*Prepared for*

**Dynegy Midwest Generation, LLC**
1500 Eastport Plaza Drive
Collinsville, Illinois 62234

# SAFETY EMERGENCY RESPONSE PLAN

## VERMILION POWER PLANT
## OAKWOOD, ILLINOIS

*Prepared by*

Geosyntec consultants

engineers | scientists | innovators

134 N. Lasalle Street, Suite 300
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August 2021

## EXECUTIVE SUMMARY

### Safety Emergency Response Plan for Vermilion Power Plant North Ash Pond, Old East Ash Pond, and New East Ash Pond

This Safety Emergency Response Plan (SERP) was created in accordance with the *Illinois Attorney General (IAG) Agreed Interim Order (AIO) (Draft 5.26.21), Section II(1)*. *Section II(1)* which states that a written SERP for the Vermilion Power Plant (Site) shall be submitted to Illinois EPA, for its review and approval, which, at a minimum, must:

a. *Define the events or circumstances involving the Ponds at the Site that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner* **(Section 2.1)**;

b. *Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving a Pond at the Site* **(Section 2.2)***;*

*c.* *Provide contact information of emergency responders* **(Section 2.3)***;*

*d.* *Include a map which delineates the downstream area which would be affected in the event of a Pond failure and a physical description of the Ponds at the Site* **(Section 2.4)***;*

*e.* *Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the Ponds at the Site and the local emergency responders* **(Section 2.5)***; and*

*f.* *Describe emergency riverbank stabilization measures at or near the Site* **(Section 2.6).**

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# 1. INTRODUCTION

## 1.1. Statement of Purpose

The Vermilion Power Plant[1] (Plant) is located along the Middle Fork of the Vermilion River near the City of Oakwood in Vermilion County, Illinois. The location is shown in Figure 1-1. The Plant is a retired coal-fired electricity producing power plant owned and operated by Dynegy Midwest Generation, LLC (DMG), a subsidiary of Dynegy. This Safety Emergency Response Plan (SERP) was prepared in accordance with the Illinois Attorney General (IAG) Agreed Interim Order entered on June 30, 2021 and covers the following Coal Combustion Residual (CCR) surface impoundments located at the site:

- North Ash Pond (NAP) – NID # N/A / Old East Ash Pond (OEAP) – NID # IL50291 (Note, no water can be impounded at the OEAP; it is filled and covered to drain surface water)
- New East Ash Pond (NEAP) – NID # IL0004057

The locations of these impoundments are shown in Figure 1-2. Section 1.2 of this SERP includes a description of each impoundment.

[1] The Vermilion Power Plant is also known as the "Vermilion Power Station".

The purpose of this SERP 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 Vermilion Power Plant.

2. Define the events or circumstances involving the CCR impoundments and related facilities at the Vermilion Power Plant 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.

8. Describe emergency riverbank stabilization measures to be implemented at the Site, if necessary.

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

## 1.2. Facility Information

The CCR surface impoundments are located entirely on a tract of land northeast of the Vermilion Power Plant. It is bounded on the west by an access road; the north and east by the Middle Fork of the Vermilion River; and to the south by E. 2150 North Road. The Plant is retired and the three CCR impoundments are inactive. The impoundments are described as follows and illustrated in Figure 1-2. Note all dimensions are approximate. Table 1-1 contains additional geometric details for each impoundment.

The surface impoundments are formed by an elevated embankment that circles the three impoundments. The embankment ranges in elevation of about 594.0 feet to 618.0 feet, though the Old East Ash Pond (OEAP) has been built up to about 636.0-feet as discussed below.

- North Ash Pond (NAP) / Old East Ash Pond (OEAP): The NAP area is approximately 41-acres and was built as a northern extension of the OEAP and has been inactive since 2011. The northern and eastern edges are delineated by perimeter dikes, while the southern edge shares a border with the OEAP. The NAP overlaps/coincides with the OEAP on its southern end. The western edge consists of two earthen embankment saddle dams approximately 16 to 18-feet tall with a combined maximum storage of approximately 40 acre-feet and fitted with surface water intake structures that collect runoff from the western hills into 24-inch diameter HDPE outlet piping that ultimately discharge north of the NAP. The saddle dam basins remain dry outside of rainfall events (i.e., no standing/normal pool). The NAP discharges decant water to a secondary pond (Secondary NAP) separated by a divider dike located at the northeast corner of the NAP. The Primary NAP has an auxiliary spillway that consists of an 18-inch corrugated metal pipe (CMP) through the divider dike. The NAP normal pool elevation is 597.0 feet which is 6.13-feet below its auxiliary spillway invert elevation of 603.13 feet. The NAP does not have a primary spillway, instead the pool is regulated intermittently by manually pumping from Primary NAP to the Secondary NAP. The Secondary NAP has a spillway configuration consisting of primary and auxiliary spillways located at its southeast corner. Its primary spillway consists of a concrete weir intake structure, with stoplogs to adjust weir intake height, connected to an 18-inch diameter CMP outlet pipe through the perimeter dike and to National Pollutant Discharge Elimination System (NPDES) Permitted Outfall 001 (Outfall 001). Its auxiliary spillway consists of a 24-inch HDPE pipe through the perimeter dike that connects to the primary spillway outlet pipe prior to Outfall 001.

  The OEAP area is immediately adjacent to the NAP and covers approximately 21.3 acres. It is typically dry, currently inactive, and does not possess a reservoir nor a spillway. It received a fill cover of varying thicknesses sometime after 1981 and before 2005 based on historical aerial photos. The northern and eastern edges of the OEAP are delineated by a perimeter dike, while the northwestern edge shares a border with the NAP and the southern edge is bounded by existing topography. The perimeter dike was raised twice to increase its capacity reaching a final elevation ranging from 624 to 636 feet.

- New East Ash Pond (NEAP): This impoundment was constructed in the late 1980s separate from the NAP as a single impoundment. In 2003, the NEAP was expanded on the western

edge with a low permeability slurry cutoff trench and the existing berms were raised to their current elevation of approximately 620 feet. The northern, eastern, and southern edges of the NEAP are delineated by berms, while the western interior slope of the impoundment is bounded by the existing topography. The NEAP spillway discharges decant water to a Secondary NEAP separated by a divider dike located at the north corner of the NEAP. The NEAP has a primary spillway that consists of an 18-inch diameter galvanized riser connected to a steel outlet pipe through the divider dike and an auxiliary spillway that consists of a 36-inch diameter reinforced concrete pipe (RCP). The normal pool elevation of primary NEAP is 594.0 feet which is 3.30 feet below its primary spillway invert elevation of 597.3 feet; the normal pool elevation of Secondary NEAP is 594.0 feet. The Secondary NEAP has a spillway configuration consisting of primary spillway located at the east. Its primary spillway consists of a concrete weir intake structure, with stoplogs to adjust weir intake height, connected to a 36-inch diameter RCP outlet pipe through the perimeter dike and to NPDES Permitted Outfall 003 (Outfall 003).

**Table 1-1. Pond Characteristics**

| Feature/Parameter | North Ash Pond Area | Old East Ash Pond Area | New East Ash Pond |
|---|---|---|---|
| Maximum Embankment Height[1] | 19.0 ft. | 40.0 ft. | 34.0 ft. |
| Length of Dam[1] | 2,430 ft. | 1,480 ft. | 3,720 ft. |
| Crest Width[1] | 12.0 ft. | 8.0 ft. | 15.0 ft. |
| Crest Elevation[1][2] | 604.0 ft. | 636.0 ft. | 618.0 ft. |
| Reservoir Area at Top of Dam[1] | 17.8 acres | N/A | 22.5 acres |
| Storage Capacity at Top of Dam[1] | 91.3 acre-ft. | N/A | 339 acre-ft. |
| Primary Spillway Type[3] | Manually Pumped Intermittently/As-Needed | N/A | 18-in. dia. Galvanized Riser (5-ft. tall) connected to a Steel Outlet Pipe of unknown diameter[4] |
| Primary Spillway Crest Elevation[1][3] | N/A | N/A | 597.3 ft. |
| Storage Capacity at Primary Spillway Elevation[1] | N/A | N/A | 25.7 acre-ft. |
| Reservoir Area at Normal Water Surface Elevation[1] | 28.8 acres | N/A | 7.7 acres |
| Auxiliary Spillway Type[3] | 18-in. dia. CMP | N/A | Open Lid Manhole Riser to 36-in. dia. RCP Outlet |
| Auxiliary Spillway Crest Elevation[1][3] | 603.1 ft. | N/A | 616.9 ft. |

Notes:
1) Vermilion Power Plan, November 2018 Topography Drawings (IngenAE, 2018)
2) Elevations are provided in vertical datum NAVD 88 unless specified otherwise
3) History of Construction Report, Vermilion Power Station (Geosyntec, June 2021)
4) New East Ash Pond Primary Spillway Steel Outlet Pipe likely has a diameter of 18-inches

## 2. SAFETY EMERGENCY RESPONSE PLAN

*IAG Interim Order Section II(1): Safety Emergency Response Plan. Within forty-five (45) days of the entry of this Order, Defendant shall submit to Illinois EPA, for its review and approval, a written Safety Emergency Response Plan for the Site….:*

This Safety Emergency Response Plan (SERP) has been prepared in accordance with the requirements of the IAG Interim Order (as detailed in the subsequent sections) and will be submitted within forty-five (45) days of the Order, which was entered on June 30, 2021.

