



# Annual Inspection Report

## B.C. COBB GENERATING FACILITY

## BOTTOM ASH POND

## 2017 ANNUAL SURFACE IMPOUNDMENT INSPECTION REPORT

Muskegon, 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, MI 48906 USA

October 2017

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## 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 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 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 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 the Bottom Ash Pond 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

CEC ceased electrical generation at BC Cobb on April 15, 2016; the facility is currently being decommissioned. During the decommissioning, the Bottom Ash Pond is permitted under a National Pollutant Discharge Elimination System (NPDES) permit to receive CCR contact wash water and low volume miscellaneous wastewaters. Before ceasing electrical generation, the Bottom Ash Pond collected sluiced bottom ash from the BC Cobb Units 4 and 5 electrical generating units. Stored bottom ash was mechanically removed routinely from the pond as needed to maintain storage capacity. The Bottom Ash Pond discharges water via two corrugated metal outflow pipes. The pipes discharge to an internal pond network (Ponds 0 through 8) and then to the NPDES permitted outfall to Muskegon Lake. The B.C. Cobb Facility is located in Muskegon, Michigan. B.C. Cobb is bordered by Lake Michigan to the west, the Muskegon River to the south, and M-120 highway to the east. Bottom ash was historically sluiced from the B.C. Cobb Units 4 and 5 electrical generating unit to an onsite Bottom Ash Pond. Currently, the Bottom Ash Pond is not receiving CCR material.

The existing reports reviewed for this assessment are summarized in Table 1 below.

**Table 1: Summary of Background Document Review**

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC B.C. Cobb Generating Facility Qualified Persons
B.C. Cobb Bottom Ash 2016 Annual RCRA CCR Surface Impoundment Inspection Report	October 2016	Golder Associates Inc.
B.C. Cobb Generating Facility Bottom Ash Pond Closure Plan	October 2016	Golder Associates Inc.
B.C. Cobb Bottom Ash 2015 Initial Annual RCRA CCR Surface Impoundment Inspection Report	January 2016	Golder Associates Inc.
B.C. Cobb Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering Company
B.C. Cobb Ash Disposal Area, 2012 Ash Dike Risk Assessment Final Inspection Report	July 2012	AECOM Technical Services, Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC



B.C. Cobb Generating Facility 2009  
Ash Dike Risk Assessment, Potential  
Failure Mode Analysis (PFMA) Report

November 2009

AECOM Technical Services,  
Inc.



### 3.0 2017 VISUAL INSPECTION

Golder performed an onsite inspection of the Bottom Ash Pond on May 17, 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. Aaron Davis, CEC Enterprise Project Management

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.
  - In October 2016, the Bottom Ash Pond was regraded to include a berm around the northern portion of the pond, up to elevation 595 (NAVD88).
- Any instrumentation in place designed to monitor the structural stability of the Bottom Ash Pond.
  - At the time of the inspection and report, there are no plans for installation of stability monitoring instrumentation due to the planned decommissioning of the Bottom Ash Pond.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection.
  - The Bottom Ash Pond is currently dry and was dewatered as part of the process of decommissioning.
- Storage capacity of the impounding structure at the time of inspection.
  - The Bottom Ash Pond has a current storage capacity of approximately 9,800 cubic yards.
- Approximate volume of the impounded water and CCR at the time of inspection.
  - The Bottom Ash Pond is currently dry and impounds CCR only, the estimated volume of dry CCR is approximately 6,900 cubic yards.
- 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:

- The Bottom Ash Pond is dry and is no longer actively sluicing water.
- There is no longer seepage or evidence of seepage noted along the southern toe of the Bottom Ash Pond downstream slope.
- There were several rodent burrows observed along the southwestern downstream slope.





