



REPORT

B.C. Cobb Generating Facility

Ponds 0-8

2018 Annual Surface Impoundment Inspection Report

Muskegon, Michigan Pursuant to 40 CFR 257.83

Submitted to:

Consumers Energy Company

1945 W. Parnall Road Jackson, Michigan, USA 49201

Submitted by:

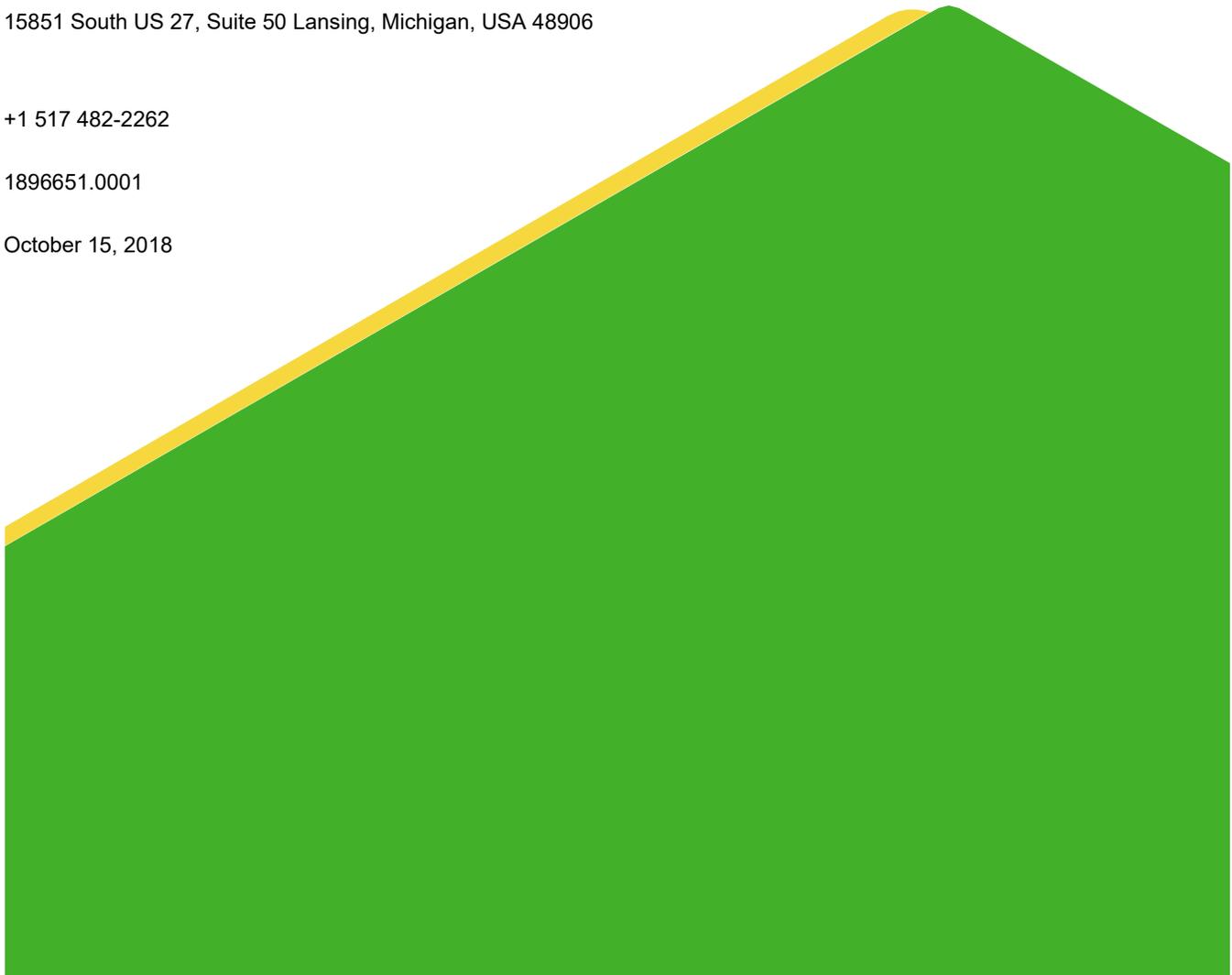
Golder Associates Inc.

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October 15, 2018



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 15, 2018

Date of Report Certification

Tiffany D. Johnson, P.E.

Name

6201049160

Professional Engineer Certification Number



Tiffany D. Johnson
10/15/18

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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 0-8 at the B.C. Cobb Generating Facility (B.C. Cobb) 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 the 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

2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

B.C. Cobb is located in Muskegon, Michigan. Generally, B.C. Cobb is bordered by Muskegon Lake to the west, the Muskegon River to the north, and M-120 highway to the east. Ponds 0-8 at B.C. Cobb served two primary functions prior to decommissioning:

- Received outflow from the Bottom Ash Pond for secondary detention and settlement of bottom ash, and
- Received intermittent sluiced fly ash and process water from the generating facility for detention and settlement.

