Illinois Power Generating Company

COFFEEN POWER PLANT

MONTGOMERY COUNTY, ILLINOIS

Emergency Action Plan (EAP)

40 CFR § 257.73(a)(3), 35 Ill. Adm. Code 845.520
Coal Combustion Residual (CCR) Impoundments & Related Facilities

- Gypsum Management Facility (GMF) Pond (NID # IL50579) (IEPA # W1350150004-03)
- GMF Recycle Pond (NID # IL50578) (IEPA # W1350150004-04)
- Ash Pond No. 1 (NID # IL50722) (IEPA # W1350150004-01)
- Ash Pond No. 2 (NID # IL50723) (IEPA # W1350150004-02)

Revision Date: September 16, 2021

Qualified Professional Engineer Certification; Emergency Action Plan for the Coffeen Power Plant GMF Pond, GMF Recycle Pond, Ash Pond 1 and Ash Pond 2

In accordance with 40 C.F.R. § 257.73(a)(3)(iv) and 35 Ill. Adm. Code 845.520(e), the owner or operator of a CCR unit that is required to prepare a written Emergency Action Plan under 40 C.F.R. § 257.73(a)(3) and 35 Ill. Adm. Code 845.520(a) must obtain a certification from a qualified professional engineer stating that the written Emergency Action Plan meets the requirements of 40 C.F.R. § 257.73(a)(3) and 35 Ill. Adm. Code 845.520.

I, Phil Morris, being a Professional Engineer in good standing in the State of Illinois, 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 C.F.R. § 257.73(a)(3) and 35 Ill. Adm. Code 845.520.

Phil Morris
Senior Director, Corporate Environmental

9/27/21
Date

COFFEEN POWER PLANT
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES

TABLE OF CONTENTS

List of Tables

List of Figures

COFFEEN POWER PLANT
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES

1 STATEMENT OF PURPOSE

The Coffeen Power Plant (Power Plant) is located near the town of Coffeen in Montgomery County, Illinois. The location of the Power Plant is shown in Figure 1-1. The Power Plant is a coal-fired electricity producing power plant owned and operated by the Illinois Power Generating Company (IPGC), a subsidiary of Dynegy. This Emergency Action Plan (EAP) was prepared in accordance with 40 CFR § 257.73(a)(3) and 35 Ill. Adm. Code 845.520 and covers the following Coal Combustion Residual (CCR) surface impoundments located at the site:

- Gypsum Management Facility (GMF) Pond (NID # IL50579) (IEPA # W1350150004-03)
- GMF Recycle Pond (NID # IL50578) (IEPA # W1350150004-04)
- Ash Pond No. 1 (NID # IL50722) (IEPA # W1350150004-01)
- Ash Pond No. 2 (Capped/Closed) (NID # IL50723) (IEPA # W1350150004-02)

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 Coffeen Power Plant.
2. Define the events or circumstances involving the CCR impoundments and related facilities at the Coffeen Power Plant 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 list 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 Illinois Power Generating Company was utilized and relied upon in preparation of this Emergency Action Plan.

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Aerial Source: 2015 NAIP Imagery
3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

0 5,000 Feet

1:60,000 (At original document size of 11x17)

Stantec DYNEGY

Project Location	175605019
Latitude: 39.059113	Prepared by RMGB on 3/29/2017
Longitude: -89.403293	Technical Review by NS on 3/29/2017
Montgomery County, Illinois	Independent Review by MM on 3/29/2017

