COAL ASH IMPOUNDMENT
SITE ASSESSMENT FINAL REPORT

E.D. Edwards Power Generating Station
Ameren Energy Generating Company
Bartonville, Illinois

Prepared by:

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KLEINFELDER PROJECT NUMBER 112618-2

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I acknowledge that the management units referenced herein:

- E.D. Edwards Power Generating Station Cooling Pond
- E.D. Edwards Power Generating Station Ash Pond
- E.D. Edwards Power Generating Station Clarification Pond

were assessed on August 12, 2010.

Signature: Brian T. Havens Date: 5/10/11

Brian T. Havens, PE
Lead Geotechnical Engineer

EXECUTIVE SUMMARY

Background information taken from the U. S. Environmental Protection Agency's (EPA's) website:

> "Following the December 22, 2008 dike failure at the TVA/Kingston, Tennessee coal combustion waste (CCW) ash pond dredging cell that resulted in a spill of over 1 billion gallons of coal ash slurry, covered more than 300 acres and impacted residences and infrastructure, the EPA is embarking on an initiative to prevent the catastrophic failure from occurring at other such facilities located at electric utilities in an effort to protect lives and property from the consequences of a impoundment or impoundment failure of the improper release of impounded slurry."

As part of the EPA's effort to protect lives and the environment from a disaster similar to that experienced in 2008, Kleinfelder was contracted to perform a site assessment at the E.D. Edwards Power Generating Station that is owned and operated by Ameren Energy. This report summarizes the observations and findings of the site assessment that occurred on August 12, 2010.

The coal combustion waste impoundments observed during the site assessment included:

- Cooling Pond – Commissioned in the early 1960's.
- Ash Pond – Commissioned in in the early 1960's.
- Clarification Pond – Commissioned in the early 1960's.

Preliminary observations made during the site assessment are documented on the Site Assessment Checklist presented in Appendix A. A copy of this checklist was transmitted to the EPA following the field walk-through. A more detailed discussion of the observations is presented in Section 4, "Site Observations."

The cooling pond, ash pond, and clarification pond impoundments are not regulated by any state agency and therefore do not currently have a designated hazard potential classification. Due to the potential environmental and economic impacts that a failure of the west or south embankment of these impoundments would present to the Illinois River, it is recommended that a Hazard Potential Classification of "Significant" be assigned to all three impoundments.

Overall, the site is reasonably well maintained and operated with a few areas of concern as discussed in Section 6, "Recommendations."

On the date of this site assessment, there appeared to be no immediate threat to the safety of the impoundment embankments. No assurance can be made regarding the impoundment

condition after this date. Subsequent adverse weather and other factors may affect the condition.

A brief summary of the Priority 1 and 2 Recommendations is given below. A more detailed discussion is provided in Section 6, “Recommendations.”

Priority 1 Recommendations

1. Prepare an EAP for the facility.
2. Perform a hydrologic and hydraulic study.
3. Review stability and seismic analyses that are being prepared by Ameren Energy.
4. Evaluate the depth and rate of movements of the west slope.
5. Monitor potential erosion in creek.
6. Perform video assessments of culvert piping.
7. Control vegetation on the upstream and downstream slopes.

Priority 2 Recommendations

1. Repair erosion of embankments.
2. Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities.
3. Monitor groundwater levels.

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SECTION 1 – INTRODUCTION

1.1 General

This report has been prepared for the United States Environmental Protection Agency (EPA) to document Kleinfelder's findings and observations from a site assessment of the cooling pond, ash pond, and clarification pond impoundments at the E.D. Edwards Power Generating Station on August 12, 2010.

The following sections present a summary of data collection activities, site information and performance history of the facility's ponds made available by the owner (Ameren Energy), a summary of site observations, and recommendations resulting from the site assessment.

1.2 Project Location

The E.D. Edwards Power Generating Station is located on the western bank of the Illinois River approximately four miles south of Bartonville, Illinois. The generating station is located in Peoria County at approximately latitude 40° 35' 37'' and longitude -89° 39' 50''. The area around the plant is a relatively flat to gently rolling rural agricultural area with some urban development nearby.

1.3 Site Documentation

Ameren provided the following documents during the time of this assessment to aid in the review of the impoundments:

- Design Nine, Inc., Proposed 150 Car Loop Track for Edwards Power Plant, 25 sheets, November 20, 2003
- Ameren, Inspection Form for Dams, Levees and Ponds at Ameren Facilities, March 29, 2010
- Surdex Corporation, Edwards Power Station (Airphoto), December 1, 2009
- Commonwealth Associates, Inc., Plant Site Fill-Foundation Wall Backfill, June 3, 1958
- Commonwealth Associates, Inc., Construction Through Levee-General Plan Views, June 30, 1960
- Commonwealth Associates, Inc., Construction Through Levee and Circulating Water Ducts General Layout, July 8, 1958
- Commonwealth Associates, Inc., Drawings to Accompany Application for Permit from Corps of Engineers, June 30, 1960

- Commonwealth Associates, Inc., Plant Site Fill-Stage #1, May 6, 1958
- Commonwealth Associates, Inc., Plant Site Fill-Stage #2, May 6, 1958
- Commonwealth Associates, Inc., Plant Site Fill-Stage #3 Final Arrangement, May 6, 1958
- Commonwealth Associates, Inc., Plant Site Fill-Stage #1 Continuation, May 6, 1958
- Commonwealth Associates, Inc., Plant Site Fill-Depressions in Fill for Yard Foundations, June 30, 1960

SECTION 2 – SITE ASSESSMENT

2.1 Attendees

The site assessment was performed on August 12, 2010 by Brian Havens, PE (Illinois) and Matt Gardella, EIT of Kleinfelder. Other persons present during the site assessment include:

- Paul Pike – Ameren Energy
- Michael Wagstaff – Ameren Energy
- William Henning – Ameren Energy
- Mark Davis – Ameren Energy
- Craig Dufficy – United States Environmental Protection Agency

2.2 Impoundments Assessed

The coal combustion waste impoundment observed during the site assessment was commissioned in the early 1960's and included several cells as follows:

- Cooling Pond
- Ash Pond
- Clarification Pond

Preliminary observations made during the site assessment are documented on the Site Assessment Evaluation Checklist presented in Appendix A. A more detailed discussion of the observations is presented in Section 4.

2.3 Weather during Inspection

The weather experienced during the field walk-through was sunny and clear with high humidity. Temperatures ranged from 95^{o} to 100^{o} F, and wind ranged from 0 to 5 miles per hour (mph).

3.1 Site Information and History

The E.D. Edwards Power Generating Station is a coal-fired facility that has been in operation since 1951. The facility currently sluices bottom ash, fly ash, and boiler slag (by-products of coal fired energy generation) into two separate cells within the impoundment. These impoundments are referred to as the "Cooling Pond" and the "Ash Pond." After being sluiced into the cooling pond or the ash pond, the power plant process water containing the fly ash and bottom ash is then diverted into another cell within the impoundment. This cell is referred to as the "Clarification Pond" and from here is discharged into the Illinois River. An aerial image of these impoundments can be seen in Figure 2. These cells act as settling basins for the bottom ash, fly ash, and boiler slag contained in the process water before it is released back into the Illinois River. Bottom ash, fly ash, and boiler slag residuals at the site are eventually removed from the various impoundments and disposed of either in a landfill or through use in the Red Amber Mine reclamation project. **Please note that the impoundment at this site is a single pond divided into three cells and that the term "impoundment" as used in this report is typically describing only one cell within the entire impoundment. We understand that the interior dikes are of ash construction. This configuration has evolved based on operational requirements for removal of bottom ash and fly ash from the impoundment.**

The cooling pond is a combination earthen embankment and incised impoundment. Sluice pipes transporting boiler slag and other solids from power generating operations outlet at the northeastern corner of the cooling pond. While impounded in the cooling pond, the majority of solids contained in the sluiced water are allowed to drop out of suspension and the process water is then allowed to flow into the clarification pond intake channel via a 24-inch CMP at the southwest corner of the pond. There is not a spillway associated with the cooling pond.

The fly ash pond is a combination earthen embankment and incised impoundment. Multiple bottom ash and fly ash slurry pipes inlet at the northeast corner of the pond. These pipes spill directly into a small diversion pool that directs the bottom ash and fly ash slurry into one of two settling channels (depending on plant operations) via CMP pipes. These settling channels are created by internal dikes made up of fly ash and bottom ash that have been placed within the ash pond. These channels provide a lengthened flow path for the slurries, which in turn allow a higher time of concentration for the process water. This longer time of concentration allows more time for suspended solids to drop out of the process water before the water is directed into the clarification pond intake channel via a CMP culvert. Once one of the fly ash pond settling channels fills with fly and bottom ash solids, process water is directed into the other fly ash pond settling channel. This allows the channel that has become full of fly and bottom ash residuals to be dried and cleared of ash, which is hauled off site for disposal, while the other channel continues to handle the process

water. This operation can then be repeated as necessary. There is not a spillway associated with the ash pond.

The clarification pond is a combination earthen embankment and incised impoundment. Power plant process water containing low level concentrations of bottom ash, fly ash, and boiler slag is directed from both the fly ash pond and cooling pond into the clarification pond by an intake channel on the northwest side of the pond. Once the process water enters the clarification pond, the remaining solids are allowed to drop out of suspension before being discharged to the Illinois River via the outlet structure on the eastern side of the pond. This outlet structure consists of an intake riser connected to a 36-inch bituminous coated CMP that runs east to the Illinois River. The intake structure for the outlet works has a fixed intake elevation, and discharge flow is regulated by a sluice gate. The outlet pipe is protected from backflow via a flap gate on the discharge location as well as the sluice gate. There is not a spillway associated with the clarification pond.

Prior to the current operational layout at the E.D. Edwards Power Generating Station, there had been additional fly ash and bottom ash impoundments at the site that were utilized until the current layout had been established in 1960. The old impoundment, located immediately east of the current cooling pond, was filled in and is now located under the switch yard.

Also, prior to the current operational layout at the E.D. Edwards Power Generating Station, the rail spurs used for coal delivery to the plant had been organized differently. Prior to the current layout, trains delivering coal to the site had to stop, break the train into groups of cars, unload the cars at the dumper house, then move the cars and dump the next group. In November 2003, plans were issued for construction to raise the embankment surrounding the cooling pond, ash pond, and clarification pond and construct a railroad loop track on the crest of the raised embankment. This would allow trains delivering coal to simply pull forward to the unloading area and unload cars as the train makes its way around the loop. This eliminated the need for unhooking cars and thus increased efficiency.

