

HOLLOW ROCK FACILITY

2019 ANNUAL LANDFILL INSPECTION REPORT FOR COAL COMBUSTION RESIDUALS (CCR) EXISTING LANDFILL

Prepared for



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January 31, 2020

Prepared by



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Attachments

Attachment 1 - Federal CCR Annual Inspection Form

Figure 1 - Facility Inspection Reference Figure

I certify under penalty of law that this document was prepared by me or under my supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Christopher Backus

Christopher A. Backus, PE

January 31, 2020

INTRODUCTION/RULE REQUIREMENTS

1.1 OBJECTIVE

The purpose of this Annual Inspection Report is to facilitate compliance with § 257.84 of the Hazardous and Solid Waste Management System; Disposal Of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4] (EPA Final CCR Rule). The EPA Final CCR Rule requires that an Annual Inspection be completed and an Annual Inspection Report be developed. The intent of the Annual inspection and report is to confirm that the design, construction, operation, and maintenance of the CCR facility is in good condition and conforms to standard engineering practices for this type of facility. This Annual Inspection Report was compiled based on a review of existing documentation consisting of permit drawings, construction drawings, record drawings, annual reports and a site inspection.

1.2 FACILITY DESCRIPTION

The Hollow Rock Facility (HRF), owned and operated by FirstEnergy Generation, LLC (FE) is a Class III Residual Solid Waste (RSW) landfill located in Jefferson County, Ohio. The residual waste placed in the HRF consists of CCRs resulting primarily from electric generation at the W. H. Sammis Plant, which is also owned and operated by FE.

The HRF address at which all correspondence is received, and at which FE's point of contact resides is:

Hollow Rock Facility
15204 State Route 152
Toronto, Ohio 43964

The CCRs, conveyed from the W.H. Sammis Plant to the HRF via a pipe conveyor system, consist of synthetic gypsum and purge stream solids. The conveyor terminates and unloads the CCR onto an enclosed disposal pad. The CCR is then loaded by a front-end loader onto off-road dump trucks that transport the CCR to the working face of the HRF. The pipe conveyor generally runs 24 hours a day, 7 days a week. Disposal operations are typically limited to Monday through Friday from 7:30 am to 4:30 pm. If the pipe conveyor is powered down for maintenance, the CCR is hauled utilizing on-road dump trucks from the Sammis Station to the HRF.

The HRF meets all criteria for operating requirements described in Chapter 3745-30-14 "Operation of residual waste landfill facilities" of the Ohio Administrative Code (OAC 3745-3014). The context of this Chapter of the OAC is compliance with Ohio EPA (OEPA) Regulations, as it existed as of April 2008. Compliance is maintained at the HRF by FE in accordance with the applicable regulations.

When completed, the overall limit of waste for the HRF will cover a disposal area of 141.6 acres divided into development phases. Currently, Phase 1 (Cells 1 and 2), Phase 2 (Cell 3), Phase 3 (Cell 4), and Phase 4 (Cell 5) have been constructed at the HRF. Cells 1, 2, 3 and 4 have reached the maximum elevation for their respective phases and have received intermediate cover until future adjacent phases will place waste on the interior slopes. FE is currently operating in Cell 5. Figure 1 provides a plan view that shows the location of all the Cells.

1.2.1 FACILITY COMPONENTS

1.2.1.1 Subgrade, Liner and Leachate Collection

The subgrade for each disposal cell is constructed at a maximum 33% (3 horizontal to 1 vertical) grade on the perimeter side slopes and a minimum 3.5% grade on the floor of the development phase.

Above the subgrade, the liner is constructed as a composite liner consisting of an eighteen (18) inch thick compacted clay layer (recompacted soil liner or RSL) having a permeability not greater than 1×10^{-7} cm/sec overlain by a geosynthetic clay liner (GCL) and geomembrane.

