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COAL ASH IMPOUNDMENT
SITE ASSESSMENT FINAL REPORT

Dallman Power Station
City of Springfield
Springfield, Illinois

Prepared by:

KLEINFELDER
Bright People. Right Solutions.

611 Corporate Circle, Suite C
Golden, CO 80401

KLEINFELDER PROJECT NUMBER 112618-6

May 10, 2011

I acknowledge that the management units referenced herein:

- Dallman Ash Pond
- Lakeside Ash Pond

Were assessed on August 13, 2010

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

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 Dallman Power Generating Station that is owned and operated by the City of Springfield, Illinois. This report summarizes the observations and findings of the site assessment that occurred on August 13, 2010.

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

- Lakeside Ash Pond – Commissioned prior to 1958
- Dallman Ash Pond – Commissioned in 1977

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 Dallman Ash Pond impoundment and the original (lower) portion of the Lakeside Ash Pond impoundment are not regulated by any state agency and therefore do not currently have a designated hazard rating. The raised portion of the Lakeside Ash Pond impoundment is regulated by the Illinois Department of Natural Resources and has a Hazard Classification of "III." In addition, the National Inventory of Dams includes the Lakeside Ash Pond with a Hazard Classification of "Low." Due to the potential environmental and economic impacts that a failure at either of these impoundments would present, it is recommended a Hazard Classification of "Significant" be assigned to both impoundments.

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

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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.

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. Control vegetation on the upstream and downstream slopes. Remove the trees from the embankment, including the large tree at the overflow outlet discharge point.
6. Establish sufficient freeboard for west embankment of Dallman Ash Pond at sluice pipe notches.

Priority 2 Recommendations

1. Repair erosion of embankment.
2. Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities.
3. 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 Dallman Power Station on August 13, 2010.

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

1.2 Project Location

The Dallman Power Generating Station and Lakeside Power Generating Station are located on the western bank of Lake Springfield in Springfield, Illinois as shown in Figure 1. The Lakeside Ash Pond is located immediately downstream of Spaulding Dam at the north end of Lake Springfield. The Dallman Ash Pond is located directly north of the Lakeside Ash Pond. The City of Springfield is located in Sangamon County at approximately 39°46'54" N and 89°39'01" W. The City of Springfield has a population of over 117,000 with the metro area having a population over 208,000. Springfield is the capitol of Illinois.

1.3 Site Documentation

The City of Springfield provided the following documents during the time of this assessment to aid in the review of the impoundments:

- Burns & McDonnell, Project Plans, August 13, 1976, Sheets C-1, C-1c, Y-28, Y-29, Y-30, Y-31, Y-32, Y-33, Y-34 and Y-35.
- Hanson Engineers, Inc., Project Plans and Technical Specifications, Lakeside Ash Pond Embankment Modification, August 3, 1987, Sheets 1, 2, 3 and 4.
- Aero-Metric, Inc., Sheboygan, Wisconsin, Topographic Mapping of Dallman Power Plant West Ash Pond, March 19, 2004.
- Hanson Engineers, Maintenance Plan for Lakeside Ash Pond Dam, June 1987.
- Hanson Engineers, Repair of Sinkhole, CWLP Lakeside Ash Disposal Area, September 27, 2004.
- Hanson Engineers, Project Drawings and Specifications, Embankment Toe Drain Additions and Drainage Blanket, CWLP Lakeside Ash Disposal Area, June 18, 1992.
- Illinois Department of Transportation, "Permit No. 19172 for Modification, Operation and Maintenance of the Lakeside Ash Disposal Area Embankment," November 2, 1987.
- PSI, Piezometer Installation for CWLP Ash Ponds, July 12, 2010.

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- Rapps Engineering & Applied Science, Potentiometric Surface for 2nd Quarter 2010 at FGDS Development Landfill, August 2010.
- City of Springfield, "Ash Pond Modification Project (Internal Memo)," July 27, 1987.
- City of Springfield, Construction of the Ash Pond Berm Daily Notes, November 11, 1987 through May 16, 1988.
- Hanson Engineers, Ash Disposal Area Embankment Evaluation, December 31, 1990.
- Hanson Engineers, "Inspection and Recommendations for North Embankment Seepage," September 30, 1993.
- City of Springfield, "Lakeside Ash Pond Berm (Internal Memo)," October 5, 1993.
- Hanson Professional Services, Inc., "Dam Inspection Report," July 30, 1988.
- Hanson Professional Services, Inc., "Dam Inspection Report," June 30, 2004.
- Hanson Professional Services, Inc., "Dam Inspection Report, August 5, 2003.
- Hanson Engineers, "Dam Inspection Report," July 18, 2001.
- Hanson Engineers, "Dam Inspection Report," June 23, 2000.
- Hanson Engineers, "Dam Inspection Report," June 21, 1999.
- Hanson Engineers, "Dam Inspection Report," June 29, 1994.
- Hanson Engineers, "Dam Inspection Report," June 22, 1992.
- City of Springfield, Owner's Maintenance Statement and Dam Inspection Report, November 30, 1990.
- City of Springfield, Owner's Maintenance Statement and Dam Inspection Report, October 31, 1989.

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SECTION 2 – SITE ASSESSMENT

2.1 Attendees

The site assessment was performed on August 13, 2010 by Brian Havens, P.E. and Matt Gardella, E.I.T. of Kleinfelder. Other persons present during the site assessment included:

- Sue Corcoran – City of Springfield
- David Farris – City of Springfield
- Jeff Hillebrenner – City of Springfield
- Christine Zeman – City of Springfield

2.2 Impoundments Inspected

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

- Dallman Ash Pond – Commissioned in 1977
- Lakeside Ash Pond – Commissioned prior to 1958

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 Dallman Power Station impoundments, the weather was sunny and clear with high humidity. Temperatures ranged from 90^{o} to 95^{o} F, and wind ranged from 0 to 5 miles per hour (mph).

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3.1 Site Information and History

The City of Springfield operates two coal-fired power generation facilities, the V.Y. Dallman Power Station and the Lakeside Power Station, as well as a potable water treatment plant. All three of these facilities are located at the same site, which is on the west side of Lake Springfield near Spaulding Dam. The Lakeside Power Station was constructed in the 1930's, and the Dallman Power Station was constructed in the 1970's. The Dallman Power Station contains three coal-fired boilers, and the Lakeside Power Station contains two coal-fired boilers. The Lakeside Power Station was retired in January 2009.

The ash handling practices at the City of Springfield are typical for a coal-fired power plant. Bottom ash and fly ash from all units are sluiced to ash ponds. The raw lake water used for sluicing is obtained from the once-through cooling water systems for the generator condensers. Three separate ash transport systems serve Dallman Units 31 and 32, Dallman Unit 33, and Lakeside. The City of Springfield operates two ash ponds, the Lakeside Ash Pond and the Dallman Ash Pond, and has the flexibility to determine which pond will receive ash. Both ash ponds are located immediately north (downstream) from Spaulding Dam as shown in Figure 2. East Lakeshore Drive is situated on the crest of Spaulding Dam.

The Lakeside Ash Pond is primarily a diked embankment with some incising along the east perimeter. Cell 3 is no longer receiving ash and is in the process of being closed. Cells 1, 2, and 4 no longer receive ash, but do receive scrubber blowdown and filter cake sludge from the drinking water facility. Sluice pipes transporting scrubber blowdown and filter cake sludge discharge into the southwest corner of the pond. Water from the Lakeside Ash Pond discharges into the clarification pond shown in Figure 2. The clarification pond is part of the original Lakeside Ash Pond that was not raised when the remainder of the Lakeside Ash Pond was raised. The clarification pond is used as a final settling pond before discharging water from the pond to Sugar Creek.

The Dallman Ash Pond is a diked embankment. Sluice pipes transporting ash from power generating operations discharge into the primary ash pond at three locations along the west side of the pond as needed (see Figure 2). Water from the Dallman Ash Pond also discharges into the clarification pond.

