

September 16, 2021

Tennessee Valley Authority
1101 Market Street
Chattanooga
Tennessee, 37402-2801

**Subject: Engineer's Certification of Run-on/Run-off Control System Plan
North Rail Loop Landfill Cell 1
Tennessee Valley Authority Gallatin Fossil Plant
Gallatin, Tennessee**

1.0 PURPOSE

The purpose of this document is to certify that the Run-on/Run-off Control System Plan for the Tennessee Valley Authority (TVA) Gallatin Fossil Plant (GAF) North Rail Loop (NRL) Landfill Cell 1 is in compliance with the run-on and run-off controls requirements specified in 40 CFR § 257.81(c) of the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals Rule (CCR Rule).

2.0 BACKGROUND

In accordance with 40 CFR § 257.81(c), a Run-on/Run-off Control System Plan must be prepared for new and existing CCR landfills and lateral expansions of CCR landfill to document how the run-on and run-off control system has been designed and constructed to manage the 25-year, 24-hour storm.

The initial Cell 1 Run-on/Run-off Control System Plan was posted to TVA's operating Record on August 30, 2016. Pursuant to 40 CFR § 257.81(c)(4) of the USEPA CCR Rule, this Run-on/Run-off Control System Plan has been reviewed and updated.

3.0 SUMMARY OF FINDINGS

A Run-on/Run-off Control System Plan has been prepared consistent with 40 CFR § 257.81(c) and is provided in **Attachment A**. The Run-on/Run-off Control System Plan demonstrates that the NRL Landfill Cell 1 meets the requirements set forth in 40 CFR § 257.81(a) and 40 CFR § 257.81(b).

4.0 CERTIFICATION

I, David E. Skeggs, being a Professional Engineer in good standing in the State of Tennessee, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering; that the information contained herein is accurate as of the date of my signature below; and that the North Rail Loop Landfill Cell 1 meets the requirements of 40 CFR § 257.81.

SIGNATURE: _____


David E. Skeggs, PE

DATE: September 16, 2021

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ATTACHMENTS: A – Run-on/Run-off Control System Plan



Attachment A
Run-on/Run-off Control System Plan

TVA GALLATIN FOSSIL PLANT – SUMNER COUNTY, TENNESSEE

**RUN-ON/RUN-OFF CONTROL SYSTEM PLAN
40 CFR § 257.81
NORTH RAIL LOOP
LANDFILL CELL 1**

Prepared for



Tennessee Valley Authority
1101 Market St.
Chattanooga, TN 37402-2801

**Revision 1
September 16, 2021**

Prepared by



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Figure 1. Site Location Map

REVISION HISTORY

Revision	Revision Date	Description
0	08/30/2016	Initial Issue
1	09/16/2021	Revised Issue – updating of pumping system for stormwater control

1.0 BACKGROUND

1.1 OBJECTIVE

This Run-on/Run-off Control System Plan (Plan) was prepared for Cell 1 of the North Rail Loop (NRL) coal combustion residuals (CCR) Landfill located at the Tennessee Valley Authority's (TVA) Gallatin Fossil Plant (GAF) in Sumner County, Tennessee. The NRL Landfill was an integral part of a project to install a lime-based dry flue gas desulfurization (FGD) system, or "dry scrubber" at GAF. The NRL Landfill Cell 1 currently accepts the CCR generated by the dry scrubber as well as other CCR produced at GAF including fly ash, FGD, and other byproducts from power generation operations.

This Plan was prepared in accordance with 40 CFR § 257.81(c) of the United States Environmental Protection Agency (USEPA) CCR Rule (CCR Rule). It is noted that the NRL Landfill is an existing landfill operating under a permit approved by the Tennessee Department of Environment and Conservation (TDEC) on June 30, 2014, which is in accordance with regulatory standards generally equivalent to those included in the CCR Rule. These regulatory standards include run-on and run-off control system requirements. Accordingly, run-on and run-off control system requirements for the landfill meet or exceed those of the CCR Rule.

1.2 CCR RULE REQUIREMENTS – 40 CFR § 257.81

§ 257.81 Run-on and run-off controls for CCR landfills.

(a) The owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill must maintain:

(1) A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm; and

(2) A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

(b) Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under § 257.3–3.