3.2 Pertinent Data

A. GENERAL

1. Name ..... E.D. Edwards Power Generating Station
2. State ..... Illinois
3. County ..... Peoria
4. Latitude ..... 40^{o} 35’ 37”
5. Longitude ..... -89^{o} 39’ 50”
6. River used for operations ..... Illinois River
7. Year Constructed 1960
8. Modifications ..... Railroad embankment modifications - all impoundments
9. Current Hazard Potential Classification ..... None
10. Proposed Hazard Potential Classification ..... Significant
11. Size Classification (See Section 7) ..... Intermediate

B. IMPOUNDMENT DETAILS

Cooling Pond

1. Type ..... Earthen Diked/Incised Combination
2. Crest Elevation ..... 455± feet with Railroad Modifications at 462[1] feet
3. Crest Width ..... 14 feet
4. Embankment Height ..... ~25 feet
5. Upstream Slope 2H:1V
6. Downstream Slope 2H:1V

Ash Pond

1. Type ..... Earthen Diked/Incised Combination
2. Crest Elevation ..... 455± feet with Railroad Modifications at 462[1] feet
3. Crest Width ..... 14 feet
4. Embankment Height ..... ~25 feet
5. Upstream Slope 2H:1V
6. Downstream Slope 2H:1V

Clarification Pond

1. Type ..... Earthen Diked/Incised Combination
2. Crest Elevation ..... 455± feet with Railroad Modifications at 462[1] feet
3. Crest Width ..... 8 feet
4. Embankment Height ..... ~25 feet
5. Upstream Slope 2H:1V
6. Downstream Slope 2H:1V

C. DRAINAGE BASIN

1. Area of Drainage Basin ..... Minimal/Unknown
2. Downstream Description ..... Rural agricultural areas with small towns

D. IMPOUNDMENT CAPACITY AND INLET

Cooling Pond

1. Impoundment Capacity ..... Combined capacity of all ponds/cells is approx. 1800 acre-ft
2. Impoundment Inlet ..... Inlet sluice pipe from the generating station

Ash Pond

1. Impoundment Capacity ..... Combined capacity of all ponds/cells is approx. 1800 acre-ft
2. Impoundment Inlet ..... Multiple inlet sluice pipes from the generating station

Clarification Pond

3. Impoundment Capacity ..... Combined capacity of all ponds/cells is approx. 1800 acre-ft
4. Impoundment Inlet ..... Culvert inlets from Ash Pond and Cooling Pond

E. PRIMARY SPILLWAY

Cooling Pond

1. Description ..... N/A – No Spillway Present

Ash Pond

1. Description ..... N/A – No Spillway Present

Clarification Pond

1. Description..... N/A – No Spillway Present

F. OUTLET WORKS

Cooling Pond

1. Description..... ~24-inch CMP to the intake channel for the clarification pond
2. Location ..... Near southwest corner of the cooling pond
3. Intake Structure..... None – CMP stubbed through embankment without flared end section
   a. Intake Invert Elevation..... Unknown
4. Discharge Conduit ..... CMP
   a. Length ..... ~80 feet
   b. Diameter ..... ~24 inches
5. Outlet Structure ..... None – CMP stubbed through embankment without flared end section
   a. Outlet Invert Elevation..... Approx. 449.4[1] feet
   b. Energy Dissipation ..... None
6. Discharge Channel ~10-foot-wide channel that empties into the Clarification Pond Intake Channel
7. Discharge Capacity with Water Surface at Top of Bank..... Unknown

Ash Pond

1. Description..... 24” CMP culvert to Clarification Pond (1 per fly ash settling channel)
2. Location ..... Near west embankment of the fly ash settling channels
3. Intake Structure..... None – CMP stubbed through embankment without flared end section
   a. Intake Invert Elevation..... Unknown
4. Discharge Conduit ..... CMP
   a. Length ..... Approximately 100 feet
   b. Diameter ..... Approximately 24 inches
5. Outlet Structure ..... None – CMP stubbed through embankment without flared end section
   a. Outlet Invert Elevation..... Approx. 447.1[1] feet
   b. Energy Dissipation ..... None
6. Discharge Channel ~20-foot-wide channel that empties into the Clarification Pond Intake Channel
7. Discharge Capacity with Water Surface at Top of Bank..... Unknown

Clarification Pond

1. Description..... 36” CMP Riser with belled “morning glory” inlet
2. Location ..... Near east embankment (app. 50 feet from the edge of the pond)
3. Intake Structure..... Pipe riser with belled inlet (fixed intake elevation)
   a. Intake Invert Elevation..... 447.2 feet
4. Discharge Conduit ..... 36” CMP with internal bituminous coating
   a. Length ..... Approx. 1,100 feet
   b. Diameter ..... 36 inches
5. Outlet Structure ..... 36” CMP connected to a slide gate and flap gate
   a. Outlet Invert Elevation..... 447.1
   b. Energy Dissipation ..... Unknown
6. Discharge Channel ..... ~20-foot-wide channel that discharges into the Illinois River
7. Discharge Capacity with Water Surface at Top of Bank..... Unknown

G. MANAGEMENT

1. Owner ..... Ameren Energy
2. Purpose ..... Coal-fired energy generation

Note: 1. Elevations were obtained from the Operations and Maintenance manual provided by Ameren Energy.

3.3 Regional Geology and Seismicity

The plant site is situated in the Illinois River Valley. As such, the subsurface conditions are expected to include Quaternary alluvial deposits overlying sedimentary bedrock. Based on the available data, it is uncertain whether the regional glacial deposits are present at the plant site between the alluvium and the bedrock.

Based on our review of historical soil borings and information from the Web Soil Survey, it appears that the upper alluvial deposits at the site include combinations of silty clay and clayey silt. Based on our review of data published by the United States Geological Survey (USGS), the sedimentary rock formations in Peoria County include shale, sandstone, and limestone.

The plant site is situated in a Seismic Zone 1 area. We have noted that the New Madrid Fault has a documented history of seismic activity but is located more than 200 miles south of the plant site.

3.4 Hydrology and Hydraulics

The cooling pond, ash pond, and clarification pond are situated in such a manner that the watershed drainage contributing to the stored volume of the ponds appears to be minimal and most likely limited to stormwater runoff from the immediate plant site east of the impoundments and precipitation that falls within the impoundments themselves. However, the exact extents of the watershed cannot be determined without a current topographic survey of the site and of the impoundments themselves.

During the site assessment, no documents relating to a hydrologic study, hydraulic design calculations and assumptions, or impoundment break analyses were provided for review. It is unknown what the designed inflow, capacity of the ponds, freeboard, or other important components of the impoundment designs are without these studies and documents.

The outlet works of the clarification pond and other impoundments appear to be functioning as intended. Based on discussions with Ameren Energy, we noted that the outlet works had, at times, been required to stop discharging water from the clarification pond to the Illinois River, when the Illinois River was at flood levels. Kleinfelder understands that the longest amount of time that the outlet works were required to remain shut was approximately three weeks. During this time, the E.D. Edwards Power Station continued to operate and sluice fly ash, bottom ash, and boiler slag into the various impoundments. According to Ameren Energy, the impoundments did not overtop and maintained adequate freeboard during the three weeks that discharge to the river was not possible.

3.5 Geotechnical Considerations

Kleinfelder understands that embankment stability analyses are currently being completed for each of the cells by another consultant retained by Ameren Energy. In addition, two zones of embankment slope instability were reported on the widened western embankment (widened for rail spur construction). Specifically, one zone of surface instability was reported by Ameren Energy near the north end of the west embankment and was apparently stabilized and covered with riprap. Another zone of surface instability was reported by Ameren Energy on the west embankment. We observed the surface scarp and were informed that Ameren continues to monitor the scarp for signs of additional movement. Ameren reported that this slope failure is located in an area where the original embankment was widened with a combination of soil and ash from the plant.

Kleinfelder understands that seepage has been previously observed by Ameren Energy along the western embankment and that the seepage was believed to be caused by overtopping of the clay core of the original embankment. We understand that Ameren Energy lowered the pond levels to limit the risk of additional seepage in this area. We also understand that possible seepage was observed along the east embankments in the coal yard, but the extent of seepage is difficult to determine due to the presence of surface water runoff in this area from the coal pile.

3.6 Structural Considerations

General

Kleinfelder understands that there are three major CMP inlets and outlets within the three ponds that are approximately 36 inches in diameter. CMP pipes can deteriorate and corrode with time in some situations. Video inspection would be useful to determine the condition and functionality of these pipes but was not available for our review. Based on the provided as-built information, no analysis was present for review of the CMP pipes within the facility. Further evaluation is recommended to ensure the integrity of the inlets and outlets.

Documentation of the structural portions of the impoundments under seismic loading was not available for our review. Although the plant site is located in a zone of relatively low risk for damaging seismic activity, evaluation of the structural components of the impoundments under applicable seismic loading conditions merits consideration.

Clarification Pond

The clarification pond includes an outlet structure with a catwalk access platform. As-built drawings for this structure were not available for our review, so we were unable to make a structural evaluation of the access platform. According to an inspection conducted in March 2010, the outlet structure was stated as being in good condition. Based on our visual assessment, the catwalk bridge access portion appears to be in good condition, and the outlet superstructure within the pond appears to be intact with minor corrosion.

3.7 Performance History

There have been no previous federal or state inspections of the ash pond impoundments at the E.D. Edwards Power Generating Station. Ameren Energy's local plant personnel perform weekly inspections of the impoundments with annual inspections by Ameren Energy's Impoundment Safety team. Based on observations made by Ameren Energy personnel during their in-house inspections, there have been no major incidents involving the cooling pond, fly ash pond, or clarification pond.

3.8 Hazard Potential Classification

The cooling pond, ash pond, and clarification pond impoundments are not regulated by any state agency and therefore do not currently have a designated Hazard Potential Classification. Due to the potential environmental and economic impacts that a failure at any of these impoundments would present by breaching their embankments, it is recommended a Hazard Potential Classification of "Significant" be assigned to both impoundments. A "High" Hazard Potential Classification was not assigned to the impoundments, because loss of life would not be likely in the event of a failure. A loss of life scenario is not expected as the impoundments are located in an area without any homes, recreational facilities, businesses, roads, or other structures immediately downstream. However, a hazard classification analysis is needed to determine the hazard classification of the impoundments.

3.9 Site Access

Following a security point check-in to gain permission for access from Ameren Energy personnel, the owner's representative lead the assessment team to the impoundments. The impoundments can be accessed by a standard vehicle under normal weather conditions.

The upstream and downstream embankment slopes, embankment crest, downstream toes, and outlet works of the cooling pond, ash pond, and clarification pond were observed during the August 12, 2010 site assessment. A brief summary of the features observed is presented below.

A copy of the Site Assessment Evaluation Checklist generated during the field walk-through for each impoundment is provided in Appendix A.

4.1 Cooling Pond

4.1.1 Upstream Slope

Overall, the upstream slope of the impoundment was in fair condition. Photos 33 and 34 in Appendix B show the conditions of the upstream slope. Specific observations include:

- The upstream slope was laid back at approximately 2H:1V.
- Minor erosion, less than 6 inches, was noted on some of the upstream slopes, especially in areas where new fill had been added to widen haul routes at the north end of the pond.
- Vegetation was present on the majority of the upstream slope. However, vegetation with stem diameters greater than one inch was not noted during the inspection.
- Mowing/vegetation control had not been completed on the majority of the upstream slope.

