INITIAL STRUCTURAL STABILITY ASSESSMENT

40 CFR 257.73 (d)

Auxillary Ash Pond Complex

Glen Lyn Plant Site

Glen Lyn, Virginia

May, 2026

Prepared for: Appalachian Power Company

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

Columbus, OH 43215

Glen Lyn Plant Site

Auxillary Ash Pond Complex

Initial Structural Stability Assessment

PREPARED BY Dan Murphy DATE _____

Digitally signed by Dan Murphy
DN: cn=Dan Murphy, c=US, email=dsmurphy1@aep.com
Date: 2026.05.05 08:16:15 -04'00'

Dan Murphy, P.E.

REVIEWED BY Blake Arthur, PE DATE _____

Digitally signed by Blake Arthur, PE
DN: cn=Blake Arthur, PE, c=US, email=barthur@aep.com
Date: 2026.05.06 13:22:03 -04'00'

Blake Arthur, P.E.

APPROVED BY David Anthony Miller DATE 05.04.2026

David Anthony Miller, P.E.

Director- Ash Management Services

I certify to the best of my knowledge, information, and belief that the information contained in this structural stability assessment meets the requirements of 40 CFR § 257.73(d)

Table of CONTENTS

Attachment A: Initial Structural Stability Assessment Report

1.0 OBJECTIVE

The "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments", 89 Fed. Reg. 38950 (May 8, 2024) (amending 40 C.F.R. §257) requires owners and operators of facilities with a legacy coal combustion residual (CCR) surface impoundment to prepare an initial structural stability assessment document for each legacy CCR surface impoundment at the facility.

The Auxiliary Ash Pond Complex at the Glen Lyn Plant Site is subjected to this rule.

2.0 DESCRIPTION OF THE CCR UNIT

The Glen Lyn Plant Site is located adjacent to the New River in Giles County, Virginia, approximately 10 miles east of Princeton, West Virginia. The latitude/longitude of the facility is: 37º 22' 12" N/ 80º 51' 48" W. The facility address is 100 APCO Road, Glen Lyn, VA, 24093. The Auxiliary Ash Pond Complex is located approximately 0.5 miles northwest of the Plant site.

The Glen Lyn Plant operated from 1919 to 2015. The total length of the perimeter dike containing the Auxiliary Ash Pond Complex is nearly 5,000 linear feet, and the Auxiliary Ash Complex is roughly 70 acres in size.

The Auxiliary Ash Pond Complex encompasses areas also known as the West Pond, Auxiliary Pond (Fly Ash Dam), and Glen Lyn Landfill.

3.0 STRUCTURAL STABILITY ASSESSMENT 257.73(d)

The Initial Structural Stability Assessment was prepared by GAI Consultants, Inc. and is included as Attachment A. Two separate reports were prepared for the West Pond and Auxiliary Ash Pond, together capturing the full extent of the Auxiliary Ash Pond Complex.

Based on the findings and general assessment in the Initial Structural Stability Assessment, the Glen Lyn Auxiliary Ash Pond Complex meets the requirements of 40 CFR 257.73 (d).

ATTACHMENT A

Initial Structural Stability Assessment Report

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gai consultants

Glen Lyn Auxiliary Ash Pond
Initial Structural Stability Assessment Report

American Electric Power
Glen Lyn Plant
Giles County, Virginia

GAI Project Number: C121043.12, Task 003

May 2026

AMERICAN ELECTRIC POWER℠

BOUNDLESS ENERGY℠

Prepared by: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

Prepared for: American Electric Power
1 Riverside Plaza, 22nd Floor
Columbus, Ohio 43215

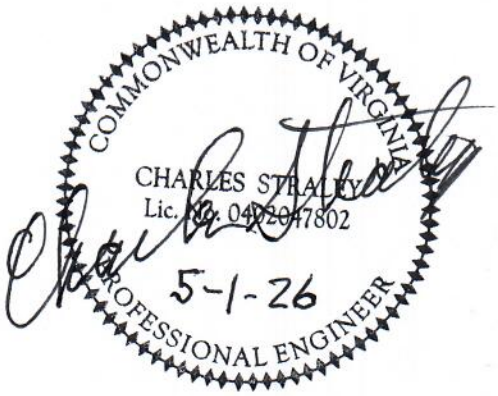
Table of Contents

Certification/Statement of Professional Opinion

The Initial Structural Stability Assessment for the Glen Lyn Auxiliary Ash Pond was prepared by GAI Consultants, Inc. (GAI). The Assessment Report was based on certain information that, other than for information GAI originally prepared, GAI has relied on, but not independently verified. Therefore this Certification/Statement of Professional Opinion is limited to the information available to GAI at the time the Assessment Report was written. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Virginia, that the Assessment has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, and at the time and in the same locale. It is my professional opinion that the Structural Stability Assessment was prepared consistent with the requirements of the United States Environmental Protection Agency's Federal Coal Combustion Residuals (CCR) Rule 40 CFR § 257.73(d), published in the Federal Register on May 8, 2024 with an effective date of November 4, 2024.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not to be interpreted or construed as a guarantee, warranty or legal opinion.

