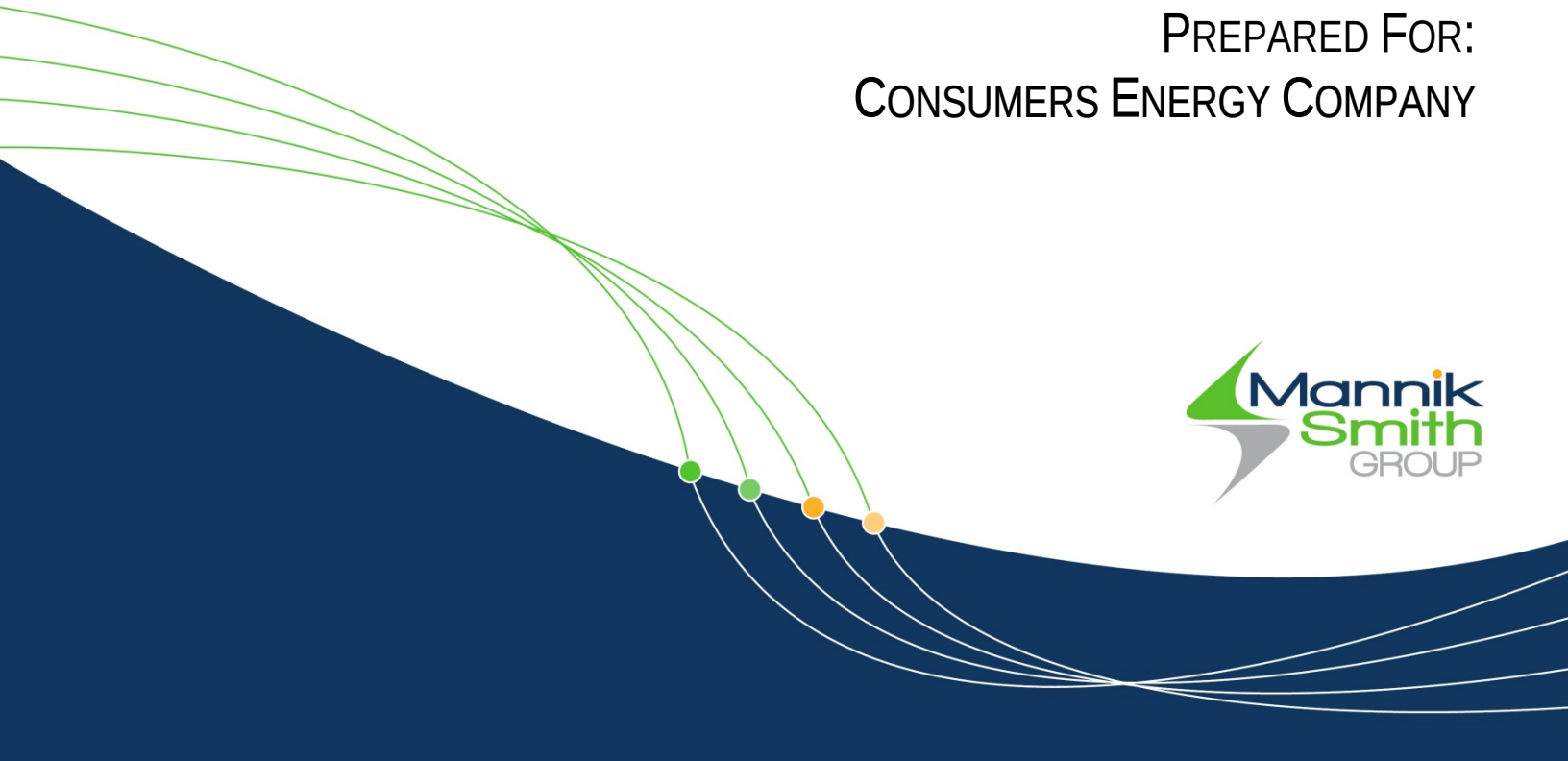
LINER SYSTEM CERTIFICATION REPORT

PONDS 1 & 2, JR WHITING PLANT
ERIE, MICHIGAN

OCTOBER 13, 2016

PREPARED FOR:
CONSUMERS ENERGY COMPANY



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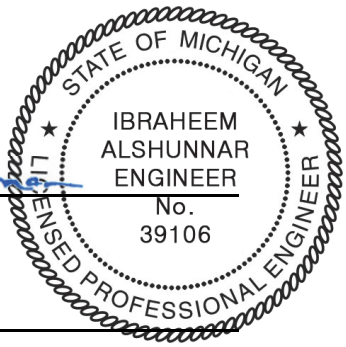
CERTIFICATION

Professional Engineer Certification Statement [40 CFR 257.71(b)]

I hereby certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the Code of Federal Regulations 40 CFR Part 257.71), I attest that this Liner System Certification is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of 40 CFR Part 257.71.

