1)(vii)	Stability of downstream slopes inundated by water body.	Yes	Downstream slopes adjacent to Newton Lake and the Secondary Pond are expected to remain stable during inundation [7].	Yes	Downstream slopes were found to be stable after performing updated sudden drawdown slope stability analyses.
Safety Factor Assessment						
6	§257.73(e)(1)(i)	Maximum storage pool safety factor must be at least 1.50	Yes	Safety factors were calculated to be 1.66 and higher [5].	Yes	Safety factors from updated slope stability analyses were calculated to be 1.66 and higher.
	§257.73(e)(1)(ii)	Maximum surcharge pool safety factor must be at least 1.40	Yes	Safety factors were calculated to be 1.66 and higher [5].	Yes	Safety factors from updated slope stability analyses were calculated to be 1.66 and higher.
	§257.73(e)(1)(iii)	Seismic safety factor must be at least 1.00	Yes	Safety factors were calculated to be 1.07 and higher [5].	Yes	Safety factors from updated slope stability analyses were calculated to be 1.07 and higher.
	§257.73(e)(1)(iv)	For embankment construction of soils that have susceptible to liquefaction, safety factor must be at least 1.20	Not Applicable	Embankment soils were not susceptible to liquefaction [5].	Not Applicable	No changes were identified that may affect this requirement.
Inflow Design Flood Control System Plan						
8	§257.82(a)(1), (2), (3)	Adequacy of inflow design control system plan.	Yes	Flood control system adequately managed inflow and peak discharge during the 1,000-year, 24-hour, Inflow Design Flood [7].	Yes	The flood control system was found to adequately manage inflow and peak discharge during the 1,000-year, 24-hour, Inflow Design Flood, after performing updated hydrologic and hydraulic analyses.
	§257.82(b)	Discharge from CCR Unit	Yes	Discharge from the CCR Unit is routed through a NPDES-permitted outfall during both normal and 1,000-year, 24-hour Inflow Design Flood conditions [6].	Yes	Discharge from the CCR Unit is routed through a NPDES-permitted outfall during both normal and 1,000-year, 24-hour Inflow Design Flood conditions, after performing updated hydrologic and hydraulic analyses.

SECTION 1

INTRODUCTION AND BACKGROUND

This Periodic United States Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule [1] Certification Report was prepared by Geosyntec Consultants (Geosyntec) for Illinois Power Generating Company (IPGC) to document the periodic certification of the Primary Ash Pond (PAP) at the Newton Power Plant (NPP), also known as the Newton Power Station, located at 6725 N 500th Street, Newton, Illinois, 62448. The location of NPP is provided in **Figure 1**, and a site plan showing the location of the PAP and landfill, among other closed and open CCR units and non-CCR surface impoundments, is provided in **Figure 2**.

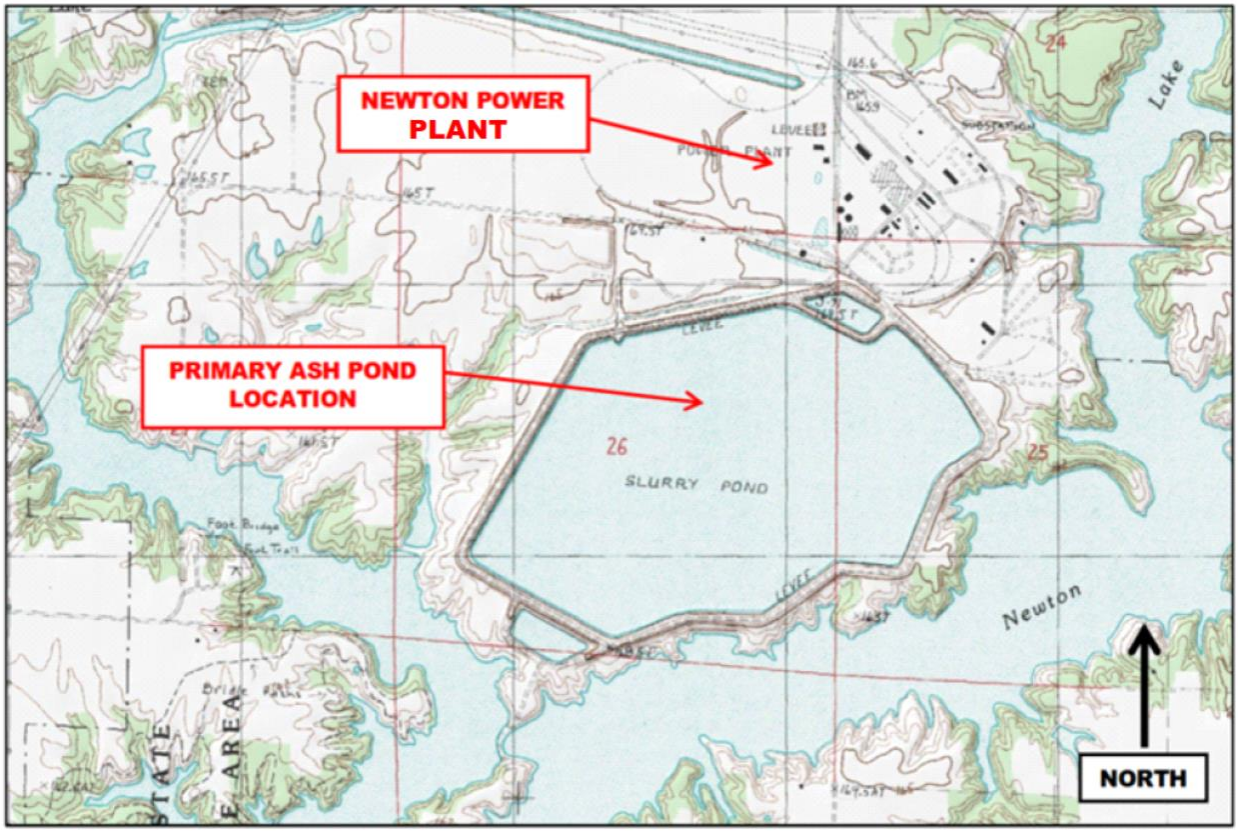

Figure 1 – Site Location Map (from AECOM, 2016)

Figure 2 – Site Plan

1.1 PAP Description

The PAP is utilized for managing CCR materials generated by NPP. The PAP has a Significant hazard potential, based on the initial hazard potential classification assessment performed by Stantec in 2016 in accordance with §257.73(a)(2) [2].

The PAP receives fly ash, bottom ash, and other miscellaneous non-CCR process waters produced by NPP. Bottom ash is sluiced from the north perimeter of the PAP on either side of the Secondary Settlement Pond, which is a non-CCR basin included within the footprint of the Primary Ash Pond. The outfall structure in the PAP discharges through the perimeter embankment into the Secondary Pond, which is a non-CCR basin that ultimately discharges into Newton Lake via a National Pollutant Discharge Elimination System (NPDES)-permitted outfall.

Two adjacent spillway structures are present at the PAP: the principal spillway structure and the secondary spillway structure. Only the principal structure is used to control outflow during both normal operational and flood conditions. The spillway structures are both identical square concrete riser structures, with inflow controlled by a series of stoplogs. Inflow into the structures is transmitted to the Secondary Pond through 30-inch diameter corrugated metal pipes that have been slip lined and now have an inside diameter of 28 inches. The principal spillway structure is located at a lower elevation than the secondary spillway structure, with a top of weir box elevation of 537 feet and a pipe invert elevation of 512.5 feet (presumed to be NGVD29 datum based on the date of the design drawings). The secondary spillway structure is located directly upslope from the primary structure and has a top of weir box elevation of 555 feet, which is the design crest elevation of the earthen embankment, and a pipe invert elevation of 533 feet. The 28-inch diameter slip lined outlet pipes from both structures converge within the earthen embankment into a single 28-inch slip lined outlet pipe that discharges into the Secondary Pond. The purpose of the secondary spillway structure is to be a supplemental spillway for the Primary Ash Pond under conditions where the pool level is significantly increased above the current normal pool to allow for additional storage volume [7].

The surface area of the impoundment is approximately 400 acres, and the embankment is a continuous structure (a ring embankment), which has a total perimeter length of approximately 3.2 miles and a maximum height above the exterior grade of 72 feet where the downstream toe of the embankment is underneath the normal pool level of the downstream Newton Lake. Typical embankment heights range from 14 to 42 feet. The embankment was constructed as a homogenous earthen structure with well-compacted clayey fill. Portions of the south embankment directly adjacent to Newton Lake include crushed stone near the waterline for erosion protection. The upstream and downstream slope orientations are typically 3H:1V (horizontal to vertical) but range from about 2.5H:1V to 3.4H:1V. Embankment crest widths range from approximately 12 to 50 feet, and the crest is covered with a gravel access road [7].

The pool elevation of the pond is controlled by the configuration of the outflow structure and plant process inflows. At the time of the periodic survey, was approximately[3] 535.5 feet. Crest elevations range from approximately 553 to 555 feet, and the minimum crest elevation is 552.7 feet [7].

Initial certifications for the PAP for Hazard Potential Classification (§257.73(a)(2)), History of Construction (§257.73(c)), Structural Stability Assessment (§257.73(d)), Safety Factor Assessment (§257.73(e)(1)), and Inflow Design Flood Control System Plan (§257.82) were completed by Stantec and AECOM in 2016 and 2017 and subsequently posted to IPGC's CCR Website ([2], [3], [4], [5], [6]).

[3] All elevations are in the North American Vertical Datum of 1988 (NAVD88), unless otherwise noted.

1.2 Report Objectives

These following objectives are associated with this report:

- Compare site conditions from 2015/2016 to site conditions in 2020/2021, and evaluate if updates are required to the:
    - §257.73(a)(2) Hazard Potential Classification [2];
    - §257.73(c) History of Construction [3];
    - §257.73(d) Structural Stability Assessment [4];
    - §257.73(e) Safety Factor Assessment [5], and/or
    - §257.82 Inflow Design Flood Control System Plan [6].
- Independently review the Hazard Potential Classification ([2], [9]), Structural Stability Assessment ([4], [7]), Safety Factor Assessment ([5], [7]), and Inflow Design Flood Control System Plan ([6], [7]) reports to determine if updates may be required based on technical considerations.
    - The History of Construction report [3] was not independently reviewed for technical considerations, as this report contained historical information primarily developed prior to promulgation of the CCR Rule [1] for the CCR units at NPP, and did not include calculations or other information used to certify performance and/or integrity of the impoundments under §257.73(a)(2)-(3), §257.73(c)-(e), or §257.82.
- If updates are required, they will be performed and documented within this report.
- Confirm that the PAP meets all of the requirements associated with §257.73(a)(2), (c), (d), (e), and §257.82, or, if the PAP does not meet all requirements, provide recommendations for compliance with these sections of the CCR Rule [1].

SECTION 2

COMPARISON OF 2015/16 AND 2020/21 SITE CONDITIONS

2.1 Overview

This section describes the comparison of conditions at the PAP between the start of the initial CCR certification program in 2015 and subsequent collection of periodic certification site data in 2020 and 2021.

2.2 Review of Annual Inspection Reports

Annual onsite inspections for the PAP were performed between 2016 and 2020 ([10], [11], [12], [13], [14] and, [15]) and were certified by a licensed professional engineer in accordance with §257.83(b). Each inspection report stated the following information, relative to the previous inspection:

- A statement that no changes in geometry of the impounding structure were observed since the previous inspection.
- Information on maximum recorded instrumentation readings and water levels.
- Approximate volumes of impounded water and CCR at the time of inspection.
- A statement that no appearances of actual or potential structural weakness or other disruptive conditions were observed.
- A statement that no other changes which may have affected the stability or operation of the impounding structure were observed.

