



Annual Inspection Report

J.H. CAMPBELL GENERATING FACILITY

DRY ASH LANDFILL ANNUAL INSPECTION REPORT

West Olive, Michigan

Pursuant to 40 CFR 257.84

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

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

October 2016

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CERTIFICATION

Professional Engineer Certification Statement [40 CFR 257.84]

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 257.84 (40 CFR Part 257.84), 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 257.84.

Golder Associates Inc.


Signature

October 14, 2016

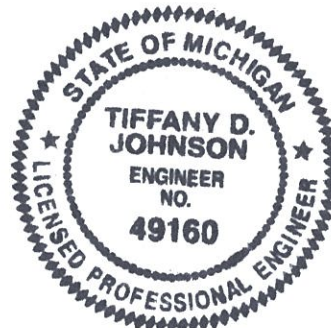
Date of Report Certification

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 landfills to have those units inspected on an annual basis by a qualified professional engineer (QPE) in accordance with 40 CFR 257.84(b). The annual QPE inspections are required to be completed and the results documented in inspection reports per CFR 257.84(b)(2) for landfills.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the QPE annual inspection of the Dry Ash Landfill at the J.H. Campbell Generating Facility (JH Campbell) 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 for the CCR unit is consistent with recognized and generally accepted good engineering standards. Golder reviewed available information regarding the status and condition of the CCR unit and performed an onsite visual inspection to identify signs of distress or malfunction of the CCR unit.

1.1 Background and Document Review Summary

The Dry Ash Landfill serves as the facility's primary disposal of dry ash and consists of four dual composite lined landfill cells and two leachate storage ponds. The landfill utilizes a double liner system with primary and secondary leachate collection layers between each layer. Total permitted capacity of the landfill is 9,380,000 cubic yards (cy). As of October of 5, 2015, approximately 4,285,000 cy of airspace was consumed per a survey conducted by CEC and an airspace evaluation completed by Engineering & Environmental Solutions, LLC (E&ES). It should be noted that the total permitted volume capacity will be achieved once the seven permitted cells have been constructed and filled.

At the time of the 2016 inspection; Cells 1, 2, 3, and 4 had been constructed with active filling occurring in uncapped portions of Cell 3 and in Cell 4. A final cover system was in place on the eastern portion of Cell 3, the north and east slopes of Cell 2, and the north and west slope of Cell 1.



The applicable available information reviewed for this assessment is summarized in Table 1.1.1 below.

Table 1.1.1 - Summary of Background Document Review

Document	Date	Author
J.H. Campbell Dry Ash Landfill Initial Annual Inspection	January 2016	Golder Associates Inc.
2015 Airspace Evaluation	October 2015	Engineering & Environmental Solutions, LLC
2015 Fill Progression Plan	February 2015	Engineering & Environmental Solutions, LLC
J.H. Campbell Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering Company
J.H. Campbell 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
J.H. Campbell Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.
J.H. Campbell Ash Storage Facility Expansion	November, 1993	STS Consultants Ltd.



2.0 2016 VISUAL INSPECTION

The 2016 onsite inspection of the Dry Ash Landfill was performed by Golder on May 19, 2016.

Golder's inspector (Ms. Tiffany Johnson) was accompanied by the following CEC representatives:

- Mr. George McKenzie, CEC Engineering Services Department
- Mr. Bradley Runkel, 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 257.84(b):

- Any changes in geometry of the structure since the previous annual inspection.
 - None were observed or noted.
- Approximate volume of CCR at the time of inspection.
 - The volume of CCR at the time of inspection was approximately 4,568,000 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 or noted.
- Any other change(s) which may have affected the stability or operation of the impounding structure since the previous inspection.
 - None were observed or noted.

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 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 257.84(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.
 - No items for investigation were identified during the inspection.



- 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 for repair were identified during the inspection.