### 2.1. Response Procedures

*IAG AIO Section II(1)(a): Define the events or circumstances involving the Ponds at the Site that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;*

The 4-Step Incident Response Process is shown in Figure 2-1 (figures provided as attachments). The Notification Flowchart is shown in Figure 2-2. 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 SERP Coordinator is responsible for notifying the ESDA/EMAs 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 2-1 provides guidance for determining the response level.
- Table 2-2 provides impoundment pool level trigger elevations.
- Table 2-3 lists emergency actions to be taken depending on the situation.

To facilitate understanding among everyone involved in implementing this SERP, 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.

**Table 2-1. Guidance for Determining the Response Level**

| Event | Situation | Response Level |
|---|---|---|
| Spillway flow (see Table 2-2 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 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 2-2 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 |

**Table 2-1. Guidance for Determining the Response Level**

| Event | Situation | Response Level |
|---|---|---|
| Sinkholes | Observation of new sinkhole in impoundment area or on embankment. | Level 2 |
| | Rapidly enlarging sinkhole and/or whirlpool in the impoundment. | Level 3 |
| Cracks without seepage | New cracks in the embankment greater than ¼ inch wide without seepage. | Level 1 |

**Table 2-2. Trigger Elevations[(1)(2)(3)]**

| | Embankment Crest Elevation (ft) | Auxiliary Spillway Crest Elevation (ft) | Normal Pool Fluctuation | |
|---|---|---|---|---|
| | | | Typical (ft) | High (ft) |
| North Ash Pond Area | 604.0 | 602.1 | 597.0 | 602.1 |
| Old East Ash Pond Area | 636.0 | NA | Dry | Dry |
| New East Ash Pond | 618.0 | 609.1 | 594.0 | 601.3 |

Notes:
1) Vermilion Power Plan, November 2018 Topography Drawings (IngenAE, 2018)
2) Elevations are provided in vertical datum NAVD 88 unless specified otherwise
3) History of Construction Report, Vermilion Power Station (Geosyntec, June 2021)

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| High Water Level/ Large Spillway Release | See Table 2-1 and Table 2-2 for elevations and triggering water levels associated with the impoundments and spillways covered by this SERP | 1. Assess cause of increased reservoir stage, especially during fair weather conditions.<br>2. Determine Response Level.<br>3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart.<br>4. Perform additional tasks as determined through consultation with the ERT.<br>5. Make notifications if condition worsens such that downstream flooding is imminent.<br>**Response Level 0**: require enhanced surveillance 3 times per day<br>**Response Level 1**: contact internal chain of command and external response partners as necessary; inspect impoundment minimum 1 time per hour<br>**Response Level 2**: contact internal chain of command; notify ESDA/EMAs and notify external response partners. ESDA/EMAs notify affected parties.<br>**Response Level 3**: contact internal chain of command; notify ESDA/EMAs and notify external response partners. ESDA/EMA's notify affected parties of emergency incident. |
| Seepage | Localized new seepage or boil(s) observed along downstream face / toe of earthen embankment with muddy discharge and increasing but controllable | 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.<br>2. Determine Response Level.<br>3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart. |

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| | discharge of water. | 4. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply:<br>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.<br>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.<br>c. Maintain continuous monitoring of feature. Record measured flow rate and any changes of condition, including presence or absence of muddy discharge.<br>5. Make notifications as outlined in the lower portion of the Notification Flowchart (Figure 2-2) if condition worsens such that failure is imminent. |
| Sabotage and Miscellaneous Other Issues | Criminal action with significant damage to embankment or structures where | 1. Contact law enforcement authorities and restrict all access (except emergency responders) to impoundment. Restrict traffic on embankment crest to essential emergency operations only. |

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| | significant repairs are required and the integrity of the facility is compromised—condition appears stable with time. | 2. Determine Response Level.<br>3. Make internal notifications as outlined in the upper portion of the Notification Flowchart (Figure 2-2).<br>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.<br>5. Perform additional tasks as directed by the ERT.<br>6. Make notifications if conditions worsen. |
| Embankment Deformation | Cracks:<br>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. | 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.<br>2. Restrict traffic on embankment crest to essential emergency operations only.<br>3. Determine Response Level.<br>4. Make notifications as outlined in the Figure 2-2 Notification Flowchart.<br>5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply:<br>a. Place buttress fill against base of slope immediately below surface feature. Stock pile additional fill. |

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| | | b. Place sand bags as necessary around crack area to divert any storm water runoff from flowing into crack(s).<br>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 Dam Safety Managers; collect piezometer and water level data; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.<br>7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent. |
| Embankment Deformation | 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. | 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.<br>2. Restrict traffic on embankment crest to essential emergency operations only.<br>3. Determine the Response Level.<br>4. Make notifications as outlined in the Figure 2-2 Notification Flowchart.<br>5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items.<br>a. Place sand bags as necessary around slide area to divert any storm water runoff from flowing into slide(s). |

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| | | 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.<br>6. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent |
| Embankment Deformation | 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. | 1. Slowly open drain gates to lower pool elevation.<br>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.<br>3. Restrict traffic on embankment crest to essential emergency operations only.<br>4. Determine Response Level.<br>5. Make notifications as outlined in the Figure 2-2 Notification Flowchart.<br>6. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items:<br>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. |

**Table 2-3. Emergency Actions**

| Condition | Description of Condition | Action to be Taken |
|---|---|---|
| | | 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.<br>7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent. |
| Gate Malfunction or Failure | Sluice gate damaged structurally (sabotage, debris, etc.) with uncontrolled release of water at a constant volume. Condition appears stable. | 1. Close any other gates, if open.<br>2. Determine Response Level.<br>3. Make notifications as outlined in the Figure 2-2 Notification Flowchart.<br>4. Obtain instructions from the Dam Safety Manager to determine if there are other methods to stop or slow down the flow of water.<br>5. If conditions worsen such that failure is imminent, make notifications as outlined in the lower portion of the Figure 2-2 Notification Flowchart. |

## 2.2. Roles and Responsibilities

*IAG Interim Order Section II(1)(b): Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving a Pond at the Site;*

Table 2-4 provides a summary of the SERP roles during an emergency event.

**Table 2-4. Summary of SERP Roles**

| Entity | Role Description |
|---|---|
| **DMG Emergency Response Team (ERT)** | **ERT:** DMG personnel responsible for SERP implementation, distribution, updates/maintenance, and training activities. The *ERT* is comprised of the following roles;<br>1. **DMG Corporate**: DMG corporate entity, committee, team, position, or personnel with relevant responsibility for a given generating station.<br>2. **Plant Management**: Personnel responsible for day-to-day operation and management of the Plant.<br>3. **Dam Safety Manager**: Personnel that is most knowledgeable about the design and technical operation of facilities at a given Plant.<br>4. **SERP Coordinator**: Personnel responsible for implementing the SERP and associated activities<br>**Emergency Event – SERP Responsibilities**<br>1. Respond to emergencies at the Plant.<br>2. Verify and assess emergency conditions.<br>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 SERP.<br>4. Take corrective action at the Plant.<br>5. Declare termination of emergencies at the Plant. |
| **Vermilion County EMA** | 1. Receive Response Level reports from *DMG Corporate* through *SERP Coordinator*.<br>2. Coordinate emergency response activities with local authorities: police, fire and rescue, etc.<br>3. Coordinate notification of public as necessary through established channels. |

**Table 2-4. Summary of SERP Roles**

| Entity | Role Description |
|---|---|
| | 4. Coordinate notification activities to affected parties within inundation areas.<br>5. Evaluate risk to areas beyond the inundation areas, communicate needs to *DMG Corporate* and/or *SERP Coordinator*, and coordinate aid as appropriate.<br>6. Responsible for declaring termination of an emergency condition off-site upon receiving notification of an emergency status termination from *DMG Corporate*.<br>7. If necessary, coordinate with *State ESDA/EMA*. |
| **Vermilion County Police, Fire and Rescue, and Emergency Services** | 1. Receive alert status reports from the *ERT* or the *Vermilion County ESDA/EMA*.<br>2. If necessary, notify affected parties and general public within inundation areas (see Section 7).<br>3. Render assistance to Vermilion County ESDA/EMA, as necessary.<br>4. Render assistance *to DMG Corporate* and *Plant Management*, as necessary. |

## 2.3. Contact information

*IAG Interim Order Section II(1)(c): Provide contact information of emergency responders;*

Table 2-5 lists contact information for the emergency responders.