In summary, the reports did not indicate any significant changes to the PAP between 2015 and 2020.

2.3 Review of Instrumentation Data

Twelve piezometers are present at the PAP and were monitored monthly between August 5, 2015 and April 29, 2021 [16]. Geosyntec reviewed the piezometer data to evaluate if significant fluctuations, partially increases in phreatic levels, may have occurred between development of the initial structural stability and factor of safety certifications [7], [4], [5]) and April 29, 2021. Available piezometer readings are plotted in **Attachment A**.

In summary, the peak measured groundwater levels for several piezometers were up to 10 ft higher than the phreatic conditions considered during the initial certification. These changes could impact the results of the factor of safety analyses required for the structural stability and factor of safety certifications ([7], [4], [5]). Specifically, up to four cross sections were identified with significant changes in phreatic conditions.

2.4 Comparison of 2015 to 2020 Surveys

Surveys conducted at the site by Weaver Consultants (Weaver) in 2015 [17] and IngenAE, LLC (IngenAE) in 2020 [18] were compared within AutoCAD Civil3D 2021 software. This comparison quantified changes in the volume of CCR placed within the PAP and considered volumetric changes above and below the starting water surface elevation (SWSE) used for the 2016 §257.82 inflow design flood control plan hydraulic analysis [7]. Potential changes to embankment geometry were also evaluated. This comparison is presented in side-by-side views of each survey in **Drawing 1**, and a plan view isopach map denoting changes in ground surface elevation in **Drawing 2**. A summary of the water elevations and changes in CCR volumes is provided in **Table 2**.

Table 2 – 2015 and 2020 Survey Comparison

Initial Surveyed Pool Elevation (ft)	534.0
Periodic Surveyed Pool Elevation (ft)	535.5
Initial §257.82 Starting Water Surface Elevation (SWSE) (ft)	534.0
Total Change in CCR Volume (CY)	98,711 (fill)
Change in CCR Volume Above SWSE (CY)	185,376 (fill)
Change in CCR Volume Below SWSE (CY)	-86,913 (cut)

The comparison indicated that approximately 98,711 CY of CCR was placed in the PAP between the initial and periodic survey, thereby leading to a potential for the peak water surface elevation (PWSE) to increase during the inflow design 1,000-year flood event. Also, the measured water surface elevation for the periodic survey is higher than the water levels estimated for both normal and a 1,000-yr flood events event in the initial certifications (**Section 7**).

No significant changes to embankment geometry appeared to have occurred between the initial and periodic surveys, as shown on the isopach. However, along the northern embankments there appears to be material stockpiled upstream of the embankments which would have increased the loading on the embankments. It is further noted that there are two areas along the southern embankment that appear to be cut and apparently excavated since the initial survey. Such excavation is not known to have occurred and it is likely this apparent cut is a byproduct of survey discrepancy between the initial and periodic bathymetric surveys.

2.5 Comparison of 2015 to 2020 Aerial Photography

Aerial photographs of the PAP collected by Weaver in 2015 [17] and IngenAE in 2020 [18] were compared to visually evaluate if potential site changes (i.e., changes to the embankment, outlet structures, limits of CCR, other appurtenances) may have occurred. A comparison of these aerial photographs is provided in **Drawing 3**, and the following changes were identified:

- A few mounds of new earth built up along the northern embankments; and
- No clear change in the ash delta or shoreline was observed; and
- It appears the water level of the impounded pond may have been higher in 2015.

2.6 Comparison of Initial and Periodic Site Visits

An initial site visit to the PAP was conducted by AECOM in 2015 and documented with a Site Visit Summary and corresponding photographs [19]. A site visit was conducted by Geosyntec on May 21, 2021, with Panos Andonyadis, P.E., conducting the site visit. The site visit was intended to evaluate potential changes at the site since 2015 (i.e., modification to the embankment, outlet structures or other appurtenances, limits of CCR, maintenance programs, repairs), in addition to performing visual observations of the PAP to evaluate if the structural stability requirements (§257.73(d)) were still met. The site visit included walking the perimeter of the PAP, visually observing conditions, recording filed notes, and collecting photographs. The site visit is documented in a photographic log provided in **Attachment B**. A summary of significant findings from the periodic site visit is provided below:

- The perimeter embankments appear to be structurally stable as no signs of structural or foundation instability were observed
- No new development was observed in the vicinity of the PAP, although the observation was limited to the portions of the vicinity visible form the crest of the PAP dike.
- No significant changes were observed since the previous certification.

2.7 Interview with Power Plant Staff

An interview with Ken Schafer of the NPP was conducted by Panos Andonyadis of Geosyntec on May 21, 2021. Mr. Schafer was employed at NPP between 2015 and 2021, The interview included a discussion of potential changes that that may have occurred at the PAP since development of the initial certifications ([2], [3], [4], [5], [6], [7]) in 2015 and 2016. between 2015 and 2020. A summary of the interview is provided below.

- Were any construction projects completed for the PAP between 2015 and 2021, and, if so, are design drawings and/or details available?

  - No repairs were performed since the initial certification.

- Were there any changes to the purpose of the PAP between 2015 and 2021?

  - No, the impoundment continues to receive sluiced ash, sluiced bottom ash, and plant waste water.

- Were there any changes to the to the instrumentation program and/or physical instruments for the PAP between 2015 and 2021?

  - No.

- Are area-capacity curves for the PAP available?

  - No area-capacity curves have been developed.

- Were there any changes to spillways and/or diversion features for the PAP completed between 2015 and 2021?

  - No changes to the spillway were made.

- Were there any changes to construction specifications, surveillance, maintenance, and repair procedures for the PAP between 2015 and 2021?

  - No changes were made.

- Were there any instances of embankment and/or structural instability for the PAP between 2015 and 2021?

  - A repair of a slough was performed on the upstream side of the southernmost embankment. The damage appears to have been caused by wave related erosion and is limited to the area of a previous repair.

SECTION 3

HAZARD POTENTIAL CLASSIFICATION - §257.73(a)(2)

3.1 Overview of 2016 Initial Hazard Potential Classification

The Initial Hazard Potential Classification (Initial HPC) was prepared by Stantec Consulting Services, Inc. (Stantec) in 2016 ([2], [9]), following the requirements of §257.73(a)(2). The Initial HPC included the following information:

- Performing a visual analysis to evaluate potential hazards associated with a failure of the PAP perimeter embankment, along all sides of the PAP.
- Evaluation of potential breach flow paths were evaluated using elevation data and aerial imagery to evaluate potential impacts to downstream structures, infrastructure, frequently occupied facilities/areas, and waterways [2].
- While a breach map is not included in the Initial HPC, it is included within the §257.73(a)(3) Initial Emergency Action Plan prepared by Stantec [20].

The visual analysis indicated that none of the breach scenarios appeared to impact occupied structures, although a breach of the east embankment could impact an infrequently-used gravel site access road and a breach of the north, northeast or east embankment could impact a nearby railroad. The Initial HPC concluded that none of breach scenarios considered would be likely to result in a probable loss of human life, although the breach could cause CCR to be released into the Newton Lake, thereby causing environmental damage. The Initial HPC therefore recommended a "Significant" hazard potential classification for the PAP [2].

3.2 Review of Initial HPC

Geosyntec performed a review of the Initial HPC ([2], [9]) in terms of technical approach, input parameters, assessment of the results, and applicable requirements of the CCR Rule [1]. No significant technical issues were noted within the technical review, although a detailed review (e.g., check) of the calculations was not performed.

3.3 Summary of Site Changes Affecting the Initial HPC

Geosyntec did not identify any changes at the site that may affect the HPC. No new structures, infrastructure, frequently occupied facilities/areas, or waterways were present in the probable breach area indicated in the Initial EmAP [20], although Geosyntec's evaluation of new structures was limited to visual observations completed from the dike crest during the site visit and a review of available aerial imagery provided by IngenAE in 2020 [18]. Additionally, no significant changes to the topography in the probable breach were identified.

3.4 Periodic HPC

Geosyntec recommends retaining the "Significant" hazard potential classification for the PAP, per §257.73(A)(2), based on the lack of site changes potentially affecting the Initial HPC occurring since the initial HPC was developed, as described in **Section 3.2**. Updates to the Initial HPC reports ([2], [9]) are not recommended at this time.

SECTION 4

HISTORY OF CONSTRUCTION REPORT - §257.73(c)

4.1 Overview of Initial HoC

The Initial History of Construction report (Initial HoC) was prepared by AECOM in 2016 [3], following the requirements of §257.73(c), and included information on the PAP. The Initial HoC included the following information for each CCR surface impoundment:

- The name and address of the owner/operator,
- Location maps,
- Statements of purpose,
- The names and size of the surrounding watershed,
- A description of the foundation and abutment materials,
- A description of the embankment materials,
- Approximate dates and stages of construction,
- A list of available design and engineering drawings,
- A summary of instrumentation,
- A statement that area-capacity curves are not available,
- Information on spillway structures,
- A statement that the constructions specifications are not available,
- Inspection and surveillance plans,
- Information on operational and maintenance procedures, and
- A statement of observed historical structural instability that occurred at the PAP.

4.2 Summary of Site Affecting the Initial HoC

Several significant changes were identified at the site that occurred after development of the initial HoC report [3] and are described below:

- A state identification number (ID) of W0798070001-01 was assigned to the PAP by the Illinois Environmental Protection Agency (IEPA).

- Revised area-capacity curves and spillway design calculations for the PAP were prepared as part of the updated periodic Inflow Design Flood Control System Plan, as described in **Section 7.3**.

A letter documenting changes to the HoC report is provided in **Attachment C**.

SECTION 5

STRUCTURAL STABILITY ASSESSMENT - §257.73(d)

5.1 Overview of Initial SSA

The Initial Structural Stability Assessment (Initial SSA) was prepared by AECOM in 2016 ([4], [7]) following the requirements of §257.73(d)(1), and included the following evaluations:

- Stability of embankment foundations, embankment abutments, slope protection, embankment compaction, and slope vegetation,
- Spillway stability including capacity, structural stability and integrity;
- Stability and structural integrity of hydraulic structures; and
- Downstream slope stability under sudden drawdown conditions for a downstream water body.

The Initial SSA concluded that the PAP met all structural stability requirements for §257.73(d)(1)(i)-(vii).

A periodic certification of the structural stability and structural integrity of hydraulic outfall structures (§257.73(d)(1)(vi)) was performed by Luminant in 2020 [8]. This certification independently determined that the criteria was met due to the condition of the spillway pipes and the soil types within the embankment. Therefore, the review and certification of §257.73(d)(1)(vi) was not included within the scope of this report.

The Initial SSA referenced the results of the Initial Structural Factor Assessment (Initial SFA) ([5], [7]), to demonstrate stability of the stability of foundations and abutments (§257.73(d)(1)(i)) and sufficiency of dike compaction (§257.73(d)(1)(iii)) portions of the SSA criteria. This included stating that slope stability analyses for slip surfaces passing through the foundation met or exceeded the criteria listed in §257.73(e)(1), for the stability of foundations and abutments. For the sufficiency of dike compaction, this included stating that slope stability analyses for slip surfaces passing through the dike also met or exceeded the §257.73(e)(1) criteria.

Additionally, the Initial SSA included a sudden drawdown slope stability analysis to evaluate the effect of a drawdown event in the adjacent Newton Lake from the 100-year flood pool to an empty-pool condition, as required by §257.73(3)(1)(vii) for CCR units where the downstream slopes are inundated by an adjacent water body. The minimum acceptable factor of safety for this loading condition was assumed to be 1.3 based on US Army Corps of Engineers guidance [21].