Prior to the current operational layout at the site of the current power plants, there may have been a fly ash pond located adjacent to the Lakeside Power Station when the power station was constructed in the 1930's. This pond has apparently since been filled and limited information is available regarding this pond.

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3.2 Pertinent Data

A. GENERAL

1. Name ..... V.Y. Dallman Power Generating Station and Lakeside Power Generating Station
2. State ..... Illinois
3. County ..... Sangamon
4. Latitude ..... 39° 45' 31'' North
5. Longitude ..... 89° 36' 12'' West
6. River used for operations ..... Lake Springfield and Sugar Creek
7. Year Constructed ..... 1930's
8. Modifications ..... Embankment raise to Lakeside Ash Pond in 1987-1988
9. Current Hazard Classification ..... Lakeside Ash Pond-Low; Dallman Ash Pond-Not classified
10. Proposed Hazard Classification ..... Significant
11. Size ..... Lakeside Ash Pond – Small; Dallman Ash Pond-Small[2]

B. IMPOUNDMENTS

LAKESIDE POND

1. Type ..... Earthen Dike/Incised Combination
2. Crest Elevation ..... 565± feet[1]
3. Crest Length ..... Approximately 3,900 feet
4. Crest Width ..... 10 feet
5. Impoundment Height ..... Approximately 30 feet
6. Upstream Slope 1H:1V
7. Downstream Slope 2H:1V
8. Volume of Stored Ash ..... 670 acre-feet
9. Ash Storage Capacity ..... 744 acre-feet

DALLMAN POND

1. Type ..... Earthen Dike
2. Crest Elevation ..... 554± feet[1]
3. Crest Length ..... Approx. 4,300 feet
4. Crest Width ..... 15 feet
5. Impoundment Height ..... App. 20 feet
6. Upstream Slope 2.5H:1V
7. Downstream Slope 2.5H:1V
8. Volume of Stored Ash ..... 452 acre-feet
9. Ash Storage Capacity ..... 682 acre-feet

C. DRAINAGE BASIN

1. Area of Drainage Basin ..... Unknown
2. Downstream Description: ..... Discharges directly into Sugar Creek

D. POND INLET

LAKESIDE POND

1. Pond Inlet ..... Multiple inlet sluice pipes from the generating stations

DALLMAN POND

1. Pond Inlet ..... Multiple inlet sluice pipes from the generating stations

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E. POND CAPACITY

LAKESIDE POND

1. Pond Capacity ..... Normal Storage is approximately 744 acre-feet

DALLMAN POND

2. Pond Capacity ..... Normal Storage is approximately 682 acre-feet

F. PRIMARY SPILLWAY

LAKESIDE POND

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

DALLMAN POND

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

G. OUTLET WORKS

LAKESIDE POND

1. Description ..... Reinforced concrete structure with steel walkway
2. Location ..... Approximately 16 feet into the pond from north embankment centerline
3. Intake Structure ..... Weir box with broad-crested weir (stop logs)
   a. Intake Invert Elevation ..... Adjustable
4. Discharge Conduit ..... Reinforced concrete pipe
   a. Length ..... Approximately 60 feet
   b. Diameter ..... 24 inches
5. Outlet Structure ..... Concrete pipe support
   a. Outlet Invert Elevation ..... 549 feet[1]
   b. Energy Dissipation ..... None[3]
6. Discharge Channel ..... Directly into clarification pond
7. Discharge Capacity with Water Surface at Top of Impoundment ..... Unknown

DALLMAN POND

1. Description ..... Reinforced concrete structure with steel walkway
2. Location ..... Approximately 59 feet into the pond from south embankment centerline
3. Intake Structure ..... Weir box with broad-crested weir (stop logs)
   a. Intake Invert Elevation ..... Adjustable
4. Discharge Conduit ..... High Density Polyethylene (HDPE) pipe
   a. Length ..... Approximatley120 feet
   b. Diameter ..... 24 inches
5. Outlet Structure ..... Reinforced concrete headwall
   a. Outlet Invert Elevation ..... 533.5 feet[1]
   b. Energy Dissipation ..... None[3]
6. Discharge Channel ..... Directly into clarification pond
7. Discharge Capacity with Water Surface at Top of Impoundment ..... Unknown

CLARIFICATION POND

1. Description ..... Concrete intake structure with steel walkway and pump structure in embankment
2. Location ..... Approximately 65 feet into the pond from west embankment centerline
3. Intake Structure ..... Weir box with broad-crested weir (stop logs)
   a. Intake Invert Elevation ..... Adjustable
4. Discharge Conduit ..... High Density Polyethylene (HDPE) pipe
   b. Length ..... Approximately120 feet
   c. Diameter ..... 30 inch

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5. Outlet Structure ..... Reinforced concrete headwall
   d. Outlet Invert Elevation ..... 532.5 feet[1]
   e. Energy Dissipation ..... Riprap
6. Discharge Channel ..... Directly into Sugar Creek
7. Discharge Capacity with Water Surface at Top of Impoundment ..... Unknown

H. MANAGEMENT

1. Owner ..... City of Springfield, Illinois
2. Purpose ..... Coal Fired Energy Generation

Notes:
1. All elevations based on construction drawings by Burns & McDonnell (Dallman Ash Pond) and Hanson Engineers (Lakeside Ash Pond).
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.

3.3 Regional Geology and Seismicity

The plant site is situated in the Sugar Creek Valley. As such, the subsurface conditions are expected to include Quaternary alluvial deposits overlying sedimentary bedrock. Based on our review of historical soil borings completed by PSI at the west perimeter of the ash ponds in 2010, it appears that the alluvial deposits at the site include combinations of clay, silt, and sand. The alluvial soil profile appears to be underlain by shale bedrock at the boring locations.

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

3.4 Hydrology and Hydraulics

The ponds appear to be situated in such a manner that the watershed drainage contributing to the stored volume of the ponds is most likely limited to stormwater runoff from an area directly east of the Lakeside Ash Pond and precipitation that falls within the impoundments themselves. However, the exact extents of the watershed cannot be determined without a current topographic survey of the 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.

We did note that the freeboard along the west side of the Dallman Ash Pond was negligible at the locations where the sluice pipes penetrate through the embankment crest, resulting in an apparent higher risk of embankment overtopping at these locations.

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3.5 Geotechnical Considerations

Regarding stability of the embankment slopes, we understand that the City of Springfield does not have documentation of specific stability analyses for the impoundments. One aspect of the embankment stability that merits consideration is the raised portion of the Lakeside Ash Pond embankment. The vertical embankment extension is a combination of scrubber sludge and silty clay that were placed on top of existing bottom ash and other sluiced materials. Pore pressures in the ash beneath the vertical embankment extension may reduce the stability of the embankment extension if the pore pressures are not sufficiently dissipated with some type of internal drainage system. The plans show a collector drain near the toe of the raised portion of the embankment, which may reduce these pore pressures, but further evaluation is merited.

Regarding seepage, we understand that uncontrolled seepage has been observed at various locations on the downstream slope along the north and west sides of the Lakeside Ash Pond's vertical embankment extension by the City of Springfield and Hanson Professional Services at various times between 1992 and 2008. As a result, we understand that various modifications were made to limit uncontrolled seepage at the raised portion of the embankment, including installation of additional toe drains, inverted filters, and filter cake sludge seals. We noted visible uncontrolled seepage along the west side of the Lakeside Ash Pond during our recent visit as well. Based on the continued presence of uncontrolled seepage water, some type of monitoring system would be valuable to document changes in seepage rate or composition.

3.6 Structural Considerations

The primary structures within this facility include the outlet works for the Lakeside Ash Pond, Dallman Ash Pond, and the clarification pond (part of the original Lakeside Ash Pond). These structures are described in Section 3.2.G of this report. According to eight separate inspection reports performed in the last 18 years, the bridge and piers for the Lakeside Ash Pond outlet structure were in "good condition". During our assessment, the visible portions of the outlet works for each of the three structures appeared to be in good condition.