The leachate management system consists of a geocomposite drainage layer. The bulk of the leachate generated by the deposited waste is carried by this geocomposite layer to a series of six (6) inch diameter perforated leachate collection pipes located along the centerline of each sub-phase and generally along the toes of the 33% internal side slopes. The collection pipes are protected by a mound of filter aggregate with a twelve (12) inch protective cover / drainage layer and drain towards a recessed collection sump located at the low point of each sub-phase area. The collection sumps house a pair of eighteen (18) inch diameter leachate extraction riser pipes. Inside the leachate risers at each sump location are extraction pumps connected to discharge pipe, power lines, and manual / automatic on/off controls. The leachate collected by the landfill cells is pumped via side slope riser pumps to the facility's leachate storage lagoons adjacent to the CCR disposal pad. The leachate in these lagoons is pumped utilizing an overhead loadout system into tanker trucks for transport. The leachate is hauled off-site to the Sammis Station and is recycled as make-up water in the WFGD system. The leachate levels in the lagoons are monitored regularly to ensure that they will not overflow.

1.2.1.2 Material Placement and Final Slopes

Waste continues to be deposited to the maximum disposal grade and elevation of the current disposal phase area. The final waste disposal slopes are a maximum 33% (3 horizontal to 1 vertical) and a minimum 5%. Slopes or areas that have been inactive for greater than 180 days receive intermediate cover consisting of twelve (12) inches of cover soil. These intermediate slopes will eventually be overlain by waste from adjacent phase areas.

1.2.1.3 Final Cap System

The permitted alternate final cap and cover system will consist of a 40-mil linear low density polyethylene (LLDPE) geomembrane, overlain by a geocomposite drainage layer, also overlain by thirty (30) inches of protective cover soil. The top six (6) inches of this protective cover soil shall be disked, fertilized, mulched and seeded to promote the growth of complete vegetative grass cover.

1.2.1.4 Storm Water Management and Miscellaneous Features

Storm water Pond 1 was constructed as part of the Phase 1 construction event. Storm water Pond 2 was constructed as part of the Phase 3 construction event. Both of these surface water management ponds have engineered outlets and spillways to manage storm water for the final configuration of the landfill. The outlets for the ponds are actively permitted under the EPA's National Pollutant Discharge Elimination System.

Other landfill construction includes perimeter containment berms, a perimeter gravel-surfaced access road, sedimentation and retention ponds along with their associated discharge structures, environmental sampling locations, leachate storage and associated systems, fences and other access controls, and other onsite facilities.

1.3 OUTLINE OF RULE REQUIREMENTS

In accordance with the EPA Final CCR Rule, AECOM was requested to perform an inspection *“to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.”*

The minimum requirements, as per §257.84(b)(i) of the EPA Final CCR Rule include the following:

- A review of available status and condition information including operational records, and previous inspections
- A visual inspection for signs of distress or malfunction
- An inspection report

The inspection, described in Section 3 and Attachment 1 was designed to address the items listed below, pursuant to §257.84(b)(2) of the EPA Final CCR Rule.

- (i) *Any changes in geometry of the structure since the previous annual inspection;*
- (ii) *The approximate volume of CCR contained in the unit at the time of the inspection;*
- (iii) *Any 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*
- (iv) *Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.”*

REVIEW OF EXISTING INFORMATION

In accordance with the EPA Final CCR Rule, AECOM completed “A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections) [§257.84(b)(i)]”

AECOM (formerly URS Corporation) has been involved with the HRF since the initial siting, permitting activities, design/construction activities; and is the engineer of record. AECOM is also the engineer of record for all subsequent landfill construction projects and cell liner certifications performed as part of the HRF’s on-going development. AECOM is also copied on all regulatory communications or in receipt of the applicable communications associated with the HRF provided by the Ohio EPA and/or the Jefferson County Health Department. As such, AECOM has reviewed all applicable documents associated with the HRF units and operating record to date. These include, but are not limited to, the documents listed in Section 2.1.

