COAL ASH IMPOUNDMENT
SITE ASSESSMENT DRAFT REPORT

Meredosia Power Station
Ameren Energy Generating Company
Meredosia, Illinois

Prepared by:

KLEINFELDER
Bright People. Right Solutions.

611 Corporate Circle, Suite C
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KLEINFELDER PROJECT NUMBER 112618-7

September 13, 2010

I certify that the management units referenced herein:

- Fly Ash Pond
- Bottom Ash Pond

Were assessed on August 10, 2010

Signature: _____ Date: _____

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

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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 Meredosia 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 10, 2010.

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

- Fly Ash Pond – Commissioned in 1968
- Bottom Ash Pond – Commissioned in 1972

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 fly ash and bottom ash pond impoundments are not regulated by any state agency and therefore do not currently have a designated hazard rating. Due to the potential environmental and economic impacts that a failure at either of these impoundments would present by breaching the south banks into the Illinois River, it is recommended a hazard classification of "Significant" be assigned to both 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 impoundments condition after this date. Subsequent adverse weather and other factors may affect the condition.

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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 Emergency Action Plan (EAP) for the facility.

2. Perform a hydrologic and hydraulic study.

3. Establish a seepage and groundwater monitoring program.

4. Perform embankment and structural stability analyses.

5. Perform video assessments of culvert piping.

6. Control vegetation on the upstream and downstream slopes. Remove the trees from the embankment including the large tree at the overflow outlet discharge point.

Priority 2 Recommendations

1. Repair erosion of embankment.

2. Review the condition of riprap at the downstream toe of the bottom ash embankment and upgrade the riprap, if needed, to meet typical requirements for riprap size and placement.

3. Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities.

4. Develop an Operation and Maintenance (O&M) manual for the impoundments and the facility.

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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 findings and observations from a site assessment at the Meredosia Power Station on August 10, 2010.

The following sections present a summary of data collection activities, site information, performance history of the facility's impoundment ponds, a summary of site observations, and recommendations resulting from the site investigation.

1.2 Project Location

The Meredosia Power Generating Station is located on the eastern bank of the Illinois River approximately one mile south of Meredosia, Illinois as shown in Figure 1. The town of Meredosia is located in Morgan County at approximately 39^{o}49'48'' N and 90^{o}33'30'' W. In general, the town of Meredosia is a rural agricultural community with the town population hovering around 1,000 people.

1.3 Site Documentation

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

- Ameren, Impoundment Safety Program for Non-Illinois Department of Natural Resources (IDNR) Regulated Facilities, AER-DSP-004, April 3, 2009
- S. Bluemner, M. Wagstaff, J. Schnelten, Annual Engineering Inspection Report, July, 31, 2009
- Ameren, Flood Control Works Inspection Report, March 18, 2008
- Hanson Engineers, Capacity Survey and Stability Analysis Fly Ash Impoundment, Meredosia Power Station, June 13, 1991
- Sargent and Lundy, Design Drawings B-331 thru B-334, 1971
- Hanson Engineers, Utility Site Plan Drawing, 1980
- The CECO Corporation, Weir Box Design Drawing, 1971

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SECTION 2 – SITE ASSESSMENT

2.1 Attendees

The site assessment was performed on August 10, 2010 by Brian Havens, P.E. and Matt Gardella, E.I.T. of Kleinfelder. Other persons present during the site assessment included:

- Paul Pike – Ameren Energy
- Michael Wagstaff – Ameren Energy
- Michael Long – Ameren Energy
- Joe Schnelter – Ameren Energy
- Craig Dufficy – United States Environmental Protection Agency

2.2 Impoundments Inspected

Impoundments and associated structures that were observed during the site assessment included:

- Fly Ash Pond – Commissioned in 1968
- Bottom Ash Pond – Commissioned in 1972

Observations from the site assessment are documented on the Site assessment Evaluation Checklists presented in Appendix A. A summary of observations from the site assessment is presented in Section 4.

2.3 Weather During Assessment

During the assessment of the Meredosia Power Station impoundments, the weather 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).

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SECTION 3 – SITE INFORMATION AND HISTORY

3.1 Site Information and History

The Meredosia Power Generating Station is a coal fired facility that has been in operation since 1948. The facility currently sluices Bottom Ash and Fly Ash, by-products of coal fired energy generation, into two separate impoundments. These impoundments are referred to as the "Bottom Ash Pond" and the "Fly Ash Pond". An aerial image of these impoundments can be seen in Figure 2. These ponds act as settling basins for the bottom and fly ash prior to the water being treated and released back into the Illinois River. Disposal of the fly ash and bottom ash currently differ at the site. The bottom ash residual is removed from the Bottom Ash Pond, dried on site, and then sold to various organizations for beneficial use such as the topping of roadways. The fly ash residual is allowed to dry, then is removed, and is disposed of in offsite landfills. Beneficial use of the fly ash is not currently economically feasible at the Meredosia site, but could possibly hold potential in the future depending on local construction projects and their need for concrete admixtures.

The Bottom Ash Pond is a combination earthen embankment and incised impoundment. Sluice pipes transporting bottom ash from power generating operations outlet at the northeastern corner of the pond. From here the bottom ash slurry is directed through a settling channel into a larger portion of the pond. This channel is approximately 500 feet long and is separated from the main pond by a peninsula composed of dried and compacted bottom ash jutting out from the main embankment of the pond. The intention of this settling channel is to allow additional time for suspended solids to drop out of suspension before entering the main body of the Bottom Ash Pond where they are harder to collect and remove for drying. Both the settling channel and main portion of the pond are considered to be components of the larger Bottom Ash Pond.

Another key component of the Bottom Ash Pond is the pond's outlet works structure. The outlet works of the Bottom Ash Pond are located near the northwestern embankment and are accessible by a 75 foot long catwalk that extends from the crest of the embankment toward the center of the pond. The outlet works consist of a weir box with adjustable intake levels that lead to a 12 inch vitrified clay pipe. This clay pipe extends to the northwest and outlets in the Illinois River.

The Bottom Ash Pond has an emergency spillway consisting of a 12" corrugated metal pipe extending through the crest of the embankment on the north side of the impoundment.

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The Fly Ash Pond is a combination earthen embankment and incised impoundment, and is divided into 4 cells by compacted bottom ash/fly ash dikes. One of these cells is a “clarifying” or “polishing” pond (Cell 4) and is used as a final settling pond before discharging water from the pond to the Illinois River. The other 3 cells that make up the Fly Ash Pond alternate impounding fly ash slurry. This is done so that a cell can be dried and the fly ash solids excavated and disposed of, before impounding more fly ash while another cell is dried and cleared. Equalization pipes and spillways cut in the internal dikes exist between all of the cells so that one cell is not allowed to overtop while the adjacent cell remains dry in extreme circumstances.

The Fly Ash Pond’s outlet structure is very similar to the Bottom Ash Pond’s outlet structure. The outlet works of the Fly Ash Pond are located near the western embankment of Cell 4 and are accessible by a 75 foot long catwalk that extends from the crest of the embankment toward the center of the pond. The outlet works consist of a weir box with adjustable intake levels that lead to a 12 inch vitrified clay pipe. This clay pipe extends to the northwest and outlets in the Illinois River.

The Fly Ash Pond does not have an emergency spillway that we are aware of.

Prior to the current operational layout at the Meredosia Power Generating Station, there had been an additional fly ash impoundment with two cells as well as a bottom ash impoundment at the site. The old fly ash pond was located immediately east of the current Fly Ash Pond, and the old bottom ash pond was located somewhere to the north of the current Bottom Ash Pond. The old fly ash impoundment was decommissioned and capped sometime in the 1970’s but an exact date is unknown. The old bottom ash impoundment was decommissioned and capped sometime before the old fly ash impoundment, but an exact date is unknown.