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 known previous federal or state assessments of the ash ponds at this site. Based on observations by the City of Springfield and Hansen Professional Services, there have been no major incidents involving the ash ponds. City of Springfield personnel perform daily visits to the impoundments and their associated structures to evaluate the operating conditions of the ponds. In addition,

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the City of Springfield retains Hanson Professional Services, Inc. to make an annual site assessment with recommendations.

3.8 Hazard Classification

The Dallman Ash Pond is not regulated by any state agency and therefore does not currently have a designated hazard rating. The Lakeside Ash Pond is regulated by the Illinois Department of Natural Resources and is classified as a "Low Hazard" potential. 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, because 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 because the ash ponds are immediately adjacent to the Sugar Creek without any homes, recreational facilities, businesses, roads, or other structures immediately downstream of the impoundments. However, a hazard classification analysis is needed to determine the hazard classification of the impoundments.

3.9 Site Access

We were required to seek permission from the City of Springfield, Illinois to gain access to the plant site. After arriving at the site and meeting with representatives of the City of Springfield, 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 City of Springfield property.

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The impoundment embankments, toes, and outlet works (portions not inundated at the time of assessment) of both the Lakeside Ash Pond and Dallman Ash Pond were observed during the August 13, 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 Lakeside Pond

4.1.1 Upstream Slope

Overall, the upstream slope of the impoundment was in satisfactory condition. Specific observations include:

- Grasses and woody bushes were observed on the upstream slope for Cell Number 3.

4.1.2 Crest

Overall, the crest of the impoundment was in satisfactory condition. Photograph 28 shows the condition of the crest where it abuts the crest of Spaulding Dam. Specific observations include:

- The impoundment crest is a roadway.
- No major depressions or rutting were noted on the impoundment crest.
- Minor erosion was noted on the 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.

4.1.3 Downstream Slope

Overall, the downstream slope was in satisfactory condition. Photographs 25, 26, and 27 show the conditions of the downstream slope. Specific observations include:

- Uncontrolled seepage was noted on the west downstream slope near the juncture between the original top of embankment and the toe of the raised portion of the embankment. This area also serves as a vehicle access road.
- Portions of the downstream slopes were covered with thick vegetation.
- Sluice lines are located on the west downstream slope.

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4.1.4 Downstream Toe Areas

The toe areas of the embankment were in satisfactory condition. See Photograph 33 for the condition of these areas.

4.1.5 Outlet Works

The outlet works of the Lakeside Ash pond are described in Section 3.2.G.

4.1.6 Impoundment Inlet

Inflow into the Lakeside Ash Pond is via metal piping at the southwest corner of the impoundment, storm water runoff that flows naturally into the pond, and precipitation.

4.2 Dallman Pond and Clarification Pond

4.2.1 Upstream Slope

Overall, the upstream slope of the impoundment was in satisfactory condition.

4.2.2 Crest

Overall, the crest of the impoundment was in satisfactory condition. Photograph 3 shows the condition of the crest. Specific observations include:

- The impoundment crest is a roadway.
- No major depressions or rutting were noted on the impoundment crest.
- Minor erosion was noted on crest in multiple locations. This erosion was typically less than six inches in depth and typically appeared on the edges of the crest, where grade breaks occurred when transitioning to embankment slopes.

4.2.3 Downstream Slope

Overall, the downstream slope was in satisfactory condition. Photograph 9 shows the conditions of the downstream slope. Specific observations include:

- Grasses and woody bushes were observed on the downstream slope and at the toe of the embankment for a large portion of the impoundment.
- Minor erosion was noted near the 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. However, we noted some locations where the erosion was greater than 12 inches in depth as shown in Photograph 7.

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4.2.4 Toe Areas

The toe areas of the embankment were in satisfactory condition. See Photographs 16 and 18 for the condition of these areas. Specific observations include:

- A mature tree was noted at the toe of the embankment near the clarification pond outlet.

4.2.5 Outlet Works

The outlet works of the Dallman Ash Pond and the clarification pond are described in Section 3.2.G.

4.2.6 Impoundment Inlet

Inflow into the Dallman Ash Pond is via multiple inlet pipes on the west side of the ash pond, storm water runoff that flows naturally into the pond, and precipitation.

4.3 Other

Kleinfelder inquired if the City of Springfield had developed an Emergency Action Plan (EAP) related to a potential failure of the impoundments. Kleinfelder understands that an EAP has not been developed for this site.

Kleinfelder also inquired if the City of Springfield had developed an Operation and Maintenance (O&M) manual for the ponds. A maintenance plan was developed for the Lakeside Ash Pond in June 1987, but an operations manual has not been developed for this pond. In addition, an O&M manual has not been developed for the Dallman Ash Pond.

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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:

- One or more mature trees exist on the toe and slopes of the clarification pond near the outlet to Sugar Creek. The root systems from these trees may impact the embankment integrity 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.
- Visible uncontrolled seepage continues at the raised portion of the embankment of the Lakeside Ash Pond.
- Documentation of the impoundment capacity under potential hydrologic and hydraulic loading is not currently available for review. Overtopping of the Dallman Ash Pond at the sluice pipe penetrations is a concern.
- We understand that an Operation and Maintenance (O&M) manual is not currently in place for the site, except for the maintenance plan developed in 1987 for the Lakeside Ash Pond. Developing an O&M manual, which includes a section that discusses the safety assessment and monitoring program, would be recommended to standardize safety assessment and monitoring practices.

Changes in Design or Operation of the Impoundments following Initial Construction

The Lakeside Ash Pond embankment was raised approximately 10 feet in 1987-1988. This modification was designed by Hanson Professional Services and has been monitored by Hanson periodically and, at a minimum, every 5 years.

Adequacy of Program for Monitoring Performance of the Impoundments

The present monitoring program primarily involves visual assessments by city personnel and by Hanson Professional Services. These visual assessments seem to be adequate to address issues such as surface erosion and general condition of

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the impoundments. However, a more detailed monitoring program is recommended to be established to quantify various important factors associated with embankment stability. Those factors include, but are not limited to, seepage quantities through the embankment, the amount of sediments carried by the seepage water, and the fluctuation of ground water levels.

5.2 Summary Statement

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

FAIR

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

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

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6.1 Definitions

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

Priority 2 Recommendation: Priority 2 Recommendations are where action is needed or required to prevent or reduce further damage or impaired operation of the facility and/or improve or enhance the O&M of the facility, which 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 Dallman Power Generating Station.

6.2 Priority 1 Recommendations

1. **Prepare an emergency action plan (EAP) for the facility by 10/1/2011.** An EAP should be prepared for the ponds as well as any other pertinent features related to the impoundments. The EAP should be reviewed by the EPA.
2. **Perform a hydrologic and hydraulic study by 10/1/2011.** This study should be performed to determine if the existing ponds are capable of impounding the appropriate inflow from a 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 conditions), and sufficient hydrologic data to determine the design storm event. The results of this evaluation should be reviewed by the EPA.
3. **Establish seepage and ground water monitoring program by 10/1/2011.** As discussed in Section 3.5, uncontrolled seepage water was observed on the west downstream slope of the Lakeside Ash pond. The presence of uncontrolled seepage water at the downstream embankment raises 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 stability analyses by 10/1/2011.** Due to the lack of documented engineering design analysis, new stability analyses of the impoundments should be performed. The analyses should incorporate seepage monitoring data and include evaluation of the embankments and the structures under seismic loading scenarios. Stability analyses for the Lakeside Ash Pond should include specific consideration of pore water pressures in the ash beneath the raised portion of the embankment because these pore pressures may have a significant impact on stability if internal drainage features are not sufficiently

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relieving the pore pressures. The results of this evaluation should be reviewed by the EPA.