5.2 Review of Initial SSA

Geosyntec performed a review of the Initial SSA ([4], [7]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing photographs collected in 2015 and used to demonstrate compliance with §257.73(d)(1)(i)-(vii).

- Reviewing geotechnical calculations used to demonstrate the stability of foundations, per §257.73(d)(1)(i), sufficiency of embankment compaction, per §257.73(d)(1)(iii), and downstream slope inundation/stability, per §257.73(d)(1)(vii), in terms of supporting geotechnical investigation and testing data, input parameters, analysis methodology, selection of critical cross-sections, and loading conditions.

- Reviewing completeness and technical approach of closed-circuit television (CCTV) inspections used to evaluate the stability of hydraulic structures, per §257.73(d)(1)(vi).

No significant technical issues were noted within the technical review, although a detailed review (e.g., check) of the calculations was not performed.

5.3 Summary of Site Changes Affecting the Initial SSA

Several changes at the site that occurred after development of the Initial SSA were identified. These changes required updates to the Initial SSA and are described below:

- The Initial SSA utilized the results of the Initial Inflow Design Flood Control System Plan (IDF) to demonstrate compliance with the adequacy of spillway design and management (§257.73(d)(1)(v)(A)-(B)). The Initial IDF was subsequently updated to develop a Periodic IDF, based on site changes, as discussed in **Section 7**.

- The Initial SSA utilized the slope stability analysis results of the Initial Safety Factor Assessment (SFA) as part of the compliance demonstration for the stability of foundations and abutments (§257.73(d)(1)(i)) and sufficiency of dike compaction (§257.73(d)(1)(iii)) as discussed in **Section 5.1**. The Initial SSA also utilized sudden drawdown slope stability analyses performed using the same cross-sections and input data as the Initial SFA to demonstrate compliance with downstream slope inundation/stability (§257.73(d)(1)(vii). The Initial SFA slope stability analyses, including the sudden drawdown analyses, were subsequently updated to develop a Periodic SFA, based on site changes, as discussed in **Section 6.4**.

5.4 Periodic SSA

The Periodic SFA (**Section 6.4**) indicates that foundations and abutments are stable and dike compaction is sufficient for expected ranges in loading conditions, as slope stability factors of safety were found to meet or exceed the requirements of §257.73(e)(1), including for static maximums storage pool conditions and post-earthquake (i.e., liquefaction) loading conditions considering seismically-induced strength loss in the foundation soils. Therefore, the requirements of §257.73(d)(1)(i) and §257.73(d)(1)(iii) are met for the Periodic SSA.

The Periodic IDF (**Section 7.4**) indicates that spillways are adequately designed and constructed to adequately manage flow during the PMF flood, as the spillways can adequately manage flow during peak discharge from the PMP storm event without overtopping of the embankments. Therefore, the requirements of §257.73(d)(1)(v)(A)-(B) are met for the Periodic SSA.

Certification of §257.73(d)(1)(vi) was independently performed by Luminant [8] and is not included within the scope of this report.

SECTION 6

SAFETY FACTOR ASSESSMENT - §257.73(e)(1)

6.1 Overview of Initial SFA

The Initial Safety Factor Assessment (Initial SFA) was prepared by AECOM in 2016 [7], following the requirements of §257.73(e)(1). The Initial SFA included the following information:

- A geotechnical investigation program with in-situ and laboratory testing;
- An assessment of the potential for liquefaction in the embankment and foundation soils;
- The development of ten slope stability cross-sections for limit equilibrium stability analysis utilizing GeoStudio SLOPE/W software; and
- The analysis of all cross-sections for maximum storage pool, maximum surcharge pool, and seismic loading conditions.

The Initial SFA concluded that the PAP met all safety factor requirements, per §257.73(e), as all calculated safety factors were equal to or higher than the minimum required values.

6.2 Review of Initial SFA

Geosyntec performed a review of the Initial SFA ([5], [7]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing geotechnical calculations used to demonstrate the acceptable safety factors, per §257.73(e)(1), in terms of:
    - Completeness and adequacy of supporting geotechnical investigation and testing data;
    - Completeness and approach of liquefaction triggering assessments;
    - Input parameters, analysis methodology, selection of critical cross-sections, and loading conditions utilized for slope stability analyses; and
    - Phreatic conditions based on piezometric data, as discussed in **Section 2.3**.

No significant technical issues were noted within the technical review, although a detailed review (e.g., check) of the calculations was not performed.

6.3 Summary of Site Changes Affecting the Initial SFA

Several changes at the site that occurred after development of the Initial SFA were identified. These changes required updates to the Initial SFA and are described below:

- The groundwater levels measured since 2015 (**Section 2.3**) appear to be up to 10 ft higher than the phreatic surface modeled for the perimeter embankments during the Initial SFA ([5], [7]). Therefore, the phreatic surface needed to be updated to reflect the critical levels observed since 2015.

- The Periodic IDF (**Section 7.4)** found that the normal pool elevation within the PAP increased from 534.0 to 537.0 ft, resulting in 3.0 ft more water loading on the embankment dikes than was considered in the Initial SFA for the maximum storage pool, seismic loading conditions (§257.73(e)(1)(i) and (iii)), and sudden drawdown loading condition (§257.73(d)(1)(ii)). Peak water surface elevations during the IDF also increased from 534.9 to 538.2 ft, resulting in 3.3 ft more water loading on the embankment dikes than was considered in the Initial SFA for the maximum surcharge pool loading conditions (§257.73(e)(1)(i)).

6.4 Periodic SFA

Geosyntec revised existing slope stability analyses associated with the Initial SFA ([5], [7]) for the ten cross- sections of PAP to account for the increase in normal and peak pool loadings, and phreatic level changes as described in **Section 2.3** and **Section 7.4**. This included revising the slope stability analyses evaluating sudden drawdown conditions in the cross-sections adjacent to the downstream water body that were utilized as part of the Initial SSA (**Section 6.2**). The following approach and input data were used to revise the analyses:

- Water levels in the PAP for the maximum storage pool, seismic slope stability analysis, and sudden drawdown loading conditions were increased to El. 537.0 ft, based on the Periodic IDF (**Section 7.4)**.

- Water levels in the PAP for the maximum surcharge pool slope stability analysis loading conditions were increased to El. 538.2 ft, based on the Periodic IDF (**Section 7.4)**.

- According to updated groundwater level monitoring plot (**Section 2.3**), the phreatic level in the location of related piezometers increased for all the loading conditions from El. 534 to El. 538 ft in cross-section “E”, from El. 537 to El. 539 ft in cross-section “F”, from El. 535 to El. 544 ft in cross-section “G”, and from El. 535 to El. 541 ft in cross-section “K”.

- All other analysis input data and settings from the Initial SFA ([5], [7]), were utilized, including, but not limited to, subsurface stratigraphy and soil strengths, phreatic conditions,

ground surface geometry, software package and version, slip surface search routines and methods, and input data for the seismic analyses.

Factors of safety from the Periodic SFA are summarized in **Table 3** and confirm that the PAP meets the requirements of §257.73(e)(1). Slope stability analysis output associated with the Initial SFA is provided in **Attachment D**.

Table 3 – Factors of Safety from Periodic SFA

	Structural Stability Assessment (§257.73(d)) and Safety Factor Assessment (§257.73(e))				Structural Stability Assessment (§257.73(d))
Cross-Section	**Maximum Storage Pool §257.73(e)(1)(i) Minimum Required = 1.50**	**Maximum Surcharge Pool[1] §257.73(e)(1)(ii) Minimum Required = 1.40**	**Seismic §257.73(e)(1)(iii) Minimum Required = 1.00**	**Dike Liquefaction §257.73(e)(1)(iv) Minimum Required = 1.20**	**Sudden Drawdown §257.73(d)(1)(ii) Minimum Required = 1.30**
A	1.82	1.82	1.26	N/A	N/A
B	1.81	1.81	1.07*	N/A	1.59*
C	1.67	1.67	1.11	N/A	1.67
D	1.76	1.76	1.23	N/A	1.76
E	2.18	2.18	1.91	N/A	N/A
F	1.93	1.93	1.45	N/A	N/A
G	1.98	1.98	1.46	N/A	N/A
H	1.81	1.81	1.36	N/A	N/A
I	1.66*	1.66*	1.43	N/A	1.61
K	1.73	1.74	1.17	N/A	1.73

Notes:
*Indicates critical cross-section (i.e., lowest calculated factor of safety out of the ten cross-sections analyzed)
N/A – Loading condition is not applicable.

SECTION 7

INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN - §257.82

7.1 Overview of 2016 Inflow Design Flood Control System Plan

The Initial Inflow Design Flood Control System Plan (Initial IDF) was prepared by AECOM in 2016 [7], following the requirements of §257.82. The Initial IDF included the following information:

- A hydraulic and hydrologic analysis, performed for the 1,000-year design flood event because of the hazard potential classification of "Significant", which corresponded to 9.01 inches of rainfall over a 24-hour period.
- The Initial IDF utilized a HydroCAD Version 10 model to evaluate spillway flows and pool level increases during the design flood, with a starting water surface elevation of 534.0 ft.

The Initial IDF concluded that the PAP met the requirements of §257.82, as the peak water surface estimated by the HydroCAD model was elevation 534.9 ft, relative to a minimum PAP embankment crest elevation of 552.7 ft. Therefore, overtopping was not expected. The Initial IDF also evaluated the potential for discharge from the CCR unit and determined that discharge from the PAP during normal and inflow design flood conditions was expected to be routed through the existing spillway and NPDES-permitted outfall.

7.2 Review of Initial IDF

Geosyntec performed a review of the Initial IDF ([6], [7]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing the return interval used vs. the hazard potential classification.
- Reviewing the rainfall depth and distribution for appropriateness.
- Performing a high-level review of the inputs to the hydrological modeling.
- Reviewing the hydrologic model parameters for spillway parameters, starting pool elevation, and storage vs. the reference data.
- Reviewing the overall Initial IDF vs. the applicable requirements of the CCR Rule

Several review comments were identified during review of the Initial IDF. The comments are described below:

- The Initial IDF utilized the National Resource Conservation Service (NRCS) Type II rainfall distribution type [22]. Geosyntec recommend utilizing the Huff 3rd Quartile distribution for areas less than 10 square miles [23] for the reasons listed below.
    - Huff 3rd Quartile distribution was determined to be a more appropriate representation of a 1,000-year, 24-hour storm event per the Illinois State Water Survey (ISWS) Circular 173 [24] which developed standardized rainfall distributions from compiled rainfall data at sites throughout Illinois.
    - Illinois Department of Natural Resources, Office of Water Resources (IDNR-OWR) [25] recommends use of the Huff Quartile distributions in Circular 173 when using frequency events to determine the spillway design flood inflow hydrograph, "*The suggested method to distribute this rainfall is described in the ISWS publication, Circular 173, "Time Distributions of Heavy Rainstorms in Illinois"*.
- The process inflows (ash sluice and wastewater) included within the hydrologic and hydraulic analysis file were daily averages which are less than the maximum pump rate (i.e., worst-case scenario).

7.3 Summary of Site Changes Affecting the Initial IDF

Two changes at the site that occurred after development of the Initial IDF were identified. These changes required updates to the Initial IDF and are described below:

- Approximately 98,700 CY of CRR were placed above the SWSE utilized for the Initial IDF certification, thereby altering the stage-storage curve for the PAP relative to the Initial IDF.
- The operative water level of the impoundment is higher, thereby altering the SWSE for the PAP relative to the Initial IDF.