Ponds 0-8 are interconnected by a subsurface pipe network that ultimately discharged from Pond 4 to the Site's permitted National Pollutant Discharge Elimination System (NPDES) outfall to Muskegon Lake. B.C. Cobb Ponds 0-8 are currently in the process of being decommissioned and have been dewatered. The NPDES outfall has been grouted and is not currently active.

The existing reports reviewed for the assessment of Ponds 0-8 are summarized in Table 1 below.

Table 1: Summary of Background Document Review

Document	Date	Author
Weekly Inspection Reports	January 2017 – January 2018	Ponds 0-8 Qualified Personnel
B.C. Cobb Generating Facility, Pond 0-8 Closure Plan	February 2018	Golder Associates Inc.
B.C. Cobb Ponds 0-8 2017 Annual RCRA CCR Surface Impoundment Inspection Report	October 2017	Golder Associates Inc.
B.C. Cobb Generating Facility, Pond 0-8 Structural Stability and Safety Factor Assessment Report (includes information on the 2016 Annual Inspection)	October 2016	Golder Associates Inc.
B.C. Cobb Ponds 0-8 2015 Initial Annual RCRA CCR Surface Impoundment Inspection	January 2016	Golder Associates Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC

3.0 2018 VISUAL INSPECTION

Golder performed an onsite inspection of Ponds 0-8 on May 9, 2018. Golder inspectors, Tiffany Johnson, P.E. and Halle Doering, EIT, were accompanied by two CEC representatives and one FK Engineering (FKE) representative, as follows:

- Mr. George McKenzie, CEC System Engineering Department
- Ms. Michelle Marion, CEC Environmental Services Department
- Mr. Zach Carr, FKE, CEC consultant

The inspection checklist form (see Appendix A) 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.
 - None were observed.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and Coal Combustion Residuals (CCR) since the previous annual inspection.
 - Average top of embankment elevation: 590 feet above mean sea level (ft-amsl)
 - Average water surface elevation: 580 ft-amsl (based on visual assessment at the time of the inspection)
 - Average pond bottom elevation: 575 ft-amsl
- There is currently no instrumentation in place designed to monitor for the structural stability of Ponds 0-8.
 - At the time of the inspection and report, there are no plans for installation of stability monitoring instrumentation due to the ongoing decommissioning of Ponds 0-8.
- Storage capacity of the impounding structure at the time of inspection.
 - Current storage capacity of Ponds 0-8 combined (CCR only) is approximately 562,000 cubic yards.
- Approximate volume of the impounded water and CCR at the time of inspection.
 - Current volume of impounded water and CCR in Ponds 0-8 combined is approximately 240,000 cubic yards. Ponds 0-8 were substantially dewatered as part of the ongoing decommissioning process at the time of the inspection.
- 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, 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.
 - 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.

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

- A dewatering test took place adjacent to Pond 0;
- Vegetation growing through riprap on the exterior east slope of Pond 5;
- No seepage near well BCC-MW-15023 was observed, and the area was no longer wet;
- Erosion at the toe of the northwestern exterior slope of Ponds 0-4 was repaired with riprap;
- Tall vegetation was present along the eastern exterior slope of Pond 0;
- Animal burrows were observed on the interior northwest slopes of Ponds 0-4;
- Minor erosion and surficial sloughing was present along interior slopes of Ponds 0-8 from dewatering;
- Minor erosion and rodent burrows were observed along the southwestern exterior slope of Pond 8; and
- Ruts and erosion on Pond 0-8 perimeter gravel road.

4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for Ponds 0-8 at B.C. Cobb. 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 Resource Conservation and Recovery Act (RCRA) reporting requirements in accordance with 40 CFR 257.83(b)(2). Golder has reviewed the available information on the B.C. Cobb Ponds 0-8 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 2017 – January 2018	Ponds 0-8 Qualified Personnel
B.C. Cobb Generating Facility, Pond 0-8 Closure Plan	February 2018	Golder Associates Inc.
B.C. Cobb Ponds 0-8 2017 Annual RCRA CCR Surface Impoundment Inspection Report	October 2017	Golder Associates Inc.
B.C. Cobb Generating Facility, Pond 0-8 Structural Stability and Safety Factor Assessment Report (includes information on	October 2016	Golder Associates Inc.
B.C. Cobb Annual Ash Dike Risk Assessment and Inspection Report, Fall 2015	June 2016	Golder Associates Inc.
B.C. Cobb Ponds 0-8 2015 Initial Annual RCRA CCR Surface Impoundment Inspection	January 2016	Golder Associates Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC

Signature Page

Golder Associates Inc.



