



Annual Inspection Report

J.R. WHITING GENERATING FACILITY

PONDS 1 AND 2

2017 ANNUAL SURFACE IMPOUNDMENT INSPECTION REPORT

Erie, Michigan

Pursuant to 40 CFR 257.83

Submitted To: Consumers Energy Company
1945 W. Parnall Road
Jackson, MI 49201

Submitted By: Golder Associates Inc.
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Lansing, MI 48906 USA

October 2017

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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.

October 12, 2017

Date of Report Certification

Tiffany D. Johnson, P.E.

Name

6201049160

Professional Engineer Certification Number





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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 (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 facility is currently being decommissioned. The facility is located on an approximate 875-acre site with an on-site ash disposal area. 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 Waste Disposal Area consists of three distinct units: Ponds 1 and 2 located just east of the Whiting Plant, Pond 6 located north of the Whiting Plant and Erie Road, and the 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.

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	June 2016 – May 2017	Varying Consumers Energy Company (CEC) J.R. Whiting Generating Facility Qualified Persons
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.
J.R. Whiting Annual Ash Dike Risk Assessment and Inspection- Fall 2015	October 2015	Golder Associates Inc.
J.R. Whiting Ash Disposal Area Triennial Ash Dike Assessment Report – Spring 2014	December 2014	Barr Engineering Company
J.R. Whiting Ash Disposal Area, 2012 Ash Dike Risk Assessment Final Inspection Report	July 2012	AECOM Technical Services, 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
J.R. Whiting Generating Facility Ash Dike Risk Assessment, Inspection Report	December 2009	AECOM Technical Services, Inc.
J.R. Whiting Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	December 2009	AECOM Technical Services, Inc.



3.0 2017 VISUAL INSPECTION

Golder performed an onsite inspection of Bottom Ash Ponds 1 and 2 on May 16, 2017. Golder inspectors, Tiffany Johnson, P.E. and Samantha Fentress, were accompanied by four CEC representatives, as follows:

- Mr. George McKenzie, CEC Systems Engineering Department
- Ms. Michelle Marion, CEC Environmental Services Department
- Mr. Harold D. Register, Jr., CEC Environmental Services Department
- Mr. Frank Rand, CEC Site Environmental 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.
 - No changes were observed since the previous inspection.
- 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 584 feet above mean sea level (ft-amsl).
- 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 Ponds 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 future planned decommissioning of Ponds 1 and 2.
- Storage capacity of the impounding structure at the time of inspection.
 - The storage capacity of Ponds 1 and 2 is 568,000 cubic yards.
- Approximate volume of the impounded water and CCR at the time of inspection.
 - Approximate volume of water of Ponds 1 and 2 is 99,250 cubic yards.
 - Approximate volume of ash of Ponds 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:

- Erosion and minor surficial sloughing is present along the interior slopes of Ponds 1 and 2.
- Rodent burrows were noted near the northern and western interior slopes and along the northern crest of Pond 1.
- Monitor and maintain the north and east exterior downstream slopes to prevent erosion from the uneven slopes that resulted from previous vegetation removal.



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 Ponds 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.

GOLDER ASSOCIATES INC.

A handwritten signature in black ink, appearing to read "Samantha Fentress".

Samantha Fentress
Engineer

A handwritten signature in blue ink, appearing to read "Tiffany D Johnson".

Tiffany D Johnson, P.E.
Associate



6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying Consumers Energy Company (CEC) J.R. Whiting Generating Facility Qualified Persons
RCRA CCR Surface Impoundment 2016 Inspection Report – Ponds 1&2, JR Whiting Plant, Erie, Michigan	October 2016	Mannik Smith Group
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**APPENDIX A
INSPECTION CHECKLIST FORM**

CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

Facility Name: *J.R. Whiting Ponds 1 and 2*

Owner: *Consumers Energy Company (CEC)*

Purpose of Facility: *Inactive, Detention and settlement of sluiced bottom ash and plant process water.*

County, State: *Monroe County, Michigan*

Inspected By: *Tiffany Johnson and Samantha Fentress*

Inspection Date: *May 16, 2017*

Weather: *Clear, Sunny 76° Fahrenheit*

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					<i>Water level is unchanged from the previous year.</i>
a. Year Minimum Water Elevation					Elevation: 584 ft-amsl.
b. Year Average Water Elevation					Elevation: 584 ft-amsl.
c. Year Maximum Water Elevation					Elevation: 584 ft-amsl.
d. Current water level					Elevation: 584 ft-amsl.
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)
g. Alterations	X				None Observed
h. Development of downstream plain	X				None Observed
i. Grass cover	X				None Observed
j. Settlement/misalignment/cracks	X				None Observed
k. Sudden drops in water level?	X				Water level has been lowered, the inflow structure has been disconnected, no inflow occurring.
2. Inflow Structure					The inflow structure has been disconnected, no inflow occurring.
a. Settlement	X				None Observed
b. Cracking	X				None Observed
c. Corrosion	X				None Observed
d. Obstacles in inlet	X				None Observed
e. Riprap/erosion control	X				None Observed
3. Outflow Structure					
a. Settlement	X				None Observed
b. Cracking	X				None Observed
c. Corrosion	X				None Observed
d. Obstacles in outlet	X				None Observed
e. Riprap/erosion control	X				None Observed
f. Seepage	X				None Observed
4. Upstream slope					Minor sloughing observed on North, East, South, and West interior slopes.
a. Erosion		X			Erosion observed along North, East, South, and West slopes of Ponds 1 and 2. See Note 1.
b. Rodent burrows		X			Rodent burrows observed along North and West slopes. See Note 1.
c. Vegetation	X				
d. Cracks/settlement	X				
e. Riprap/other erosion protection	X				
f. Slide, Slough, Scarp		X			Continue monitoring sloughing and erosion on interior slopes. See Note 1.
5. Crest					
a. Soil condition	X				
b. Comparable to width from previous inspection	X				
c. Vegetation	X				
d. Rodent burrows		X			Some rodent burrows observed along northern crest. See Note 1.
e. Exposed to heavy traffic	X				None Observed

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
f. Damage from vehicles/machinery	X				None Observed
6. Downstream slope					Steep slopes on downstream East slope and concrete debris observed on the north and east slopes.
a. Erosion		X			Recently removed vegetation resulted in uneven slopes and observed erosion. See Note 1
b. Vegetation		X			Recently removed vegetation resulted in uneven slopes and stumps on eastern side of Ponds 1 and 2 and western side of Pond 1. See Note 1.
c. Rodent burrows	X				None Observed
d. Slide, Slough, Scarp	X				None Observed
e. Drain conditions	X				None Observed
f. Seepage		X			No seepage observed at the time of this inspection and no seepage was noted in the weekly inspection logs. Water levels in Ponds1&2 are lower than previous inspections. However seepage has been observed in the past on the western side of Pond 2, continue to monitor. See Note 1.
7. Toe					
a. Vegetation	X				
b. Rodent burrows	X				None Observed
c. Settlement	X				None Observed
d. Drainage conditions	X				None Observed
e. Seepage	X				None Observed

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) Current volume of CCR and water was estimated by Mannik and Smith Group (MSG, 2016).
- 3) Golder recommends that items identified with a repair designation exhibited conditions that should initiate measures be taken to rectify the area of concern. 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: 10-12-17

Engineering Firm: Golder Associates Inc.

Signature:

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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