

## Notice of Intent to Close

### *Upstream Raise 92 CCR Surface Impoundment - Coal Creek Station*

Submitted to:

**Great River Energy**

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Submitted by:

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## 1.0 INTRODUCTION

This document serves as the notice of intent to close the Upstream Raise 92 Coal Combustion Residual (CCR) Surface Impoundment (Upstream Raise 92) at Great River Energy's Coal Creek Station located near Underwood, North Dakota. The purpose of this document is to comply with the notification and certification requirements in accordance with the Environmental Protection Agency (EPA) CCR rule, 40 CFR Part 257 (USEPA 2015).

Section 257.102(g) of the EPA CCR rule requires that a notification of intent to close a CCR unit be placed in the facility's operating record upon initiation of closure activities. This notification must also include a certification by a qualified professional engineer for the design of the final cover system as required by Section 257.102(d)(3)(iii), if applicable.

Upstream Raise 92 is a CCR surface impoundment that encompasses approximately 103 acres. It will be closed with CCR and other permitted material remaining in place in accordance with Section 257.102(d). Included with this document is a certification by a qualified professional engineer that the design of the final cover system to be used for Upstream Raise 92 meets the requirements of the federal CCR rule.

## 2.0 NOTICE OF INTENT TO CLOSE

Pursuant to Section 257.102(e)(1)(i):

*The owner or operator must commence closure of the CCR unit no later than 30 days after the date on which the CCR unit...receives the known final receipt of waste, either CCR or any non-CCR waste stream.*

The final receipt of CCR and non-CCR waste occurred on April 10, 2021.

Furthermore, in accordance with Section 257.102(e)(3)(i):

*Closure of the CCR unit has commenced if the owner or operator has ceased placing waste and...taken any steps necessary to implement the written closure plan required by paragraph (b) of this section;*

The written closure plan for Upstream Raise 92 (Golder 2016) indicates that the initial steps for closure include drainage and stabilization. The efforts associated with closure and drainage began shortly after final receipt of waste. The final waste and final cover grades presented in the current Upstream Raise 92 closure plan (Golder 2016) rely on combining the closure grades of Upstream Raise 92 with adjacent CCR units. Due to recent changes in the EPA CCR rule, the ability to proceed with this combined closure grading plan may not be possible. Once the EPA finalizes its decisions that affect the final closure grading of Upstream Raise 92 and the adjacent facilities, the final grades will be revised as appropriate, and the closure plan updated. In addition, Upstream Raise 92 is regulated by the North Dakota Department of Environmental Quality (NDDEQ), and a revised closure plan will be submitted to and approved by the NDDEQ once compliance with the EPA CCR rule has been established.

Section 257.102(g) requires the following:

*No later than the date the owner or operator initiates closure of a CCR unit, the owner or operator must prepare a notification of intent to close a CCR unit. The notification must include the certification by a qualified professional engineer for the design of the final cover system as required by §257.102(d)(3)(iii), if applicable. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by §257.105(i)(7).*

The purpose of this document is to serve as the Notice of Intent to Close Upstream Raise 92. The above-referenced certification by a qualified professional engineer for the design of the final cover system is provided in Section 5.0.

### 3.0 CONSTRUCTION SCHEDULE

Pursuant to Section 257.102(f)(1)(ii):

*Except as provided for in paragraph (f)(2) of this section, the owner or operator must complete closure ...for existing and new CCR surface impoundments, within five years of commencing closure activities.*

Closure activities for Upstream Raise 92 will be completed in accordance with the closure plan and within five years after commencing closure activities, or as allowed through a closure extension demonstration in accordance with Section 257.102(f)(2)(i). Closure activities to be completed during this time include drainage and stabilization of CCRs, placement of beneficial use CCR (or other non-waste material) to achieve required crown slopes, regrading of final waste slopes after drainage and stabilization of CCR material, preparation of bid documents and solicitation of contractor's bids, installation of the final cover system, and preparation and submittal of as-built documents and certifications as required under Section 257.102(f)(3) and the engineering design and operations plan for the facility.

An extension of the closure timeframe may be pursued in accordance with Section 257.102(f)(2)(i) due to factors such as:

- Drainage and consolidation of the CCR materials may occur slowly and may limit the areas of Upstream Raise 92 that are able to be covered within the five-year time period due to detrimental effects settlement of this material may have on the constructed final cover system.
- The quantity of soil materials to be identified and borrowed from on-site resources as well as constraints on the resources (such as labor, equipment, and materials) may slow construction progress and extend the closure period beyond five years.

### 4.0 FINAL COVER SYSTEM DESIGN CERTIFICATION

#### 4.1 Design Requirements

Pursuant to Section 257.102(d)(3):

*If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.*

An alternative final cover system outlined in Section 257.102(d)(3)(ii) requires the following:

- The design of the final cover system must include an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (d)(3)(i)(A) and (B) of this section.
  - (d)(3)(i)(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  centimeters per second (cm/sec), whichever is less.
  - (d)(3)(i)(B) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.
- The design of the final cover system must include an erosion layer that provides equivalent protection from wind or water erosion as the erosion layer specified in paragraph (d)(3)(i)(C) of this section.

- The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

## 4.2 Final Cover Design

The bottom liner system for the west side of Upstream Raise 92 consists of two feet of compacted clay rich material with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec, overlain with a 40-mil high-density polyethylene (HDPE) geomembrane liner. The bottom liner system for the east side of Upstream Raise 92 consists of (from bottom to top) several feet of natural clay liner soil, historically placed and regraded CCRs and soil, one foot of compacted clay rich material with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec, and a 60-mil linear low density polyethylene (LLDPE) geomembrane liner.

Section 257.102(d)(3)(ii) allows for the use of an alternative final cover system design, provided the alternative final cover system is designed and constructed to provide equivalent performance as the prescriptive final cover system with respect to infiltration, erosion, settling, and subsidence. The final cover system for Upstream Raise 92 meets the alternative final cover system requirements with the following components (from bottom to top):

- a 30-inch-thick infiltration layer consisting of clay-rich soil to store moisture and support plant rooting
- a 6-inch-thick erosion layer consisting of topsoil to sustain native plant growth

Disruption of the integrity of the final cover system will be inhibited by dewatering and compacting the underlying CCRs to establish a firm and unyielding subgrade prior to installation of the final cover system and by establishing maximum slopes of 25% and minimum slopes of 3% to provide positive drainage off the facility, limit ponding, and mitigate the potential effects of settling and subsidence.

An alternative final cover demonstration was completed for Upstream Raise 92 in 2020 (Golder 2020).

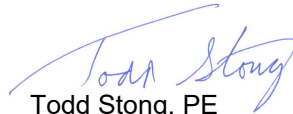
## 5.0 CERTIFICATION

The undersigned attest to the completeness and accuracy of this notice of intent to close Upstream Raise 92 at Coal Creek Station and certify that the final cover system design for Upstream Raise 92 meets the requirements of 40 CFR 257.102(d)(3)(i).

**Golder Associates Inc.**



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TJS/CCS/mp

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## 6.0 REFERENCES

Golder (Golder Associates Inc.). 2016. Closure and Post-Closure Plan – Upstream Raise CCR Surface Impoundment – Coal Creek Station – Great River Energy. October 13, 2016.

Golder (Golder Associates Inc.). 2020. Alternative Final Cover Demonstration for Coal Combustion Residuals Landfill and Surface Impoundments at Great River Energy's Coal Creek Station. May 5, 2020.

USEPA (United States Environmental Protection Agency). 2015. Code of Federal Regulations Title 40 Part 257: Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities. April 17.



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