REPORT

J.R. Whiting Generating Facility
Ponds 1 and 2
2019 Annual Surface Impoundment Inspection Report

Erie, Michigan
Pursuant to 40 CFR 257.83

Submitted to:

Consumers Energy Company
1945 W. Parnall Road Jackson, Michigan, USA 49201

Submitted by:

Golder Associates Inc.
15851 South US 27, Suite 50 Lansing, Michigan, USA 48906

+1 517 482-2262

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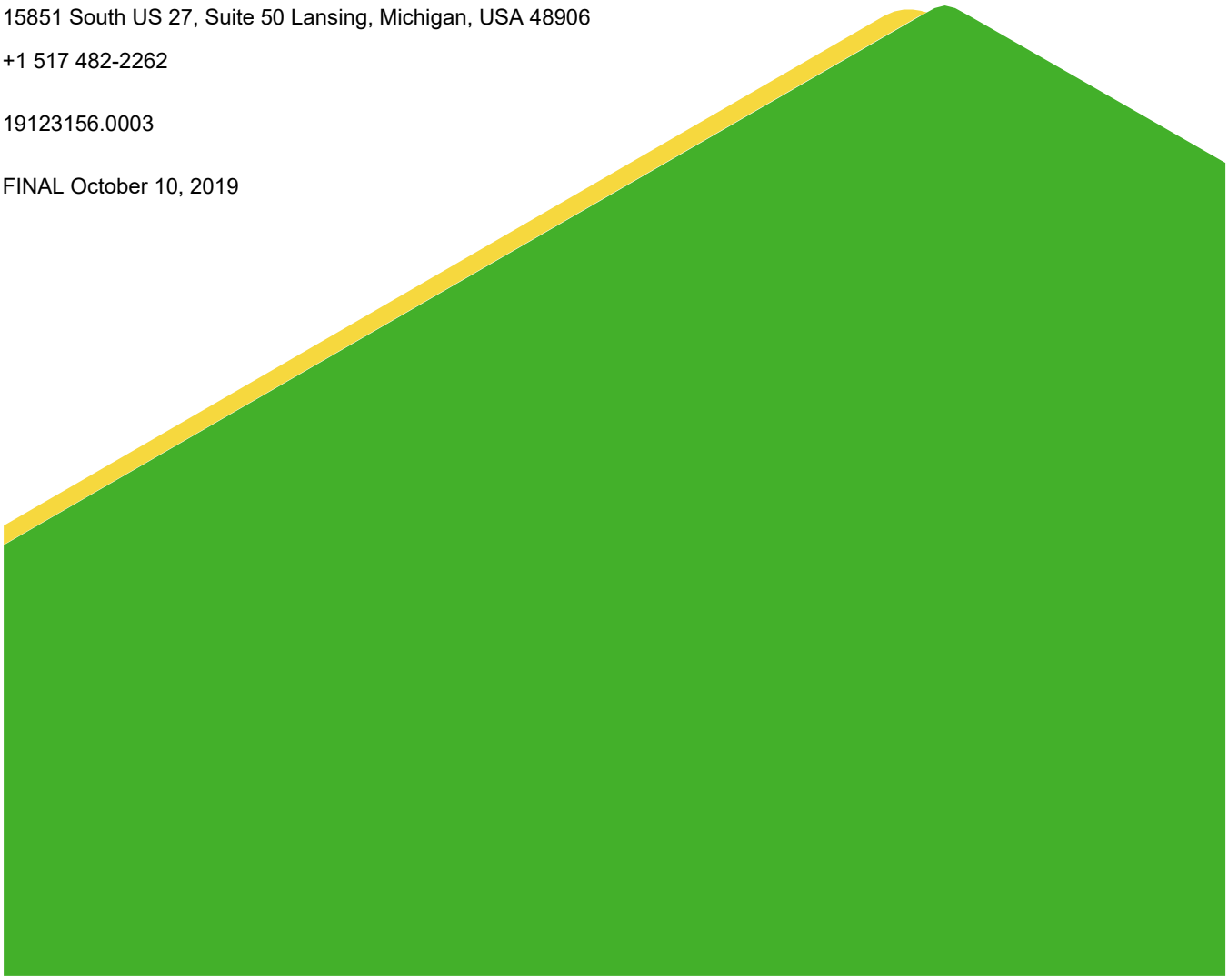
FINAL October 10, 2019