Client/Project
Coffeen Power Station
Emergency Action Plan

Figure No.
1-1

Title
Location Map

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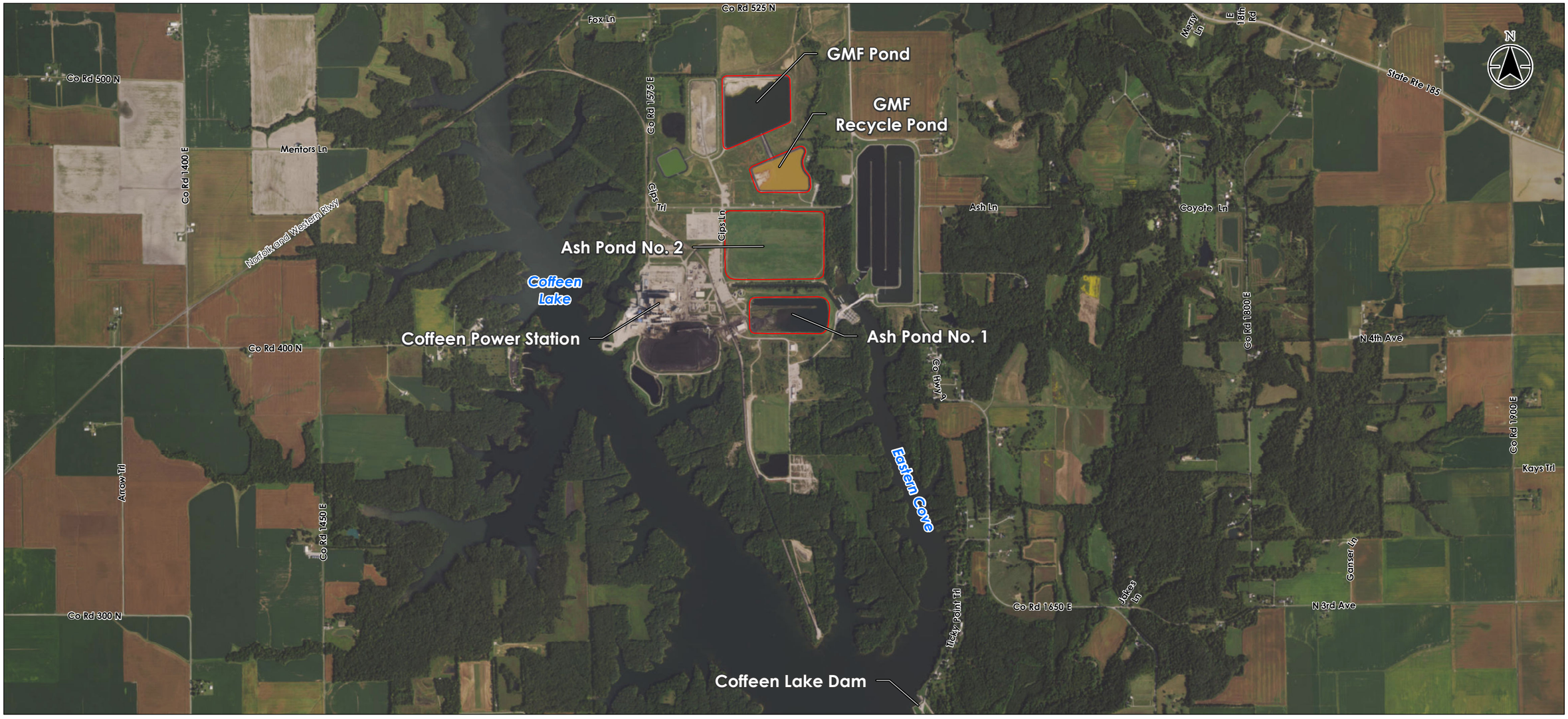

Legend

CCR Surface Impoundment Boundary

0 2,000 Feet

1:24,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Aerial Source: 2015 NAIP Imagery
3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

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Latitude: 39.059113
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Prepared by RMGB on 3/29/2017
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Client/Project
Coffeen Power Station
Emergency Action Plan

Figure No.
1-2

Title
CCR Impoundments

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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

Step 1: Detection, Evaluation, and Response Level Determination

Sequence of Tasks:

- Notify EAP Coordinator, Plant Manager, and Dam Safety Manager of unusual condition detected and confer on next steps needed.
- Conduct technical evaluation of conditions as needed.
- Determine Response Level based on evaluation. **(Table 4-1)**
- Reset Response Level as revised evaluations warrant.

Step 2: Notification

Sequence of Tasks:

- Notify authorities, designated personnel, and external response partners of change in Response Level, using the Notification Flowchart. **(Figure 2-2)**
- *Re-notify authorities, designated personnel, and external response partners as Response Level is changed*.

Step 3: Emergency Actions

Sequence of Tasks:

- Perform emergency actions with goal of saving the impoundment and minimizing impacts to life, property, and environment. **(Table 4-3)**
- Take continuous actions to include situation assessment, information sharing, remediation, and public safety advisories or warnings, as warranted.
- *Revise action plan as changes in conditions warrant*.

Step 4: Follow-up

Sequence of Tasks:

- Document conditions and decisions in the Emergency Incident Log.
- Notify authorities, designated personnel, and external response partners that condition is stabilized, limit incident termination declarations to conditions at the site.
- Conduct and document after-action review of incident and response.