**Table 2-5. SERP Emergency Responders**

| Position | Name | Phone # |
|---|---|---|
| **Internal Contacts** | | |
| **Vermilion Power Plant** | | |
| Managing Director | Dianna Tickner | (618) 381-3124 |
| Environmental Manager (SERP Coordinator) | Brian Voelker | (217) 412-6605 |
| Engineering Manager | Vic Modeer | (618) 541-0878 |
| | | |
| **DMG Corporate Operations** | | |
| Dam Safety Manager | Jason Campbell | (217) 622-3491 |
| Construction Manager | Vic Modeer | (618) 541-0878 |
| | | |
| **External Contacts** | | |
| **Local / County ESDA/EMA, Police, & Fire** | | |
| Vermilion County EMA | Russell Rudd | (217) 443-6011 |
| Vermilion County Sheriff Department | Patrick Hartshorn | 911, (217) 442-4080 |
| Cayuga Fire Station | | 911, (765) 492-3515 |
| | | |
| **State Emergency Management Agencies & Organizations** | | |
| IDNR-OWR Dam Safety Section Manager | Paul Mauer | (217) 782-4427 |
| Middle Fork State Fish and Wildlife Area | | (217) 442-4915 |
| Illinois Conservation Police | | (877) 236-7529 |
| Vermilion County Conservation Police Officer | Chase Sanford | (217) 361-9982 |
| Illinois State Police | | 911 |
| | | |

## 2.4. Breach Inundation Maps and Potential Impacts

*IAG Interim Order Section II(1)(d): Include a map which delineates the downstream area which would be affected in the event of a Pond failure and a physical description of the Ponds at the Site;*

An inundation map for potential breach scenarios for the NAP and NEAP are provided in Figure 2-4 and Figure 2-5, respectively. It is the Vermilion County 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 map. Currently, there are no residences or otherwise occupied structures in the area of inundation.

Using a semi-quantitative approach for evaluating the extent of inundation due to a breach of the NAP and NEAP at full capacity reservoir volume, Geosyntec developed inundation mapping for full riverbank and 100-year flows in the Middle Fork Vermilion River in July 2021. The full river bank flow condition is when the flows have reached the top of bank but have not spilled over into the overbank (the lower floodplain). This is typically between the 1-year and 5-year flow. The 100-year flow condition is based on the published flows for the 1% (or 100-year flow). The methodology used to identify potential inundation extents due to a potential breach of the ponds consisted of several possible breach scenarios. Inundation limits were plotted using the best available topographic mapping for the site, which consisted of Illinois DOT LiDAR topographic data and supplemented with field survey data. Details for each breach scenario are as follows:

- NAP full riverbank – Using full riverbank flow conditions and assuming a breach on the northern embankment, Figure 2.4a depicts the estimated extend of the potential breach inundation. The inundation area immediately adjacent to the breach extends outside of the river channel banks and returns to the primary flow channel approximately one mile downstream of the breach. Minimal impacts extend downstream of the figure limits.

- NAP 100-year – Using river conditions during a 100-year storm flow and assuming a breach on the northern embankment, Figure 2.4b depicts the estimated extend of a potential breach. The inundation area immediately north of the breach extends slightly outside of the river 100-year flood extents; however, returns to coincide with the 100-year flood extent downstream of the breach location. Minimal impacts extend downstream of the figure limits.

- NEAP full riverbank – Using full riverbank flow conditions and assuming a breach on the eastern embankment, Figure 2.5a depicts the estimated extend of the potential breach inundation. The inundation area immediately adjacent to the breach extends outside of the river channel banks and returns to the primary flow channel approximately 0.5 miles downstream of the breach. Minimal impacts extend downstream of the figure limits.

- NEAP 100year – Using river conditions during a 100-year storm and assuming a breach on the eastern embankment, Figure 2.5b depicts the estimated extend of a potential breach. Overall breach waters stay within the river 100-year flood extents, minimal impacts extend downstream of the figure limits.

Approximate inundation areas are illustrated in Figure 2-4 and Figure 2-5.

## 2.5. Annual Preparedness Meetings

> *IAG Interim Order Section II(1)(e): Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the Ponds at the Site and the local emergency responders; and*

A coordination meeting shall be conducted annually between representatives of Dynegy Midwest Generation, LLC, and local emergency responders. This meeting may be in the form of face-to-face meeting, tabletop exercise, or additional training regarding the SERP. Internal and external emergency responders listed within Table 2-5 should take part in an annual preparedness meeting.

Emergency supplies and equipment will be provided by DMG emergency response contractor as needed and may include:

- Flashlights
- Generator
- Extension Cords
- Fire extinguishers
- Floodlights
- Backhoe
- Dozer
- Large Equipment (Rental – including excavating equipment, pumps, lighting)
- Grader
- Scraper
- End Loader
- Dump Truck
- Pump and Hoses
- Sandbags and Sand
- Fill
- (Stone, aggregate, sand)
- Concrete/grout
- Geotextile Filter Fabric
- Plastic Sheeting
- Rope
- Personal Flotation Devices

Table 2-6 is a partial list of area suppliers for many of the items typically needed during an emergency response. Applicable tables should be reviewed and updated as deemed necessary during annual preparedness meetings.

**Table 2-6. Supplier Addresses**

| Supply/Rental Item(s) | Supplier Contact Information | Distance from Site (miles) | Address |
|---|---|---|---|
| Sandbags | Tractor Supply | 17 | 3623 N. Vermilion St., Danville, IL 61832 (217) 431-5756 |
| | Powell Ace Home Center | 31 | 3391 IN-28, West Lebanon, IN 47991 (765) 893-8888 |
| Gravel, Sand, & Riprap | Hanson Aggregates | 14 | 3706 Catlin Homer Rd., Fairmount, IL 61841 (217) 733-2151 |
| | Rogers Group – Interstate Sand & Gravel | 31 | 3255 W. 650 S., Williamsport, IN 47993 (765) 893-4463 |
| Concrete, Cement, Sand, Grout | Sport Redi Mix LLC | 18 | 590 N. J St., Tilton, IL 61833 (217) 446-6992 |
| Portable Pumps, Rental Equipment | United Rentals | 29 | 3501 N. Country View Rd., Urbana, IL 61802 (217) 351-5820 |
| | Sunbelt Rentals | 33 | 1401 N. Mattis Ave, Champaign, IL 61821 (217) 355-1296 |
| | Rain for Rent | 105 | 1110 W. Thompson Rd., Indianapolis, IN 46217 (317) 780-6248 |
| General Hardware & Supply | R.P. Lumber Company | 20 | 1214 S. State St., Westville, IL 61883 (217) 267-3319 |
| | Powell Ace Home Center | 31 | 3391 IN-28, West Lebanon, IN 47991 (765) 893-8888 |

## 2.6. Maintenance of Riverbank Conditions

*AIG Interim Order Section (1)(f): Describe emergency riverbank stabilization measures at or near the Site, including but not limited to:*

*(i): The monitoring activities that Defendant shall conduct in the Middle Fork of the Vermilion River and the riverbank adjacent to the North Ash Pond and the Old East Ash Pond to assist in determining when a safety emergency exists and when the installation of temporary erosion protection is necessary;*

*(ii): The temporary erosion protection that Defendant shall install upon its determination that a safety emergency exists and shall maintain until its closure of the North Ash Pond and the Old East Ash Pond is completed; and*

*(iii): The method and timing of when Defendant will remove the temporary erosion protection, if installed, in consultation with the relevant regulatory authorities.*

### 2.6.1. Monitoring Activities

Monitoring for riverbank erosion along the OEAP and NAP has been ongoing and will continue. The monitoring program consists of surveying a series of 5-ft long steel reinforcing rods (ground-rod) inserted laterally into the riverbank along the OEAP and NAP. Ground-rods are placed in vertical profiles every 25 ft along the riverbank. Two to three ground-rods are placed at each profile: at the bottom of the riverbank, the middle of the riverbank, and, at approximately half of the profiles, at the top of the riverbank. A survey is performed monthly and consists of measuring the lateral distance from the tip of ground-rod to the riverbank. Once approximately 3 ft of rod is exposed, they are to be re-driven and baseline readings are re-established so that a continuous cumulative erosion value can be calculated.