In reviewing the response letter to the EPA’s section 104(e) request for information, shown in Appendix C, it was noted that previously there had been a release of impounded water at the Meredosia Power Generating Station. Upon further review with Ameren Energy personnel during the inspection it was determined that the release had not been a release of bottom ash or fly ash slurry from either of the impoundments. Instead, storm water had fallen on the decommissioned and capped fly ash pond and had flowed into the Fly Ash Pond. No previous unpermitted releases of impounded water were known about at the time of inspection.

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3.2 Pertinent Data

A. GENERAL

1. Name ..... Meredosia Power Generating Station
2. State ..... Illinois
3. County ..... Morgan
4. Latitude ..... 39° 49' 02'' North
5. Longitude ..... 90° 34' 20" West
6. River used for operations ..... Illinois River
7. Year Constructed 1948
8. Modifications ..... None to current impoundments
9. Current Hazard Classification ..... None
10. Proposed Hazard Classification ..... Significant
11. Size ..... Unregulated Currently – Small Impoundment[2]

B. IMPOUNDMENTS

BOTTOM ASH POND

1. Type ..... Earthen – Diked/Incised Combination
2. Crest Elevation ..... ±450[1]
3. Crest Length ..... Approximately 3,000 ft
4. Crest Width ..... 8 ft
5. Impoundment Height ..... App. 20 ft
6. Upstream Slope 3H:1V
7. Downstream Slope 3:1V
8. Volume of Stored Ash ..... 139 acre-feet

FLY ASH POND

1. Type ..... Earthen – Diked/Incised Combination
2. Crest Elevation ..... ±452[1]
3. Crest Length ..... Approx. 5,000 ft
4. Crest Width ..... 8 ft
5. Impoundment Height ..... App. 20 ft
6. Upstream Slope 3H:1V
7. Downstream Slope 3H:1V
8. Volume of Stored Ash ..... 650 acre-feet

C. DRAINAGE BASIN

1. Area of Drainage Basin ..... Unknown
2. Downstream Description: ..... Discharges directly into the Illinois River

D. RESERVOIR INLET

BOTTOM ASH POND

1. Reservoir Inlet ..... Multiple inlet sluice pipes from the generating station

FLY ASH POND

1. Reservoir Inlet ..... Multiple inlet sluice pipes from the generating station

E. RESERVOIR

BOTTOM ASH POND

1. Reservoir Capacity ..... Normal Storage is approximately 186 acre-feet

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FLY ASH POND

2. Reservoir Capacity ..... Normal Storage is approximately 620 acre-feet

F. PRIMARY SPILLWAY

BOTTOM ASH POND

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

FLY ASH POND

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

G. OUTLET WORKS

BOTTOM ASH POND

1. Description ..... Rectangular weir box with adjustable V-notch weir connected to 12" VCP
2. Location ..... Near northwest embankment app. 75' into the center of the pond
3. Intake Structure ..... Weir box with adjustable V-notch weir
   a. Intake Invert Elevation ..... Adjustable
4. Discharge Conduit ..... Vitrified Clay Pipe
   a. Length ..... 150 ft
   b. Diameter ..... 12 inches
5. Outlet Structure ..... Gate valve at weir box
   a. Outlet Invert Elevation ..... 425.3[1]
   b. Energy Dissipation ..... Concrete slab with surrounding riprap[3]
6. Discharge Channel ..... ~20' x 20' bay that empties directly into the Illinois River
7. Discharge Capacity with Water Surface at Top of Impoundment ..... Unknown

FLY ASH POND

1. Description ..... Rectangular weir box with adjustable V-notch weir connected to 12" VCP
2. Location ..... Near west embankment app. 75' into the center of the pond
3. Intake Structure ..... Weir box with adjustable V-notch weir
   a. Intake Invert Elevation ..... Adjustable
4. Discharge Conduit ..... Vitrified Clay Pipe
   a. Length ..... 150 ft
   b. Diameter ..... 12 inches
5. Outlet Structure ..... Gate valve at weir box
   a. Outlet Invert Elevation ..... 427.3[1]
   b. Energy Dissipation ..... Concrete slab with surrounding riprap[3]
6. Discharge Channel ..... ~20' x 30' bay that empties directly into the Illinois River
7. Discharge Capacity with Water Surface at Top of Impoundment ..... Unknown

H. MANAGEMENT

1. Owner ..... Ameren Energy
2. Purpose ..... Coal Fired Energy Generation

Notes:

1. All elevations in feet based on original construction drawings by Sargent and Lundy Engineers
2. Impoundment is unregulated; size is based on Illinois Department of Natural Resources Administrative Code for Impoundment Safety
3. Structure was inundated during the time of inspection and was not able to be inspected

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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, clayey silt, silty sand and clayey sand. Based on our review of data published by the United States Geological Survey (USGS), the sedimentary rock formations in Morgan 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

Both the Bottom Ash and Fly Ash Ponds are designed and situated in such a manner that the watershed drainage contributing to the stored volume of the ponds is minimal and most likely limited to pumping operations and storm water that falls within the impoundments themselves. However, the exact extents of the watershed cannot be determined without a current topographic survey of the surrounding area and of the impoundments themselves.

During the assessment, documents such as hydrologic studies, hydraulic design calculations and assumptions, and impoundment break analyses were not available for our review. As a result, the design inflow, design freeboard and other important components of the impoundment designs are unknown at this time. The project plans do identify that the Bottom Ash Pond was designed to store up to 300,000 cubic yards of ash and the Fly Ash Pond was designed to store up to 1,000,000 cubic yards of ash.

3.5 Geotechnical Considerations

Regarding stability of the embankment slopes, we have reviewed a report dated May 17, 1991 by Hanson Engineers Incorporated. This study was apparently completed at a time when Central Illinois Public Service Company (now Ameren Energy) was considering raising the pool elevation in the Fly Ash impoundment. The study included stability analyses under the condition of a higher pool elevation at Elevation 449, but did not document stability of the impoundments in their present configuration (pool at Elevation 447). It appears that the pool elevation (and embankment elevation) were not raised following this study. We understand that embankment stability analyses are currently being completed for both impoundments by another consultant retained by Ameren Energy.

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Regarding seepage, we understand that seepage at various locations along the downstream embankment of the Fly Ash pond has been witnessed by Ameren Energy and Hanson Professional Services at various times including 1991, 2008, 2009 and other intervening years. The seepage noted by Hanson Engineers in 2008 was at a low rate and appeared to be clear and free of transported or piped soils.

3.6 Structural Considerations

According to the inspection conducted in July, 2009, a fractured cross brace was noted in the middle support of the catwalk. The assessment conducted in 2010 by Kleinfelder shows that the same fractured cross member is not repaired (see Photo 14 in Appendix B). The catwalk bridge access portion appears to be in good condition and the superstructure appears to be intact with minor corrosion. The catwalk substructure concrete foundations appear to be in good condition as well with little to no concrete spalling or scaling.

The 6' X 6' reinforced concrete weir box appears to be in good condition. A sluice gate within the weir box controls flows in and out of the fly ash pond. The weir box is approximately 30 feet high and connects with the catwalk mentioned above. Due to the water level at the time of inspection, we were not able to observe the foundation condition of the weir box.

The bottom ash pond inlet pipe appears to be supported on wood supports. The supports appeared to be weathered, although not to the point of structural failure. Due to the age of the facility, a structural engineering evaluation is merited to determine the condition of the supports.

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.