Figure 2-2. Notification Flowchart

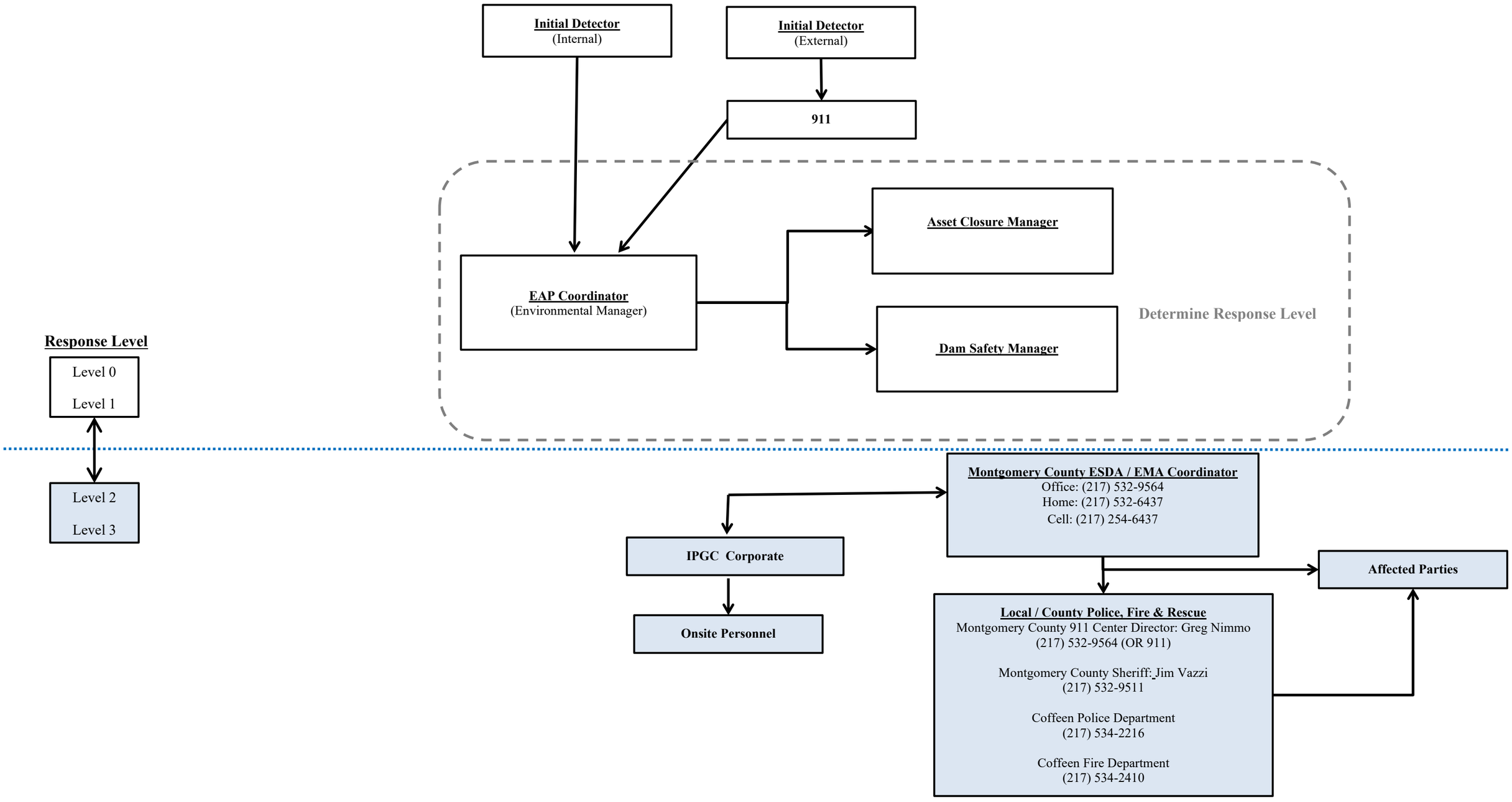


Figure 2-3. EAP Response Process Decision Tree

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.