In addition to ground-rod monitoring, weekly inspections of the Eastern Berms and riverbank along the OEAP and NAP will be performed. Weekly inspections are conducted by a qualified person trained in identifying non-optimal conditions for CCR units. Areas inspected include the top of the riverbank, Eastern Berm crests, upstream and downstream of the Eastern Berms, and spillways. Inspectors provide observations for potential issues including, but not limited to, cracking, settlement, animal burrows, surface erosion, vegetation, seeps, etc.

### 2.6.2. Maintenance of Riverbank

In the event that cumulative lateral erosion reaches three feet over an entire vertical profile of the riverbank along the OEAP or NAP, an engineering evaluation will be performed by a qualified geotechnical engineer. This evaluation will assess whether maintenance measures are required and if so, provide maintenance recommendations.

**Design**

A maintenance measure, hereafter referred to as buttress, will be designed based on the engineering evaluation recommendations. First, a preliminary design will be prepared and used to obtain the required environmental permits.

The buttress will consist of varying sizes of aggregate designed to withstand the river flow erosive forces, and placed against the riverbank, extending vertically from the bottom of the riverbank to the top of the riverbank. The buttress will include the placement of a separator fabric between the riverbank and the buttress. The buttress will extend up to five feet within the original riverbank baseline. Potential erosion of the buttress will then be monitored along with the remaining ground-rods. Additional buttress material will be placed as necessary to maintain the temporary riverbank maintenance measure. Buttress erosion and remaining thickness will then be monitored via paint marks on the top of the buttress.

**Environmental Permitting and Approvals**

DMG will consult with both the US Fish and Wildlife Service (USFW) and the Illinois Department of Natural Resources (IDNR) and revise both the USFW-approved biological assessment and IDNR-approved conservation plan, to reflect the design approach. Through these consultations, DMG will seek revisions to both the current USFW-issued incidental take authorization (ITA) and the current IDNR-drafted ITA if needed.

Based on the preliminary design, the following permits and approvals may be required before construction can commence:

- General NPDES permit for construction activity application (if over one acre is disturbed)
- Re-evaluate the need to revise the current biological assessment and conservation plan and the USFW and INDR ITAs, to reflect any significant design changes
- CWA Section 404 permit and CW Section 401 certification
- IDNR floodplain permit

- IDNR dam safety permit
- Consultation with IDNR Corridor Manager
- Consultation with the Middle Fork River Corridor Advisory Committee

**Implementation**

Once an engineering evaluation has been conducted and riverbank maintenance is identified as being required, permits are approved, and the design is finalized, DMG will install the buttress.

### 2.6.3. Removal of Temporary Measures

The buttress, if constructed as the temporary riverbank maintenance measure, will be removed upon completion of OEAP and NAP closures by removal. Environmental permits will be obtained prior to buttress removal. Details regarding the removal of the buttress will be included in a permit application for work in the river. Issued for Construction (IFC) drawings will be prepared and a contractor will be retained.

Once permits are approved, the buttress will be removed using either a long-reach type excavator situated at a safe distance from the edge of the riverbank and/or an amphibious type excavator working in the river. Measures will be taken to protect the river in accordance with permits. Material removed from the temporary measures will be placed at an approved onsite stockpile location.

## 3. CERTIFICATION

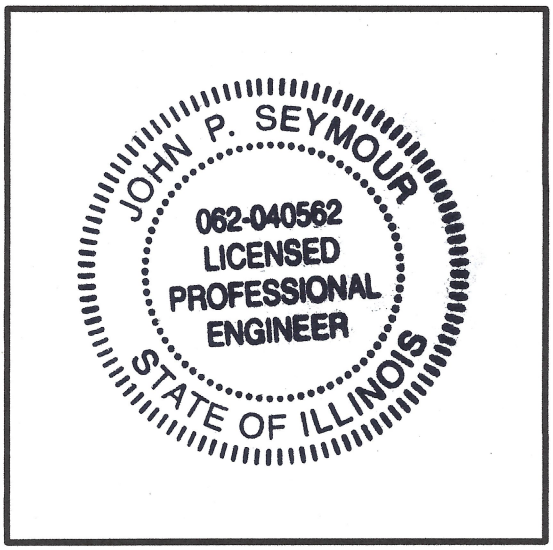
**CCR Unit:** DMG Midwest Generation, LLC; Vermilion Power Plant, Old East Ash Pond, New East Ash Pond, and North Ash Pond

I, John Seymour, 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 SERP has been prepared in accordance with the accepted practice of engineering for the above referenced CCR Units.

John Seymour
Printed Name

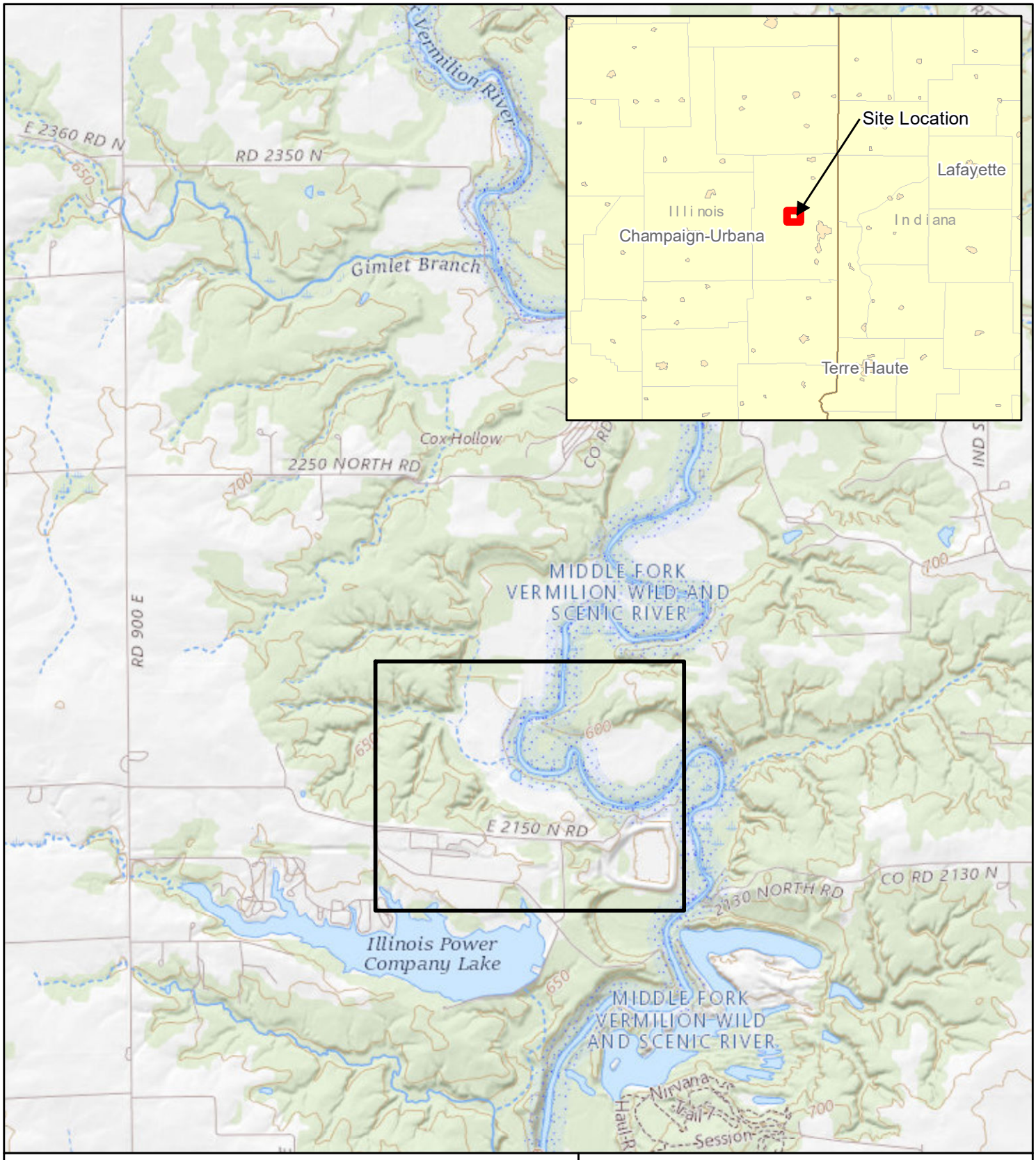
8/16/2021
Signature Date

062.040562 Illinois 30 November 2021
Registration Number State Expiration Date




*Affix Seal*

# FIGURES




**Legend**

Site Location

N

0 750 1,500 3,000 Feet

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS

**Site Location Map**

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Former Vermilion Power Plant