(c) Run-on and run-off control system plan –

(1) Content of the plan. The owner or operator must prepare initial and periodic run-on and run-off control system plans for the CCR unit according to the timeframes specified in paragraphs (c)(3) and (4) of this section. These plans must document how the run-on and run-off control systems have been designed and constructed to meet the applicable requirements of this section. Each plan must be supported by appropriate engineering calculations. The owner or operator has completed the initial run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by § 257.105(g)(3).



(2) Amendment of the plan. The owner or operator of the CCR unit may amend the written run-on and run-off control system plan at any time provided the revised plan is placed in the facility's operating record as required by § 257.105(g)(3). The owner or operator must amend the written run-on and run-off control system plan whenever there is a change in conditions that would substantially affect the written plan in effect.

(3) Timeframes for preparing the initial plan –

(i) Existing CCR landfill. The owner or operator of the CCR unit must prepare the initial run-on and run-off control system plan no later than October 17, 2016.

(ii) New CCR landfills and any lateral expansion of a CCR landfill. The owner or operator must prepare the run-on and run-off control system plan no later than the date of initial receipt of CCR in the CCR unit.

(4) Frequency for revising the plan. The owner or operator of the CCR unit must prepare periodic run-on and runoff control system plans required by paragraph (c)(1) of this section every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first subsequent plan. The owner or operator may complete any required plan prior to the required deadline provided the owner or operator places the completed plan into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing a subsequent plan is based on the date of completing the previous plan. For purposes of this paragraph (c)(4), the owner or operator has completed a periodic run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by § 257.105(g)(3).

Cell 1 of the NRL Landfill is an existing landfill that was designed to incorporate run-on and run-off controls systems, which prevent flow from and onto the active portion of the unit during a 24-hour, 25-year storm. In accordance with the frequency requirements of 40 CFR § 257.81(C)(3) this plan (Revision 1) has been revised since its initial issue on August 30, 2016 to reflect the facility's current management practices for leachate and storm water run-on and run-off.

1.3 PLAN CONTENT – 40 CFR § 257.81(c)(1)

This Plan describes how the run-on and run-off control systems have been designed and constructed to meet the applicable requirements of the CCR Rule. A certification statement from a qualified professional engineer verifying that this initial Plan meets the requirements of 40 CFR § 257.81(c) has been provided. In accordance with 40 CFR § 257.81(c)(1), this Plan will be amended whenever there is a change in conditions that substantially affect the written plan



in effect. As new cells are developed, temporary run-on/run-off control measures will be designed to manage the 25-year/24-hour storm as described in **Section 2.0**.

1.4 SITE LOCATION AND DESCRIPTION

The NRL Landfill is located on land currently owned by TVA at GAF. GAF is located at 1499 Steam Plant Road in Sumner County, on the north bank of the Cumberland River, approximately four miles southeast of the juncture of U.S. Route 31E and Tennessee State Route 109 in Gallatin. The NRL site for the disposal facility (**Figure 1**) is located within the GAF reservation, just north of the GAF plant and west of Steam Plant Road. Existing ground surface elevation across the disposal site ranges from approximately 470-feet (ft) to 580-ft National Geodetic Vertical Datum of 1929 (NGVD29).

2.0 OVERVIEW OF RUN-ON/RUN-OFF CONTROL SYSTEMS – § 257.81(c)(1)

2.1 RUN-ON CONTROL SYSTEM – 40 CFR § 257.81(a)(1)

Temporary storm water diversion structures, including ditches, rain flap berms, sumps, and pumps will be used as needed to minimize storm water run-on into the NRL Landfill Cell 1. Non-contaminated storm water will be diverted to one of two sediment basins. The active area of Cell 1 will be minimized to reduce leachate generation and the potential for fugitive dust emissions. In general, working areas will be limited in size so as to reduce the amount of water that comes in contact with CCR.

2.2 BERMS

Run-on from adjacent land onto the active portion of NRL Landfill Cell 1 will be prevented using diversion berms designed to accommodate a 25-year/24-hour storm. The intent of the diversion berms is to route run-on from undisturbed areas, such that run-on is not combined with sediment laden run-off from the landfill site. Supporting design calculations for the berms are presented in Part F of the State Part II Permit Application (URS, 2014b).

