Closure Plan for Existing CCR Surface Impoundments and CCR Landfills

Prepared for Interstate Power and Light Company
Prairie Creek Generating Station
Cedar Rapids, IA

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LEGAL NOTICE

1. INTRODUCTION

Interstate Power and Light Company (IPL) – a wholly owned subsidiary of Alliant Energy – operates the four-unit Prairie Creek Generating Station (PCS), located in Cedar Rapids, Iowa. This coal-burning facility operated a system of interconnected ponds that form its Coal Combustion Residual (CCR) treatment units and two CCR piles. The ponds and piles have ceased receiving CCR after a conversion to a dry bottom ash handling system for Unit 3 in September 2017, and the completion of refueling Unit 4 to natural gas in October 2017. Generating units (1 and 2) do not contribute CCR to the Station's CCR units.

To comply with the requirements of the USEPA Final CCR Rule (40 CFR 257.50 thru 257.107), IPL has prepared the following Closure Plan detailing the steps to be undertaken to close the existing CCR surface impoundments and CCR landfills, in accordance with §257.102(b) of the CCR Rule. This Closure Plan amendment, which amends the initial Closure Plan that was prepared prior to October 17, 2016, has been developed in accordance with §257.102(b)(3) of the CCR Rule. The purpose of this amendment is to describe the closure in place of the stations CCR units through consolidation of all CCR into a single Closure Area located within the original footprint of the CCR ponds.

This document provides the following required information:

- Facility information
- Estimate of the maximum inventory of CCR on-site
- Proposed CCR surface impoundment closure procedure
- Description of the proposed final cover system over the CCR material
- Schedule for completing all closure activities

PCS currently operates 12 surface impoundments at the site, of which 8 were managed as existing CCR impoundments under the provisions of the CCR Rule. The remaining ponds are associated with coal pile runoff and are not CCR surface impoundments. This Closure Plan applies to the following existing CCR surface impoundments:

- PCS Pond 1
- PCS Pond 2
- PCS Pond 3
- PCS Pond 4
- PCS Pond 5
- PCS Pond 6
- PCS Pond 7
- PCS Pond 8 (Discharge Pond)

PCS currently operates two CCR Landfill locations at the site. This Closure Plan applies to the following CCR Landfills:

- PCS Bottom Ash Pile
- PCS Beneficial Use Storage Area

Additionally, an inactive hydrated fly ash beneficial reuse stockpile is located on-site. The fly ash stockpile has not received CCR since October 19, 2015 and is therefore not a CCR Unit.

The overall layout of the facility, prior to initiation of closure, is shown in Figure 1.