Certifications

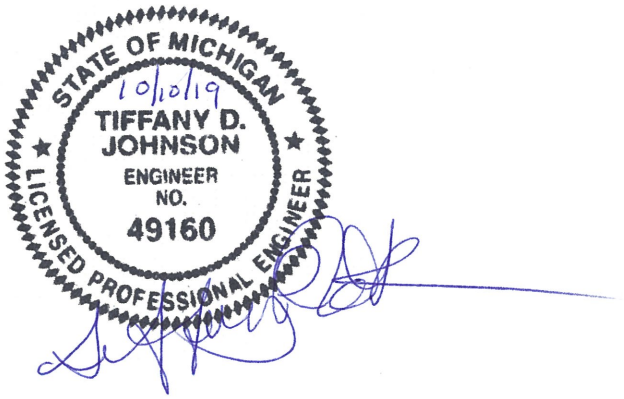
Professional Engineer Certification Statement [40 CFR 257.83]

I hereby certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the code of Federal Regulations Section 257.83 (40 CFR Part 257.83), I attest that this Annual Inspection Report 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 257.83.

Golder Associates Inc.

10/10/19

Date of Report Certification



Tiffany D. Johnson, P.E.

Name

6201049160

Professional Engineer Certification Number

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TABLES

APPENDICES

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"). The CCR RCRA Rule requires owners or operators of existing CCR surface impoundments to have those units inspected on an annual basis by a qualified professional engineer (QPE) in accordance with 40 CFR 257.83(b). The annual qualified professional engineer inspections are required to be completed and the results documented in inspection reports (per 40 CFR 257.83(b)(2) for Existing CCR Surface Impoundments. These inspections are focused primarily on the structural stability of the unit and must ensure that the operation and maintenance of the unit is in accordance with recognized and generally accepted good engineering standards. Each inspection must be conducted and certified by a QPE.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the annual inspection of Ponds 1 and 2 at the J.R. Whiting Generating Facility (J.R. Whiting, Site) to document, to the extent reasonable based on the information provided by CEC and the limits of the visual inspection, that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection included the following:

- Review of applicable information regarding the status and condition of the CCR unit
- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures
- A visual inspection of hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation

2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

J.R. Whiting was a coal burning power generation facility located on the east side of Erie, Michigan along the Lake Erie shoreline that ceased electrical generation in April 2016. The generation facility is currently being demolished. The facility was located on an approximate 875-acre site with on-site ash disposal areas. The site is bounded to the north by a canal called the La Pointe Drain and the town of Luna Pier, to the east by Camp Lady of the Lakes and the shoreline of Lake Erie, to the south by North Maumee Bay, and to the west by a Wildlife Area, agricultural fields, and I-75. The J.R. Whiting disposal area consists of three distinct units: Existing Ponds 1 and 2 located just east of the Whiting Plant, closed Pond 6 located north of the Whiting Plant and Erie Road, and closed Ponds 3, 4, and 5, located southeast of the Whiting Plant and east of the Intake Channel and between Lake Erie and Maumee Bay. Ponds 1 and 2 were under active closure construction during the 2019 inspection.

The existing reports reviewed for the assessment of Ponds 1 and 2 are summarized in Table 1, below.

Table 1: Summary of Background Document Review

Document	Date	Author
Weekly Inspection Reports	January 2018 – May 2019	Ponds 1 and 2 Qualified Persons
J.R. Whiting Ponds 1 and 2, 2018 Annual RCRA CCR Inspection	October 2018	Golder Associates Inc.

Document	Date	Author
Report		
J.R. Whiting Ponds 1 and 2, 2017 Annual RCRA CCR Inspection Report	October 2017	Golder Associates Inc.
RCRA CCR Surface Impoundment 2016 Inspection Report – Ponds 1&2, JR Whiting Plant, Erie, Michigan	October 13, 2016	Mannik Smith Group
J.R. Whiting Ponds 1 and 2, 2015 Initial Annual RCRA CCR Inspection Report	January 2016	Golder Associates Inc.
Dam Safety Assessment of CCW Impoundments – J.R. Whiting Plant	June 2011	United States Environmental Protection Agency – O'Brien and Gere Engineers, Inc.
Fossil Fuel Generation, Solid Waste Disposal Area - Surveillance Monitoring Programs (SMP)s	December 2010, Revised 2015	CEC