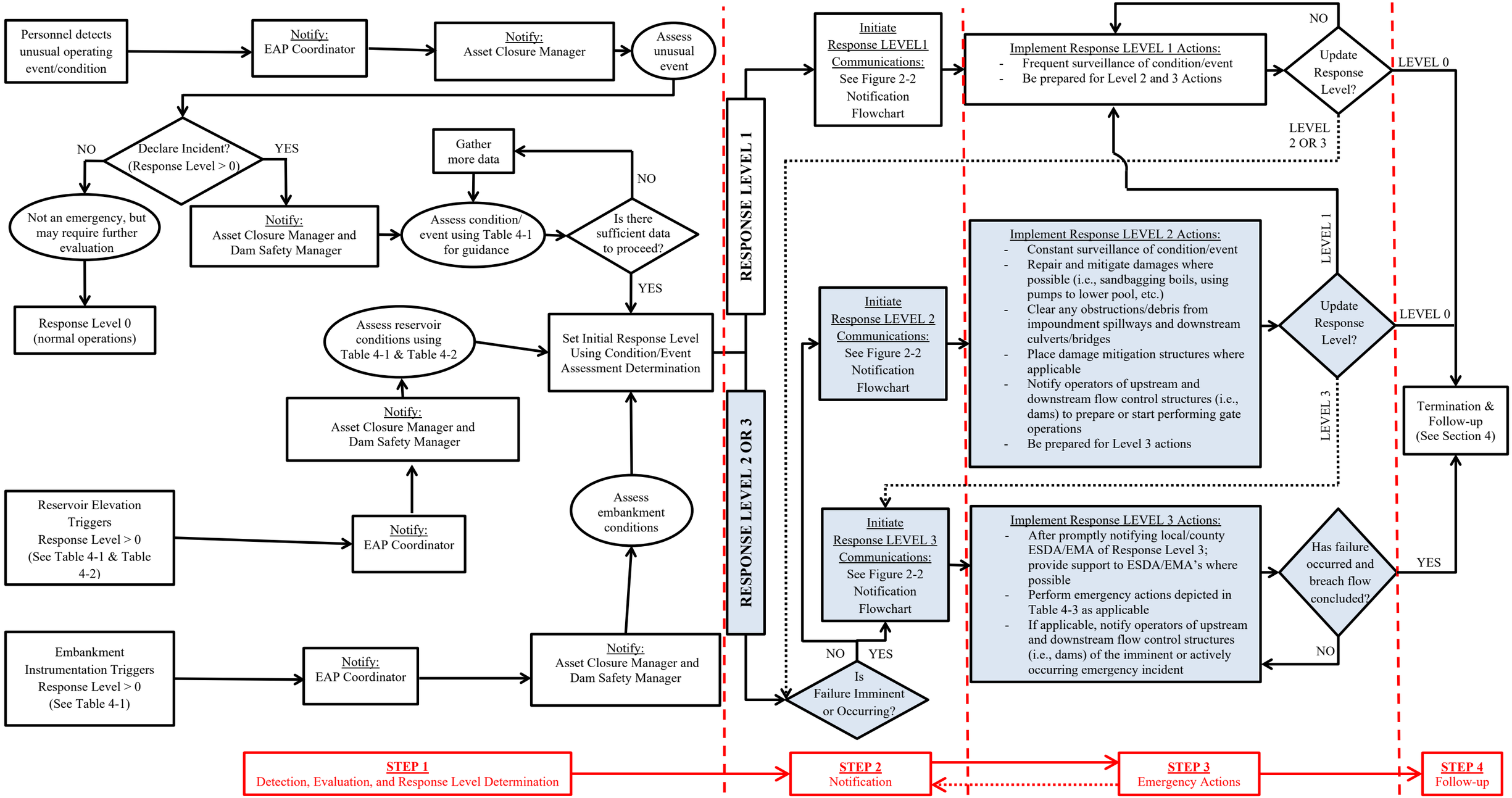


Table 2-1. EAP Emergency Responders

Position / Entity	Contact Information	
Internal Contacts		
Coffeen Power Plant	**Phone #**	
Asset Closure Manager	(903) 577-5207	
Environmental Manager (EAP Coordinator)	(217) 341-7319	
Control Room	(217) 534-7621	
IPGC Corporate Operations	**Contact**	
Dam Safety Manager		(618) 792-8488
External Contacts		
Local/County ESDA/EMA, Police, & Fire	**Phone #**	**Alternate Phone #**
Montgomery County 911 Emergency Communication Center	911	(217) 532-9564
Montgomery County Sheriff	(217) 532-9511	
Montgomery County ESDA/EMA Coordinator	(217) 532-9564	(217) 254-6437
Coffeen Police Department	(217) 534-2216	
Coffeen Fire Department	(217) 534-2410	
Montgomery County Ambulance	(217) 532-9562	
Montgomery County Engineer	(217) 532-6109	
State Emergency Management Agencies & Organizations	**Contact Phone #**	
IDNR-OWR Dam Safety Section Manager	(217) 782-4427	
Coffeen Lake State Fish & Wildlife Area	(217) 537-3351	
Illinois Conservation Police	(309) 338-1017	
Illinois State Police	(309) 833-4046	

