

# Annual CCR Landfill Inspection

Ottumwa-Midland Landfill  
15300 130<sup>th</sup> Street  
Ottumwa, Iowa 52501

Prepared for:

Interstate Power and Light Company  
15300 130<sup>th</sup> Street  
Ottumwa, Iowa 52501

**SCS ENGINEERS**

25223073.00 | December 19, 2023

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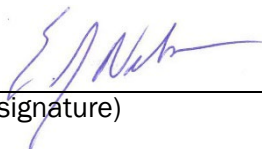
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## PE CERTIFICATION

	<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;">             12/19/2023              (date)         </div> </div>
	<p style="text-align: center;">Eric J. Nelson (printed or typed name)</p>
	<p>License number 23136</p> <p>My license renewal date is December 31, 2024.</p>
	<p>Pages or sheets covered by this seal:</p> <p>Annual CCR Landfill Inspection, Ottumwa-Midland Landfill,</p>
	<p>December 19, 2023</p>

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## 1.0 INTRODUCTION

### 1.1 PURPOSE

SCS Engineers (SCS) completed an annual inspection of the Interstate Power and Light Company (IPL) Ottumwa-Midland Landfill (OML) in Ottumwa, Iowa. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (U.S. EPA) 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.

### 1.2 BACKGROUND

The OML facility includes an active, existing CCR landfill, which consists of two phases, both constructed prior to the effective date of the CCR rule:

- OML Existing Landfill (original landfill footprint developed at OML in the 1990s).
- OML Expansion Phase 1 (first phase of a multi-phase expansion completed in September 2015).

The OML Existing Landfill and OML Expansion Phase 1 are one existing CCR landfill under the federal CCR Rule. The phases are used to describe the location of items observed during the inspection. The inspection requirements in 40 CFR 257.84(b)(1) apply to both phases.

At the time of the inspection, the CCR unit was active in various stages of development and used as described in the table below.

CCR Unit	CCR Rule Status	Basis for Status
OML including two phases: <ul style="list-style-type: none"><li>• Existing Landfill</li><li>• Expansion Phase 1</li></ul>	Existing CCR Landfill, currently accepting CCR	OML received CCR before and after the effective date of the CCR Rule. Both phases of the landfill unit were constructed before the effective date of the CCR rule.

## 2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the CCR unit at OML. 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, remedial recommendations, and activities completed or planned to remedy each item, as available from IPL, are described in further detail in **Section 4.0**.

Condition	Location/ Phase	Recommendation(s)	Report Section
Limited woody vegetation in leachate drainage layer sand on northwest corner at culverts draining to Temporary Contact Water Basin 1/2.	Expansion Phase 1	Spot removal of limited woody vegetation.  Monitor during 7-day inspections.	4.3.2
System status screen was not legible (apparently due to exposure to direct sunlight over time) making system monitoring difficult to impossible.	Expansion Phase 1	Replace system readout (see construction submittals for leachate collection system, EPG Companies (supplier) Job #14 11496).  If possible, obtain readings when readout is visible when not in direct sunlight.	4.4.2.1
Level sensor (transducer) is not legible and appears to read double-digits. Panel also shows a headwell sensor failure alarm during today's visit.	Expansion Phase 1	Have IPL electrician evaluate sensor/control panel and discuss sensor and recurring fault condition with EPG Companies (panel and leachate level measurement system manufacturer). <a href="https://www.epgco.com/aboutus/contact-us/">https://www.epgco.com/aboutus/contact-us/</a>  Monitor during 7-day inspections.	4.4.2.1
A number of stitched rain cover ballast material seams have started to separate, which may subject the rain cover material to uplift and potential damage.	Expansion Phase 1	Repair stitching or add supplemental sandbag ballast in lieu of stitching.  Monitor during 7-day inspections.	4.4.2.1

## 3.0 ANNUAL INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the active CCR unit at OML on August 22, 2023. 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 OML, in addition 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 OML facility.