4.1.2 Crest

Overall, the crest of the impoundment was in satisfactory condition. Photos 41 and 42 show the condition of the crest. Specific observations include:

- The impoundment crest consists of a graded fill used as a haul route for plant operations and removal of fly ash, bottom ash, and boiler slag residue. The crest is also used for a railroad line that is utilized in the delivery of coal for the facility.
- Overall, the crest was clear of all vegetation with only some sparse grasses and minimal bushes observed on the crest.
- No major depressions or rutting were noted on the impoundment crest.
- A chain link fence is located on the eastern side of the cooling pond at the crest. The chain link pole penetrations are at least 40 feet away from the upstream slope of the impoundment.
- Minor erosion was noted on crest in limited locations. This erosion was typically less than six inches and depth and typically appeared on the edges of the crest, where grade breaks occurred when transitioning to embankment

slopes. Typically, this erosion was noted at the northern edge of the pond, where additional fill had been used to widen the haul route.

4.1.3 Downstream Slope

Overall, the downstream slope was in fair to poor condition. Photos 36 through 40 show the conditions of the downstream slope. Specific observations include:

- Erosion, some areas greater than 6 inches, was noted on some of the downstream slope.
- Penetrations into the downstream embankment, including manholes, were present.
- A large scarp, approximately two feet in depth, was present for a significant portion of the western embankment slope.
- Grasses and woody bushes were observed on the downstream slope.

4.1.4 Downstream Toe Area

The toe areas of the embankment were in fair to poor condition. Key features and observations of these areas include:

- Grasses and woody bushes were observed on the downstream slope for the majority of the western embankment.
- A stormwater ditch was present at the western embankment downstream toe with water that was constantly flowing during the inspection.

4.1.5 Outlet Works

The outlet works of the cooling pond consist of a 24-inch CMP culvert at the southwestern corner of the impoundment that discharges into the clarification pond intake channel. The culvert does not include a trash rack and has a pool gauge located in its vicinity.

- The intake location of the outlet pipe was surrounded with riprap.
- The CMP appears to be in newer condition with no visible rust or other damage.
- No video monitoring of the CMP culvert was available at the time of inspection.
- Overall, the outlet works system appears to be functioning as intended at this time.

4.1.6 Impoundment Inlet

Inflow into the cooling pond is via metal piping on the northeastern corner of the impoundment, as well as stormwater runoff that flows naturally into the pond. From this inlet location, the boiler slag and process water slurry flow through an

interior settling channel and into the larger storage pool of the impoundment. The inlet pipe appears to be in satisfactory condition.

4.2 Ash Pond

4.2.1 Upstream Slope

Overall, the upstream slope of the impoundment was in satisfactory condition. Photo 4 in Appendix B shows the conditions of the upstream slope. Specific observations include:

- The upstream slope was laid back at approximately 2H:1V.
- Grasses and woody bushes were observed on the upstream slope. No vegetation with a stem diameter greater than 1 inch was noted during the inspection.
- Grasses, bushes, and woody debris were observed on the slope.
- Penetrations into the ash pond embankment were noted on the upstream slope. These penetrations were in the form of various stormwater pipes.
- Minor erosion, less than 6 inches, was noted during the inspection on the upstream slopes.

4.2.2 Crest

Overall, the crest of the impoundment was in satisfactory condition. Photos 3 through 5 show the condition of the crest. Specific observations include:

- The impoundment crest is a gravel road with railroad tracks over the majority of the western embankment.
- Sparse grasses and bushes were observed on the crest.
- No major depressions or rutting were noted on the impoundment crest.
- Minor erosion was noted on crest in multiple locations. This erosion was typically less than six inches in depth and typically appeared on the edges of the crest, where grade breaks occurred when transitioning to embankment slopes.

4.2.3 Downstream Slope

Overall, the downstream slope was in fair condition. Photos 44 and 45 show the conditions of the downstream slope (at the sheet pile wall portion). Specific observations include:

- Grasses and woody bushes were observed on the downstream slope and at the toe of the embankment for a large portion of the impoundment.
- Typically, the embankment was very close to the natural ground elevation and only elevated from the natural ground elevations in some locations.
- Typically, the embankment was well maintained with what appears to be regular mowing and grading operations.

- A sheet pile wall was located on the east side of the east embankment to separate the impoundment from the coal stockpile area.

4.2.4 Downstream Toe Area

The toe areas of the embankment were in fair condition. See photos 44 and 45 for the condition of these areas. Key features and observations of these areas include:

- Minor possible seepage from the impoundment was noted at the base of the sheet pile wall. This seepage could also be surface water runoff seeping through the coal stockpile.
- The toe area had a few locations where vegetation and woody growth were noted.

4.2.5 Outlet Works

The outlet works of the fly ash pond consist of two 24-inch CMP culverts - one at the end of each fly ash settling channel. Both culverts discharged into the clarification pond intake channel on the western side of the impoundment. Key features and observations of the outlet works include:

- The uncontrolled CMP pipe discharged into a small bay of the clarification pond inlet channel. The embankment surrounding this outlet was heavily vegetated, but no vegetation over 1 inch in diameter was noted.

4.2.6 Impoundment Inlet

Inflow into the Fly Ash Pond occurs through multiple inlet pipes on the northeastern corner of the impoundment that discharge into a diversion pool. From this diversion pool, flow can be directed into one of two ash settling channels as discussed in Section 3.1. The inlet pipes and pipes connecting the diversion pool to the ash settling channels appear to be in functional condition.

4.3 Clarification Pond

4.3.1 Upstream Slope

Overall, the upstream slope of the impoundment was in fair condition. Photos 7, 13, and 22 in Appendix B show the conditions of the upstream slope. Specific observations include:

- The upstream slope was laid back at approximately 2H:1V
- Minor erosion, less than 6 inches, was noted on some of the upstream slopes.
- Grasses and woody bushes were observed on the upstream slope for the majority of the impoundment.

- Mowing/vegetation control had not been completed on the majority of the upstream slope.
- The majority of the upstream slope was protected by riprap that extended below the water surface during the time of inspection.

4.3.2 Crest

Overall, the crest of the impoundment was in fair condition. Photos 11 through 14 show the condition of the crest. Specific observations include:

- The impoundment crest is a combination of a gravel road, railroad track embankment, and vegetated embankment.
- Grasses and bushes were observed on the crest.
- No major depressions or rutting were noted on the impoundment crest.
- Some significant erosion, greater than 6 inches, was noted on the crest in multiple locations. This erosion typically appeared on the edges of the crest where grade breaks occurred when transitioning to embankment slopes.
- Lack of vegetation was noted in multiple locations along the crest.

4.3.3 Downstream Slope

Overall, the downstream slope was in fair condition. Photos 8, 9, 12, 15 through 25, and 28 show the conditions of the downstream slope. Specific observations include:

- The downstream slope was laid back at approximately 2H:1V
- There were areas of riprap slope protection present on the downstream slope. This riprap had been vegetated in some locations but was mostly clear of vegetation.
- Significant erosion, greater than 6 inches deep, was noted on some of the downstream slopes, particularly on the southern embankment of the impoundment.
- Grasses and woody bushes were observed on the downstream slope and at the toe of the embankment for the majority of the impoundment.
- Penetrations into the downstream slope included manholes and power line poles.

4.3.4 Downstream Toe Area

The toe areas of the embankment were in fair to poor condition. See photos 8, 9, and 15 for the condition of these areas. Key features and observations of these areas include:

- A flowing creek was present immediately at the toe of the west embankment.
- The toe area had grasses, some bushes, and multiple small trees.

- On the toe of the southern and eastern embankments, vegetation had been cleared for at least 15 feet from the toe and the area had been recently mowed.
- Minor erosion, less than 6 inches deep, was noted at some locations of the southern embankment toe.

4.3.5 Outlet Works

The outlet works of the clarification pond consist of a metal pipe riser with a belled end section, located near the eastern embankment of the impoundment. The outlet was accessible via a metal catwalk that terminated directly above the intake riser. The metal pipe riser is set at elevation 447.2 feet and cannot be adjusted. The intake pipe riser connects to a 36-inch CMP that discharges into the Illinois River. A manually-operated sluice gate is present on the 36-inch CMP. The discharge pipe includes a flap gate to prevent water from back flowing into the clarification pond during times of flooding on the Illinois River.

- We understand that video monitoring of the 36-inch CMP had been recently performed, but the video was unavailable at the time of inspection.
- Overall, the outlet works system appears to be functioning as intended at this time.

4.3.6 Impoundment Inlet

Inflow into the clarification pond is via the intake channel on the northwestern side of the impoundment as well as stormwater runoff that flows naturally into the pond. The inlet channel can be seen in photos 27 and 33 of Appendix B. The inlet pipes from both the ash pond settling channels and cooling pond appear to be in satisfactory condition.

4.4 Other

Internal dikes of the fly ash pond cells appear to be laid back at approximately a 2.5H:1V slope. Surface erosion up to 12 inches in depth can be seen along the crest and slope of the majority of the internal dikes. Sparse vegetation can be observed on the slopes of the dikes but provides little or no protection against surface erosion.

During the inspection it was inquired if Ameren Energy had developed an Emergency Action Plan (EAP) documenting what specific actions and personnel should be implemented or contacted in the case of an emergency at the plant. Currently, there is not an EAP for the impoundment.

Ameren Energy has developed an Operation and Maintenance (O&M) manual for the E.D. Edwards Power Generating Station. This O&M manual documents day-to-day operation of the plants impoundments, how to monitor instrumentation of the ponds, and what actions should correspond with those measurements.

5.1 Analysis and Conclusions

Our analysis is summarized in three general considerations that are presented as follows:

Safety of the Impoundments Including Maintenance and Methods of Operation

Kleinfelder understands that the impoundments have a history of safe performance. However, the future performance of these impoundments will depend on a variety of factors that may change over time, including surface water hydrology, changes in groundwater levels, changes in embankment integrity, etc. Kleinfelder has noted several items, as follows, that present some concern in this regard:

- Trees exist at some locations on embankment slopes.
- An Emergency Action Plan (EAP) is not currently in place at the site to mitigate damage in the event of an emergency related to failure of the impoundment(s).
- Analyses of the slope stability for the embankment and groundwater conditions are not currently available for our review. However, we understand that analyses are in the process of being developed.
- Documentation of the impoundment capacity under potential hydrologic and hydraulic loading is not currently available for review.

Changes in Design or Operation of the Impoundments Following Initial Construction

The primary change in design of the impoundments involves construction of the rail loop around the perimeter of the ash ponds. Construction of this loop involved widening of the perimeter embankments at several locations around the ash ponds. Kleinfelder understands that the embankments were widened with a combination of soil and ash from the plant. The widened portion of the west embankment has experienced some sloughing as noted earlier in this report. The embankment widening also involved filling a portion of the south part of the clarification pond.

Adequacy of Program for Monitoring Performance of the Impoundments

The present monitoring program primarily involves visual inspections by plant personnel and by the Ameren Energy Dam Safety Group. These visual inspections seem to be adequate to address issues, such as surface erosion and general condition of the impoundments. However, a more detailed monitoring program is recommended to be established to quantify various important factors associated with embankment stability. Those factors include, but are not limited to, seepage quantities through the embankment, the amount of sediments carried by the seepage water, and the fluctuation of ground water levels.

