

Dynegy Zimmer, LLC

ZIMMER POWER STATION
MOSCOW, CLERMONT COUNTY, OHIO

Emergency Action Plan (EAP)

40 CFR § 257.73(a)(3)
Coal Combustion Residual (CCR) Impoundments
& Related Facilities

- Coal Pile Runoff Pond (NID # OH01393)
- D Basin (NID # OH01393)

Revision Date: April 13, 2017

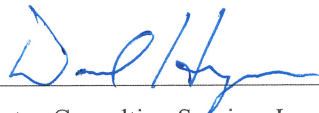
Qualified Professional Engineer Certification; Emergency Action Plan for the Zimmer Power Station Coal Pile Runoff Pond and D Basin.

In accordance with 40 CFR 257.73(a)(3)(iv), the owner or operator of a CCR unit that is required to prepare a written Emergency Action Plan under 40 CFR 257.73(a)(3) must obtain a certification from a qualified professional engineer stating that the written Emergency Action Plan meets the requirements of 40 CFR 257.73(a)(3).

I, David Hayson, being a Professional Engineer in good standing in the State of Ohio, do hereby certify, to the best of my knowledge, information, and belief that:

1. the information contained in this Emergency Action Plan was prepared in accordance with the accepted practice of engineering; and
2. this Emergency Action Plan meets the requirements of 40 CFR 257.73(a)(3).

SIGNATURE



DATE

4/13/17

ADDRESS:

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**ZIMMER POWER STATION
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES**

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**ZIMMER POWER STATION
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES**

1 STATEMENT OF PURPOSE

The Zimmer Power Station (Station) is located near Moscow in Clermont County, Ohio. The location is shown in Figure 1-1. The Station is a coal-fired electricity producing power plant operated by Dynegy Zimmer, LLC, a subsidiary of Dynegy. This Emergency Action Plan (EAP) was prepared in accordance with 40 CFR § 257.73(a)(3) and covers the following Coal Combustion Residual (CCR) surface impoundments located at the site:

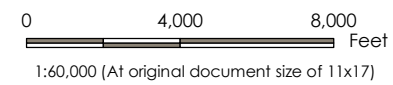
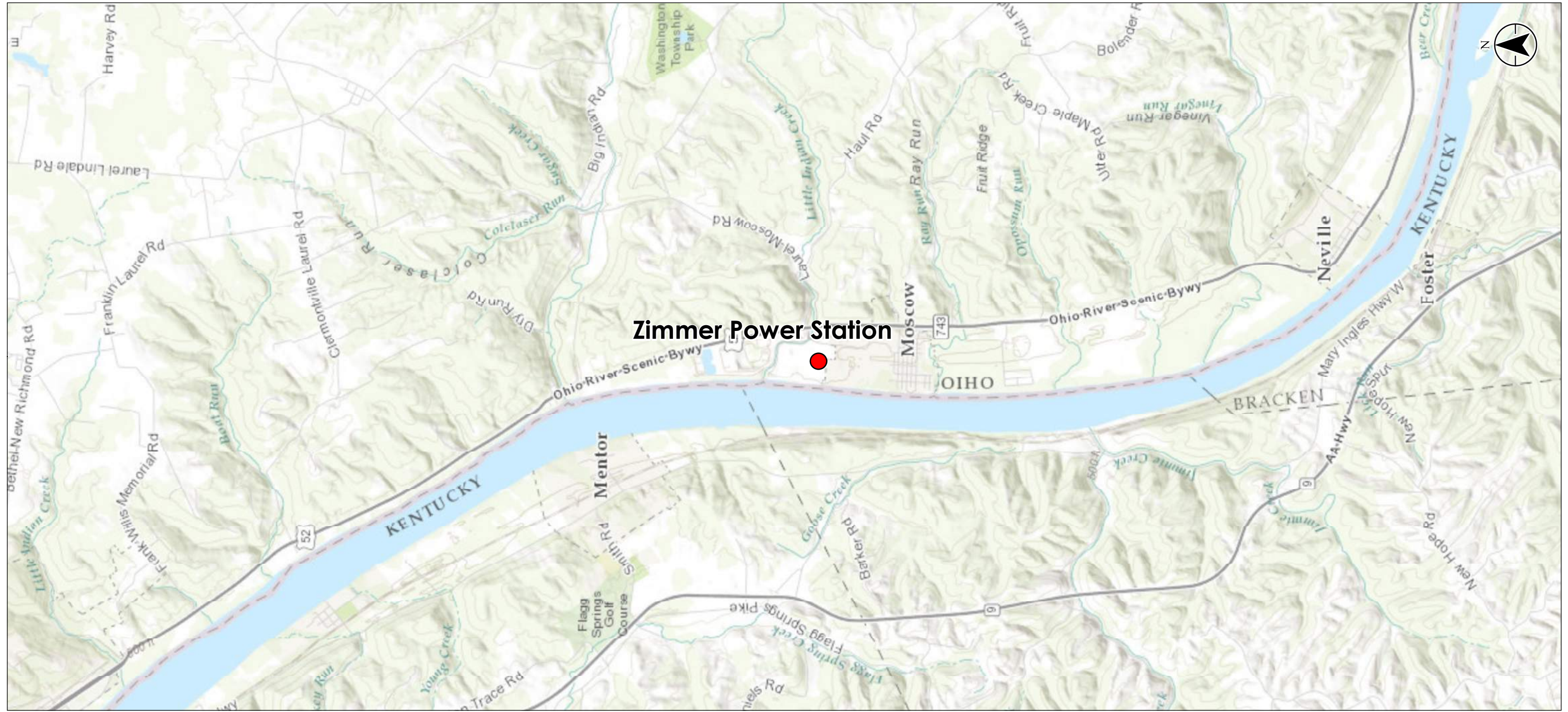
- Coal Pile Runoff Pond
- D Basin

The locations of these impoundments are shown in Figure 1-2. Section 6 of this EAP includes a description of each impoundment.

The purpose of this Emergency Action Plan (EAP) is to:

1. Safeguard the lives, as well as to reduce property damage, of citizens living within potential downstream flood inundation areas of CCR impoundments and related facilities at the Zimmer Power Station.
2. Define the events or circumstances involving the CCR impoundments and related facilities at the Zimmer Power Station that represent atypical operating conditions that pose a safety hazard or emergency and how to identify those conditions.
3. Define responsible persons, their responsibilities, and notification procedures in the event of a safety emergency.
4. Provide contact information of emergency responders.
5. Identify emergency actions in the event of a potential or imminent failure of the impoundments.
6. Identify the downstream area that would be affected by failure of the impoundments.
7. Provide for effective facility surveillance, prompt notification to local Emergency Management Agencies, citizen warning and notification responses, and preparation should an emergency occur.

Information provided by Dynegy was utilized and relied upon in preparation of this report.



