BIG BEND STATION
COALFIELD STORMWATER RUNOFF (SLAG SETTLING) POND CLOSURE PLAN

Prepared for

Tampa Electric Company
13031 Wyandotte Rd.
Gibsonton, Florida 33534

Prepared by

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Florida Board of Professional Engineers Certificate of Authorization No. 5392

Wood Project No. 300996x1

October 2018
Engineering Certification

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Wood Environment & Infrastructure Solutions, Inc., 1101 Channelside Drive, Suite 200, Tampa, FL 33602, a corporation authorized to operate as a business providing engineering consulting services (5392) by the State of Florida Department of Professional Regulation, Board of Engineers. I further certify that I, or others under my direct supervision, have prepared the geotechnical engineering evaluations, findings, opinions, calculations, conclusions or technical advice hereby represented in this report.

SIGNATURE: 

NAME: Tanel Nuriye-Esin Andry, P.E. 

LICENSE NO: 56775 

Date: October 3, 2018 

Report Title: 

Big Bend Station 
Coalfield Stormwater Runoff (Slag Settling) Pond 
Closure Plan 

Tampa Electric Company 

October 2018 

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1.0 **INTRODUCTION**

Tampa Electric Company (TEC) is planning to excavate the existing coal combustion residual by-product slag from the pond formerly known as the West Slag Dewatering (and Settling) Pond at their Big Bend Station located at 13031 Wyandotte Road, Apollo Beach, Florida. This pond is now utilized as a stormwater pond for runoff from the Station’s coalfield.

As part of this work, TEC intends to follow the general closure requirements of Part 257.102(c) of the Federal CCR rule 40 CFR Part 257 entitled “Disposal of Coal Combustion Residuals from Electric Utilities”. TEC plans Closure by removal of the slag within the pond embankments to meet the intent of the requirements. After slag removal, the pond bottom will be raised to achieve separation from the groundwater and the pond will be lined to remain in use for stormwater runoff from the coal pile. This document presents the written closure plan for the removal of CCR and construction of a lined system and generally follows the requirements of 40 CFR Part 257.102(b). The proposed construction plans for the CCR removal and pond lining are included in Appendix A and a site location map and aerial views are presented in the construction plans.

2.0 **SITE DESCRIPTION**

The CSRP is an approximately 3.5-acre unlined pond that was previously used as a disposal area for boiler slag from the burning of coal and was converted for use as a stormwater pond in 2009. The peninsula on which the Big Bend Station coal storage area and CSRP are located was constructed of reclaimed dredge spoils. The CSRP receives stormwater runoff from the coal storage area through a series of ditches. The East Coal Field Sump (ECFS) which contains three 2,000 gpm pumps is located on the southeast corner of the existing pond; discharging into the Economizer Ash & Pyrite (EAPP) Suction pond located in the southern portion of the site. The Suction Pond will be demolished and pipe discharges will be routed directly to the Long-Term Flash Stormwater Pond (LTFAP).

3.0 **CLOSURE PLAN**

3.1 **Project Description**

The existing pond will be removed from service during construction. This project will require removal of stormwater from the pond and dewatering to an elevation that allows for removal of the residual slag, and construction of a lined pond system to hold stormwater runoff generated from the coal storage area (coalfield) in the future. Wood Environment & Infrastructure Solutions, Inc. (Wood) has developed construction plans for implementation of the CSRP closure. The proposed construction plans are in **Appendix A**. The project will involve raising the pond bottom
from approximately elevation +3 ft to +4.5 ft using the TEC Plant Vertical Datum (Plant Datum) which will require modifications to the ECFS.

### 3.2 Closure Process

The surface water in the existing pond will first be pumped out and temporary pumping equipment will be used to route stormwater directly into the ECFS. Dewatering will then be required to lower the groundwater 2 ft to 3 ft below the bottom of excavation (or to approximate elevation 0 ft to -1.0 ft., Plant Datum. Based on historical water table elevation data, this should allow removal of all slag and still leave separation between the bottom of the excavation and the groundwater to allow placement of new fill, however, special measures such as light weight equipment may be required to place the initial lifts.

