



**Stantec Consulting Services Inc.**  
10509 Timberwood Circle, Suite 100, Louisville, Kentucky 40223-5308

October 12, 2021  
File: rpt\_037\_let\_175568465  
Revision 0

Tennessee Valley Authority  
1101 Market Street  
Chattanooga, Tennessee 37402

**RE:     Periodic Hazard Potential Classification Assessment  
          Peabody Ash Pond  
          EPA CCR Rule  
          TVA Paradise Fossil Plant  
          Drakesboro, Kentucky**

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## **1.0     PURPOSE**

This letter documents certification that Peabody Ash Pond at the Tennessee Valley Authority (TVA) Paradise Fossil Plant is in compliance with the hazard potential classification requirements set forth in 40 CFR 257.73(a)(2) of the EPA CCR Rule. The EPA CCR Rule requires periodic hazard potential classification assessments, certified by a professional engineer, every five years. The initial certification of hazard potential classification was placed in the operating record on October 12, 2016.

## **2.0     INITIAL HAZARD CLASSIFICATION ASSESSMENT**

The initial hazard potential classification assessment is attached. The results of the initial assessment assigned a hazard potential classification rating of "significant" for the Peabody Ash Pond because a failure or mis-operation could result in off-site release of coal combustion residuals (CCR) and is unlikely to result in loss of human life.

## **3.0     CURRENT HAZARD CLASSIFICATION ASSESSMENT**

Stantec reviewed the results of the initial assessment and the changes in conditions that have occurred in the past five years at the site. The following operational changes and other factors were considered in this periodic assessment:

1. Coal-fired power generation at Paradise ceased operation February 2020. Peabody Ash Pond ceased receiving CCR and non-CCR waste streams 1.
2. Peabody Ash Pond operating pool level has decreased from El. 405.0 ft to approximate El. 388 ft. The pool level is below the crest of the spillway riser. After rainfall events, water is pumped to the Green River to maintain this pool elevation.
3. Cross-sectional geometry at the critical cross section has not changed.



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Peabody Ash Pond  
EPA CCR Rule  
TVA Paradise Fossil Plant  
Drakesboro, Kentucky**

4. Flood levels of adjacent Jacobs Creek have not changed.
5. Additional geotechnical data was obtained during October 2016 for a supplemental seismic stability assessment of the Peabody Ash Pond (Geocomp 2016). This additional data was reviewed, and it was determined that changes in the static safety factor analyses are not warranted.
6. Annual and weekly inspections conducted since 2015 were reviewed as part of this assessment. No observations have been made that would affect the hazard assessment.
7. Monthly instrumentation (i.e., piezometer) monitoring conducted since 2015 has been reviewed and the phreatic condition of the perimeter dike has not changed.

Based on our review, there are no conditions that have changed in the past five years that would cause the results of the initial hazard classification to have changed.

#### **4.0 SUMMARY OF ASSESSMENT**

Based on a review of the initial hazard potential classification assessment and the items listed in Section 3.0, the result of this hazard potential classification assessment is that the Peabody Ash Pond at Paradise meets the requirements for classification as a "significant" hazard impoundment (as defined in 40 CFR § 257.53).



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Re: **Periodic Hazard Potential Classification Assessment  
Peabody Ash Pond  
EPA CCR Rule  
TVA Paradise Fossil Plant  
Drakesboro, Kentucky**

**5.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION**

I, Stephen H. Bickel, 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 hazard potential classification assessment for the TVA Paradise Fossil Plant's Peabody Ash Pond meets the requirements specified in 40 CFR 257.73(a)(2).

SIGNATURE                     Stephen H. Bickel                    

DATE 10/12/2021

ADDRESS: Stantec Consulting Services Inc.  
10509 Timberwood Circle, Suite 100  
Louisville, Kentucky 40223-5308

TELEPHONE: (502) 212-5075

ATTACHMENTS: Initial Hazard Potential Classification Assessment



# **INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT**



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

October 5, 2016  
File: rpt\_013\_let\_175565009  
Revision 0

Tennessee Valley Authority  
1101 Market Street  
Chattanooga, Tennessee 37402

**RE: Initial Hazard Potential Classification Assessment  
Peabody Ash Pond  
EPA Final Coal Combustion Residuals (CCR) Rule  
TVA Paradise Fossil Plant  
Drakesboro, Kentucky**

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## **1.0 PURPOSE**

This letter documents Stantec's certification of the initial hazard potential classification assessment for the TVA Paradise Fossil Plant's Peabody Ash Pond. The EPA Final 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, Peabody Ash Pond has been assigned a significant hazard potential classification rating.

