Stantec Consulting Services Inc.
3052 Beaumont Centre Circle, Lexington KY 40513

March 26, 2018
File: rpt_004_let_175666001
Revision 0

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

RE: Wetlands
New CCR Landfill
TVA Shawnee Fossil Plant
Paducah, McCracken County, Kentucky

1.0 PURPOSE

As described in 40 CFR § 257.61(a), an owner or operator of a new CCR landfill is required to demonstrate that the unit is not located in wetlands unless the unit meets certain requirements. This letter documents Stantec's certification that the new CCR landfill at the TVA Shawnee Fossil Plant (SHF) complies with the location restrictions for wetlands in the EPA Final CCR Rule at 40 CFR § 257.61(a).

2.0 SUMMARY OF FINDINGS

The attached demonstration documents that the new CCR landfill meets the requirements set forth in 40 CFR § 257.61(a).

3.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, Michael J. Steele, being a Professional Engineer in good standing in the Commonwealth of Kentucky, do hereby certify, to the best of my knowledge, information, and belief:

1. that the information contained in this certification is prepared in accordance with the accepted practice of engineering;

2. that the information contained herein is accurate as of the date of my signature below; and

3. that the TVA Shawnee New CCR Landfill meets the requirements specified in 40 CFR § 257.61(a).

RE: **Wetlands**
New CCR Landfill
TVA Shawnee Fossil Plant
Paducah, McCracken County, Kentucky

SIGNATURE _____ DATE 3/26/2018

ADDRESS: Stantec Consulting Services Inc.
3052 Beaumont Centre Circle
Lexington, Kentucky 40513

TELEPHONE: (859) 422-3000

ATTACHMENTS: Wetlands Demonstration

STATE OF KENTUCKY
MICHAEL J. STEELE
23731
LICENSED PROFESSIONAL ENGINEER

Wetlands Demonstration

New CCR Landfill
TVA Shawnee Fossil Plant
Paducah, McCracken County,
Kentucky

Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

Prepared by:
Stantec Consulting Services Inc.
Lexington, Kentucky

March 26, 2018
Revision 0

Table of Contents

1.0 INTRODUCTION

On April 17, 2015, the "Disposal of Coal Combustion Residuals (CCR) from Electric Utilities" (EPA Final CCR Rule) was published in 40 CFR Parts 257 and 261 of the Federal Register. The Tennessee Valley Authority (TVA) retained Stantec Consulting Services Inc. (Stantec) to review the new coal combustion residual (CCR) landfill unit at the Shawnee Fossil Plant (SHF) for compliance with certain requirements of the EPA Final CCR Rule and, as appropriate, to provide a compliance demonstration report and certification of the wetlands location requirements for this CCR unit pursuant to the EPA Final CCR Rule 40 CFR § 257.61.

1.1 OBJECTIVE

As required by § 257.61 of the EPA Final CCR Rule, an owner or operator of new CCR landfills is required to demonstrate that the unit is not located in wetlands unless the unit meets certain requirements. The objective of this report is to document that the new CCR landfill complies with the location restriction for wetlands.

1.2 UNIT DESCRIPTION

SHF is a coal-fired, electric-generating plant. The plant is located in McCracken County, Kentucky, along the south shore of the Ohio River near river mile 946, just east of the confluence of Little Bayou Creek with the Ohio River.

The new CCR landfill will be located on the Shawnee East Site, which consists of about 205 acres that TVA acquired in 2016 next to the eastern boundary of the SHF reservation. The new CCR landfill will be constructed in three stages over a total footprint of 88 acres. The embankment will be about 115 feet tall with maximum 4H:1V slopes and will accommodate about 8 million cubic yards of CCR material (fly ash, bottom ash, and gypsum) across an estimated 25-year operational life.

2.0 CRITERIA AND DEMONSTRATION

The EPA Final CCR Rule § 257.61 requirements for wetlands are listed below in italics. A description of how the new CCR landfill meets these requirements follows.

> ***40 CFR § 257.61(a).*** *New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in wetlands, as defined in § 232.2 of this chapter, unless the owner or operator demonstrates by the dates specified in paragraph c) of this section that the CCR unit meets the requirements of paragraphs (a)(1) through (5) of this section.*

> ***40 CFR § 257.61(a)(1).*** *Where applicable under section 404 of the Clean Water Act or applicable state wetlands laws, a clear and objective rebuttal of the presumption that an alternative to the CCR unit is reasonably available that does not involve wetlands.*

As documented in the SHF Coal Combustion Residual Management 2017 Final Environmental Impact Statement (EIS), TVA's preferred alternative includes closing the existing Ash Impoundment 2 and former Special Waste Landfill and constructing a new landfill to dispose of dry CCR. In 2015, TVA conducted a siting study to evaluate potential locations for the disposal of dry CCR that will be produced at SHF after completion and commencement of operations of the new dewatering facility. Ultimately, one site for construction and operation of a new landfill was identified as the most feasible option. TVA acquired this site in 2016.

