

Annual CCR Landfill Inspection

Edgewater I-43 Ash Disposal Facility

Prepared for:

Wisconsin Power and Light Company
Edgewater Generating Station
3739 Lakeshore Drive
Sheboygan, Wisconsin 53081

SCS ENGINEERS

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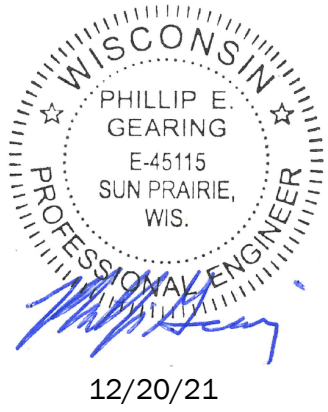
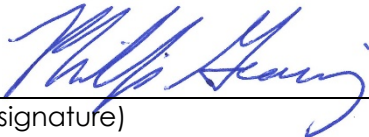
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PE CERTIFICATION

	<p>I, Phillip E. Gearing, 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 Wisconsin.</p>	
		<p>12/20/21</p>
	<p>(signature)</p>	<p>(date)</p>
	<p>Phillip Gearing</p>	
	<p>(printed or typed name)</p>	
	<p>License number <u> E-45115 </u></p> <p>My license renewal date is July 31, 2022.</p> <p>Pages or sheets covered by this seal:</p>	
<p>All – Annual CCR Landfill Inspection – Edgewater I43 Dry Ash Disposal Facility</p>		

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1.0 INTRODUCTION

1.1 PURPOSE

SCS Engineers (SCS) completed an annual inspection of the Wisconsin Power and Light Company (WPL) Edgewater I-43 Ash Disposal Facility (I-43) in Sheboygan, Wisconsin. The annual inspection was completed on August 19, 2021, 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 I-43 facility includes a closed CCR landfill, which consists of disposal Phase 1 and Phase 2, and an active CCR landfill, which currently consists of an existing CCR unit in disposal Phase 3 and Phase 4. The two landfills are located on the same property, but are not contiguous. The U.S. EPA CCR Rule does not apply to Phase 1 and Phase 2 because they were closed before the effective date of the CCR Rule.

The active CCR landfill at I-43 includes the following modules:

- Phase 3, Module 1
- Phase 3, Module 2
- Phase 4, Module 1

These phases were previously described as separate existing CCR landfills although they are managed as a single landfill by the facility and by the Wisconsin Department of Natural Resources. WPL recently clarified that Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 are one existing CCR landfill under the federal CCR Rule, and this report reflects WPL's clarification.

The modules are used to describe the location of items observed during the inspection. The inspection requirements in 40 CFR 257.84(b)(1) apply to the existing (active) CCR unit.

At the time of the inspection, the active CCR landfill modules were in various stages of development and use as described in the table below.

Unit	CCR Rule Status	Basis for Status
Existing Active Landfill (Includes Phase 3, Module 1; Phase 3, Module 2; Phase 4, Module 1)	Existing CCR Landfill. Currently accepting CCR.	Overlay from Phase 3, Module 2 is currently occurring on Phase 3, Module 1. Final or interim waste grades have been reached in some areas, and final or intermediate cover is present on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the CCR unit at I-43. 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 / Location	Recommendation(s)	Report Section
Vegetation growth in contact swale aggregate	Contact water swale west of Phase 4, Module 1 and south of Phase 3, Module 1	Continue to remove vegetation, especially woody vegetation, before it becomes established.	4.3.2
Vegetation growth in berm drainage layer material	Separation berm between Phase 3, Module 2 and contact water swale	Continue to monitor during 7-day inspections.	
Vegetation growth in drainage layer material and interior slopes	Phase 3, Module 2 toe of north and west waste slope and drainage layer material	Inspect and remove any vegetation growth in contact water swale, along berm, or along interior of Phase 3, Module 2 during general maintenance.	
Some movement of aggregate in swale due to geosynthetics bubble	Contact swale (northern section east of access road to Phase 3, Module 1)	Continue to remove vegetation before it becomes established. Continue to monitor during 7-day inspections. Continue to monitor for potential impedance.	4.4.2.1

Condition	CCR Unit / Location	Recommendation(s)	Report Section
CCR tracking on roads	Landfill haul road (Entrance to Phase 3, Module 2)	Remove CCR as necessary per the fugitive dust control plan. Add rock tracking pad aggregate at entrance to active module, as needed.	4.4.2.1

3.0 ANNUAL INSPECTION

Mr. Phillip Gearing of SCS completed an annual inspection of the active CCR landfill at I-43 on August 19, 2021. Mr. Gearing is a licensed professional engineer in Wisconsin and holds a Bachelor's of Science degree in Geological Engineering. He has over 13 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 I-43. Information reviewed by SCS included operating record materials provided by WPL and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the I-43 facility.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of the I-43 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, intermediate cover areas, final cover areas, and exterior non-CCR berms or slopes.
- Leachate collection and removal system components including visible leachate drainage layer materials.
- Leachate and contact water run-off management features including swales, the storage basin, and the storage basin pumping system.
- Non-contact storm water run-on and run-off control features, including swales located adjacent to active fill areas but outside the landfill limits and the on-site storm water management basin.