2.3 RUN-OFF CONTROL SYSTEM – 40 CFR § 257.81(a)(2)

The outer slopes of the NRL Landfill Cells 1 and 2 have been designed with terraces that will be constructed progressively as the elevation of the landfill is raised. Riprap-lined letdowns will convey surface water run-off by gravity to perimeter channels and catch basins at the base of the landfill. Surface water runoff will be collected in two existing sediment basins designed to manage runoff from both Cell 1 and Cell 2 areas. Discharge of surface water runoff from the basins is pumped through a force main to Stilling Pond B, prior to discharging through a permitted NPDES outfall. All permanent run-off measures, including perimeter channels, culverts, and pump systems are designed to collect and control the peak flow resulting from a 25-year/24-hour storm under final design conditions. Supporting design calculations for the surface water control structures are provided in Part F of the State Part II Permit Application (URS, 2014b). Permanent run-off features and associated details are provided in the Engineering Plans (Drawings 10W275-07, 10W275-10 through 14, and 10W275-22 through 10W275-24) in Part E of the State Part II Permit Application (URS, 2014a). A minor modification



to the State landfill permit was completed and approved to allow for pumping of storm water from the two sediment basins to Stilling Pond B.

2.3.1 COLLECTION AND HOLDING FACILITIES

Holding facilities associated with storm water management consist of two sediment basins. Water is pumped from the two sediment basins to Stilling Pond B. In the event that the pumping system fails or does not have adequate time to lower the water level in the basins prior to a storm event, the emergency spillways are designed to manage runoff resulting from the 100-year/24-hour storm event.

Sediment basins will be cleaned periodically to maintain the minimum required storage volume. A witness post has been installed in the bank of each sediment basin to visually identify when sediment accumulation approaches the maximum sediment storage elevation. A painted marking has also been applied to the primary spillway structure to serve as a secondary visual indicator. Supporting design calculations for the surface water control structures are presented in Part F of the State Part II Permit Application (URS, 2014b).

2.3.2 STORM WATER AND LEACHATE MANAGEMENT

The leachate and storm water are designed to be handled separately. Leachate will be collected in a force main and pumped to a treatment system prior to discharging through a permitted NPDES outfall. Storm water will be collected and managed by the two sediment basins, as previously described. Storm water that comes into contact with CCR will be collected and pumped to Stilling Pond B until construction of the new lined process water basin is complete. The State landfill permit has been modified to allow storm water that comes into contact with CCR in the NRL Landfill to be collected in the new lined basin once constructed, conveyed to the Flow Management System, and discharged at a permitted outfall.

Surface water drainage features and either intermediate cover or the final cover system will be installed progressively as filling proceeds, such that intermediate cover soil will be placed on all outboard slopes prior to allowing run-off to enter the storm water management system.

2.3.3 EROSION CONTROL

Storm run-off will be controlled and managed through a series of temporary and permanent surface water and erosion control measures including silt fences, seeding and mulching, and drainage channels. A Storm Water Pollution Prevention Plan was developed to obtain coverage under the NPDES Construction General Permit for storm water discharge from construction activities.

2.4 FREQUENCY FOR REVISING THE PLAN – 40 CFR § 257.81(c)(4)

TVA will prepare periodic run-on and run-off control system plans every five years and will place the plan in the facility's operating record. TVA will obtain a certification from a qualified professional engineer stating that the periodic run-on and run-off control system plans meet the requirements of this section.