5. **Control vegetation on the upstream and downstream slopes. Remove the trees from the embankment including the large tree at the overflow outlet discharge point by 10/1/2011.** Refer to Federal Emergency Management Agency's (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 on an as-needed basis.** Minor surface erosion was noted at various locations across the site. 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. **Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities on an on-going basis.** We believe that this log will provide continuity during periods of staff change.
3. **Develop an Operation and Maintenance (O&M) manual for the impoundments and the facility by 10/1/2011.** 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 (i.e. surface erosion, settlement and sloughing), internal embankment changes (i.e. 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 pond or the misoperation of the impoundment, pond, or appurtenances. The Hazard Potential Classification of an impoundment or pond shall not reflect in any way on the current condition of the impoundment or pond and its appurtenant works, including the impoundment's or pond's safety, structural integrity, or flood routing capacity. These classifications are as described below:

1. **Low Hazard Potential**

   "Low Hazard Potential" means a impoundment's or pond'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 Potential" means a impoundment's or pond's failure will result in no probable loss of human life but can cause major economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Significant Hazard Potential classification impoundments or ponds 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 Potential" means an impoundment's or pond'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, an impoundment system is classified by size, based on its height and potential storage capacity. Size classification is determined by which category (storage or height) is greatest (produces the larger size classification).

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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 (the term expected is to be defined as likely) under all applicable loading conditions (static, hydrologic, and seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

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

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

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

Condition Rating Criteria

In a system similar to the U.S. Department of Interior, Safety Evaluation of Existing Impoundments (SEED 1995), the terms ”Satisfactory,” “Fair,” ”Poor,” and “Unsatisfactory,” are used in a general sense when describing the structural condition and the operational adequacy of the equipment for a impoundment or pond 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 and operational integrity of a facility or that may threaten the safety of the impoundment.

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

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SECTION 8 – LIMITATIONS

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

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

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

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

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

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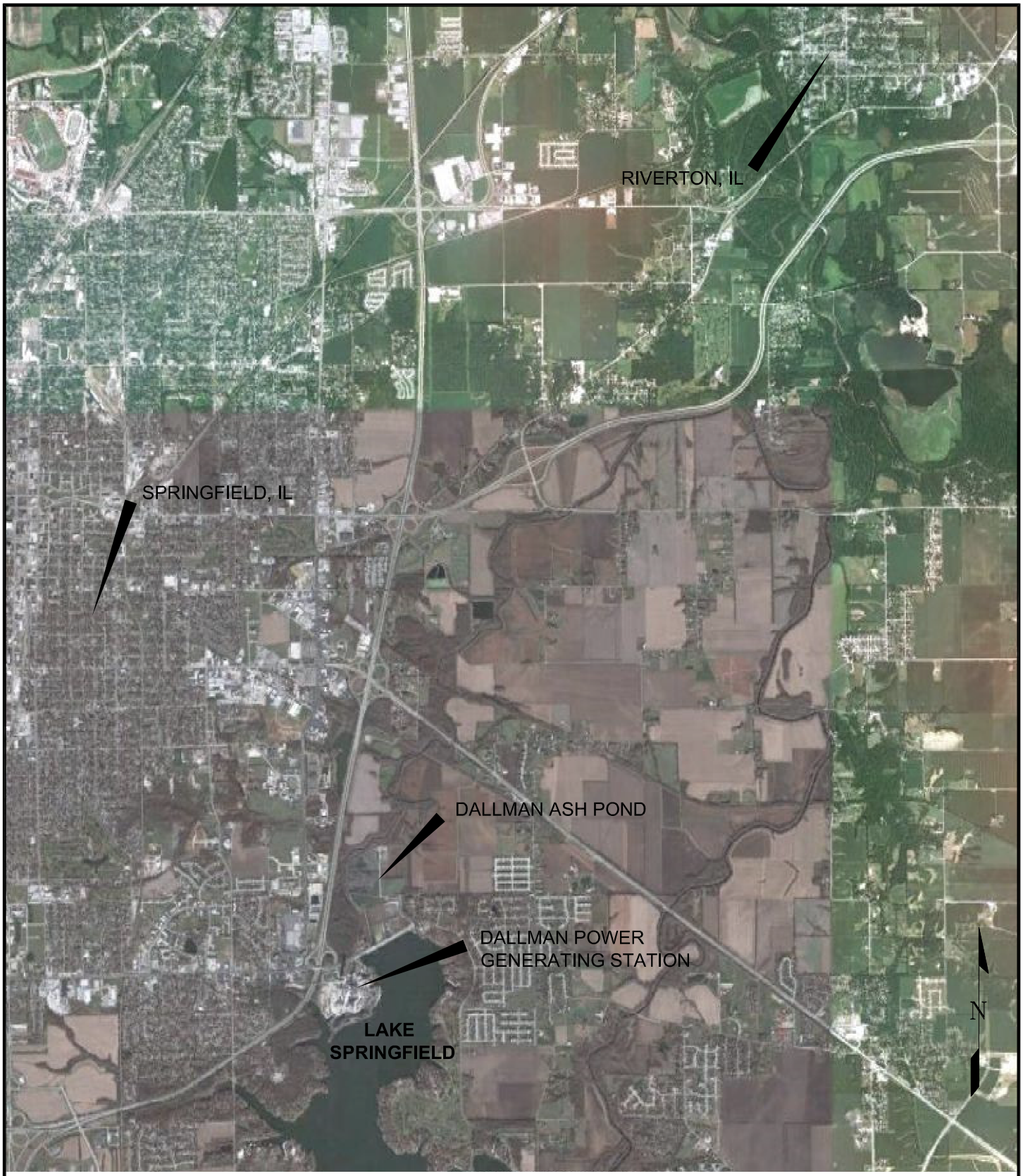

AERIAL IMAGE

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PROJECT NO.	112618
DATE:	08/27/10
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CHECKED BY:	BDH
FILE NAME:	

DALLMAN POWER STATION
VICINITY MAP

DALLMAN POWER GENERATING STATION
3100 STEVENSON DRIVE
SPRINGFIELD, IL 62707

FIGURE

1

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DALLMAN POWER STATION
AERIAL LOCATION MAP

DALLMAN POWER GENERATING STATION
3100 STEVENSON DRIVE
SPRINGFIELD, IL 62707

FIGURE
2

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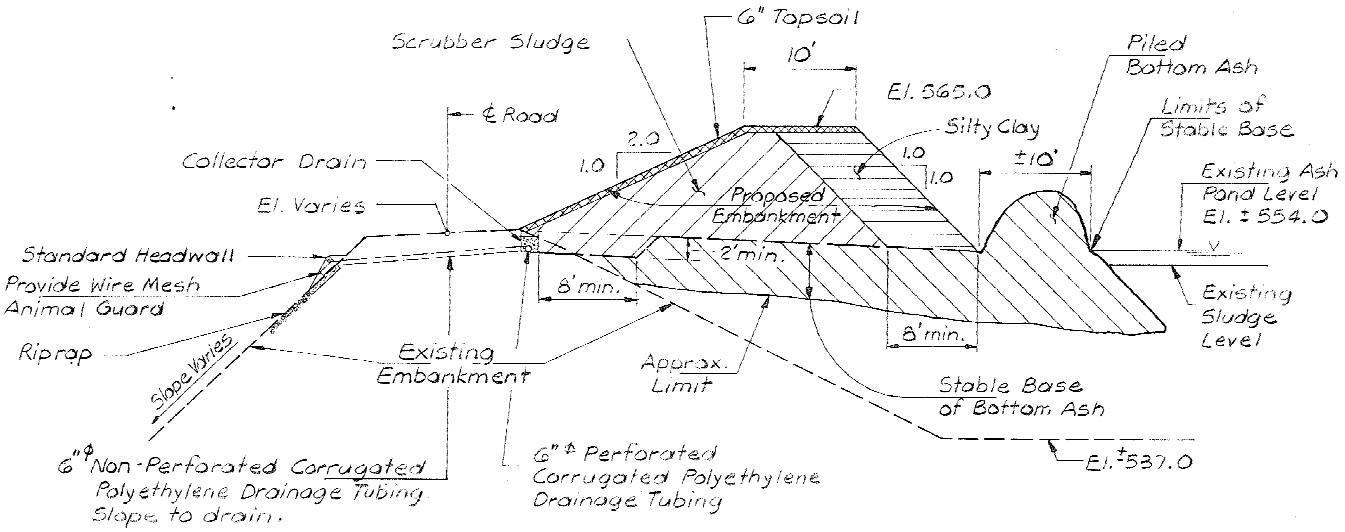