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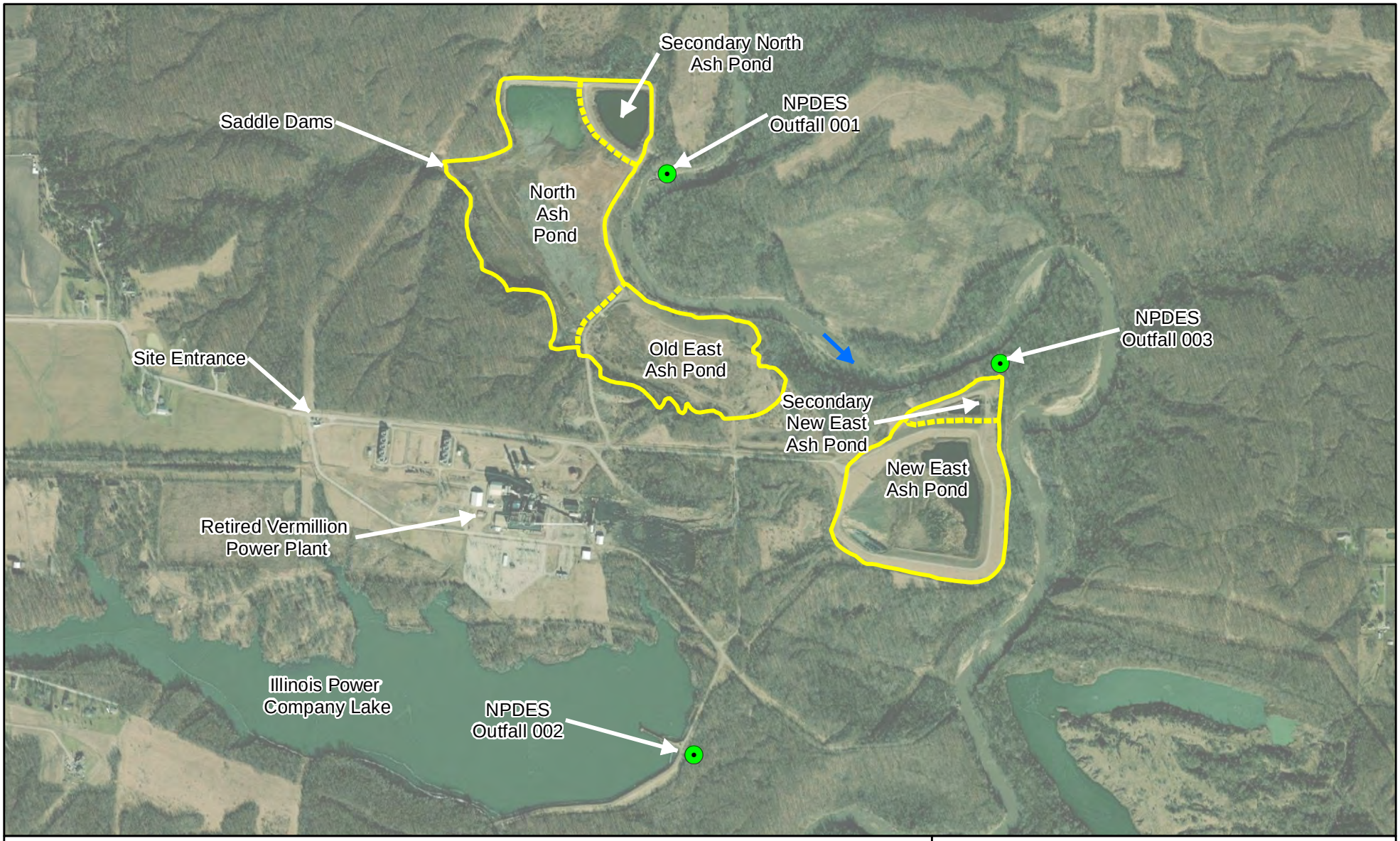
|---|---|

**Figure 1-1**

P:\CAD_GIS\Projects\CHE8404A-02_04 Vermillion\MXDs\Figure 1-1 Site Location Map.mxd 7/20/2021 1:07:02 PM