#### **4.0 LIMITATIONS OF ASSESSMENT**

Golder has conducted the site inspection and prepared this report for the Bottom Ash Pond 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 the Bottom Ash Pond 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 D. Johnson, P.E.  
Associate



## 6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC B.C. Cobb Generating Facility Personnel
B.C. Cobb Bottom Ash 2016 Annual RCRA CCR Surface Impoundment Inspection Report	October 2016	Golder Associates Inc.
B.C. Cobb Generating Facility Bottom Ash Pond Closure Plan	October 2016	Golder Associates Inc.
B.C. Cobb Bottom Ash 2015 Initial Annual RCRA CCR Surface Impoundment Inspection Report	January 2016	Golder Associates Inc.
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Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC
B.C. Cobb Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.

**APPENDIX A  
INSPECTION CHECKLIST FORM**

## CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

**Facility Name:** B.C. Cobb Bottom Ash Pond

**Owner:** Consumers Energy Company (CEC)

**Purpose of Facility:** Detention and settlement of sluiced bottom ash

**County, State:** Muskegon County, Michigan

**Inspected By:** Tiffany Johnson and Samantha Fentress

**Inspection Date:** 05/17/2017

**Weather:** Sunny, 80-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: Dry
b. Year Average Water Elevation					Elevation: Dry
c. Year Maximum Water Elevation					Elevation: Dry
d. Current water level					Elevation: Dry
e. Current storage capacity					Volume: 9,800 cubic yards (See Note 1)
f. Current volume of impounded water and CCR					Volume: 6,900 cubic yards (See Note 1), CCR only.
g. Alterations	X				The pond was dry at the time of the inspection.
h. Development of downstream plain	X				None observed
i. Grass cover		X			Sparse to no vegetation, maintain vegetation controls, see note 3.
j. Settlement/misalignment/cracks	X				
k. Sudden drops in water level?	X				
2. Inflow Structure					The inflow pipe was decommissioned at the time of the inspection.
a. Settlement	X				
b. Cracking	X				
c. Corrosion	X				The inflow pipe was decommissioned at the time of the inspection.
d. Obstacles in inlet	X				
e. Riprap/erosion control	X				
3. Outflow Structure					
a. Settlement	X				
b. Cracking	X				
c. Corrosion	X				Outlet pipe was decommissioned.
d. Obstacles in outlet	X				
e. Riprap/erosion control	X				
f. Seepage	X				No seepage observed.
4. Upstream slope					
a. Erosion	X				None observed, newly constructed.
b. Rodent burrows	X				None observed, newly constructed.
c. Vegetation	X				None observed, newly constructed.
d. Cracks/settlement	X				None observed, newly constructed.
e. Riprap/other erosion protection	X				None observed, newly constructed.
f. Slide, Slough, Scarp	X				None observed, newly constructed.
5. Crest					
a. Soil condition	X				
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 3.
d. Rodent burrows	X				
e. Exposed to heavy traffic	X				
f. Damage from vehicles/machinery	X				

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
6. Downstream slope					
a. Erosion		X			Intermittent minor erosion observed along the southern slope, maintain erosion controls. See Note 3.
b. Vegetation		X			Vegetation observed, maintain erosion controls. See Note 3.
c. Rodent burrows		X			Several rodent burrows were observed along the southwestern slope. Maintain animal controls. See Note 3.
d. Slide, Slough, Scarp	X				
e. Drain conditions	X				
f. Seepage	X				
7. Toe					
a. Vegetation	X				
b. Rodent burrows	X				
c. Settlement	X				
d. Drainage conditions	X				No evidence of seepage observed, as was observed in 2015, likely because the pond is dry.
e. Seepage	X				No evidence of seepage observed, as was observed in 2015, likely because the pond is dry.

**Notes:**

- 1) Current storage capacity of the Bottom Ash Pond is based on approximate bottom elevation of 572.4 NAVD88 and elevation 593.0 NAVD88 which corresponds to two feet below the minimum berm elevation (595.0 NAVD88). The current volume of impounded CCR is based on an approximate bottom elevation of 572.4 NAVD88 and the current pond CCR elevation of 590.0 NAVD88.
- 2) Previously observed seepage was not observed during this inspection. The Bottom Ash Pond is currently dry, which was likely the source of the historic seepage.
- 3) 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: 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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