2.1 REVIEWED OPERATING RECORD DOCUMENTS

- OEPA Permit to Install #06-08263 and all related approved alterations
- Construction Certification Reports for Cells 1, 2, 3, 4, and 5 (i.e. all existing construction portions of the facilities liner and leachate collection systems).
- Annual Operating Reports for 2010 through 2018. These reports include information on waste receipt volumes, disposal capacity remaining and facility repairs and maintenance activities conducted to date.
- Applicable correspondence with the Ohio EPA and Jefferson County Health Department associated with the facility
- The CCR annual inspection report for the inspection conducted in 2018.
- The weekly CCR landfill inspections.

ANNUAL INSPECTION SUMMARY

The Annual Inspection was conducted on Thursday, November 21, 2019 starting at 10 am EST at the HRF offices.

Personnel in attendance included:

- Chris Backus, PE, Consulting Engineer, AECOM
- Laura Habib, PE, Project Manager, AECOM

The weather was cloudy, approximately 54-degrees with a slight breeze.

3.1 STRATEGY AND ROUTE

The general strategy and route of the inspection included a general assessment of the leachate storage and loadout facility immediately adjacent to the landfill office complex, including a general inspection of the gypsum receiving facility. Then a driving inspection of the HRF was performed with stops at key locations and observational areas including storm water ponds 1 and 2, the perimeter access road, the bottom ash storage area, soil stockpile areas and the facility access road, which was inspected during the initial entrance to the facility by AECOM. The inspection was conducted in a generally counter-clockwise direction starting and concluding at the landfill offices.

3.2 FACILITY CONDITIONS

In general, the HRF appears to be well-operated and maintained. No significant deficient observations associated with the CCR regulations were noted. Some minor storm water management and minor housekeeping items were noted and are discussed in Section 4.1.

3.3 LANDFILL GEOMETRY

As required by §257.84(b)(2)(i) the geometry of the HRF was inspected for changes. Items inspected included sides-slopes, benches and landfill height. The existing HRF geometry was compared to the annual operational reports required by the Ohio EPA. Based on documentation reviewed and observations during the inspection by AECOM, the changes in geometry of the landfill are associated with the additional CCR placement since the 2018 inspection and are in compliance with the design. The facility slopes and benches appeared well graded and maintained. Soil cover and vegetative cover also appeared well maintained.

3.4 APPROXIMATE VOLUME OF CCR

Pursuant to §257.84(b)(2)(ii) the approximate volume of CCR contained in the HRF at the time of the inspection was obtained. The volume of CCR was approximately 3,393,973 cubic yards, a 170,614 cubic yard increase since the last inspection.

3.5 STRUCTURAL INSPECTION

In accordance with §257.84(b)(2)(iii), the HRF was visually inspected for structural weaknesses. There were no observed appearances of an actual or potential structural weakness of the CCR unit. In addition, existing conditions that could be disrupting or have the potential to disrupt the operation and safety of the CCR unit were not observed.

3.6 ADDITIONAL CHANGES

The landfill and the appurtenant structures were inspected as described in §257.84 (b)(2)(iv). Pond 1 had just recently been completely cleaned out to the fence line and looked to be in good condition. Pond 2 also looked to be in good condition. West and North sides of Cell 5 had recently received intermediate cover and seeding. Vegetation looked to be establishing well and healthy. No erosion was apparent. Soil stockpiles on site were seeded. AECOM did not observe any changes which may affect the stability or operation of the landfill.

CONCLUSIONS

As noted in the CCR Rules *“If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken [§257.84(b)(5)].”*

No deficiencies or releases were identified during the inspection.

4.1 RECOMMENDATIONS – NORMAL MAINTENANCE

- Clean out ditches as necessary.
- Clean material behind rock check dams.
- Minor erosion rills were noted on Cell 4 access ramp. The erosion rills should be monitored periodically and maintained when slope and weather conditions allow to prevent a progressive problem.

