

Prepared for



Tampa Electric Company
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CLOSURE PLAN ECONOMIZER ASH AND PYRITES PONDS AND WEST SLAG DISPOSAL POND

**BIG BEND STATION
Apollo Beach, Florida**

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1 INTRODUCTION

1.1 Site Background

Tampa Electric Company (TEC) operates the Big Bend Station (BBS) located at 13031 Wyandotte Road, Apollo Beach, Florida 33572 (Site). The property is located on Tampa Bay, with the center of the facility at approximately 27°47'36" north latitude and 82°24'16" west longitude and encompasses approximately 1,492 acres.

Construction of BBS began in the late 1960s on two dredge/fill peninsulas. Four coal-fired power generating units are present at the BBS and were placed in service in 1970, 1973, 1976, and 1985. Units 1, 2, and 3 are wet-bottom slag-tap type units that originally used saltwater slag-handling systems and electrostatic precipitators for stack gas emissions control. However, these units are now operating as freshwater systems, subsequently allowing more internal water recycling. Unit 4 is a dry-bottom unit with a closed-loop freshwater bottom ash-slucice system. All units are equipped with electrostatic precipitators and stack gases are treated with a limestone flue gas desulfurization (FGD) system.

The BBS also operates a combustion turbine with a capacity of 62 megawatts (MW). This natural gas- and fuel oil-fired peaking unit was installed in 2009 to provide additional power during periods of peak demand. The BBS peak generating capacity is approximately 1,800 MW produced by the four primary generating units.

1.2 Purpose and Scope of Plan

The purpose of this Closure Plan (Plan) is to describe the proposed closure process for the regulated BBS Coal Combustion Residual (CCR) disposal units as required by the *40 CFR Part 257, Subpart D; Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments*. This plan also provides Tampa Electric's notice of intent to close and/or retrofit the Economizer Ash and Pyrites Ponds (EAPP) and the West Slag Disposal Pond (WSDP) under the provisions of Sections 257.101 and 257.102 of the rule.

1.3 Plan Organization

The remainder of this Plan is organized as follows:

- The regulatory framework for closure of the CCR areas is presented in Section 2;
- Details of the closure plans for the EAPP and WSDP areas are presented in Section 3;
- Certification requirements are presented in Section 4;
- References are provided in Section 5.

2 REGULATORY FRAMEWORK

2.1 Overview

The Federal CCR Rule [USEPA, 2015] was published in the Federal Register on April 17, 2015. This rule regulates CCR as a nonhazardous waste under Subtitle D of the Resource Conservation and Recovery Act (RCRA). The effective date of the rule is October 19, 2015. Most of the regulatory deadlines are set from the date the rule was published.

2.2 Written Closure Plan Requirements (§257.102(b)(1)(i-vi))

§257.102(b)(1) paragraphs (i) through (vi) prescribe the requirements for the Closure Plan. The information for the WSDP and EAPP are provided below.

2.2.1 **Narrative Description (§257.102 (b)(1) (i))**

According to Section §257.102 (b)(1) (i), the written closure plan must include “A *narrative description of how the CCR unit will be closed in accordance with this section*”.

A description of the steps necessary to close both the EAPP and WSDP areas consistent with recognized and generally accepted good engineering practices is provided in Section 3.

2.2.2 **Description of Removal Procedures (§257.102 (b)(1) (ii))**

According to Section §257.102 (b)(1) (ii), if the CCR is to be removed the written closure plan must include “...*a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section*”.

In addition, Section §257.102 (c) states: “*Closure by removal of CCR. An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part*”.

A description of the steps necessary to close both the EAPP and WSDP units consistent with recognized and generally accepted good engineering practices is provided in Sections 3.1.1 to 3.1.8.

2.2.3 **Description of Procedures – Leaving CCR in Place (§257.102 (b)(1) (iii))**

Section §257.102 (b)(1) (iii) states: “*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 section of the rule is not applicable since the closure of both management units covered under this plan will be accomplished by the removal of the CCRs.

2.2.4 Estimate of Maximum Inventory (§257.102 (b)(1) (iv))

According to Section §257.102 (b)(1) (iv), the written closure plan must include “*An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit*”.

The quantities estimated for both the EAPP and WSDP are presented in Section 3.2.

2.2.5 Estimate of Largest Area (§257.102 (b)(1) (v))

According to Section §257.102 (b)(1) (v), the written closure plan must include “*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*”.

This section of the rule is not applicable since the proposed closure plan will be accomplished by the removal of CCRs.

2.2.6 Schedule (§257.102 (b)(1) (vi))

According to Section §257.102 (b)(1) (vi), the written closure plan must include “*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.*”

A schedule with an estimate of the start and finish dates for all anticipated activities related to closure is provided in Section 3.3.

2.3 Notice of Intent to Close CCR Units under §257.101(b)(1)

Section 257.101(b)(1) states that “Except as provided by paragraph (b)(4) of this section, within six months of determining that an existing CCR surface impoundment has not demonstrated compliance with any location standard specified in §§257.60(a), 257.61(a), 257.62(a), 257.63(a), and 257.64(a), the owner or operator of the CCR surface impoundment must cease placing CCR and non-CCR wastestreams into such CCR unit and close the CCR unit in accordance with the requirements of §257.102.” Data collected during Tampa Electric’s groundwater monitoring programs for the EAPP has demonstrated that the bottom of the system is less than five feet from the seasonal high water table (i.e. “uppermost aquifer”) at the site and therefore does not meet the location restriction for a five-foot separation between the bases of the units and the uppermost aquifer under §257.60(a). Consequently, this impoundment is required to close, as stated above.