3.7 Performance Evaluations

There have been no previous federal or state assessments of the Meredosia Power Generating Station's Bottom Ash or Fly Ash impoundments. Based on observations by Ameren Energy in their annual assessments, weekly assessments and other documents and accounts, there have been no major incidents involving the Bottom Ash or Fly Ash Ponds. Currently Ameren Energy's local plant personnel perform weekly assessments of the impoundments and their associated structures. Ameren Energy also performs annual assessments of the Meredosia impoundments, similar to this assessment, via their Impoundment Safety and Environmental personnel. In addition, Ameren Energy retained Hanson Professional Services, Inc. to make a site assessment and provide recommendations on January 11, 2008.

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3.8 Hazard Classification

The Meredosia Power Generating Station's two impoundments are not regulated by any state agency and therefore do not currently have a designated hazard rating. However, the Fly Ash and Bottom Ash ponds were rated by Ameren Energy's internal impoundment safety organization as being Significant Hazard and Low Hazard impoundments respectively. However, due to the potential environmental and economic impacts that a failure at either of these impoundments would present, it is recommended that a hazard classification of "significant" be assigned to both impoundments. A "High Hazard" rating was not assigned to the impoundments, as it is not expected that a loss of life situation would be likely in the event of a failure. A loss of life situation is not expected as the Bottom Ash and Fly Ash Ponds sit immediately adjacent to the Illinois River without any homes, recreational facilities, businesses, roads or other structures immediately downstream of the impoundments.

3.7 Site Access

We were required to seek permission from Ameren Energy to gain access to the plant site. After arriving at the site and meeting with representatives of Ameren Energy, we were escorted by facility personnel to assess the impoundments. The impoundments can be accessed by standard car during normal weather conditions via gravel-surfaced roadways on the Meredosia Power Generating Station property.

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SECTION 4 – SITE OBSERVATIONS

The impoundment embankments, toes and outlet works (portions not inundated at the time of inspection) of both the Bottom Ash and Fly Ash Pond were observed during the August 10, 2010 site assessment. General observations of these features are presented below; more specific observations of the site and facilities are documented in the Site assessment Evaluation Checklist provided in Appendix A.

4.1 Bottom Ash Pond

4.1.1 Upstream Slope

Overall, the upstream slope of the impoundment was in fair condition. Photos 1, 6 and 23 in Appendix B show the conditions of the upstream slope. Specific observations include:

- The upstream slope was laid back at approximately 1.5H:1V, based on visual observations. This varies from the construction documents provided by Ameren, probably due to the build-up of bottom ash on the embankment. However, it is possible that cleanout operation at the Bottom Ash Pond could have cut into the embankment and steepened it over time.
- Minor erosion rills, less than 6 inches deep, were 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.

4.1.2 Crest

Overall, the crest of the impoundment was in good condition. Photos 1 through 3 show the condition of the crest. Specific observations include:

- The impoundment crest is a gravel road.
- Sparse grasses and bushes were observed on the crest.
- No major depressions or rutting was noted on the impoundment crest.
- Transecting the crest with minimal cover are two Fly Ash sluice lines. Photo 24 in Appendix B shows these sluice lines.
- A chain link fence is located around the majority of the Bottom Ash Pond at the crest.
- Multiple light poles penetrate the crest of the levee. These light poles can be seen in Appendix B photos 23 and 28.
- 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.

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- Foundations for the pipeline that runs along the crest of northern embankment penetrate the crest in multiple locations.

4.1.3 Downstream Slope

Overall, the downstream slope was in fair to poor condition. Photos 7, 8 , 9, 18 and 20 show the conditions of the downstream slope. Specific observations include:

- There was slope protection on the downstream slope adjacent to the Illinois River. It was comprised of riprap that ranged greatly in size. Riprap armoring was sparse in some areas of the downstream slope.
- Minor erosion rills, less than 6 inches deep, were noted on some of the downstream slope.
- Grasses, woody bushes and large mature trees were observed on the downstream slope and at the toe of the embankment for the majority of the impoundment.
- Driven sheet pile used to form an access to the oil delivery area intersects the downstream slope of the Bottom Ash Pond as shown in Photos 12 and 13.

4.1.4 Downstream Toe Areas

The toe areas of the embankment were in fair to poor condition. See photos 15 and 17 for the condition of these areas. Key features and observations of these areas include:

- The toe areas were almost impassible in certain locations due to mud. The Illinois River had been up against the downstream bank of the impoundment and had just recently receded.
- The toe area had sparse grasses, some bushes, and multiple large mature trees.

4.1.5 Outlet Works

The outlet works of the Bottom Ash pond consist of a weir box located at the northwestern corner of the impoundment, approximately 75 feet toward the center of the pond. The weir box is accessible via a metal catwalk. The weir box has stop logs and a v-notch weir that can adjust the height of intake for the outlet structure. A sluice gate separates the weir box from a 12 inch vitrified clay pipe leading to the discharge location on the Illinois River. Operation of this sluice gate in flood conditions is possible by one person without any mechanized equipment. According to Ameren Energy personnel and the provided documents, the discharge location of the outlet pipe has a concrete slab to protect against slope erosion during discharge. However, this slab could not be observed during the assessment as it was inundated.

- The discharge location of the outlet pipe was not able to be observed as it was inundated at the time of assessment

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- One cross brace of the catwalk used to access the weir box has rusted through.
- No video monitoring of the clay pipe was available at the time of assessment
- Overall, the outlet works system appears to be functioning as intended at this time.

4.1.6 Impoundment Inlet

Inflow into the Bottom Ash Pond is via metal piping on the northeastern corner of the impoundment, as well as storm water runoff that flows naturally into the pond. The inlet pipe can be seen in photo 4 of Appendix B. From this inlet location the ash and water slurry then flows 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 Fly Ash Pond

4.2.1 Upstream Slope

Overall, the upstream slope of the impoundment was in satisfactory condition. Photo 32 in Appendix B shows the conditions of the upstream slope. Specific observations include:

- The upstream slope was laid back at approximately 3H:1V
- Mowing had not been completed on the majority of the upstream slope.
- Grasses, bushes and woody debris were observed on the slope.

4.2.2 Crest

Overall, the crest of the impoundment was in good condition. Photos 29 and 31 show the condition of the crest. Specific observations include:

- The impoundment crest is a gravel road.
- Sparse grasses and bushes were observed on the crest.
- No major depressions or rutting was 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 30 and 31 show the conditions of the downstream slope. Specific observations include:

- Grasses, woody bushes and large mature trees were observed on the downstream slope and at the toe of the embankment for a large portion of the impoundment.

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- There was slope protection on the majority of the slope for the Fly Ash Pond. Typically it consisted of large riprap that was typically vegetated.
- Typically the embankment was well maintained with recent mowing operations

4.2.4 Toe Areas

The toe areas of the embankment were in fair to poor condition. See photos 30 and 33 for the condition of these areas. Key features and observations of these areas include:

- The toe areas were in almost impassible in certain locations due to mud. The Illinois River had been up against the downstream bank of the impoundment and had just recently receded.
- The toe area had multiple locations where large mature trees still remained along with recently felled trees that had not been removed from the toe and slope of the impoundment

4.2.5 Outlet Works

The outlet works of the Fly Ash Pond are almost identical to that of the Bottom Ash Pond. The outlet works intake weir box is located in cell 4 near the western embankment, approximately 75 feet toward the center of the pond. The weir box is accessible via a metal catwalk. The weir box has stop logs and a v-notch weir that can adjust the height of intake for the outlet structure. A sluice gate separates the weir box from a 12 inch vitrified clay pipe leading to the discharge location on the Illinois River. Operation of this sluice gate in flood conditions is possible by one person without any mechanized equipment. According to Ameren Energy personnel and the provided design drawings, the discharge location of the outlet pipe has a concrete slab to protect against slope erosion during discharge. However, this slab could not be observed during the assessment as it was inundated.