TYPICAL EMBANKMENT SECTION - LAKESIDE POND (WITH IMPROVEMENTS)

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IMAGE SOURCE: HANSON ENGINEERS - ASH POND EMBANKMENT MODIFICATION DRAWINGS SHEET 1 - 08/03/87

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TYPICAL CROSS SECTION LAKESIDE POND

DALLMAN POWER GENERATING STATION
3100 STEVENSON DRIVE
SPRINGFIELD, IL 62707

FIGURE

3

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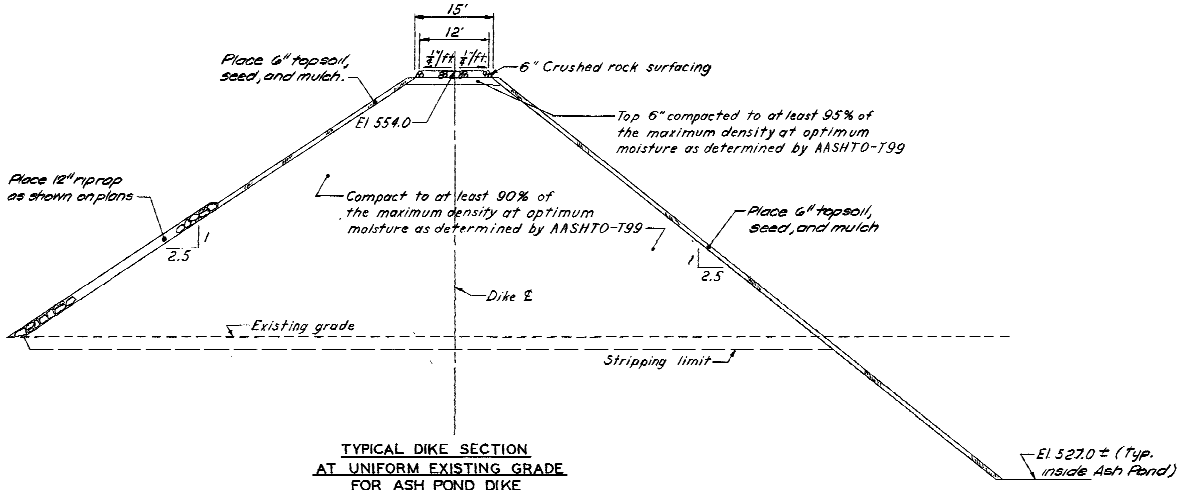
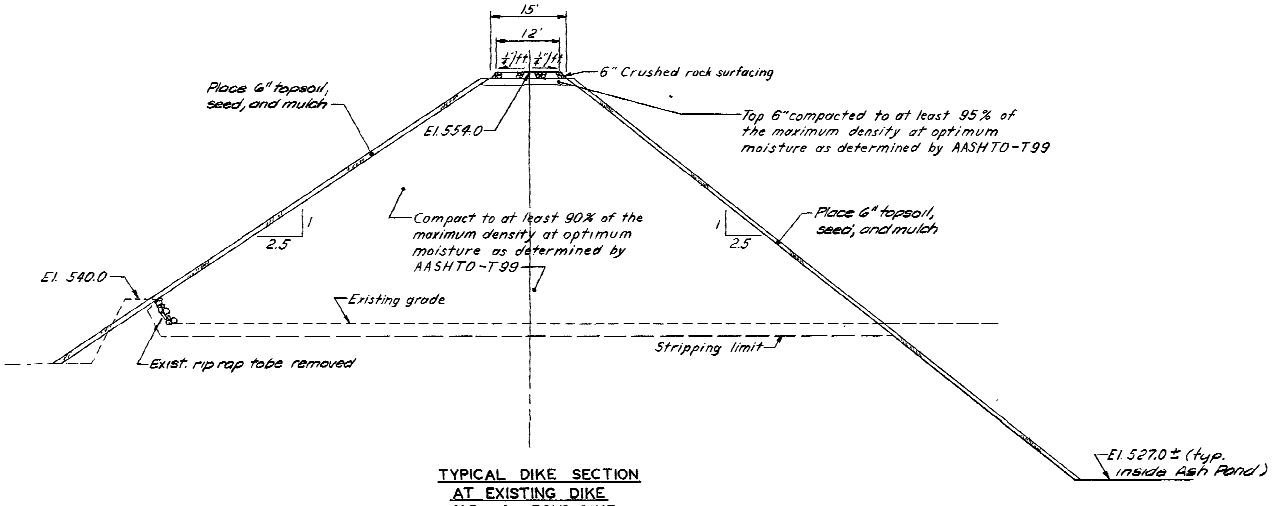


TYPICAL DIKE SECTION
AT UNIFORM EXISTING GRADE
FOR ASH POND DIKE
DIKE A AND DIKE ACCESS ROAD
Not to Scale

Desired el. for the bottom of pond is El. 527.0. However it may fluctuate to avoid unsuitable material. Proposal shall include all costs for obtaining the required amount of fill material from inside of pond or from borrow area.



TYPICAL DIKE SECTION
AT EXISTING DIKE
FOR ASH POND DIKE
DIKE A AND DIKE ACCESS ROAD
Not to Scale

TYPICAL CROSS SECTION DALLMAN POND

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IMAGE SOURCE: BURNS & MCDONNELL - TYPICAL CROSS SECTION DETAILS - IMAGE DATE 08/13/76

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TYPICAL CROSS SECTION DALLMAN POND

DALLMAN POWER GENERATING STATION
3100 STEVENSON DRIVE
SPRINGFIELD, IL 62707

FIGURE
4

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FIGURE 5
1 of 1 sheets

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DATE: 08/27/10
CHECKED BY: B.HAVENS
DRAWN BY: M. GARDELLA
DESIGNED BY: N/A

PHOTO PLAN OF INSPECTION POINTS - DALLMAN ASH POND AND CLARIFICATION POND

DALLMAN POWER GENERATING STATION
3100 STEVENSON DRIVE
SPRINGFIELD, IL 62707

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IMAGE SOURCE: GOOGLE EARTH PRO - IMAGE DATE 08/27/10

FIGURE 6
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DRAWN BY: M. GARDELLA
DESIGNED BY: N/A

PHOTO PLAN OF INSPECTION POINTS - LAKESIDE POND

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Appendix A

Site Assessment Evaluation Checklists

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Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name: CWLP Ash Ponds | Date: 8-13-10

Unit Name: Lakeside Ash Pond | Operator's Name: City of Springfield, IL

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?	X		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	see below		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	see below		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		X	Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	565		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?		X	Is water exiting outlet flowing clear?	X	
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		X	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
1	Operator makes informal observations on a daily basis. Hanson Professional Services inspects every 5 years.
2 and 3	Water levels are variable due to operations, but are within the range of 554 to 565 where 554 is the invert at the outlet pipe and 565 is the top of berm
21	Minor seepage noted on west side of pond at base of vertical extension (roadway)

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL0002467 INSPECTOR Brian Havens, Matt Gardella

Date 8/13/10

Impoundment Name Lakeside Ash Pond

Impoundment Company City of Springfield, IL

EPA Region V

State Agency (Field Office) Addresss 1021 North Grand Avenue East
Springfield, IL 62794-9276

Name of Impoundment Lakeside 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: Storage of flyash, bottom ash, boiler slag, flue gas emission control residuals and drinking water filter plant sludge

Nearest Downstream Town : Name Riverton, IL

Distance from the impoundment 6 miles

Impoundment Location: ~~Latitude~~ Longitude 39 Degrees 45 Minutes 47 Seconds

~~Longitude~~ Latitude 89 Degrees 35 Minutes 50 Seconds

State IL County Sangamon

Does a state agency regulate this impoundment? YES X NO _____

If So Which State Agency? Illinois DNR - Vertical extension of impoundment 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.