In 2008, Tampa Electric elected to inactivate the West Slag Disposal Pond. This project entailed cessation of receipt of CCR (slag) into the pond and routed the slag to a closed loop slag dewatering

bin system. Material existing in the pond was not completely removed but was excavated to an elevation approved by Florida Department of Environmental Protection. The pond was then used to collect and route stormwater generated from the coal field. Upon the enactment of the CCR rule, TEC has determined that it will close this inactive impoundment as a complete removal of the CCRs had not been done when the pond was closed to additional CCR storage. Data reviewed during Geosyntec's demonstrates that the bottom of the pond is less than five feet from the seasonal high water table (i.e. "uppermost aquifer") at the site and therefore does not meet the location restriction for a five-foot separation between the bases of the units and the uppermost aquifer under §257.60(a). Consequently, this impoundment is required to close.

By posting this Written Closure Plan in the Big Bend CCR operating record, Tampa Electric hereby provides notice of its intent to commence closure as of this date and to close both CCR management units covered under this plan under the provisions of §257.101(b)(1). The receipt of CCRs in the EAPP will cease not later than April 19, 2017, in accordance with the provisions of §257.102(e)(1). Additional information on the schedules for closures of both units is provided in Section 3.3.

3 CLOSURE PLAN

3.1 Closure Overview

A variety of options are available for closure of CCR units. These may include capping, excavation and on- or off-site disposal, beneficial re-use, or a combination of these. Neither the economizer ash contained in the EAPP nor the slag contained in the WSDP meet customer specifications for beneficial use. Therefore, both the EAPP and WSDP will be closed by removal of CCRs in accordance with the provisions of §257.102(c), stated as follows:

“An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.” All removed CCRs will be hauled to a permitted offsite landfill for disposal. Groundwater monitoring will be performed in accordance with the EPA groundwater monitoring plan pursuant to the applicable provisions of §§257.93-95.

Closure of the EAPP will include the following steps:

- Dewater CCR units using appropriate methods.
- Visually inspect and remove all CCRs by excavation or dredging as appropriate and haul to a permitted off-site landfill;
- Remove all geomembrane liner material and haul to a permitted offsite landfill for disposal;
- Decontaminate the area as necessary to meet §257.102 (c);
- Remove earthen containment berms down to natural ground and regrade area. The final surface will be seeded or sodded to provide stable vegetative cover; and
- Monitor groundwater until groundwater concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.

Closure of the WSDP will include the following steps:

- Dewater the WSDP using appropriate methods
- Visually inspect and remove all CCRs from the WSDP as necessary to meet requirements of Section §257.102 (c) and haul to a permitted offsite landfill for disposal;
- Backfill and grade bottom of impoundment;

- Install liner; and
- Monitor groundwater until groundwater concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.

These components of the proposed pond closure will be submitted in more detail in the Final Closure Plan.

3.2 Maximum CCR Volumes (§257.102 (b)(iv))

A variety of existing engineering information, including design plans, surveys and soil/CCR boring data, was available to assist with the estimation of the maximum CCR volumes stored in both the EAPP units and the WSDP, as required by §257.102 (b)(iv). Information and measurements gathered by Geosyntec during site visits were also used to verify current conditions in both areas and Table 1 below provides the estimated maximum quantities for each CCR unit.

Table 1. Estimated Quantities of Material to be Removed During Closure

Area	Volume (cy)	Type of CCR
EAPP	430,000	Economizer Ash
WSDP	57,000	Boiler Slag

3.3 Project Schedule

An estimate of the start and finish dates for all anticipated activities related to closures of the EAPP and the WSDP are provided in Tables 2a and 2b below.

Table 2a. EAPP Project Schedule

Activity	Start Date	End Date
Closure Plan Development	November 2016	June 2017
FDEP Plan Review/Approval	June 2017	October 2017
Dewatering	October 2017	October 2018
Removal of CCRs and Liner	March 2018	October 2018
Remove Earthen Containment Berms	October 2018	December 2018
Groundwater Monitoring	December 2018	Until verification that Appendix IV groundwater protection standards met

Table 2b. WSDP Project Schedule

Activity	Start Date	End Date
Closure Plan Development	November 2016	June 2017
FDEP Plan Review/Approval	June 2017	October 2017
Dewatering	October 2017	October 2018
Removal of CCRs	March 2018	October 2018
Grading and Install Liner	October 2018	December 2018
Groundwater Monitoring	December 2018	Until verification that Appendix IV groundwater protection standards met

4 CERTIFICATION

Section §257.102 (b)(4) of CCR rule prescribes that *“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 this section”*.

I, Todd D. Anderson, being a Registered Professional Engineer, in accordance with the State of Florida Professional Engineer’s Registration, possessing the technical knowledge and experience to make the specific technical certifications required under 40 C.F.R Part 257, Subpart D, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, and being licensed in the state where the subject CCR units are located, do hereby certify to the best of my knowledge, information, and belief, that this written closure plan meets the requirements of 40 C.F.R. § 257.102(b).



Professional Engineer's Signature

STATE OF FLORIDA
Professional Engineer

October 19, 2016
Date

5 REFERENCES

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