## **2.0 BASIS FOR CLASSIFICATION RATING**

As described in the attached assessment report, the hazard potential classification rating of "significant" was assigned to Peabody Ash Pond because a failure or mis-operation would result in no probable loss of human life, but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. In 2013, an assessment was completed. Riverside Road located downstream of the pond was identified as potentially impacted during a breach. No other structures or critical infrastructure was identified within the flow paths of the potential breach scenarios reviewed. Loss of life was considered improbable due to the intermittent and transient nature of persons entering these areas. However, a breach would likely result in a release of CCR materials. Review of the analysis and current conditions at the Peabody Ash Pond concluded that the existing hazard classification was applicable.

## **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 "significant."



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**RE: Initial Hazard Potential Classification Assessment  
Peabody Ash Pond  
EPA Final Coal Combustion Residuals (CCR) Rule  
TVA Paradise Fossil Plant  
Drakesboro, Kentucky**

#### **4.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION**

I, John S. Montgomery, 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 initial hazard potential classification assessment for the TVA Paradise Fossil Plant's Peabody Ash Pond meets the requirements specified in 40 CFR 257.73(a)(2).

SIGNATURE

DATE

*October 5, 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**

Paradise Fossil Plant – Peabody  
Ash Pond  
Drakesboro, Kentucky



Prepared for:  
Tennessee Valley Authority  
Chattanooga, Tennessee

Prepared by:  
Stantec Consulting Services Inc.  
Lexington, Kentucky

October 5, 2016  
Revision 0

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# INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Rating  
October 5, 2016

## 1.0 RATING

This report documents the Hazard Potential Classification Assessment for the Peabody Ash Pond at Paradise Fossil Plant (PAF) 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 Peabody Ash Pond is classified as a significant 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 review of a previous assessment conducted by Stantec in September, 2013.

# INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

Basis of Rating  
October 5, 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.

PAF is located in Muhlenberg County, Kentucky. The plant is located adjacent to the Green River, approximately 50 miles northwest of Bowling Green, KY. The Peabody Ash Pond is located south of the power plant. A site overview figure is included in the appendix.

### 2.2 SOURCE DATA

For the Peabody Ash Pond, an assessment was previously conducted in 2013. Based on the findings, it was recommended that the hazard classification of the Peabody Ash Pond be listed as a significant hazard.

### 2.3 POTENTIAL FAILURE SCENARIOS

It was noted in the 2013 study that a breach of the Peabody Ash Pond would likely result in flow through the culvert beneath Riverside Road, potentially impacting the road. It was determined this was a local road, that the road was intermittently used and the at-risk populations were considered transient. Therefore, loss of life from a breach of the impoundment was not envisioned. However, a breach could result in off-site release of CCRs.

As part of this initial hazard classification assessment, site conditions were reviewed to determine if changes have occurred to the impoundment or to downstream areas that would affect the conclusions of the 2013 study. No significant changes have been identified and it is concluded the hazard classification determination is appropriate.

### 2.4 HAZARD CLASSIFICATION

Findings of this review and assessment demonstrate that a breach of the impoundment results in no probable loss of human life, but could cause economic loss or environmental damage. It is Stantec's opinion the impoundment fits the definition for a significant hazard potential CCR surface impoundment (as defined in the EPA Final CCR Rule §257.53).

## INITIAL HAZARD POTENTIAL CLASSIFICATION ASSESSMENT

References  
October 5, 2016

### 3.0 REFERENCES

1. Stantec, September 30, 2013. Dam Safety Hazard Classification Projects Summary Report.
2. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4]. April, 2015.

# APPENDIX SITE OVERVIEW FIGURE



**Paradise Fossil Plant**

**Peabody Ash Pond**

Green River

Riverside Road



Figure No.  
1

Title  
**Site Overview**  
**PAF - Peabody Ash Pond**

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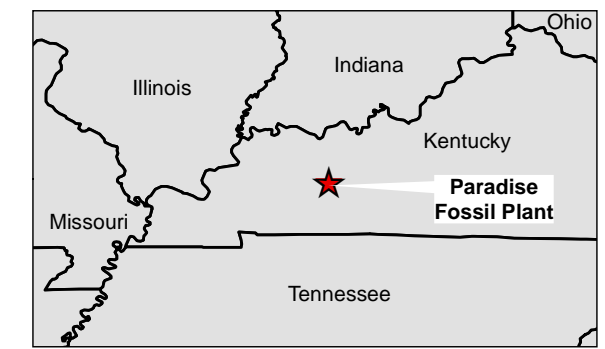
Client/Project  
Tennessee Valley Authority  
Paradise Fossil Plant (PAF)  
Hazard Potential Classification Assessment

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Project Location: Muhlenberg County, Kentucky      Prepared by: BSJ on 2015-06-29  
 Technical Review by: AWG on 2016-09-30  
 Independent Review by: WRM on 2016-09-30

0      500      1,000  
 Feet

1:12,000 (At Original document size of 11x17)



Notes

1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. TVA Aerial Imagery Dated 2016.
3. State boundaries produced by ESRI, U.S. Department of Commerce, U.S. Census Bureau.



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