**Legend**

- NPDES Outfall
- Middle Fork Vermilion River Flow Direction
- Ash Pond

N

0 250 500 1,000 Feet

**CCR Impoundments**

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**Figure 1-2**

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

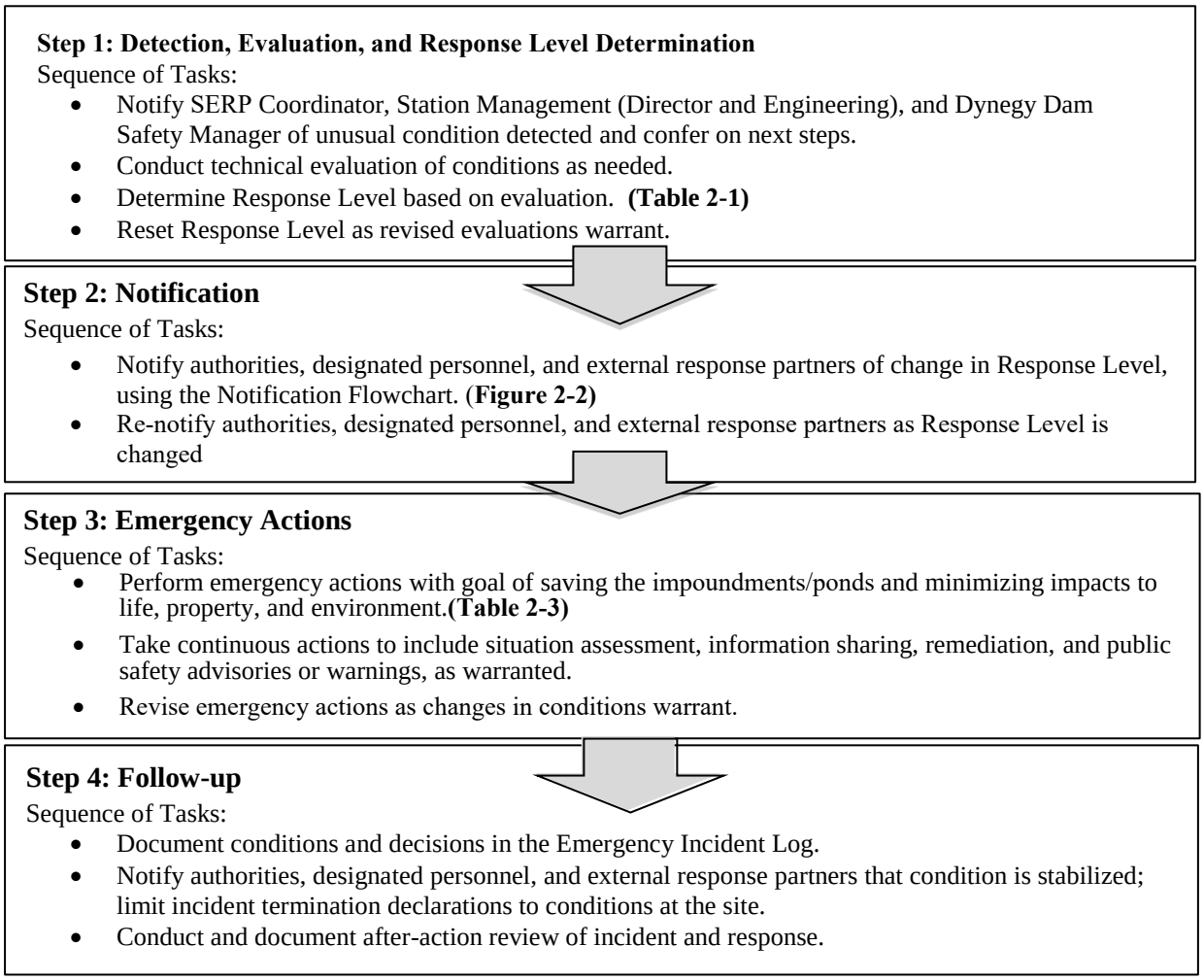


**Figure 2-2. Notification Flowchart**

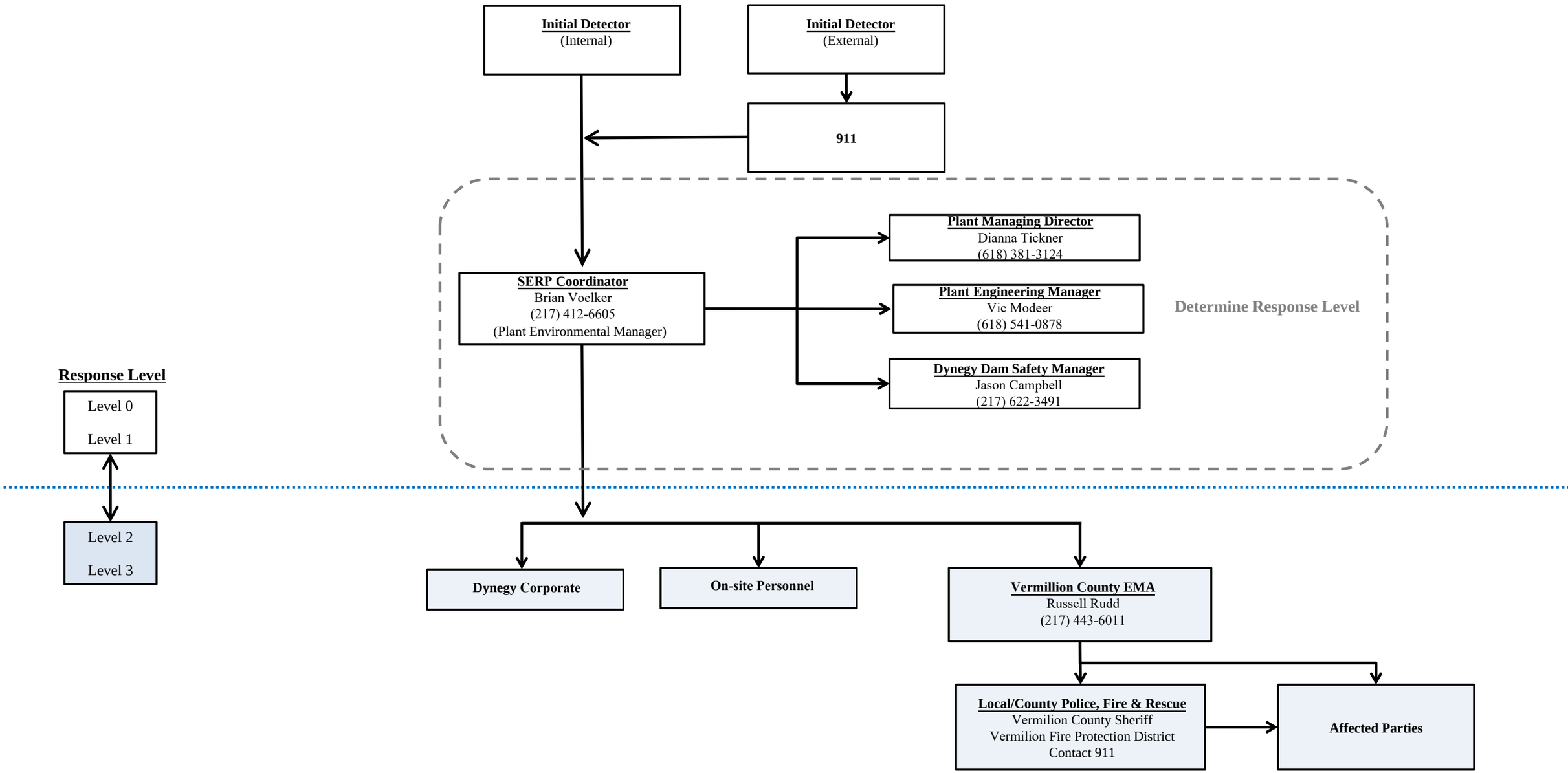
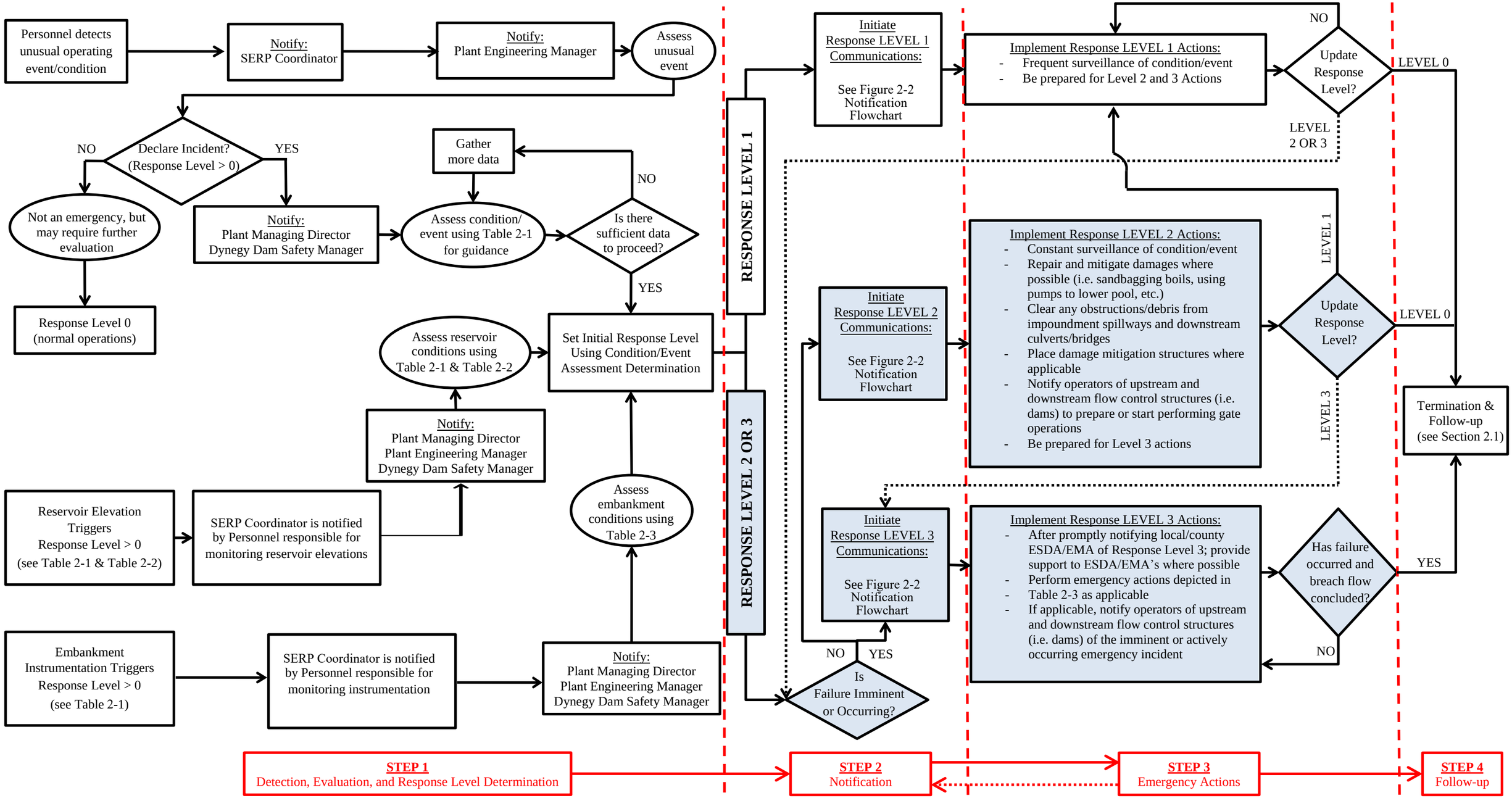
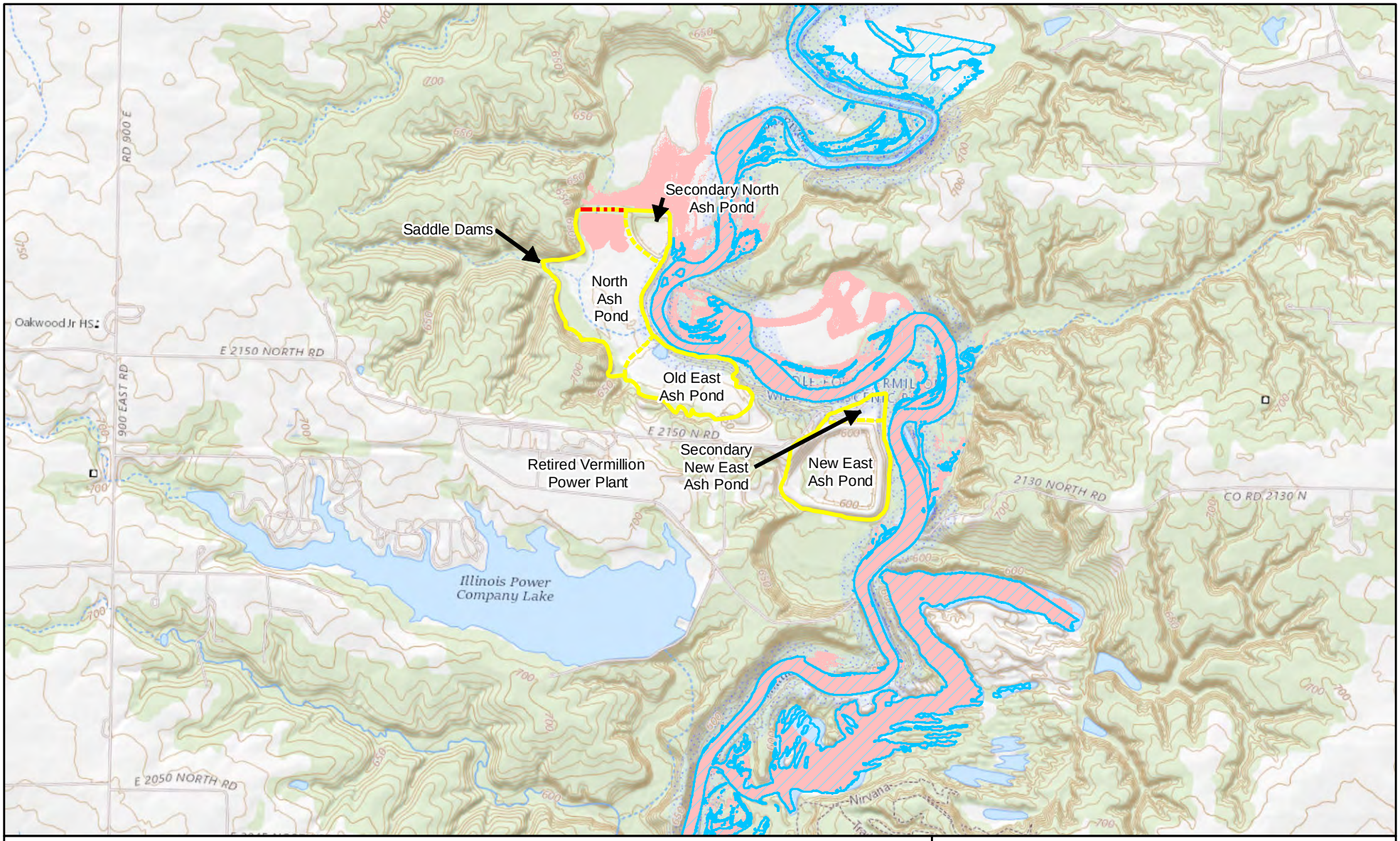