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
IPGC Emergency Response Team (ERT)	**ERT: IPGC** personnel responsible for EAP implementation, distribution, updates/maintenance, and training activities. The *ERT* is comprised of the following roles: 1. **IPGC Corporate:** IPGC corporate entity, committee, team, or position with relevant responsibility for a given generating power plant. 2. **Asset Closure Management:** Personnel responsible for the management of the closure of the Power Plant. 3. **Dam Safety Manager:** Personnel that is most knowledgeable about the design and technical operation of facilities at a given power plant. 4. **EAP Coordinator:** Personnel responsible for implementing the EAP and associated activities. **Emergency Event – EAP Responsibilities** 1. Respond to emergencies at the Power Plant. 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 Power Plant. 5. Declare termination of emergencies at the Power Plant.
Montgomery County ESDA/EMA	1. Receive Response Level reports from *IPGC Corporate* through *EAP Coordinator*. 2. Coordinate emergency response activities with local/county 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 the *IPGC Corporate* and/or *EAP Coordinator*, 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 the *IPGC Corporate*. 7. If necessary, coordinate with *State ESDA/EMA*.
Local/County Police, Fire & Rescue	1. Receive alert status reports from the *ERT* or the Montgomery County *ESDA/EMA*. 2. If necessary, notify affected parties and general public within inundation areas (see Section 7). 3. Render assistance to Montgomery County *ESDA/EMA*, as necessary. 4. Render assistance to *IPGC Corporate* and *Power Plant Management*, as necessary.

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 high pool fluctuation elevation.	Level 1
	Impoundment water surface elevation within 2 feet of the embankment crest 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 another 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
GMF Pond	632.0 ft.	N/A	621 ft.	626 ft.
GMF Recycle Pond	629.0 ft.	624.1 ft.	610 ft.	623 ft.
Ash Pond No.1	637.5 ft.	631.0 ft.	629 ft.	633 ft.
Ash Pond No.2	638.0 ft.	N/A	N/A	N/A

Notes:Elevations are in reference to NAVD88

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
High Water Level/ Large Spillway Release	Not applicable to capped impoundments. See Table 4-1 and Table 4-2 for elevations and triggering water levels associated with the impoundments and spillways covered by this EAP.	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. **Response Level 0**: require enhanced surveillance 3 times per day **Response Level 1**: contact internal chain of command and external response partners as necessary; inspect impoundment minimum 1 time per hour **Response Level 2**: contact internal chain of command; notify ESDA/EMA's and notify external response partners. ESDA/EMA's notify affected parties. **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.
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.	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: a) Place a ring of sandbags with a weir at the top towards the natural drainage path to monitor flow rate. If boil becomes too large to sandbag, 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.	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	**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.	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: a) Place buttress fill against base of slope immediately below surface feature. Stockpile additional fill. b) Place sandbags 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 Dam Safety Manager; 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.
	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. 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. a) Place sandbags 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.

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
Embankment Deformation (cont.)	**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. 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: 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. Stockpile 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	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. 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 the Illinois Power Generating Company 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	Contact EAP Coordinator for location(s).
Generator	Yes	Contact EAP Coordinator for location(s). Contact Grand Rental Station for additional generators (see Table 5-2).
Extension Cords	Yes	Contact EAP Coordinator for location(s).
Fire extinguishers	Yes	Contact EAP Coordinator for location(s).
Floodlights	Yes	Contact EAP Coordinator for location(s). Contact Grand Rental Station for additional emergency lighting (see Table 5-2).
Backhoe	Yes	Backhoe/tractor and 650 John Deere Track hoe available. Contact EAP Coordinator for location(s).
Dozer	Yes	D7 & D10 Crawler Tractors and two rubber-tired dozers (844B & 834B). Contact EAP Coordinator for location(s).
Dump Truck	Yes	Contact EAP Coordinator for location(s).
Large Equipment Rental (excavating equipment, large earth moving, etc.)	Occasionally	Contact EAP Coordinator for availability and location(s). Contact United Rentals (see Table 5-2) and/or other nearby large equipment rental providers for additional large equipment as necessary.
Pump and Hoses	Yes	Contact EAP Coordinator for location(s). Contact The Curry Companies or Rain for Rent for high-capacity portable pumps (see Table 5-2).
Sandbags	Yes	Contact EAP Coordinator for location(s). Contact Great Western Bag Co. for additional sandbags (see Table 5-2).
Fill (Stone, aggregate, sand)	Yes	Contact EAP Coordinator for location(s). Contact listed suppliers in Table 5-2 for gravel, sand, and riprap fill as necessary.
Concrete/grout	Yes	Contact EAP Coordinator for location(s). Contact Vandalia Ready Mix and/or Greenville Ready Mix for additional concrete (see Table 5-2).
Geotextile Filter Fabric	Yes	Two rolls of 10-ounce, non-woven filter fabric available. Contact EAP Coordinator for location(s).
Plastic Sheeting	Yes	Contact EAP Coordinator for location(s).
Rope	Yes	Contact EAP Coordinator for location(s). Should be maintained in close proximity to any features that might require immediate access.
Personal Flotation Devices	Yes	Contact EAP Coordinator for location(s).