A wetlands survey was completed for the new CCR landfill site during October and November 2016. A total of 5.5 acres of wetlands were found within the 205-acre project area. Only one of the wetlands (0.7 acres) has been determined by the United States Army Corps of Engineers (USACE) to be jurisdictional, requiring a Section 404 permit if impacted. The remaining wetlands are distributed among 15 isolated areas that USACE determined are not Waters of the United States (WOTUS) and will not require a permit.

> ***40 CFR § 257.61(a)(2).*** *The construction and operation of the CCR unit will not cause or contribute to any of the following:*
>
> *(i) A violation of any applicable state or federal water quality standard;*
> *(ii) A violation of any applicable toxic effluent standard or prohibition under section 307 of the Clean Water Act;*

The landfill design provides for conveyance of discharges during construction and operation activities to Kentucky Pollutant Discharge Elimination System (KPDES) compliance points in accordance with Kentucky Water Quality Standards. Actions involving wetlands will be subject to requirements outlined in the federal Clean Water Act Section 404 permit. TVA will adhere to all conditions stipulated in this permit.

> *(iii) Jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Endangered Species Act of 1973;*

The United States Fish and Wildlife Services (USFWS) found that TVA's requirements under Section 7 of the Endangered Species Act have been fulfilled.

> (iv) *A violation of any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.*

Based on the definition of "marine" as set forth in 15 CFR § 922.3, the new CCR landfill site does not include any marine sanctuaries and therefore this requirement is not applicable.

40 CFR § 257.61(a)(3). *The CCR unit will not cause or contribute to significant degradation of wetlands by addressing all of the following factors:*

(i) Erosion, stability, and migration potential of native wetland soils, muds, and deposits used to support the CCR unit;

(ii) Erosion, stability, and migration potential of dredged and fill materials used to support the CCR unit;

TVA intends to to avoid impacts to defined wetlands if possible. However, because the activities involved in the proposed actions (i.e. construction of a landfill and an ancillary facility area) must be in close proximity to each other, there is no practicable alternative to certain activities which would avoid all impacts to wetlands, such as clearing, excavating, and grading.

Potential indirect impacts resulting from construction activities at the landfill site could include erosion and sedimentation from storm water runoff during construction into offsite or nearby jurisdictional and non-jurisdictional wetlands. A KDPES stormwater permit will be obtained for the site. Use of BMPs in accordance with a site-specific Stormwater Pollution Prevention Plan (SWPPP) will be implemented to reduce the potential for erosion and sedimentation.

(iii) The volume and chemical nature of the CCR;

The landfill is designed to accommodate about 8 million cubic yards of CCR (fly ash, bottom ash, and gypsum). Previous testing of SHF bottom ash and fly ash was conducted. TVA intends to characterize gypsum material for the operations of the selective catalytic reduction (SCR) and flue gas desulfurization (FGD) systems. The landfill includes a bottom liner system which is designed to contain CCR and leachate.

(iv) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of CCR;

The landfill is designed to meet stability (and containment) requirements outlined in the CCR Rule. During construction and operation, inspections will be conducted in accordance with the CCR Rule to inspect for appearances of actual or potential structural weaknesses. Dust control measures will be provided in accordance with the CCR Fugitive Dust Control Plan to reduce the potential for CCR from becoming airborne. Stormwater will be managed in accordance with the Run-on and Run-off Control System Plan to collect and control run-off from the landfill.

(v) The potential effects of catastrophic release of CCR to the wetland and the resulting impacts on the environment; and;

(vi) Any additional factors, as necessary to demonstrate that ecological resources in the wetland are sufficiently protected.

As stated above, the landfill is designed to meet stability (and containment) requirements outlined in the CCR Rule.

> ***40 CFR § 257.61(a)(4).*** *To the extent required under section 404 of the Clean Water Act or applicable state wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by first avoiding impacts to wetlands to the maximum extents reasonable as required by paragraphs (a)(1) through (3) of this section, then minimizing unavoidable impacts to the maximum extent reasonable, and finally offsetting remaining unavoidable impacts through all appropriate and reasonable compensatory mitigation actions (e.g. restoration of existing degraded wetlands or creation of manmade wetlands).*

In instances where impacts to wetlands cannot be avoided, regulatory requirements associated with the USACE Section 404 permitting program require mitigation sufficient to offset impacts. These mitigation measures will be clarified at the end of the consultation with the USACE.

> ***40 CFR § 257.61(a)(5).*** *Sufficient information is available to make a reasoned determination with respect to the demonstrations in paragraphs (a)(1) through (4) of this section.*

As stated above, the wetlands were defined with USACE concurrence. The landfill design is intended to satisfy CCR Rule requirements related to these wetlands.

3.0 CONCLUSION

Based on this assessment, the new CCR landfill located at SHF meets the requirements of § 257.61 of the EPA Final CCR Rule.

4.0 REFERENCES

Tennessee Valley Authority (2017). Shawnee Fossil Plant Coal Combustion Residual Management Final Environmental Impact Statement.