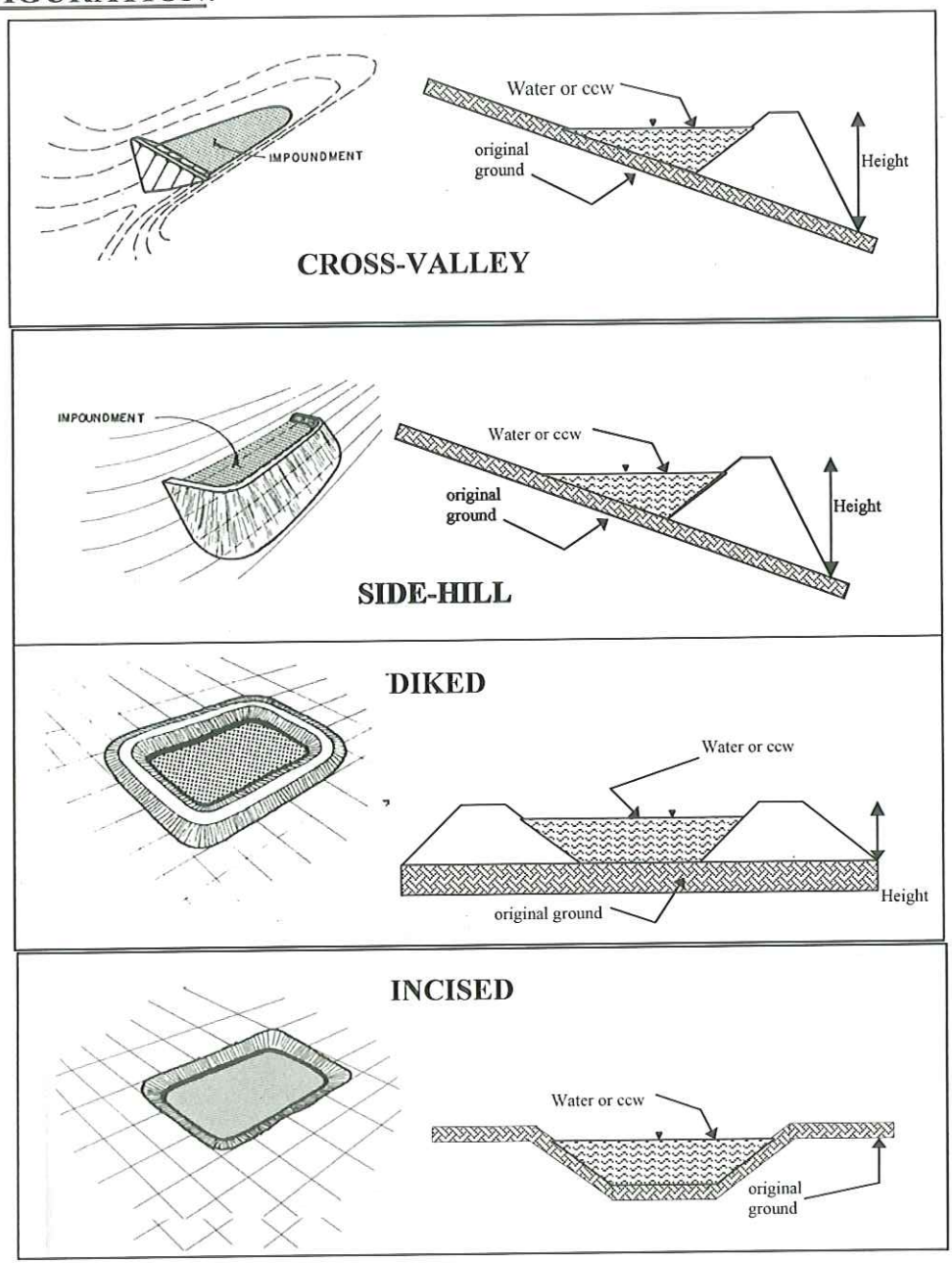
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.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

Failure could result in movement of flyash into Sugar Creek, resulting in environmental damage and flow disruptions downstream from Spaulding Dam with some economic losses. Loss of life appears to be unlikely as there are no structures between the ash pond and Sugar Creek. Also, no significant structures seem to appear until the Village of Riverton, Illinois approximately 6 miles downstream.

CONFIGURATION:



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

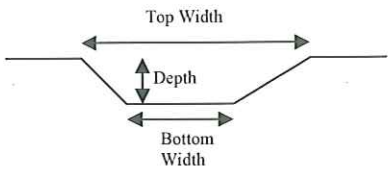
Embankment Height 30 feet
Pool Area ~2 ~~34~~ BTH acres
Current Freeboard ~5 feet
Embankment Material Clay
Liner N/A
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

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

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

TRAPEZOIDAL



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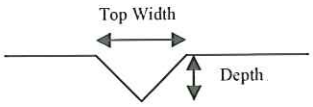

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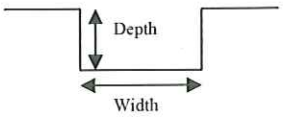

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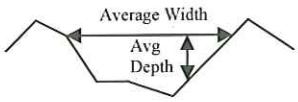
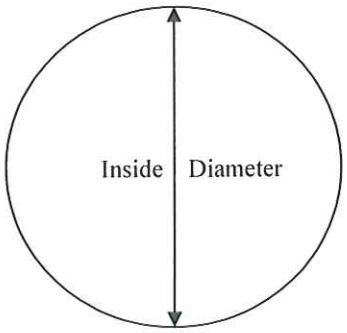


_____ **Outlet**

_____ inside diameter



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

_____

Is water flowing through the outlet? YES _____ NO _____

_____ **No Outlet**

_____

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

The Impoundment was Designed By Unknown; Vertical expansion by Hanson Professional Services

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 X NO _____

If So When? See below

IF So Please Describe: _____

1999 Seepage at North and West sides of pond
→ Recommendation to repair visible seepage holes at North
→ Recommendation to add more toe drainage and seal pond with filter cake sludge at west side

2001 Seepage at North side of pond
→ Recommendation to add inverted filter inside pond

2003 Seepage at West side of pond
→ Recommendation to add inverted filter inside pond

2008 Seepage at West side of pond
→ Recommendation to monitor

1992 Seepage at West side of pond
→ Recommendation to add additional toe drain

1993 Seepage at North & Northeast sides of pond
→ Recommendations to add additional toe drain

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: CWLP Ash Ponds | Date: 8-13-10

Unit Name: Dallman Ash Pond | Operator's Name: City of Springfield, IL

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?		X	18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	X		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	Approx. 548		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?		X	Is water entering inlet, but not exiting outlet?		X
5. Lowest dam crest elevation (operator records)?	553.6		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?		X	Is water exiting outlet flowing clear?		X
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		N/A	From underdrain?		X
9. Trees growing on embankment? (If so, indicate largest diameter below)	X		At isolated points on embankment slopes?		X
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?		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
1	No formal inspection program. Operator makes informal observations on a daily basis while observing other aspects of operations
2	Primary ash pond level approx. 548.1 to 552.9 Clarifying ash pond level approx. 548.1 or lower
9	6" to 8" trees growing on embankment near outlet to Sugar Creek

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IL0024767 INSPECTOR Brian Havens, Matt Gardella

Date 8/13/10

Impoundment Name Dallman Ash Pond

Impoundment Company City of Springfield, IL (CWLP)

EPA Region I

State Agency (Field Office) Addresss 1021 North Grand Avenue East
Springfield, IL 62794-9276

Name of Impoundment Dallman 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: Storage of flyash, bottom ash, boiler slag, FGD landfill leachate and onsite industrial waste water treatment plant sludge

