Annual CCR Landfill Inspection, Modules 1-3 and Module 4

Columbia Dry Ash Disposal Facility

Prepared for:

Wisconsin Power and Light Company
W8375 Murray Road
Pardeeville, Wisconsin 53954

SCS ENGINEERS

25220067.00 | December 18, 2020

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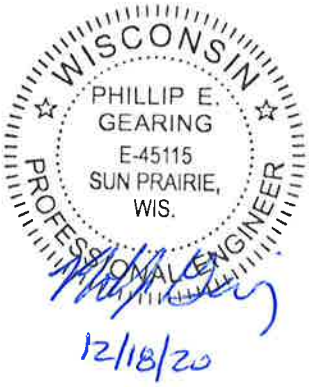
PE CERTIFICATION



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.

Phillip E Gearing 12/18/20

(signature) (date)

PHILLIP GEARING

(printed or typed name)

License number E-45115

My license renewal date is August 30, 2022.

Pages or sheets covered by this seal:

ALL - ANNUAL CCR LANDFILL INSPECTION

COLUMBIA DRY ASH DISPOSAL FACILITY

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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) Columbia Dry Ash Disposal Facility (COL) in Pardeeville, Wisconsin. 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.

1.2 BACKGROUND

The COL facility includes an active CCR landfill, which currently consists of two CCR units located in Phase 1 of the facility. The CCR landfill includes a second phase (Phase 2), which is currently undeveloped.

The active CCR landfill at COL is comprised of the two following CCR units:

- Modules 1 through Module 3 (existing CCR landfill per 40 CFR 257.53)
- Module 4 (new CCR landfill per 40 CFR 257.53)

Modules 1-3 were previously described as separate existing CCR landfills although they are contiguous and are managed as a single landfill by the facility and by the Wisconsin Department of Natural Resources. WPL recently clarified that Modules 1-3 are one existing CCR landfill under the federal CCR Rule, and this report reflects WPL's clarification. Module 4 is a new CCR landfill that initiated construction after October 19, 2015, and is therefore managed as a separate CCR unit under the CCR Rule even though it is contiguous to Modules 1-3.

The inspection requirements in 40 CFR 257.84(b)(1) apply to all of the CCR units listed above.

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

Disposal Phase	Unit	CCR Rule Status	Basis for Status
Phase 1	Modules 1 - 3	Existing CCR Landfill. Currently accepting CCR.	Final or interim grades have been reached. Final cover completed on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit. Overlay from Module 4 is currently occurring on to Module 3.
	Module 4	New CCR Landfill. Currently accepting CCR.	CCR placement began on November 5, 2018.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

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

SCS did identify additional 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 / Area	Recommendation(s)	Report Section
Vegetation growing in grouted riprap, which may impede storm water flow. Woody shrub near bottom of southwest down chute.	Modules 1-3	Remove any vegetation growth in down chutes, especially woody vegetation. Continue to observe and remove vegetation, as necessary. Monitor during 7-day inspections.	4.3.2
Small woody growth in riprap, which may affect riprap stabilization and liner system	Contact Water / Leachate Pond	Remove any woody growth or other unwanted vegetation in riprap. Continue to observe and remove, as necessary. Monitor during 7-day inspections.	4.3.2
Erosion observed on east perimeter slope (Module 3) and west perimeter slope (Module 4)	Modules 1-3 / Module 4	Replace bottom ash / sand drainage layer material. Monitor during 7-day inspections.	4.3.4
Rilling observed on intermediate cover, which may expose CCR	Modules 1-3	Backfill and regrade eroded areas. Continue to add erosion mat and seed to bare areas to promote vegetation. Monitor during 7-day inspections.	4.3.4

Condition	CCR Unit / Area	Recommendation(s)	Report Section
CCR tracking on roads	Entrance from Module 4	Continue to use regular housekeeping practices as described in the fugitive dust plan. Monitor during 7-day inspections.	4.4.2.1

3.0 ANNUAL INSPECTION

Mr. Phillip Gearing of SCS completed an annual inspection of active CCR landfill areas at COL, including Modules 1 through 3 and Module 4 on August 11, 2020. Mr. Gearing is a licensed professional engineer in Wisconsin and holds a Bachelor's of Science degree in Geological Engineering. He has over 14 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 COL. 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 COL facility.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of Modules 1 through 3 and Module 4 to identify signs of distress or malfunction of the CCR units.