7.4 Periodic IDF

Geosyntec revised the HydroCAD model associated with the Initial IDF to account for the revised rainfall distribution type, cessation of process flows, and additional CCR placement, as described in **Sections 7.2** and **7.3**. The following approach and input data were used for the revised analyses and are referenced in **Attachment E** as appropriate:

- Stage-storage (i.e., area-capacity) curves for the PAP were updated based on the 2020 site survey [18].

  - A revised stage-volume curves for the PAP and Secondary Pond were prepared based on measuring the storage volume of the ponds at every one-foot increment of depth from an elevation at the bottom of the ponds (495 ft PAP; 505 ft Secondary Pond) to the perimeter dike embankment's approximate minimum crest elevation (552 ft PAP; 532 ft Secondary Pond). This analysis identified an overall increase of 129,070 CY (80 ac-ft) of storage volume at the PAP and an overall decrease of 14,520 CY (9 ac-ft) of storage volume at the Secondary Pond from 2016 to 2021.

- The SWSE within the PAP was updated from 534.0 ft to 537.0 ft as this is the invert of the pond outlet structure. The 2020 site survey showed a water surface elevation (WSE) of 535.5 ft; however, the greater elevation of the outlet invert and the surveyed WSE was used as the SWSE to provide conservatism in the model.

- The SWSE within the Secondary Pond was updated from 520.0 ft to 519.9 ft to reflect the 2020 site survey. The primary outlet invert elevation from the Secondary Pond is 505 ft; however, the greater elevation of the outlet invert and the surveyed WSE was used as the SWSE to provide conservatism in the model.

- Updated the inflows from the Ash Sluice from 3.88 cfs for 14 hours per day to 13.37 cfs for 14 hours per day for the duration of the modeled simulation. This more accurately reflects the full load operation of the pumps described in the Initial Full Certification Report (two pumps at 3,000 gpm each, operating 14 hours/day under full load).

- Wastewater inflows were updated from 11.64 cfs for 24 hours per day to 23.39 cfs for 12 hours per day for the duration of the modeled simulation. This more accurately reflects the full load operation of the pumps described in the Initial Full Certification Report (five pumps at 2,100 gpm each, operating 60 pump hours/day).

- The time of concentration (ToC) was updated for drainage areas to the PAP and Secondary Pond from 16.7 minutes (PAP) and 5 minutes (Secondary Pond) to 6 minutes to reflect direct run-on inflow in accordance with TR-20 [22].

- The primary outlet structure from the PAP was updated to reflect the description in the Initial Full Certification Report with no noted changes to the outlet structures.

  - The outlet invert elevation was updated from 512.0 ft to 512.18 ft to reflect the described invert elevation of 512.5 ft using the NGVD29 datum. This was converted to the NAVD88 datum to be consistent with the vertical datum used for the IDF HydroCAD model.

  - Added a weir box riser structure by routing a 28-inch diameter horizontal orifice to the existing outlet culvert. The invert of the riser was set to 537.0 ft. The dimensions of the riser structure were not available; therefore, the riser structure was sized in the model to be consistent with the downstream culvert; this was assumed to be a conservatively restrictive outlet.

- The routing method for the model was updated to more accurately account for routing between the ponds and Lake Newton. The Reach Routing Method was updated from "Storage Indication+ Translation" to "Dynamic Storage Indication". The Pond Routing Method was updated from "Storage – Indication" to "Dynamic Storage Indication".

- The tailwater conditions of the PAP and Secondary Pond were changed from fixed elevations to "Automated" to more accurately account for routing between the ponds.

- Lake Newton was changed to be represented by a link instead of a pond, which allowed a fixed water surface of 504.33 ft (based on 2020 survey of outlet invert elevation).

- The outlet invert elevation of the culvert outlet from the Secondary Pond was updated to 504.33 ft to reflect the 2020 site survey.

- All other input data and settings from the Initial IDF HydroCAD model were utilized, including, but not limited to software package and version, runoff method, rainfall depth, analysis time span and analysis time step.

The results of the Updated IDF are summarized in **Table 4** and confirm that the PAP meets the requirements of §257.82(a)-(b), as the peak water surface elevation does not exceed the minimum perimeter dike crest elevations. Additionally, all discharge from the PAP is routed through the existing spillway system to the NPDES-permitted outfall, during both normal and IDF conditions. Updated area-capacity curves and HydroCAD model output is provided in **Attachment E**.

Table 4- Water Levels from Periodic IDF

	Primary Ash Pond		
Analysis	**Starting Water Surface Elevation (ft)**	**Peak Water Surface Elevation (ft)**	**Minimum Dike Crest Elevation (ft)**
Initial IDF	534.0	534.9	552.0
Updated Periodic IDF	537.0	538.2	552.0
Initial to Periodic Change[1]	+3.0	+3.3	

Notes:
[1]Postive change indicates increase in the WSE relative to the Initial IDF, negative change indicates decrease in the WSE, relative to the Initial IDF.

SECTION 8

CONCLUSIONS

The PAP at NPP was evaluated relative to the USEPA CCR Rule periodic assessment requirements for:

- Hazard potential classification (§257.73(a)(2)),
- History of Construction reporting (§257.73(d)),
- Structural stability assessment (§257.73(d)), with the exception of §257.73(d)(1)(vi) that was independently certified by Luminant [8];
- Safety factor assessment (§257.73(e)), and
- Inflow design flood control system planning (§257.82).

Based on the evaluations presented herein, the referenced requirements are satisfied.

SECTION 9

CERTIFICATION STATEMENT

CCR Unit: Illinois Power Generating Company, Newton Power Plant, Primary Ash Pond

I, Panos Andonyadis, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this 2021 USEPA CCR Rule Periodic Certification Report, has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the periodic assessment of the hazard potential classification, history of construction report, structural stability, safety factors, and inflow design flood control system planning, dated October 2021, were conducted in accordance with the requirements of 40 CFR §257.73(a)(2), (c), (d), (e), and §257.82, with the exception of §257.73(d)(1)(vi)) that was independently certified by others.

Panos Andonyadis

OCTOBER 11, 2021

Date

SECTION 10

REFERENCES

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[3] AECOM, "History of Construction, USEPA Final CCR Rule, Newton Power Station, Newton, Illinois," October 2016.

[4] AECOM, "CCR Rule Report: Initial Structural Stability Assessment For Primary Ash Pond At Newton Power Station," St. Louis, MO, October 2016.

[5] AECOM, "CCR Rule Report: Initial Safety Factor Assessment For Primary Ash Pond At Newton Power Station," St. Louis, MO, October 2016.

[6] AECOM, "CCR Rule Report: Initial Inflow Design Flood Control System Plan For Primary Ash Pond At Newton Power Station," St. Louis, MO, October 2016.

[7] AECOM, "CCR Certification Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary Ash Pond at Newton Power Station," St. Louis, MO, October 2016.

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[18] IngenAE, "Luminant, Dynegy Midwest Generation, LLC, Newton Power Station, December 2020 Topography," Earth City, Missouri, March 12, 2021.

[19] AECOM, "Draft CCR Unit Initial Site Visit Summary, Dynegy CCR Compliance Program," June 24, 2015.

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Section 3

Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Prepared for
Illinois Power Generating Company

Date
January 31, 2022

Project No.
1940100711-012

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

PRIMARY ASH POND

NEWTON POWER PLANT

NEWTON, ILLINOIS

RAMBOLL Bright ideas. Sustainable change.

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
NEWTON POWER PLANT PRIMARY ASH POND

Project name	**Newton Power Plant Primary Ash Pond**
Project no.	**1940100711-012**
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Prepared by	**Chase J. Christenson, PG**
Checked by	**Lauren Cook**
Approved by	**Brian Hennings**
Description	**Annual Report in Support of Part 845**

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
https://ramboll.com

Chase J. Christenson, PG
Hydrogeologist

Brian Hennings, PG
Senior Managing Hydrogeologist

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ACRONYMS AND ABBREVIATIONS

§	Section
35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
bgs	below ground surface
CCR	coal combustion residuals
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard
HCR	Hydrogeologic Site Characterization Report
ID	identification
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
NA	not applicable
NID	National Inventory of Dams
No.	number
NPP	Newton Power Plant
PAP	Primary Ash Pond
Part 845	35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments
PMP	potential migration pathway
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SI	surface impoundment
SSI	statistically significant increase
TDS	total dissolved solids
UA	uppermost aquifer
UD	upper drift
WLO	water level only

EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 35 of the Illinois Administrative Code (35 I.A.C.) Section (§) 845.610(e) (*Annual Groundwater Monitoring and Corrective Action Report*) for the Primary Ash Pond (PAP) located at Newton Power Plant (NPP) near Newton, Illinois.

An operating permit application for the PAP was submitted by Illinois Power Generating Company (IPGC) to the Illinois Environmental Protection Agency (IEPA) by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. The PAP is recognized by Vistra identification (ID) Number (No.) 501, IEPA ID No. W0798070001-01, and National Inventory of Dams (NID) No. IL50719.

A Groundwater Monitoring Plan (GMP; Ramboll Americas Engineering Solutions, Inc. [Ramboll], 2021a), which included a Statistical Analysis Plan, was developed and submitted as part of the operating permit application to propose a monitoring well network and monitoring program specific to the PAP that will comply with 35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (Part 845; IEPA, 2021). The proposed groundwater protection standards (GWPS), as presented in the GMP, are shown in **Appendix A**.

Groundwater concentrations observed from 2015 to 2021 were presented in the Hydrogeologic Site Characterization Report (HCR; Ramboll, 2021b) and evaluated in the presentation of the History of Potential Exceedances (Ramboll, 2021c) included in the operating permit application, as required by 35 I.A.C. § 845.230(d). Groundwater concentrations from 2015 to 2021 that exceeded the GWPS set forth in 35 I.A.C. § 845.600(a) are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. The determination of potential historical exceedances of 35 I.A.C. § 845.600(a) and a summary of potential historical exceedances of proposed GWPS are shown in **Appendix B**.

Evaluation of background groundwater quality was presented in the GMP (Ramboll, 2021a), and compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of an operating permit.

This report summarizes only the information presented in the operating permit application for the PAP, submitted to IEPA by October 31, 2021, which is pending IEPA approval.

1. INTRODUCTION

This report has been prepared by Ramboll on behalf of IPGC, to provide the information required by 35 I.A.C. § 845.610(e) for the PAP located at NPP near Newton, Illinois. The owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) must prepare and submit to IEPA by January 31st of each year an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year as part of the Annual Consolidated Report required by 35 I.A.C. § 845.550. The Annual Groundwater Monitoring and Corrective Action Report shall document the status of the groundwater monitoring and corrective action plan for the CCR SI, summarize key actions completed, including the status of permit applications and Agency approvals, describe any problems encountered and actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the annual report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR SI and all background (or upgradient) and downgradient monitoring wells, including the well ID Nos., that are part of the groundwater monitoring program for the CCR SI, and a visual delineation of any exceedances of the GWPS.
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.
3. A potentiometric surface map for each groundwater elevation sampling event required by 35 I.A.C. § 845.650(b)(2).
4. In addition to all the monitoring data obtained under 35 I.A.C. §§ 845.600-680, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected.
5. A narrative discussion of any statistically significant increases (SSIs) over background levels for the constituents listed in 35 I.A.C. § 845.600.
6. Other information required to be included in the annual report as specified in 35 I.A.C. §§ 845.600-680.
7. A section at the beginning of the annual report that provides an overview of the current status of the groundwater monitoring program and corrective action plan for the CCR SI. At a minimum, the summary must:
    i. Specify whether groundwater monitoring data shows a SSI over background concentrations for one or more constituents listed in 35 I.A.C. § 845.600.
    ii. Identify those constituents having a SSI over background concentrations and the names of the monitoring wells associated with the SSI(s).
    iii. Specify whether there have been any exceedances of the GWPS for one or more constituents listed in 35 I.A.C. § 845.600.
    iv. Identify those constituents with exceedances of the GWPS in 35 I.A.C. § 845.600 and the names of the monitoring wells associated with the exceedance.
    v. Provide the date when the assessment of corrective measures was initiated for the CCR SI.

vi. Provide the date when the assessment of corrective measures was completed for the CCR SI.

vii. Specify whether a remedy was selected under 35 I.A.C. § 845.670 during the current annual reporting period, and if so, the date of remedy selection.

viii. Specify whether remedial activities were initiated or are ongoing under 35 I.A.C. § 845.780 during the current annual reporting period.

