



October 6, 2016
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Revision 0

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

**RE: Initial Hazard Potential Classification Assessment
Bottom Ash Pond
EPA Final CCR Rule
TVA Gallatin Fossil Plant
Gallatin, Tennessee**

1.0 PURPOSE

This letter documents Stantec's certification of the initial hazard potential classification assessment for the TVA Gallatin Fossil Plant's Bottom Ash Pond. The CCR Rule requires owners or operators of CCR surface impoundments to conduct initial and periodic hazard potential classification assessments of the unit, assign one of three potential hazard classification ratings to it, and provide the basis for the rating, as per 40 CFR 257.73(a)(2). Hazard potential classification ratings define the consequences in the event of a failure – *the ratings have nothing to do with the likelihood of failure or the structural stability of the impoundment*. Based on this assessment, the Bottom Ash Pond has been assigned a low hazard potential classification rating.

2.0 BASIS FOR CLASSIFICATION RATING

As described in the attached assessment report, the hazard potential classification rating of "low" was assigned to the Bottom Ash Pond because a failure or mis-operation would result in no probable loss of human life, and potential impacts would likely be minor and principally limited to TVA property.

3.0 SUMMARY OF FINDINGS

The attached report presents the analysis for the initial hazard potential classification assessment. The results demonstrate that the impoundment meets the hazard potential classification of "low."

4.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, John S. Montgomery, being a Professional Engineer in good standing in the State of Tennessee, 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;



October 6, 2016
Page 2 of 2

**RE: Initial Hazard Potential Classification Assessment
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2. that the information contained herein is accurate as of the date of my signature below;
and
3. that the initial hazard potential classification assessment for the TVA Gallatin Fossil Plant's
Bottom Ash Pond meets the requirements specified in 40 CFR 257.73(a)(2).

SIGNATURE

DATE October 6, 2016

ADDRESS:

Stantec Consulting Services Inc.
1409 North Forbes Road
Lexington, Kentucky 40511-2024

TELEPHONE:

(859) 422-3000

ATTACHMENTS:

Initial Hazard Potential Classification Assessment



Initial Hazard Potential Classification Assessment

Gallatin Fossil Plant – Bottom Ash
Pond
Gallatin, Tennessee



Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

Prepared by:
Stantec Consulting Services Inc.
Lexington, Kentucky

October 6, 2016
Revision 0

Table of Contents

1.0	RATING	1
2.0	BASIS OF RATING	2
2.1	INTRODUCTION.....	2
2.2	SOURCE DATA	2
2.3	POTENTIAL FAILURE SCENARIOS	2
2.3.1	Breach towards Middle Pond A	3
2.3.2	Breach towards southwest.....	3
2.4	HAZARD CLASSIFICATION	3
3.0	REFERENCES	4
 APPENDIX BREACH SCENARIOS		

INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Rating
October 6, 2016

1.0 RATING

This report documents the hazard potential classification assessment for the Bottom Ash Pond at Gallatin Fossil Plant (GAF) as required per the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4] (EPA Final CCR Rule) § 257.73 (a)(2). Hazard potential classifications are based on the consequences of failure or mis-operation and are not a measure of the condition of the unit. The applicable hazard potential classifications are defined in the EPA Final CCR Rule § 257.53 as follows:

- (1) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.
- (2) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
- (3) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

Based on these definitions the Bottom Ash Pond is classified as a low hazard potential CCR surface impoundment.

This report contains supporting documentation for the hazard potential classification assessment. The hazard potential classification for this structure was determined by a visual assessment and a review of available data.

INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Basis of Rating
October 6, 2016

2.0 BASIS OF RATING

2.1 INTRODUCTION

The Tennessee Valley Authority (TVA) has contracted Stantec Consulting Services Inc. (Stantec) to review and update previous hazard potential classification assessments as needed and to prepare the accompanying certification for selected impoundments at various TVA Plants.

GAF is located in Sumner County, Tennessee. The plant is located adjacent to the Cumberland River, approximately 40 miles northeast of Nashville, Tennessee. The Bottom Ash Pond is located to the south of Middle Pond A and to the west of the railroad tracks. The Bottom Ash Pond has a total volume of approximately 30 acre-feet with only 12 acre-feet of that being available for pool storage purposes. The pond has two outlets that both flow to Middle Pond A. The outlet in the northeast corner of the pond consist of a 48-inch diameter reinforced concrete pipe (RCP) and a 36-inch diameter corrugated metal pipe (CMP). The outlet in the northwest corner of the pond consists of three 48-inch diameter RCP. The layout of the facility and the potential failure directions are shown on the figure provided in the appendix.