- The discharge location of the outlet pipe was not able to be observed as it was inundated at the time of assessment
- No video monitoring of the clay pipe was available at the time of assessment
- Overall, the outlet works system appears to be functioning as intended at this time.

4.5.1 Impoundment Inlet

Inflow into the Fly Ash Pond is via multiple inlet pipes on the northeastern corner of the impoundment in cell 1, as well as storm water runoff that flows naturally into the pond. From this inlet location the ash and water slurry then flows through a series of pipes to fill either cells 2, 3 (depending on which cell is being cleaned out) and then into cell 4 which contains the outlet works for the impoundment. The inlet pipe and pipes connecting all of the cells appear to be in functional condition.

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4.5.2 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. Currently there are two known piezometers in the dikes that consist mainly of fly ash and bottom ash. However, these piezometers are not monitored with any specific frequency.

We inquired if Ameren Energy had developed an Emergency Action Plan (EAP) related to a potential failure of the impoundments. We understand that an EAP has not been developed for the site.

We also inquired if Ameren Energy had developed an Operation and Maintenance (O&M) Manual for the Meredosia Power Generating Station bottom ash and fly ash impoundments. We understand that an O&M Manual has also not been developed for the site. The above referenced EAP should be part of this O&M Manual, but should be capable of being a stand-alone document.

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SECTION 5 – OVERALL CONDITION OF THE FACILITY IMPOUNDMENTS

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

We understand 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. In light of this situation, we have noted several items as follows that present some concern in this regard:

- Large mature trees exist on the toe and slopes of both the Bottom Ash Pond and Fly Ash Pond and stumps remain in some areas where trees were recently cut down. These stumps can decompose over time and eventually create preferential paths for uncontrolled seepage
- 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 embankments are not currently available for our review. However, we understand that these 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.
- We understand that an Operation and Maintenance (O&M) Manual is not currently in place for the site. Developing an O&M manual which includes a section that discusses the safety inspection and monitoring program would be recommended to standardize safety inspection and monitoring practice.

Changes in Design or Operation of the Impoundments following Initial Construction

We are not aware of significant changes in the design or operation of the impoundments that have been implemented. We reviewed a 1991 study for raising the pool level in the Fly Ash Pond, but we believe that this concept was never implemented.

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 not limited to seepage quantities

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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: _____ Date: _____

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

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SECTION 6 – RECOMMENDATIONS

6.1 Definitions

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

Priority 2 Recommendation: Priority 2 Recommendations where action is needed or required to prevent or reduce further impoundmentage 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 emergency action plan (EAP) for the facility.** An EAP should be prepared for the Fly Ash and Bottom Ash Ponds as well as any other pertinent features related to the impoundments.
2. **Perform a hydrologic and hydraulic study.** This study should be performed to determine if the existing ponds are capable of impounding the appropriate inflow design flood without overtopping of the impoundments. At a minimum, documentation required for this evaluation will include a current topographic survey of the site and surrounding drainage basin, basin characteristics (surface runoff/infiltration condition) and sufficient hydrologic data to determine the design storm event.
3. **Establish seepage and ground water monitoring program**
   As discussed in Section, 3.5, seepage water at various locations along the downstream embankment of the Fly Ash pond was observed. The presence of seepage water at the downstream embankment raises serious questions regarding the integrity and the stability of the embankment. Therefore, a detailed monitoring program should be established to quantify various important factors including seepage quantities through the embankment, the amount of sediments carried by the seepage water, and the fluctuation of ground water levels.
4. **Perform embankment and structure stability analyses.** The slopes of the Bottom Ash Pond were steep, appearing to be 1H:1V in some cases, and their stabilities are is unknown. Due to the lack of documented engineering design analysis, new stability analyses of both impoundments should be performed. The analyses should incorporate seepage monitoring data and include evaluation of the embankments and the structures under seismic loading scenarios. According to Ameren, 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.

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5. **Perform video assessments of culvert piping.** Culvert piping used for the outlet works of the impoundments is vitrified clay pipe. As this pipe is either past or nearing the end of its life expectancy, a video assessment should be performed of all culvert piping to determine its effectiveness and if remedial actions are necessary.
6. **Control vegetation on the upstream and downstream slopes. Remove the trees and stumps from the embankment including the large tree at the overflow outlet discharge point.** Refer to FEMA Manual 534 (Impact of plants on Earthen Impoundments) for guidance on vegetation removal. This manual is available on the FEMA website.

6.3 Priority 2 Recommendations

1. **Repair erosion of embankment.** Minor surface erosion was noted at both the Bottom Ash Pond and Fly Ash Pond. Areas where erosion has occurred should be filled in and re-dressed with appropriate fill in order to prevent erosion from cutting further into the embankments.
2. **Review the condition of riprap at the downstream toe of the bottom ash embankment and upgrade the riprap, if needed, to meet typical requirements for riprap size and placement.**
3. **Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities.** We believe that this log will provide continuity during periods of staff change.
4. **Develop an Operation and Maintenance (O&M) manual for the impoundments and the facility.** The O&M manual should include at least the following three key elements:
   - Procedures needed for operation and maintenance of the impoundments during typical operating conditions
   - Procedures for monitoring performance of the impoundments, including visible changes such as surface erosion, settlement and sloughing; internal embankment changes such as erosion due to uncontrolled seepage; and fluctuations in groundwater level
   - The EAP

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SECTION 7 – GLOSSARY OF TERMS

For the EPA Ash Pond Assessment program, the following glossary of terms shall be used for classification unless otherwise noted.

Hazard Potential Rating

"Hazard potential" means the possible adverse incremental consequences that result from the release of water or stored contents due to the failure of the impoundment or reservoir or the misoperation of the impoundment, reservoir, or appurtenances. The hazard potential classification of a 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's or reservoir's safety, structural integrity, or flood routing capacity. These classifications are as described below:

1. **Low Hazard Potential**

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

2. **Significant Hazard Potential**

   "Significant hazard" means a impoundment's or reservoir's failure will result in no probable loss of human life but can cause major economic loss, environmental impoundmentage, 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 population and significant infrastructure.

3. **High Hazard Potential**

   "High hazard" means a impoundment's or reservoir's 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, a 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).

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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 New Jersey Department of Environmental Protection Impoundment Safety Guidelines for the Inspection of Existing Impoundments (January 2008), 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, 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, 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, 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 – Considered unsafe. A impoundment safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

*the term expected is to be defined as likely

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 a impoundment or reservoir and its appurtenant works during the visual assessment. In addition the term unknown may be utilized as applicable.

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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.

Recommendation Listing

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 (July, 1998 FAC 01-07) 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 that may threaten the safety of the impoundment.

Priority 2 Recommendations: Priority 2 Recommendations where action is needed or required to prevent or reduce further impoundmentage 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.