4.2 RECOMMENDATIONS OTHER THAN NORMAL MAINTENANCE

- No recommendations other than normal maintenance was observed.

4.3 DEFICIENCIES DISCOVERED

- No deficiencies were observed as part of this annual inspection.

4.4 CORRECTIVE MEASURES

- No corrective measures are required by FE based on the observations noted as part of this annual inspection.

ATTACHMENTS

Federal CCR Annual Inspection Form - CCR Landfills

Rev. 0

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Station: W. H. Sammis Power Station

CCR Unit: Hollow Rock Facility (OEPA 269130)

Date: 21-Nov-19

Inspector(s): L. Habib, C. Backus

Weather Conditions: Cloudy, Light Wind; 54°

Ground Conditions: Dry

Purpose of Inspection [§257.84(a)(1)(i)]: At intervals not exceeding 7 days, inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit.

Please refer to the attached figure to mark location of any identified conditions.

CCR UNIT FEATURE	Yes	No	NA	Location ID # or map identifier
CCR Placement				
1) Is waste being handled or placed differently than standard station practices?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Bench Conditions				
2) Any signs of surface cracking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3) Any signs of depressions or sunken areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Slope Conditions				
4) Any signs of surface cracking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5) Any signs of surface movement? If yes, please categorize	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5a) Sloughing (sliding of materials in sheets)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5b) Sliding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5c) Sinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6) Any signs of erosion rills greater than 3 inches?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7) Any signs of erosion gullies greater than 6 inches?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8) Any signs of holes or animal burrows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Haul Road Conditions				
9) Any obstructions?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10) Any noticeable damage? If yes, please categorize	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10a) Rutting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10b) Sinking	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10c) Pot holes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Erosion Controls				
11) Any areas of active construction lacking erosion controls (silt fence)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12) Any signs that existing erosion controls are not properly functioning?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Rock check and ditch maintenance recommended
13) Any evidence of insufficient vegetative cover?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Liner System Conditions (prior to CCR placement or during active liner construction)				
14) Any damage to liner protective cover?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
15) Any damage to liner system observed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Federal CCR Annual Inspection Form - CCR Landfills

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Station: W. H. Sammis Power Station

CCR Unit: Hollow Rock Facility (OEPA 269130)

Date: 21-Nov-19

CCR UNIT FEATURE

Leachate Collection/Detection System

- 16) Any signs of obstruction to leachate collection/detection pipe outlets?
- 17) Any signs of obstruction to leachate flow(s) to sedimentation pond(s)?

Yes	No	NA
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Location ID # or map identifier

Surface Water Controls (Diversion Channels/Collection Channels/Sedimentation Ponds)

- 18) Any signs of uncontrolled run-on to the landfill?
- 19) Any signs of uncontrolled run-off from the landfill
- 20) Any signs of obstruction in surface water conveyance channels?
- 21) Any cracking or separation in surface water conveyance channels?
- 22) Any signs of heaving or sinking of surface water conveyance channels?
- 23) Any signs of obstruction in culverts, drop boxes, or sumps?
- 24) Any signs of sedimentation pond malfunction (excessive sediment buildup)?
- 25) Any signs of excessive sedimentation pond water loss (leaking)?
- 26) Any signs of obstruction to sedimentation pond outlet structure (in pond)?
- 27) Any signs of obstruction to sedimentation pond effluent discharge?

Yes	No	NA
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Fugitive Dust Controls

- 28) Any evidence that fugitive dust controls are not being used?

Yes	No	NA
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Other

- 29) Any nontypical operations occurring at facility? If yes, please describe.

Yes	No	NA
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments:

Individual Completing Form:

Laura Habib
Print

Laura Habib
Signature

Federal CCR Annual Inspection Form - CCR Landfills

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Station: W. H. Sammis Power Station

CCR Unit: Hollow Rock Facility (OEPA 269130)

Date: 21-Nov-19