5.2 Summary Statement

I acknowledge that the management unit(s) referenced herein was personally inspected by me and found to be in the following condition:

FAIR

Signature: Brian T. Havens Date: 5/10/11

Brian T. Havens, P.E.
Lead Geotechnical Engineer

6.1 Definitions

Priority 1 Recommendation: Priority 1 Recommendations involve the correction of severe deficiencies where action is required to ensure the structural safety and operational integrity of a facility that may threaten the safety of the impoundment.

Priority 2 Recommendation: Priority 2 Recommendations occur when action is needed or required to prevent or reduce further damage or impair operation and/or improve or enhance the O&M of the facility, that do not appear to threaten the safety of the impoundment.

Based on observations during the site assessment, it is recommended that the following actions be taken at the Meredosia Power Generating Station.

6.2 Priority 1 Recommendations

1. **Prepare an EAP for the facility by 8/1/2011.** An Emergency Action Plan (EAP) should be prepared for all of the impoundments as well as any other pertinent features at the facility. The EAP should be added to the current O&M Manual but should also function as a stand-alone document. The EAP should be reviewed by the EPA.
2. **Perform a hydrologic and hydraulic study by 8/1/2011.** This study should be performed to determine if the existing ponds are capable of impounding the appropriate stormwater inflow from the plant site and precipitation within the ponds. An impoundment break analysis should also be completed to determine the possible effects on the safety of people and the environment downstream of the facility. The results of this evaluation should be reviewed by the EPA.
3. **Review stability analyses that are being prepared by Ameren Energy by 8/1/2011.** The slopes of the impoundments all had flowing water at their western toe. In addition, sloughing was noted in two areas along these slopes. The stability of these slopes especially under seismic loading is unknown at this time. We understand that this task is currently being completed by another consultant retained by Ameren Energy. The results of this evaluation should be reviewed by the EPA.
4. **Evaluate the depth and rate of movements of the west slope by 10/1/2011.** Install and monitor at least one inclinometer to facilitate this evaluation. Ameren Energy has noted that lowered water levels have likely stopped movements of the west slope, so the purpose of the inclinometer is to document this assumption by Ameren Energy.
5. **Monitor potential erosion in creek on at least a quarterly basis.** Significant erosion in creek could impact west slope stability.

6. **Control vegetation on the upstream and downstream slopes. Remove the remaining trees from the embankments by 8/1/2011.** Refer to FEMA Manual 534, Impact of Plants on Earthen Impoundments for guidance on vegetation removal. This manual is available on the FEMA website.
7. **Perform video assessments of culvert piping by 8/1/2011.** Culvert piping used for the outlet works of the impoundments is CMP. As this pipe is either past or nearing the end of its life expectancy, a video assessment should be performed of all culvert pipes to determine their effectiveness and if remedial actions are necessary.

6.3 Priority 2 Recommendations

1. **Repair erosion of embankments on an as-needed basis to limit depth of surface erosion to less than 6 inches.** Minor erosion was noticed on various slopes of all the impoundments. Slopes and areas where erosion has occurred should be filled in with the appropriate material and re-dressed and reseeded to keep erosion from cutting into and compromising the embankment further.
2. **Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities on an on-going basis.**
3. **Monitor ground water levels on at least a quarterly basis following well installation.** Piezometers should be installed where applicable to determine the phreatic surface of water between impoundments and surrounding areas. Records of these levels should be regularly checked and recorded.

SECTION 7 – GLOSSARY OF TERMS

For the EPA ash pond inspection program, the following glossary of terms shall be used unless otherwise noted.

Hazard Potential Classification

"Hazard Potential" means the possible adverse consequences that result from the release of water or stored contents due to the failure of an impoundment embankment, impoundment, or reservoir, or the mis-operation of the impoundment, reservoir, or appurtenances. The Hazard Potential Classification of an impoundment or reservoir shall not reflect in any way on the current condition of the impoundment or reservoir and its appurtenant works, including the impoundment or reservoir safety, structural integrity, or flood routing capacity. The classifications are described below:

1. **Low Hazard Potential**

   "Low Hazard" means a impoundment or reservoir failure will result in no probable loss of human life and low economic or environmental loss. Economic losses are principally limited to the owner's property.

2. **Significant Hazard Potential**

   "Significant Hazard" means an impoundment or reservoir failure will result in no probable loss of human life but can cause major economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification impoundments or reservoirs are often located in predominantly rural or agricultural areas but could be located in areas with increased population density and significant infrastructure.

3. **High Hazard Potential**

   "High Hazard" means a impoundment or reservoir failure will result in probable loss of human life.

Size Classification

In accordance with the Illinois Department of Natural Resources (IDNR) Administrative Code for Impoundment Safety, "Part 3702, Construction and Maintenance of Impoundments" dated January 13, 1987, an impoundment system is classified by size based on its height and potential storage capacity. Size classification is determined by which category (storage or height) is greatest (produces the larger size classification).

Category	Storage (acre-feet)	Height (feet)
Small	<1,000	<40
Intermediate	≥ 1,000 to <50,000	≥ 40 to <100
Large	≥ 50,000	≥ 100

Overall Classification of Impoundment

In a system similar to the U.S. Department of Interior, "Safety Evaluation of Existing Impoundments" (Seed 1995), when the following terms are capitalized they denote and shall be used to describe the overall classification of the impoundment as follows:

SATISFACTORY - No existing or potential impoundment safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, and seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

FAIR – Acceptable performance is expected under all required loading conditions (static, hydrologic, and seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

POOR - A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, and seismic) in accordance with the applicable impoundment safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential impoundment safety deficiencies.

UNSATISFACTORY – Facility is considered unsafe. An impoundment safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

Condition Rating Criteria

In a system similar to the U.S. Department of Interior, "Safety Evaluation of Existing Impoundments" (Seed 1995), the terms satisfactory, fair, poor, and unsatisfactory are used in a general sense when describing the structural condition and the operational adequacy of the equipment for an impoundment or reservoir and its appurtenant works during the visual inspection. In addition, the term unknown may be utilized as applicable.

Satisfactory – Expected to fulfill intended function.

Fair – Expected to fulfill intended function, but maintenance or other actions are recommended.

Poor – May not fulfill intended function; maintenance, repairs, or other actions are necessary.

Unsatisfactory – Is not expected to fulfill intended function; repair, replacement, or modification is necessary.

Unknown – Not visible, not accessible, not inspected, or unable to determine the condition rating based on the observation taken.

Recommendations

Recommendations shall be written concisely and identify the specific actions to be taken. The first word in the recommendation should be an action word (i.e. "Prepare," "Perform," or "Submit"). The recommendations shall be prioritized and numbered to provide easy reference. Impoundment safety recommendations shall be grouped, listed, or categorized similar to the U.S. Department of Interior, "Reclamation Manual, Directives and Standards, Review/Examination Program for High- and Significant-Hazard Impoundments," FAC 01-07 dated July 1998 as follows:

Priority 1 Recommendations: Priority 1 Recommendations involve the correction of severe deficiencies where action is required to ensure the structural safety, operational integrity of a facility, and the safety of the impoundment.

Priority 2 Recommendations: Priority 2 Recommendations are where action is needed or required to prevent or reduce further damage, impair operation, and/or improve or enhance the O&M of the facility. These items do not appear to threaten the safety of the impoundment.

SECTION 8 – LIMITATIONS

The scope of this work is for a preliminary screening for the EPA and plant owner/operator of the visible performance and apparent stability of the impoundment embankments based only on the observable surface features and information provided by the owner/operator. Other features below the ground surface may exist or may be obscured by vegetation, water, debris, or other features that could not be identified and reported. This site assessment and report were performed without the benefit of any soil drilling, sampling, or testing of the subsurface materials, calculations of capacities, quantities, or stability, or any other engineering analyses. The purpose of this assessment is to provide information to the EPA and the plant owner/operator about recommended actions and/or studies that need to be performed to document the stability and safety of the impoundments.

This work was performed by qualified personnel in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession, practicing in the same locality, under similar conditions, and at the date the services are provided. Kleinfelder's conclusions, opinions, and recommendations are based on a limited number of observations. It is possible that conditions could vary between or beyond the observations made. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided. Kleinfelder makes no warranty or guaranty of future embankment stability or safety.

This report may be used only by the client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance but in no event later than one (1) year from the date of the report.

The information, included on graphic representations in this report, has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, expressed or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. These documents are not intended for use as a land survey product nor are they designed or intended as a construction design document. The use or misuse of the information contained on these graphic representations is at the sole risk of the party using or misusing the information.

Recommendations contained in this report are based on preliminary field observations without the benefit of subsurface explorations, laboratory tests, or detailed knowledge of the existing construction. If the scope of the proposed recommendations changes from that described in this report, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed and the conclusions of this report are modified or approved in writing by Kleinfelder. Kleinfelder cannot be responsible for interpretation by others of this report or the conditions encountered in the field.

Ameren, “Inspection Form for Dams, Levees and Ponds at Ameren Facilities”, March 29, 2010

Commonwealth Associates, Inc., *Construction Through Levee and Circulating Water Ducts General Layout*, July 8, 1958

Commonwealth Associates, Inc., *Construction Through Levee-General Plan Views*, June 30, 1960

Commonwealth Associates, Inc., *Drawings to Accompany Application for Permit from Corps of Engineers*, June 30, 1960

Commonwealth Associates, Inc., *Plant Site Fill-Depressions in Fill for Yard Foundations*, June 30, 1960

Commonwealth Associates, Inc., *Plant Site Fill-Foundation Wall Backfill*, June 3, 1958

Commonwealth Associates, Inc., *Plant Site Fill-Stage #1 Continuation*, May 6, 1958

Commonwealth Associates, Inc., *Plant Site Fill-Stage #1*, May 6, 1958

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Design Nine, Inc., *Proposed 150 Car Loop Track for Edwards Power Plant*, (25 sheets), November 20, 2003

Illinois Department of Natural Resources (IDNR), *Part 3702 – Construction and Maintenance of Impoundments*, Administrative Code for Impoundment Safety, January 13, 1987.

New Jersey Department of Environmental Protection, *Impoundment Safety Guidelines for the Inspection of Existing Impoundments,* January 2008.

Surdex Corporation, *Edwards Power Station* (Airphoto), December 1, 2009

US Deparment of Agriculture (USDA)/Natural Resources Conservation Service (NRCS), “Web Soil Survey”, *http://websoilsurvey.nrcs.usda.gov*

US Department of Interior, *Directives and Standards – Review/Examination Program for High and Significant Hazard Impoundments*, Reclamation Manual, July 1998.