Project Location: 175605019
 Latitude: 38.877193 Prepared by DTH on 2017-04-12
 Longitude: -84.229495 Technical Review by NS on 2017-04-12
 Clermont County, Ohio Independent Review by MH on 2017-04-12

Client/Project
 Zimmer Power Station
 Emergency Action Plan

Figure No.
1-1

Title
Location Map

Notes
 1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 2. Aerial Source: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO,
 3. NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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 Revised: 2017-04-12 By: dhayson



Legend

CCR Surface Impoundment Boundary

0 1,000
 Feet
 1:12,000 (At original document size of 11x17)



Project Location: 175605019
 Latitude: 38.877193 Prepared by DTH on 2017-04-12
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 Clermont County, Ohio Independent Review by MH on 2017-04-12

Client/Project
 Zimmer Power Station
 Emergency Action Plan

Figure No.

1-2

Title

CCR Impoundments

- Notes**
1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 2. Aerial Source: Clermont County, Dated 2015, 4-Inch Resolution.
 3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

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2 COMMUNICATION

To facilitate understanding among everyone involved in implementing this EAP, four response levels are used to identify the condition of an impoundment. These are:

Response Levels:

- **Level 0:** Normal conditions and routine operations, including surveillance and initial investigation of unusual conditions and effects of storm events.
- **Level 1:** Potentially hazardous condition exists, requiring investigation and possible corrective action.
- **Level 2:** Potential failure situation is developing; possible mode of failure is being assessed; corrective measures are underway.
- **Level 3:** Failure is occurring or is imminent, public protective actions are required.

The 4-Step Incident Response Process is outlined in Figure 2-1. This should be used in conjunction with the Notification Flowchart (Figure 2-2) and EAP Decision Tree (Figure 2-3). Section 4 provides guidance tables for determining Response Levels and a table providing emergency actions to be taken given various situations. Table 2-1 lists contact information for the emergency responders.

