



# Liner System Certification Report

## B.C. COBB GENERATING FACILITY

### PONDS 0-8 LINER SYSTEM CERTIFICATION REPORT

Muskegon, Michigan

Pursuant to 40 CFR 257.71

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

**Prepared By:** Golder Associates Inc.  
15851 South US 27, Suite 50  
Lansing, Michigan 48906

October 2016

1652598





**CERTIFICATION**

**Professional Engineer Certification Statement [40 CFR 257.71(b)]**

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 257.71 (40 CFR Part 257.71), I attest that this Liner System Certification 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 257.71.

Golder Associates Inc.

Signature

October 14, 2016

Date of Report Certification

Jeffrey R. Piaskowski, PE

Name

6201061033

Professional Engineer Certification Number



10/14/16



---

## Table of Contents

CERTIFICATION..... C-1  
    Professional Engineer Certification Statement [40 CFR 257.71(b)] ..... C-1  
1.0 INTRODUCTION..... 1  
2.0 HISTORICAL DOCUMENTATION..... 2  
3.0 PONDS 0-8 INVESTIGATION ..... 3  
4.0 CONCLUSIONS AND SUMMARY..... 4  
5.0 REFERENCES..... 5

## List of Tables

Table 1          Ponds 0-8 Borehole Summary



## 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”) to regulate the beneficial use and disposal of CCR materials generated at coal-fired electrical power generating complexes. Section 257.71 of the CCR RCRA Rule requires the owner or operator of an existing CCR surface impoundment to document whether or not the unit was constructed with a liner system meeting criteria outlined in Section 257.71(a)(1). According to 257.71(b), the documentation must be certified accurate by a qualified professional engineer in the State of Michigan.

Golder Associates Inc. (Golder) is submitting this report to certify that no liner constructed per the requirements of 40 CFR 257.71 exists beneath the Pond 0-8 CCR surface impoundment (Ponds 0-8) at the Consumers Energy Company (CEC) B.C. Cobb Generating Facility (BC Cobb) in Muskegon, Michigan.



## 2.0 HISTORICAL DOCUMENTATION

Golder performed a review of the following historic documentation relative to Ponds 0-8:

- Potential Failure Mode Analysis (PFMA) Report (AECOM 2009)
- Aerial photographs dated from:
  - 1938
  - 1953
  - 1955
  - 1968

No evidence was found from review of the historic documentation that would indicate that Ponds 0-8 were constructed with a liner system as described in 40 CFR 257.71 liner design criteria for existing CCR surface impoundments as follows:

- A liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no more than  $1 \times 10^{-7}$  cm/sec as required in Section 257.71(a)(1)(i);
- A composite liner that meets the requirements of Section 257.70(b); or
- An alternative composite liner that meets the requirements of Section 257.70(c).



### 3.0 PONDS 0-8 INVESTIGATION

During October 2015, Golder continuously sampled soil at 20 locations in Ponds 0-8. The sampling effort targeted depths ranging from 15 to 25 feet below mudline. A sonic rig was used to advance the investigations, the locations and depths of which are summarized in Table 1 – Ponds 0-8 Borehole Summary.

The boreholes were terminated approximately 10 to 20 feet into native material underlying the CCR. Native material was composed of poorly-graded, fine-grained sand interbedded with discontinuous 0.5- to 1.0-foot-thick layers of organic materials and peat. No liner material meeting the criteria outlined in Section 257.71(a)(1) was encountered in any of the boreholes.



#### 4.0 CONCLUSIONS AND SUMMARY

Based on the subsurface investigation and review of available historic documentation, Golder has determined there is no existing liner beneath Ponds 0-8 at BC Cobb based on the criteria provided in 40 CFR 257.71(a)(1)(i) – (iii). This report must be placed in the facility’s operating record in accordance with Section 257.105(f) and must be made available on the facility’s publicly accessible internet site in accordance with Section 257.107(f).

Sincerely,

**GOLDER ASSOCIATES INC.**

A handwritten signature in blue ink that reads "Megan Jehring".

Megan Jehring, E.I.T.  
Geotechnical Engineer

A handwritten signature in blue ink that reads "Jeff Piaskowski".

Jeff Piaskowski, P.E.  
Project Engineer



## 5.0 REFERENCES

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

“Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments,” Title 40 – Protection of the Environment Part 257 – Criteria for Classification of Solid Waste Disposal Facilities and Practices Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments.



**TABLE 1**  
**PONDS 0-8 BOREHOLE SUMMARY**

**TABLE 1**  
**Ponds 0-8 Borehole Summary**

Boring ID	Latitude	Longitude	Elevation	Water Depth (ft)	Borehole Depth (ft)
BCC-G15-BH-01W	43.25908	-86.24799	585.8	8.5	33.5
BCC-G15-BH-02W	43.25947	-86.24767	586.7	8.3	32.3
BCC-G15-BH-03W	43.25988	-86.24745	587.2	8.1	30.1
BCC-G15-BH-04W	43.26020	-86.24703	587.3	9.6	34.6
BCC-G15-BH-05W	43.26083	-86.24658	587.3	9.8	17.8
BCC-G15-BH-06	43.25850	-86.24741	587.6	-	30.0
BCC-G15-BH-07	43.25922	-86.24665	589.0	-	30.0
BCC-G15-BH-08	43.25997	-86.24602	590.1	-	30.0
BCC-G15-BH-09W	43.25816	-86.24589	585.8	8.5	26.0
BCC-G15-BH-10W	43.25850	-86.24568	586.7	6.9	30.9
BCC-G15-BH-11W	43.25885	-86.24534	587.2	7.3	25.8
BCC-G15-BH-12W	43.25927	-86.24500	587.3	6.4	31.4
BCC-G15-BH-13W	43.25957	-86.24471	587.3	10.7	25.7
BCC-G15-BH-14W	43.25795	-86.24461	592.0	5.8	25.8
BCC-G15-BH-15W	43.25842	-86.24429	592.0	10.3	30.3
BCC-G15-BH-16W	43.25866	-86.24419	588.0	8.1	28.1
BCC-G15-BH-17W	43.25892	-86.24397	587.5	10.2	31.2
BCC-G15-BH-18W	43.25795	-86.24383	592.0	4.7	29.7
BCC-G15-BH-19W	43.25791	-86.24339	588.0	5.0	20.0
BCC-G15-BH-20W	43.25795	-86.24296	587.5	8.6	23.6

## Notes:

Coordinates are given in NAD83

Elevation datum is NAVD88

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.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

[solutions@golder.com](mailto:solutions@golder.com)  
[www.golder.com](http://www.golder.com)

**Golder Associates Inc.**  
**15851 South U.S. 27, Suite 50**  
**Lansing, MI 48906 USA**  
**Tel: (517) 482-2262**  
**Fax: (517) 482-2460**



**Engineering Earth's Development, Preserving Earth's Integrity**

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation