Closure Plan for Existing CCR Surface Impoundments – Amendment No. 1

Wisconsin Power and Light Company
Edgewater Generating Station
Sheboygan, WI 53051

Prepared for:

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

SCS ENGINEERS

25218053.01 | June 3, 2020

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A – July 29, 2016 Sargent & Lundy Closure Plan

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PE CERTIFICATION

6/3/2020

I, Eric J. Nelson, hereby certify the following:

- This Closure Plan amendment meets the requirements of 40 CFR 257.102(b)
- The final cover system described in this Closure Plan amendment meets the design requirements in 40 CFR 257.102(d)(3)

The Closure Plan amendment was prepared by me or under my direct supervision, and I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

6/03/2020

(signature) (date)

Eric J. Nelson

(printed or typed name)

License number 37855-6

My license renewal date is July 31, 2020.

Pages or sheets covered by this seal:

Closure Plan - Amendment No. 1

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1.0 INTRODUCTION AND PROJECT SUMMARY

On behalf of Wisconsin Power and Light Company (WPL), SCS Engineers (SCS) has prepared Amendment Number 1 (No. 1) to the Closure Plan for the existing coal combustion residual (CCR) surface impoundments at the Edgewater Generating Station (Edgewater) as allowed by 40 CFR 257.102(b)(3)(i).

The initial closure plan was issued in July 2016 by Sargent & Lundy in accordance with 40 CFR 257.100(e)(6) and 257.102(b). SCS prepared Amendment No. 1 at the request of WPL to reconcile the July 2016 closure plan with the plans developed to obtain a Closure Plan of Operation Modification and Low-Hazard Waste Exemption from the Wisconsin Department of Natural Resources (WDNR).

40 CFR 257.102(b) *"Written closure plan - (1) Content of the plan. The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section."*

40 CFR 257.102(b)(3) *"Amendment of a written closure plan. (i) The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time."*

Edgewater site background information, project summary, and site layout is described in Section 1 of the July 29, 2016 closure plan developed by Sargent & Lundy. The July 2016 closure plan document is provided in **Appendix A**.

2.0 PROPOSED CCR IMPOUNDMENT CLOSURE PROCEDURE

40 CFR 257.102(b)(1)(i) **"***A narrative description of how the CCR unit will be closed in accordance with this section."*

The proposed CCR impoundment closure procedure was initially described in Section 2 of the July 29, 2016 closure plan developed by Sargent & Lundy. The closure procedure generally remains the same, with the updates described below.

No CCR is currently being sluiced to the CCR surface impoundments. The EDG facility currently operates one coal-fired unit (Unit 5), which has been equipped with a dry bottom ash handling system. Low volume wastewater that was historically discharged to the CCR surface impoundments has been re-routed to bypass the CCR surface impoundments and Pond C, a non-CCR surface impoundment at the ash pond facility.

As decribed in the July 2016 closure plan, the CCR surface impoundments will be dewatered using existing infrastructure supplemented with temporary pumps. Supplemental treatment will be provided as needed to meet Wisconsin Pollutant Discharge Elimination System (WPDES) permit requirements for the EDG facility. Once dewatered to the extent possible, the surface impoundments will be prepared to receive additional fill materials required to develop the proposed cover subgrades. Stabilization of some existing CCR within the impoundments in accordance with 40 CFR 257.102(d)(2) is likely required before additional fill materials are placed. A combination of on-site borrow from berm and site grading, along with off-site fill material will be used to develop cover

subgrade elevations. Additionally, the Slag Stockpile Area described in the July 2016 closure plan will be prepared to receive new final cover materials. Following development of cover subgrades, a different cover system than described in the July 2016 closure plan will be installed per Section 3.

3.0 PROPOSED COVER SYSTEM

40 CFR 257.102(b)(1)(iii). *"If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section."*

This amendment is modifying the cover system described in Section 3 of the July 29, 2016 closure plan developed by Sargent & Lundy. The amended cover system over all areas, except the Slag Pond, is proposed to consist of the following from the bottom up:

- Grading layer (minimum 3 inches thick) or geosynthetic reinforcement
- 24 inches of compacted clay (257.102(d)(3)(i)(B))
- 6 inches of topsoil (257.102(d)(3)(i)(C))

The Slag Pond area has a compacted clay liner according to site development records, and requires a composite cover system to meet the requirements of 40 CFR 257.102(d)(3)(i)(A). The amended cover system in the Slag Pond area will consist of:

