Annual CCR Landfill Inspection

Lansing Landfill

Prepared for:

Interstate Power and Light Company
Lansing Generating Station
2320 Power Plant Drive
Lansing, Iowa 52151

SCS ENGINEERS

25216070.18 | December 20, 2018

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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PE CERTIFICATION

I, Eric J. Nelson, hereby certify that this Annual CCR Landfill Inspection Report meets the requirements of 40 CFR 257.84(b)(2), was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

(signature) 12/20/2018 (date)

Eric J. Nelson
(printed or typed name)

License number 23136

My license renewal date is December 31, 2018.

Pages or sheets covered by this seal:

Annual CCR Landfill Inspection, Lansing Generating Station,

December 20, 2018

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1.0 INTRODUCTION

SCS Engineers (SCS) completed an annual inspection of the Interstate Power and Light Company (IPL) Lansing (LAN) Landfill in Lansing, Iowa. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) rule, 40 CFR 257 Subpart D, in particular 257.84(b)(1). According to 40 CFR 257.84(b)(1), an annual inspection by a qualified professional engineer is required for all existing and new CCR landfills, and any lateral expansion of a CCR landfill. The purpose of the annual inspection is to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:

- 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); and

- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

This report has been prepared in accordance with 40 CFR 257.84(b)(2) to document the annual inspection.

1.1 BACKGROUND

The LAN facility includes an active CCR landfill, which currently consists of a single CCR unit. The LAN landfill has received CCR both before and after the effective date of the CCR Rule.

The inspection requirements in 40 CFR 257.84(b)(1) apply to the existing (active) CCR unit listed above.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the LAN landfill. Deficiencies and releases must be remedied by the owner or operator as soon as feasible and the remedy documented.

SCS did identify conditions during the annual inspection that are not considered deficiencies but have the potential to become a deficiency if left unaddressed. Each condition and the recommendations provided by SCS to address them are summarized in the table below. These conditions and recommendations are described in further detail in **Section 4.0**.

Condition	CCR Unit	Recommendation(s)	Report Section
Vegetation adjacent to current fill limits within approved disposal limits	Landfill	• Clear vegetation before additional CCR filling	4.3.2
Tall grass along riprap areas that cannot be mowed	Landfill	• Monitor	4.3.2

Condition	CCR Unit	Recommendation(s)	Report Section
Accumulation of CCR in the settling area adjacent to northeast landfill limits, between landfill and ash pond	Landfill	• Remove accumulated CCR • Monitor	4.3.4.1
Accumulation of CCR in the drainage swale located at the south end of the CCR unit along the upper limit of the existing final cover	Landfill	• Improve CCR compaction • Moisture condition exposed CCR surfaces to prevent desiccation • Monitor and remove accumulated CCR that could impede proper drainage	4.3.4.1
Erosion at soil and riprap pad in the southern perimeter ditch	Landfill	• Monitor and repair as needed	4.3.4.2
Erosion in the drainage gulley between the landfill and radio tower access road (southeast end of unit)	Landfill	• Install physical marker/barrier • Monitor • Identify potential repair options if erosion continues	4.3.4.3

3.0 ANNUAL INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the LAN landfill on July 27, 2018. Mr. Nelson is a licensed professional engineer in Iowa and holds a Bachelor's of Science degree in Geological Engineering. He has over 20 years of experience in the design, construction, and operation of solid waste disposal facilities. The scope of the annual inspection is described in Sections 3.1 and 3.2. The results of the annual inspection are discussed in Section 4.0.

3.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for the LAN landfill prior to the visual inspection discussed in Section 3.2. Information reviewed by SCS included operating record materials provided by IPL and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the LAN facility, as of the date of the inspection.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of the LAN landfill to identify signs of distress or malfunction of the CCR unit.

The visual inspection included observations of the following:

- CCR placement areas including active filling areas, final cover areas, and exterior non-CCR berms or slopes.
- Contact water run-off management features including internal contact water drainage features and discharges to the LAN Upper Ash Pond.

- Non-contact storm water run-on and run-off control features including swales located adjacent to active fill areas.

4.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies or releases identified during the visual inspection, are summarized in the following sections.

4.1 CHANGES IN GEOMETRY

No apparent changes in geometry were noted that would indicate distress or malfunction of the CCR unit at the facility. All changes in geometry observed during the annual inspection were the result of planned CCR filling activities.

At the time of the visual inspection, active CCR placement was evident based on exposed and recently graded CCR fill surfaces. Final cover is in place along nearly the entire south and east slopes, as it was during the 2017 annual inspection with the remaining landfill areas being open.

4.2 CCR VOLUMES

The approximate volume of CCR contained in the landfill at the time of inspection is 368,400 cubic yards. This estimate is based on a design capacity of 446,900 cubic yards less the approximate capacity remaining (88,020 cubic yards) as of March 7, 2018; and the estimated volume of CCR placed between March 7, 2018, and the inspection date (July 27, 2018). The approximate capacity remaining as of March 7, 2018 is based on a topographic survey completed by Mohn Surveying and airspace calculations completed by SCS. An estimated 9,520 cubic yards of CCR has been placed in the 5 months since the March 7, 2018 topographic survey based on CCR disposal data provided by IPL in tons. The tons of CCR disposed were converted to cubic yards by assuming the CCR has an average unit weight of 1.2 tons per cubic yard.