Once the pond is dry and water diverted, the CCR (slag) throughout the pond will be removed and temporarily stockpiled in the coalfield to drain/dewater back into the perimeter coalfield ditch. Once the stockpiled slag has dried sufficiently, it will be hauled to a permitted off-site landfill facility for disposal. After removal of all slag, an additional one foot of soil will be excavated (to an approximate elevation of +2.0 feet TPD) from the pond bottom in preparation for backfilling to the final pond bottom elevation of approximately +4.5 feet, Plant Datum. Existing stormwater conveyance piping from the coalfield perimeter ditch to the CSRP (three 24-inch diameter and one 15-inch diameter RCP pipes) will also be removed and disposed of at an off-site landfill. Drainage from the coalfield ditch to the CSRP will be conveyed via a newly installed settling sump and weir at the pond’s western edge. This sump has been designed to collect potential coal fines prior to the stormwater transference into the pond. The concrete sediment collection sump has been designed to allow TEC to routinely clean and remove the sediment. Stormwater will be conveyed into the sump from the existing ditch system and a proposed 24” diameter RCP under an existing ditch crossing adjacent to the sump. (Reference Drawings 349-FY-8AE, 349-FC-23AF, 349-FC-23AG, 349-FC-23AH) Stormwater will flow from the CSRP embankment through four (4) 24-inch HDPE DR-11 pipes. The pipe penetrations will be booted and welded to the HDPE liner lining the slopes of the pond.

Once the pond bottom and slopes have been verified to be clear of slag material (See Section 3.3 below), imported fill will be used to regrade the pond bottom and berms. The final pond shall consist of a minimum 15-foot-wide crest at a minimum elevation of +11 feet, Plant Datum. The interior slopes of the pond will be graded to a 3 horizontal to 1 vertical (3H:1V) slope. The pond floor is designed to be at an elevation of 4.5 feet, Plant Datum, or 1 foot above the design anticipated high groundwater elevation of +3.5 feet. After completion of grading to the design elevation, the pond will be lined with 80-mil (2mm) HDPE geomembrane liner.
(The intakes for the ECFS currently consist of three 3 ft by 3 ft square openings between elevation +3 ft and +6 ft, Plant Datum. The proposed pond bottom elevation of 4.5 ft would encroach on the bottom half of these openings. Therefore, a modification consisting of a concrete weir box will be attached to the wall of the sump to allow the existing openings to remain in their current configuration. Drawing 349-FC-23AE shows the details of the proposed sump modification.)

3.3 Confirmation of Removal

Section 257.102(c) of the CCR Rule 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.” As previously described in 3.2 above, TEC or its representative will inspect the bottom of pond prior to placement of new fill to confirm CCR removal. Confirmation of slag removal will be made visually. Post closure care for this facility will consist of stabilization of all disturbed areas by seeding or sodding.

3.4 CCR (slag) Quantity

Wood used a survey of the pond together with results of soil testing to develop and opinion of probable volume of slag material to be removed. The existing pond bottom surface was based on a March 2017 site bathymetric survey performed by George F. Young, Inc. of St. Petersburg, FL. In April 2018, S&ME completed 35 vibracores and three standard penetration test (SPT) borings within the pond embankments. The April 2017 “Report of Geotechnical Engineering Services” by S&ME included logs of the borings documenting slag thicknesses encountered in each of the 38 borings.

Wood compiled the survey data together with the slag thicknesses to develop a bottom of CCR (slag) surface. The two surfaces (existing bottom and interpreted bottom of slag) imported into AutoCAD Civil 3D, and the volume of slag was calculated as the difference. Based on this information, a total slag volume of 11,500 cubic yards was calculated within the pond embankments. Additional material below the slag will likely be removed as part of the construction process. One additional foot of excavation would result in approximately 6,000 cubic yards of material. Given inherent uncertainties associated with the input information and calculation, we anticipate that the actual volume may vary from these estimates. Experience with estimating volumes based on boring data suggests a potential contingency of +/- 20 percent would be prudent. Note that this volume likely includes small pockets of accumulated pond
sediment and other non-slag material within irregularities at the interface of the slag and subsurface soils. Any such areas will be over excavated to ensure the removal of all CCR material from the pond bottom.

No information on the in-situ density or moisture content of the slag and non-slag materials to be excavated is available. Therefore, only a very approximate conversion of volume to weight can be made. We anticipate that the slag in the pond was placed without compaction and is, therefore, in a relatively loose or low-density condition that may approximate the loose density it will have during transport. The moisture content during transport will impact the weight for hauling. Therefore, the material will be stacked within the coalfield and drained sufficiently to allow for proper loading and transport to the landfill.