Halle Doering
Staff Engineer



Tiffany D. Johnson, P.E.
Associate

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APPENDIX A - INSPECTION CHECKLIST FORM

CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

Facility Name: B.C. Cobb Ponds 0-8

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Previously used for detention and settlement of sluiced fly ash and process water.

County, State: Muskegon County, Michigan

Inspected By: Tiffany Johnson and Halle Doering

Inspection Date: May 9, 2018

Weather: 66°F Overcast

ITEM		Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
1. General Conditions						Ponds 0-8 are in the process of being closed. Standing water was observed in the eastern ponds, Ponds 1 and 5.
a. Year Minimum Water Elevation						Elevation: See Note 1
b. Year Average Water Elevation						Elevation: See Note 1
c. Year Maximum Water Elevation						Elevation: See Note 1
d. Current water level						Elevation: See Note 1, Ponds 0-8 are dewatered for decommissioning
e. Current storage capacity						Volume: ~ 562,000 CY (See Note 1)
f. Current volume of impounded water and CCR						Volume: ~ 240,000 CY CCR Only (See Note 1)
g. Alterations		X				
h. Development of downstream plain		X				
i. Grass cover		X				
j. Settlement/misalignment/cracks		X				
a. Sudden drops in water level?		X				
a. Inflow Structure						Inflow structure considered as inflow pipes to Pond 8, 6, and 5 and force main pipe into eastern concrete box vault. Inflow structure is inactive. Force main has been disconnected at 4 and 4A.
b. Settlement		X				
c. Cracking		X				
d. Corrosion		X				
e. Obstacles in inlet		X				
f. Riprap/erosion control		X				
g. Outflow Structure						Outflow structure considered as discharge pipe from Pond 8. Outflow structure has been grouted and is closed off.
b. Settlement		X				
c. Cracking		X				
d. Corrosion		X				
e. Obstacles in outlet		X				
f. Riprap/erosion control		X				
• Seepage		X				
h. Upstream slope						Upstream Slope Considered North, South, and East Slopes
a. Erosion			X			Steep interior pond slopes were observed likely due to the dewatering. Maintain erosion and grading controls during pond cleaning. See Note 2.

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
b. Rodent burrows		X			Rodent burrows were observed on the western slopes of Ponds 4 and 5, maintain animal control procedures, see note 2.
c. Vegetation		X			Sparse vegetation and woody vegetation.
d. Cracks/settlement	X				
e. Riprap/other erosion protection	X				N/A
f. Slide, Slough, Scarp		X			Steep interior pond slopes were observed likely due to the dewatering. Maintain erosion and grading controls during pond cleaning. See Note 2.
2. Crest					
a. Soil condition		X			Road gravel.
b. Comparable to width from previous inspection	X				
c. Vegetation		X			Pine trees that remain intended to act as visual screening and dust suppression, maintain vegetation controls. See Note 2.
d. Rodent burrows		X			Rodent burrows are present along interior pond slopes, maintain animal control procedures. See Note 2.
e. Exposed to heavy traffic	X				N/A
f. Damage from vehicles/machinery		X			Minor rutting observed.
3. Downstream slope					Downstream slope considered the north and west slopes along the discharge channel, and the eastern slope along the fence line.
a. Erosion		X			Erosion observed along west slope of Pond 8 and the area southwest of Pond 4 where there is no riprap, maintain erosion controls. Rip rap was placed at the toe of the northern slope along the channel to repair and prevent erosion. See Note 2.
b. Vegetation		X			Areas of bare vegetation observed along southwestern slope of Pond 8, maintain vegetation controls. Woody vegetation and trees along the southwestern slope, and tall phragmites on the eastern slope. See Note 2.
c. Rodent burrows		X			Rodent burrows were observed along west slopes of Pond 8 and ash stockpile area, maintain animal control procedures. See Note 2.
d. Slide, Slough, Scarp	X				
e. Drain conditions	X				
f. Seepage	X				
4. Toe					
a. Vegetation	X				
b. Rodent burrows		X			Rodent burrows were observed along southwestern toes of Pond 8 and ash stockpile area, maintain animal control procedures. See Note 3.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				Apparent seepage near a well on the northeast side of Pond 0 that was observed during the 2015 inspection was not observed during this 2018 inspection.

Notes:

- The following elevations were applied to approximate the combined capacity and current volume of Ponds 0-8:
 - Average top of embankment elevation: 590.0
 - Average water surface elevation: 580.0
 - Average pond bottom elevation: 575.0
- 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.

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

Date: October 15, 2018

Engineering Firm: Golder Associates Inc.

Signature:





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