### 3.2 VISUAL INSPECTION

SCS completed a visual inspection of OML 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, intermediate cover areas, and exterior non-CCR berms or slopes.
- Leachate collection and removal system components including visible leachate drainage layer materials, leachate vaults, cleanouts, and the leachate storage lagoon.
- Contact water run-off management features including internal contact water drainage features and Temporary Contact Water Basin 1/2.
- Non-contact storm water run-on and run-off control features including swales and sedimentation basins located adjacent to active fill areas but outside the landfill limits.
- Groundwater underdrain system components including the visible underdrain discharge pipes.

## 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 since the previous annual inspection at OML, completed under 40 CFR 257.84(b)(1). All changes in geometry observed during the annual inspection were the result of planned CCR filling or intermediate soil cover placement activities.

At the time of the visual inspection, the Existing Landfill was covered with intermediate cover, and no exposed CCR was observed.



At the time of the visual inspection, active CCR placement was evident in Expansion Phase 1. CCR placement has extended vertically and to the west since the previous inspection. The current lift of CCR is being placed from east to west. With the exception of the sump area at the west end, the temporary rain cover has been removed from the bottom of Phase 1 and the cell is actively being filled. The temporary rain cover remains in place on the interior west slope. Additional rain cover has been removed and CCR placed along the interior south slope of the lined area since the previous annual inspection. The temporary rain cover remains on the upper third to approximately half of the south slope on the western third of the south slope. Nearly all of the temporary rain cover has been removed from the interior east slope and eastern two thirds of the interior south slope and CCR has been placed.

## 4.2 CCR VOLUMES

The approximate volume of CCR contained in the CCR unit at the time of the inspection is summarized below. A description of how the estimate was developed and the sources used are also summarized below.

CCR Unit	Estimated Volume of CCR in Place	Basis for Estimate and Source
OML	1,281,455 cubic yards	Estimated volume based on existing in-place waste volume as of 6/8/2023 plus estimated waste disposed between 6/8/2023 and 8/22/2023 (date of inspection). In-place volume as of 6/8/2023 is based on topographic survey. Waste disposed from 6/8/2023 to 8/22/2023 (5,418 tons) was estimated using actual disposal data provided by IPL and average daily disposal rates estimated using the data provided. This tonnage was converted to cubic yards (5,906 cubic yards), assuming an average unit weight for CCR of 1.09 tons/cy for the period of 6/8/2023 to 8/22/2023. Disposal records through September 2023 were provided by IPL to support this estimate.

## 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 feet to 1 vertical foot (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**

Woody vegetation was present at the culverts draining to temporary Contact Water Basin 1/2 in the northwest corner of Expansion Phase 1. If left to grow it could impede leachate flow within the sand leachate drainage layer. Woody vegetation should be spot removed or mowed, and these areas monitored during the 7-day inspections for renewed growth.

### **4.3.3 Animal Burrows**

No animal burrows were noted during the inspection of the CCR unit.

### **4.3.4 Erosion Damage**

No erosion damage was noted during the inspection.

### **4.3.5 Unusual Surface Damaged 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**

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

- **Leachate Collection System status screen not legible.** The system status screen in the leachate collection system vault control panel at Expansion Phase 1 was not legible at the time of the inspection. Direct sunlight at the time of the inspection and apparently over time makes system monitoring difficult. It is recommended that the system readout be replaced (component information is available in construction submittals for leachate collection system, EPG Companies (supplier) Job #14 11496).

Based on correspondence with IPL, landfill management staff are currently working with EPG Companies to obtain replacement parts and schedule repairs to the leachate collection system status screen.

- **Leachate head readings are not legible.** SCS observed the level sensor (transducer) at the Expansion Phase 1 – leachate headwell was not legible and appears to read double digits. The leachate monitoring system control panel was displaying a headwell sensor failure message at the time of the inspection. Based on correspondence with IPL staff, this issue was evaluated and repaired prior to our inspection. It is recommended OML staff have an IPL electrician reevaluate the sensor/control panel and discuss sensor and recurring fault conditions with EPG Companies (panel and leachate level measurement system manufacturer: <https://www.epgco.com/aboutus/contact-us/>). SCS also recommends monitoring during the 7-day inspections.