For GAF, there is no documentation available for a hazard potential classification assessment for the Bottom Ash Pond, but a hazard assessment is required per the EPA Final CCR Rule. Therefore, Stantec has prepared the hazard assessment for this unit as documented in this report.

2.2 SOURCE DATA

The following information was used to perform the hazard assessment of the Bottom Ash Pond:

- Aerial Imagery (from Tuck Mapping Solutions Inc. dated March 16, 2015).
- Topographic Information (from Tuck Mapping Solutions Inc. dated April 19, 2015).
- Ash Haul Road A Redline Drawings (dated September 26, 2014).

2.3 POTENTIAL FAILURE SCENARIOS

The Bottom Ash Pond is bounded by higher ground to the northeast and southeast, therefore a breach of the impoundment in these directions is not considered plausible.

The pond is separated from Middle Pond A by an embankment and Ash Haul Road A. Middle Pond A is primarily dry with no permanent pool maintained. There is a channel maintained through the pond to convey flows from the Bottom Ash Pond outlets to Ash Pond A. The water surface elevation within this conveyance ditch is approximately 474 feet. The Bottom Ash Pond outlets are configured where the water surface elevation within the Bottom Ash Pond can exceed elevation 474 feet, therefore a breach in this direction was evaluated.

INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Basis of Rating
October 6, 2016

A breach to the southwest would discharge to a series of stormwater conveyance structures.

2.3.1 Breach towards Middle Pond A

A breach in the embankment to the north would discharge flow from the main pool to the area between the Ash Haul Road A and the Bottom Ash Pond. Flow from this area would pass through a culvert and flow to Middle Pond A and ultimately to Ash Pond A. The available pool storage in the Bottom Ash Pond is approximately 12 acre-feet. The storage capacity in Ash Pond A above normal pool is approximately 450 acre-feet. Therefore, Ash Pond A would contain a breach of the Bottom Ash Pond without overtopping.

2.3.2 Breach towards southwest

A breach through the embankment to the southwest would flow to an adjacent ditch. From there, flow could go in one of two directions:

- Through the culvert under Ash Haul Road A, to a small depression. If this depression were to overtop, it would then flow towards a culvert that discharges into a depression adjacent to Ash Pond E. Because of the small size of the Bottom Ash Pond, the capacity of the depressions that the breach would have to surcharge and overtop (approximately 10 acre-feet), the distance the CCR material would have to travel (over 2,000 feet), and that bottom ash has limited mobility, it is likely that CCR materials will principally remain on TVA property.
- Through a culvert underneath the Coal Conveyor to a small depression. If this depression were to overtop, it would then flow along a ditch to the south of the Coal Conveyor to a culvert. This culvert outlets to a wooded area that sheet flows to the Cumberland River. This ditch/culvert system is approximately 1,000 feet long. Given the small size of the Bottom Ash Pond, the long travel length, and that bottom ash has limited mobility, it is likely that CCR materials will principally remain on TVA property.

2.4 HAZARD CLASSIFICATION

Findings of this review and assessment demonstrate that a breach of the Bottom Ash Pond would result in no probable loss of life. In addition, it is Stantec's opinion that impacts would be principally limited to TVA property. Therefore, the impoundment fits the definition for a low hazard potential CCR surface impoundment (as defined in the EPA Final CCR Rule §257.53).

INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

References
October 6, 2016

3.0 REFERENCES

1. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4]. April 2015.

