Initial Annual Inspection Report

J.R. WHITING GENERATING FACILITY

POND 6 INACTIVE CCR SURFACE IMPOUNDMENT

Initial 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.
15851 South US 27, Suite 50
Lansing, Michigan 48906

July 7, 2017 **1772978.0003**

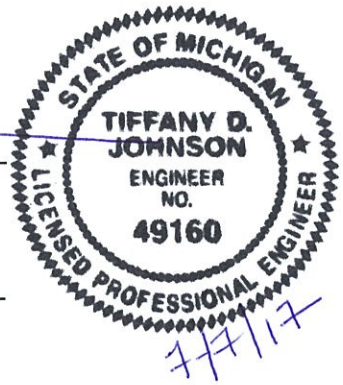
Golder Associates

CERTIFICATION

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 Initial 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.



Signature

July 7, 2017

Date of Report Certification

Tiffany Johnson, PE

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 J.R. Whiting Generating Facility (J.R. Whiting) Pond 6 is an inactive surface impoundment and as such, was not required to conduct annual inspections by a qualified professional engineer until the rule was amended on August 5, 2016. 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. Owners and operators of inactive CCR surface impoundments subject to the provisions of the amended 40 CFR 257.100(e)(4)(iv) must conduct this initial annual inspection by July 19, 2017.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the QPE initial annual inspection of the Pond 6 Inactive Surface Impoundment at J.R. Whiting to document, to the extent reasonable based on 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 available 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.

The amended CCR RCRA Rule also required that the inspections by a qualified person, including weekly inspections and monthly instrument monitoring of CCR, as set forth in 40 CFR 257.83(a) be initiated no later than April 18, 2017.

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. An overview map of the J.R. Whiting generating facility and ash disposal area is shown in Figure 1. 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: Pond 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. Pond 6 is currently in construction for closure.

The existing reports reviewed for the assessment of Pond 6 are summarized in Table 1, below.

Table 1. Summary of Background Document Review

Inspection/Assessment	Date	Author
Weekly Inspection Reports	April 2017-June 2017	Varying Consumers Energy Company (CEC) J.R. Whiting Generating Facility Qualified Persons
J.R. Whiting Annual Progress Report-Winter 2016	December 2016	Mannik Smith Group
J.R. Whiting Annual Ash Dike Risk Assessment and Inspection- Fall 2015	October 2015	Golder Associates Inc.
J.R. Whiting Generating Facility, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering
J.R. Whiting Ash Disposal Area 2012 Ash Dike Risk Assessment Inspection Report	July 2012	AECOM Technical Services, Inc.
Dam Safety Assessment of CCW Impoundments, J.R. Whiting Plant	June 2011	O'Brien & Gere Engineers, Inc. (on behalf of US EPA)
Inspection Report J.R. Whiting Generating Facility Ash Dike Risk Assessment, Erie, Michigan	December 2009	AECOM Technical Services, Inc.
Potential Failure Mode Analysis (PFMA) Report, J.R. Whiting Generating Facility Ash Dike Risk Assessment, Erie, Michigan	December 2009	AECOM Technical Services, Inc.

3.0 2017 INSPECTION

Golder performed an onsite inspection of Pond 6 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 Engineering Services Department
- Ms. Michelle Marion, CEC Engineering Services Department
- Mr. Harold D. Register, Jr., CEC Environmental Services Department
- Mr. Frank Rand, CEC Environmental Services Department

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

- Any changes in geometry of the impounding structure since the previous annual inspection.
  - Since this is the first annual inspection, changes in geometry will be incorporated in the report for the next annual inspection.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and Coal Combustion Residuals (CCR) since the previous annual inspection.
  - Since this is the first annual inspection, a placeholder for this data has been provided in the inspection form and will be input for the 2018 annual inspection.
- Any instrumentation in place designed to monitor the structural stability of Pond 6.
  - There are currently two piezometers and seven slope inclinometers that are being monitored during the closure construction of Pond 6. Since this is the initial annual inspection, the maximum measurements from these instruments will be included in the next annual inspection report.
- Storage capacity of the impounding structure at the time of inspection.
  - Pond 6 has been dewatered and is in the process of closure, there is no storage capacity remaining.
- Approximate volume of the impounded water and CCR at the time of inspection.
  - Pond 6 has been dewatered and is in the process of closure construction.
- Appearances of an 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. The categories are defined as follows:

- Acceptable: The condition was visually documented to be acceptable, requiring no action beyond periodic inspection in accordance with the Surveillance Monitoring Plan (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: The condition was visually identified to exhibit the potential for or show existing degeneration that merits initiation of measures 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 review of previous inspection reports listed in Table 1, as compared to conditions noted during the inspection, the following changes were observed:

- Pond 6 is dewatered and in the process of closure construction.
- Areas of sparse vegetation and minor erosion were observed on areas of Pond 6 that were closed in 2016. As part of the 2017 closure construction activities, the current on-site contractor will repair the erosion and re-seed these areas in 2017.