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SECTION 8 – REFERENCES

- US Department of Agriculture (USDA)/ Natural Resources Conservation Service (NRCS) Web Soil Survey - online

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

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

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

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

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AERIAL IMAGE

NTS

IMAGE SOURCE: GOOGLE EARTH PRO - IMAGE DATE 08/19/10

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PROJECT NO.	112618
DATE:	08/19/10
DRAWN BY:	MAG
CHECKED BY:	BDH
FILE NAME:	

LOCATION OF CRITICAL INFRASTRUCTURE

MEREDOSIA POWER GENERATING STATION
800 SOUTH WASHINGTON STREET
MEREDOSIA, IL 62665

FIGURE

1

10 Sep 2010, 2:19pm, MGardella

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AERIAL IMAGE

NTS

IMAGE SOURCE: GOOGLE EARTH PRO - IMAGE DATE 08/19/10

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PROJECT NO.	112618
DATE:	08/19/10
DRAWN BY:	MAG
CHECKED BY:	BDH
FILE NAME:	

MEREDOSIA POWER STATION
AERIAL MAP

MEREDOSIA POWER GENERATING STATION
800 SOUTH WASHINGTON STREET
MEREDOSIA, IL 62665

FIGURE
2

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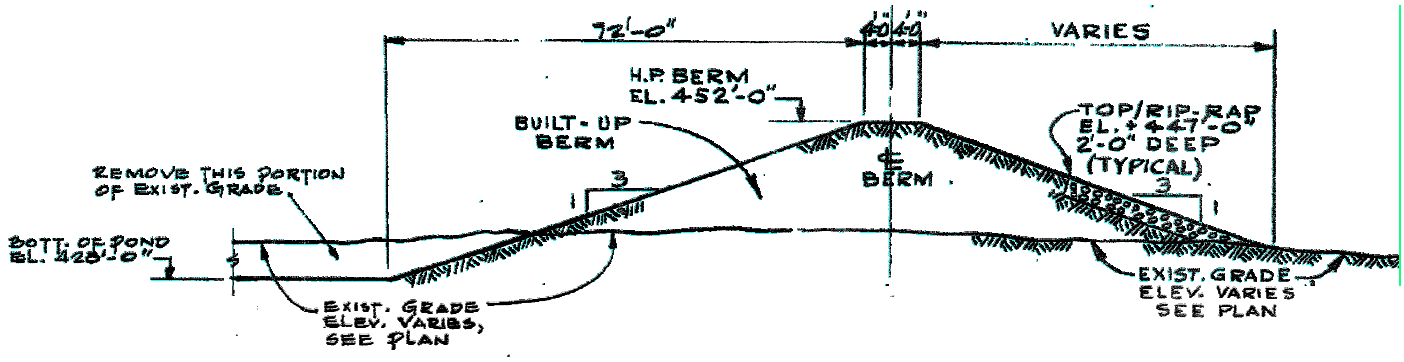

TYPICAL EMBANKMENT SECTION - FLY ASH POND

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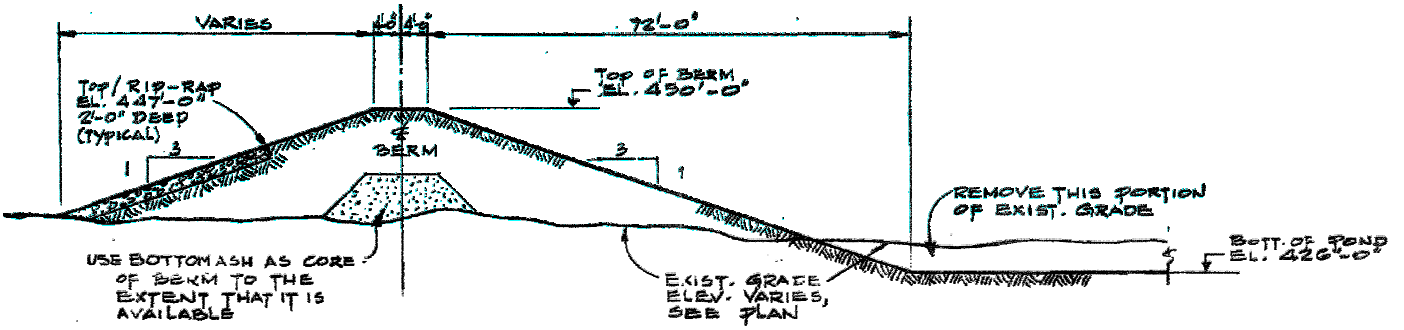

TYPICAL EMBANKMENT SECTION - BOTTOM ASH POND

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FILE NAME:	

TYPICAL CROSS SECTION
BOTTOM AND FLY ASH PONDS

MEREDOSIA POWER GENERATING STATION
800 SOUTH WASHINGTON STREET
MEREDOSIA, IL 62665

FIGURE
3

ATTACHED IMAGES:
ATTACHED XREFS:
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CAD FILE: U:\MGardella\ASH PONDS\Reports\Meredosia Report\ LAYOUT: General (2)

LOCATIONS OF SITE ASSESSMENT PHOTOS FLY ASH POND

MEREDOSIA POWER GENERATING STATION
800 SOUTH WASHINGTON STREET
MEREDOSIA, IL 62665

KLEINFELDER
Bright People. Right Solutions.
611 Corporate Circle, Suite C
Golden, Colorado 80401
PH. 303-237-6601 FAX. 303-237-6602
www.kleinfelder.com

PROJ. NO.: 112618
ACAD FILE: Meredosia Figure 5.dwg

DESIGNED BY: N/A
DRAWN BY: M. GARDELLA
CHECKED BY: B. HAVENS
DATE: 08/18/10
SCALE: NTS

FIGURE 4
1 of 1 sheets

NO.	REVISION	BY	DATE
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0	-	—	—
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ATTACHED IMAGES:
ATTACHED XREFS:
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CAD FILE: U:\MGardella\ASH PONDS\Reports\Meredosla Report\ LAYOUT: General (2)

LOCATIONS OF SITE ASSESSMENT PHOTOS BOTTOM ASH POND

MEREDOSIA POWER GENERATING STATION
800 SOUTH WASHINGTON STREET
MEREDOSIA, IL 62665

KLEINFELDER
Bright People. Right Solutions.
611 Corporate Circle, Suite C
Golden, Colorado 80401
PH. 303-237-6601 FAX. 303-237-6602
www.kleinfelder.com

PROJ. NO.: 112618
ACAD FILE: Meredosia Figure 4.dwg

DESIGNED BY: N/A
DRAWN BY: M. GARDELLA
CHECKED BY: B. HAVENS
DATE: 08/18/10
SCALE: NTS

FIGURE 5
1 of 1 sheets

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PLOTTED: 10 Sep 2010, 2:27pm, MGardella

Appendix A

Site Visit Evaluation Checklists

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Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: MEREDOSIA POWER STATION Date: 08-10-10

Unit Name: BOTTOM ASH POND Operator's Name: AMEREN ENERGY

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

Inspector's Name: BRIAN HAVENS, 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 WITH ANNUAL REVIEW		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	441.8 ft MG		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	VARIES (STOP LOGS) OUTLET PIPES 426		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)?	450'		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	N/A PLANS M. WELLS	FOR & PIEZOS	Is water exiting outlet flowing clear?	UNKNOWN	UNKNOWN N/A
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)?	UNKNOWN	UNKNOWN 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?		N/A	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
8	ON DRAWINGS & OTHER INFORMATION PROVIDED CLEARING AND GRUBBING OPERATIONS ARE NOT CALLED OUT EXCEPT IN NOTES REFERENCING SPECIFICATIONS THAT ARE UNACCOUNTED FOR AND SUBSEQUENTLY UNAVAILABLE FOR REVIEW.
9	TREES ON EMBANKMENT SLOPES & TOES RANGE FROM LESS THAN 1" TO ~18"
20	OUTLET LOCATIONS FOR THE BOTTOM ASH POND WAS SUBMERGED DURING TIME OF INSPECTION & OUTFLOW COLOR COULD NOT BE DETERMINED
23.	WATER HAS BEEN AGAINST THE TOE RECENTLY WITH THE RAISED ILLINOIS RIVER LEVEL. HOWEVER, IT WAS RECEDED AT THE TIME OF INSPECTION

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL 0000116-003 INSPECTOR BRIAN HAVENS, MATT GARDEZELA

Date 08-10-10

Impoundment Name BOTTOM ASH POND

Impoundment Company AMEREN ENERGY

EPA Region V

State Agency (Field Office) Addresss 5415 N. UNIVERSITY

PEORIA, IL 61614

Name of Impoundment BOTTOM ASH 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: SETTLING POND FOR BOTTOM ASH

Nearest Downstream Town : Name NAPLES, IL

Distance from the impoundment APPROXIMATELY 5 MILES

Impoundment Location: Longitude W 90 Degrees 34 Minutes 16 Seconds

Latitude N 39 Degrees 49 Minutes 12 Seconds

State ILLINOIS County MORGAN

Does a state agency regulate this impoundment? YES _____ NO X (DAM SAFETY NOT MONITORED ONLY DISCHARGE)

If So Which State Agency? ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (DISCHARGE ONLY)

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.

