

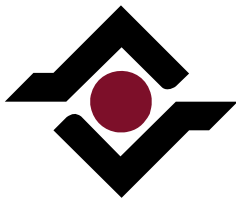
**City Water, Light & Power  
Ash Impoundments  
Springfield, Sangamon County, Illinois**

# **Initial Hazard Potential Classification Assessment Report for Coal Combustion Residuals Surface Impoundments**

**October 2016**



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## TABLE OF CONTENTS

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1.	INTRODUCTION.....	1
2.	CCR UNIT INFORMATION .....	1
3.	CURRENT CLASSIFICATION.....	2
4.	CLASSIFICATION ANALYSIS.....	3
	4.1 Downstream Conditions.....	3
	4.2 Safety Factor Assessment.....	3
	4.3 Additional Information.....	3
	4.4 Hazard Classification.....	4
5.	STATEMENT .....	4

## 1. INTRODUCTION

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City Water, Light and Power (CWLP) Lakeside Ash Pond and Dallman Ash Pond are coal combustion residuals (CCR) surface impoundments. An assessment of the hazard potential classification for the CCR surface impoundments was conducted as required by 40 CFR Part 257.73:

257.73 (a)(2) *Periodic hazard potential classification assessments.* (i) *The owner or operator of the CCR unit must conduct initial and periodic hazard potential classification assessments of the CCR unit according to the timeframes specified in paragraph (f) of this section. The owner or operator must document the hazard potential classification of each CCR unit as either a high hazard potential CCR surface impoundment, a significant hazard potential CCR surface impoundment, or a low hazard potential CCR surface impoundment. The owner or operator must also document the basis for each hazard potential classification.*

257.73 (f) *Timeframes for periodic assessments—(1) Initial assessments.* *Except as provided by paragraph (f)(2) of this section, the owner or operator of the CCR unit must complete the initial assessments required by paragraphs (a)(2), (d), and (e) of this section no later than October 17, 2016. The owner or operator has completed an initial assessment when the owner or operator has placed the assessment required by paragraphs (a)(2), (d), and (e) of this section in the facility's operating record as required by § 257.105(f)(5), (10), and (12).*

Andrews Engineering, Inc. (AEI) reviewed aerial maps and current hazard potential classification status information regarding the Lakeside Ash Pond and Dallman Ash Pond as part of this initial hazard potential classification assessment. A summary of this information, as well as conclusions for the assessment is provided below.

## 2. CCR UNIT INFORMATION

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Both the Lakeside Ash Pond and the Dallman Ash Pond are owned and operated by CWLP. The ponds are operated under National Pollutant Discharge Elimination System (NPDES) Permit Number IL0024767.

The Lakeside Ash Pond is primarily a diked embankment with some incising along the east perimeter and was placed into service prior to 1958. The original Lakeside Ash Pond has been divided into four separate ponds since it was expanded vertically in 1988, including three lime softening ponds and the settling pond. The vertical expansion consists of berms built on top and inside of the existing embankments. The current Lakeside Ash Pond is approximately 27.6 acres and ceased receiving ash in 2009.

The second impoundment, the Dallman Ash Pond, which is a diked embankment, was placed into service in approximately 1976 and is approximately 34.5 acres. Fly ash and bottom ash are sluiced to the Dallman Ash Pond with raw lake water.

Settled water from both the Dallman Ash Pond and Lakeside Ash Pond flow into opposite sides of a Clarification Pond before being discharged to Sugar Creek at Outfall 004 pursuant to the aforementioned NPDES permit.

### **3. CURRENT CLASSIFICATION**

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The Dallman Ash Pond and the original (lower) portion of the Lakeside Ash Pond are not regulated by a state agency and were never designated a potential hazard rating. The expansion portion of the Lakeside Ash Pond is regulated by the Illinois Department of Natural Resources (IDNR) and was assigned a Hazard Classification of "Class III," which corresponds to U.S. Corps of Engineers (USACE) "Low Hazard Potential" category. Additionally, Lakeside Ash Pond is listed in the National Inventory of Dams (NID) with a Hazard Classification of "Low."

This rating was determined by IDNR under the following classification system provided by 17 Ill. Adm. Code 3702.30(a)(1):

*Dams will be categorized in one of three classes, according to the degree of threat to life and property in the event of a dam failure. The three classes of dams are:*

- A) *Class I – Dams located where failure has a high probability for causing loss of life or substantial economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed. A dam has a high probability for causing loss of life or substantial economic loss if it is located where its failure may cause additional damage to such structures as a home, a hospital, a nursing home, a highly traveled roadway, a shopping center, or similar type facilities where people are normally present downstream of the dam. This is similar to U.S. Army Corps of Engineers HIGH HAZARD POTENTIAL category as defined in the Corps Guidelines, and the U.S. Soil Conservation Service Class (c) dams as defined in Soil Conservation Service Technical Release No. 60.*
  