Figure 2-1. Summary/Sequence of Tasks 4-Step Incident Response Process

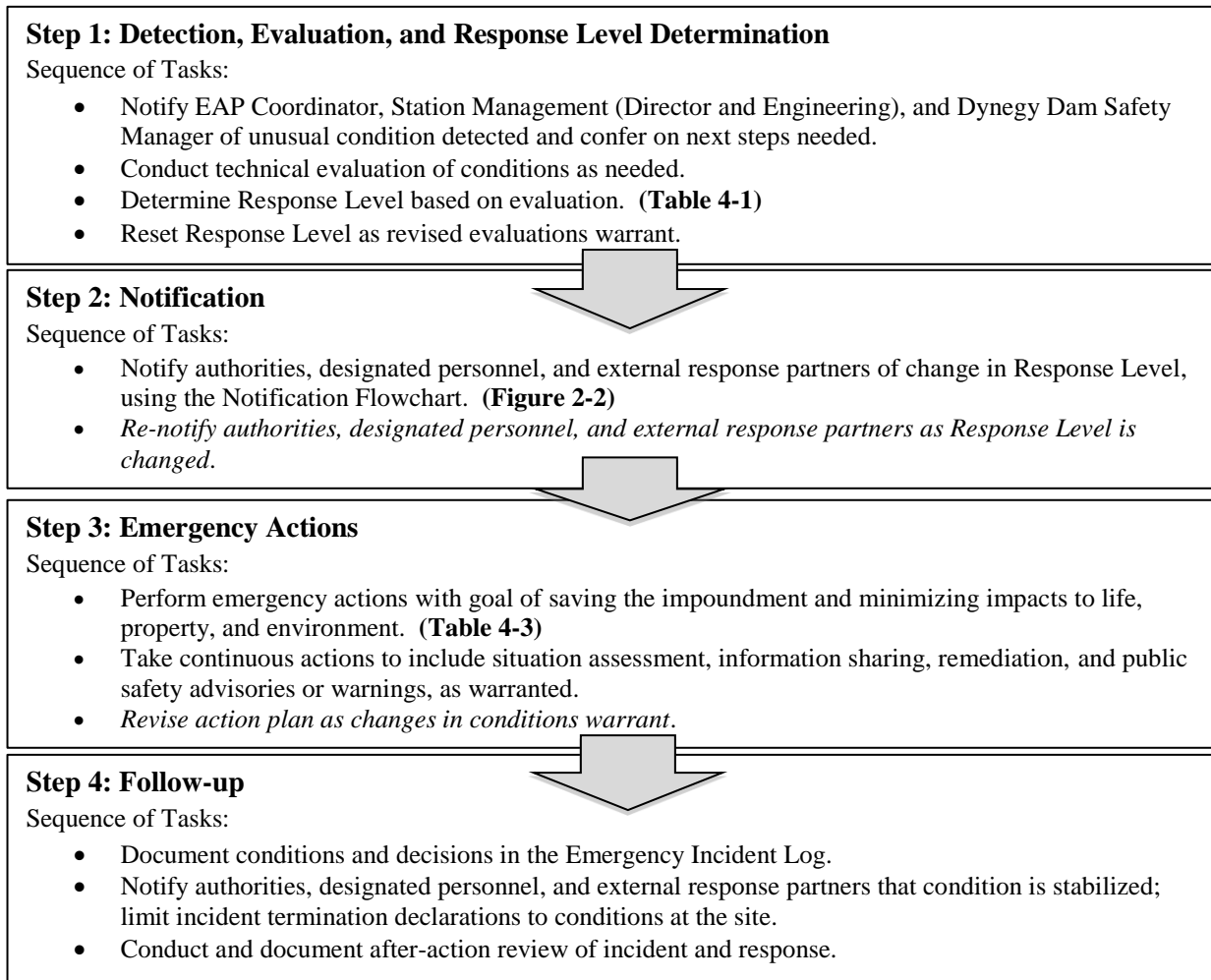


Figure 2-2. Notification Flowchart

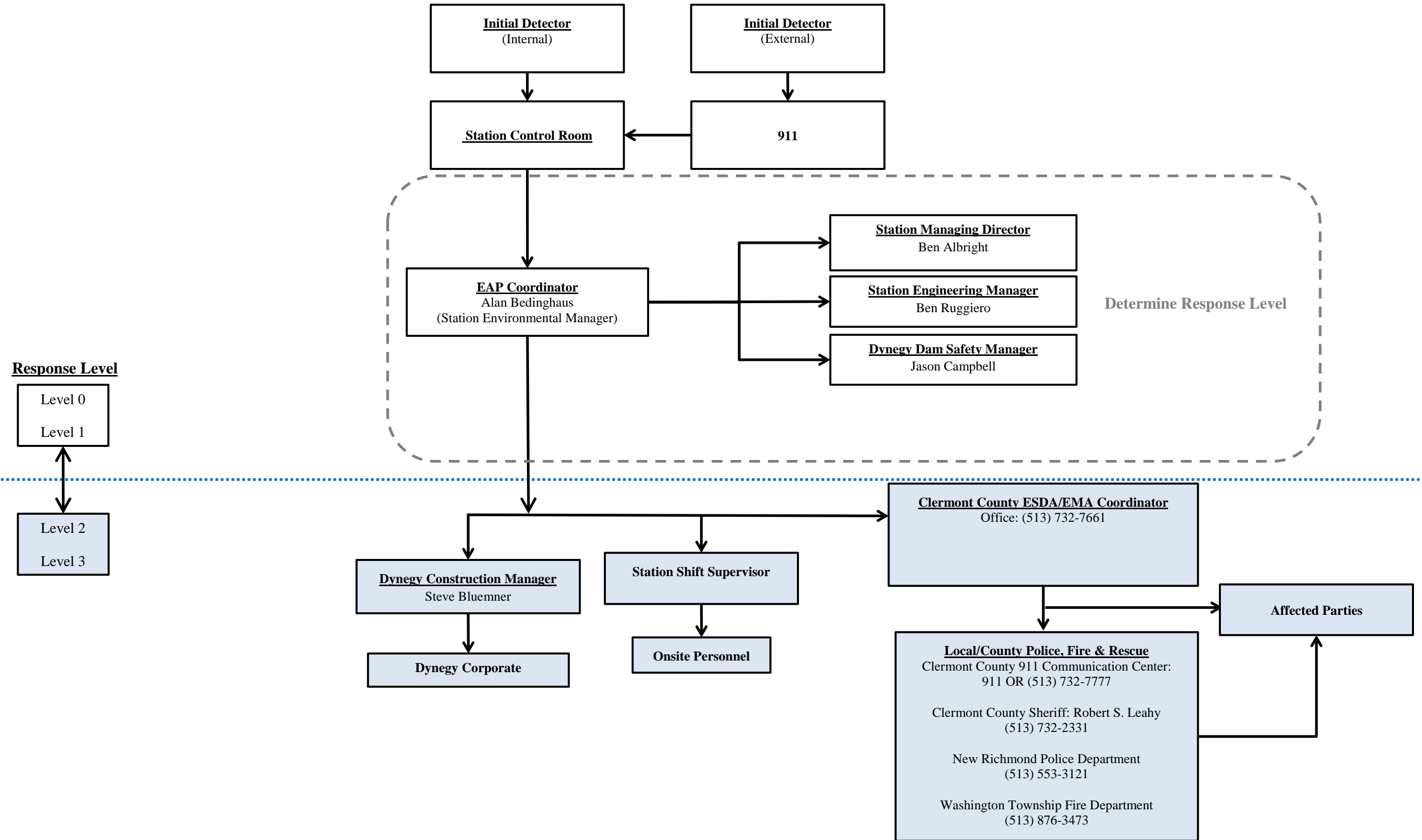


Figure 2-3. EAP Response Process Decision Tree

Note: At any given below, if failure is imminent or actively occurring CALL 911 IMMEDIATELY to notify emergency responders and then continue with process afterwards.