An operating permit application for the PAP was submitted by IPGC to IEPA by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. Therefore, the Part 845 groundwater monitoring program has not yet been initiated. This report summarizes the data collected for the PAP as it was presented in the operating permit application, and includes the following:

- A map showing the CCR SI and all proposed background (or upgradient) and downgradient monitoring wells, including their identification numbers, that are part of the proposed groundwater monitoring program for the CCR SI presented in the GMP included in the operating permit application (Ramboll, 2021a).
- Identification of monitoring wells that were installed during 2021 to fulfill the requirements of 35 I.A.C. § 845.620(b).
- Representative potentiometric surface maps from the independent sampling events conducted in 2021 to meet the requirements of 35 I.A.C. § 845.650(b)(1)(A), as presented in the HCR included in the operating permit application (Ramboll, 2021b).
- A summary from the independent sampling events completed in 2021, including the number of groundwater samples that were collected for analysis for each proposed background and downgradient well and the dates the samples were collected.
- The proposed GWPS as presented in the GMP.
- A summary of the History of Potential Exceedances included in the operating permit application (Ramboll, 2021c), as required by 35 I.A.C. § 845.230(d), summarizing groundwater concentrations from 2015 to 2021 that exceeded the proposed GWPS.
  - These are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A of the GMP), which is pending IEPA approval.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for the PAP.

3. KEY ACTIONS COMPLETED IN 2021

Work was completed in 2021 to meet the requirements of Part 845 and details were provided in the operating permit application submitted to IEPA. The boring logs and well construction forms are included in the HCR provided with the operating permit application (Ramboll, 2021b).

The proposed Part 845 monitoring well network is presented in **Figure 1** and summarized below in **Table A**. The proposed Part 845 monitoring well network also includes wells previously installed for other programs.

Table A. Proposed Part 845 Monitoring Well Network

Well ID	Monitored Unit	Well Screen Interval (feet bgs)	Well Type [1]
APW02*	UD	9.7 - 19.7	Compliance
APW03*	UD	9.7 - 19.7	Compliance
APW04*	UD	7.7 - 17.7	Compliance
APW05	UA	62.6 - 67.4	Background
APW05S*	UD	10 - 20	Compliance
APW06	UA	67.7 - 72.5	Background
APW07	UA	77.9 - 82.7	Compliance
APW08	UA	71.4 - 81.1	Compliance
APW09	UA	56.7 - 61.5	Compliance
APW10	UA	40.7 - 45.5	Compliance
APW11	UA	60 - 65	Compliance
APW12*	UD	20 - 30	Compliance
APW13	UA	58.5 - 63.5	Compliance
APW14	UA	50 - 55	Compliance
APW15	UA	98 - 103	Compliance
APW16	UA	80.5 - 85.5	Compliance
APW17	UA	87 - 92	Compliance
APW18	UA	75 - 80	Compliance
XSG01 [2, 3]	CCR	NA	WLO
SG02 [2, 3]	Surface Water	NA	WLO

[1] Well type refers to the role of the well in the monitoring network.
[2] Surface water level measuring point.
[3] Location is temporary pending implementation of impoundment closure per an approved construction permit application.
* Well in the UD that has been identified to monitor the potential migration pathway (PMP).
bgs = below ground surface
CCR = coal combustion residuals
NA = not applicable
UA = uppermost aquifer
UD = upper drift
WLO = water level only

Proposed Part 845 monitoring wells were sampled for eight rounds of independent groundwater samples from February to August 2021 and the results were analyzed for the parameters listed in 35 I.A.C. § 845.600. Select proposed Part 845 monitoring wells are also monitored as part of the monitoring system for the requirements of Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257. A summary of the samples collected from background and compliance monitoring wells for determination of the history of potential exceedances is included in **Table B** below. All groundwater elevation data and analytical results obtained in 2021 are presented in the HCR (Ramboll, 2021b). Groundwater elevation contour maps representative of the independent sampling events are presented in **Figures 2 and 3**.

Table B. Summary of Groundwater Samples Collected

Sampling Dates	Parameters Collected	Monitoring Wells Sampled [1]
February 9 - 11, 2021	Appendix III [2], field parameters [3]	APW05, APW06, APW07, APW08, APW09, and APW10
February 17 - 18, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, and APW06
March 10 - 11, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, and APW06
March 29 - 31, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW06, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18
April 28 - 29, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW05S, APW06, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18
May 24 - 25, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW05S, APW06, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18
June 16 - 17, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW05S, APW06, APW10, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18
June 30, 2021	pH, TDS	APW10
June 30, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW05S, APW06, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18
July 14 - 29, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	APW02, APW03, APW04, APW05, APW05S, APW06, APW10, APW11, APW12, APW13, APW14, APW15, APW16, APW17, and APW18

[1] In general, one sample was collected per monitoring well per event.
[2] Appendix III parameters include boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS).
[3] Field parameters include pH, dissolved oxygen, temperature, oxidation/reduction potential, specific conductance, and turbidity.
[4] Metals include antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium.
[5] Inorganic parameters include fluoride, chloride, sulfate, and TDS.

Evaluation of background groundwater quality is presented in the GMP and the proposed GWPSs are included in **Appendix A.** Compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of the operating permit for the PAP.

Groundwater concentrations from 2015 to 2021 were presented in the HCR and evaluated in the presentation of the History of Potential Exceedances included in the operating permit application. Groundwater concentrations that exceeded the proposed GWPS are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. Tables summarizing how potential historical exceedances were determined and the potential exceedances themselves are provided in **Appendix B**.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

The first round of groundwater sampling for compliance with the Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for the PAP, and in accordance with the GMP.

5. KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Groundwater sampling and reporting for compliance will be initiated the quarter following issuance of the operating permit at all monitoring wells in the approved monitoring well network as presented in the GMP and required by 35 I.A.C. § 845.610(b)(3), including:
  - Monthly groundwater elevations.
  - Quarterly groundwater sampling.

6. REFERENCES

Illinois Environmental Protection Agency (IEPA), 2021. *In the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Title 35 Illinois Administration Code 845, Addendum*. April 15, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021a. *Groundwater Monitoring Plan. Newton Power Plant, Primary Ash Pond, Newton, Illinois*. Illinois Power Generating Company. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021b. *Hydrogeologic Site Characterization Report. Newton Power Plant, Primary Ash Pond, Newton, Illinois*. Illinois Power Generating Company. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021c. *History of Potential Exceedances. Newton Power Plant, Primary Ash Pond, Newton, Illinois*. Illinois Power Generating Company. October 25, 2021.

FIGURES

COMPLIANCE WELL
BACKGROUND WELL
STAFF GAUGE
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 500 1,000
Feet

PROPOSED PART 845 GROUNDWATER MONITORING WELL NETWORK

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT PRIMARY ASH POND

NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\Newton\GMP\Figure 2-1_Proposed Monitoring Well Network.mxd

PROJECT: 169000XXXX | DATED: 10/20/2021 | DESIGNER: STOLZSD

BACKGROUND WELL
MONITORING WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION CONTOUR
GROUNDWATER FLOW DIRECTION
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. NM = NOT MEASURED
3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988

0 400 800
Feet

POTENTIOMETRIC SURFACE MAP
APRIL 27, 2021

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT PRIMARY ASH POND

NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\NewtonFigure 3-3_GWE_Contours_20210427.mxd

PROJECT: 169000XXXX | DATED: 10/19/2021 | DESIGNER: STOLZSD

Y:\Mapping\Projects\222285\MXD\845_Operating_Permit\Newton\Figure 3-4_GWE_Contours_20210714.mxd

BACKGROUND WELL
MONITORING WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
GROUNDWATER ELEVATION CONTOUR (5-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION CONTOUR
GROUNDWATER FLOW DIRECTION
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE

NOTES:

1.ELEVATIONS IN PARENTHESIS WERE NOT USED FOR CONTOURING.

2. NM = NOT MEASURED

3. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988

0 400 800
Feet

POTENTIOMETRIC SURFACE MAP
JULY 14, 2021

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT PRIMARY ASH POND

NEWTON POWER PLANT
NEWTON, ILLINOIS

FIGURE 3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 10/19/2021 | DESIGNER: STOLZSD

APPENDICES

APPENDIX A
TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND STANDARDS

TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND STANDARDS
GROUNDWATER MONITORING PLAN
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Parameter	Background Concentration	845 Limit	Groundwater Protection Standard	Unit
Antimony, total	0.003	0.006	0.006	mg/L
Arsenic, total	0.059	0.010	0.059	mg/L
Barium, total	0.3	2.0	2.0	mg/L
Beryllium, total	0.001	0.004	0.004	mg/L
Boron, total	0.26	2	2	mg/L
Cadmium, total	0.001	0.005	0.005	mg/L
Chloride, total	52	200	200	mg/L
Chromium, total	0.011	0.1	0.1	mg/L
Cobalt, total	0.0043	0.006	0.006	mg/L
Fluoride, total	0.633	4.0	4.0	mg/L
Lead, total	0.0074	0.0075	0.0075	mg/L
Lithium, total	0.03	0.04	0.04	mg/L
Mercury, total	0.0002	0.002	0.002	mg/L
Molybdenum, total	0.018	0.1	0.1	mg/L
pH (field)	7.8 / 6.4	9.0 / 6.5	9.0 / 6.4	SU
Radium 226 and 228 combined	6.9	5	6.9	pCi/L
Selenium, total	0.001	0.05	0.05	mg/L
Sulfate, total	36	400	400	mg/L
Thallium, total	0.001	0.002	0.002	mg/L
Total Dissolved Solids	628	1200	1200	mg/L

Notes:
For pH, the values presented are the upper / lower limits
Groundwater protection standards for calcium and turbidity do not apply per 35 I.A.C. § 845.600(b)
mg/L = milligrams per liter
SU = standard units
pCi/L = picocuries per liter

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APPENDIX B
HISTORY OF POTENTIAL EXCEEDANCES

HISTORY OF POTENTIAL EXCEEDANCES

This presentation of the History of Potential Exceedances, and any corrective action taken to remediate groundwater, is provided to meet the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.230(d)(2)(M) for the Newton Power Plant Primary Ash Pond, Illinois Environmental Protection Agency (IEPA) ID No. W0798070001-01.

Note

Groundwater concentrations from 2015 to 2021 presented in the Hydrogeologic Site Characterization Report (HCR) Table 4-1, and evaluated and summarized in the following tables, are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A to Groundwater Monitoring Plan [GMP]), which has not been reviewed or approved by IEPA at the time of submittal of the 35 I.A.C. § 845 Operating Permit application.

Alternate sources for potential exceedances as allowed by 35 I.A.C. § 845.650(e) have not yet been evaluated. These will be evaluated and presented in future submittals to IEPA as appropriate.

Table 1 summarizes how the potential exceedances were determined. Table 2 is a summary of all potential exceedances.

Background Concentrations

Background monitoring wells identified in the GMP include APW05 and APW06.

