

# CLOSURE PLAN

**CFR 257.102(b)**

Waste Water and Sludge Pond

Oklaunion Power Station  
Vernon, Texas

October, 2016  
Amended May 2021

Originally Prepared for: Public Service Company of Oklahoma  
Amended for: Oklaunion Industrial Park, LLC

Originally Prepared by: American Electric Power Service Corporation  
1 Riverside Plaza  
Columbus, OH 43215

Amended by: Civil & Environmental Consultants, Inc.  
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Texas Registered Engineering Firm F-38

## PROFESSIONAL ENGINEER CERTIFICATION

This Closure Plan fulfills the CCR Rule Closure requirements for a Written Closure Plan in §257.102(b).

I, M. Zahirul Islam, Ph.D., P.E., a registered professional engineer in the State of Texas certify that this Closure Plan for the Oklaunion Power Station Pond 6 fulfills the requirements of §257.102(b). This certification is based on my review of the amended Oklaunion Pond 6 Closure Plan.

M. Zahirul Islam

Printed Name of Professional Engineer

M. Zahirul Islam

Signature

109989

Registration No.

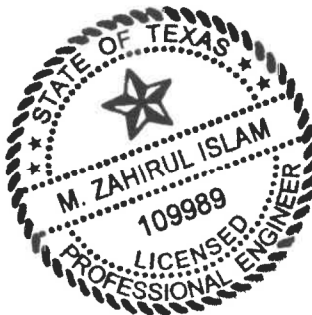
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Registration State

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## **1.0 OBJECTIVE**

This report was originally prepared by AEP- Geotechnical Engineering Services (GES) section to fulfill requirements of CFR 257.102(b) for Closure Plans of Existing Unlined CCR Surface Impoundments. This Closure Plan has been amended by Civil & Environmental Consultants, Inc. to identify the new owner and operator of the Oklaunion Power Station, Oklaunion Industrial Park, LLC and to include an option to construct the final cover system with a compacted clay soil component. Following completion of the final design documents, this Closure Plan will be amended again.

## **2.0 DESCRIPTION OF THE CCR UNIT**

The Oklaunion Power Station is located near the City of Vernon, Texas. The Waste Water and Sludge Pond (WWSP) is one of five surface impoundments used for disposal of CCR. The WWSP is located within the main evaporation pond complex of the generating station. It is a side hill embankment and is approximately 25 feet in height. The pond was constructed as a continuous upground earthen embankment with 3H:1V inboard and outboard slopes and crest width of 20 feet. The WWSP does not have any outlet structures or spillways and relies on evaporation to remove water from the impoundment. The impoundment retains the wastes until it is sufficiently dry to be hauled away and landfilled.

## **3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)**

***[A narrative description of how the CCR unit will be closed in accordance with this section]***

WWSP will be closed by closure in place. The closure will consist of re-grading the existing onsite materials and the installation of a final cover system with vegetative cover. The existing surface will be graded to achieve a gently sloping surface to promote surface water runoff. The regraded surface will be covered with the final cover system. The surface soil will be seeded and mulched to promote the growth of a vegetative cover.

## **4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii)**

***[If closure of the CCR unit will be accomplished by leaving the 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.]***

The final cover system will include either a 24-inch compacted clay soil or a flexible geomembrane that will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than  $1 \times 10^{-5}$  cm/sec. Installed over the compacted clay soil or geomembrane will be an infiltration layer consisting of 18 inches of earthen material and an erosion layer consisting of 6 inches of earthen material that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slope will be a minimum of 2% and will convey water to a NPDES permitted outfall.

Prior to installation of the final cover system the impoundment will be drained of the free water within the ash and soil material will be regraded to provide a stable subgrade.

## **4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1)**

### **4.1.1 SECTION 257.102(d)(1)(i)**

*[Control, minimize or eliminate, the maximum extent possible extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.]*

The final cover system will cover the CCR material and will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than  $1 \times 10^{-5}$  cm/sec.

### **4.1.2 SECTION 257.102(d)(1)(ii)**

*[Preclude the probability of future impoundment of water, sediment, or slurry.]*

The impoundment will be gently graded to a minimum slope of 2% to prevent the ponding of water sediment or slurry.

### **4.1.3 SECTION 257.102(d)(1)(iii)**

*[Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.]*

The final cover system will be gently graded with a minimum 2% slope. The final configuration of the impoundment will meet the stability requirements to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.

### **4.1.4 SECTION 257.102(d)(1)(iv)**

*[Minimize the need for further maintenance of the CCR unit.]*

The impoundment will be vegetated to prevent erosion. Maintenance of the final cover system will include mowing.

### **4.1.5 SECTION 257.102(d)(1)(v)**

*[Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.]*

The CCR unit will be closed in a timeframe consistent with recognized and generally accepted good engineering practices. Initiation of closure began by May 11, 2021 and will comply with the schedule in 40 CFR 257.102(e)(2)(i).

## **4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT**

### **257.102(d)(2)**

*[The owner or operator of a CCR surface impoundment of any lateral expansion of a CCR surface impoundment must meet the requirements of paragraph (d)(2)(i) and (ii) of this section prior to installing the final cover system required under paragraph (d)(3) of this section.]*

### **4.2.1 SECTION 257.102(d)(2)(i)**

*[Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes]*

***and waste residue.]***

As part of closure of the CCR unit, free water will be removed.

#### **4.2.2 SECTION 257.102(d)(2)(ii)**

***[Remaining waste must be stabilized sufficient to support the final cover system.]***

The remaining waste that make up the subgrade of the final cover system will be stabilized by removal of free liquids and providing bridging as necessary.

#### **4.3 FINAL COVER SYSTEM 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 desgined 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.***

***The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan.]***

The final cover system will include either a 24-inch compacted clay soil or flexible geomembrane that will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than  $1 \times 10^{-5}$  cm/sec. Installed over the compacted clay soil or geomembrane will be an infiltration layer consisting of 18 inches of earthen material and an erosion layer consisting of 6 inches of earthen material that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slope will be a minimum of 2% and will convey water to a NPDES permitted outfall. The final cover slope will be a minimum of 2% to accommodate settling and subsidence.

#### **5.0 ESTIMATE OF MAXIMUM CCR VOLUME 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 CCR volume ever on-site is 477 acre-feet.

#### **6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v)**

***[An estimate of the largest area of CCR unit ever requiring a final cover***

The largest area of the CCR unit ever requiring a final cover is 22.6 acres.

#### **7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi)**

***[A schedule for completing all activities necessary to satisfy the closure criteria in the section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of the CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of the CCR***

***unit closure.***

Initiation of closure began by May 11, 2021 and will comply with the schedule in 40 CFR 257.102(e)(2)(i).