Table 5-2. Supplier Addresses

Supply/Rental Item(s)	Supplier Contact Information	Distance from Site (miles)	Address
Sandbags	**Great Western Bag Co.** (314) 421-0498 (days) (314) 993-5287 (nights/weekends)	66	1416 N. Broadway St. Louis, MO
Gravel, Sand, & Riprap	**Fuller Brothers Ready Mix** (217) 532-2422	11	935 Ash Street Hillsboro, IL
Gravel, Sand, & Riprap	**Vandalia Sand and Gravel** (618) 283-4029	20	Route 140 Vandalia, IL
Gravel, Sand, & Riprap	**Central Illinois Materials** (618) 283-3259	20	RR 2 Vandalia, IL
Gravel, Sand, Riprap & High-Capacity Portable Pumps	**The Curry Companies** Brian Fenton: (217) 854-3101	40	21149 Route 4 Carlinville, IL
High-Capacity Portable Pumps	**Rain for Rent** Mark ByBee: (618) 931-0901	60	3711 Horseshoe Lake Road Granite City, IL
High-Capacity Portable Pumps	**Linden and Company** (800) 383-4811	145	800 W. Deerbrook Peoria, IL 61615
High-Capacity Portable Pumps	**Heartland Pumps** (618) 985-5110	120	1800 Supply Road, Suite A Carterville, IL 62918
Emergency Lighting, 5,000 to 8,500watt Generators, Concrete Mixers, Compact Excavators, Skid Steers, Portable Pumps, & Plate Compactors	**Grand Rental Station Fairview Heights, IL** (618) 277-7750 (866) 645-0218 (after hours)	60	5612 N. Illinois Street Fairview Heights, IL
Emergency Lighting, 4,000watt Generators, Concrete Mixers, Tractor Backhoes/Loaders, Compact Excavators, Skid Steers, Portable Pumps, & Compactors (Plate & Vibratory)	**Grand Rental Station Litchfield, IL** (217) 324-4000 (866) 645-0218 (after hours)	20	1105 West Weir Street Litchfield, IL 62056
Concrete (Ready Mix Concrete Supplier)	**Vandalia Ready Mix** (618) 283-1600	20	1021 Janette Drive Vandalia, IL 62471
Concrete (Ready Mix Concrete Supplier)	**Greenville Ready Mix** (618) 664-1340	17	1311 S. 4th Street Greeneville, IL 62246
Large Earthmoving Equipment (25,000 to 50,000 lb. Track hoe Excavators & 3.0 to 3.4 CY Wheel Loaders)	**United Rentals** (618) 345-6050	60	5076 Mid America Court Collinsville, IL 62234

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.

The Coffeen Power Plant is located in Montgomery County, Illinois approximately 1.5 miles south of Coffeen, Illinois. The plant is located on the east bank of Coffeen Lake, which is an impoundment created by Coffeen Lake Dam.

The GMF Pond is located northeast of power plant and north of the GMF Recycle Pond. The GMF Pond consists of a single pond formed by an earthen embankment around its perimeter. The earthen embankment crest elevation is currently 13-feet above grade; however, its final design has a crest elevation 100-feet above grade. The final design was used in the breach analysis and corresponding inundation map because the final design is more conservative than existing conditions (larger volume, greater dam height, etc.). The GMF Pond is used to dewater, store and dispose of gypsum from the Power Plant's flue gas desulphurization system. The GMF Pond discharges via a HDPE lined transfer channel into the GMF Recycle Pond. The transfer channel has a trapezoidal cross section with 3H:1V side slopes, a bottom width of 32 feet, a depth of 9-feet, and is 500-feet long.

The GMF Recycle Pond is located northeast of the power plant and south of the GMF Pond. The GMF Recycle Pond consists of a single pond formed by an earthen embankment around its perimeter. The pond is used to dewater, store and dispose of gypsum. It also is used to retain stormwater discharge from the GMF Pond transfer channel. The pool level is controlled by a recycle pump system that is located at the southeast corner. There is an emergency spillway located at the northeast corner that discharges into a creek that runs along the east side of the pond and discharges into the eastern cove of Coffeen Lake (Eastern Cove).

Ash Pond No. 1 is located east of the power plant and consists of a single pond formed by earthen embankments around the perimeter. The pool level is controlled by a recycle pump system that is located at the northwest corner. The emergency spillway consists of a pipe that connects to the top of the recycle pump intake pipe. The emergency spillway discharges into the cooling water discharge channel to the north which feeds into the eastern cove of Coffeen Lake. The stored material settled in the bottom of the pond consists of primarily bottom ash and boiler slag.