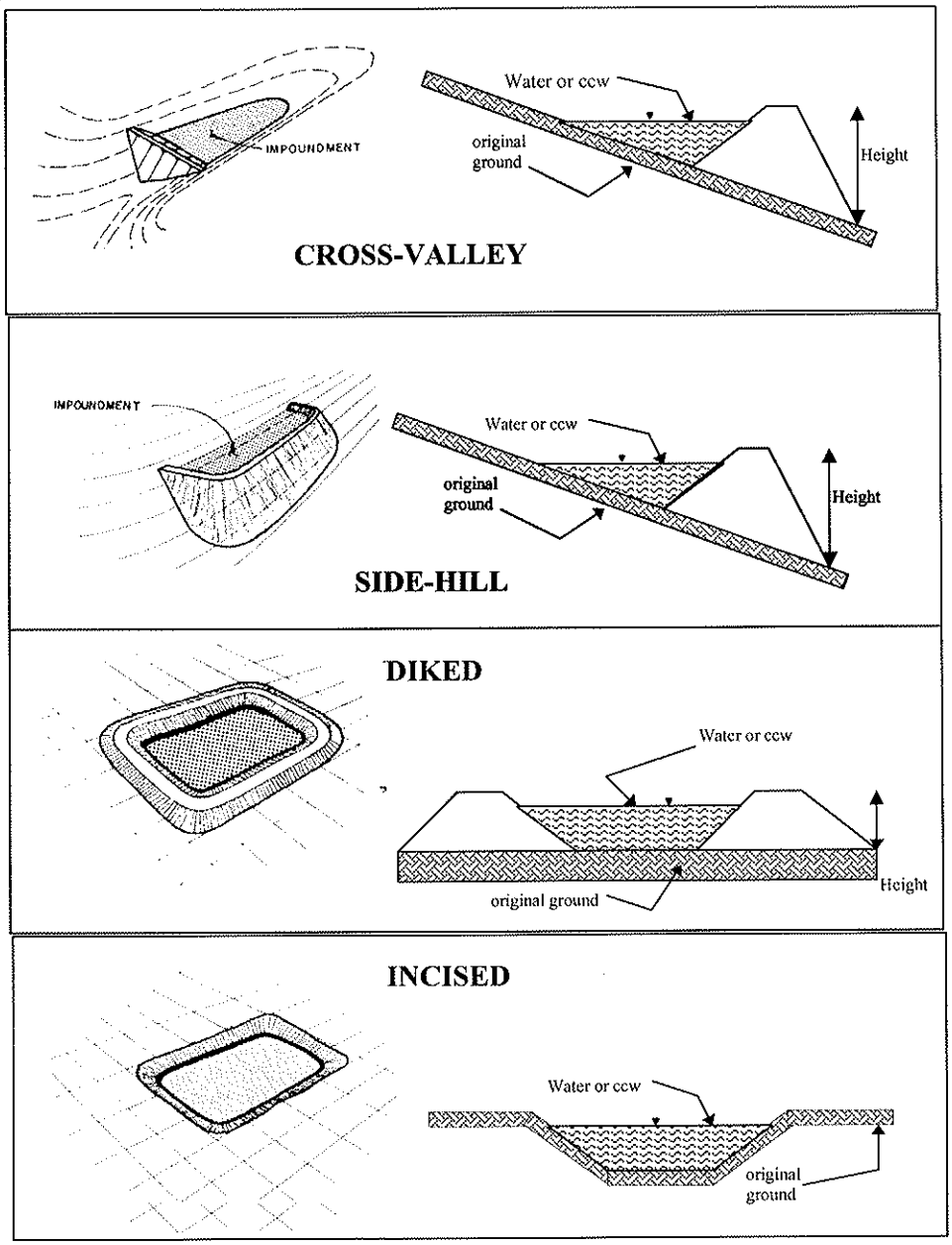
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. 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:

THE BOTTOM ASH POND SITS IMMEDIATELY ADJACENT TO THE ILLINOIS RIVER. IN THE EVENT OF AN EMBANKMENT FAILURE AT THIS LOCATION BOTTOM ASH SLURRY WOULD ENTER THE ILLINOIS RIVER ALMOST IMMEDIATELY. THIS COULD RESULT IN LARGE ENVIRONMENTAL DAMAGES AS WELL AS ECONOMIC LOSS AS THIS IS A NAVIGABLE WATERWAY USED FOR COMMERCE. LOSS OF LIFE WOULD NOT BE EXPECTED AS THERE ARE NO STRUCTURES OR FACILITIES BETWEEN THE BOTTOM ASH POND AND THE ILLINOIS RIVER. ALSO, NO SIGNIFICANT STRUCTURES SEEM TO APPEAR UNTIL 5 MILES DOWNSTREAM OF THE IMPOUNDMENT NEAR THE TOWN OF NAPLES.

CONFIGURATION:



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

Embankment Height 450 feet
Pool Area ~ 22 acres
Current Freeboard ~ 8.2' MSL feet

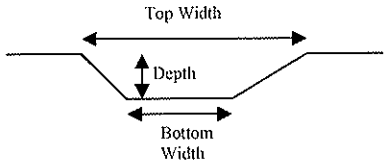
Embankment Material BOTTOM ASH CORE + EARTH EMBANKMENT
Liner N/A
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

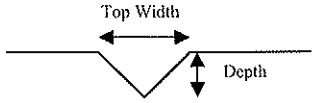
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

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

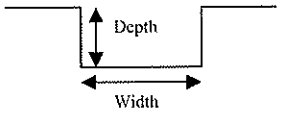
TRAPEZOIDAL



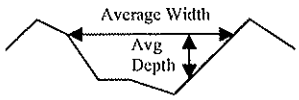
TRIANGULAR



RECTANGULAR

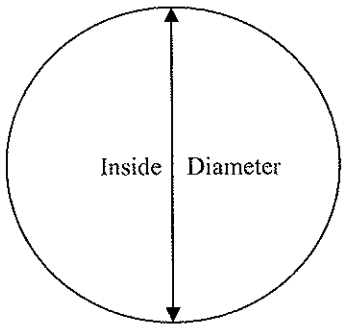


IRREGULAR



X **Outlet**

12" inside diameter



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

_____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

_____

X **Other Type of Outlet** (specify) WEIR BOX (TRIANGULAR) CONNECTED TO 12" VCP

The Impoundment was Designed By SARGENT & LUNDY ENGINEERS

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: MEREDOSIA POWER STATION Date: 08-10-10

