ANNUAL STRUCTURAL STABILITY AND SAFETY FACTOR ASSESSMENT
ASH SURGE BASIN AND ASH BYPASS BASIN
POWERTON STATION
OCTOBER 2026

This annual report documenting the structural stability and safety factor assessments has been prepared for the Ash Surge Basin (ASB) and Ash Bypass Basin (ABB) at Powerton Station (Station) in Pekin, Illinois. This assessment report documents the annual structural stability and safety factor assessments completed by a licensed professional engineer pursuant with Title 35 of the Illinois Administrative Code (35 IAC) Sections 845.450 and 845.460, and Title 40 of the Code of Federal Regulations (40 CFR) Section 257.73(d)(3) and 257.73(e)(2), herein referred to as to the regulations, respectively.

Civil & Environmental Consultants, Inc. (CEC) completed this annual structural stability and safety factor assessment as described in the following sections.

1.0 REGULATION REQUIREMENTS

In accordance with the above referenced regulations, the owner or operator of a coal combustion residual (CCR) impoundment is required to:

(1) conduct initial and periodic structural stability assessments and document whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded in the CCR impoundment; and

(2) conduct an initial and annual safety factor assessments for each CCR unit and document whether the calculated factors of safety for each CCR unit achieve the minimum safety factors specified for the critical cross section of the embankment.

The following provides a description of the site followed by the assessments and certification.

2.0 SITE DESCRIPTION

At the time of this report, the ASB is an inactive CCR surface impoundment. The ABB is active after a permitted retrofit in 2024. The basins are approximately 7.5 acres and 1 acre in size, respectively. On October 6, 2026, CEC inspected both the ASB and ABB and our observations showed no signs of distress that would suggest the stability or operation of the impounding structure is compromised.

3.0 STRUCTURAL STABILITY AND SAFETY FACTOR ASSESSMENT

In preparing the annual structural stability and safety factor assessments, CEC completed the 2026 CCR surface impoundment inspection. Results of the annual inspection showed no modification to either the configuration or condition of the ASB and ABB, nor were structural deficiencies observed or release(s) reported. CEC reviewed both the initial structural stability and safety factor assessment reports prepared by Geosyntec Consultants in October 2016 and the previous annual report prepared by Sargent & Lundy in 2025. Considering there have been no changes to the ASB and ABB within the last year, both the structural stability and safety factor assessments remain valid. ASB and ABB are considered stable for the maximum volume of CCR and CCR wastewater that can be impounded.

3.1 Structural Stability Assessment

The following sections describe the results of the annual structural stability assessment.

3.1.1 Stable Foundation and Abutments

Detailed descriptions of the soils forming the earthen dike and foundation soils are provided in the initial structural stability report. Results of the annual inspection indicate no modifications to the ASB and ABB foundations since the initial structural stability assessment. As a result, the conclusions regarding stable foundations and abutment documented in the initial structural stability report remain valid.

3.1.2 Adequate Slope Protection

As documented in the initial structural stability assessment and the 2025 structural stability reports, the structural stability of the downstream slopes is maintained during a low pool condition. The ASB and ABB are constructed with a 60 mil high-density polyethylene (HDPE) liner that provides adequate protection of the upstream slopes against surface erosion, wave action, and adverse effects of sudden (rapid) drawdown. No modifications to the slope protection have been observed or documented. Conclusions regarding the adequacy of the documented upstream slope protection remain valid.

Downstream slope protection consists of vegetative cover over the downstream slopes and pertinent surrounding areas. The annual inspection shows the grassy vegetation continues to be well maintained and free of woody vegetation. At the time of inspection, the vegetation did not exceed 12 inches in height. Conclusions regarding downstream slope protection remain valid.

3.1.3 Dike Compaction

Information regarding dike compaction is outlined in the initial structural stability report. Considering the annual inspection of the dike did not show signs of distress that would be

indicative of improperly placed and/or loosely compacted soils, the conclusions regarding dike compaction documented in the 2025 Sargent & Lundy structural stability report remain valid.

3.1.4 Spillway

The initial structural stability assessments estimated the design precipitation (1,000-year, twenty-four-hour event) within the ASB is lower than the emergency spillway invert elevations. The 2025 inflow design flood control system plan, by Sargent & Lundy in 2025, concluded that water entering the ABB during a design precipitation would not overtop the basin's dikes. Discharge from the basins is not anticipated.

3.1.5 Structural Integrity of Hydraulic Structures

The hydraulic structures associated with ASB and ABB include reinforced concrete distribution troughs, reinforced concrete inlet trenches, and discharge concrete and HDPE pipes that pass through or beneath the basin embankments. Station personnel reported no pipe distress or problems with operation of the pipes. The last reported video inspection of the discharge pipes of the ASB was performed in 2016 and of the ABB in July 2024. Those inspections showed no significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, or debris that may negatively affect the basins.

Our 2026 inspection showed no visual signs of distress at the embankment surfaces that could be indicative of pipe deterioration, failure, deformation, etc. (e.g., soft spots caused by leaking water, distortions in dike alignment). The structural stability of the basins is not of current concern.

3.1.6 Structural Stability Assessment Deficiencies

Structural deficiencies with hydraulic structures were neither observed nor have deficiencies been reported by Station personnel. It is noted that the ASB discharge pipe has not been inspected since 2016. A visual surveillance should be performed to verify the ASB discharge pipes are in good working condition, and are free of significant sedimentary deposits that may negatively affect the pipe's integrity.

3.2 Safety Factor Assessment

The following sections describe the results of the annual safety factor assessment.

3.2.1 Slope Stability Methodology

The assessment included review of the initial and previous annual safety factor assessment. The purpose of reviewing the previous safety factor assessments was to confirm the methodology, assumptions, and inputs used to complete the safety factor assessment remain relevant. The methodology used for the slope stability analysis reported in the initial safety factor assessment is

consistent with regulations and, considering results of the 2026 surface impoundment inspection showed no significant modifications to either the configuration or condition of the ASB and ABB, nor were structural deficiencies observed, the assumptions and inputs used to complete each of the slope stability cases analyzed remain relevant.

3.2.2 Conclusion - 2026 Safety Factor Assessment

The initial 2016 and the 2025 safety factor assessment reports for the ASB, along with the initial 2022 slope stability analysis for the ABB and the 2025 safety factor assessment report for the retrofitted ABB, were reviewed. The results of these assessments, coupled with the findings from the 2026 impoundment inspections, confirm the factors of safety remain valid. We conclude that the previous safety factor assessment is valid and that the calculated factors of safety for the ASB and ABB achieve the minimum safety factors specified for the critical cross section of the embankment.

4.0 LIMITATIONS AND CERTIFICATION

Prepared under the direction of Mr. M. Dean Jones, P.E., the annual structural stability and safety factor assessments were prepared and meet the requirements of 35 IAC Sections 845.450 and 845.460, and 40 CFR Sections 257.73(d)(3) and 257.73(e)(2).

By affixing my seal to this, I do hereby certify to the best of my knowledge, information, and belief that the information contained in this report is true and correct. I further certify I am licensed to practice in the State of Illinois and that it is within my professional expertise to verify the correctness of the information. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Seal: 

Signature: _____

Name: M. Dean Jones, P.E.

Date of Certification: October 21,2026

Illinois Professional Engineer No.: 062-051317

Expiration Date: November 30, 2027