4.0 LIMITATIONS OF ASSESSMENT

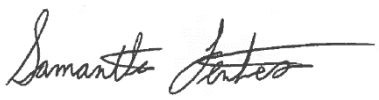
Golder has conducted the site inspection and prepared this report for Pond 6 at J.R. Whiting. The factual data, assessment, interpretations, and recommendations provided herein are based on the results of field observations from site inspections performed by Golder and review of previous site inspection 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 on the Pond 6 Surface Impoundment at J.R. Whiting 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.



Samantha Fentress
Engineer

Tiffany Johnson, P.E.
Senior Consultant

6.0 REFERENCES

AECOM, 2009a. Potential Failure Mode Analysis (PFMA) Report, J.R. Whiting Generating Facility Ash Dike Risk Assessment, Erie, Michigan, AECOM Technical Services, Inc., December 2009.

AECOM, 2009b. Inspection Report J.R. Whiting Generating Facility Ash Dike Risk Assessment, Erie, Michigan, AECOM Technical Services, Inc., December 2009.

AECOM, 2012. J.R. Whiting Ash Disposal Area 2012 Ash Dike Risk Assessment FINAL Inspection Report, AECOM Technical Services, Inc., July 2012.

Barr, 2014a. J.R. Whiting Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014, Barr Engineering Company, December 8, 2014.

Barr, 2014b. J.R. Whiting Ash Disposal Area, Pipe Condition Assessment Report – Fall 2014. Barr Engineering Company, December 8, 2014.

Consumers Energy Company, 2010. Fossil Fuel Generation Solid Waste Disposal Area Surveillance Monitoring Programs (SMPs).

Mannik Smith Group, 2016. J.R. Whiting RCRA CCR Surface Impoundment Inspection Report.-Fall 2016, Mannik Smith Group, October 13, 2016

O'Brien & Gere Engineers, Inc., 2011. Dam Safety Assessment of CCW Impoundments, J.R. Whiting Plant (Final Report), June 27, 2011.

CCR SURFACE IMPOUNDMENT INSPECTION CHECKLIST

Facility Name: J.R. Whiting Pond 6

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Inactive ash pond, dewatered, in the process of closure.

County, State: Monroe County, Michigan

Inspected By: Tiffany Johnson and Samantha Fentress ***Inspection Date: May 16, 2017***

Weather: Clear, Sunny, 76 ° Fahrenheit

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: Not applicable (NA) – This is the first RCRA Annual Inspection.
b. Year Average Water Elevation					Elevation: NA – This is the first RCRA Annual Inspection.
c. Year Maximum Water Elevation					Elevation: NA – This is the first RCRA Annual Inspection.
d. Current water level					Elevation: Pond 6 is dewatered.
e. Current storage capacity					Volume: 0 cubic yards, Pond 6 is in the process of closure.
f. Current volume of impounded water and CCR					Volume: NA - Pond 6 is in the process of closure.
g. Alterations					NA
h. Development of downstream plain					NA
i. Grass cover	X				
j. Settlement/misalignment/cracks	X				
k. Sudden drops in water level?					NA – No drop in water level observed.
2. Inflow Structure					
a. Settlement					NA – Pond 6 is inactive and has no inflow.
b. Cracking					NA – Pond 6 is inactive and has no inflow.
c. Corrosion					NA – Pond 6 is inactive and has no inflow.
d. Obstacles in inlet					NA – Pond 6 is inactive and has no inflow.
e. Riprap/erosion control					NA – Pond 6 is inactive and has no inflow.
3. Outflow Structure					
a. Settlement					NA – Pond 6 is inactive and has no outflow.
b. Cracking					NA – Pond 6 is inactive and has no outflow.
c. Corrosion					NA – Pond 6 is inactive and has no outflow.
d. Obstacles in outlet					NA – Pond 6 is inactive and has no outflow.
e. Riprap/erosion control					NA – Pond 6 is inactive and has no outflow.
f. Seepage					NA – Pond 6 is inactive and has no outflow.
4. Upstream slope					
a. Erosion		X			Areas of Pond 6 that were closed in 2016 have minor erosion.
b. Rodent burrows	X				
c. Vegetation		X			Areas of Pond 6 that were closed in 2016 have sparse vegetation.
d. Cracks/settlement	X				
e. Riprap/other erosion protection	X				
f. Slide, Slough, Scarp	X				
5. Crest					
a. Soil condition	X				
b. Comparable to width from previous inspection	X				
c. Vegetation	X				
d. Rodent burrows	X				
e. Exposed to heavy traffic	X				Exposed to heavy construction traffic, but no damage observed.
f. Damage from vehicles/machinery	X				None observed.
6. Downstream slope					
a. Erosion	X				
b. Vegetation	X				Dense vegetation.
c. Rodent burrows	X				
d. Slide, Slough, Scarp	X				
e. Drain conditions	X				
f. Seepage	X				None observed.
7. Toe					
a. Vegetation	X				
b. Rodent burrows	X				
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				None observed.

Notes:

1) Observations 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.

Name of Engineer: Tiffany Johnson, P.E.

Date: July 7, 2017

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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