



# Annual Inspection Report

## B.C. COBB GENERATING FACILITY

## BOTTOM ASH POND ANNUAL INSPECTION REPORT

Muskegon, Michigan

Pursuant to 40 CFR 257.83

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

**Submitted By:** Golder Associates Inc.  
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Lansing, Michigan 48906

October 2016

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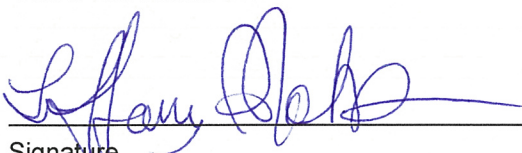


## CERTIFICATION

### 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.

  
Signature

October 14, 2016

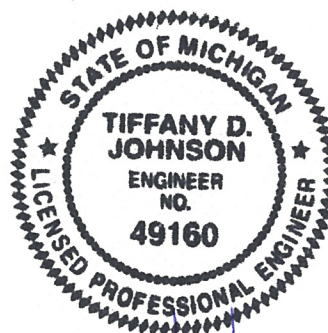
Date of Report Certification

Tiffany Johnson, PE

Name

6201049160

Professional Engineer Certification Number



10/14/16



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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) and, if the CCR surface impoundments are over 20-feet-high or if they impound more than 20 acre-feet, then the inspection must comply with Section 257.73. The Bottom Ash Pond at B.C. Cobb Generating Facility (BC Cobb) does not meet those requirements, so only the annual inspection was conducted according to Section 257.83.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the QPE inspection of the Bottom Ash Pond at BC 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 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

### 1.1 Background and Document Review Summary

CEC ceased electrical generation at BC Cobb on April 15, 2016; and 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 is 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 existing reports reviewed for this assessment are summarized in Table 1.1.1 below.

**Table 1.1.1 - Summary of Background Document Review**

<b>Document</b>	<b>Date</b>	<b>Author</b>
B.C. Cobb Bottom Ash Pond Initial Annual Surface Impoundment Inspection	January 2016	Golder Associates Inc.
Weekly inspections performed by Consumers Energy Company (CEC) qualified persons	June 2012 – May 2016	Varying CEC B.C. Cobb Generating Facility qualified persons
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 Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.



## 2.0 2016 VISUAL INSPECTION

Golder performed an onsite inspection of the Bottom Ash Pond on May 19, 2016, with a follow-up visit conducted on October 6, 2016. Golder's inspector, Ms. Tiffany Johnson, was 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. Sean Looman, CEC Engineering 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 the last inspection and as noted during the October 6, 2016 visit, the Bottom Ash Pond was regraded to include a berm around the northern portion of the pond, up to elevation 595.0 feet (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 9,800 cubic yards (cy).
- Approximate volume of the impounded water and CCR at the time of inspection.
  - The Bottom Ash Pond is currently dry and impounds CCR only; this volume is 6,900 cy.
- 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 1.1.1 compared to conditions noted during the inspection, the following changes were observed:

- The Bottom Ash Pond is dry as part of the dewatering and decommissioning process.
- 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.
- The Bottom Ash Pond was regraded to a minimum berm elevation of 595.0 feet NAVD88.



### 3.0 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 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.

A handwritten signature in blue ink, appearing to read "Jeff Piaskowski".

Jeff Piaskowski, P.E.  
Project Engineer

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

Tiffany Johnson, P.E.  
Senior Consultant





## 4.0 REFERENCES

Barr Engineering Company, 2014. B.C. Cobb Ash Disposal Area: Triennial Ash Dike Risk Assessment Report – Spring 2014.

AECOM Technical Services, Inc., 2009 Potential Failure Modes Analysis Report, B.C. Cobb Generating Facility, Ash Dike Risk Assessment.

AECOM Technical Services, Inc., 2012. B.C. Cobb Ash Disposal Area: 2012 Ash Dike Risk Assessment Inspection Report.

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

**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

**Inspection Dates:** 05/19/2016 and 10/06/2016

**Weather:** Sunny, 70-degrees F

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: 590.0 feet NAVD88
b. Year Average Water Elevation					Elevation: 590.5 feet NAVD88
c. Year Maximum Water Elevation					Elevation: 591.0 feet NAVD88
d. Current water level					Elevation: 590.0 feet NAVD88
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				
h. Development of downstream plain	X				
i. Grass cover	X				
j. Settlement/misalignment/cracks	X				
k. Sudden drops in water level?					Bottom Ash Pond is being dewatered, pond was dry at the time of inspection.
2. Inflow Structure					
a. Settlement	X				
b. Cracking	X				
c. Corrosion		X			Observed corrosion on pipe, continue maintenance controls. See Note 3.
d. Obstacles in inlet	X				
e. Riprap/erosion control	X				
3. Outflow Structure					
a. Settlement	X				
b. Cracking	X				
c. Corrosion		X			Observed corrosion on pipe, continue maintenance controls. See Note 3.
d. Obstacles in outlet	X				
e. Riprap/erosion control	X				
f. Seepage	X				No seepage observed.
4. Upstream slope					Upstream slope of Bottom Ash Pond considered as the west slope.
a. Erosion		X			Observed erosion, maintain erosion and vegetation controls. See Note 3.
b. Rodent burrows	X				
c. Vegetation	X				
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			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				
6. Downstream slope					Downstream slope considered the southern and western slope of the Bottom Ash Pond.
a. Erosion		X			Intermittent minor erosion observed along the slope, maintain erosion controls. See Note 3.
b. Vegetation		X			Woody vegetation observed, maintain erosion controls. See Note 3.
c. Rodent burrows		X			Several large 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				

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
c. Settlement	X				
d. Drainage conditions	X				No evidence of seepage observed, as was observed in 2015; likely because the Bottom Ash Pond is dry.
e. Seepage	X				No evidence of seepage observed, as was observed in 2015; likely because the Bottom Ash Pond is dry.

**Notes:**

- 1) Current storage capacity of the Bottom Ash Pond is based on approximate bottom elevation of 572.4 feet NAVD88 and elevation 593.0 feet NAVD88 which corresponds to two feet below the minimum berm elevation (595.0 feet NAVD88). The current volume of impounded CCR is based on an approximate bottom elevation of 572.4 feet NAVD88 and the current pond CCR elevation of 590.0 feet 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:** *10-14-2016*

**Engineering Firm:** *Golder Associates Inc.*

**Signature:**

*Tiffany D. Johnson*

PROFESSIONAL ENGINEER SEAL

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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