



Submitted to
Illinois Power Generating
Company
134 Cips Lane
Coffeen, IL 62017

Submitted by
AECOM
1001 Highlands Plaza Drive West
Suite 300
St. Louis, MO 63110

October 2016

CCR Rule Report: Initial Safety Factor Assessment

For

Ash Pond No. 1

At Coffeen Power Station

1 Introduction

This Coal Combustion Residual (CCR) Rule Report documents that Ash Pond No. 1 at the Illinois Power Generating Company Coffeen Power Station meets the safety factor assessment requirements specified in 40 Code of Federal Regulations (CFR) §257.73(e). Ash Pond No. 1 is located near Coffeen, Illinois in Montgomery County, approximately 0.3 miles east of the Coffeen Power Station. Ash Pond No. 1 serves as the primary wet impoundment basin for bottom ash produced by the Coffeen Power Station.

Ash Pond No. 1 is an existing CCR surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the initial safety factor assessment for an existing CCR surface impoundment be completed by October 17, 2016.

The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the initial safety factor assessment meets the requirements of 40 CFR § 257.73(e). The owner or operator must prepare a safety factor assessment every five years.

2 Initial Safety Factor Assessment

40 CFR §257.73(e)(1)

The owner or operator must conduct initial and periodic safety factor assessments for each CCR unit and document whether the calculated factors of safety for each CCR unit achieve the minimum safety factors specified in (e)(1)(i) through (iv) of this section for the critical cross section of the embankment. The critical cross section is the cross section anticipated to be the most susceptible of all cross sections to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations.

(i) The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.

(ii) The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.

(iii) The calculated seismic factor of safety must equal or exceed 1.00.

(iv) For dikes constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety must equal or exceed 1.20.

A geotechnical investigation program and stability analyses were performed to evaluate the design, performance, and condition of the earthen dikes of Ash Pond No. 1. The exploration consisted of hollow-stem auger borings, cone penetration tests, piezometers, and laboratory program including strength, hydraulic conductivity, consolidation, and index testing. Data collected from the geotechnical investigation, available design drawings, construction records, inspection reports, previous engineering investigations, and other pertinent historic documents were utilized to perform the safety factor assessment and geotechnical analyses.

In general, the subsurface conditions at Ash Pond No. 1 consist of medium stiff to stiff lean clay embankment fill, overlying medium stiff to stiff weathered loess clay, overlying a thin zone of very soft clay, which in turn overlies very stiff to hard glacial till. The phreatic surface within the subsurface is typically at the ground surface at the toe of the embankment and near the embankment/foundation interface beneath the crest.

Five (5) representative cross sections were analyzed using limit equilibrium slope stability analysis software to evaluate stability of the perimeter dike system and foundations. The cross sections were located to represent critical surface geometry, subsurface stratigraphy, and phreatic conditions across the site. Each cross section was evaluated for each of the loading conditions stipulated in §257.73(e)(1).

The Soils Susceptible to Liquefaction loading condition, §257.73(e)(1)(iv), was not evaluated because a liquefaction susceptibility evaluation did not find soils susceptible to liquefaction within the Ash Pond No. 1 dikes. As a result, this loading condition is not applicable to Ash Pond No. 1.

Results of the Initial Safety Factor Assessments, for the critical cross-section for each loading condition, are listed in **Table 1** (i.e., the table identifies the lowest calculated factor of safety for any one of the five analyzed cross sections for each loading condition).

Table 1 – Summary of Initial Safety Factor Assessments

| Loading Conditions | §257.73(e)(1) Subsection | Minimum Factor of Safety | Calculated Factor of Safety |
|-----------------------------------|--------------------------|--------------------------|-----------------------------|
| Maximum Storage Pool Loading | (i) | 1.50 | 1.50 |
| Maximum Surcharge Pool Loading | (ii) | 1.40 | 1.49 |
| Seismic | (iii) | 1.00 | 1.03 |
| Soils Susceptible to Liquefaction | (iv) | 1.20 | Not Applicable |

Based on this evaluation, Ash Pond No. 1 meets the requirements in §257.73(e)(1).

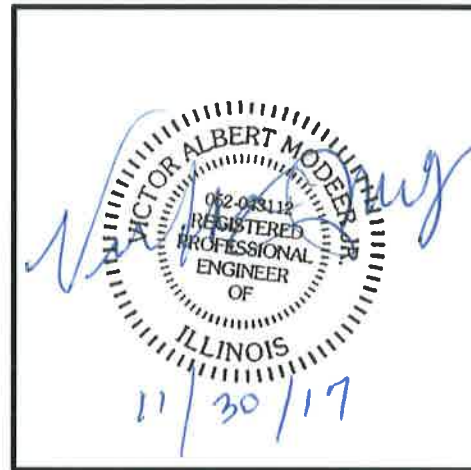
3 Certification Statement

CCR Unit: Illinois Power Generating Company; Coffeen Power Station; Ash Pond No. 1

I, Victor A. Modeer, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this CCR Rule Report, and the underlying data in the operating record, has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the initial safety factor assessment dated October 13, 2016 meets the requirements of 40 CFR §257.73(e).

VICTOR A MODEER JR.
Printed Name

11/13/16
Date



About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With nearly 100,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of \$19 billion.

More information on AECOM and its services can be found at www.aecom.com.

1001 Highlands Plaza Drive West
Suite 300
St. Louis, MO 63110
1-314-429-0100