Nearest Downstream Town : Name Riverton, IL

Distance from the impoundment 6 miles

Impoundment Location:

Longitude W 89 Degrees 36 Minutes 00 Seconds

Latitude N 39 Degrees 46 Minutes 07 Seconds

State IL County Sangamon

Does a state agency regulate this impoundment? YES _____ NO X

If So Which State Agency? _____

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

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

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

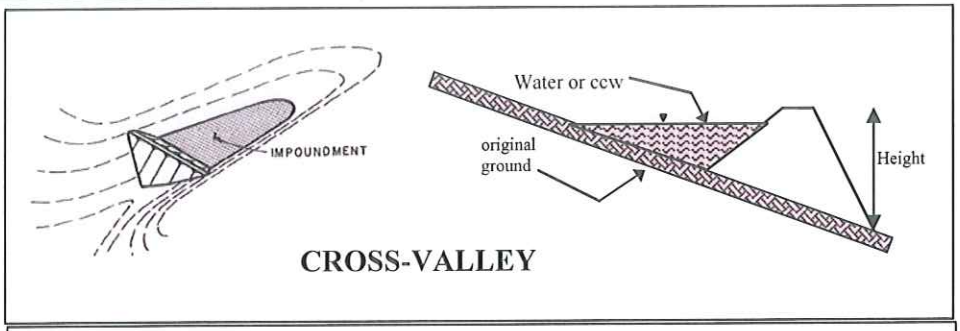
__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.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

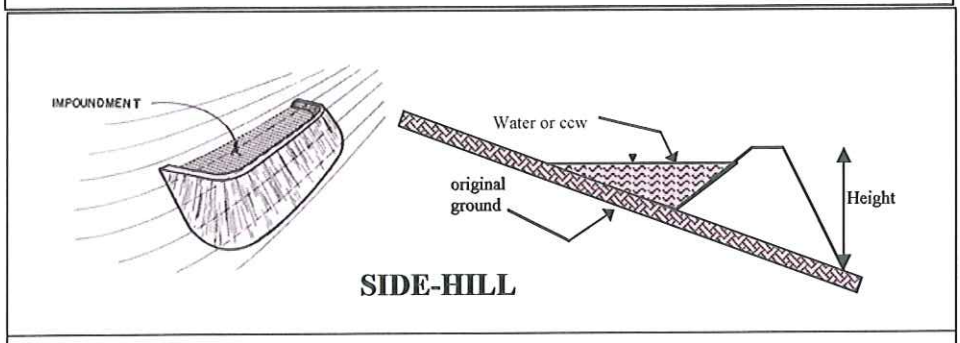
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

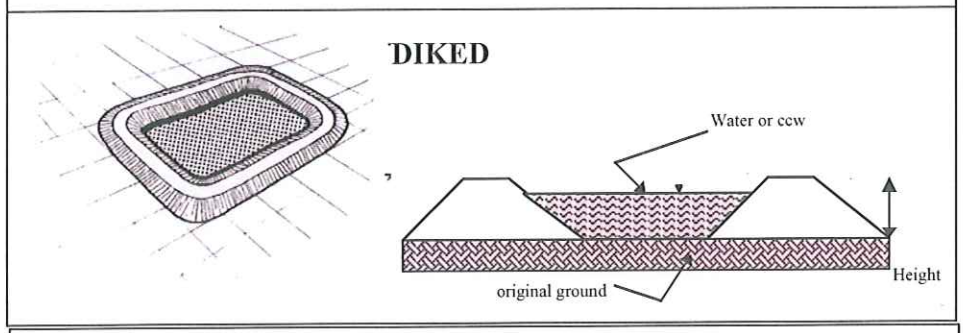
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

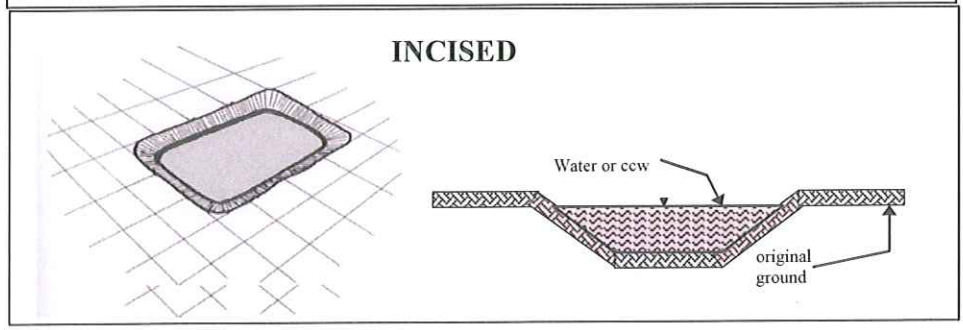
Failure could result in movement of flyash into Sugar Creek, resulting in environmental damage and flow disruptions downstream from Spaulding Dam with some economic losses. Loss of life appears to be unlikely as there are no structures between the ash pond and Sugar Creek. Also, no significant structures seem to appear until the Village of Riverton, Illinois approximately 6 miles downstream.

CONFIGURATION:









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

Embankment Height 20 feet
Pool Area ~34 acres
Current Freeboard 2.4'-6.3' feet but less at sluice pipe cut in embankment

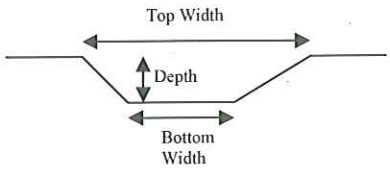
Embankment Material Clay
Liner N/A
Liner Permeability N/A

TYPE OF OUTLET (Mark all that apply)

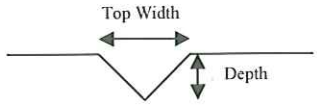
_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

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

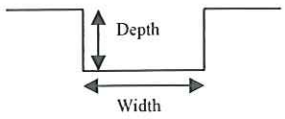
TRAPEZOIDAL



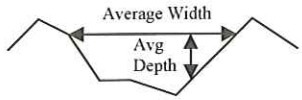
TRIANGULAR



RECTANGULAR

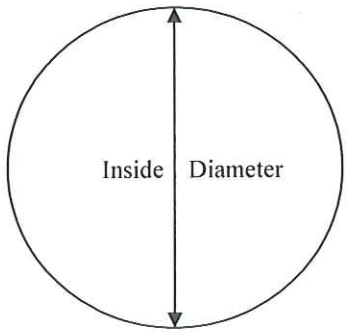


IRREGULAR



_____ **Outlet**

~36" inside diameter



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

_____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

_____

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

The Impoundment was Designed By Burns & McDonnell Engineering

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 ~~X~~ 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 : _____

Appendix B

Site Assessment Photographs

Photo 1 – Dallman Ash Pond Typical Northern Embankment Looking West (Note Uneven Slope Surface)

Photo 2 – Dallman Ash Pond Typical Northern Embankment Looking East (Note Vegetation on Slope)

Photo 3 – Dallman Ash Pond Typical Crest Condition Looking East

Photo 4 – Dallman Ash Pond Typical Crest Condition Looking South

Photo 5 – Dallman Ash Pond Typical Crest Condition Looking South West

Photo 6 – Dallman Ash Pond Typical Crest Condition Looking West

Photo 7 – Surface Erosion Greater than 12” on Downstream Slope and Edge of Crest

Photo 8 – Sluice Pipe Inlet into Dallman Ash Pond (Note Cut in Embankment)

Photo 9 – Grate on Crest Providing Roadway Access Over Sluice Pipe Inlet into Dallman Ash Pond

Photo 10 – Alternate Sluice Pipes (Not Active during Inspection, Note Cut in Embankment)

Photo 11 – Inactive Sluice Pipe Outlet Connection

Photo 12 – Boiler Slag Sluice Pipe into Dallman Ash Pond (Note Backfilled Embankment)