4.3 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the CCR unit. The visual inspection included a review of CCR fill areas including the top slopes, internal side slopes, external side slopes, and internal ramps/haul roads for the presence of the following conditions:

- Signs of surface movement or instability:
  - Sloughing, slumping, or sliding
  - Surface cracking
  - Slopes in excess of 3 horizontal to 1 vertical (3H:1V)
  - Toe of slope bench movement
  - Evidence of inadequate compaction of exposed CCR
- Inappropriate vegetation growth
- Animal burrows
- Erosion damage
- Unusual surface damage caused by vehicle traffic

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4.3.1 Signs of Surface Movement or Instability

No signs of surface movement or instability were noted during the inspection.

4.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth impacting the CCR unit was noted during the inspection. However, there is vegetation present immediately adjacent to the current fill limits on the north side of the landfill that must be cleared before any additional filling in this area. There is also tall grass along the riprap areas that cannot be mowed. The areas of long vegetation adjacent to the riprap did not contain inappropriate/woody vegetation, and the areas should be monitored by IPL to avoid the establishment of woody vegetation. These vegetation observations are not considered operating deficiencies.

4.3.3 Animal Burrows

No animal burrows were noted during the inspection.

4.3.4 Erosion Damage

4.3.4.1 CCR Fill Areas

Erosion damage and the movement of CCR as a result of erosion was noted due to the accumulation of CCR in the drainage swale located at the south end of the CCR unit along the upper limit of the existing final cover. Similar erosion was noted during the previous annual inspection.

The erosion and movement of CCR is likely the result of inadequate CCR compaction or the desiccation (drying out) of exposed CCR surfaces combined with runoff from large precipitation events. Similar minor erosion conditions have been noted in previous inspections. These conditions are not currently considered to be operating deficiencies since the current conditions are unlikely to have a significant impact on the function of the CCR unit and no discharge of CCR was evident during the inspection.

SCS recommends the following operational practices to improve CCR compaction and prevent desiccation of exposed CCR surfaces that might lead to erosion:

- Place and grade CCR in lifts that are sloped only enough to prevent the ponding of surface water within the active disposal area.
- Compact the lifts of CCR using appropriate equipment until the surface is firm.
- Condition (add moisture or dry out) the CCR as needed to obtain adequate compaction before placing the next lift of CCR.
- Moisture condition exposed CCR surfaces to prevent desiccation.

The accumulation of CCR in the drainage swale at the exposed CCR/final cover interface impedes the flow of contact water runoff in the swale. If flow in the swale is impeded enough, a discharge of runoff from exposed CCR surfaces onto the final cover will occur. No evidence of a discharge was observed during the inspection. However, SCS recommends IPL monitor the swale along the final

cover interface during their 7-day inspections and maintain the swale by removing accumulated CCR to reestablish the as-built conditions of the swale.

The other areas of erosion within CCR fill that were noted during the 2017 annual inspection have been addressed. These included the following:

- Gulley erosion along the northern fill limit of the CCR unit
- Gulley erosion along the toe of slope on the south side of the access road that is internal to the CCR unit

4.3.4.2 Final Cover Areas

A small area of erosion on the final cover was observed in the perimeter ditch along the south side of the landfill. The erosion has formed where the soil cover in the perimeter ditch meets the riprap pad at the northwest end of the ditch. This condition is not considered an operating deficiency, but the area should be repaired by placing additional geotextile separator and riprap or by backfilling with soil and restoring the vegetation to prevent the continued erosion of the final cover.

This same observation was noted during the 2017 annual inspection. There was no significant change to the erosion since the previous inspection.

4.3.4.3 Adjacent Areas

Erosion was observed in a drainage gulley located between the landfill and the radio tower access road to the south of the landfill. SCS discussed the erosion with IPL staff during the inspection. IPL plans to install a section of silt fence to serve as a marker/physical barrier between the landfill access road and the edge of the gulley. The silt fence will be used to monitor the erosion in the gulley and any encroachment toward the landfill. The erosion in the gulley is not considered an operating deficiency, but, if the erosion continues and encroaches toward the landfill, it has the potential to impact the landfill. If the erosion continues and encroaches toward the landfill, IPL will identify/ consider potential repair options.

No other erosion damage was noted during the inspection.

4.3.5 Unusual Surface Damage Caused by Vehicle Traffic

No unusual surface damage caused by vehicle traffic was noted during the inspection.

4.4 DISRUPTIVE CONDITIONS

4.4.1 Existing Disruptive Conditions

4.4.1.1 Current Inspection

No existing conditions that were disrupting the operation and safety of the CCR unit were noted during the annual inspection.

4.4.1.2 Previous Inspection

No existing conditions that were disrupting the operation and safety of the CCR unit were noted during the previous inspection.

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4.4.2 Potentially Disruptive Conditions

4.4.2.1 Current Inspection

Other than the items discussed in Section 4.3, no other potentially disruptive conditions were noted during the annual inspection.

4.4.2.2 Previous Inspection

Other than the items discussed in Section 4.3, no potentially disruptive conditions were noted during the previous inspection.

4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

No other changes to site conditions that appear to have the potential to affect the stability or operation of the facility were noted during the inspection.

5.0 FUTURE INSPECTIONS

5.1 EXISTING CCR LANDFILL

As stated in 40 CFR 257.84(b)(4), the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the inspection report is the basis for establishing the deadline to complete the next subsequent inspection. Any required inspection may be conducted prior to the required deadline, provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. The owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record.

The next annual inspection of the LAN must be completed within 1 year of the placement of this inspection report in the operating record for the LAN facility.

5.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

The initial annual inspection for any lateral expansion in the future must be completed within 14 months of the initial receipt of CCR in the module per 40 CFR 257.84(b)(3)(ii).

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