US Department of the Interior, *Safety and Evaluation of Existing Impoundments (SEED)*, 1995

AERIAL IMAGE

NTS

IMAGE SOURCE: GOOGLE EARTH PRO - IMAGE DATE 08/23/10

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PROJECT NO.	112618
DATE:	08/23/10
DRAWN BY:	MAG
CHECKED BY:	BDH
FILE NAME:	

E.D. EDWARDS POWER STATION
VICINITY MAP

E.D. EDWARDS POWER GENERATING STATION
7800 CILCO LANE
BARTONVILLE, IL 61607-9352

FIGURE
1

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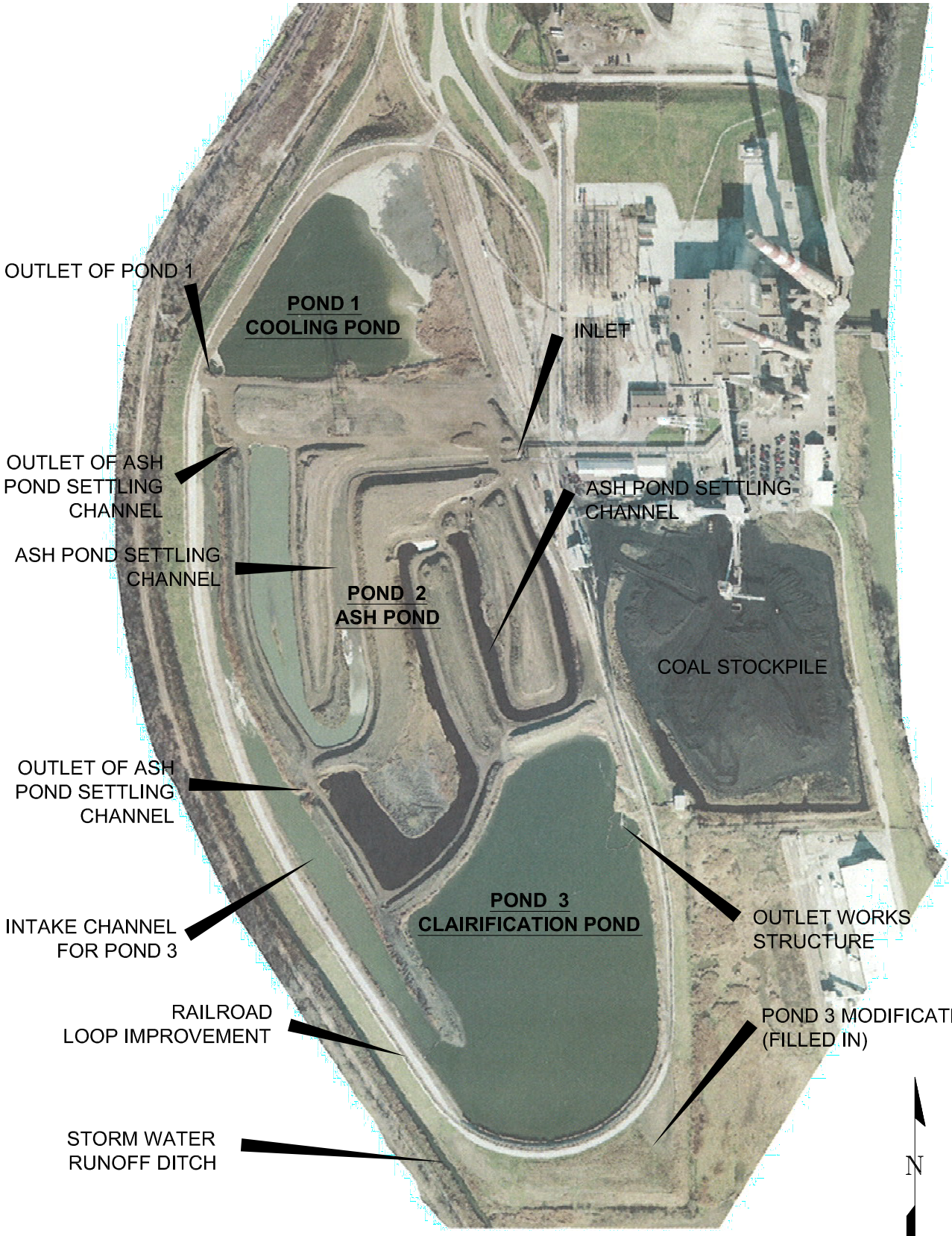

AERIAL IMAGE

NTS

IMAGE SOURCE: SURDEX CORPORATION - EDWARDS POWER STATION AERIAL IMAGE - IMAGE DATE 10/01/09

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PROJECT NO.	112618
DATE:	08/23/10
DRAWN BY:	MAG
CHECKED BY:	BDH
FILE NAME:	

E.D. EDWARDS POWER STATION
AERIAL LOCATION MAP

E.D. EDWARDS POWER GENERATING STATION
7800 CILCO LANE
BARTONVILLE, IL 61607-9352

FIGURE
2

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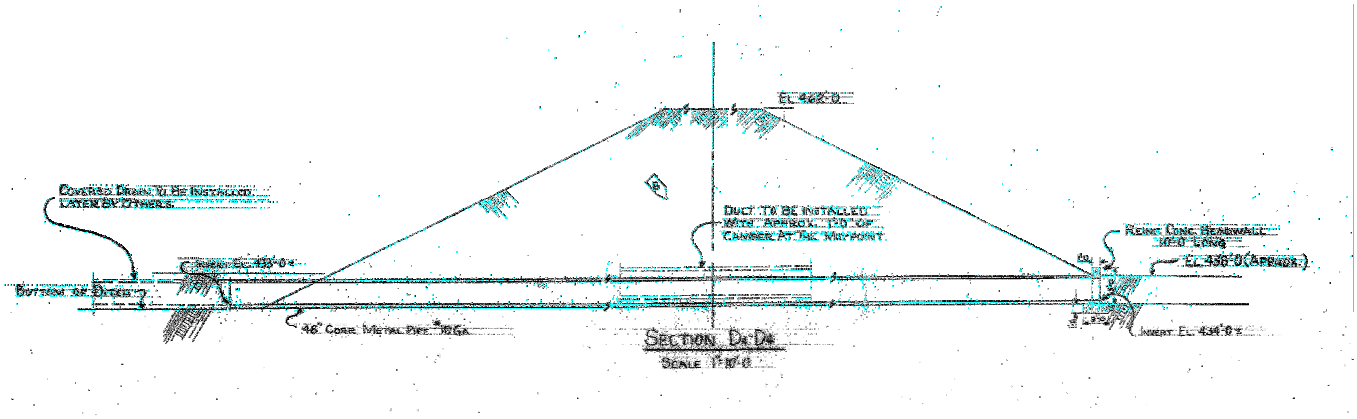

TYPICAL EMBANKMENT SECTION - IMPOUNDMENTS PRIOR TO RAILROAD IMPROVEMENTS

NTS

IMAGE SOURCE: COMMONWEALTH ASSOCIATES - PLANT SITE FILL SHEET 4 - IMAGE DATE 05/06/58

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FILE NAME:	

TYPICAL CROSS SECTION BOTTOM & FLY ASH PONDS

E.D. EDWARDS POWER GENERATING STATION
7800 CILCO LANE
BARTONVILLE, IL 61607-9352

FIGURE

3

ATTACHED IMAGES:
ATTACHED XREFS:
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CAD FILE: W:\112618 EPA Ash Pond Inspectlons\Task 2 - E.D. Edwards\E.D. Edwards Report\ LAYOUT: General (2)

IMAGE SOURCE: SURDEX CORPORATION - EDWARDS POWER STATION AERIAL IMAGE - IMAGE DATE 10/01/09

FIGURE 4
1 of 1 sheets

SCALE: NTS
DATE: 08/23/10
CHECKED BY: B.HAVENS
DRAWN BY: M.GARDELLA
DESIGNED BY: N/A

PHOTO PLAN OF INSPECTION POINTS - ASH POND 2

E.D. EDWARDS POWER GENERATING STATION
7800 CILCO LANE
BARTONVILLE, IL 61607-9352

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Appendix A

Site Assessment Evaluation Checklists

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: E.D. EDWARDS POWER STA. Date: 08/12/10

Unit Name: POND 1 - COOLING POND Operator's Name: AMEREN ENERGY

Unit I.D.: Hazard Potential Classification: High (Significant) Low

Inspector's Name: BRIAN HAVENS & MATT CARRERA

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	WEEKLY W/ ANNUAL REVIEW		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	450.25		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	462		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	N/A		Is water exiting outlet flowing clear?	X	
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	N/A		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		X	From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		X
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?	X	
17. Cracks or scarps on slopes?	X		24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
17	SCARP ON WEST SLOPE IN WIDENED EMBANKMENT; NOT IN PRIMARY SLOPE

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL0001970 INSPECTOR BRIAN HAVENS & MATT GARDNER

Date 08/12/10

Impoundment Name POND 1 - COOLING POND

Impoundment Company AMEREN ENERGY

EPA Region V

State Agency (Field Office) Addresss 5415 N. UNIVERSITY

PEORIA, IL 61614

Name of Impoundment POND 1 - COOLING POND

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: COOLING POND FOR WATER USED IN PLANT OPERATIONS

Nearest Downstream Town : Name BARTONVILLE

Distance from the impoundment 1 MILE

Impoundment Location: Longitude W 89 Degrees 40 Minutes 4 Seconds

Latitude N 40 Degrees 35 Minutes 46 Seconds

State ILLINOIS County PEORIA

Does a state agency regulate this impoundment? YES _____ NO _____ N/A

If So Which State Agency? _____

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

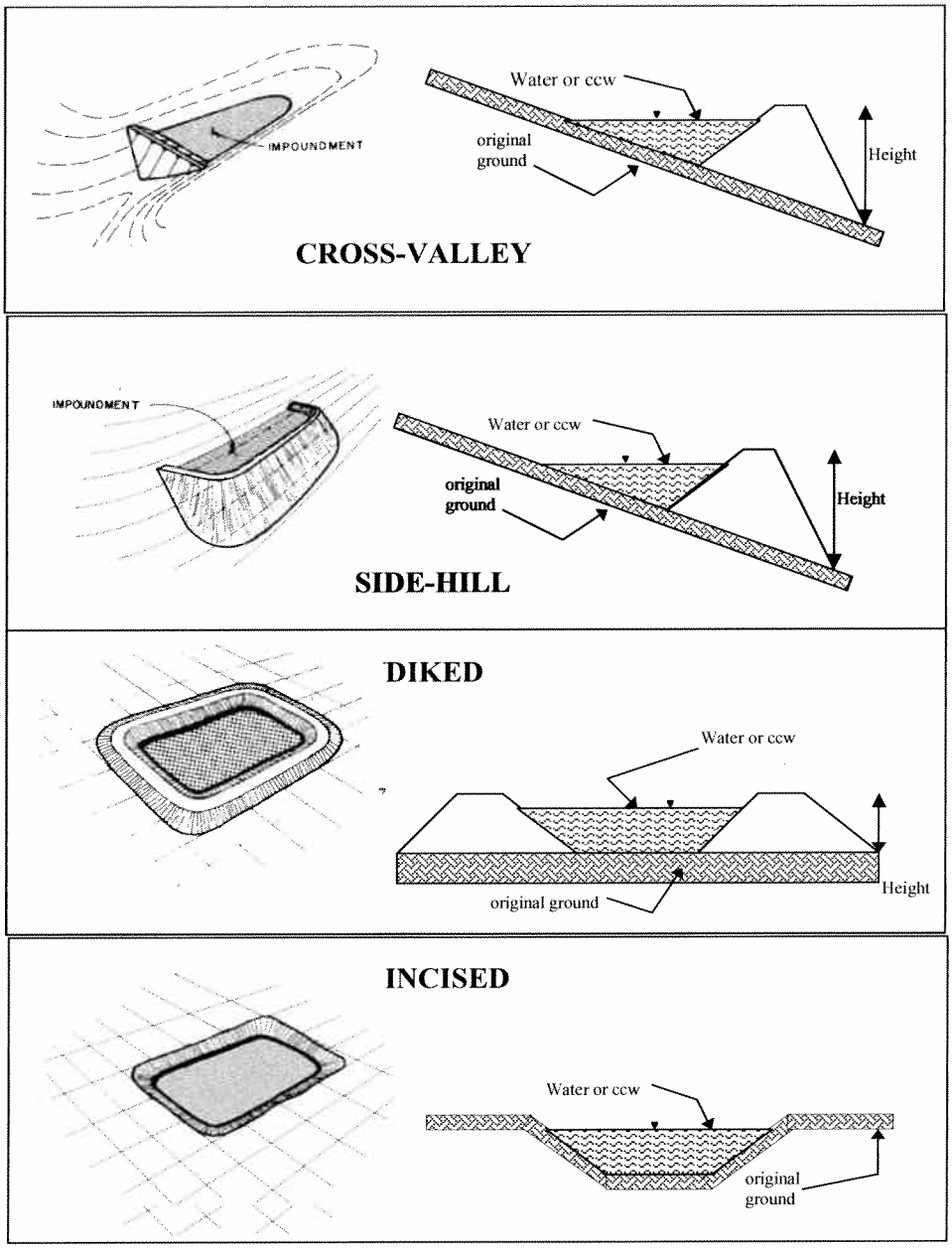
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