- Grading layer or geosynthetic reinforcement
- Laminated Geosynthic Clay Liner (GCL) (257.102(d)(3)(ii)(A))
- Geocomposite drainage layer
- 24- inch rooting zone layer
- 6-inch topsoil layer (257.102(d)(3)(i)(C))

4.0 ESTIMATED MAXIMUM INVENTORY OF CCR

40 CFR 257.102(b)(1)(iv). *"An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit."*

The estimated maximum inventory of CCR at Edgewater is described in Section 4 of the July 29, 2016 closure plan developed by Sargent & Lundy, as copied below:

> *"A conservative estimate of the maximum inventory of CCR ever stored within the Station's CCR surface impoundments can be calculated by summing together the volume of the previously closed ash landfill (see Figure 1) and the total storage capacity of the existing CCR surface impoundments assuming that each CCR surface impoundment was at one time completely filled up to the top of existing dike elevations. Understanding that the perimeter berms were constructed with native soils, a conservative estimated volume of the maximum CCR ever stored on site is approximately 1,044,000 cubic yards. Given that the existing CCR surface impoundments have never been completely filled with CCR, it can be confidently concluded that the actual amount of CCR ever stored within the Station's CCR surface impoundments is less than the above value."*

This amendment makes no modification to section 4.0 of the 2016 closure plan.

5.0 ESTIMATED MAXIMUM AREA OF COVER

40 CFR 257.102(b)(1)(v). *"An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life."*

The description of the estimated maximum area of cover from Section 5 of the July 29, 2016 closure plan developed by Sargent & Lundy is amended, as follows:

The estimated maximum extent of final cover provided in the initial closure plan was 16.6 acres. As designed, the proposed cover system will occupy an area of approximately 14.7 acres, of which 1.94 acres will be composite cover.

6.0 SCHEDULE OF SEQUENTIAL CLOSURE ACTIVITIES

40 CFR 257.102(b)(1)(vi). *"A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed."*

The schedule of closure activities from Section 6 of the July 29, 2016 closure plan developed by Sargent & Lundy is amended, as follows:

Closure of the existing CCR surface impoundments is anticipated to require one construction season to complete and is expected to be done in late 2020/early 2021.

Task Description	Anticipated Start Date	Anticipated Completion Date
Award Contract for Closure Work	2/2020	5/2020
Construct CCR Surface Impoundment Closure	5/2020	12/2020
Place a Notification of CCR Surface Impoundment Closure Completion in the Station's Operating Record	1/2021	1/2021
Send Notification of Availability of Closure Completion to Relevant State Director / Place Closure Completion to the Station's Internet Website	1/2021	1/2021
Record a Notation of the CCR Impoundment Closure on the Deed of the Property	1/2021	1/2021
Place a Notification of the Deed Notation in the Station's Operating Record	1/2021	1/2021
Send Notification of Availability of Deed Notation to Relevant State Director / Place Deed Notation to the Station's Internet Website	1/2021	1/2021

7.0 COMPLETION OF CLOSURE ACTIVITIES

To confirm completion of the CCR surface impoundment closures, WPL has retained SCS, a qualified engineer licensed in the State of Wisconsin, to verify that the CCR surface impoundments have been closed in accordance with this closure plan and the requirements of 40 CFR 257.102(d). SCS will provide WPL with a written certification stating compliance as required in 40 CFR 257.102(f)(3). The Post-Closure Plan is presented in a separate document.

8.0 CERTIFICATIONS

40 CFR 257.102(b)(4) *"The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirement of this section."*

Eric J. Nelson, PE, a licensed professional engineer in the State of Wisconsin, has overseen the preparation of this Closure Plan Amendment. A certification statement is provided on **page iii** of the amendment.

9.0 RECORDKEEPING AND REPORTING

40 CFR 257.102(b)(vi)(2)(iii). *"The owner or operator has completed the written closure plan when the plan, including the certification required by paragraph (b)(4) of this section, has been placed in the facility's operating record as required by Section 257.105(i)(4)."*

The closure plan amendment will be placed in the facility's operating record and on Alliant Energy's CCR Rule Compliance Data and Information website.

Additional amendments to the written closure plan will be done when there is a change in the operation of the CCR unit that affects the plan or when unanticipated events warrant revision to the written closure plan, as required by 40 CFR 102(b)(3)(ii).

WPL will provide notification as follows:

- Intent to initiate closure
- Closure completion
- Availability of the written Closure Plan and any amendments

All notifications will be placed in the facility's operating record and on the website (40 CFR 257.105(i), 257.106(i), 257.107 (i)).

10.0 REFERENCES

40 CFR Part 257, Subtitle D – Environmental Protection Agency Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities.

Sargent & Lundy, 2016, Closure Plan for Existing CCR Surface Impoundments, Edgewater Generating Station, Wisconsin Power and Light, July 29, 2016.

Appendix A

July 29, 2016 Sargent & Lundy Closure Plan

Closure Plan for Existing CCR Surface Impoundments

Prepared for Wisconsin Power and Light Company Edgewater Generating Station

Issue Date: July 29, 2016
Issue Purpose: For Use

Prepared by:	J. Fifarek	7/29/16 Date
Reviewed by:	D. Packard	7/29/16 Date
Approved by:	D. Dahlberg	7/29/16 Date

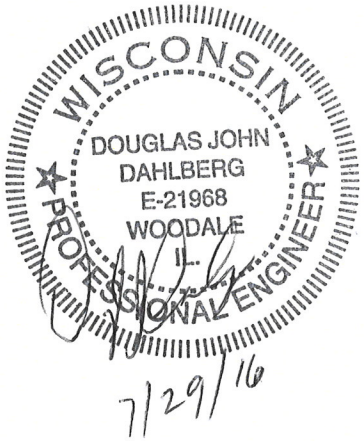
Sargent & Lundy LLC

55 East Monroe Street
Chicago, IL 60603-5780 USA

Project Number: 13391-002

Report Number: SL-013362
Revision: 0

Certification and Seal:



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LEGAL NOTICE

1. INTRODUCTION AND PURPOSE

> **40 CFR 257.102(b)** – *"Written closure plan – (1) Content of the plan. The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of [section 257.102]."*

Pursuant to 40 CFR 257.102(b), Sargent & Lundy (S&L), on behalf of Wisconsin Power and Light Company (WPL), has prepared the following Closure Plan for the four existing CCR surface impoundments – Slag Pond, A-Pond North, A-Pond South, B-Pond – at the Edgewater Generating Station located in Sheboygan, WI. WPL intends to close the four existing CCR surface impoundments by leaving the CCR in place and providing a final cover system in compliance with the requirements of 40 CFR 257.102(d). Concurrently with the closure of the four existing CCR surface impoundments, the C-Pond, a non-CCR surface impoundment, will also be closed such that all surface impoundments west of Lake Shore Drive are closed at one time.[1] An annotated aerial photograph of the Station's surface impoundments located west of Lakeshore Drive is included in Figure 1 for reference.

Figure 1: Edgewater Generating Station Surface Impoundments Located West of Lakeshore Dr.

[1] Since C-Pond is not a CCR surface impoundment, its closure will not be detailed further in this report.

2. CLOSURE PLAN NARRATIVE DESCRIPTION

40 CFR 257.102(b)(1)(i) – *"A narrative description of how the CCR unit will be closed in accordance with [section 257.102]."*

The Edgewater Generating Station consists of three coal-fired units – Units 3 (retired), 4 and 5. The first step to closure of the Station's CCR surface impoundments will be to reroute, cap and/or remove all existing CCR discharge piping from Units 3, 4, or 5 to the existing CCR surface impoundments. The slag discharge pipes which discharge into the Slag Pond will be partially removed, and the abandoned portion to remain capped. Wastewater discharge pipes, which currently discharge into A-Ponds North and South, will be partially removed and rerouted to recycle and/or discharge the wastewater into other permitted wastewater management ponds located elsewhere on site. Similarly, all interconnected culvert piping between the existing CCR surface impoundments will be removed.

Once the existing CCR surface impoundments cease to receive wastewater from the Station, the surface impoundments will be dewatered by routing the free liquids to C-Pond, then ultimately to Lake Michigan through WPDES Outfall 004. The outfall from B-Pond to C-Pond is an overflow weir structure that skims water from the surface of B-Pond. The elevation of this overflow weir will be adjusted incrementally downward until most of the water has been removed from the ponds. A temporary pump may be necessary to complete the dewatering process. As part of the low water level pumping activities, sediment and filtration BMPs will be employed so as to comply with NPDES limits. Some of this liquid may be retained for dust control or trucked offsite due to significant TSS. Additionally, portions of the interior dikes between the Slag Pond, the A-Ponds, and B-Pond may be removed to enhance the dewatering process. Free liquids will be removed to the extent possible, and the existing CCR materials within the CCR surface impoundments will be sufficiently stabilized as required to support the placement of the final fill and cover as required by 40 CFR 257.102(d)(2).

