

Prepared for

Dynegy Midwest Generation, LLC

1500 Eastport Plaza Drive

Collinsville, Illinois 62234

CCR INITIAL SAFETY FACTOR ASSESSMENT

**VERMILION POWER PLANT
OLD EAST ASH POND AREA
NORTH ASH POND AREA
OAKWOOD, ILLINOIS**

Prepared by

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Project Number CHE8404A

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1. INTRODUCTION

Dynegy Midwest Generation, LLC (Dynegy) is the owner of the inactive coal-fired Vermilion Power Station Plant (VPP), also referred to as Vermilion Power Station, located approximately 13 miles Northwest of Danville, Illinois. The Old East Ash Pond Area (OEAP) and North Ash Pond Area (NAP) are inactive surface impoundments storing coal combustion residuals (CCR). The OEAP and NAP must meet the requirements of 35 Ill. Admin. Code 845, Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (Part 845).

The OEAP and NAP are existing CCR surface impoundment as defined by Section 845.120. Although OEAP was designed to hold liquids, it has been filled with CCR and soil and does not hold water. This Initial Safety Factor Assessment addresses the requirements of Section 845.460 for OEAP and NAP.

1.1. Facility Information

Facility: Vermilion Power Plant
10188 East 2150 North Rd
Oakwood, IL 61858

Owner/Operator: Dynegy Midwest Generation, LLC
1500 Eastport Plaza Drive
Collinsville, IL 62234

2. INITIAL SAFETY FACTOR ASSESSMENT

Section 845.460(a): The owner or operator of a CCR surface impoundment must conduct an initial and annual safety factor assessments for each CCR surface impoundment and document whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in 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.

- 1. For new CCR surface impoundments, the calculated static factor of safety under the end-of-construction loading condition must equal or exceed 1.30. The assessment of this loading condition is only required for the initial safety factor assessment and is not required for subsequent assessments.*
- 2. The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.*
- 3. The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.*
- 4. The calculated seismic factor of safety must equal or exceed 1.00.*
- 5. 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 by Geosyntec to evaluate the stability of the OEAP and NAP perimeter dike. Available data from field investigations, existing documents and reports, and other information provided to Geosyntec from Dynegy were utilized to perform this assessment.

In general, the perimeter dike of OEAP consists of a fine-grained soil and coal ash and NAP consists of a fine-grained compacted soil, both overlying native clay alluvium and sand alluvium ranging from 10 to 20 feet thick. Glacial and reworked till underlays the alluvium soils with a thickness ranging between 10 and 25 feet extending down to shale. The phreatic surface was established considering groundwater level readings from borings and established wells in and around the OEAP and NAP.

Two (2) representative cross sections were analyzed for each pond area, for a total four (4) sections, using limit equilibrium slope stability analysis software to evaluate the 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. The cross sections were evaluated for the loading conditions stipulated in Section 845.460(a).

OEAP ceased operations with no further construction after receiving a cover prior to 1998. Therefore, the end-of-construction short-term loading condition was not applicable and not analyzed for this initial safety factor assessment. Furthermore, OEAP is inactive with no reservoir to pool water against the perimeter dike. Therefore, the long-term maximum surcharge pool loading condition is not applicable and was not analyzed for this initial safety factor assessment.

NAP was constructed in the late 1970s, and it is currently inactive. Therefore, the end-of-construction short-term loading condition was not applicable and not analyzed for this initial safety factor assessment as well.

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

Table 2-1: Summary of Initial Safety Factor Assessments

Loading Conditions	845.460(a) Subsection	Minimum Factor of Safety	Calculated Factor of Safety
End-of-Construction Loading	1	1.30	Not Applicable
Long-term Maximum Storage Pool Loading	2	1.50	1.70
Maximum Surcharge Pool Loading	3	1.40	2.07
Seismic	4	1.00	>1.00
Soils Susceptible to Liquefaction	5	1.20	>1.20

Based on this evaluation, OEAP and NAP meet the requirements in Section 845.460(a).

3. CERTIFICATION

CCR Unit: Dynegey Midwest Generation, LLC; Vermilion Power Plant, Old East Ash Pond Area and North Ash Pond Area

I, John Seymour, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify in accordance with Section 845.460(b), to the best of my knowledge, information, and belief, that the information contained in this plan has been prepared in accordance with the accepted practice of engineering and meets the requirements of Section 845.460.

John Seymour

Printed Name

John Seymour 10/22/2021

Signature

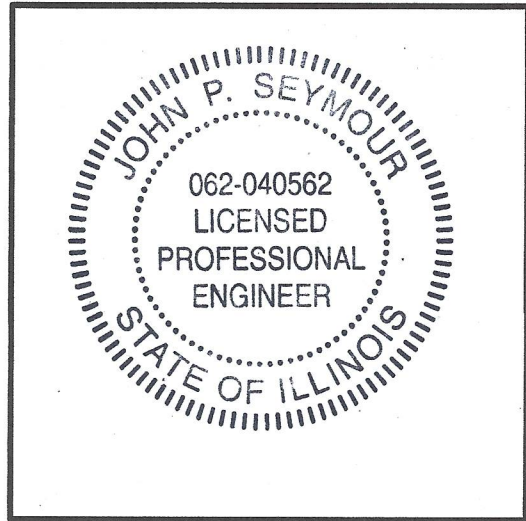
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062.040562 Illinois 30 November 2021

Registration Number

State

Expiration Date



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