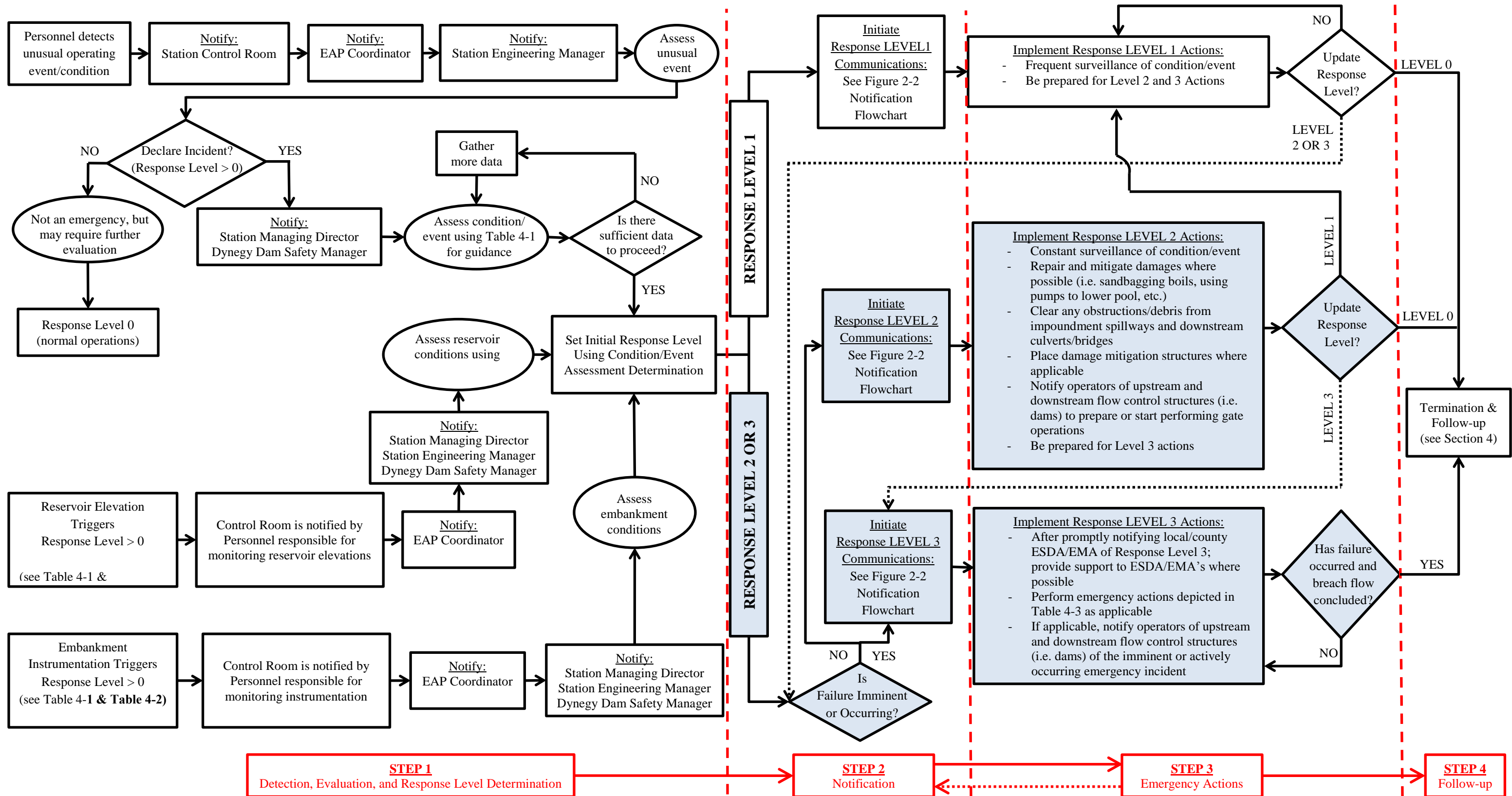


Table 2-1. EAP Emergency Responders

| Position / Entity | | Contact Information | |
|--|-------------------------|----------------------------|--------------------------|
| Internal Contacts | | | |
| Zimmer Power Station | | Contact | |
| Managing Director | Ben Albright | | |
| Environmental Manager (EAP Coordinator) | Alan Bedinghaus | (513) 305-4814 | |
| Engineering Manager | Ben Ruggiero | | |
| Control Room | | (513) 467-5205 | |
| Dynegy Corporate Operations | | Contact | |
| Dam Safety Manager | Jason Campbell | (618) 792-8488 | |
| Construction Manager | Steve Bluemner | | |
| External Contacts | | | |
| Local/County ESDA/EMA, Police, & Fire | Contact | Phone # | Alternate Phone # |
| Clermont County 911 Emergency Communication Center | | 911 | (513) 732-7777 |
| Clermont County – ESDA/EMA | Clermont County EMA | (513) 732-7661 | |
| New Richmond – Police Department | Chief Randy Harvey | (513) 553-3121 | |
| Clermont County – Sheriff Department | Sheriff Robert S. Leahy | (513) 732-2331 | (513) 732-7500 |
| Washington Township – Fire Department | Chief Dana Kellenberger | (513) 876-3473 | (513) 876-3740 |
| State Emergency Management Agencies & Organizations | Contact | Phone # | Alternate Phone # |
| Ohio Department of Natural Resources - Wildlife | | 1(800) 945-3543 | (614) 265-6314 |

3 EAP ROLES AND RESPONSIBILITIES

Table 3-1 provides a summary of the EAP roles during an emergency event.

Table 3-1. Summary of EAP Roles

| Entity | Role Description |
|--|--|
| Dynegy Emergency Response Team (ERT) | <p>ERT: Dynegy personnel responsible for EAP implementation, distribution, updates/maintenance, and training activities. The <u>ERT</u> is comprised of the following roles;</p> <ol style="list-style-type: none"> 1. Dynegy Corporate: Dynegy corporate entity, committee, team, or position with relevant responsibility for a given generating station. 2. Station Management: Personnel responsible for day-to-day operation and management of the Station. 3. Dam Safety Manager: Personnel that is most knowledgeable about the design and technical operation of facilities at a given Station. 4. EAP Coordinator: Personnel responsible for implementing the EAP and associated activities. <p style="text-align: center;"><u>Emergency Event – EAP Responsibilities</u></p> <ol style="list-style-type: none"> 1. Respond to emergencies at the Station. 2. Verify and assess emergency conditions. 3. Notify and coordinate as appropriate with participating emergency services disaster agencies or emergency management agencies (ESDA/EMA’s), emergency responders, regulatory agencies, and all other entities involved or affected by this EAP. 4. Take corrective action at the Station. 5. Declare termination of emergencies at the Station. |
| Clermont County ESDA/EMA | <ol style="list-style-type: none"> 1. Receive Response Level reports from <u>Dynegy Corporate</u> through <u>EAP Coordinator</u>. 2. Coordinate emergency response activities with local authorities: police, fire and rescue, etc. 3. Coordinate notification of public as necessary through established channels, which may include door-to-door contact. 4. Coordinate notification activities to affected parties within inundation areas. 5. Evaluate risk to areas beyond the inundation areas, communicate needs to <u>Dynegy Corporate</u> and/or <u>EAP Coordinator</u>, and coordinate aid as appropriate. 6. Responsible for declaring termination of an emergency condition off-site upon receiving notification of an emergency status termination from <u>Dynegy Corporate</u>. 7. If necessary, coordinate with <u>State ESDA/EMA</u>. |
| New Richmond Police, Washington Township Fire, and Rescue | <ol style="list-style-type: none"> 1. Receive alert status reports from the <u>ERT</u> or the <u>County ESDA/EMA</u>. 2. If necessary, notify affected parties and general public within inundation areas (see Section 7). 3. Render assistance to Clermont ESDA/EMA, as necessary. 4. Render assistance to <u>Dynegy Corporate</u> and <u>Station Management</u>, as necessary. |
| Clermont County Police, Fire and Rescue, and Emergency Services | <ol style="list-style-type: none"> 1. Receive alert status reports from the <u>ERT</u> or the <u>County ESDA/EMA</u>. 2. If necessary, notify affected parties within the inundation area. 3. Provide mutual aid to other affected areas, if requested and able. |

4 EAP RESPONSE

The 4-Step Incident Response Process is shown in Figure 2-1. The Decision Tree shown in Figure 2-3 provides a flowchart for the various elements of the response process. Upon reaching Step 4 of the response process (termination and follow-up), the EAP Coordinator is responsible for notifying the ESDA/EMA's that the condition of the dam/impoundment has been stabilized. The purpose of this section is to provide specific information that can be used during a response. This information is provided in the following tables:

- Table 4-1 provides guidance for determining the response level.
- Table 4-2 provides impoundment pool level trigger elevations.
- Table 4-3 lists emergency actions to be taken depending on the situation.

Table 4-1. Guidance for Determining the Response Level

| Event | Situation | Response Level |
|---|--|----------------|
| Spillway flow (see Table 4-2 for relevant elevations) | Primary spillway flow is not causing active erosion and impoundment water surface elevation is below auxiliary spillway crest elevation (if equipped). | Level 0 |
| | Impoundment water surface elevation is at or above auxiliary spillway crest elevation (if equipped). No active erosion caused by spillway flow. | Level 1 |
| | Spillway flow actively causing minor erosion that is not threatening the control section or dam/impoundment stability. | Level 2 |
| | Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise. | Level 2 |
| | Abnormal operation of the spillway system due to blockage or damage that could lead to flooding. | Level 2 |
| | Spillway flow actively eroding the soil around the spillway that is threatening the control section (e.g. undermining) or dam/impoundment stability. | Level 3 |
| | Spillway flow that is flooding people downstream. | Level 3 |
| Embankment overtopping (see Table 4-2 for relevant elevations) | Impoundment water surface elevation at or below typical normal pool fluctuation elevation. | Level 0 |
| | Impoundment water surface elevation above typical normal pool fluctuation elevation. | Level 1 |
| | Impoundment water surface elevation above high normal pool fluctuation elevation. | Level 2 |
| | Impoundment water surface elevation at or above embankment crest elevation. | Level 3 |
| Seepage | New seepage areas in or near the dam/impoundment with clear flow. | Level 1 |
| | New seepage areas with cloudy discharge or increasing flow rate. | Level 2 |
| | Heavy seepage with active erosion, muddy flow, and/or sand boils. | Level 3 |
| Sinkholes | Observation of new sinkhole in impoundment area or on embankment. | Level 2 |
| | Rapidly enlarging sinkhole and/or whirlpool in the impoundment. | Level 3 |
| Embankment cracking | New cracks in the embankment greater than ¼ inch wide without seepage. | Level 1 |
| | Any crack in the embankment with seepage. | Level 2 |
| | Enlarging cracks with muddy seepage. | Level 3 |