- B) *Class II – Dams located where failure has a moderate probability for causing loss of life or may cause substantial economic loss in excess of that which would naturally occur downstream of the dam if the dam had not failed. A dam has a moderate probability for causing loss of life or substantial economic loss if it is located where its failure may cause additional damage to such structures as a water treatment facility, a sewage treatment facility, a power substation, a city park, a U.S. Route or Illinois Route highway, a railroad or similar type facilities where people are downstream of the dam for only a portion of the day or on a more sporadic basis. This is similar to U.S. Army Corps of Engineers SIGNIFICANT HAZARD POTENTIAL category and the U.S. Soil Conservation Service Class (b) dams.*
  
- C) *Class III – Dams located where failure has 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. A dam has a low probability for causing loss of life or minimal economic loss if it is located where its failure may cause additional damage to agricultural fields, timber areas, township roads or similar type areas where people seldom*

*are present and where there are few structures. This corresponds to U.S. Army Corps of Engineers LOW HAZARD POTENTIAL category and U.S. Soil Conservation Service Class (a) dams.*

## **4. CLASSIFICATION ANALYSIS**

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The following information was considered for the hazard potential classification analysis of the CWLP surface impoundments performed by Paul Van Metre, P.E., in October 2016:

### **4.1 Downstream Conditions**

Both the Dallman Ash Pond and Lakeside Ash Pond are immediately adjacent to Sugar Creek. There are no homes, recreational facilities, businesses, roads, or other permanent structures immediately downstream of the impoundments. The floodplain area adjacent to the immediate downstream Sugar Creek is entirely comprised of agricultural fields and timber areas. The closest structures downstream along Sugar Creek from the ash ponds are a pedestrian bridge servicing the Lost Bridge Trail system at more than 4,000 feet downstream from Dallman Ash Pond, and a vehicle bridge for IL Route 29 at more than a mile downstream from Dallman Ash Pond.

### **4.2 Safety Factor Assessment**

A Safety Factor Assessment was performed by AEI for both the Dallman Ash Pond and Lakeside Ash Pond. This assessment included slope stability analyses for critical sections in the surface impoundments, including the constructed berms and underlying soils. Although there is a lack of construction records for the impoundments, conservative parameters derived from published literature, available geotechnical data from subsurface drilling and testing programs, and field surveys were used to assess factors of safety. The assessment concluded that all applicable factors of safety under 257.73(e) for both surface impoundments were exceeded by the results of these analyses.

### **4.3 Additional Information**

The eastern portion of the original Lakeside Ash Pond is incised. The entire ash pond abuts the Lake Springfield dam to the south. The northern portion of the ash pond is separated by a roadway from the Unit 1 landfill and the clarification pond. The only portions of the Lakeside Ash Pond with open downstream slopes are the west dike of the original ash pond and the vertical expansion berms, which were constructed on the east, west and south boundaries of the ash pond.

The entire Dallman Ash Pond is partially incised. Material from the center of the ash pond were excavated and utilized in the construction of the dikes. The Dallman Ash Pond abuts the CWLP landfills to the east and the clarification pond to the south. The only open downstream slopes of the Dallman Ash Pond are on the west and south dikes.

A stability analysis was performed by Testing Service Corporation (TSC) in 1994 for the design of the adjacent Unit 2 Landfill. The landfill is located in the northeastern half of the site which is directly adjacent to the east of the Dallman Ash Pond and north of the Lakeside Ash Pond. This analysis included a review of all of the subsurface studies performed at the site (72 borings in total) as well as five additional borings drilled as part of the stability analysis study. Laboratory testing completed on cohesive soil samples from these five borings included analyses on:

moisture content, in-place dry density, unconfined compressive strength, and Atterberg limits. In addition, one sample was selected for triaxial shear testing, and another for direct shear testing.

The TSC analysis for Unit 2 included an evaluation of settlement and bearing capacity for the foundation, and mass stability for the various excavated and constructed slopes of the landfill. Both static and seismic conditions for short- and long-term scenarios were evaluated using the geologic data acquired from the aforementioned study. The safety factors resulting from these analyses exceeded all requirements for new solid waste landfills in Illinois under 35 Ill. Adm. Code 811.304.

The geologic characteristics at the site were determined via subsurface boring programs related to permitting and monitoring of the landfill units as well as the drilling conducted for the monitoring program currently implemented for the ash impoundments. The geologic characteristics were determined to be consistent throughout the site. The structural characteristics of the soils also apply to the entire site, which includes the ash ponds.

#### 4.4 Hazard Classification

Based on the information presented in this report, there is a low probability of a failure for either unit. In addition, there is a low probability of a failure to cause loss of life, and a failure would cause minimal economic loss. Therefore, both the Dallman Ash Pond and the entire Lakeside Ash Pond qualify as “**Low Hazard Potential CCR Surface Impoundments**” under the qualifications described in Ill. Adm. Code 3702.30(a)(1), quoted in Section 3.

### 5. STATEMENT

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This Initial Hazard Potential Classification Assessment Report for Coal Combustion Residuals Surface Impoundments was completed for CWLP by Andrews Engineering, Inc. in accordance with the requirements under 40 CFR Part 257.73.

  
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Paul M. Van Metre, P.E.

10-14-2016  
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Date