APPENDIX BREACH SCENARIOS

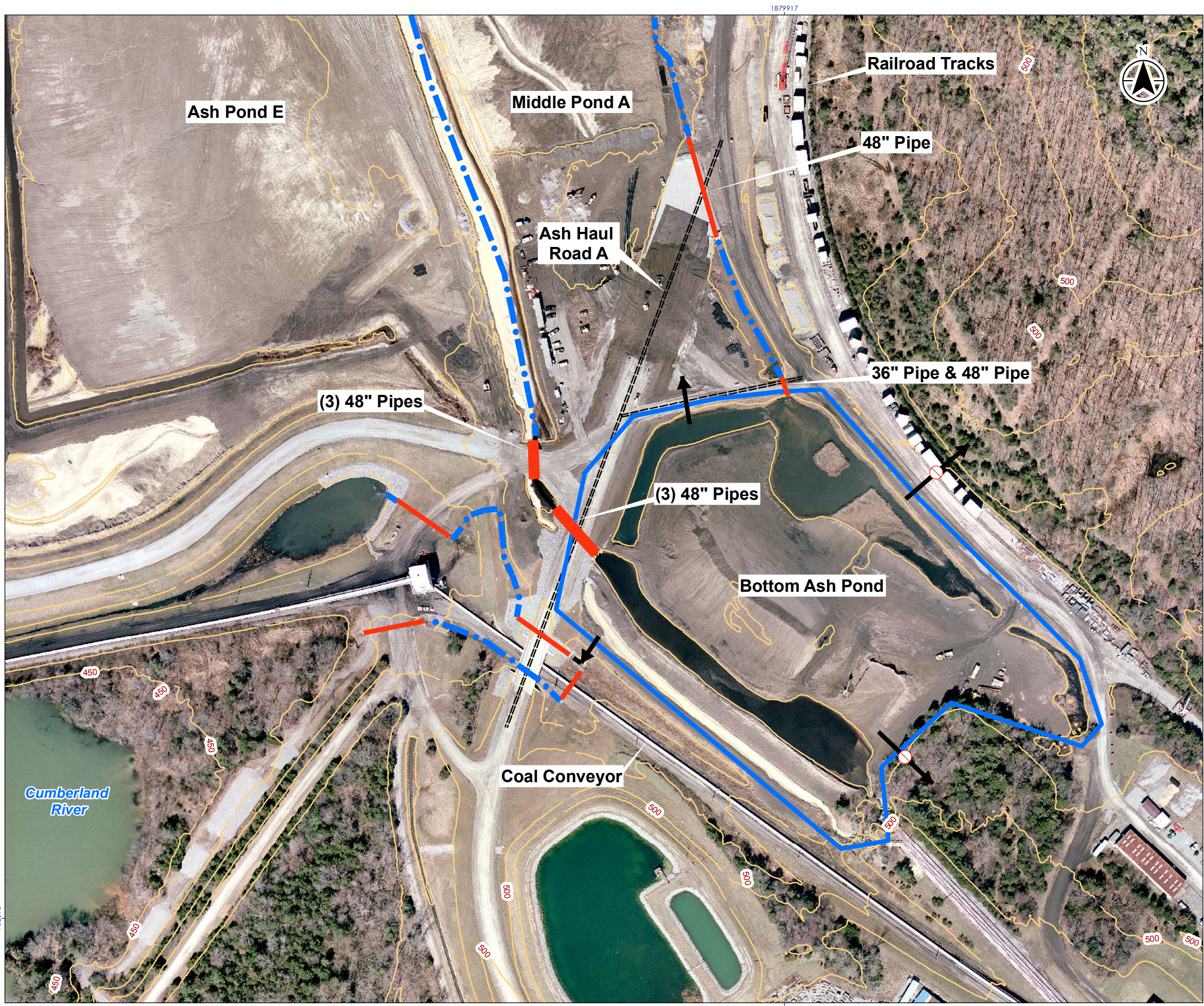
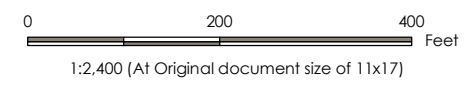
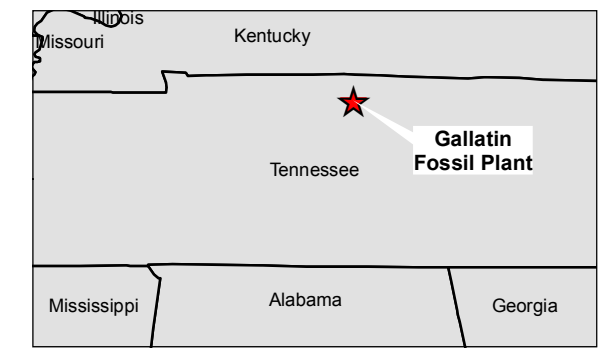


Figure No. 1
 Title **Breach Scenarios GAF - Bottom Ash Pond**
 Client/Project Tennessee Valley Authority
 Gallatin Fossil Plant (GAF)
 Hazard Potential Classification Assessment
 Project Location: Gallatin, TN
 Prepared by MMM on 2015-09-30
 Technical Review by AWG on 2016-09-30
 Independent Review by WRM on 2016-09-30



Legend

- ➔ Potential Breach Direction of Flow
- ⊘➔ Direction in Which Breach Cannot Occur
- Pipes
- Ditch
- == Access Roads Potentially Impacted by Breach
- 10ft Contours
- Approximate Facility Limits



Notes
 1. Coordinate System: NAD 1927 StatePlane Tennessee FIPS 4100
 2. TVA Aerial Imagery and Topographic Data dated 2015.
 3. State boundaries produced by ESRI, U.S. Department of Commerce, U.S. Census Bureau.



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