The site will be regraded to achieve final grades that optimize the soil material present near the existing CCR surface impoundments and minimize the amount of borrowed soil to be relocated from offsite. First, the top portions of the interior and exterior dikes will be excavated and this reclaimed soil used to fill in the remaining available storage capacity of the four existing CCR surface impoundments. Next, fill material will be reclaimed from the surface of the Slag Stockpile Area. Any beneficial use material piled on the surface of the Slag Stockpile Area will be transferred offsite prior to commencing the pond closure activities. It is anticipated that the surface of the Slag Stockpile Area has been impacted with CCR; therefore, the top layer of soil within this area will be relocated to the existing CCR surface impoundments to be used as fill and assist in forming the final grades. All fill will be placed in 2 foot layers and compacted appropriately. During detailed design, the design engineer will determine the required level of compaction and final grades and confirm slope stability of the final grades.

Finally, a final cover system will be placed over the graded CCR material, which includes the Slag Stockpile Area, as required per 40 CFR 257.102(d)(3). The intended final cover system is described in Section 3.

3. FINAL COVER SYSTEM DESCRIPTION

40 CFR 257.102(b)(1)(iii) – *"If the closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system designed in accordance with paragraph (d) of [section 257.102], and methods and procedures to be used to install the final cover. The Closure Plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of [section 257.102]."*

The final cover system shall meet the minimum requirements of 40 CFR 257.102(d)(3)(i)(A) thru (D). It shall consist, from bottom to top, of a compacted 18" thick "infiltration layer" of appropriate low-permeability material having a hydraulic conductivity of no more than 10^{-5}cm/s, followed by a 6" thick "erosion layer" of uncompacted soil capable of sustaining a vegetative cover, with a suitable seed mixture.

The existing CCR material located within the impoundments will be stabilized, graded, and compacted as required to be able to support the overlying materials of the final cover system. The overlying materials will be placed and compacted so as to minimize infiltration, limit erosion and future maintenance, and maintain positive drainage. Soil properties, compaction, permeability, and thickness testing will be performed to confirm compliance with the Rule. Final surface slopes will be designed to accommodate settling and subsidence while maintaining proper drainage. Regular maintenance of the seeding will take place until the vegetative cover is established and self-sustaining, in order to limit erosion of the topmost layer.

All other areas that are disturbed during the surface impoundment closure activities will be restored, either by providing a vegetative cover or an aggregate surface.

4. MAXIMUM INVENTORY OF CCR ESTIMATE

40 CFR 257.102(b)(1)(iv) – *An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.*

A conservative estimate of the maximum inventory of CCR ever stored within the Station's CCR surface impoundments can be calculated by summing together the volume of the previously closed ash landfill (see Figure 1) and the total storage capacity of the existing CCR surface impoundments assuming that each CCR surface impoundment was at one time completely filled up to the top of existing dike elevations. Understanding that the perimeter berms were constructed with native soils, a conservative estimated volume of the maximum CCR ever stored on site is approximately 1,044,000 cubic yards. Given that the existing CCR surface impoundments have never been completely filled with CCR, it can be confidently concluded that the actual amount of CCR ever stored within the Station's CCR surface impoundments is less than the above value. Table 1 provides a breakdown of this estimated maximum volume for each impoundment and the previously closed ash landfill.

TABLE 1: ESTIMATED MAXIMUM QUANTITY OF CCR PER IMPOUNDMENT/AREA

Impoundment/Area	Estimated Maximum Quantity of CCR (cy)
Slag Pond	72,000
A-Pond North	83,000
A-Pond South	83,000
B-Pond	115,000
Previously Closed Ash Landfill (Includes Slag Stockpile Area)	691,000

5. FINAL COVER SURFACE AREA ESTIMATE

40 CFR 257.102(b)(1)(v) – *"An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of [section 257.102] at any time during the CCR unit's active life."*

The final cover system required to close the CCR surface impoundments will encapsulate an area of roughly 16.6 acres, which includes the Slag Stockpile Area and areas adjacent to the existing dike crests. Table 2 provides a breakdown of this estimated value.

TABLE 2: ESTIMATED SURFACE AREAS REQUIRING THE FINAL COVER SYSTEM

Area Requiring Final Cover System	Estimated Surface Area (acres)
Slag Pond	2.2
A-Pond North	2.6
A-Pond South	2.6
B-Pond	4.8
Slag Stockpile Area	4.4

6. SCHEDULE

40 CFR 257.102(b)(1)(vi) – *"A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed."*

Closure of the existing CCR surface impoundments is anticipated to require approximately 22 months. The schedule provided in Table 3 assumes an initiation date of January 1, 2020 with completion of closure by November 1, 2021.