FAILURE OF EMBANKMENT OR OVERTOPPING COULD RESULT IN DISCHARGE TO STORMWATER CHANNEL AT WESTERN TOE. THIS COULD RESULT IN THE RELEASE OF WATER & ASH SLURRY DOWNSTREAM CAUSING ENVIRONMENTAL & ECONOMICAL CONCERNS. LOSS OF LIFE WOULD NOT BE EXPECTED AS THERE ARE NO STRUCTURES / INHABITANTS IMMEDIATELY DOWNSTREAM OF THE EMBANKMENTS.

CONFIGURATION:



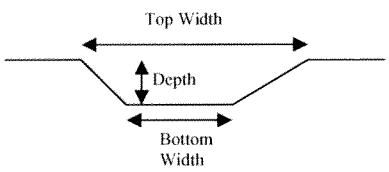
_____ Cross-Valley
_____ Side-Hill
_____ Diked
_____ Incised (form completion optional)
__x__ Combination Incised/Diked

Embankment Height 29 feet
Pool Area ~12 acres
Current Freeboard 5 feet
Embankment Material CLAY
Liner N/A
Liner Permeability N/A

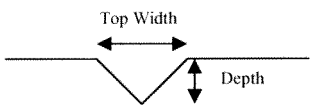
TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

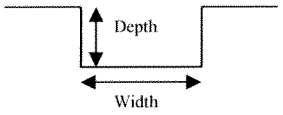


TRIANGULAR

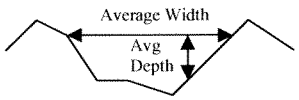


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

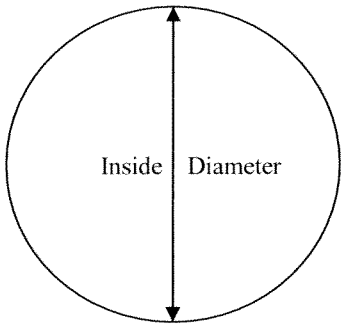


IRREGULAR



_____ **Outlet** N/A

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _____ NO _____

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By COMMONWEALTH ASSOCIATES

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES X NO __

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : OUTLET CULVERT HAS BEEN ADJUSTED TO MAINTAIN A LOWER POND LEVEL TO LIMIT SEEPAGE OVER CLAY CORE OF ORIGINAL EMBANKMENT.

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: E.D EDWARDS Date: 08/12/10

Unit Name: POND 2 - ASH POND SETTLING CH Operator's Name: AMEREN ENERGY

Unit I.D.: Hazard Potential Classification: High (Significant) Low

Inspector's Name: BRIAN HAWKINS + MATT GARDELLA

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	WEEKLY W/ ANNUAL INSP		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	445		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	462		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	N/A		Is water exiting outlet flowing clear?	X	
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	N/A		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		X	From downstream foundation area?	X	
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		X
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?	X	
17. Cracks or scarps on slopes?	X		24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
17	SCARP ON WEST SCOPE IN WIDENED EMBANKMENT, NOT PRIMARY EMBANKMENT
21	POSSIBLE SEEPAGE AT EAST TOE

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL0001970 INSPECTOR BRIAN HAVENS & MATT GARDNER

Date 08/12/10

Impoundment Name POND 2 - ASH POND SETTLING CHANNELS

Impoundment Company AMEREN ENERGY

EPA Region V

State Agency (Field Office) Addresss 5415 N. UNIVERSITY

PEORIA, IL 61614

Name of Impoundment POND 2 - ASH POND SETTLING CHANNELS

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: SETTLING POND FOR FLY ASH SLURRY

Nearest Downstream Town : Name BALTONVILLE, IL

Distance from the impoundment 1 MILE

Impoundment Location: Longitude W 89 Degrees 40 Minutes 02 Seconds

Latitude N 40 Degrees 35 Minutes 34 Seconds

State ILLINOIS County PEORIA

Does a state agency regulate this impoundment? YES _____ NO _____ N/A

If So Which State Agency?_____

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

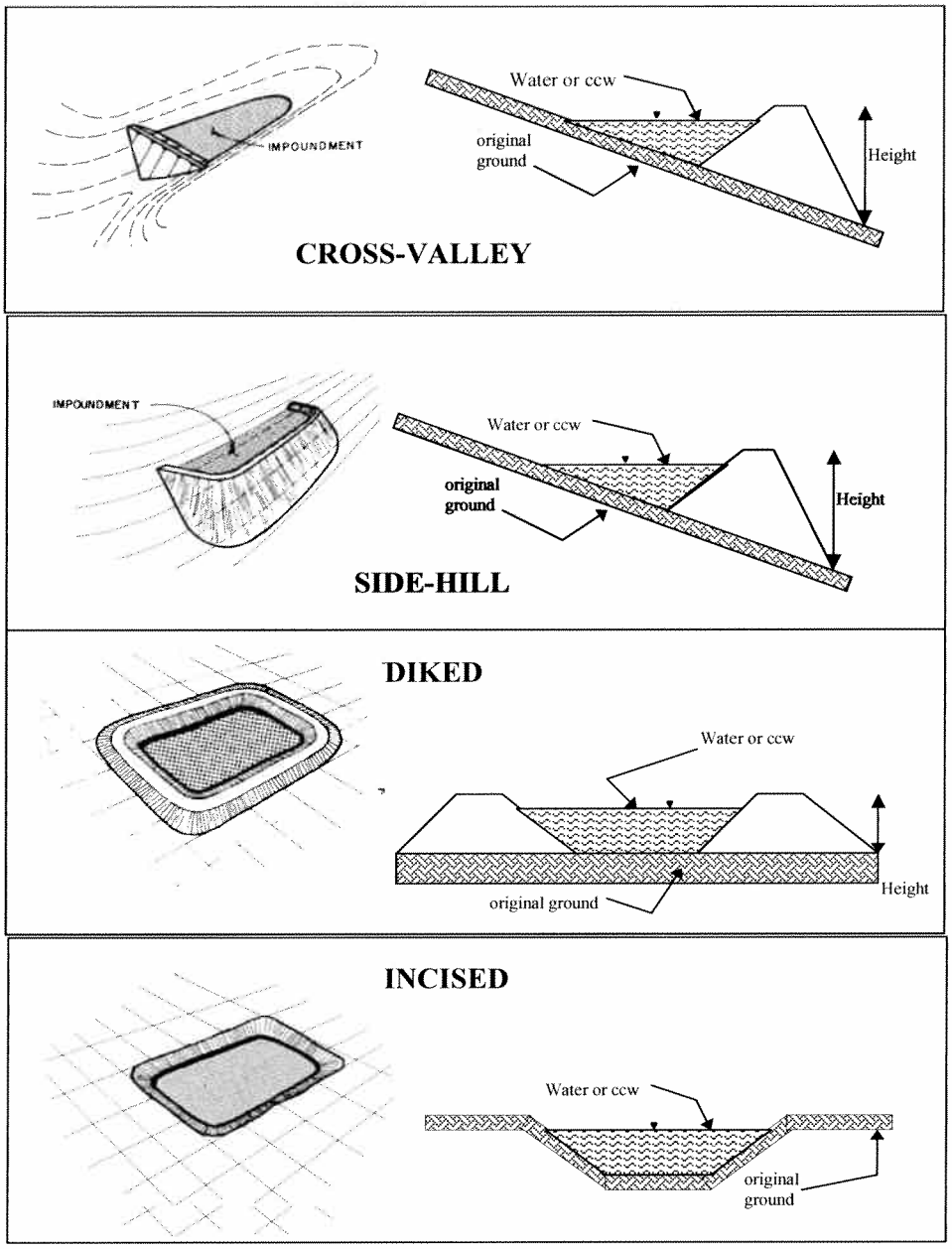
__x__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

FAILURE OF EMBANKMENT OR OVERTOPPING COULD RESULT IN DISCHARGE TO STORMWATER CHANEL AT WESTERN TOE. THIS COULD BE CARRIED DOWNSTREAM CAUSING ENVIRONMENTAL + ECONOMICAL CONCERNS. LOSS OF LIFE WOULD NOT BE EXPECTED AS THERE ARE NO STRUCTURES / INHABITANTS IMMEDIATELY DOWNSTREAM OF THE EMBANKMENTS

CONFIGURATION:



_____ Cross-Valley
_____ Side-Hill
_____ Diked
_____ Incised (form completion optional)
__K__ Combination Incised/Diked

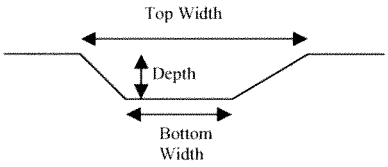
Embankment Height __26__ feet
Pool Area __~ 32__ acres
Current Freeboard __5__ feet
Embankment Material __CCAY__
Liner __N/A__
Liner Permeability __N/A__

TYPE OF OUTLET (Mark all that apply)

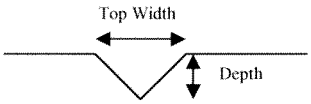
_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