For monitoring wells that have been historically monitored in accordance with Title 40, Code of Federal Regulations, Part 257, Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments), background concentrations calculated from sampling events in 2015-2017 were compared to the standards identified in 35 I.A.C. § 845.600(a)(1). For constituents with calculated background concentrations in 2015-2017 greater than the standards in 35 I.A.C. § 845.600(a)(1), those calculated background concentrations were used as Groundwater Protection Standards (GWPSs) for comparing to statistical calculation results for each compliance well to determine potential exceedances. Compliance well statistical calculations consider concentrations from all sampling events in 2015-2021.

For all other monitoring wells, either newly constructed in 2021 or existing wells not monitored under Title 40, Code of Federal Regulations, Part 257, Subpart D, background concentrations calculated from the eight sampling events required by 35 I.A.C. § 845.650(b)(1)(A), to be collected within 180 days from April 21, 2021, were compared to the standards identified in 35 I.A.C. § 845.600(a)(1). For constituents with calculated background concentrations greater than the standards in 35 I.A.C. § 845.600(a)(1), those calculated background concentrations were used as GWPSs. Compliance well statistical calculations from that same time period were compared to the GWPSs to determine potential exceedances.

Corrective Action

No corrective actions have been taken to remediate the groundwater.

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW02	UD	845	Antimony, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW02	UD	845	Arsenic, total	mg/L	02/17/2021 - 07/15/2021	Most recent sample	0.001	0.059	0.059	0.01	Background
APW02	UD	845	Barium, total	mg/L	02/17/2021 - 07/15/2021	CB around linear reg	0.016	2.0	0.30	2	Standard
APW02	UD	845	Beryllium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW02	UD	845	Boron, total	mg/L	02/17/2021 - 07/15/2021	CI around geomean	0.096	2.0	0.26	2	Standard
APW02	UD	845	Cadmium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW02	UD	845	Chloride, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	98	200	52	200	Standard
APW02	UD	845	Chromium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW02	UD	845	Cobalt, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW02	UD	845	Fluoride, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.25	4.0	0.63	4	Standard
APW02	UD	845	Lead, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW02	UD	845	Lithium, total	mg/L	02/17/2021 - 07/15/2021	CB around linear reg	0.092	0.040	0.030	0.04	Standard
APW02	UD	845	Mercury, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW02	UD	845	Molybdenum, total	mg/L	02/17/2021 - 07/15/2021	CI around median	0.001	0.10	0.018	0.1	Standard
APW02	UD	845	pH (field)	SU	02/17/2021 - 07/15/2021	CI around median	6.6	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW02	UD	845	Radium-226 + Radium 228, tot	pCi/L	02/17/2021 - 07/15/2021	CI around mean	0.16	6.9	6.9	5	Background
APW02	UD	845	Selenium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW02	UD	845	Sulfate, total	mg/L	02/17/2021 - 07/15/2021	CI around median	1500	400	36	400	Standard
APW02	UD	845	Thallium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW02	UD	845	Total Dissolved Solids	mg/L	02/17/2021 - 07/15/2021	CI around mean	4890	1200	628	1200	Standard
APW03	UD	845	Antimony, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW03	UD	845	Arsenic, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.059	0.059	0.01	Background
APW03	UD	845	Barium, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.062	2.0	0.30	2	Standard
APW03	UD	845	Beryllium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW03	UD	845	Boron, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.36	2.0	0.26	2	Standard
APW03	UD	845	Cadmium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW03	UD	845	Chloride, total	mg/L	02/18/2021 - 07/15/2021	CI around median	8.0	200	52	200	Standard
APW03	UD	845	Chromium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW03	UD	845	Cobalt, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW03	UD	845	Fluoride, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.25	4.0	0.63	4	Standard
APW03	UD	845	Lead, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.001	0.0075	0.0074	0.0075	Standard
APW03	UD	845	Lithium, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.018	0.040	0.030	0.04	Standard
APW03	UD	845	Mercury, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
APW03	UD	845	Molybdenum, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.00123	0.10	0.018	0.1	Standard
APW03	UD	845	pH (field)	SU	02/18/2021 - 07/15/2021	CI around mean	6.6	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW03	UD	845	Radium-226 + Radium 228, tot	pCi/L	02/18/2021 - 07/15/2021	CI around mean	0.058	6.9	6.9	5	Background
APW03	UD	845	Selenium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW03	UD	845	Sulfate, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	164	400	36	400	Standard
APW03	UD	845	Thallium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW03	UD	845	Total Dissolved Solids	mg/L	02/18/2021 - 07/15/2021	CI around mean	623	1200	628	1200	Standard
APW04	UD	845	Antimony, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW04	UD	845	Arsenic, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.001	0.059	0.059	0.01	Background
APW04	UD	845	Barium, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.017	2.0	0.30	2	Standard
APW04	UD	845	Beryllium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW04	UD	845	Boron, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.023	2.0	0.26	2	Standard
APW04	UD	845	Cadmium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW04	UD	845	Chloride, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	28	200	52	200	Standard
APW04	UD	845	Chromium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW04	UD	845	Cobalt, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW04	UD	845	Fluoride, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.25	4.0	0.63	4	Standard
APW04	UD	845	Lead, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.001	0.0075	0.0074	0.0075	Standard
APW04	UD	845	Lithium, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.014	0.040	0.030	0.04	Standard
APW04	UD	845	Mercury, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
APW04	UD	845	Molybdenum, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.10	0.018	0.1	Standard
APW04	UD	845	pH (field)	SU	02/18/2021 - 07/15/2021	CI around median	6.1	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW04	UD	845	Radium-226 + Radium 228, tot	pCi/L	02/18/2021 - 07/15/2021	CI around mean	-0.0682	6.9	6.9	5	Background
APW04	UD	845	Selenium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW04	UD	845	Sulfate, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	887	400	36	400	Standard
APW04	UD	845	Thallium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW04	UD	845	Total Dissolved Solids	mg/L	02/18/2021 - 07/15/2021	CI around mean	1710	1200	628	1200	Standard
APW05S	UD	845	Antimony, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW05S	UD	845	Arsenic, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.00103	0.059	0.059	0.01	Background
APW05S	UD	845	Barium, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.048	2.0	0.30	2	Standard
APW05S	UD	845	Beryllium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW05S	UD	845	Boron, total	mg/L	02/17/2021 - 07/15/2021	CI around median	0.039	2.0	0.26	2	Standard
APW05S	UD	845	Cadmium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW05S	UD	845	Chloride, total	mg/L	02/17/2021 - 07/15/2021	CI around median	180	200	52	200	Standard
APW05S	UD	845	Chromium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW05S	UD	845	Cobalt, total	mg/L	02/17/2021 - 07/15/2021	CI around median	0.002	0.006	0.0043	0.006	Standard
APW05S	UD	845	Fluoride, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.35	4.0	0.63	4	Standard
APW05S	UD	845	Lead, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW05S	UD	845	Lithium, total	mg/L	02/17/2021 - 07/15/2021	CI around geomean	0.033	0.040	0.030	0.04	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
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PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW05S	UD	845	Mercury, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW05S	UD	845	Molybdenum, total	mg/L	02/17/2021 - 07/15/2021	CI around geomean	0.00101	0.10	0.018	0.1	Standard
APW05S	UD	845	pH (field)	SU	02/17/2021 - 07/15/2021	CI around mean	6.7	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW05S	UD	845	Radium-226 + Radium 228, tot	pCi/L	02/17/2021 - 07/15/2021	CI around geomean	0.13	6.9	6.9	5	Background
APW05S	UD	845	Selenium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW05S	UD	845	Sulfate, total	mg/L	02/17/2021 - 07/15/2021	CI around median	200	400	36	400	Standard
APW05S	UD	845	Thallium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW05S	UD	845	Total Dissolved Solids	mg/L	02/17/2021 - 07/15/2021	CI around mean	3350	1200	628	1200	Standard
APW07	UA	257	Antimony, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW07	UA	257	Arsenic, total	mg/L	12/15/2015 - 06/13/2017	CB around linear reg	0.00513	0.027	0.027	0.01	Background
APW07	UA	257	Barium, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.39	2.0	0.26	2	Standard
APW07	UA	257	Beryllium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.004	0.0025	0.004	Standard
APW07	UA	257	Boron, total	mg/L	12/15/2015 - 02/10/2021	CI around mean	0.070	2.0	0.14	2	Standard
APW07	UA	257	Cadmium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.005	0.0017	0.005	Standard
APW07	UA	257	Chloride, total	mg/L	12/15/2015 - 02/10/2021	CI around median	69	200	58	200	Standard
APW07	UA	257	Chromium, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.004	0.10	0.004	0.1	Standard
APW07	UA	257	Cobalt, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.002	0.006	0.002	0.006	Standard
APW07	UA	257	Fluoride, total	mg/L	12/15/2015 - 02/10/2021	CI around mean	0.38	4.0	0.70	4	Standard
APW07	UA	257	Lead, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.001	0.0075	0.0025	0.0075	Standard
APW07	UA	257	Lithium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.010	0.040	0.023	0.04	Standard
APW07	UA	257	Mercury, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.0002	0.002	0.002	0.002	Standard
APW07	UA	257	Molybdenum, total	mg/L	12/15/2015 - 06/13/2017	CB around linear reg	-0.00141	0.10	0.038	0.1	Standard
APW07	UA	257	pH (field)	SU	12/15/2015 - 02/10/2021	CI around mean	7.1	6.5/9.0	6.6/8.0	6.5/9	Standard/Standard
APW07	UA	257	Radium-226 + Radium 228, tot	pCi/L	12/15/2015 - 06/13/2017	CI around mean	1.1	5.0	1.5	5	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW07	UA	257	Selenium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.050	0.006	0.05	Standard
APW07	UA	257	Sulfate, total	mg/L	12/15/2015 - 02/10/2021	CI around geomean	2.2	400	15	400	Standard
APW07	UA	257	Thallium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.0025	0.0025	0.002	Background
APW07	UA	257	Total Dissolved Solids	mg/L	12/15/2015 - 02/10/2021	CI around mean	457	1200	1000	1200	Standard
APW08	UA	257	Antimony, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW08	UA	257	Arsenic, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.011	0.027	0.027	0.01	Background
APW08	UA	257	Barium, total	mg/L	12/15/2015 - 06/13/2017	CB around linear reg	0.34	2.0	0.26	2	Standard
APW08	UA	257	Beryllium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.004	0.0025	0.004	Standard
APW08	UA	257	Boron, total	mg/L	12/15/2015 - 02/10/2021	CB around linear reg	0.088	2.0	0.14	2	Standard
APW08	UA	257	Cadmium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.005	0.0017	0.005	Standard
APW08	UA	257	Chloride, total	mg/L	12/15/2015 - 02/10/2021	CI around mean	55	200	58	200	Standard
APW08	UA	257	Chromium, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.004	0.10	0.004	0.1	Standard
APW08	UA	257	Cobalt, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.002	0.006	0.002	0.006	Standard
APW08	UA	257	Fluoride, total	mg/L	12/15/2015 - 02/10/2021	CB around linear reg	0.17	4.0	0.70	4	Standard
APW08	UA	257	Lead, total	mg/L	12/15/2015 - 06/13/2017	CI around geomean	0.000849	0.0075	0.0025	0.0075	Standard
APW08	UA	257	Lithium, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.00917	0.040	0.023	0.04	Standard
APW08	UA	257	Mercury, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.0002	0.002	0.002	0.002	Standard
APW08	UA	257	Molybdenum, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.00528	0.10	0.038	0.1	Standard
APW08	UA	257	pH (field)	SU	12/15/2015 - 02/10/2021	CI around mean	7.2	6.5/9.0	6.6/8.0	6.5/9	Standard/Standard
APW08	UA	257	Radium-226 + Radium 228, tot	pCi/L	12/15/2015 - 06/13/2017	CI around mean	0.80	5.0	1.5	5	Standard
APW08	UA	257	Selenium, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.001	0.050	0.006	0.05	Standard
APW08	UA	257	Sulfate, total	mg/L	12/15/2015 - 02/10/2021	CB around linear reg	44	400	15	400	Standard
APW08	UA	257	Thallium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.0025	0.0025	0.002	Background
APW08	UA	257	Total Dissolved Solids	mg/L	12/15/2015 - 02/10/2021	CI around mean	540	1200	1000	1200	Standard