Charles F. Straley, P.E.
Engineering Director



1.0 Purpose

Pursuant to the Federal Coal Combustion Residuals (CCR) Rule 40 CFR § 257.73(d)(1), each CCR impoundment is required to conduct an initial and periodic structural stability assessment to establish whether the CCR unit can safely store the maximum volume of CCR and wastewater.

2.0 Introduction

The Glen Lyn Auxiliary Ash Pond is associated with the Glen Lyn Plant located in Giles County, Virginia (VA). The Auxiliary Ash Pond is located approximately 0.5 miles northwest of the Plant site. The Station operated from 1919 to 2015. Ash generated after 2008 was disposed of off-site. The Auxiliary Ash Pond was closed in 2014 and was used for the management, storage, and disposal of CCR. Available historic records indicate that the primary waste managed by the Auxiliary Ash Pond was fly ash.

The Station began operating in 1919 and was acquired by Appalachian Power Company in 1925. In 1919, the first coal-fired generating unit had a capacity of 15 megawatts of electricity. The first coal-fired unit was retired in 1954. In 1920, the second unit was put into service. The third unit was put into service in 1924. In 1927, the fourth unit was put into service. Units 2, 3, and 4 had the capacity to generate 65 megawatts of electricity and were retired in 1971. The fifth unit was put into service in 1944 and had the capacity to generate 95 megawatts of electricity. The sixth unit was put into service in 1957 and had the capacity to generate 240 megawatts of electricity. The fifth and sixth units were retired in 2015 when the plant ceased production.

The Auxiliary Ash Pond was closed in place in 2014. It is the intent of AEP to close the Auxiliary Ash Pond by closure of removal of all CCR material in future efforts. The CCR material generated from closure will be placed in a proposed CCR Landfill.

A visual inspection of the Auxiliary Ash Pond was also performed on March 3, 2026, as part of structural stability assessment. During the inspection, GAI personnel did not identify any signs of distress or malfunction that would affect the structural condition of the Auxiliary Ash Pond.

3.0 Information Review

GAI Consultants, Inc. (GAI) reviewed the documents listed under the References section, which include:

- Prior Dam Safety Assessments;
- Design and as-built drawings; and
- Surveys.

The documents were reviewed to determine if the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices.

3.1 Stable Foundations

The foundation soils are alluvial deposits. The alluvial soils underlying the embankments/fills are generally sand and gravel. The bedrock underneath the alluvial soil is Hinton Formation and typically described as gray, green, red shale, siltstone and sandstone. The site is located near the axis of the northeast/southwest trending Hurricane Ridge Syncline. The top of bedrock elevation ranges from 1477 to 1487 feet-mean seal level (ft-msl) across the Auxiliary Ash Pond.

Based on historical subsurface investigation, the relative density and description of the foundation materials are adequate for the CCR unit.

3.2 Slope Protection

The downstream slope of the north dike that parallels the New River is protected by riprap and transitions to a grass covered slope to the crest of the dike. The remaining downstream slopes are protected with vegetative cover with some areas of riprap. A small slough was observed on the east embankment which appears to cease movement in a stable configuration and has adequate vegetation.

The current condition of riprap on the slopes is adequate. The riprap lining the slope to Adair Run does not meet the requirements to withstand the shear stresses resulting from the 1,000-year event. The in-place riprap does not show any signs of displacement or erosion. Closure activities for the Auxiliary Ash Pond have commenced as required by the CCR Rule.

The slope protection appears to be adequate at the time of preparing this report.

3.3 Dike Compaction

The Auxiliary Pond is considered to be a part of the Auxiliary Ash Pond Complex. The pond complex is encompassed by a perimeter dike that has been modified over the history of the site. The first sequence of embankment occurred in 1958. The crest of the dike was at elevation 1525 ft-msl and was constructed with clayey shale. The interior footprint was excavated to approximately elevation 1490 ft-msl. The slopes of the embankments were 2 horizontal to 1 vertical (2H:1V).

Subsequent upstream raising occurred to the dikes using fly ash material with soil cover for the embankment construction to a new crest at elevation 1535 ft-msl in 1963. An internal drainage system was installed. In addition, a riprap toe buttress was placed along the New River.

In 1965, the crest was raised to elevation 1540 ft-msl to provide additional storage capacity. In 1967, the pond was filled with ash and remained in that state until 1974. In 1974, ash was excavated from the pond and an upstream clay blanket was installed.

By 1981, the Glen Lyn Plant was creating dry fly ash, thus CCR was placed and compacted in the pond.