Ash Pond No. 2 is located east of the power plant, north of Ash Pond No. 1 and west of the Cooling Water Pond. Ash Pond No. 2 was closed by leaving CCR in place and constructing a final cover system. The boundaries of these impoundments encompass a total area of approximately 60 acres.

Table 6-1. Power Plant Impoundment Characteristics

Feature/Parameter	GMF Pond	GMF Recycle Pond	Ash Pond No.1	Ash Pond No.2
Maximum Embankment Height	13.0 feet	20.0 feet	41.5 feet	28.0 feet
Length of Dam	5,060 feet	3,600 feet	4,300 feet	6,400 feet
Crest Width	20 feet	20 feet	N/A	N/A
Crest Elevation	632.0 feet	629.0 feet	637.5 feet	638.0 feet
Reservoir Area at Top of Dam	37.6 acres	17.0 acres	N/A	N/A
Storage Capacity at Top of Dam	442 acre-feet	324 acre-feet	N/A	N/A
Primary Spillway Type	Trapezoidal Channel	Recycle Pump	Recycle Pump (48” dia. steel intake pipe)	Stormwater let-down structures are now the spillways
Primary Spillway Crest Elevation	623.0 feet	610.0 feet	N/A	N/A
Storage Capacity at Primary Spillway Elevation	1,150 acre-feet	49.7 acre-feet	N/A	N/A
Reservoir Area at Normal Water Surface Elevation	27.0 acres	10.4 acres	N/A	N/A
Auxiliary Spillway Type	None	(3x) 6'x6' conc. risers to (3x) 4’dia. HDPE pipes	N/A	N/A
Auxiliary Spillway Crest Elevation	N/A	624.1 feet	N/A	N/A

Notes:
Elevations are in reference to NAVD88

7 BREACH INUNDATION MAPS AND POTENTIAL IMPACTS

Inundation maps for GMF Pond, GMF Recycle Pond, Ash Pond No.1, and Ash Pond No.2 potential breach scenarios are provided in the following pages. It is the Montgomery 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 inundation maps.

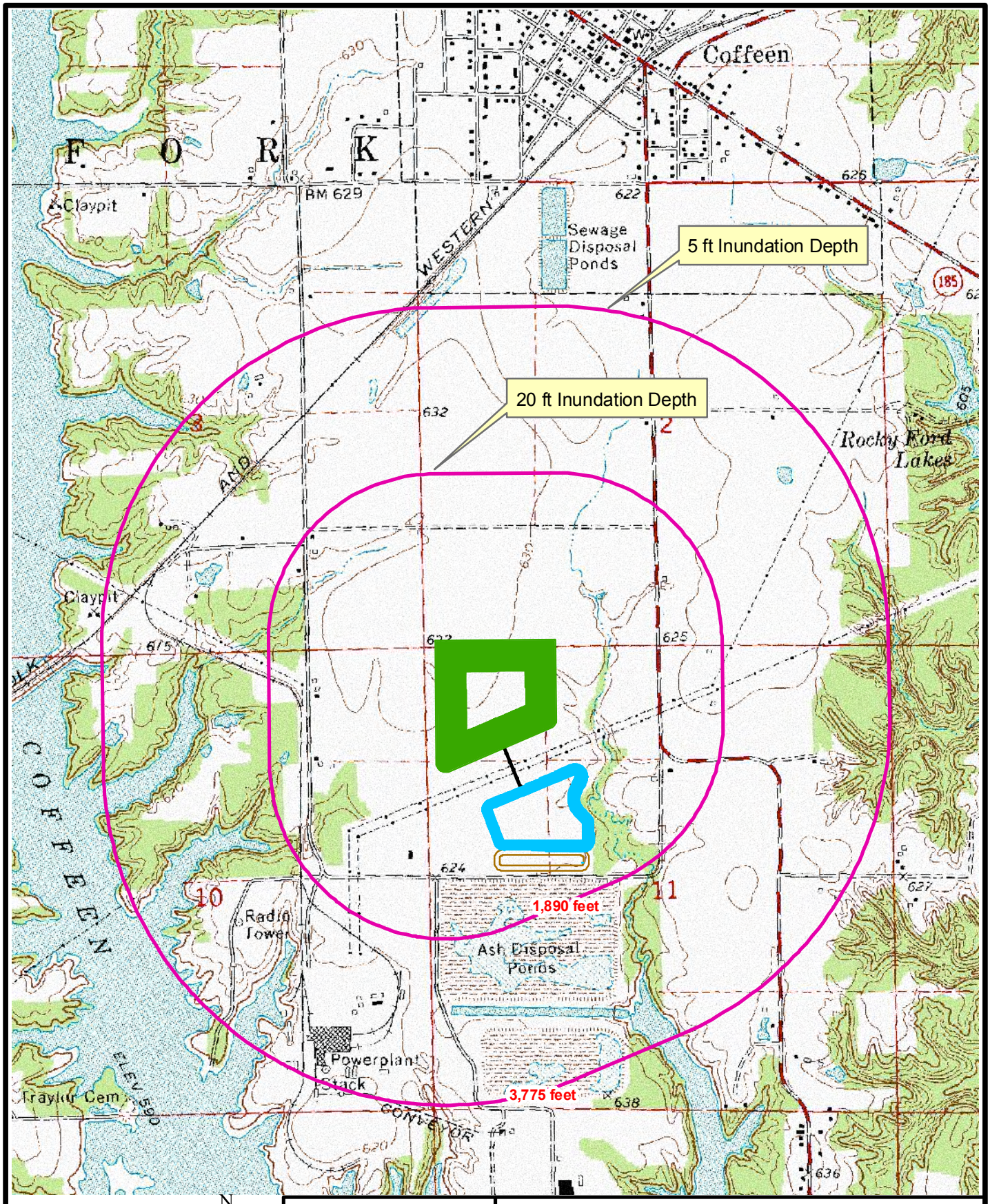
The methodology used to identify probable inundation extents for potential breach scenarios varied as a function of the impoundment size, location, surrounding topography, and surrounding structures/facilities/waterbodies.