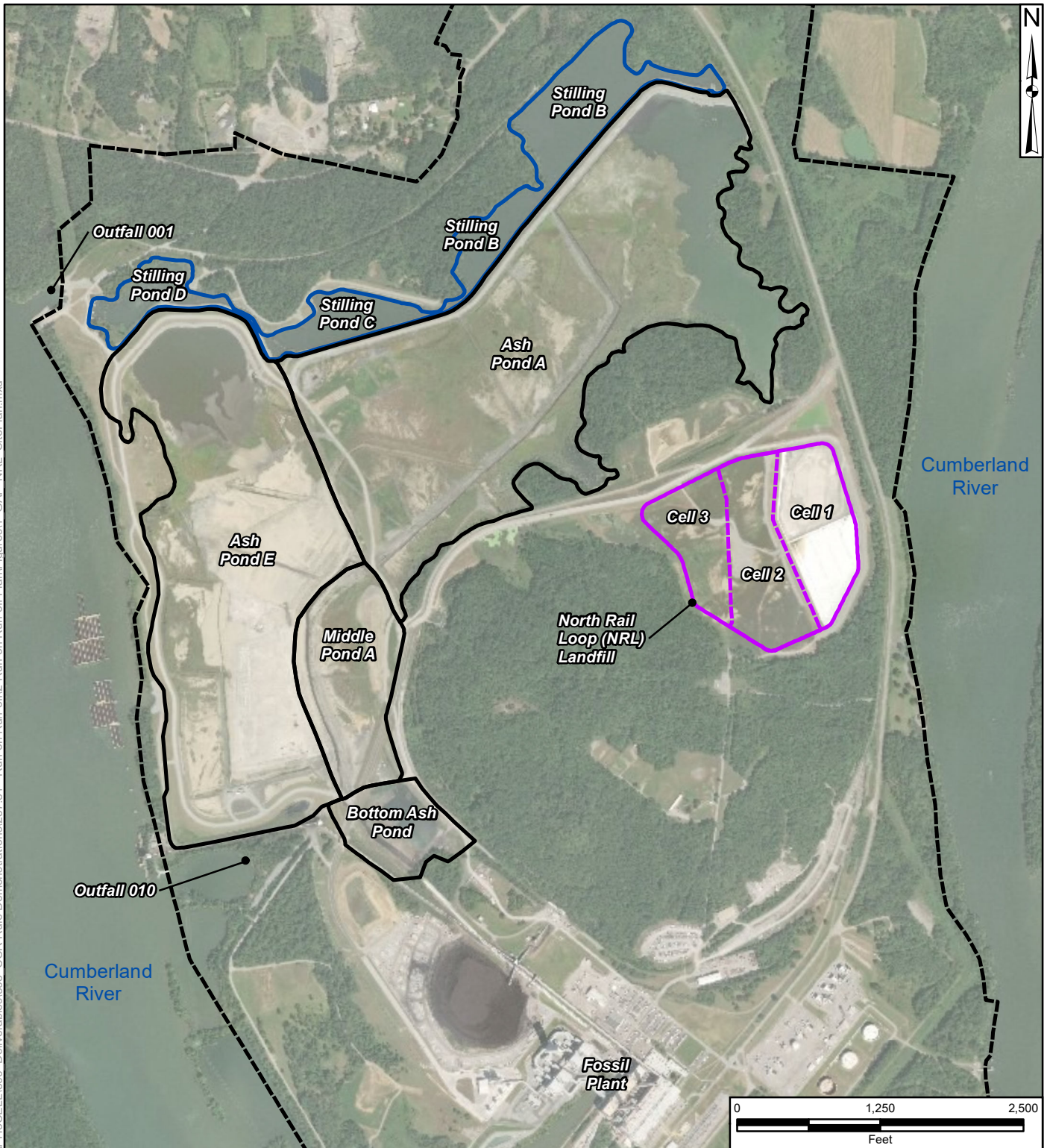


3.0 REFERENCES

URS (2014a), *Part II Permit Application, CCP Disposal Facility – North Rail Loop Site, Engineering Plans and Narratives, Vol 2 – Engineering Plans*, June 2014.

URS (2014b), *Part II Permit Application, CCP Disposal Facility – North Rail Loop Site, Engineering Plans and Narratives, Vol 3 – Design Calculations*, June 2014.

FIGURES



Document Path: O:\DCS\Projects\EN\60570642_TVAPH3CELL1500_Deliverables\503_CCR Rule Demonstrations\257.81 - Run-on Run-off\2-Run-on Run-off Plan\Figures1_GAF_NRL_SitePlan.mxd

- LEGEND**
- CCR Management Units
 - North Rail Loop (NRL) Landfill
 - Stillings Ponds
 - TVA Gallatin Fossil Plant Property Boundary

AECOM

Figure 1

SITE LOCATION MAP

DRAWN BY: J.COLLEY	REVIEWED BY: D.SKEGGS	APPROVED BY: -	REVISION NUMBER: REV. 0
GALLATIN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY			
DATE: MAR 2020	DEPT: FOSSIL AND HYDRO ENGINEERING		

NOTE: Aerial image dated February 2017