The Mannik Smith Group, Inc.



Signature

October 13, 2016
Date of Report Certification

Ibraheem Shunnar, PE
Name

6201039106
Professional Engineer Certification Number

1.0 INTRODUCTION

On April 17, 2015, the United States Environmental Protection Agency (EPA) issued the Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule (40 CFR 257 Subpart D) ("CCR RCRA Rule") to regulate the beneficial use and disposal of CCR materials generated at coal-fired electrical power generating complexes. In accordance with the CCR RCRA Rule, any CCR surface impoundment or CCR landfill that was actively receiving CCRs on the effective date of the CCR RCRA Rule (October 19, 2015) was deemed to be an "Existing CCR Unit" on that date and subject to self-implementing compliance standards and schedules.

Consumers Energy identified two CCR units at the JR Whiting Generating Facility (JR Whiting):

- Ponds 1 & 2 (Existing CCR surface impoundment)
- Pond 6 (Inactive CCR surface impoundment)

Section 257.71 of the CCR RCRA Rule requires the owner or operator of an existing CCR surface impoundment to document whether or not the unit was constructed with a liner system meeting criteria outlined in §257.71(a)(1). According to §257.71(b), the documentation must be certified accurate by a qualified professional engineer in the State of Michigan.

The Mannik Smith Group, Inc. (MSG) is submitting this report to certify that no liner, constructed per the requirements of 40 CFR 257.71(a)(1), exists beneath Ponds 1 & 2 at the Consumers Energy Company (CEC) JR Whiting Generating Facility (JR Whiting) in Erie, Michigan.

To complete this certification, a review of the applicable section of the CCR RCRA Rule and available historical information including ash investigations was completed.

2.0 BACKGROUND

JR Whiting is a coal-fired power generation facility located in Erie, Michigan as presented on Figure 1 – Site Location Map. JR Whiting formerly operated coal-burning baseload units but ceased electrical generation in April 2016. Ponds 1 & 2, as presented in Figure 2 – General Site Plan, served two primary functions:

- Received outflow of bottom ash for primary detention and settlement
- Received intermittent sluiced fly ash and low-volume miscellaneous wastewater from the generating facility for detention and settlement

The two ponds comprising the CCR surface impoundment are no longer continuously receiving CCRs from an active power generating plant but are managing stormwater. The pond system is underlain by clay soils and contained by a perimeter dike which has, generally, a 20-foot wide crest and a crest elevation of about 590.1 (NAVD88). The perimeter dikes are designed and constructed of native materials and coal ash utilized as fill. The crest of the dike structure is graded to allow flow of stormwater from the crest into the ponds. The elevation of water in Ponds 1 & 2 is about 584 ft. (NAVD88).

In accordance with 40 CFR 257.71(a)(1), no later than October 17, 2016, the owner or operator of an existing CCR surface impoundment must document whether or not such unit was constructed with any of the following:

(i) A liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no more than $1x10^{-7}$ cm/sec;

(ii) A composite liner that meets the requirements of § 257.70(b); or

(iii) An alternative composite liner that meets the requirements of § 257.70(c).

3.0 HISTORICAL REVIEW

The following documents were reviewed in the preparation of this certification:

TABLE 1
SUMMARY OF BACKGROUND DOCUMENT REVIEW

Document	Date	Author
J. R. Whiting Ponds 1 and 2 - Annual RCRA CCR Surface Impoundment Inspection Report	01/2016	Golder Associates, Inc.
J.R. Whiting Ash Disposal Area Triennial Ash Dike Assessment Report – Spring 2014	12/2014	Barr Engineering Company
J.R. Whiting Ash Disposal Area, 2012 Ash Dike Risk Assessment Final Inspection Report	07/2012	AECOM Technical Services, Inc.
Dam Safety Assessment of CCW Impoundments J.R. Whiting Plant	06/2011	United States Environmental Protection Agency O'Brien and Gere Engineers, Inc.
J.R. Whiting Generating Facility Ash Dike Risk Assessment, Inspection Report	12/2009	AECOM Technical Services, Inc.
J.R. Whiting Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	12/2009	AECOM Technical Services, Inc.