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NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW09	UA	257	Antimony, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW09	UA	257	Arsenic, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.00549	0.027	0.027	0.01	Background
APW09	UA	257	Barium, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.20	2.0	0.26	2	Standard
APW09	UA	257	Beryllium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.004	0.0025	0.004	Standard
APW09	UA	257	Boron, total	mg/L	12/15/2015 - 02/11/2021	CI around mean	0.065	2.0	0.14	2	Standard
APW09	UA	257	Cadmium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.005	0.0017	0.005	Standard
APW09	UA	257	Chloride, total	mg/L	12/15/2015 - 02/11/2021	CI around median	84	200	58	200	Standard
APW09	UA	257	Chromium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.004	0.10	0.004	0.1	Standard
APW09	UA	257	Cobalt, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.002	0.006	0.002	0.006	Standard
APW09	UA	257	Fluoride, total	mg/L	12/15/2015 - 02/11/2021	CI around mean	0.51	4.0	0.70	4	Standard
APW09	UA	257	Lead, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.001	0.0075	0.0025	0.0075	Standard
APW09	UA	257	Lithium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.010	0.040	0.023	0.04	Standard
APW09	UA	257	Mercury, total	mg/L	12/15/2015 - 06/13/2017	CI around median	0.0002	0.002	0.002	0.002	Standard
APW09	UA	257	Molybdenum, total	mg/L	12/15/2015 - 06/13/2017	CI around mean	0.00713	0.10	0.038	0.1	Standard
APW09	UA	257	pH (field)	SU	12/15/2015 - 02/11/2021	CB around T-S line	7.3	6.5/9.0	6.6/8.0	6.5/9	Standard/Standard
APW09	UA	257	Radium-226 + Radium 228, tot	pCi/L	12/15/2015 - 06/13/2017	CI around mean	0.72	5.0	1.5	5	Standard
APW09	UA	257	Selenium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.050	0.006	0.05	Standard
APW09	UA	257	Sulfate, total	mg/L	12/15/2015 - 02/11/2021	CI around geomean	2.7	400	15	400	Standard
APW09	UA	257	Thallium, total	mg/L	12/15/2015 - 06/13/2017	All ND - Last	0.001	0.0025	0.0025	0.002	Background
APW09	UA	257	Total Dissolved Solids	mg/L	12/15/2015 - 02/11/2021	CI around mean	508	1200	1000	1200	Standard
APW10	UA	257	Antimony, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW10	UA	257	Arsenic, total	mg/L	12/16/2015 - 07/29/2021	CI around mean	0.00476	0.027	0.027	0.01	Background
APW10	UA	257	Barium, total	mg/L	12/16/2015 - 07/29/2021	CB around linear reg	0.016	2.0	0.26	2	Standard
APW10	UA	257	Beryllium, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.001	0.004	0.0025	0.004	Standard

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PRIMARY ASH POND
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Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW10	UA	257	Boron, total	mg/L	12/16/2015 - 07/29/2021	CI around mean	0.068	2.0	0.14	2	Standard
APW10	UA	257	Cadmium, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.001	0.005	0.0017	0.005	Standard
APW10	UA	257	Chloride, total	mg/L	12/16/2015 - 07/29/2021	CI around mean	46	200	58	200	Standard
APW10	UA	257	Chromium, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.004	0.10	0.004	0.1	Standard
APW10	UA	257	Cobalt, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.002	0.006	0.002	0.006	Standard
APW10	UA	257	Fluoride, total	mg/L	12/16/2015 - 07/29/2021	CI around mean	0.27	4.0	0.70	4	Standard
APW10	UA	257	Lead, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.001	0.0075	0.0025	0.0075	Standard
APW10	UA	257	Lithium, total	mg/L	12/16/2015 - 07/29/2021	CI around mean	0.022	0.040	0.023	0.04	Standard
APW10	UA	257	Mercury, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.0002	0.002	0.002	0.002	Standard
APW10	UA	257	Molybdenum, total	mg/L	12/16/2015 - 07/29/2021	CB around linear reg	0.00488	0.10	0.038	0.1	Standard
APW10	UA	257	pH (field)	SU	12/16/2015 - 07/29/2021	CI around mean	7.0	6.5/9.0	6.6/8.0	6.5/9	Standard/Standard
APW10	UA	257	Radium-226 + Radium 228, tot	pCi/L	12/16/2015 - 07/29/2021	CI around mean	0.54	5.0	1.5	5	Standard
APW10	UA	257	Selenium, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.001	0.050	0.006	0.05	Standard
APW10	UA	257	Sulfate, total	mg/L	12/16/2015 - 07/29/2021	CI around median	410	400	15	400	Standard
APW10	UA	257	Thallium, total	mg/L	12/16/2015 - 07/29/2021	All ND - Last	0.001	0.0025	0.0025	0.002	Background
APW10	UA	257	Total Dissolved Solids	mg/L	12/16/2015 - 07/29/2021	CI around mean	939	1200	1000	1200	Standard
APW11	UA	845	Antimony, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW11	UA	845	Arsenic, total	mg/L	02/18/2021 - 07/15/2021	CI around geomean	0.00152	0.059	0.059	0.01	Background
APW11	UA	845	Barium, total	mg/L	02/18/2021 - 07/15/2021	CB around linear reg	-0.0314	2.0	0.30	2	Standard
APW11	UA	845	Beryllium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW11	UA	845	Boron, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.062	2.0	0.26	2	Standard
APW11	UA	845	Cadmium, total	mg/L	02/18/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW11	UA	845	Chloride, total	mg/L	02/18/2021 - 07/15/2021	CI around median	26	200	52	200	Standard
APW11	UA	845	Chromium, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.004	0.10	0.011	0.1	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW11	UA	845	Cobalt, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.002	0.006	0.0043	0.006	Standard
APW11	UA	845	Fluoride, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.25	4.0	0.63	4	Standard
APW11	UA	845	Lead, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.001	0.0075	0.0074	0.0075	Standard
APW11	UA	845	Lithium, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	0.020	0.040	0.030	0.04	Standard
APW11	UA	845	Mercury, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
APW11	UA	845	Molybdenum, total	mg/L	02/18/2021 - 07/15/2021	CB around linear reg	-0.00109	0.10	0.018	0.1	Standard
APW11	UA	845	pH (field)	SU	02/18/2021 - 07/15/2021	CI around mean	6.5	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW11	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/18/2021 - 07/15/2021	CI around mean	0.26	6.9	6.9	5	Background
APW11	UA	845	Selenium, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.001	0.050	0.001	0.05	Standard
APW11	UA	845	Sulfate, total	mg/L	02/18/2021 - 07/15/2021	CI around median	140	400	36	400	Standard
APW11	UA	845	Thallium, total	mg/L	02/18/2021 - 07/15/2021	CI around median	0.001	0.002	0.001	0.002	Standard
APW11	UA	845	Total Dissolved Solids	mg/L	02/18/2021 - 07/15/2021	CI around mean	797	1200	628	1200	Standard
APW12	UD	845	Antimony, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW12	UD	845	Arsenic, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.00153	0.059	0.059	0.01	Background
APW12	UD	845	Barium, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.034	2.0	0.30	2	Standard
APW12	UD	845	Beryllium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW12	UD	845	Boron, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.16	2.0	0.26	2	Standard
APW12	UD	845	Cadmium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW12	UD	845	Chloride, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	21	200	52	200	Standard
APW12	UD	845	Chromium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW12	UD	845	Cobalt, total	mg/L	02/17/2021 - 07/15/2021	CB around linear reg	0.00205	0.006	0.0043	0.006	Standard
APW12	UD	845	Fluoride, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.25	4.0	0.63	4	Standard
APW12	UD	845	Lead, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW12	UD	845	Lithium, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.024	0.040	0.030	0.04	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW12	UD	845	Mercury, total	mg/L	02/17/2021 - 07/15/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
APW12	UD	845	Molybdenum, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	0.000744	0.10	0.018	0.1	Standard
APW12	UD	845	pH (field)	SU	02/17/2021 - 07/15/2021	CI around mean	6.2	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW12	UD	845	Radium-226 + Radium 228, tot	pCi/L	02/17/2021 - 07/15/2021	CI around geomean	0.20	6.9	6.9	5	Background
APW12	UD	845	Selenium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW12	UD	845	Sulfate, total	mg/L	02/17/2021 - 07/15/2021	CI around mean	322	400	36	400	Standard
APW12	UD	845	Thallium, total	mg/L	02/17/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW12	UD	845	Total Dissolved Solids	mg/L	02/17/2021 - 07/15/2021	CI around mean	1110	1200	628	1200	Standard
APW13	UA	845	Antimony, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW13	UA	845	Arsenic, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.00345	0.059	0.059	0.01	Background
APW13	UA	845	Barium, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.050	2.0	0.30	2	Standard
APW13	UA	845	Beryllium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW13	UA	845	Boron, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.10	2.0	0.26	2	Standard
APW13	UA	845	Cadmium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW13	UA	845	Chloride, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	45	200	52	200	Standard
APW13	UA	845	Chromium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW13	UA	845	Cobalt, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW13	UA	845	Fluoride, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.25	4.0	0.63	4	Standard
APW13	UA	845	Lead, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW13	UA	845	Lithium, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.029	0.040	0.030	0.04	Standard
APW13	UA	845	Mercury, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW13	UA	845	Molybdenum, total	mg/L	02/22/2021 - 07/15/2021	CB around linear reg	0.00402	0.10	0.018	0.1	Standard
APW13	UA	845	pH (field)	SU	02/22/2021 - 07/15/2021	CI around median	6.4	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW13	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/22/2021 - 07/15/2021	CI around mean	0.17	6.9	6.9	5	Background