A review of available subsurface investigations through the embankment indicates that the material is stiff and representative of compacted earthen materials.

3.4 Vegetated Slopes

The vegetative areas are mowed to facilitate inspections and maintain growth of the vegetative layer and prevent the growth of woody vegetation.

3.5 Spillway Capacity

The Auxiliary Ash Pond is generally in a filled condition and capped with no storage capacity. The pond does not have a spillway system. However, the grading and discharge of water on the pond surface is provided.

The central swale has a 10-foot bottom width, 50H:1V side slopes, and is 2 feet deep. The cap collection ditch has a 2-foot bottom width, 2.5H:1V side slopes, and is 2 feet deep. Both structures discharge onto a Virginia Department of Transportation (VDOT) Class AI riprap lined slope which directs the discharge to Adair Run.

3.6 Underlying Hydraulic Structures

The area that comprises the Auxiliary Pond was originally constructed in 1957 but underwent several modifications since then. Presently, the Aux Pond is a closed and capped pond with a vegetated central swale draining to the southeast and a vegetated cap collection ditch running along the west edge of the pond. The central swale has a 10-foot bottom width, 50H:1V side slopes, and is 2 feet

deep. The cap collection ditch has a 2-foot bottom width, 2.5H:1V side slopes, and is 2 feet deep. Both structures discharge onto a VDOT Class AI riprap lined slope which directs the discharge to Adair Run.

3.7 Adjacent Water Bodies

The downstream slope of the Auxiliary Ash Pond embankment is abutted by the Adair Run to the east and the New River to the North. The bank of the New River is lined with riprap, and the bank of Adair Run is lined with riprap and vegetative cover; thus, a structural stability analysis with adjacent water bodies was not performed.

4.0 Corrective Measures

The riprap along Adair Run appears to be undersized for the 1,000-year design storm. The in-place riprap does not show any signs of displacement or erosion. Closure activities for the Auxiliary Ash Pond have commenced as required by the CCR Rule. The riprap should be monitored periodically for signs of displacement and erosion.

No other deficiencies were detected in the structural stability analysis of the Auxiliary Ash Pond, and therefore, no other corrective measures are recommended at this time.

5.0 Conclusion

GAI reviewed previous structural stability analyses and relevant drawings and surveys for this Structural Stability Assessment. Based on the analyses conducted for the conditions outlined in the CCR Rule, the Glen Lyn Auxiliary Ash Pond design, construction, and operations and maintenance is consistent with good engineering practices for the volume of CCR and wastewater contained in the impoundment.

6.0 References

1. American Electric Power Service Corporation. *History of Construction – Auxiliary Ash Pond Complex – Glen Lyn Plant Site.* February 2026.
2. GAI Consultants. *Bottom Ash Pond Complex Delineation Data Report*. June 2017.
3. GAI Consultants. *Bottom Ash Pond Complex Delineation Data Report Addendum*. June 2018.
4. GAI Consultants. *Closure Plan – AEP Auxiliary Fly Ash Pond*. February 2013.
5. GAI Consultants. *Closure Plan – AEP Former Glen Lyn Power Plant Bottom Ash Pond*. Revised December 2024.
6. GEI Consultants. *Analysis Report – Seismic Stability of Ash Landfill and West Pond at Glen Lyn Plant*. August 2018.
7. GEI Consultants. *Data Report – Seismic Stability of Ash Landfill and West Pond at Glen Lyn Plant*. August 2018.
8. *Soil Liquefaction during Earthquakes*, Idriss and Boulanger, EERI Monograph MNO-12, 2008.
9. *Coal Ash: Characteristics, Management and Environmental Issues*, Technical Update - Coal Combustion Products - Environmental Issues, Electric Power Research Institute, September 2009.

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Glen Lyn Landfill and West Pond
Initial Structural Stability Assessment Report

American Electric Power
Glen Lyn Plant
Giles County, Virginia

GAI Project Number: C121043.12, Task 003

May 2026

BOUNDLESS ENERGY℠

Prepared by: GAI Consultants, Inc.
Pittsburgh Office
385 East Waterfront Drive
Homestead, Pennsylvania 15120-5005

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1 Riverside Plaza, 22nd Floor
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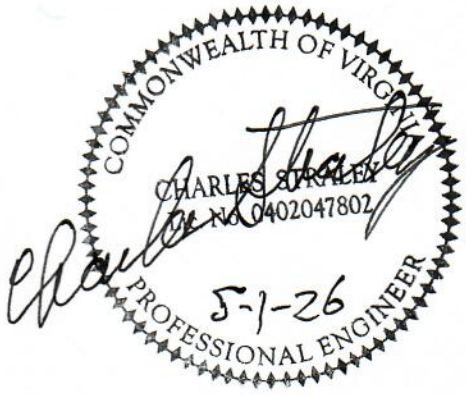

1.0 Purpose

Pursuant to the Federal Coal Combustion Residuals (CCR) Rule 40 CFR § 257.73(d)(1), each CCR impoundment is required to conduct an initial and periodic structural stability assessment to establish whether the CCR unit can safely store the maximum volume of CCR and wastewater.