Table 4-1. Guidance for Determining the Response Level

| Event | Situation | Response Level |
|---|--|-----------------------|
| Embankment movement | Visual signs of movement/slippage of the embankment slope. | Level 1 |
| | Detectable active movement/slippage of the embankment slope or other related effects (tension cracking, bulges/heaves, etc.) that could threaten the integrity of the embankment. | Level 2 |
| | Sudden or rapidly proceeding slides of the embankment slopes. | Level 3 |
| Embankment Monitoring Equipment (piezometers, inclinometers, surface displacement mounts, etc.) | Instrumentation readings beyond historic normal. | Level 1 |
| | Instrumentation readings indicate the embankment is susceptible to failure. | Level 2 |
| | Instrumentation readings indicate embankment is at threshold of failure or is currently failing. | Level 3 |
| Earthquake or other event | Measurable earthquake felt or reported on or within 100 miles of the impoundment. | Level 1 |
| | Earthquake or other event resulting in visible damage to the impoundment or appurtenances. | Level 2 |
| | Earthquake or other event resulting in uncontrolled release of water or materials from the impoundment. | Level 3 |
| Security threat | Verified bomb threat or other physical threat that, if carried out, could result in damage to the impoundment. | Level 2 |
| | Detonated bomb or other physical damage that has resulted in damage to the impoundment or appurtenances. | Level 3 |
| Sabotage/ vandalism | Damage to impoundment or appurtenance with no impact to the functioning of the impoundment. | Level 1 |
| | Modification to the impoundment or appurtenances that could adversely impact the functioning of the impoundment. This would include unauthorized operation of spillway facilities. | Level 2 |
| | Damage to impoundment or appurtenances that has resulted in seepage flow. | Level 2 |
| | Damage to impoundment or appurtenances that has resulted in uncontrolled water release. | Level 3 |

Table 4-2. Impoundment Trigger Elevations

| Impoundment | Embankment Crest Elevation | Auxiliary Spillway Crest Elevation | Normal Pool Fluctuation | |
|-----------------------|-----------------------------------|---|--------------------------------|-------------|
| | | | Typical | High |
| Coal Pile Runoff Pond | 509.2 ft. | Not Applicable | 507.2 ft.* | 507.5 ft. |
| D Basin | 510 ft. | Not Applicable | None | None |

Notes:

*Elevation estimated from 2014 Topographic survey prepared by ESP Associates, P.A. – September 2014

Table 4-3. Step 3: Emergency Actions

| Condition | Description of Condition | Action to be Taken |
|---|--|--|
| High Water Level/ Large Spillway Release | See Table 4-1 and Table 4-2 for elevations and triggering water levels associated with the impoundments and spillways covered by this EAP. | <ol style="list-style-type: none"> 1. Assess cause of increased reservoir stage, especially during fair weather conditions. 2. Determine Response Level. 3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart. 4. Perform additional tasks as determined through consultation with the ERT. 5. Make notifications if condition worsens such that downstream flooding is imminent. <p>Response Level 0: require enhanced surveillance 3 times per day</p> <p>Response Level 1: contact internal chain of command and external response partners as necessary; inspect impoundment minimum 1 time per hour</p> <p>Response Level 2: contact internal chain of command; notify ESDA/EMA's and notify external response partners. ESDA/EMA's notify affected parties.</p> <p>Response Level 3: contact internal chain of command; notify ESDA/EMA's and notify external response partners. ESDA/EMA's notify affected parties of emergency incident.</p> |
| Seepage | Localized new seepage or boil(s) observed along downstream face / toe of earthen embankment with muddy discharge and increasing but controllable discharge of water. | <ol style="list-style-type: none"> 1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 2. Determine Response Level. 3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart. 4. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply: <ol style="list-style-type: none"> a) Place a ring of sand bags with a weir at the top towards the natural drainage path to monitor flow rate. If boil becomes too large to sand bag, place a blanket filter over the area using non-woven filter fabric and pea gravel. Attempt to contain flow in such a manner (without performing any excavations) that flow rates can be measured. Stockpile gravel and sand fill for later use, if necessary. b) Inspect the embankment and collect piezometer, water level and seepage flow data daily unless otherwise instructed by the Dam Safety Manager. Record any changes of conditions. Carefully observe embankment for signs of depressions, seepage, sinkholes, cracking or movement. c) Maintain continuous monitoring of feature. Record measured flow rate and any changes of condition, including presence or absence of muddy discharge. 5. Make notifications as outlined in the lower portion of the Notification Flowchart (Figure 2-2) if condition worsens such that failure is imminent. |

Table 4-3. Step 3: Emergency Actions

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| Sabotage and Miscellaneous Other Issues | Criminal action with significant damage to embankment or structures where significant repairs are required and the integrity of the facility is compromised—condition appears stable with time. | <ol style="list-style-type: none"> 1. Contact law enforcement authorities and restrict all access (except emergency responders) to impoundment. Restrict traffic on embankment crest to essential emergency operations only. 2. Determine Response Level. 3. Make internal notifications as outlined in the upper portion of the Notification Flowchart (Figure 2-2). 4. In conjunction with the Dam Safety Manager, assess extent of damage and visually inspect entire embankment and ancillary structures for additional less obvious damage. Based on inspection results, confirm if extent of damage to various components of the impoundment warrants a revised Response Level and additional notifications. 5. Perform additional tasks as directed by the ERT. 6. Make notifications if conditions worsen. |
| Embankment Deformation | <p>Cracks: New longitudinal (along the embankment) or transverse (across the embankment) cracks more than 6 inches deep or more than 3 inches wide or increasing with time. New concave cracks on or near the embankment crest associated with slope movement.</p> | <ol style="list-style-type: none"> 1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 2. Restrict traffic on embankment crest to essential emergency operations only. 3. Determine Response Level. 4. Make notifications as outlined in the Figure 2-2 Notification Flowchart 5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply: <ol style="list-style-type: none"> a) Place buttress fill against base of slope immediately below surface feature. Stock pile additional fill. b) Place sand bags as necessary around crack area to divert any storm water runoff from flowing into crack(s). 6. As directed by the Dam Safety Manager, additional inspection and monitoring of the dam may be required. Items may include; inspect the dam on a schedule determined by the engineers; collect piezometer and water level data; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent. |