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW13	UA	845	Selenium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW13	UA	845	Sulfate, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	208	400	36	400	Standard
APW13	UA	845	Thallium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW13	UA	845	Total Dissolved Solids	mg/L	02/22/2021 - 07/15/2021	CI around mean	787	1200	628	1200	Standard
APW14	UA	845	Antimony, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW14	UA	845	Arsenic, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.00462	0.059	0.059	0.01	Background
APW14	UA	845	Barium, total	mg/L	02/22/2021 - 07/15/2021	CB around linear reg	0.046	2.0	0.30	2	Standard
APW14	UA	845	Beryllium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW14	UA	845	Boron, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.092	2.0	0.26	2	Standard
APW14	UA	845	Cadmium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW14	UA	845	Chloride, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	42	200	52	200	Standard
APW14	UA	845	Chromium, total	mg/L	02/22/2021 - 07/15/2021	CI around median	0.004	0.10	0.011	0.1	Standard
APW14	UA	845	Cobalt, total	mg/L	02/22/2021 - 07/15/2021	CI around median	0.002	0.006	0.0043	0.006	Standard
APW14	UA	845	Fluoride, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.26	4.0	0.63	4	Standard
APW14	UA	845	Lead, total	mg/L	02/22/2021 - 07/15/2021	CI around median	0.001	0.0075	0.0074	0.0075	Standard
APW14	UA	845	Lithium, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	0.026	0.040	0.030	0.04	Standard
APW14	UA	845	Mercury, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW14	UA	845	Molybdenum, total	mg/L	02/22/2021 - 07/15/2021	CB around linear reg	0.000155	0.10	0.018	0.1	Standard
APW14	UA	845	pH (field)	SU	02/22/2021 - 07/15/2021	CI around median	6.5	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW14	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/22/2021 - 07/15/2021	CI around mean	0.38	6.9	6.9	5	Background
APW14	UA	845	Selenium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW14	UA	845	Sulfate, total	mg/L	02/22/2021 - 07/15/2021	CI around mean	315	400	36	400	Standard
APW14	UA	845	Thallium, total	mg/L	02/22/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW14	UA	845	Total Dissolved Solids	mg/L	02/22/2021 - 07/15/2021	CI around mean	869	1200	628	1200	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW15	UA	845	Antimony, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW15	UA	845	Arsenic, total	mg/L	02/23/2021 - 07/14/2021	CI around mean	0.016	0.059	0.059	0.01	Background
APW15	UA	845	Barium, total	mg/L	02/23/2021 - 07/14/2021	CI around mean	0.57	2.0	0.30	2	Standard
APW15	UA	845	Beryllium, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW15	UA	845	Boron, total	mg/L	02/23/2021 - 07/14/2021	CI around mean	0.13	2.0	0.26	2	Standard
APW15	UA	845	Cadmium, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW15	UA	845	Chloride, total	mg/L	02/23/2021 - 07/14/2021	CB around linear reg	120	200	52	200	Standard
APW15	UA	845	Chromium, total	mg/L	02/23/2021 - 07/14/2021	CI around median	0.004	0.10	0.011	0.1	Standard
APW15	UA	845	Cobalt, total	mg/L	02/23/2021 - 07/14/2021	CI around median	0.002	0.006	0.0043	0.006	Standard
APW15	UA	845	Fluoride, total	mg/L	02/23/2021 - 07/14/2021	CB around linear reg	1.2	4.0	0.63	4	Standard
APW15	UA	845	Lead, total	mg/L	02/23/2021 - 07/14/2021	CI around median	0.001	0.0075	0.0074	0.0075	Standard
APW15	UA	845	Lithium, total	mg/L	02/23/2021 - 07/14/2021	CI around median	0.020	0.040	0.030	0.04	Standard
APW15	UA	845	Mercury, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW15	UA	845	Molybdenum, total	mg/L	02/23/2021 - 07/14/2021	CI around mean	0.00926	0.10	0.018	0.1	Standard
APW15	UA	845	pH (field)	SU	02/23/2021 - 07/14/2021	CI around median	6.5	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW15	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/23/2021 - 07/14/2021	CI around mean	1.4	6.9	6.9	5	Background
APW15	UA	845	Selenium, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW15	UA	845	Sulfate, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	1.0	400	36	400	Standard
APW15	UA	845	Thallium, total	mg/L	02/23/2021 - 07/14/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW15	UA	845	Total Dissolved Solids	mg/L	02/23/2021 - 07/14/2021	CI around mean	999	1200	628	1200	Standard
APW16	UA	845	Antimony, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW16	UA	845	Arsenic, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.007	0.059	0.059	0.01	Background
APW16	UA	845	Barium, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	0.51	2.0	0.30	2	Standard
APW16	UA	845	Beryllium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW16	UA	845	Boron, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.12	2.0	0.26	2	Standard
APW16	UA	845	Cadmium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW16	UA	845	Chloride, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	66	200	52	200	Standard
APW16	UA	845	Chromium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
APW16	UA	845	Cobalt, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW16	UA	845	Fluoride, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.60	4.0	0.63	4	Standard
APW16	UA	845	Lead, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW16	UA	845	Lithium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.020	0.040	0.030	0.04	Standard
APW16	UA	845	Mercury, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW16	UA	845	Molybdenum, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	-0.000901	0.10	0.018	0.1	Standard
APW16	UA	845	pH (field)	SU	02/23/2021 - 07/15/2021	CI around mean	7.1	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW16	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/23/2021 - 07/15/2021	CI around mean	0.70	6.9	6.9	5	Background
APW16	UA	845	Selenium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW16	UA	845	Sulfate, total	mg/L	02/23/2021 - 07/15/2021	CI around median	1.0	400	36	400	Standard
APW16	UA	845	Thallium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW16	UA	845	Total Dissolved Solids	mg/L	02/23/2021 - 07/15/2021	CI around mean	667	1200	628	1200	Standard
APW17	UA	845	Antimony, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
APW17	UA	845	Arsenic, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	0.00404	0.059	0.059	0.01	Background
APW17	UA	845	Barium, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.56	2.0	0.30	2	Standard
APW17	UA	845	Beryllium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
APW17	UA	845	Boron, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.084	2.0	0.26	2	Standard
APW17	UA	845	Cadmium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
APW17	UA	845	Chloride, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	14	200	52	200	Standard
APW17	UA	845	Chromium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard

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HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW17	UA	845	Cobalt, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.002	0.006	0.0043	0.006	Standard
APW17	UA	845	Fluoride, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.37	4.0	0.63	4	Standard
APW17	UA	845	Lead, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.0075	0.0074	0.0075	Standard
APW17	UA	845	Lithium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.020	0.040	0.030	0.04	Standard
APW17	UA	845	Mercury, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
APW17	UA	845	Molybdenum, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	0.00247	0.10	0.018	0.1	Standard
APW17	UA	845	pH (field)	SU	02/23/2021 - 07/15/2021	CI around mean	7.2	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW17	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/23/2021 - 07/15/2021	CI around mean	0.51	6.9	6.9	5	Background
APW17	UA	845	Selenium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.050	0.001	0.05	Standard
APW17	UA	845	Sulfate, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	23	400	36	400	Standard
APW17	UA	845	Thallium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
APW17	UA	845	Total Dissolved Solids	mg/L	02/23/2021 - 07/15/2021	CI around mean	624	1200	628	1200	Standard
APW18	UA	845	Antimony, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.003	0.006	0.003	0.006	Standard
APW18	UA	845	Arsenic, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.000977	0.059	0.059	0.01	Background
APW18	UA	845	Barium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.18	2.0	0.30	2	Standard
APW18	UA	845	Beryllium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.001	0.004	0.001	0.004	Standard
APW18	UA	845	Boron, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.10	2.0	0.26	2	Standard
APW18	UA	845	Cadmium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.001	0.005	0.001	0.005	Standard
APW18	UA	845	Chloride, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	-2.82	200	52	200	Standard
APW18	UA	845	Chromium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.004	0.10	0.011	0.1	Standard
APW18	UA	845	Cobalt, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.002	0.006	0.0043	0.006	Standard
APW18	UA	845	Fluoride, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.93	4.0	0.63	4	Standard
APW18	UA	845	Lead, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	0.000336	0.0075	0.0074	0.0075	Standard
APW18	UA	845	Lithium, total	mg/L	02/23/2021 - 07/15/2021	All ND - Last	0.020	0.040	0.030	0.04	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW18	UA	845	Mercury, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
APW18	UA	845	Molybdenum, total	mg/L	02/23/2021 - 07/15/2021	CB around linear reg	-0.00885	0.10	0.018	0.1	Standard
APW18	UA	845	pH (field)	SU	02/23/2021 - 07/15/2021	CI around mean	7.4	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW18	UA	845	Radium-226 + Radium 228, tot	pCi/L	02/23/2021 - 07/15/2021	CI around mean	1.4	6.9	6.9	5	Background
APW18	UA	845	Selenium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.001	0.050	0.001	0.05	Standard
APW18	UA	845	Sulfate, total	mg/L	02/23/2021 - 07/15/2021	CI around mean	-1.82	400	36	400	Standard
APW18	UA	845	Thallium, total	mg/L	02/23/2021 - 07/15/2021	CI around median	0.001	0.002	0.001	0.002	Standard
APW18	UA	845	Total Dissolved Solids	mg/L	02/23/2021 - 07/15/2021	CI around mean	483	1200	628	1200	Standard

Notes:
Potential exceedance of GWPS
HSU = hydrostratigraphic unit:
  UA = Uppermost Aquifer
  UD = Upper Drift
Program = regulatory program data were collected under:
  257 = 40 C.F.R. Part 257 Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments)
  845 = 35 I.A.C. Part 845 (Sampling events completed to assess well locations for inclusion in the Part 845 monitoring well network)
mg/L = milligrams per liter
pCi/L = picoCuries per liter
SU = standard units
Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result
Statistical Calculation = method used to calculate the statistical result:
  All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown
  CB around linear reg = Confidence band around linear regression
  CB around T-S line = Confidence band around Thiel-Sen line
  CI around geomean = Confidence interval around the geometric mean
  CI around mean = Confidence interval around the mean
  CI around median = Confidence interval around the median
  Most recent sample = Result for the most recently collected sample used due to insufficient data
Statistical Result = calculated in accordance with Statistical Analysis Plan using constituent concentrations observed at monitoring well during all sampling events within the specified date range
For pH, the values presented are the lower / upper limits
GWPS = Groundwater Protection Standard
GWPS Source:
  Standard = standard specified in 35 I.A.C. § 845.600(a)(1)
  Background = background concentration (see cover page for additional information)
  Background = background concentration (see cover page for additional information)

TABLE 2. SUMMARY OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
NEWTON POWER PLANT
PRIMARY ASH POND
NEWTON, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
APW02	UD	845	Lithium, total	mg/L	02/17/2021 - 07/15/2021	CB around linear reg	0.092	0.040	0.030	0.04	Standard
APW02	UD	845	Sulfate, total	mg/L	02/17/2021 - 07/15/2021	CI around median	1500	400	36	400	Standard
APW02	UD	845	Total Dissolved Solids	mg/L	02/17/2021 - 07/15/2021	CI around mean	4890	1200	628	1200	Standard
APW04	UD	845	pH (field)	SU	02/18/2021 - 07/15/2021	CI around median	6.1	6.4/9.0	6.4/7.8	6.5/9	Background/Standard
APW04	UD	845	Sulfate, total	mg/L	02/18/2021 - 07/15/2021	CI around mean	887	400	36	400	Standard
APW04	UD	845	Total Dissolved Solids	mg/L	02/18/2021 - 07/15/2021	CI around mean	1710	1200	628	1200	Standard
APW05S	UD	845	Total Dissolved Solids	mg/L	02/17/2021 - 07/15/2021	CI around mean	3350	1200	628	1200	Standard
APW10	UA	257	Sulfate, total	mg/L	12/16/2015 - 07/29/2021	CI around median	410	400	15	400	Standard
APW12	UD	845	pH (field)	SU	02/17/2021 - 07/15/2021	CI around mean	6.2	6.4/9.0	6.4/7.8	6.5/9	Background/Standard

Notes:
HSU = hydrostratigraphic unit:
  UA = Uppermost Aquifer
  UD = Upper Drift
Program = regulatory program data were collected under:
  257 = 40 C.F.R. Part 257 Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments)
  845 = 35 I.A.C. Part 845 (Sampling events completed to assess well locations for inclusion in the Part 845 monitoring well network)
mg/L = milligrams per liter
pCi/L = picoCuries per liter
SU = standard units
Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result
Statistical Calculation = method used to calculate the statistical result:
  CB around linear reg = Confidence band around linear regression
  CI around mean = Confidence interval around the mean
  CI around median = Confidence interval around the median
Statistical Result = calculated in accordance with Statistical Analysis Plan using constituent concentrations observed at monitoring well during all sampling events within the specified date range
For pH, the values presented are the lower / upper limits
GWPS = Groundwater Protection Standard
GWPS Source:
  Standard = standard specified in 35 I.A.C. § 845.600(a)(1)
  Background = background concentration (see cover page for additional information)