2.0 Introduction

The Glen Lyn Landfill and West Pond (West Pond) are associated with the Glen Lyn Plant located in Giles County, Virginia (VA). The Station operated from 1919 to 2015. Ash generated after 2008 was disposed of off-site. The Ash Landfill has been assigned Solid Waste Permit #222. Sections of the West Pond were converted into a Landfill area composed of sluiced fly ash.

The Station began operating in 1919 and was acquired by Appalachian Power Company in 1925. In 1919, the first coal-fired generating unit had a capacity of 15 megawatts of electricity. The first coal-fired unit was retired in 1954. In 1920, the second unit was put into service. The third unit was put into service in 1924. In 1927, the fourth unit was put into service. Units 2, 3, and 4 had the capacity to generate 65 megawatts of electricity and were retired in 1971. The fifth unit was put into service in 1944 and had the capacity to generate 95 megawatts of electricity. The sixth unit was put into service in 1957 and had the capacity to generate 240 megawatts of electricity. The fifth and sixth units were retired in 2015 when the plant ceased production.

The West Pond includes approximately 2.5 acres of open water at the far northwestern edge of the site. The original discharge outfall structure is the primary spillway for the West Pond with a 36-inch diameter pipe and riser. In 2019, a 90-foot wide emergency spillway channel was installed at the western end of the West Pond. There is also a 2-acre, geomembrane lined leachate pond associated with the Ash Landfill overlying the West Pond. The Ash Landfill was capped and closed in 2014. The closure area was regraded and capped with a 30-mil PVC geomembrane, a geocomposite drainage net material, and a vegetated cover.

A visual inspection of the Ash Landfill and West Pond was also performed on March 3, 2026, as part of structural stability assessment. During the inspection, GAI personnel did not identify any signs of distress or malfunction that would affect the structural condition of the Ash Landfill and West Pond.

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Based on historical subsurface investigation, the relative density and description of the foundation materials are adequate for the CCR unit.

3.2 Slope Protection

The downstream slope of the north dike that parallels the New River is protected by riprap and transitions to a grass covered slope to the crest of the dike. The remaining downstream slopes are protected with vegetative cover with some areas of riprap.

The slope protection appears to be adequate at the time of preparing this report.

3.3 Dike Compaction

The Ash Landfill and West Pond are considered to be a part of the Auxiliary Ash Pond Complex. The West Pond is encompassed by a perimeter dike. In 1967, the embankment was completed using clayey shale to a crest elevation 1536 ft-msl. The slopes of the embankments were 2 horizontal to 1 vertical (2H:1V) with a riprap toe buttress.

By 1981, the Glen Lyn Plant was creating dry fly ash, thus CCR was placed and compacted in the Landfill.

A review of available subsurface investigations through the embankment indicates that the material is stiff and representative of compacted earthen materials.

3.4 Vegetated Slopes

The vegetative areas are mowed to facilitate inspections and maintain growth of the vegetative layer and prevent the growth of woody vegetation.

3.5 Spillway Capacity

The West Pond operated as an ash pond until the early 1970s, when an adjacent landfill was constructed. The West Pond is currently used as a sedimentation pond. The spillway system will convey the 1,000-year design storm for a significant hazard pond.

3.6 Underlying Hydraulic Structures

Current conditions of the Site include an existing diversion channel located along the western side of the Site and a leachate holding basin to the south. The Site spillway discharges across the northern side into a channel that runs to the New River. The spillway weir crest is a trapezoid with a bottom width of 90 feet, 2H:1V side slopes, and a crest elevation of 1,532 feet. The spillway channel slopes at 33 percent down the embankment and then at a 10 percent grade into a receiving channel. The downstream area of the Site spillway is through an undeveloped, wooded valley that drains to the New River.

3.7 Adjacent Water Bodies

The downstream slope of the West Pond north embankment is abutted by the New River. The bank of the New River is lined with riprap; thus, a structural stability analysis with adjacent water bodies was not performed.

4.0 Corrective Measures

No deficiencies were detected in the structural stability analysis of the West Pond, and therefore, no corrective measures are recommended at this time.

5.0 Conclusion

GAI reviewed previous structural stability analyses and relevant drawings and surveys for this Structural Stability Assessment. Based on the analyzes conducted for the conditions outlined in the CCR Rule, the Glen Lyn Landfill and West Pond design, construction, and operations and maintenance is consistent with good engineering practices for the volume of CCR and wastewater contained in the impoundment.

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