Table 4-3. Step 3: Emergency Actions

| Condition | Description of Condition | Action to be Taken |
|--------------------------------|--|---|
| Embankment Deformation (cont.) | <p>Slides / Erosion: Deep slide / erosion (greater than 2 feet deep) on the embankment that may also extend beyond the embankment toe but does not encroach onto the embankment crest and appears stable with time.</p> | <ol style="list-style-type: none"> 1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection report. 2. Restrict traffic on embankment crest to essential emergency operations only. 3. Determine the Response Level. 4. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items. <ol style="list-style-type: none"> a) Place sand bags as necessary around slide area to divert any storm water runoff from flowing into slide(s). b) Increase inspections of the dam; collect piezometer and water level data; and record any changes of condition. During inspections, carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 6. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent. |
| | <p>Sinkholes: Small depression observed on the embankment or within 50 feet of the embankment toe that is less than 5 feet deep and 30 feet wide or which is increasing with time.</p> | <ol style="list-style-type: none"> 1. Slowly open drain gates to lower pool elevation. 2. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 3. Restrict traffic on embankment crest to essential emergency operations only. 4. Determine Response Level. 5. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 6. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items: <ol style="list-style-type: none"> a) Backfill the depression with relatively clean earth fill (free of organic materials) generally even with surrounding grade and slightly mounded (6 to 12 inches higher) in the center in order to shed storm water away from the depression. Stock pile additional fill. b) Increase inspections of the dam; collect piezometer and water level data daily unless otherwise instructed by Dam Safety Manager; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent. |
| Gate Malfunction or Failure | <p>Sluice gate damaged structurally (sabotage, debris, etc.) with uncontrolled release of water at a constant volume. Condition appears stable.</p> | <ol style="list-style-type: none"> 1. Close any other gates, if open. 2. Determine Response Level. 3. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 4. Obtain instructions from the Dam Safety Manager to determine if there are other methods to stop or slow down the flow of water. 5. If conditions worsen such that failure is imminent, make notifications as outlined in the lower portion of the Figure 2-2 Notification Flowchart |

5 PREPAREDNESS

The intent of this section is to provide information that will be utilized during a response. Established emergency supplies and locations, suppliers, and equipment are provided in Table 5-1. Supplier contact information is listed in Table 5-2.

A coordination meeting shall be conducted annually between representatives of Dynegy Zimmer, LLC and local emergency responders. This meeting may be in the form of a face-to-face meeting, tabletop exercise, or additional training regarding the EAP.

Table 5-1. Emergency Supplies and Equipment

| Item | On-site (Yes/No/Occasionally) | Remarks |
|---|----------------------------------|---|
| Flashlights | Yes | Typically at Zimmer Power Station Maintenance Facility, contact Shift Supervisor for location(s). |
| Generator | | |
| Extension Cords | | |
| Fire extinguishers | | |
| Floodlights | | |
| Backhoe | No | Contact The Nelson Stark Company, Utter Construction (see Table 5-2) and/or other nearby large equipment rental providers for additional large equipment as necessary. |
| Dozer | Yes | One CAT D8T and one CAT D6N. Contact Shift Supervisor for location(s). |
| Large Equipment (Rental – including excavating equipment, pumps, lighting) | Yes | One Hyundai 290 Long Reach Excavator, one CAT 980H Rubber Tire Loader and one CAT IT28G Rubber Tire Loader, two 4000 gallon capacity water trucks, two 637G Motor Scrapers, one Chevy crew cab pickup truck, one New Holland LS125 Skid Steer, one Bobcat 463 Skid Steer, one POSI TRAK RC60 Skid Steer, one 84-inch hamm smooth drum roller, one 500 gallon fuel/lube wagon, three light plants, two industrial vacuum trucks, one John Boat, and an MV Pleasant. Contact The Nelson Stark Company, Utter Construction (see Table 5-2) and/or other nearby large equipment rental providers for additional large equipment as necessary. |
| Dump Truck | Yes | Six 35 ton Mountain Mack dump trucks. Contact Shift Supervisor for location(s). |
| Pump and Hoses | Yes | Three Portable Water Pumps. Contact Shift Supervisor for availability and location(s). Contact Shift Supervisor for location(s). Contact Allied Technical Services or Sunbelt Rentals for high capacity portable pumps (see Table 5-2). |
| Sandbags and Sand | Yes | Soil stockpiled on-site. Contact Shift Supervisor for location(s). Contact Dayton Bag & Burlap or Max Katz Bag Company, Inc for additional sandbags (see Table 5-2). |
| Fill (Stone, aggregate, sand) | Yes | Medium sized aggregate available on-site. Contact Shift Supervisor for location(s). Contact listed suppliers in Table 5-2 for gravel, sand, and riprap fill as necessary. |
| Concrete/grout | No | Contact Ernst Concrete and/or City Wide Ready Mix for concrete/grout (see Table 5-2). |
| Geotextile Filter Fabric | No | |
| Plastic Sheeting | No | |
| Rope | No | |
| Personal Flotation Devices | Yes | Contact Shift Supervisor for location(s) and availability. |

Table 5-2. Supplier Addresses

| Supply/Rental Item(s) | Supplier Contact Information | Distance from Site (miles) | Address |
|--|---|----------------------------|--|
| Backhoe, Large Equipment (Rental – including excavating equipment, pumps, lighting) | <u>The Nelson Stark Company</u> (513) 489-0866 | 36.3 | 7685 Fields Ertel Rd #3 Cincinnati, OH 45241 |
| | <u>Utter Construction</u> (513) 876-8616 | 11.1 | 1302 OH-133 Bethel, OH 45106 |
| Pump and Hoses | <u>Allied Technical Services</u> (513) 793-0499 | 37.5 | 3460 Mustafa Drive Cincinnati, OH 45241 |
| | <u>Sunbelt Rentals</u> (859) 283-5544 | 37.9 | 2970 E Crescentville Road West Chester Township, OH 45069 |
| Fill (Stone, aggregate, sand) | <u>Kipp’s Gravel Company, Inc.</u> (513) 732-1024 | 22.5 | 4987 OH-222 Batavia, OH 45103 |
| | <u>Arch Materials LLC</u> (513) 724-7625 | 24.5 | 4438 OH-276 Batavia, OH 45103 |
| Sandbags and Sand | <u>Dayton Bag & Burlap</u> (937) 253-1726 | 76.4 | 322 Davis Avenue Dayton, OH 45403 |
| | <u>Max Katz Bag Company, Inc.</u> (317) 635-9561 | 133 | 235 S La Salle Street Indianapolis, IN 46201 |
| Concrete/grout | <u>Ernst Concrete</u> (513) 398-9613 | 51.5 | 107 River Cir. #1 Fairfield, OH 45014 |
| | <u>City Wide Ready Mix</u> (513) 533-1111 | 24.2 | 5623 Wooster Pike Cincinnati, OH 45226 |

6 FACILITY/IMPOUNDMENT DESCRIPTION

The impoundments included in this EAP are described as follows and illustrated in Figure 1-2. Table 6-1 contains additional geometric details for each impoundment.

