

Annual CCR Landfill Inspection

Lansing Landfill
2320 Power Plant Drive
Lansing, Iowa 52151

Prepared for:

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

SCS ENGINEERS

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Table of Contents

| Section | Page |
|--|------------|
| PE Certification | iii |
| 1.0 Introduction | 1 |
| 1.1 Background..... | 1 |
| 2.0 Summary of Results and Recommendations | 1 |
| 3.0 Annual Inspection | 2 |
| 3.1 Operating Record Review..... | 2 |
| 3.2 Visual Inspection | 2 |
| 4.0 Inspection Results | 3 |
| 4.1 Changes in Geometry..... | 3 |
| 4.2 CCR Volumes | 3 |
| 4.3 Appearance of Structural Weakness..... | 3 |
| 4.3.1 Signs of Surface Movement or Instability | 3 |
| 4.3.2 Inappropriate Vegetation Growth | 4 |
| 4.3.3 Animal Burrows..... | 4 |
| 4.3.4 Erosion Damage | 4 |
| 4.3.4.1 CCR Fill Areas | 4 |
| 4.3.4.2 Final Cover Areas | 4 |
| 4.3.4.3 Adjacent Areas | 4 |
| 4.3.5 Unusual Surface Damage Caused by Vehicle Traffic | 5 |
| 4.4 Disruptive Conditions | 5 |
| 4.4.1 Existing Disruptive Conditions | 5 |
| 4.4.1.1 Current Inspection..... | 5 |
| 4.4.1.2 Previous Inspection..... | 5 |
| 4.4.2 Potentially Disruptive Conditions..... | 5 |
| 4.4.2.1 Current Inspection..... | 5 |
| 4.4.2.2 Previous Inspection..... | 5 |
| 4.5 Other Changes Since Previous Annual Inspection | 6 |
| 5.0 Future Inspections | 6 |
| 5.1 Existing CCR Landfill..... | 6 |
| 5.2 New CCR Landfills and Lateral Expansions | 6 |

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PE CERTIFICATION

| | |
|---|---|
|  | <p>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.</p> |
| | <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  (signature) </div> <div style="text-align: center;"> 12/20/2021 (date) </div> </div> |
| | <p style="text-align: center;">Eric J. Nelson</p> <p>(printed or typed name)</p> |
| | <p>License number <u>23136</u></p> <p>My license renewal date is December 31, 2022.</p> <p>Pages or sheets covered by this seal:</p> |
| | <p>All - Annual CCR Landfill Inspection - Lansing Landfill</p> |

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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 (U.S. EPA) Coal Combustion Residuals (CCR) rule, 40 Code of Federal Regulations (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 remedial recommendations are described in further detail in **Section 4.0**.

| Condition | CCR Unit | Recommendation(s) | Report Section |
|---|---|--|----------------|
| Accumulation of CCR in the contact water drainage swale at the south end of CCR unit along the upper limit of the existing final cover. | Landfill | <ul style="list-style-type: none"> Monitor during 7-day inspections. Remove accumulated CCR that could impede proper drainage. | 4.3.4.1 |
| Minor head cutting/erosion immediately upstream of the riprap pad in the southern final cover perimeter ditch. | Landfill | <ul style="list-style-type: none"> Monitor during 7-day inspections and repair as needed. | 4.3.4.2 |
| Erosion adjacent to Landfill. | Drainage/gulley between the landfill and radio tower access road (southeast end of unit). | <ul style="list-style-type: none"> Monitor during 7-day inspections. 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 August 12, 2021. Mr. Nelson is a licensed professional engineer in Iowa and holds a Bachelor 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. The final cover is in place along nearly the entire south and east slopes, as it was during previous annual inspections beginning in 2018 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 389,000 cubic yards (yd³). This estimate is based on a design capacity of 446,900 yd³ less the approximate capacity remaining (65,976 yd³) as of May 21, 2020; and the estimated volume of CCR placed between May 21, 2020, and the inspection date (August 12, 2021). The approximate capacity remaining as of May 21, 2020, is based on a topographic survey completed by Mohn Surveying and airspace calculations completed by SCS. An estimated 8,000 yd³ of CCR has been placed since the May 21, 2020, topographic survey, based on the CCR disposal rate of 17.8 tons per day. The tons of CCR disposed of 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

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.

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 in the following areas during the inspection:

- Accumulation of CCR in the contact water drainage swale located at the south end of the CCR unit along the upper limit of the existing final cover.

The erosion and movement of CCR is likely the result of disturbance or desiccation 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.

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.

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 area is isolated to the bottom of the perimeter ditch in the immediate area of the interface between soil and riprap. The area was noted due to the potential for water flow to cause head-cutting erosion in the final cover. However, the area appeared stable at the time of the inspection. This same observation was noted during the 2020 annual inspection as discussed in **Section 4.4.2.2**.

4.3.4.3 Adjacent Areas

Erosion was observed in a drainage gully located outside the limits of the CCR unit between the landfill and the radio tower access road to the south. The erosion in the gully is not considered an operating deficiency, but, is noted because the erosion has the potential to impact the landfill if it continues and encroaches on the landfill. The area should be monitored during 7-day inspections and, if the erosion continues and encroaches toward the landfill, IPL should identify/consider potential repair options. This same observation was noted during the 2020 annual inspection as discussed in **Section 4.4.2.2**.

Since the completion of the August 2021 inspection, IPL has completed some initial interim actions to maintain the stability of the adjacent gully. Those interim actions include the following:

- Removed woody debris including fallen trees and limbs that have accumulated in the gully and may be contributing to erosion.
- Flattened exposed sandy slopes with limited vegetation adjacent to the landfill and covered them with clayey soil to reduce erosion.
- Restored disturbed slopes with seed and mulch.
- Initiated the design of long-term erosion repairs.

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.

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

The following potentially disruptive conditions were observed during the previous inspection.

- **A small area of erosion on the final cover** was observed in the perimeter ditch along the south side of the landfill. The erosion formed where the soil cover in the perimeter ditch meets the riprap pad at the northwest end of the ditch. This area appeared stable during the current inspection. Continued monitoring of this area during 7-day inspections is recommended. This item is also discussed in **Section 4.3.4.2**.

- **Erosion was observed in a drainage gully** located between the landfill and the radio tower access road to the south of the landfill. Continued monitoring of this area was recommended. Potential repair options should be identified/considered for implementation if erosion continues. This item is also discussed in **Section 4.3.4.3**.

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).