_____ depth
_____ bottom (or average) width
_____ top width

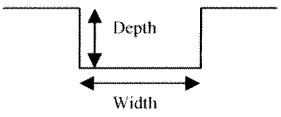
TRAPEZOIDAL



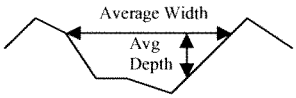
TRIANGULAR



RECTANGULAR

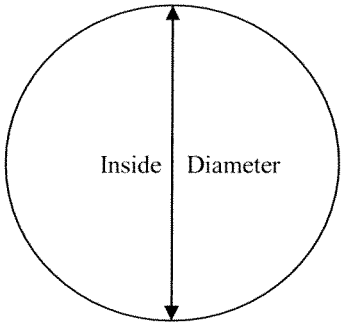


IRREGULAR



__X__ **Outlet**

__18"__ inside diameter



Material
__X__ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES __X__ NO _____

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By COMMONWEALTH ASSOCIATES

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO _X_

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO __X__

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: E.D. EDWARDS Date: 08/12/10

Unit Name: POND 3 - CLARIFICATION POND Operator's Name: AMEREN ENERGY

Unit I.D.: Hazard Potential Classification: High (Significant) Low

Inspector's Name: BRIAN MAHONS & MATT GARDERLA

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	WEEKLY W/ ANNUAL REVIEW		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	445		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	N/A		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	N/A		Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	462		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	N/A		Is water exiting outlet flowing clear?	X	
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	N/A		From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		X	From downstream foundation area?	POSSIBLE	
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?		X	Around the outside of the decant pipe?		X
15. Are spillway or ditch linings deteriorated?		X	22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?		X	23. Water against downstream toe?	X	
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
21	POSSIBLE SEEPAGE AT EAST TOE

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL0001970 INSPECTOR BRIAN HAVENS & MATT GARDELL
Date 08/12/10

Impoundment Name POND 3 - CLARIFICATION POND
Impoundment Company AMEREN ENERGY
EPA Region V
State Agency (Field Office) Addresss 5415 N. UNIVERSITY
PEORIA, IL 61614
Name of Impoundment POND 3 - CLARIFICATION POND
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: FINAL SETTLING POND FOR FLY ASH SLURRY

Nearest Downstream Town : Name BARTONVILLE, IL
Distance from the impoundment 1 MILE
Impoundment Location: Longitude W 89 Degrees 39 Minutes 55 Seconds
Latitude N 40 Degrees 35 Minutes 23 Seconds
State ILLINOIS County PEORIA

Does a state agency regulate this impoundment? YES _____ NO _____ N/A

If So Which State Agency? _____

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

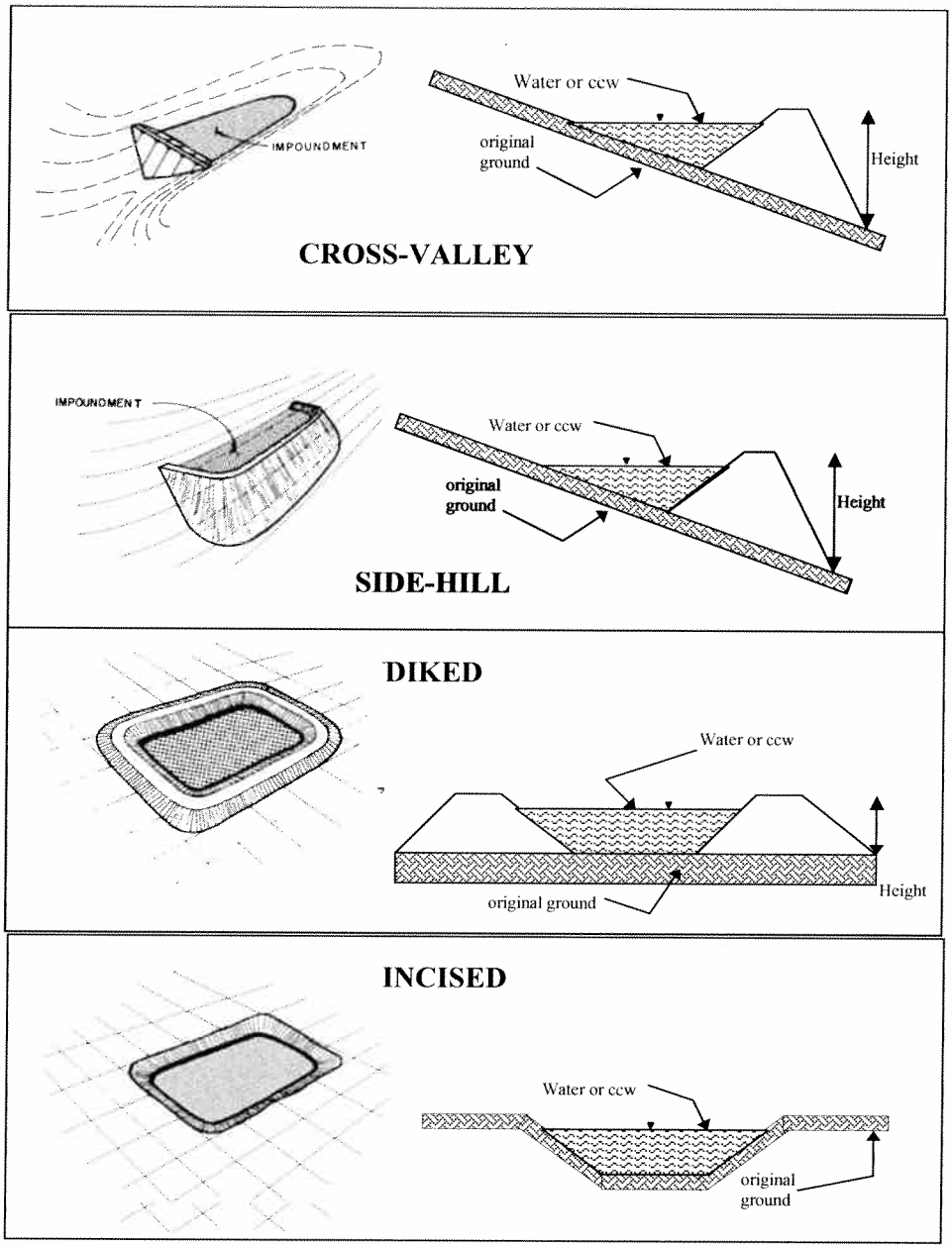
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

FAILURE OF EMBANKMENT OR OVERTOPPING COULD RESULT IN DISCHARGE TO STORMWATER CHANNEL AT WESTERN TOE. THIS COULD RESULT IN THE RELEASE OF WATER & ASH SLURRY DOWNSTREAM CAUSING ENVIRONMENTAL & ECONOMICAL CONCERNS. LOSS OF LIFE WOULD NOT BE EXPECTED AS THERE ARE NO STRUCTURES / INHABITANTS IMMEDIATELY DOWNSTREAM OF THE EMBANKMENTS.

CONFIGURATION:

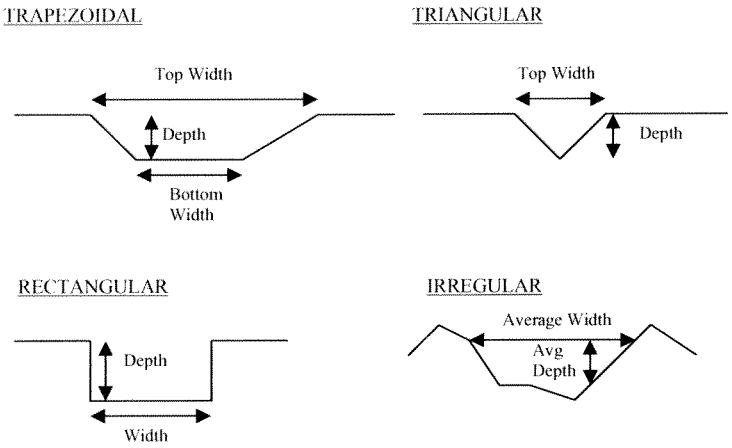


_____ Cross-Valley
_____ Side-Hill
_____ Diked
_____ Incised (form completion optional)
__X__ Combination Incised/Diked

Embankment Height 26 feet
Pool Area ~23 acres
Current Freeboard 5 feet
Embankment Material CLAY
Liner N/A
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

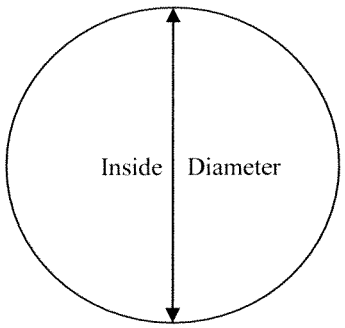
_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular



_____ depth
_____ bottom (or average) width
_____ top width

__X__ **Outlet**

__36"__ inside diameter



Material
__X__ corrugated metal w/ BITUMINOUS COATING
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES __X__ NO _____

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By COMMONWEALTH ASSOCIATES INC.

Has there ever been a failure at this site? YES _____ NO __X__

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: SMALL AREA OF POSSIBLE SEEPAGE AT D/S CHANNEL OF COAL PILE. COULD ALSO BE A RESULT OF SEEPAGE OF WATER THROUGH COAL PILE

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

Appendix B

Site Assessment Photographs

Photo 1 – Sluice Pipes at the Inlet to the Ash Pond

Photo 2 – Elevated Sluice Pipe Structure

Photo 3 – Active Ash Pond Settling Channel

Photo 4 – Active Intake Pipe and Ash Settling Channel

Photo 5 – Railroad Tracks on Crest of Ash Pond and Clarification Pond Embankment

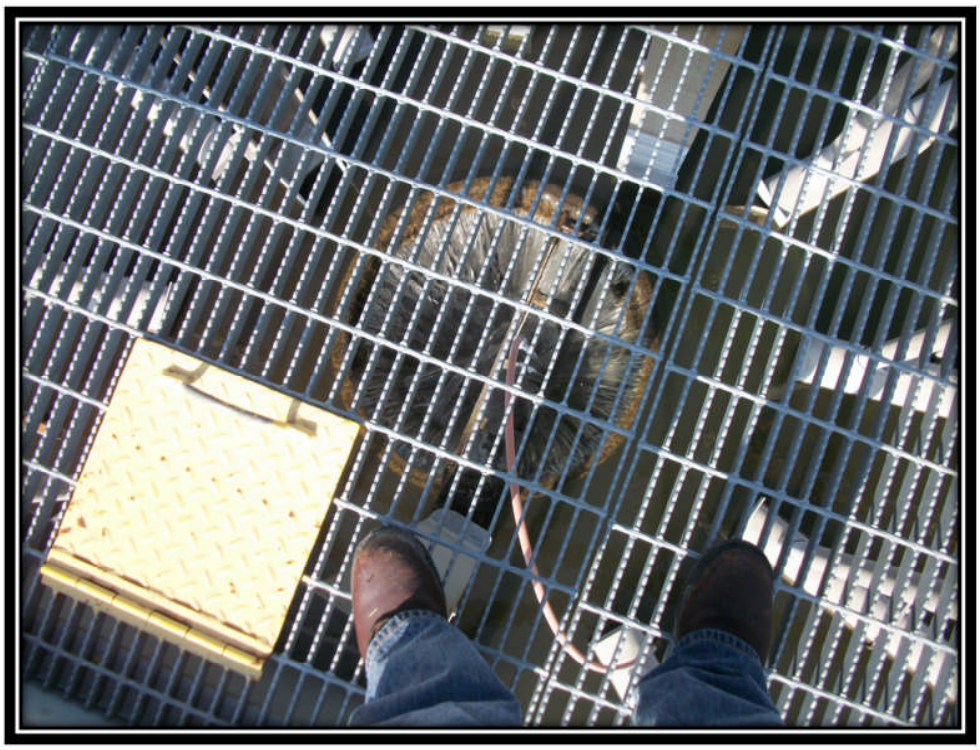


Photo 6 – Inlet Piping for Clarification Pond Outlet Works

Photo 7 – Outlet Works Access Platform

Photo 8 – Cleared Toe of Downstream Slope on Eastern Embankment

Photo 9 – Cleared Toe of Downstream Slope (Note Riprap and Minor Rutting)