Photo 13 – Boiler Slag Outlet Connection

Photo 14 – Sluice Pipes Running to Dallman Ash Pond on Western Embankment Crest

Photo 15 – Typical Newly Installed Monitoring Well

Photo 16 – Dallman Ash Pond Typical Western Embankment Looking South

Photo 17 – Gas Pipeline Penetrating Embankment between Dallman Ash Pond & Clarification Pond

Photo 18 – Termination of Outlet Pipe for Clarification Pond (Note Mature Tree on Slope)

Photo 19 – Channel from Clarification Pond Outlet Piping (Note Riprapped Channel)

Photo 20 – Erosion of Creek Slopes Adjacent to Outlet Works Piping from Clarification Pond

Photo 21 – Clarification Pond Outlet Structure Intake

Photo 22 – Clarification Pond Outlet Structure and Pump House (Intake for Outlet is in the Background)

Photo 23 – Looking South Along the Old Lakeside Ash Pond Channel (Channel on Left Side of Photo)

Photo 24 – Seepage Area Looking West from Crest

Photo 25 – Seepage Area Looking South

Photo 26 – Seepage Area at Base of Vertical Extension of Old Lakeside Ponds

Photo 27 – Seepage Area Looking East (Note Vertical Extension of Old Lakeside Ponds)

Photo 28 – Southern Edge of the Old Lakeside Ponds Embankment Looking East

Photo 29 – Old Lakeside Pond Cell Number 1

Photo 30 – Old Lakeside Pond Cell Number 2

Photo 31 – Old Lakeside Pond Cell Number 3 Overgrown and Currently Inactive

Photo 32 – General Photograph of V.Y. Dallman Power Station

Photo 33 – Embankment Separating the Old Lakeside Ponds from the Clarification Pond

Photo 34 – Embankment Separating the Clarification Pond from the Dallman Ash Pond

Photo 35 – Permitted Landfill Area on the Northeast Side of the Dallman Ash Pond

Photo 36 – Permitted Landfill Area Looking East

Photo 37 – Lime Stockpile Looking North from Dallman Ash Pond Eastern Embankment

Photo 38 – Dallman Ash Pond Looking South Along Eastern Embankment

Appendix C

Response Letter to the EPA's Request for Information

OFFICE OF PUBLIC UTILITIES
CITY OF SPRINGFIELD, ILLINOIS
TIMOTHY J. DAVLIN, MAYOR
R. TODD RENFROW, GENERAL MANAGER

Via Federal Express

March 26, 2009

Mr. Richard Kinch
U.S. Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Drive
5th Floor N-5783
Arlington, VA 22203-2733

RE: Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC 9604(e)

Dear Mr. Kinch:

In response to the letter dated March 9, 2009, from Barry Breen to the Plant Manager of the Dallman Power Station, please be advised that the City of Springfield, Illinois, owns and operates the V.Y. Dallman Power Station and the Lakeside Power Station at 3100 Stevenson Drive, Springfield, Sangamon County, Illinois. The City also operates a potable water treatment plant (filter plant) at this site. The station consists of three coal-fired boilers at Dallman and two coal-fired boilers at Lakeside. These plants generate electricity for the residents and businesses in Springfield and provide potable water to Springfield and surrounding communities. Approximately 200 people are employed at the power generating stations and an additional 20 people are employed at the water treatment plant.

The ash handling practices at the City are typical for a coal-fired power plant. Bottom ash and fly ash from all units are sluiced to ash ponds. The raw lake water used for sluicing is obtained from the once-through cooling water systems for the generator condensers. Three separate ash transport systems serve Dallman Units 31 and 32, Dallman Unit 33, and Lakeside.

The City operates two ash ponds, the Lakeside ash pond and the Dallman ash pond at this site, and has operating flexibility to determine which pond will receive ash.

Surface Impoundment Survey

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.*

Under the National Inventory of Dams, the Lakeside Ash Pond is listed as NPDP ID #IL50232. It's hazard class is low. Dallman Ash Pond is not listed on the Inventory.

In the State of Illinois, dam safety is regulated by the Illinois Department of Natural Resources (IDNR). The regulations are located at Illinois Administrative Code, Title 17: Conservation, Chapter I: Department of Natural Resources, Subchapter h: Water Resources, Part 3702 Construction and Maintenance of Dams.

In Illinois, there are three classifications of dams: Class I, Class II and Class III, based on degree of threat to life and property in the event of a dam failure. Class I has the highest hazard.

The City's two ash ponds were constructed prior to 1980, when Illinois adopted the dam safety regulations. They were inspected by IDNR soon after the regulations were adopted. At that time, the City was not required to obtain a dam permit. However, the Lakeside Ash Pond was modified in 1988, and was then required to obtain a Class III dam safety permit. Currently, Dallman Ash Pond does not have a dam safety permit.

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

The year the Lakeside Ash Pond was commissioned could not be determined. Based on an aerial photo, it was prior to 1958. The pond was expanded in 1988.

Construction began on Dallman Ash Pond in 1976. It has not been 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).*

Lakeside Ash Pond contains fly ash, bottom ash, boiler slag, flue gas emission control residuals (not including bulk amounts of scrubber sludge) and drinking water filter plant sludge.

Dallman Ash Pond contains fly ash, bottom ash, boiler slag, FGD landfill leachate and onsite industrial waste water treatment plant sludge.

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?*

The Lakeside Ash Pond original designs could not be found. The expansion of Lakeside Ash Pond was designed by Hanson Engineers, Inc. The ash pond is inspected periodically by Hanson Engineers as required by the dam safety permit.

The Dallman Ash Pond was designed by Burns and McDonnell. The unit is not required to have periodic inspections by a Professional Engineer since it does not have a dam safety permit.

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 on assessment or evaluation in the future, when is it expected to occur?*

The Lakeside Ash Pond was last inspected by a Professional Engineer in July 2008 from Hanson Professional Services. The engineer, Danny Kerns, P.E., has evaluated this site during and after construction since 1987. There were two noted items that required minor repairs within the year. These were repairing erosion areas and regrading of the north embankment and scheduling the removal of small trees and brush. Safety integrity is listed as not yet imperiled for these measures. Corrective actions are in progress. The next inspection is due in 2013.

Dallman Ash Pond is not required to be inspected by a Professional Engineer since it does not have a dam safety permit.

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.*

The City is not aware of any federal inspections. It is our understanding the ponds were inspected by the State when the regulations were adopted, but the City does not have any records of those inspections. We are not aware of any planned future inspections.

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.*

There have been no inspections by State or Federal officials within the past year of Lakeside or Dallman Ash Ponds.

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.

Dallman Ash Pond
Surface Area: 34.5 acres
Storage Capacity: 1,100,000 cu yd
Current Vol. Stored: 730,000 cu yd
Maximum Height: 20 ft
Date: Jan. 1, 2009

Lakeside Ash Pond
Surface Area: 35 acres
Storage Capacity: 1,200,000 cu yd
Current Vol. Stored: 1,080,000 cu yd
Maximum Height: 30 ft
Date: Jan. 1, 2009

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).

The Lakeside Ash Pond was inspected by Hanson Professional Services in June 1999. There was seepage in the North embankment. It was recommended to repair the holes to stop seepage. This report was filed with IDNR. The Lakeside Ash Pond was inspected by Hanson Professional Services in June 2000. No deficiencies were noted. This report was also filed with IDNR.

Lakeside Ash Pond was also inspected in July 2001, July 2003, and June 2004. In September 2004, a sink hole developed in the Northwest corner of the pond. The City hired Hanson to recommend a method to repair the sink hole and investigate a second sink hole that was developing. The areas were repaired.

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

Owner: City of Springfield
Operator: City of Springfield

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.

Signature: John Vaus

Name: John R. Vaus

Title: Power Generation Director

If you should have any questions or require additional information regarding these responses, please contact me at (217) 757-8610, ext. 1105.

Sincerely,

S. David Farris

S. David Farris, CIH, CSP
Environmental Health & Safety Manager

SDF/SC/gj