TABLE 3 – PLANNING LEVEL SCHEDULE FOR CLOSURE OF EXISTING CCR SURFACE IMPOUNDMENTS

Task Description	Anticipated Start Date	Anticipated Completion Date
Place this Initial Closure Plan in the Station's Operating Record	10/16/2016	10/16/2016
Post this Document to the Station's Internet Web Site and Send to the Relevant State Director a Notification of Availability of this Written Closure Plan	10/16/2016	11/16/2016
Place a Post-Closure Care Plan in the Station's Operating Record	10/16/2016	10/16/2016
Post to the Station's Internet Web Site and Send to the Relevant State Director a Notification of Availability of A Written Post-Closure Care Plan	10/16/2016	11/16/2016
Initiation of Close-In-Place Operation	01/01/2020	01/01/2020
Place a Notification of Intent to Close the Existing CCR Surface Impoundments in the Station's Operating Record	01/01/2020	01/01/2020
Post to the Internet Web Site and Send to the Relevant State Director a Notification of Intent to Close the Existing CCR Surface Impoundments	01/01/2020	01/31/2020
Preparation of Bid Documents	01/01/2020	04/01/2020
Bids Due	09/01/2020	09/01/2020
Issue Award and Notice to Proceed	11/01/2020	11/01/2020
Preparation of SWPPP and other State and Local Municipality Permits	11/08/2020	02/28/2021
Contractor Mobilization	03/15/2021	03/15/2021
Dewatering and Stabilization of Existing CCR Surface Impoundments	04/01/2021	04/30/2021
Re-grading and Placement of Fill within the Existing CCR Surface Impoundments	05/01/2021	08/01/2021
Placement of Final Cover Material	06/01/2021	09/01/2021
Completion of Final Site Grading and Vegetation	08/01/2021	10/01/2021
Independent Visual Verification of Close-In-Place Operation Completion	08/01/2021	10/01/2021
Place a Notification of Pond Closure Completion in the Station's Operating Record	10/01/2021	11/01/2021
Post to the Station's Internet Web Site and Send to the Relevant State Director a Notification of Closure Completion	10/01/2021	11/01/2021
Record a Notation of the CCR Impoundment Closure on the Deed of the Property	10/01/2021	11/01/2021
Place a Notification of the Deed Notation in the Station's Operating Record	10/01/2021	11/01/2021
Post to the Station's Internet Web Site and Send to the Relevant State Director a Notification of the Deed Notation	10/01/2021	11/01/2021
Place a Notification of Completion of the Post-Closure Care in the Station's Operating Record	10/01/2051	11/01/2051
Post to the Station's Internet Web Site and Send to the Relevant State Director a Notification of Completion of the Post-Closure Care	10/01/2051	11/01/2051

7. COMPLETION OF CLOSURE ACTIVITIES

40 CFR 257.102(f)(3) – *"Upon completion, the owner or operator of the CCR unit must obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan specified in paragraph (b) of [section 257.102] and the requirements of [section 257.102]."*

To confirm completion of the close-in-place operation, WPL will retain an qualified professional engineer licensed in the State of Wisconsin to verify that the existing CCR surface impoundments have been closed in accordance with this closure plan and the requirements of 40 CFR 257.102(d). The qualified professional engineer will provide WPL with a written certification stating compliance as required in 40 CFR 257.102(f)(3).

8. CERTIFICATIONS

40 CFR 257.102(b)(4) – *"The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of [section 257.102]."*

It is S&L's opinion that this written closure plan meets the requirements of 40 CFR 257.102(b).

40 CFR 257.102(d)(3)(iii) – *"The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the design of the final cover system meets the requirements of [section 257.102]."*

It is S&L's opinion that the proposed final cover system as described herein meets the design requirements specified by 40 CFR 257.102(d)(3).

9. REFERENCES

1. 40 CFR Part 257; Environmental Protection Agency Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule, Federal Register, Vol. 80, No. 74, Friday, April 17, 2015, as amended by the Technical Amendments published in the Federal Register on July 2, 2015 Page 37988.
2. "Edgewater Generating Station – Ash Management Area." 43°42'42.95"N and 87°42'46.93" W. GOOGLE EARTH PRO v.6.2. June 1, 2015. September 10, 2015.