Photo 10 – Vegetated Riprap on Embankment Slope (Typical)

Photo 11 – Vegetation on Upstream Slope of Clarification Pond (Note Steep Slopes)

Photo 12 – Riprap and Railroad Tracks at Crest of Clarification Pond Embankment

Photo 13 – Minor Erosion on Crest of Clarification Pond (Typical of Ash Pond and Clarification Pond)

Photo 14 – Area of Clarification Pond Filled in After Completion of Railroad Improvements

Photo 15 – Area of Sparse Vegetation and Erosion on Embankment Slope and Toe

Photo 16 – Typical Southern Embankment of Clarification Pond

Photo 17 – Erosion Greater than 12 Inches Forming on Downstream Slopes of Southern Embankment

Photo 18 – Erosion and Sparse Vegetation on Downstream Slopes of Southern Embankment

Photo 19 – Sparse Vegetation on Crest and Downstream Slope of Southern Embankment

Photo 20 – Sparse Vegetation on Crest and Downstream Slope of Southern Embankment

Photo 21 – Erosion on Southern Downstream Slopes and Crest (Typical)

Photo 22 – Clarification Pond General Condition

Photo 23 – Clarification Pond Inlet Channel

Photo 24 – Original Embankment with Raised Railroad Embankment Improvements Visible

Photo 25 – Typical Western Embankment of Clarification Pond, Clarification Pond Inlet and Pond 1

Photo 26 –Clarification Pond Inlet Channel with Riprap (Note Ash Pond Settling Channel Inlets)

Photo 27 – Outlet of Ash Pond Settling Channel into Clarification Pond Inlet Channel

Photo 28 – Waste Water Sewer Line Manhole in Downstream Slope (Near Toe of Original Embankment)

Photo 29 – Electric Line Penetration near Toe of Downstream Embankment

Photo 30 – Waste Water Sewer Line Manhole in Downstream Slope with Erosion Present

Photo 31 – Erosion Greater Than 12” Present at Sides of Waste Water Sewer Manhole

Photo 32 – Small Diameter Vegetation Growing on Crest

Photo 33 – Outlet Piping from Pond 1 into Clarification Pond Inlet Channel

Photo 34 – Pond 1 Pool Elevation Gauge

Photo 35 – Pond 1 General Conditions

Photo 36 – Scarp on Western Pond 1 Downstream Slope (Note Post for Observational Purposes)

Photo 37 – Scarp on Western Pond 1 Downstream Slope Approximately 18”-24” Deep

Photo 38 – Scarp on Western Pond 1 Downstream Slope

Photo 39 – Waste Water Sewer Manhole on Downstream Slope of Pond 1

Photo 40 – Scarp that has Been Repaired on Western Pond 1 Downstream Slope

Photo 41 – Pond 1 General Conditions (Note Access Road Expansion into Pond)

Photo 42 – General Crest Conditions of Pond 1 (Note Piezometer in Crest)

Photo 43 – Typical Newly Installed Monitoring Well

Photo 44 – Floodwall Separating Ash Pond Settling Channels and Coal Pile

Photo 45 – Storm Water Channel between Coal Pile and Floodwall (Possible Seep Location)

Appendix C

Response Letter to the EPA's Section 104(e) Request for Information

Ameren Services

Environmental Services
314.554.2388 (Phone)
314.554.4182 (Facsimile)
ppike@ameren.com

One Ameren Plaza
1901 Chouteau Avenue
PO Box 66149
St. Louis, MO 63166-6149

March 26, 2009

Mr. Richard Kinch
US Environmental Protection Agency (53306P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Request for Information under Section 104 (e) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9604(e)

Dear Mr. Kinch:

This letter and attachments are AmerenEnergy Generating and AmerenEnergy Resources Companies' response to the United States Environmental Protection Agency's request for information relating to the surface impoundments or similar diked or bermed management unit(s) or management units designated as landfills which receive liquid-borne material from a surface impoundment used for the storage or disposal of residuals or by-products from the combustion of coal, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residuals.

AmerenEnergy Generating and AmerenEnergy Resources Companies have received requests for information about their five coal-fired power stations in Illinois. Although most of our surface impoundments are not considered to be dams by State or Federal regulations, we are subject to State and Federal NPDES regulations and have had Agency personnel inspect these units. We are providing a full and complete response to each separate request for information set forth in your Enclosure A (attached) with responses corresponding to numbering in your questions. If you have any further questions please feel free to contact Paul Pike at (314) 554-2388.

I certify that the information contained in this response to EPA's request for information and the accompanying documents is true, accurate, and complete. As to the identified portions of this response for which I cannot personally verify their accuracy, I certify under penalty of law that this response and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, those persons directly responsible for gathering the information, the information submitted is, to the best of my

knowledge, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Sincerely,

Michael L. Menne
Vice President – Environmental Services

Enclosure A

Please provide the information requested below for each surface impoundment or similar diked or bermed management unit(s) or management units designated as landfills which receive liquid-borne material for the storage or disposal of residuals or by-products from the combustion of coal, including, but not limited to, fly ash, bottom ash, boiler slag, or flue gas emission control residuals. This includes units that no longer receive coal combustion residues or by-products, but still contain free liquids. .

1. Relative to the National Inventory of Dams criteria for High, Significant, Low, or Less-than-Low, please provide the potential hazard rating for each management unit and indicate who established the rating, what the basis of the rating is, and what federal or state agency regulates the unit(s). If the unit(s) does not have a rating, please note that fact.

2. What year was each management unit commissioned and expanded? ;

3. What materials are temporarily or permanently contained in the unit? Use the following categories to respond to this question: (1) fly ash; (2) bottom ash: (3) boiler slag; (4) flue gas emission control residuals; (5) other. If the management unit contains more than one type of material, please identify all that apply. Also, if you identify "other," please specify the other types of materials that are temporarily or permanently contained in the unit(s).

4. Was the management unit(s) designed by a Professional Engineer? Is or was the construction of the waste management unit(s) under the supervision of a Professional Engineer? Is inspection and monitoring of the safety of the waste-management unit(s) under the supervision of a Professional Engineer?

5. When did the company last assess or evaluate the safety (i.e., structural integrity) of the management unit(s)? Briefly describe the credentials of those conducting the structural integrity assessments/evaluations. Identify actions taken or planned by facility personnel as a result of these assessments or evaluations. If corrective actions were taken, briefly describe the credentials of those performing the corrective actions, whether they were company employees or contractors. If the company plans an assessment or evaluation in the future, when is it expected to occur?

6. When did a State or a Federal regulatory official last inspect or evaluate the safety (structural integrity) of the management unit(s)? If you are aware of a planned state or federal inspection or evaluation in the future, when is it expected to occur? Please identify the Federal or State regulatory agency or department which conducted or is planning the inspection or evaluation. Please provide a copy of the most recent official inspection report or evaluation.

7. Have assessments or evaluations, or inspections conducted by State or Federal regulatory officials conducted within the past year uncovered a safety issue(s) with the management unit(s), and, if so, describe the actions that have been or are being taken to deal with the issue or issues. Please provide any documentation that you have for these actions.

8. What is the surface area (acres) and total storage capacity of each of the management units? What is the volume of materials currently stored in each of the management unit(s)? Please provide the date that the volume measurement(s) was taken. Please provide the maximum height of the management unit(s). The basis for determining maximum height is explained later in this. Enclosure.

9. Please provide a brief history of known spills or unpermitted releases from the unit within the last ten years, whether or not these were reported to State or federal regulatory agencies. For purposes of this question, please include only releases to surface water or to the land (do not include releases to groundwater).

10. Please identify all current legal owner(s) and operator(s) at the facility.

AmerenEnergy Resources Generating Company Response

E. D. Edwards Power Station
7800 South Cilco Lane
Bartonville, Illinois 61607

1. Coal-combustion by-product surface impoundments at this Station are not classified as dams by State or Federal regulatory agencies so they have not been rated.

2. See table below.

Management Unit	Year Commissioned or Expanded
Ash Pond	1960

3. See table below.

Management Unit	Materials Contained in Unit*
Fly Ash Pond	1, 2, 5

*Use the following categories to respond to this question: (1) fly ash; (2) bottom ash: (3) boiler slag; (4) flue gas emission control residuals; (5) other.

Other types of materials that are temporarily or permanently contained in the unit(s) include, but are not limited to residual wastes remaining following treatment of wastewater from these systems: primary water treatment; boiler water make-up treatment; laboratory and sampling streams; boiler blowdown; floor drains; coal pile run off; house service water systems; and pyrites.

4. The management units at this facility were designed by a Professional Engineer. The construction of the management units were done under the supervision of a Professional Engineer. And, inspection and monitoring of the safety of the waste management units is under the supervision of a Professional Engineer.

5. The most recent annual internal professional engineering inspection of the management units occurred in 2009. Since these management units are not classified by regulation as dams the evaluation only included a visual inspection of the units. AmerenEnergy Resources Company has formed a Dam Safety Group consisting of civil engineers who oversee the implementation of the company Dam Safety Program and this Group is supervised by a licensed Professional Engineer. The Dam Safety Program requires routine, annual and special inspection of the ash ponds and employees performing these inspections receive dam safety training. If maintenance issues are identified in these visual inspections, then

corrective actions are taken by either plant employees or contractors to remedy the issue and final acceptance of the work is reviewed and evaluated by Dam Safety Group personnel.

6. No State, or Federal regulatory official has inspected or evaluated the safety (structural integrity) of the management unit(s), and we are not aware of a planned state or federal inspection or evaluation in the future.

7. Not applicable, see response to Question 6.

8. See table below.

Management Unit	**Surface Area (Acres)**	**Total Storage Capacity (Acre-ft)**	**Volume of Stored Ash (Acre-ft)**	**Maximum Height of Unit (ft.)**
Fly Ash Pond	89	1,800	1,000	32

The volume measurement includes area excavated below natural surface level and was determined in 2007.

9. Assuming that brief history means incident(s) which could have occurred in the last ten (10) years, we are not aware of any spills or unpermitted releases of coal-combustion by-products from our surface impoundments to surface water or to the land.

10. The current legal owner and operator at the facility is AmerenEnergy Resources Generating Company.