3.0 2019 VISUAL INSPECTIONS

Golder performed an onsite inspection of Pond 1 and 2 on May 24, 2019. Golder inspectors, Tiffany Johnson, P.E. and Halle Doering, EIT, and Brittany Bradley were accompanied by one CEC representative, as follows:

- Mr. George McKenzie, P.E., CEC Systems Engineering Department

The inspection checklist form is provided in Appendix A. The checklist provides both observations and recommendations as a result of the visual inspection and the following information as stipulated in 40 CFR 257.83(b):

- Any changes in geometry of the impounding structure since the previous annual inspection.
  - Bottom Ash Pond 1-2 were being dewatered as part of closure construction. The east, north and west exterior slopes were cleared of vegetation and trees.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and Coal Combustion Residuals (CCR) since the previous annual inspection.
  - Approximate minimum, maximum and present depths of water are 580 feet above mean sea level (ft-amsl) (approximately 10-feet below the crest) and at the time of inspection the ponds were actively being dewatered.
- Any instrumentation in place designed to monitor the structural stability of Ponds 1 and 2.
  - There is currently no instrumentation in place designed to monitor for the structural stability of Pond 1 and 2 at J.R. Whiting. At the time of the inspection and report, there are no plans for installation of stability monitoring instrumentation due to the 2019 planned closure of Pond 1 and 2.

- Storage capacity of the impounding structure at the time of inspection.
  - The storage capacity of Pond 1 and 2 is 568,000 cubic yards (no change from 2018).
- Approximate volume of the impounded water and CCR at the time of inspection.
  - Approximate volume of water of Pond 1 and 2 is 99,250 cubic yards, ponds were actively undergoing dewatering.
  - Approximate volume of ash inPond 1 and 2 is 420,850 cubic yards.
- Appearances of actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.
  - None were observed.
- Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.
  - None were observed.

The checklist categorizes observed conditions of the impoundment or appurtenant structures as either acceptable, monitor/maintain, investigate, or repair, which are defined as follows:

- Acceptable: The condition was visually documented to be acceptable, requiring no action beyond periodic inspection in accordance with the SMP and typical maintenance.
- Monitor/Maintain: The condition was visually identified to exhibit the potential for or show existing degeneration that should either be monitored or maintained as detailed in the checklist.
  - Items identified in this category are not considered a deficiency or release as classified under 40 CFR 257.83(b)(5) requiring immediate action by CEC.
- Investigate: The limitations of the visual inspection did not allow for an opinion to be made on the condition of the item observed, and Golder recommends additional investigation to categorize the item.
- Repair: Golder recommends that items identified with a repair designation exhibited conditions that should initiate measures be taken to rectify the area of concern.
  - No items identified for repair were considered a deficiency or release as classified under 40 CFR 257.83(b)(5) requiring immediate action by CEC.

Based on a review of previous inspection reports listed in Table 1 compared to conditions noted during the inspection the following was observed:

- Pond 1 and 2 were actively being dewatered and undergoing closure construction at the time of the inspection;
- Pond 1 and 2 exterior slopes had vegetation removed and were graded for closure, and the east exterior slope ready for shoreline protection;

4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for Ponds 1 and 2 at J.R. Whiting. The factual data, assessment, interpretations, and recommendations provided herein are based on the results of field observations from site inspections performed by Golder and review of previous site inspection reports provided to

Golder by CEC and pertain to the specific project as described in this report and are not applicable to any other project or site location.

Golder has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practicing under similar conditions and has characterized the site conditions within the limitations of the scope of services as defined by CEC and subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made. Any change of site conditions, purpose, development plans, or operation may alter the validity of this report. Golder cannot be responsible for use of this report, or portions thereof, unless Golder is requested to review and, if necessary, revise the report.

5.0 CLOSING

This report has been prepared in general accordance with normally accepted civil engineering practices to fulfill the RCRA reporting requirements in accordance with 40 CFR 257.83(b)(2). Golder has reviewed the available information for the J.R. Whiting Pond 1 and 2 and performed an onsite visual inspection. Golder's assessment is limited to the information provided by CEC and to the features that could be inspected visually in a safe manner. Golder cannot attest to the condition of subsurface or submerged structures.