Unit Name: FLY ASH POND Operator's Name: AMEREN ENERGY

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

Inspector's Name: BRIAN HAVENS, 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 REVIEW		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	~447.0'		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	VARIES (STOP LOGS) OUTLET PIPES 428		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)?	~~450.0'~~ 450.9'		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?	N/A PLANS PIEZOS FOR EM. WELL		Is water exiting outlet flowing clear?	UNKNOWN N/A	
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)?	UNKNOWN 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?		N/A	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
8	ON PROVIDED DRAWINGS & OTHER INFORMATION CLEARING AND GRUBBING INFORMATION IS NOT CALLED OUT EXCEPT IN NOTES REFERENCING SPECIFICATIONS THAT ARE UNAVAILIBLE FOR REVIEW.
9	TREES ON EMBANKMENT SLOPES AND TOES RANGE FROM LESS THAN 1" TO ≈ 12"
20	OUTLET LOCATION SUBMERGED DURING TIME OF INSPECTION & OUTFALL COLOR COULD NOT BE DETERMINED.
23	WATER WAS PRESENT AT THE TOE OF EMBANKMENT FROM ELEVATED LEVELS OF THE ILLINOIS RIVER & HIGH PRECIPITATION IN THE AREA

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL 0000116-004 INSPECTOR BRIAN HAVENS, MATT GARDERCA

Date 08-10-10

Impoundment Name FLY ASH POND

Impoundment Company AMEREN ENERGY

EPA Region V

State Agency (Field Office) Addresss 5415 N. UNIVERSITY
PEORIA, IL 61614

Name of Impoundment FLY ASH 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: SETTLING POND FOR FLY ASH

Nearest Downstream Town : Name NAPLES, IL

Distance from the impoundment APPROXIMATELY 5 MILES

Impoundment Location:
Longitude W 90 Degrees 34 Minutes 20 Seconds
Latitude N 39 Degrees 49 Minutes 2 Seconds
State ILLINOIS County MORGAN

Does a state agency regulate this impoundment? YES _____ NO X (DAM SAFETY NOT MONITORED ONLY DISCHARGE

If So Which State Agency? ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (DISCHARGE ONLY)

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.

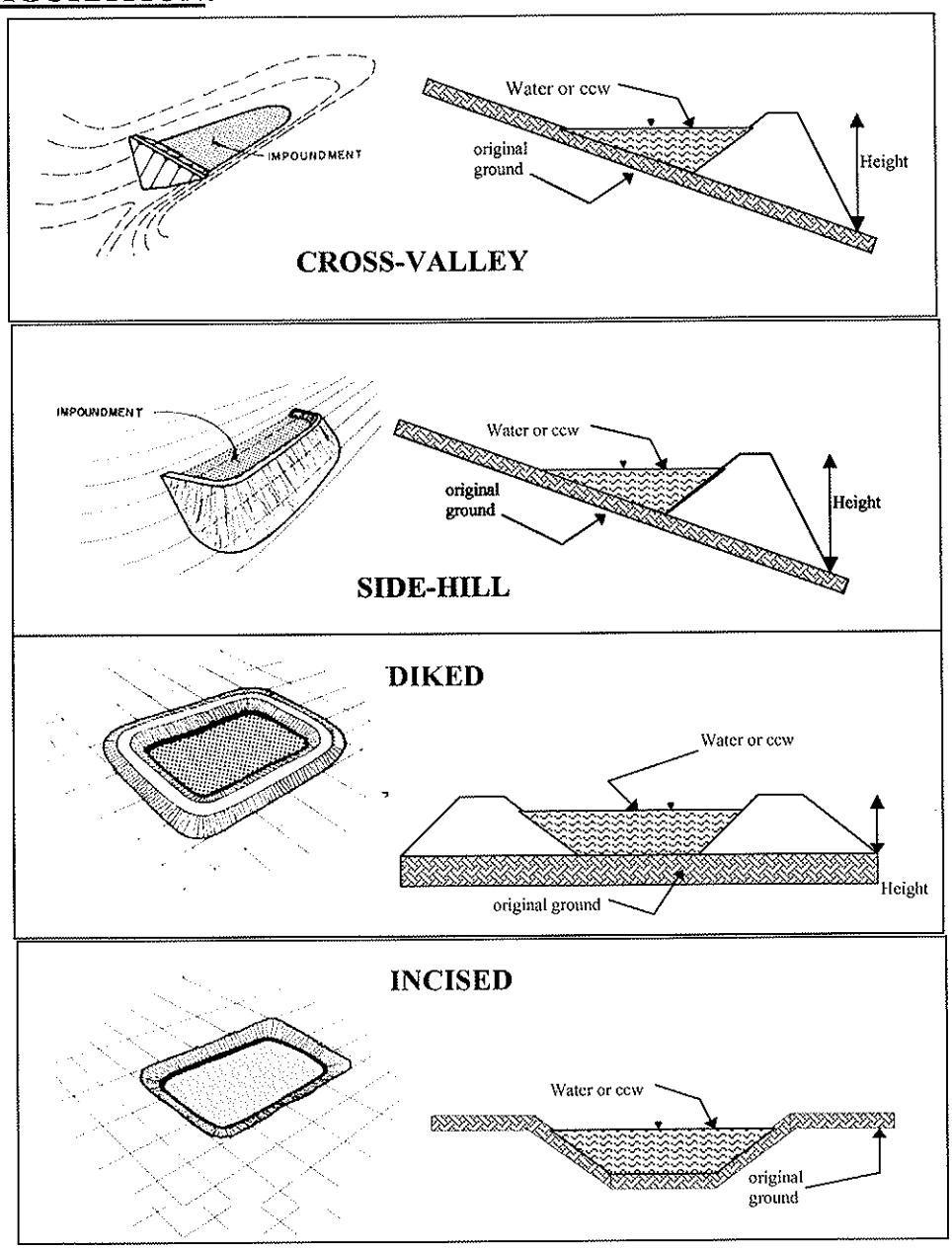
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. 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:

THE FLY ASH POND IS LOCATED ADJACENT TO THE ILLINOIS RIVER. IN THE EVENT OF AN EMBANKMENT FAILURE AT THE FLY ASH POND, FLY ASH SLURRY WOULD ENTER THE ILLINOIS RIVER ALMOST IMMEDIATELY. IF THIS WERE TO OCCUR IT COULD RESULT IN LARGE ENVIRONMENTAL DAMAGES AS WELL AS ECONOMIC LOSSES, AS THE ILLINOIS RIVER IS A NAVIGABLE WATERWAY USED FOR COMMERCE. LOSS OF LIFE WOULD NOT BE EXPECTED AS NO RESIDENCES, STRUCTURES OR FACILITIES EXIST BETWEEN THE FLY ASH POND AND THE ILLINOIS RIVER. ALSO, NO SIGNIFICANT STRUCTURES SEEM TO APPEAR UNTIL 5 MILES DOWN STREAM OF THE FLY ASH NEAR THE TOWN OF NAPLES.

CONFIGURATION:



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

Embankment Height 450.9 - 452 feet
Pool Area ~77 acres
Current Freeboard 3.9' - 5' min feet

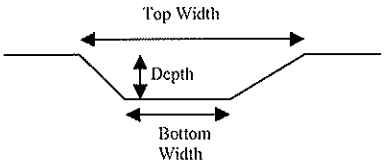
Embankment Material COMPACTED EARTH FILL
Liner N/A
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

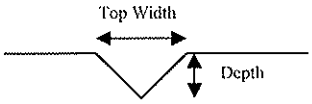
N/A **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

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

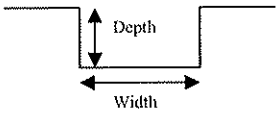
TRAPEZOIDAL



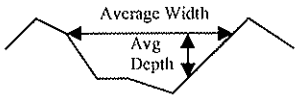
TRIANGULAR



RECTANGULAR

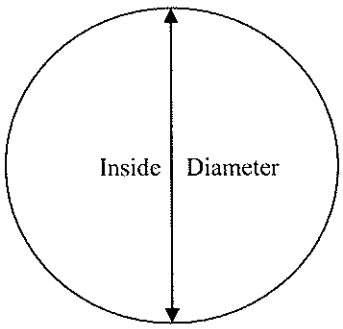


IRREGULAR



X **Outlet**

12" inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
X other (specify) VITRIFIED CLAY PIPE (VCP)

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) WEIR BOX CONNECTED TO VCP (12")

The Impoundment was Designed By SARGENT & LUNDY ENGINEERS

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: _____

2 LOCATIONS OF MINOR POSSIBLE SEEPAGE NOTED IN PAST INSPECTION REPORT. NO DOCUMENTATION OR KNOWLEDGE OF SIGNIFICANT SEEPAGE.