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 internal contact water drainage features, leachate collection system discharge pipe, and the leachate/surface water pond.
- Non-contact storm water run-on and run-off control features including swales located adjacent to active fill areas, on intermediate/final cover slopes, and outside the landfill limits and the south sedimentation 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 units at the facility since the previous annual inspection of Modules 1 through 3 and Module 4 at the COL 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 in the current CCR units.

As noted in **Section 1.2**, both CCR units are currently accepting CCR. A majority of the CCR placement is occurring in Module 4. Final cover or intermediate cover is established along portions of Modules 1 through 3, and vegetation is established or becoming established on all final and intermediate cover areas.

4.2 CCR VOLUMES

The approximate volume of CCR contained in each of the active units near the time of inspection is summarized below. Note that the inspection was performed on August 11, 2020, and survey of CCR was performed on September 15, 2020. A description of how the estimate was developed is summarized below.

Disposal Phase	Unit	Estimated Volume of CCR in Place	Basis for Estimate and Source
Phase 1	Modules 1-3	1,004,000 cubic yards	Estimated volume based on existing waste volumes as of 11/30/2015 plus tons disposed between 12/1/2015 and 8/11/2020, extrapolated from a survey performed on 9/15/2020. Volume includes material placed during the 2016 cover construction project. Disposal records were provided by WPL. Volume continues to be placed due to overlay from Module 4.
	Module 4	63,000 cubic yards	The initial placement of CCR in Module 4 occurred on 11/5/2018. The CCR material was bottom ash placed for frost protection. Post bottom ash placement, the Module was covered with a rain cover and not active until 10/1/2019. CCR volume placed in Module 4 after 10/1/2019, was estimated based on a survey conducted on 9/15/2020 and extrapolated back to 8/11/2020.

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, except as observed below:

- Vegetation was observed in the grouted riprap down chutes, also a small woody shrub was observed near bottom of southwest down chute. It was discussed with site personnel that any residual vegetation growth in the down chutes should be removed before any woody growth becomes established that could potentially impact the cover system. The vegetative growth was not currently impacting the stability of the CCR landfill. Continued removal and monitoring is recommended of the down chutes.

- Vegetation was observed in the riprap slope of the Contact Water/Leachate Pond. It was discussed with site personnel that any small woody growth in the riprap be removed before stabilization and liner system are impacted. The vegetative growth was not currently impacting the stability of the Contact Water/Leachate Pond. Continued removal and monitoring is recommended.

4.3.3 Animal Burrows

No animal burrows were noted during the inspection.

4.3.4 Erosion Damage

The following erosion damage was noted during the inspection:

- Erosion on the east perimeter slope of Module 3 (CCR Unit Modules 1 through 3) and the west perimeter slope of Module 4. Erosion may eventually expose geomembrane if not addressed.

- Rilling on the intermediate cover of Module 3 (CCR Unit Modules 1 through 3). Erosion may eventually expose CCR if not addressed.

The erosion conditions noted are not currently considered an operating deficiency since it is unlikely to have a significant impact on the function of the CCR unit. However, additional observation of these areas is recommended to ensure that the conditions observed during the visual inspection, or similar future conditions, are addressed. The erosion was discussed with plant staff after the inspection was performed.

No additional 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 units 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 units were noted during the previous inspection.

4.4.2 Potentially Disruptive Conditions

4.4.2.1 Current Inspection

The tracking of CCR onto the landfill west haul road was noted as a potentially disruptive condition. Tracking of CCR from Module 4 was observed during the current inspection. 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. 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. Rock tracking areas could also be implemented to create separation from the module and the haul road. The west haul road was sprayed with water to suppress dust.

No other potentially disruptive conditions were noted during the inspection.

4.4.2.2 Previous Inspection

The tracking of CCR onto the landfill haul road was noted as a potentially disruptive condition. Tracking of CCR from Module 4 was observed during the current inspection.

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.

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 CCR units Modules 1 through 3 and Module 4 must be completed within 1 year of the placement of this inspection report in the operating record for the COL 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)(4).