Based on our reviews, interviews and research, no evidence was found from the review of the historic documentation that would indicate that the Ponds 1 & 2 surface impoundment was constructed with a liner system that meet the requirements of 40 CFR 257.71(a)(1). The ponds are underlain by natural clay but not by a mechanically placed and compacted clay liner that meet the requirements of 40 CFR 257(a)(1)(i)-(iii).

4.0 SUBSURFACE INVESTIGATION

During October 2015, Golder Associates (Golder) completed 23 test borings in the Ponds 1 & 2 as shown in Figure 3. The boreholes are summarized below in Table 3.1 – Ponds 1 and 2 Borehole Summary.

TABLE 3.1
PONDS 1 AND 2 BOREHOLE SUMMARY

Boring Location ID	Northing	Easting	Ground Surface Elevation	Water Depth
PB-01	107845	13374462	580.4	3.4
PB-02	107968	13374605	575.4	8.4
PB-03	107986	13374889	577.0	6.8

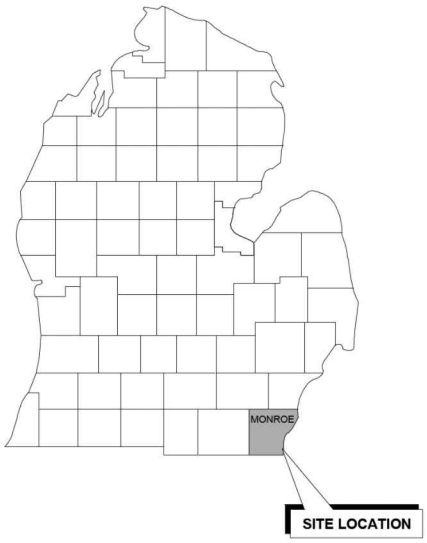
TABLE 3.1 PONDS 1 AND 2 BOREHOLE SUMMARY				
Boring Location ID	Northing	Easting	Ground Surface Elevation	Water Depth
PB-04	107823	13374918	575.2	8.6
PB-05	107740	13374752	578.3	5.5
PB-06	108189	13374444	581.4	2.0
PB-07	108423	13374355	578.8	4.6
PB-08	108334	13374551	577.6	5.8
PB-09	108234	13374772	576.4	7.0
PB-10	108450	13374772	576.9	6.5
SB-01	107903.759	13374347.230	588.1	N/A
SB-02	107621.006	13374317.219	590.6	N/A
SB-03	107538.109	13374816.434	590.8	N/A
SB-04	107612.731	13375034.778	588.3	N/A
SB-05	107891.017	13375042.963	589.6	N/A
SB-06	108118.384	13374963.619	589.2	N/A
SB-07	108059.938	13374503.683	588.4	N/A
SB-08	108351.312	13374955.626	588.2	N/A
SB-09	108626.735	13374927.617	589.0	N/A
SB-10	108633.188	13374671.986	589.2	N/A
SB-11	108632.589	13374240.682	587.1	N/A
SB-12	108395.557	13374237.186	588.3	N/A
SB-13	108061.69	13374268.941	587.6	N/A

The boreholes were terminated approximately 10 to 20 feet into native material underlying the CCR. Native material was composed of soft to stiff native clay soils. No liner material meeting the criteria outlined in §257.71(a)(1) was encountered in any of the boreholes. It is worth mentioning that the underlying native soils likely meet the hydraulic conductivity requirements. However, since it is not mechanically compacted clay liner, it does not meet the liner requirements of the CCR rules.

5.0 CONCLUSION AND SUMMARY

Based on the subsurface investigation and review of available historic documentation, MSG has determined there is no existing liner beneath the Ponds 1 & 2 CCR surface impoundment at JR Whiting based on the criteria provided in 40 CFR 257.71(a)(1)(i) – (iii). This report must be placed in the facility's operating record in accordance with 257.105(f) and must be made available on the facility's publicly accessible internet site in accordance with 257.107(f).