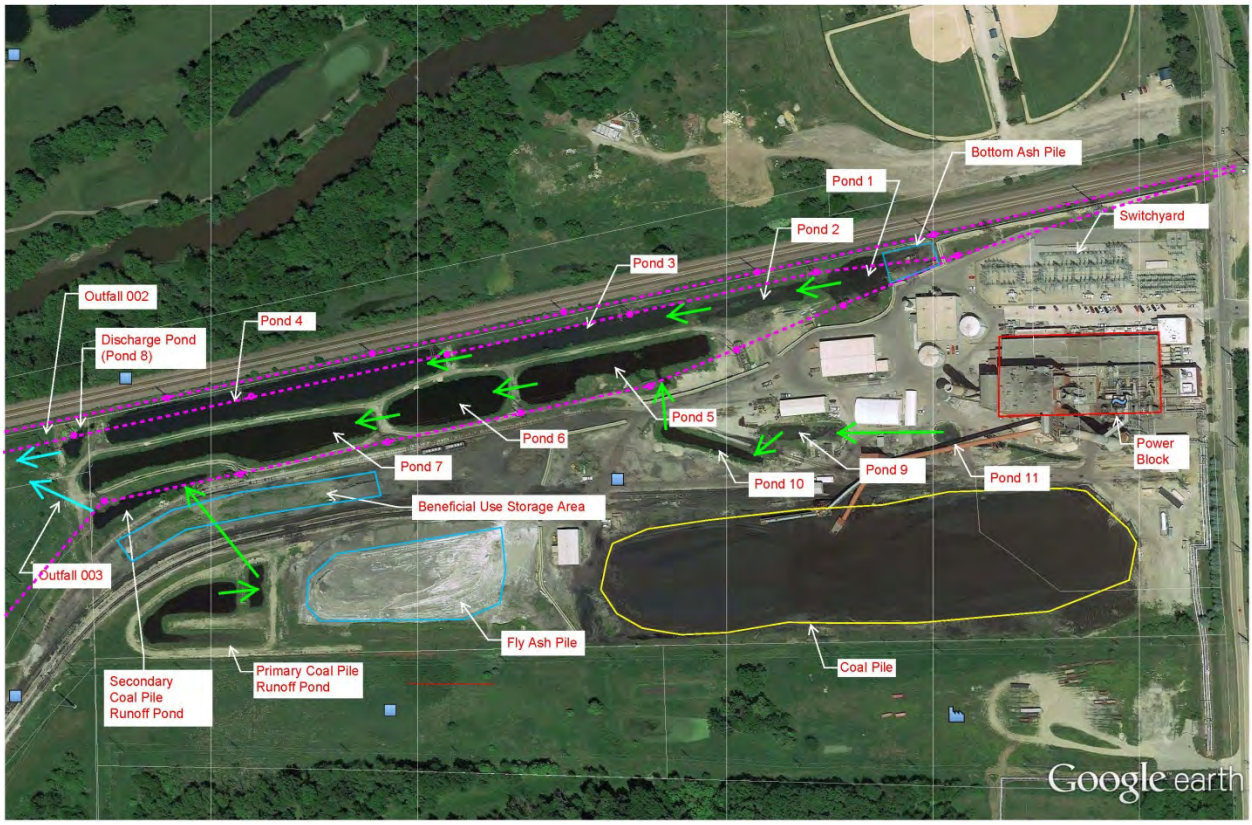

Figure 1: Initial Layout of CCR Units at Prairie Creek Generating Station

The main ash settling area was located along the north perimeter of the Station property, covering an area of approximately 5 acres, and consisting of Ponds #1 thru #8. These eight CCR surface impoundments were configured into two parallel lines of interconnected basins, with Ponds #1 thru #4 and Ponds #5 thru #7 forming the north and south lines, respectively; both flowing to the Discharge Pond (#8).

The PCS Bottom Ash Pile was located adjacent to Pond #1 and served as a temporary dewatering facility for bottom ash. The PCS Beneficial Use Storage Area was located south of the surface impoundments.

Ponds #9 thru #11 are located parallel to the rail spur that services the Station. Water flowed from Pond #11 through ponds #9 & #10, then via an underground culvert where it rejoined the main pond system at Pond 5. The discharge of Pond #10 has been rerouted to the Coal Pile Runoff Ponds. These ponds serve as temporary detention for coal washdown water and do not contain CCR. They are therefore not in the scope of this Closure Plan.

The Station manages an inactive hydrated fly ash pile. As described in Section 2 of this Plan, it is the intent to use a portion of this material as part of the closure of Ponds #1 thru #8 or for beneficial reuse. The fly ash pile occupies approximately 4.2 acres.

The Station also maintains two coal pile runoff ponds: a Primary and a Secondary pond. They are not designed to treat, store, or dispose of CCR, and do not meet the definition of a CCR surface impoundment subject to the CCR Rule. They are therefore not in the scope of this Closure Plan.