Based on correspondence with IPL and in addition to the repairs discussed above, landfill management staff are currently working with EPG Companies to schedule a technician to visit OML to assess, repair, and/or replace the leachate headwell sensor to address the condition observed during the inspection.

- **Stitched rain cover ballast material seam separation.** A number of stitched rain cover ballast material seams have started to separate at various locations on the rain cover ballast in Expansion Phase 1. This may subject the rain cover material to uplift and potential damage. Some seams have been repaired with zip ties. It is recommended that the separated stitching is repaired or supplemental sandbag ballast is added in lieu of stitching and that the rain cover ballast material seams be monitored during the 7-day inspections.

Based on correspondence with IPL, the separated rain cover ballast material seams identified during the inspection have been repaired.

#### 4.4.2.2 Previous Inspection

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

- **Eroded liner ballast.** SCS observed erosion in the contact water basin liner ballast at the storm water inlet culvert and the southeast corner of the basin. Erosion of the ballast has exposed the contact water basin liner at the southeast corner and reduced the ballast thickness at the southern storm water culvert resulting in a risk of liner bubbles (aka “whales”). It is recommended that eroded areas be filled with supplemental ballast material and be monitored during the 7-day inspections. Based on observations during the August 22, 2023, inspection, erosion in the contact water basin liner ballast has been repaired by IPL.
- **Leachate Collection System status screen is barely legible.** The system status screen in the leachate collection system vault control panel at Expansion Phase 1 is barely legible, apparently due to exposure to direct sunlight over time. This is making system monitoring difficult. It is recommended that the system readout be replaced (component information is available in construction submittals for leachate collection system, EPG Companies (supplier) Job #14 11496). The system readout had not been replaced as of the August 22, 2023, inspection.

- **Negative leachate head readings.** SCS observed the level sensor (transducer) was reading negative values at the Expansion Phase 1 – leachate headwell. The leachate monitoring system control panel was displaying a headwell sensor failure message at the time of the inspection. IPL evaluated and made repairs in 2023. IPL electricians found a short in the control wiring, and new upgraded replacement control wiring was installed. This work was completed as of August 1, 2023. Readings from the leachate level sensor were recorded in August through October 2023, however as noted above similar issues with the system status screen and level sensor readout were noted during the August 22, 2023, inspection.
- **Stitched rain cover ballast material seam separation.** A number of stitched rain cover ballast material seams had started to separate at various locations on the rain cover ballast in Expansion Phase 1. This may subject the rain cover material to uplift and potential damage. It was recommended that the stitching is repaired or supplemental sandbag ballast is added in lieu of stitching and that the rain cover ballast material seams be monitored during the 7-day inspections. It was apparent during the August 22, 2023, inspection that IPL has addressed this item. However; additional areas of seam separation have occurred. This will likely be an ongoing maintenance item until the rain cover is no longer needed.
- **Leachate flowmeter malfunction.** Based on leachate removal and hauling records provided by IPL, the leachate flowmeter in the wetwell that manages leachate flows from both phases of the landfill malfunctioned on or around 9/20/2022. This flowmeter measures the volume of leachate pumped from the wetwell, which includes leachate from both the Existing Landfill and Expansion Phase 1, to the leachate storage lagoon where it is stored until it is loaded and trucked off site for treatment. No direct daily measurement of leachate flow from the Existing Landfill is possible without this flowmeter. Leachate flow from Phase 1 is recorded with a separate flowmeter that is operational. The volume of leachate that is hauled off-site for treatment is also monitored and recorded separately. It is still possible to estimate the flow of leachate from the Existing Landfill using available flowmeter data from Phase 1 and the volume of leachate hauled off site for treatment. However, it was recommended that the flowmeter for the combined leachate wetwell be repaired. Based on records provided by IPL, the leachate flowmeter was replaced as of April 12, 2023.

## 4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

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

## 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 OML must be completed within 1 year of the placement of this inspection report in the operating record for the facility.

## **5.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS**

As discussed above, the CCR unit at the OML facility is considered an existing CCR unit. The initial annual inspection for CCR units constructed 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).