6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	January 2018 – May 2019	Ponds 1 and 2 Qualified Persons
J.R. Whiting Ponds 1 and 2, 2018 Annual RCRA CCR Inspection Report	October 2018	Golder Associates Inc.
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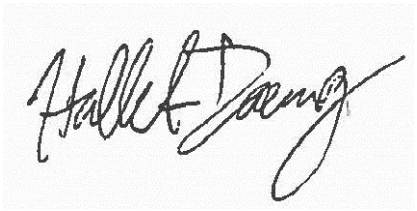
Signature Page

Golder Associates Inc.



Halle Doering
Project Engineer

Tiffany D. Johnson, P.E.
Principal

APPENDIX A - INSPECTION CHECKLIST FORM

CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

Facility Name: J.R. Whiting Pond 1 and 2

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Detention and settlement of sluiced ash and plant process water.

County, State: Monroe County, Michigan

Inspected By: Tiffany Johnson and Halle Doering ***Inspection Date: May 24, 2019***

Weather: Sunny, 65 ºF

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS The Bottom Ash Ponds 1-2 were undergoing closure construction during the 2019 inspection.
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: 580 ft-amsl.
b. Year Average Water Elevation					Elevation: 580 ft-amsl.
c. Year Maximum Water Elevation					Elevation: 580 ft-amsl.
d. Current water level					Elevation: 580 ft-amsl. (5-6' below crest of pond, observed in 2018, and approximately 10' below crest of pond in 2019)
e. Current storage capacity					Volume: 568,000 cubic yards
f. Current volume of impounded water and CCR					Volume: 99,250 cubic yards and 420,850 cubic yards (respectively), see Note 2.
g. Alterations	X				Currently being dewatered, exterior slopes have been cleared of vegetation and graded.
h. Development of downstream plain					N/A
i. Grass cover	X				Slopes have been cleared, graded, and are ready for closure.
j. Settlement/misalignment/cracks		X			Minor, surficial sloughing on inside crest, and active dewatering.
k. Sudden drops in water level?	X				Active dewatering for closure.
2. Inflow Structure					Abandoned and grouted, site is undergoing closure.
a. Settlement					N/A
b. Cracking					N/A
c. Corrosion					N/A
d. Obstacles in inlet					N/A
e. Riprap/erosion control					N/A
3. Outflow Structure					Abandoned and grouted, site is undergoing closure.
a. Settlement					N/A
b. Cracking					N/A
c. Corrosion					N/A
d. Obstacles in outlet					N/A
e. Riprap/erosion control					N/A
f. Seepage					N/A
4. Upstream slope					None observed.
a. Erosion		X			Erosion observed along North, East, South, and West slopes of Ponds 1 and 2.
b. Rodent burrows	X				N/A
c. Vegetation	X				None Observed
d. Cracks/settlement		X			Minor surficial sloughing on all interior slopes as a result of active dewatering.

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS The Bottom Ash Ponds 1-2 were undergoing closure construction during the 2019 inspection.
e. Riprap/other erosion protection	X				Repaired areas only NW and SE corners of Pond 2, and SW corner of Pond 1.
f. Slide, Slough, Scarp	X				Active sloughs all sides, but undergoing closure construction.
5. Crest					
a. Soil condition	X				Soil and road gravel
b. Comparable to width from previous inspection	X				
c. Vegetation	X				None observed
d. Rodent burrows	X				None.
e. Exposed to heavy traffic		X			Active construction traffic.
f. Damage from vehicles/machinery	X				None observed.
6. Downstream slope					Steep slopes on downstream East slope, cleared and ready for shoreline protection.
a. Erosion	X				Slopes cleared, grubbed, and ready for closure construction.
b. Vegetation	X				Slopes cleared, grubbed, and ready for closure construction.
c. Rodent burrows	X				None observed.
d. Slide, Slough, Scarp	X				None observed.
e. Drain conditions	X				
f. Seepage	X				No seepage observed at the time of inspection.
7. Toe					
a. Vegetation	X				Recently cleared and grubbed, ready for closure.
b. Rodent burrows	X				None observed.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				

Notes:

1) Features observed and documented in this checklist were not considered a deficiency or release as classified under 40 CFR 257.83(b)(5) and required no immediate action beyond periodic inspection in accordance with the SMP and typical maintenance.

2) It should be noted that no items identified for repair were considered a deficiency or release as classified under 40 CFR 257.83(b)(5) requiring immediate action by CEC.

Name of Engineer: Tiffany D. Johnson, P.E.

Date: October 10, 2019

Engineering Firm: Golder Associates Inc.

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