**Figure 2-3. SERP Response Process Decision Tree**

**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.






**Legend**

- Ash Pond
- NAP Breach Extent
- Middle Fork Vermilion River Full-Bank Flow
- Breach Location

N

0 400 800 1,600 Feet

**NAP Inundation Map**
**Vermilion River Full-Bank Flow**

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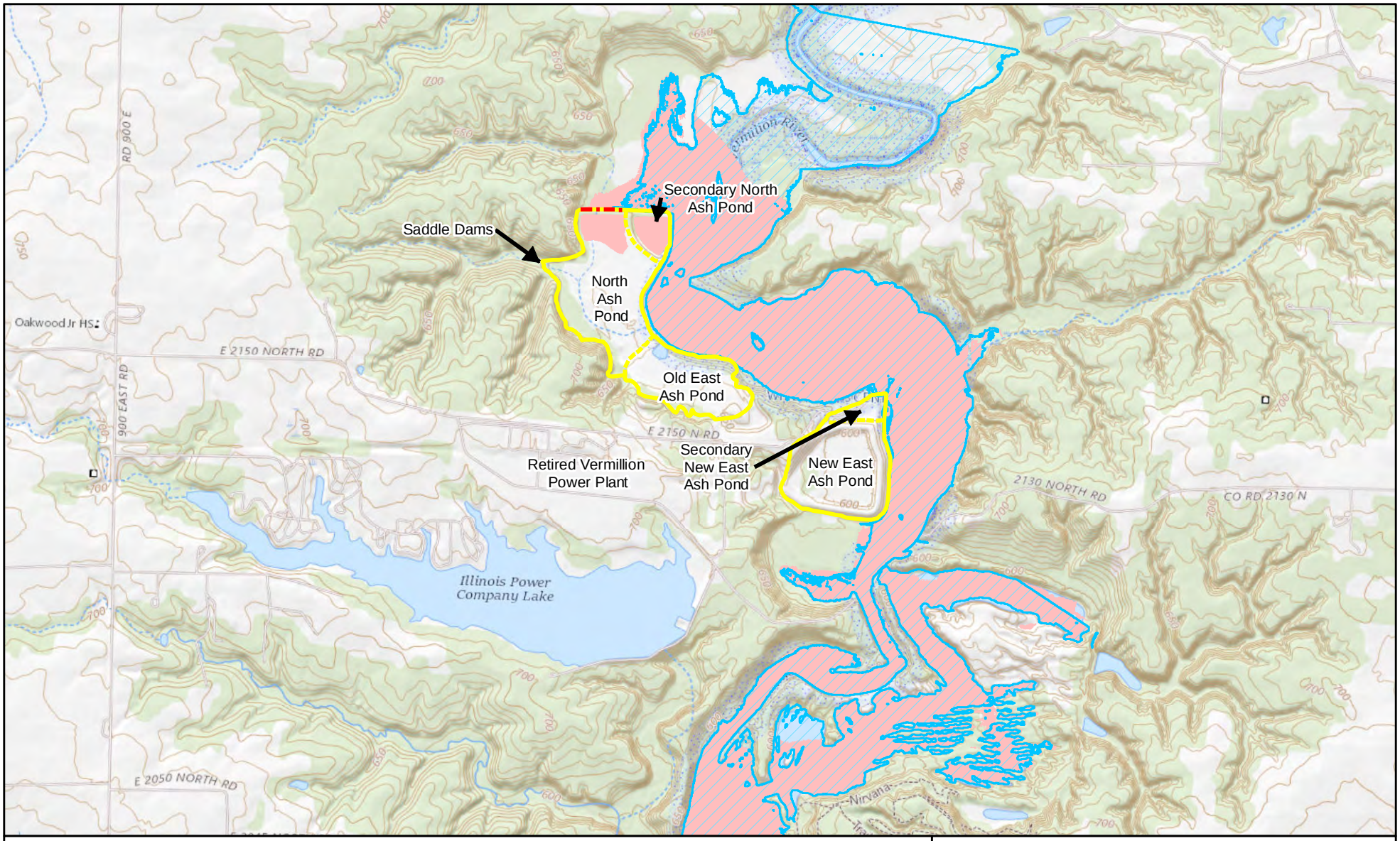
**Figure 2-4a**




**Legend**

- Ash Pond
- NAP Breach Extent
- Middle Fork Vermilion River 100-year Flood Flow
- Breach Location