Zimmer Power Station is located to the north of the Village of Moscow in Monroe Township and Washington Township, Clermont County, Ohio. The station is bounded to the west by the Ohio River, to the east by US 52, and to the south by the village of Moscow, approximately 22 miles to the southeast of downtown Cincinnati.

The Coal Pile Runoff Pond is part of the Wastewater Pond Complex and is located about 3,000 feet north of the power house. The Coal Pile Runoff Pond is a diked impoundment constructed from native soils excavated from the site (primarily clayey soils with low permeability) and sand dredged from the Ohio River. The pond was constructed in the late 1980s when the Zimmer Power Station was converted into a coal fired operation facility. Including the embankment, the footprint of the Coal Pile Runoff Pond is approximately 4 acres. The total storage capacity of the Coal Pile Runoff Pond is approximately 17 acre-feet with an invert elevation of approximately 498 feet. A normal pool within the Coal Pile Runoff Pond is maintained around 507.2 feet per a Topographic Survey conducted in 2014 (stored water volume of approximately 12.5 acre-feet).

The main inflow to the Coal Pile Runoff Pond is precipitation which is either falls directly on the pond or runs off the embankment. Additionally, flow from D Basin (runoff from the coal pile) is pumped from a sump located at an elevation of 482 feet along the west dike through two 6-inch diameter high density polyethylene (HDPE) pipes into the Coal Pile Runoff Pond. The Wastewater Pond Complex discharge to the Ohio River is permitted as Outfall 005 under OEPA Permit #11B00011*JD and NPDES permit #OH0048836.

D Basin is a diked impoundment. Drawing files indicate that D Basin was constructed after 2002 as a dewatering basin. Including the embankment, the footprint of D Basin is approximately 9 acres. Aerial imagery does not show a normal pool within D Basin. The lowest crest elevation of the impoundment is approximately 510 feet. The crest is approximately 55 feet above the normal pool elevation of the Ohio River. Flow from D Basin is pumped from a sump along the west dike through two 6-inch diameter high density polyethylene (HDPE) pipes into the Coal Pile Runoff Pond to the north.

Table 6-1. Station Impoundment Characteristics

| Feature/Parameter | Coal Pile Runoff Pond | D Basin |
|--|------------------------------|------------------------------------|
| Maximum Embankment Height | 15 ft. | 7 ft. |
| Length of Dam | 1,500 ft. | 2,600 ft. |
| Crest Width | 40 ft. | 20 ft. |
| Crest Elevation | 509.2 ft. | 510 ft. |
| Reservoir Area at Top of Dam | 2.6 acres | 5.2 acres |
| Storage Capacity at Top of Dam | 17 acre-ft. | 4 acre-ft. |
| Primary Spillway Type | 18" Steel Pipe (submerged)* | Sump Pump to two 6-inch HDPE pipes |
| Primary Spillway Crest Elevation | Approximately 507.5 ft. | Not Applicable |
| Storage Capacity at Primary Spillway Elevation | 14 acre-ft. | Not Applicable |
| Reservoir Area at Normal Water Surface Elevation | 2.2 acres | Not Applicable |
| Auxiliary Spillway Type | 15" Pipe | Not Applicable |
| Auxiliary Spillway Crest Elevation | 507.9 ft. | Not Applicable |

Notes:

- *Source: "Dam Safety Assessment of CCW Impoundments – WH Zimmer Station", Prepared for United States Environmental Protection Agency by O'Brien & Gere Engineers, Inc. September 27, 2010. All remaining values are GIS estimated.
- Survey Data obtained from (Topographic Survey of Duke Ash Ponds at the Zimmer Power Station, prepared by ESP Associates, P.A. – September, 2014)
- 2.5-Foot Resolution LiDAR DEM - Downloaded from <http://ogrip.oit.ohio.gov/> (January, 2016)
- Elevations are in reference to Mean Sea Level (MSL), NAVD88.