2. PROPOSED CCR IMPOUNDMENT CLOSURE PROCEDURE

The proposed closure of the CCR impoundments at PCS will be done according to the following steps:

- Dewatering of Ponds #1 thru #8
- Divert non-CCR wash water to discharge point via coal pile runoff ponds
- Consolidation of CCR Piles and a portion of the fly ash stockpile within Ponds #3 thru #7
- Removal of CCR from Ponds #1, #2, #8, and portions of #3, #4 and #7
- Consolidation of CCR from Ponds #1, #2, #8, and portions of #3, #4 and #7 within Ponds #3 thru #7
- Grading of CCR material to final slopes for drainage
- Installation of cover system materials
- Installation of drainage control features
- Restoration of former PCS Bottom Ash Pile area
- Restoration of former PCS Beneficial Use Storage Area

Proposed final grades for the capped area over the former CCR impoundments will range from a minimum 3% to a maximum of 3H:1V, which will allow for adequate drainage of rainwater off the cover system described in Section 3.

Storm runoff drainage ditches are proposed around the South and North edges of the capped CCR impoundment to direct runoff flows away from and off the cap. The ditch on the south drains with a constant slope to the west. The ditch to the north drains to multiple low points. There are culverts at each low point which drain under the road to the north to another ditch which drains to the west.

Drainage ditches and outlets will be designed per the requirements of the Iowa Erosion Control Manual published by the Iowa Department of Natural Resources, latest edition.

As part of the consolidation of CCR material within the confines of Ponds #3 thru #7, Ponds #1, #2, #8, portions of #3, #4 and #7, as well as the PCS Bottom Ash Pile and PCS Beneficial Use Storage Area will undergo removal of all CCR material. The removal of CCR will be done according to the following steps:

- Removal of CCR from Ponds #1, #2, #8, portions of #3, #4 and #7, the PCS Bottom Ash Pile, and PCS Beneficial Use Storage Area for consolidation into Ponds #3 thru #7,
- Stripping of in-situ soil that may be intermixed with the CCR above, with resulting material consolidated into Ponds #3 thru #7,
- Visual examination of area formerly occupied by the surface impoundments to ensure proper cleanup,
- Restoration of area formerly occupied by Ponds #1, #2, #8, portions of #3, #4 and #7, the PCS Bottom Ash Pile, and PCS Beneficial Use Storage Area.

3. PROPOSED COVER SYSTEM

The final cover will meet the minimum requirements of 40 CFR 257.102(d)(3)(i)(A) thru (D). It will 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 soil capable of sustaining a vegetative cover, with a suitable seed mixture.

The materials of the cover system will be placed and compacted as required 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 CCR Rule. Regular maintenance of the seeding will take place until the vegetative cover is established and self-sustaining, in order to prevent premature 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. ESTIMATED MAXIMUM INVENTORY OF CCR

Based on existing information provided to S&L in the preparation of this Plan including original plant construction drawings and recent survey data, it is estimated that approximately 148,000 cubic yards of CCR are currently present on-site. This quantity includes the inactive hydrated fly ash stockpile and material that has settled in Ponds #1 thru #8. Table 1 gives the estimated breakdown of CCR quantities for each CCR unit.

TABLE 1: ESTIMATED CCR IN ALL UNITS

CCR Unit	Area (acres)	Estimated CCR Quantity (cu. yd)
Pond #1	0.35	4,140
Pond #2	0.50	5,910
Pond #3	1.0	11,830
Pond #4	1.63	19,280
Pond #5	1.0	11,800
Pond #6	0.76	8,980
Pond #7	1.40	16,560
Pond #8	0.17	2,000
Bottom Ash Pile	0.19	2500
Beneficial Use Storage Area	1.30	7000
Inactive fly ash stockpile	4.20	58,000
TOTAL		**148,000**

In Table 1, the total amount of estimated CCR was determined by comparing the original contours of the ash disposal area to contours from a 2017 survey. CCR in each unit is approximate and based on area of each impoundment relative to total area.

5. ESTIMATED MAXIMUM AREA OF COVER

Per the aerial view of the Station, it is estimated that the total area of the 5 surface impoundments requiring a cover system is approximately 5.5 acres . Note that the area formerly occupied by Ponds #1, #2, #8, and portions of #3, #4 and #7 will no longer contain CCR, since this material will be consolidated into the other CCR units during closure operations.