N

0 400 800 1,600 Feet

**NAP Inundation Map**
**Vermilion River 100-year Flood Flow**

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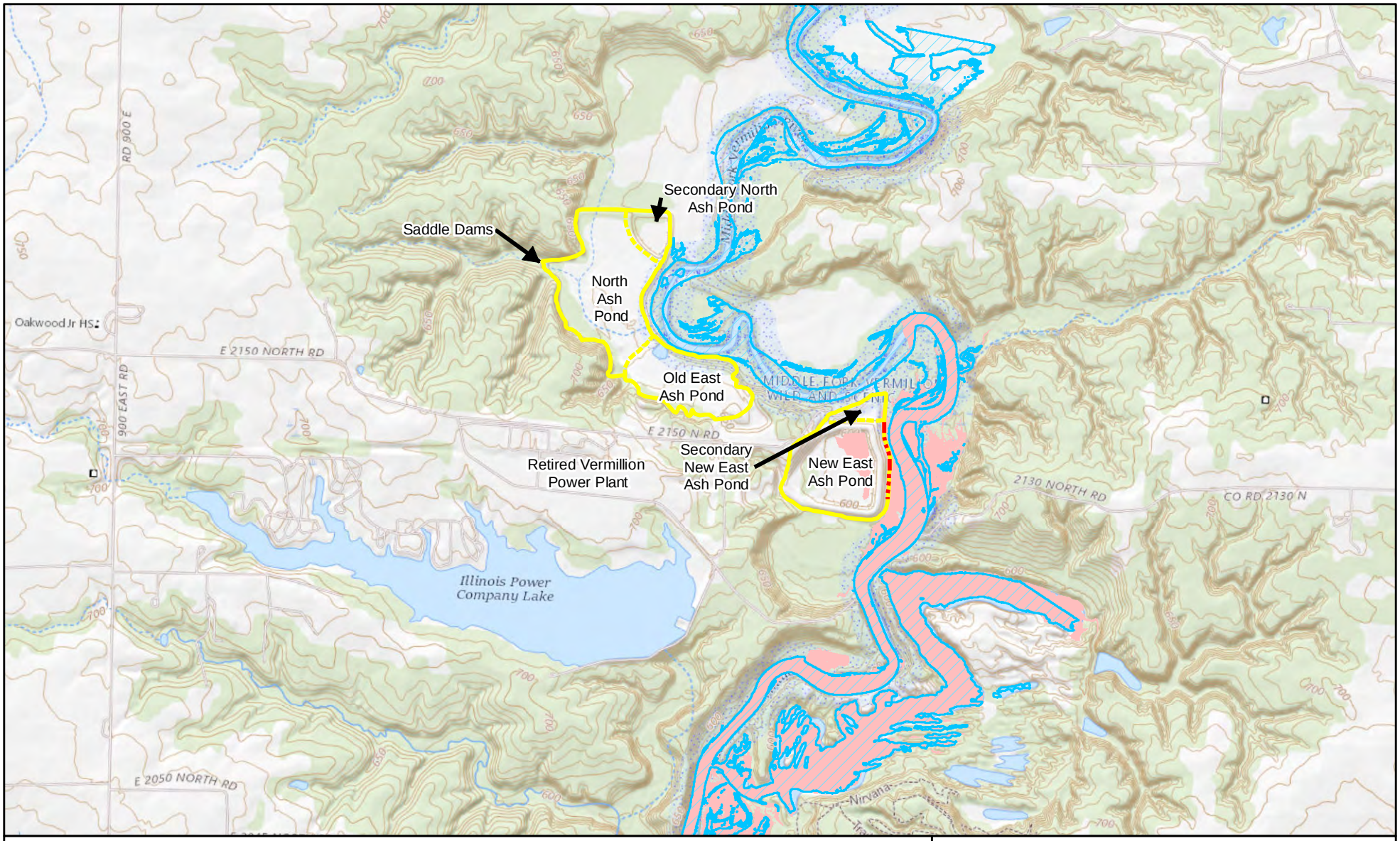
**Figure 2-4b**




**Legend**

- Ash Pond
- NEAP Breach Extent
- Middle Fork Vermilion River Full-Bank Flow
- Breach Location

N

0 400 800 1,600 Feet

**NEAP Inundation Map**
**Vermilion River Full-Bank Flow**

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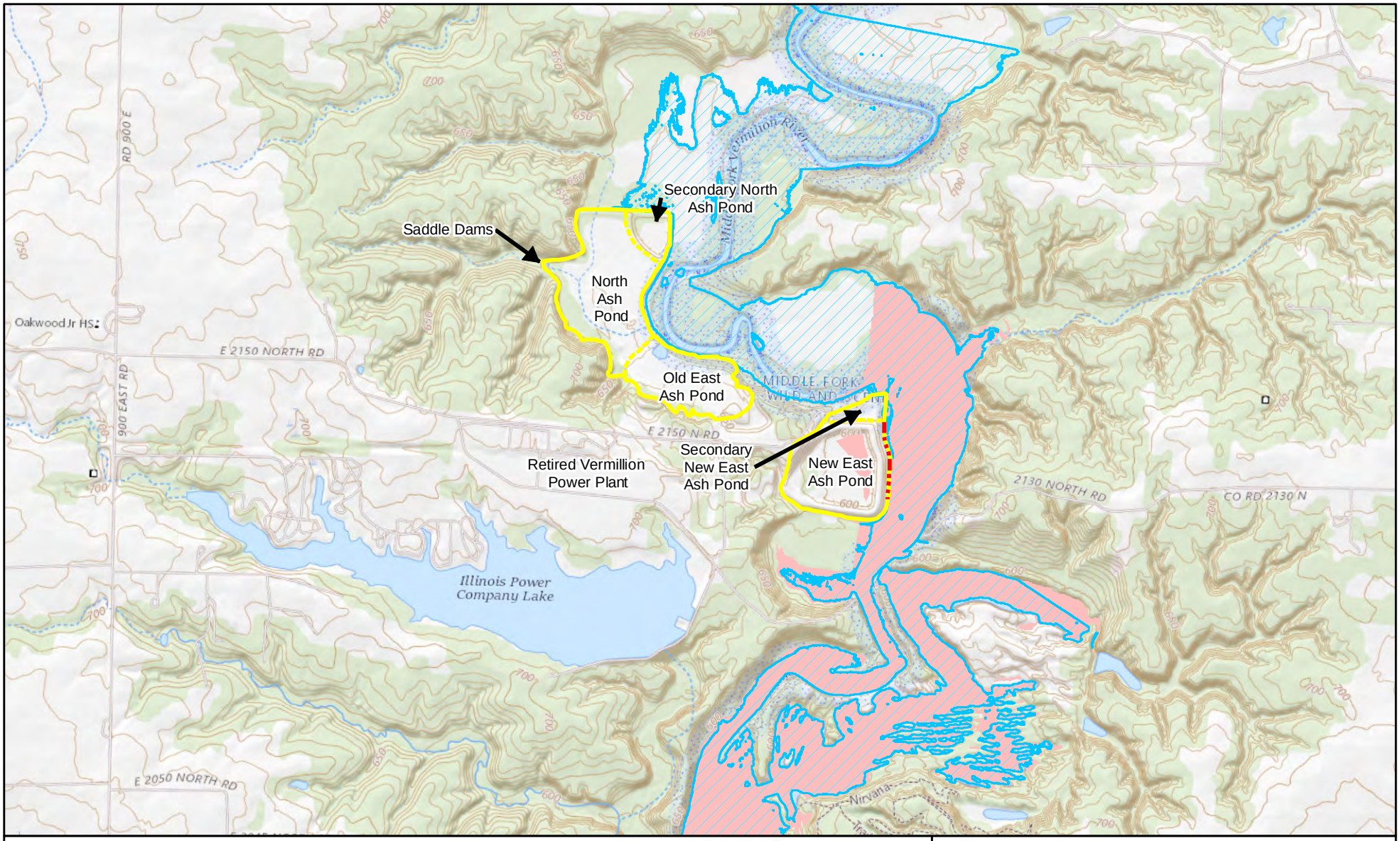
**Figure 2-5a**




**Legend**

- Ash Pond
- NEAP Breach Extent
- Middle Fork Vermilion River 100-year Flood Flow
- Breach Location

N

0 400 800 1,600 Feet

**NEAP Inundation Map**
**Vermilion River 100-year Flood Flow**

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**Figure 2-5b**