After the 2016 annual inspection was completed, Golder compared the 2016 annual inspection conditions noted to conditions documented during CEC inspections conducted in 2015. The comparison identified the following three changes:

- Animal burrows observed adjacent to the grouted riprap down chutes
- Weathering of the grouted riprap down chutes observed
- Vegetation observed in the crest of the landfill cell, within the lining limits



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 257.84(b)(2). Golder has reviewed the available information on the Dry Ash Landfill and performed an onsite visual inspection. Golder's assessment is limited to the information provided by CEC and to the aspects 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, reading "Jeff Piaskowski".

Jeff Piaskowski, P.E.
Project Engineer

A handwritten signature in blue ink, reading "Tiffany Johnson".

Tiffany Johnson, P.E.
Senior Consultant



4.0 REFERENCES

EPA (Environmental Protection Agency). 2015. Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. 40 CFR Part 257. Effective Date October 19, 2015.

Golder Associates Inc., 2016. J.H. Campbell Dry Ash Landfill Annual Inspection Report

Engineering & Environmental Solutions, LLC, 2015. J.H. Campbell Dry Landfill Airspace Evaluation

Engineering & Environmental Solutions, LLC, 2015. J.H. Campbell Dry Landfill Fill Progression Plan

Barr Engineering Company, 2014. J.H. Campbell Ash Disposal Area: Triennial Ash Dike Risk Assessment Report – Spring 2014.

AECOM Technical Services, Inc., 2012. J.H. Campbell 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).

AECOM Technical Services, Inc., 2009 Potential Failure Modes Analysis Report J.H. Campbell Generating Facility, Ash Dike Risk Assessment.

STS Consultants Ltd., 1993 J.H. Campbell Ash Storage Facility Expansion

APPENDIX A
INSPECTION CHECKLIST FORM

CCR LANDFILL VISUAL INSPECTION CHECKLIST

Facility Name: J.H. Campbell Dry Ash Landfill

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Dry Ash Disposal

County, State: Ottawa County, Michigan

Inspected By: Tiffany Johnson

Inspection Date: 5/19/2016

Weather: Clear, 75-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Current volume of CCR					Volume: 4,568,000 CY
b. Alterations	X				None
c. Grass cover	X				
d. Settlement/misalignment/cracks	X				None
e. Leachate Collection	X				See Note 1.
2. Landfill Slope					
a. Erosion – liner exposed?		X			Observed isolated location of erosion at inlet inverts to the Cell 2 downchute. See Note 2.
b. Rodent burrows		X			Observed burrows located along Cell 2 downchutes, maintain animal control procedures. See Note 3.
c. Vegetation	X				
d. Cracks/settlement	X				
e. Riprap/other erosion protection		X			Observed grout weathering on Cell 3 downchute riprap, maintain erosion controls in this area. See Note 2.
f. Slide, Slough, Scarp	X				
g. Benches		X			Isolated location of eroded topsoil and standing water along the Cell 3 diversion berm on the southeast slope.
h. Final Cover	X				
i. Downchutes		X			Observed grout weathering and rodent damage on Cell 2 and 3 downchute riprap, maintain erosion controls in this area. See Note 2.
3. Crest					
a. Soil condition	X				
b. Comparable to design width or previous inspection	X				
c. Vegetation		X			Observed medium vegetation growing on crest, near likely location of the landfill cell lining system. Implement SMP, see Note 3.
d. Rodent burrows	X				
e. Exposed to heavy traffic	X				
f. Damage from vehicles/machinery	X				
4. Toe					
a. Vegetation		X			Observed erosion along Cell 2 perimeter toe, maintain erosion controls. See Note 2.
b. Rodent burrows		X			Small burrow noted along NW corner near Cell 1 downchute, maintain animal control procedures. See Note 3.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				

General Remarks:

- Leachate collection system inspection was limited by visual observation of surficial components of the system, i.e. condition of riser pipes.
- Maintain erosion controls per the SMP and monitor the condition of the grouted riprap along the downchutes as well as erosion along the diversion berm invert on the north slope. This is not a deficiency or release as classified under 40 CFR 257.84(b)(5).
- Features observed and documented in this checklist were not considered a deficiency or release as classified under 40 CFR 257.84(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: 10/14/2016

Engineering Firm: Golder Associates Inc.

Signature:

Tiffany 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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