3.5 Pond Capacity

The proposed construction will include raising the bottom of pond elevation from approximately 3.0 ft. to 4.5 ft. (Plant Datum). The perimeter berms will also be raised from minimum elevation +9.6 ft. to +11 ft. (Plant Datum). The existing pond capacity was calculated by assuming a minimum freeboard of 2 feet below the lowest point of the existing embankments, with an assumed maximum water level within the existing pond of elevation 7.6 ft. Based on these criteria, the existing pond was estimated to have a storage capacity of 5.1 million gallons (MG). With the berms at elevation +11 ft, the assumed maximum water level for the proposed pond configuration is assumed to be elevation 9 ft. Based on these criteria, the proposed pond capacity is estimated to be 5.3 MG.

The increase in pond capacity can be attributed to the design increase in crest elevation for the pond embankments.

3.6 Project Schedule

Based on the proposed construction plans, construction of the project is estimated to take four months to complete. No contingencies were taken into consideration for weather related delays. Based on a “Dewatering Plan Evaluation” completed by Wood (under the predecessor name of Amec Foster Wheeler) in August 2017, it is recommended this work take place during the “Dry” season (November to April). Therefore, the project is expected to commence in November 2018 and to be complete by March 1, 2019. Post closure care will commence immediately upon construction completion and groundwater monitoring will commence on April 1, 2019. Groundwater monitoring will be performed semi-annually for two years to verify that groundwater protection standards have been met, as required by Part 257.102(c).
4.0 **STORMWATER MANAGEMENT**

Tampa Electric will submit a Notice of Intent to Use NPDES Generic Permit For Stormwater Discharge From Large And Small Construction Activities at least 72 hours prior to project initiation. TEC’s contractor will certify conformance with the permit and the Stormwater Pollution Prevention Plan (SWP3) for the project. The SWP3 will specify the siltation controls and measures to prevent offsite siltation from the project. These may include silt screens, hay bales, trackout pads or other measures to prevent escape of silt from the site. A Notice of Termination will also be submitted at the end of the project upon completion of site stabilization.

5.0 **REFERENCES**


APPENDIX A

Proposed Construction Plans
CONSTRUCTION PLANS FOR:
TAMPA ELECTRIC COMPANY
BIG BEND COALFIELD STORMWATER RUNOFF (SLAG SETTLING) POND
TAMPA, HILLSBOROUGH COUNTY, FLORIDA
ISSUED FOR CONSTRUCTION
AMEC PROJECT NUMBER: 300996e1
June 20, 2018

SOURCE: APOLLO BEACH FLORIDA, FLORIDACORP. (NOT TO SCALE)

SITE LOCATION MAP
HILLSBOROUGH COUNTY, FLORIDA
SECTION 9, TOWNSHIP 11 SOUTH, RANGE 19 EAST

INDEX OF DRAWINGS

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ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN PROCESSED IN SCALE ON SHEET 2 OF SHEETSET. THIS MAY BE CONSIDERED UNINFORMED SCALE DATA.

CONSTRUCTION PLANS ARE AVAILABLE IN AUTOCAD
FOUNDATION PLAN ONLY. ALL OTHER DRAWINGS WILL BE IN THE COMMISSION'S OFFICE.

REVISION REVISES: THIS PLAN IS A REVISED PLAN
IN THE PROJECT OF THE PROPOSED PROJECT WITH AMEC FOSTER WHEELER ENVIRONMENTAL & INFRASTRUCTURE, INC. A CORPORATION AUTHORIZED TO OPERATE AS A PROFESSIONAL ENGINEERING CORPORATION BY THE STATE OF FLORIDA BOARD OF PROFESSIONAL ENGINEERS. IT FURTHERS CERTIFIES THAT IT, OR OTHERS UNDER ITS DIRECT AUTHORITY, HAVE CONDUCTED ENGINEERING EVALUATION, FINDING, SIGNING, SEALING OR TECHNICAL ADVISE RELEVANT TO THESE PLANS.

REGISTERED IN THE STATE OF FLORIDA AS A PROFESSIONAL ENGINEER.

DATE: 343-FY-008
GENERAL GUARDRAIL
INSTALLED ELEVATION

INSTALLED PLAN

GENERAL, TL-3 GUARDRAIL DETAILS