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 since the previous annual inspection at the I-43 facility completed under 40 CFR 257.84(b)(1). All changes in geometry observed during the annual inspection were the result of planned CCR filling.

At the time of the visual inspection, CCR placement was ongoing in Phase 3, Module 2 and overlay onto Phase 3, Module 1. Final grades or interim grades have been reached throughout the unit. Final cover exists in areas where final grades have been reached and intermediate cover exists in remaining interim grade areas that are awaiting future CCR placement.

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.

Unit	Estimated Volume of CCR in Place	Basis for Estimate and Source
Existing Active Landfill (Includes Phase 3, Module 1; Phase 3, Module 2; Phase 4, Module 1)	424,200 cubic yards	Estimated volume based on interim capacity permitted with state Department of Natural Resources plus the amount of CCR placed in the unit based on a survey performed on August 12, 2021. Volume placed between August 23, 2020, and August 12, 2021, was estimated based on survey data from 2020 and 2021 and previous CCR placement densities.

4.3 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of 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 three horizontal to one 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 of the landfill.

4.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth impacting the CCR unit was noted during the inspection, except as observed below:

- Maintenance of weeds and woody vegetation growth in the contact swale aggregate, separation berm drainage layer material between Phase 3, Module 2 and the contact swale, and interior of Phase 3, Module 2 is currently ongoing. This condition is not considered an operating deficiency, but SCS recommends woody vegetation and weed growth be spot removed, and these areas monitored during the 7-day inspections.
- Dense vegetation growth in the exterior drainage swales and around features (toe drains, cleanouts, discharge structures, etc.) makes access for inspection more difficult. Regular vegetation maintenance is likely to aid in the identification of issues before they become significant. Additional vegetation maintenance could be beneficial for future weekly and annual inspections. This condition is not considered an operating deficiency, but SCS recommends woody vegetation and dense vegetation be spot removed, and these areas monitored during the 7-day inspections.

Maintenance of vegetation growth was performed in September and October 2021.

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 of the CCR unit, except as observed below:

- Intermittent bare soil and thin vegetation spots were observed in the southeast corner of Phase 4, Module 1. Areas observed possibly due to recent mowing of grass. No erosion observed. Any observed bare areas should be reseeded to prevent potential future erosion.

Maintenance of the bare areas was performed in September and October 2021.

4.3.5 Unusual Surface Damage Caused by Vehicle Traffic

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

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.

- **Aggregate impedance in contact swale.** SCS observed some movement of aggregate in the contact swale, (northern section east of access road to Phase 3, Module 1), due to a geosynthetics bubble could potentially lead to improper flow to the contact swale culvert beneath the access road if sediment or vegetation accumulates. Vegetation growth in the contact swale was addressed in September and October 2021. Currently the flow is not impeded.

WPL addressed this potential disruptive condition in October 2021 by investigating and repairing the likely source of water intrusion that caused the geosynthetics bubble. The likely source of the water that accumulated under the geomembrane, a tear in the geomembrane at the adjacent anchor trench, was repaired. Existing water from beneath the geomembrane was also removed during the repair. In addition, WPL installed a drain consisting of a perforated pipe and side slope riser beneath the geosynthetics at the bubble location. The drain will allow WPL to remove additional water that might collect beneath the geomembrane. SCS recommends that WPL continue to monitor the repair area for potential impedance of contact water flow during 7-day inspections.

- **Tracking of CCR onto landfill haul road.** The tracking of CCR onto the landfill haul road at the entrance to Phase 3, Module 2 was noted as a potentially disruptive condition. The tracking and accumulation of CCR on the landfill haul roads has the potential to produce fugitive dust if not addressed through maintenance of the roads as described in the fugitive dust control plan. Tracking of CCR was observed during the current inspection. Landfill staff has indicated that CCR is removed from the roads as indicated in the fugitive dust control plan on an as-needed basis.

The tracking and accumulation of CCR on the landfill haul roads is not currently considered an operating deficiency since WPL has maintained, and plans to continue maintaining, the haul roads as described in the fugitive dust control plan. The observed tracking and accumulation of CCR on the landfill haul roads can be addressed through regular housekeeping practices described in the fugitive dust control plan. The addition

of rock tracking pad aggregate at the entrance to active modules, should be incorporated as needed. SCS recommends that tracking and accumulation of CCR on the landfill haul roads be monitored during the 7-day inspections.

No other potentially disruptive conditions were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1.

4.4.2.2 Previous Inspections

CCR tracking on haul roads and movement of aggregate in the contact swale, as discussed in **Section 4.4.2.1**, was observed during the previous inspection and noted as potentially disruptive conditions.

4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

No site changes were noted during the inspection of Phase 3, Module 1; Phase 3, Module 2; and Phase 4, Module 1 when comparing to the previous annual 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 existing landfill unit 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

The initial annual inspection for modules 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).

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