FIGURES



MONROE COUNTY

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FIGURE 1

SITE LOCATION MAP

PONDS 1 & 2
JR Whiting Generating Facility
Erie, Monroe County, Michigan

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FIGURE 2

GENERAL SITE PLAN

PONDS 1 & 2
JR Whiting Generating Facility
Erie, Monroe County, Michigan

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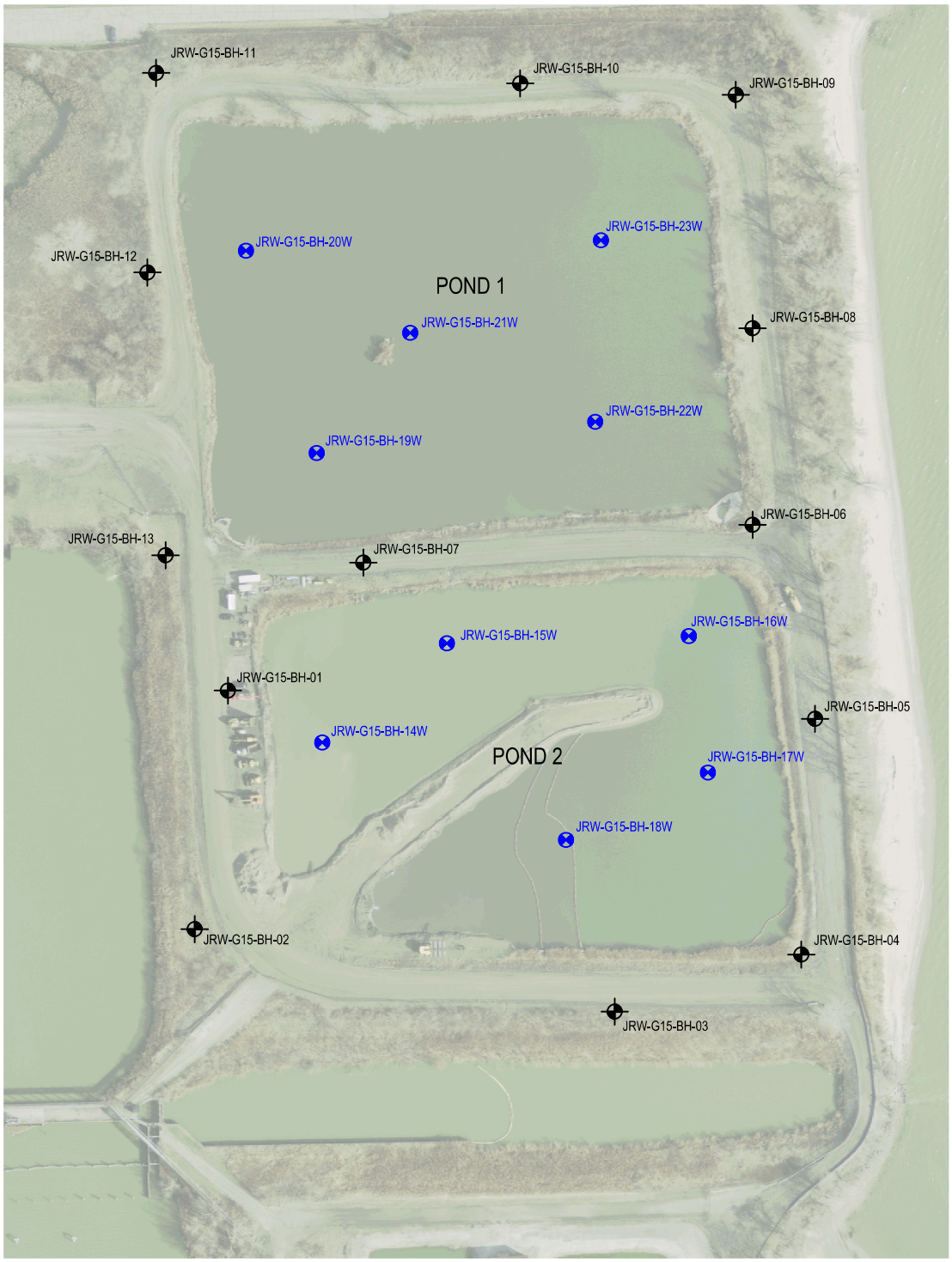

MSG

LEGEND

JRW-G15-BH-## 2015 LAND BOREHOLE LOCATION

JRW-G15-BH-16W 2015 WATER BOREHOLE LOCATION

LOCATIONS BY GOLDER ASSOCIATES

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FIGURE 3

TEST BORING LOCATION PLAN

PONDS 1 & 2
JR Whiting Generating Facility
Erie, Monroe County, Michigan

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