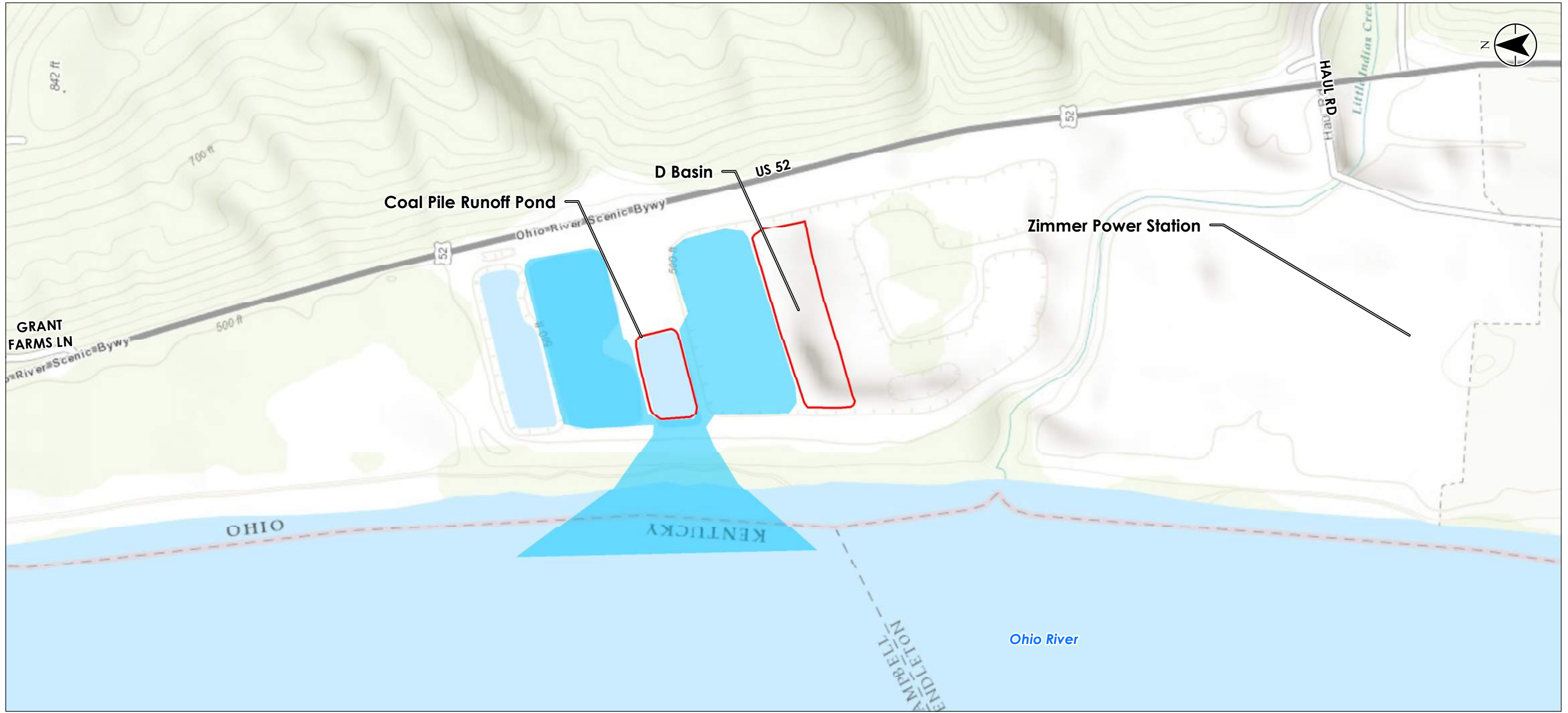
7 BREACH INUNDATION MAPS AND POTENTIAL IMPACTS

Inundation maps for the Coal Pile Runoff Pond and D Basin potential breach scenarios are provided in this section. It is the Clermont County ESDA/EMA's responsibility to keep a current list of affected parties/properties to contact in the case of emergencies that result in Response Level 2 or 3. This list should encompass all properties within and adjacent to the probable inundation extents shown in the provided maps.

The methodology used to identify probable inundation extents for potential breach scenarios varied as a function of the impoundment size, location, surrounding topography, and surrounding structures/facilities/waterbodies.

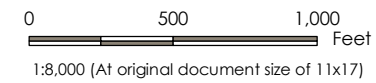
A visual analysis was performed for the Coal Pile Runoff Pond and D Basin to determine possible inundation limits for each breach scenario. The inundation limits were mapped using a combination of digital elevation data from the topographic survey prepared by ESP Associates, P.A. – September, 2014 and DEM data downloaded from the Ohio OGRIP website. Stage-storage capacity was considered when the impoundment could breach into an adjacent basin.

Approximate inundation areas are illustrated in Figure 7-1 and Figure 7-2.



Legend

- CCR Surface Impoundment Boundary
- Expected Breach Inundation Area



Project Location: 175605019
 Latitude: 38.877193
 Longitude: -84.229495
 Prepared by DTH on 2017-04-12
 Technical Review by NS on 2017-04-12
 Independent Review by MH on 2017-04-12

Client/Project:
 Zimmer Power Station
 Emergency Action Plan

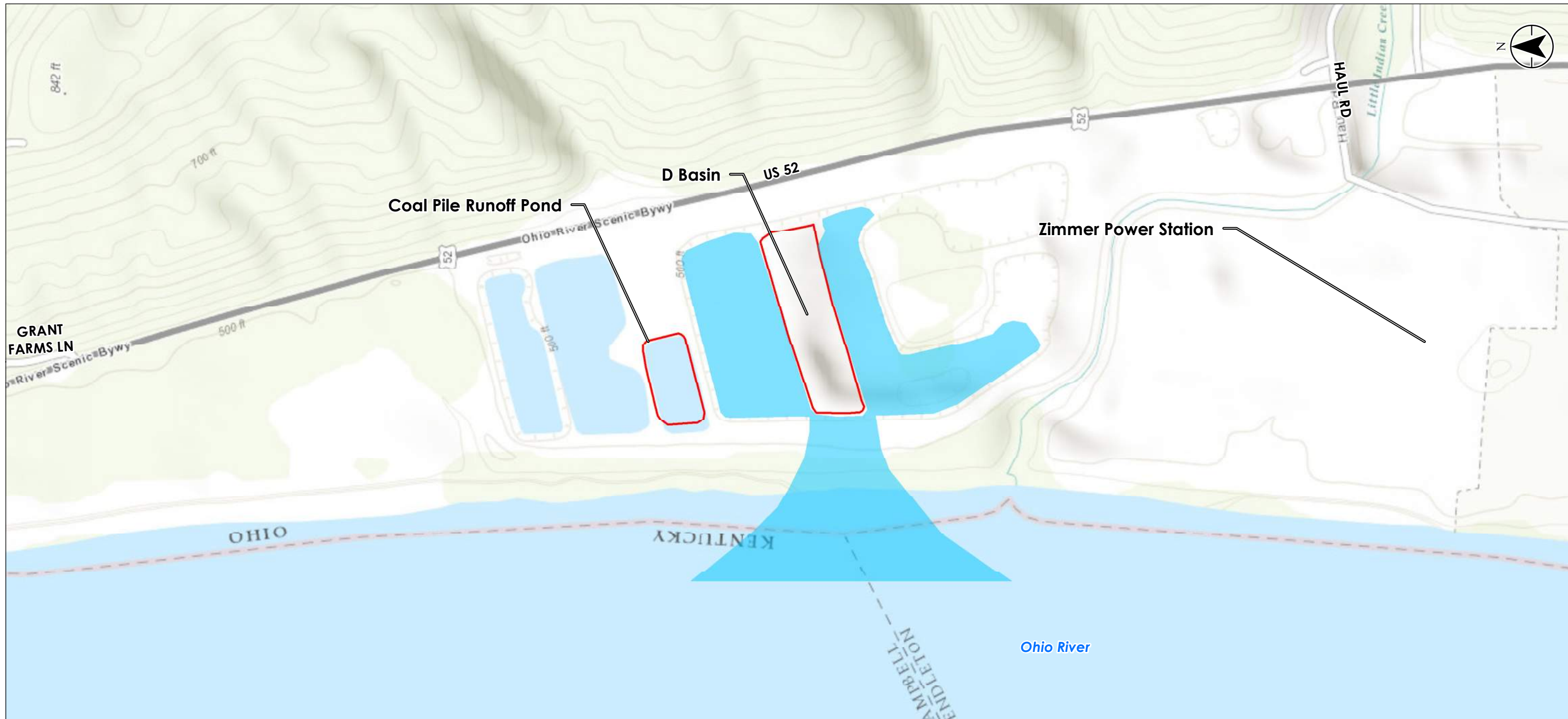
Figure No.
7-1

Title:
**Inundation Map
 Coal Pile Runoff Pond**

- Notes**
1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 2. Aerial Source: Clermont County, Dated 2015, 4-Inch Resolution.
 3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

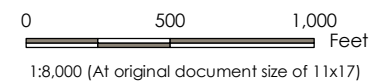
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Legend

- CCR Surface Impoundment Boundary
- Expected Breach Inundation Area

Notes
 1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 2. Aerial Source: Clermont County, Dated 2015, 4-Inch Resolution.
 3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)



Project Location: 175605019
 Latitude: 38.877193 Prepared by DTH on 2017-04-12
 Longitude: -84.229495 Technical Review by NS on 2017-04-12
 Clermont County, Ohio Independent Review by MH on 2017-04-12

Client/Project
 Zimmer Power Station
 Emergency Action Plan

Figure No.
7-2

Title
**Inundation Map
 D Basin**

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