6. SCHEDULE

Closure of the existing CCR surface impoundments is anticipated to require one year to complete. The schedule provided in Table 2 estimates that earthwork associated with closure will be initiated on April 1, 2018. Alliant Energy will obtain certification from an Iowa licensed professional engineer that the CCR surface impoundments were closed in compliance with the Closure Plan. The certification will be placed in the Station's operating record within 60 days of completing closure.

TABLE 2: PLANNING LEVEL SCHEDULE FOR CLOSURE OF CCR SURFACE IMPOUNDMENTS

Task Description	Anticipated Start Date	Anticipated Completion Date
Pre-Design Activities		
Preparation of ***Closure Plan*** for compliance with Federal CCR Rule	04/16/2016	10/16/2016
Post initial ***Closure Plan*** in the Station's Operating Record	10/16/2016	10/16/2016
Send a Notification of the availability of the Closure plan to the Relevant State Director and publish ***Closure Plan*** to the Station's Internet Website	10/16/2016	11/15/2016
Place initial ***Post-Closure Plan*** in the Station's Operating Record	10/16/2016	10/16/2016
Send Notification of availability of ***Post-Closure Plan*** to the State Director and place ***Post-Closure Plan*** to the Station's Internet Website	10/16/2016	11/15/2016
Design / Bidding / Permitting		
Site Survey & Bathymetric Survey	07/01/2016	08/31/2016
Engineering / Preparation of Bid docs	05/15/2017	08/01/2017
Issue Request for Bids	08/02/2017	08/02/2017
Bids due	10/17/2017	10/17/2017
Bid Evaluation Period	10/18/2017	12/15/2017
Issue Award and Notice to Proceed	12/16/2017	02/15/2018
Construction		
Place a ***Notification of Intent to Close*** the Surface Impoundment in the Station's Operating Record	11/30/2017	11/30/2017
Send ***Notification of Intent to Close*** to State Director and post Notification to the Station's Internet Website	12/30/2017	12/30/2017
Initiation of Close-In-Place Activities	04/01/2018	04/01/2018
Contractor Mobilization	04/01/2018	04/30/2018
Rerouting non-CCR Contact water from Pond 10 to Outfall 003	04/01/2018	05/01/2018
Dewatering of CCR Impoundment	03/10/2018	05/01/2018
Relocation of Fill Material (Fly Ash Pile)	05/01/2018	07/31/2018
Restoration of Fly Ash Pile Area	07/31/2018	08/31/2018
Regrading of Fill to final slopes	09/01/2018	09/30/2018
Placement of Final Cover / Veg. Cover	09/01/2018	09/30/2018

Post-Construction Administration		
Certification verifying the completion of closure in accordance with the closure plan	10/15/2018	10/30/2018
Place a Notification of CCR Surface Impoundment Closure Completion in the Station's Operating Record	11/01/2018	11/15/2018
Send Notification of availability of Closure Completion to Relevant State Director / place Closure Completion to the Station's Internet Website	11/15/2018	11/15/2018
Record a Notation of the CCR Impoundment Closure on the Deed of the Property	11/01/2018	11/15/2018
Place a Notification of the Deed Notation in the Station's Operating Record	11/15/2018	11/15/2018
Send Notification of availability of Deed Notation to Relevant State Director / place Deed Notation to the Station's Internet Website	11/15/2018	11/15/2018
Place a Notification of Completion of the Post-Closure Care in the Station's Operating Record	11/15/2048	11/15/2048
Send a Notification of the availability of the Post-Closure Care to the Relevant State Director and place Post-Closure Care to the Station's Internet Website	11/15/2048	11/15/2048

7. COMPLETION OF CLOSURE ACTIVITIES

To confirm completion of the CCR surface impoundment closures, IPL will retain a qualified engineer licensed in the State of Iowa 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 engineer will provide IPL 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. CERTIFICATIONS

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

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

9. REFERENCES

1. 40 CFR Part 257,Subtitle D, – Environmental Protection Agency Hazardous and Solid Waste management System; Disposal of Coal Combustion Residuals from Electric Utilities