The GMF Pond inundation map was developed by Hanson Professional Services Inc. (2007) using final design conditions (100-feet tall and 2,478 acre-feet of stored volume) and an approximate method of computing the inundation limits of gypsum slurry by computing a runout distance on a constant slope. It was assumed that a breach of the earthen perimeter embankment would cause saturated gypsum material to liquefy and release towards downstream areas in a semi-circular pattern. This breach scenario was simulated at multiple locations along the earthen perimeter dike and the corresponding results were used to create the inundation map shown as Figure 7-1.

The GMF Recycle Pond breach analysis consisted of a Probable Maximum Precipitation (PMP) failure scenario at the eastern embankment. The resultant breach discharges were modeled downstream using 1D and 2D capabilities of HEC-RAS. The approximate inundation area is illustrated in the inundation map shown as Figure 7-2.

The Ash Pond No. 1 breach analysis consisted of PMP failure scenarios of the embankment near the northwest and northeast corners of the pond. The breach discharges were modeled downstream using 1D and 2D capabilities of HEC-RAS. The approximate inundation area is illustrated in the inundation map shown as Figure 7-2.

The Ash Pond No. 2 breach analysis consisted of a failure scenario where the stored volume liquefies and breaches the embankment near the southwest corner of the pond. The breach discharge was modeled downstream using 2D capabilities of HEC-RAS. The approximate inundation area is illustrated in the inundation map shown as Figure 7-2.



HANSON
Hanson Professional Services Inc.

GYPSUM BREACH INUNDATION MAP

GYPSUM MANAGEMENT FACILITY
COFFEEN POWER GENERATING STATION
MONTGOMERY COUNTY, ILLINOIS

Job Number 05S3004A | Figure Appendix C - 1

I:\05jobs\05s3004A\GIS\Projects\IDNR-OWR Schematic.mxd

GMF Recycle Pond

Ash Pond No. 2

Ash Pond No. 1

Coffeen Power Plant

Coffeen Lake

Coffeen Lake Dam

N

E 14th Rd
Mentors Ln
629 ft
Norfolk Southern
N 4th Ave
Arrow Trl
630 ft
Walnut Grove Rd
695 ft
Ticky Point Trl
E 450th Rd
Cips Trl
N Ash
Odell Ln
Coyote Ln
650 ft
651 ft
600 ft
Battle Trl
Red Bail Trl
701 ft
Durbin Ln
E 19th Rd
Gansel Ln
N 3rd Ave
Jakes Ln

Legend

- CCR Surface Impoundment Boundary
- 100-year Storm Event Inundation Approximate Limits
- Expected Breach Inundation Area

0 2,000 Feet

1:24,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois West FIPS 1202 Feet
2. Aerial Source: 2015 NAIP Imagery
3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

Stantec DYNEGY

Project Location
Latitude: 39.059113
Longitude: -89.403293
Montgomery County, Illinois

175605019
Prepared by RMGB on 3/29/2017
Technical Review by NS on 3/29/2017
Independent Review by MM on 3/29/2017

Client/Project
Coffeen Power Station
Emergency Action Plan

Figure No.
7-2

Title
Inundation Map
GMF Recycle Pond, Ash Pond No.1, Ash Pond No.2

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