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 Visit Photographs

Photo 1 – Bottom Ash Pond Embankment Looking Southwest (Note Pipeline, Foundations and Fence)

Photo 2 – Minor Surface Erosion of Bottom Ash Pond Crest (Note Typical Crest Condition and Pipeline)

Photo 3 – Minor Surface Erosion of Crest and Downstream Slope of the Bottom Ash Pond (Typical)

Photo 4 – Bottom Ash Pond Inlet Piping (Note Coal Stockpile in Background)

Photo 5 – Bottom Ash Pond Inlet Piping

Photo 6 – Settling Channel of Bottom Ash Pond near Inlet

Photo 7 – Riprap and Mature Trees on the Downstream Slope of the Bottom Ash Pond (Typical)

Photo 8 – Riprap on Downstream Slope of Bottom Ash Pond (Typical)

Photo 9 – Undersized Riprap on Downstream Embankment of the Bottom Ash Pond

Photo 10 – Emergency Spillway Pipe for the Bottom Ash Pond

Photo 11 – Emergency Spillway Pipe for the Bottom Ash Pond without any Noticeable Obstructions

Photo 12 – North Side of the Oil Delivery Sheet Pile Platform (Note Penetration into Embankment)

Photo 13 – South Side of the Oil Delivery Sheet Pile Platform (Note Penetration into Embankment)

Photo 14 – Outlet Works for the Bottom Ash Pond (Note Broken Support of Walkway)

Photo 15 – Bottom Ash Pond Outlet Piping Outfall (Submerged)

Photo 16 – Bottom Ash Pond Outlet Pipe Discharge Bay (Note Illinois River in Background)

Photo 17 – Debris Pile and Heavy Vegetation at the Downstream Toe of the Bottom Ash Pond (Typical)

Photo 18 – Vegetated Riprap on the Bottom Ash Pond Southwest Embankment

Photo 19 – Area between the Fly Ash and Bottom Ash Impoundments Looking Northwest

Photo 20 – Riprap on Downstream Slope of Bottom Ash Pond (Note Fence at Crest)

Photo 21 – Area between the Fly Ash and Bottom Ash Impoundments Looking Southeast

Photo 22 – General Photo of Bottom Ash Pond Looking Northeast

Photo 23 – Upstream Slope of the Bottom Ash Pond (Note Steep Slopes and Light Pole Penetrations)

Photo 24 – Sluice Pipe Penetrations through Crest of Bottom Ash Pond Embankment

Photo 25 – General Bottom Ash Pond Photograph (Note Bottom Ash Stockpile and Settling Channel)

Photo 26 – General Photograph of the Bottom Ash Pond (Note Settling Channel and Main Pond)

Photo 27 – Stockpile of Bottom Ash Recovered from the Bottom Ash Pond

Photo 28 – Typical Crest Condition of the Bottom Ash Pond (Note Light Pole Penetrations in Crest)

Photo 29 – Typical Embankment of Fly Ash Pond (Note Fly Ash Cell Divider Embankment to Left in Photo)

Photo 30 – Vegetation on the Downstream Slope and Toe of the Fly Ash Pond

Photo 31 – Fly Ash Pond Embankment (Note Riprap and Felled Tree Debris near Toe)

Photo 32 – Fly Ash Pond Outlet Works

Photo 33 – Fly Ash Pond Outlet Works Pipe Outfall (Submerged)

Photo 34 – Flooded Timber and Felled Tree Debris at the Toe of the Fly Ash Pond

Photo 35 – Mowed Woody Vegetation on Downstream Slope of Fly Ash Pond (Note Intact Root System)

Photo 36 – Fly Ash Pond Culvert Pipe between cells 1 and 4 (Note Emergency Spillway Cut)

Appendix C

Response Letter to the EPA's 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 Generating Company Response

Meredosia Power Station
800 W. Washington
Meredosia, Illinois 62665

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
Fly Ash Pond	1968
Bottom Ash Pond	1972

3. See table below.

Management Unit	Materials Contained in Unit*
Fly Ash Pond	1
Bottom Ash Pond	2

*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	186	700	650	24
Bottom Ash Pond	34	186	139	24

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 only aware of one instance when there was a release from our surface impoundments to the land. The incident occurred in late December, 2006, when we released a small amount of water (less than 500 gallons) from the fly ash pond to the land. In response, we modified the pond and developed internal procedures to prevent a recurrence of the situation. We are not aware of any other 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 Generating Company.

AmerenEnergy Generating Company Response

Hutsonville Power Station
15142 East 1900 Avenue
Hutsonville, Illinois 62433

1. One of the coal-combustion by-product surface impoundments at this Station is classified as a dam by State or Federal regulatory agencies. The unit that we refer to as Ash Pond A is classified under Illinois regulations as a Class III dam which is considered to be a low risk unit. The potential hazard rating was established by company employees, and the basis of the rating was the size of the pond and that in case of a failure, it has a low probability for causing loss of life, where there are no permanent structures for human habitation, or minimal economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed.. The Illinois Department of Natural Resources is the agency that regulates the unit. All the remaining 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 A	1986
Ash Pond B	2000
Ash Pond C	2000
Bottom Ash Pond	1940

3. See table below.

Management Unit	Materials Contained in Unit*
Ash Pond A	1
Ash Pond B	1, 2
Ash Pond C	1, 2, 5
Bottom Ash Pond	2

*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; sanitary wastewater 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 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. 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 are 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.

   Ash Pond A was evaluated for its structural integrity during its design in March, 1984. The individual who conducted the structural integrity assessments/evaluations was a geotechnical engineer who is licensed by the State of Illinois as a professional engineer. The evaluation was used to guide construction of the facility and no corrective actions other than possible design changes of the proposed unit were required based on the evaluation.

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.)**
Ash Pond A	14	250	50	22
Ash Pond B	4.4	70	10	17
Ash Pond C	2	20	5	12

Bottom Ash Pond	1.2	6	3	15

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 Generating Company.

AmerenEnergy Generating Company Response

Newton Power Station
6725 North 500th Street
Newton, Illinois 62448

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
Primary Ash Pond	1977
Secondary Ash Pond	1977

3. See table below.

Management Unit	Materials Contained in Unit*
Primary Ash Pond	1, 2, 5
Secondary 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.)**
Primary Ash Pond	400	9250	2000	47
Bottom Ash Pond	9.3	83	minimal	29

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 Generating Company.

AmerenEnergy Resources Generating Company Response

Duck Creek Power Station
17751 N. Cilco Road
Canton, Illinois 61520

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 1	1976
Ash Pond 2	1986

3. See table below.

Management Unit	Materials Contained in Unit*
Ash Pond 1	1, 2, 4
Ash Pond 2	1, 2, 4

*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; sanitary wastewater 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.)**
Ash Pond 1	58	1300	1900	50
Ash Pond 2	85	1000	800	45

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.

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.