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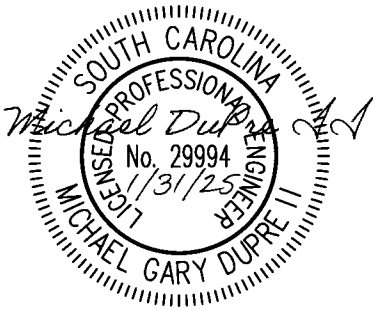

COAL COMBUSTION RESIDUAL IMPOUNDMENT INSPECTION – JEFFERIES GENERATING STATION

Moncks Corner, South Carolina

santee cooper®

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**Please note that the terms "embankment", "berm", "dike", and "dam" are used interchangeably within this report, as are the terms "pond", "basin", and "impoundment".*

Executive Summary

This report is being completed in accordance with the 2024 Legacy CCR Rule effective November 8, 2024, which requires and annual inspection for all newly defined Legacy CCR Surface Impoundments by February 10, 2025, in accordance 40 CFR § 257.100 (f)(3)(iv) and 40 CFR § 257.83(b).

This assessment of the stability and functionality of the Jefferies Generating Station (JGS) coal combustion residual (CCR) management unit is based on a review of available documents and an on-site assessment conducted by Santee Cooper engineering staff on January 13, 2025. We found the supporting technical information to be generally adequate. As detailed in Section 5.4, there are four (4) recommendations based on field observations for the continued maintenance of the management unit.

In summary, the JGS CCR management unit, Ash Pond A, is generally satisfactory for continued safe and reliable operation. It should be noted that the coal fired units at JGS were decommissioned on December 31, 2012, and the oil-fired units were decommissioned on October 1, 2015. The impoundment has not received CCR since the coal fired units were decommissioned. The impoundment still receives industrial stormwater and contains both CCR and liquids. JGS is decommissioned and the impoundment is inactive. Santee Cooper is actively removing all of the ash from the impoundment for beneficial use. As a result of the ongoing process to remove the coal ash, the impoundment maintains a constant, "near-dry" status in which the water level is kept drawn down to the lowest extent possible. No recognized existing or potential management unit safety deficiencies were identified within the parameters of design and operation given the unit's low hazard potential classification per EPA guidelines. Technical documentation from an outside consultant (Worley Parsons) was submitted to USEPA on March 29, 2012, supporting the "low" hazard classification.

Summary of Recommendations

1. Minor scalping from mowing operations was noted on the upstream slope of the southern dike in Ash Pond A. These areas should be monitored for erosion during routine inspections until the vegetation has been reestablished. If erosion occurs before the grass regrows in these areas, then any eroded areas should be repaired

by placing topsoil to grade and establishing grass to stabilize the bank.

2. A localized surficial slide located near the outfall structure should be monitored for progression until it can be repaired. The slide occurred as a result of Tropical Storm Debby and appears to have reached equilibrium.

3. Monitor shallow animal burrows for progression. If warranted, contact a trapper to assist in removing burrowing animals.

4. There is a localized surficial slide resulting from TS Debby noted in the weekly inspections that is outside of the perimeter of Ash Pond A, in the stormwater canal that parallels the dike on the eastern side. Though there is no threat to the integrity of the impoundment as a result of this slide, it should be monitored for significant progression. If the slide were to progress significantly, and the bulk of the loose material were to slide into the channel, then the resulting blockage could potentially cause a backwater effect upstream, resulting in stormwater flowing into the pond instead of around it. It should be noted that this is a very low potential scenario and highly unlikely to occur.

Coal Combustion Residual Impoundment Inspection – Jefferies Generating Station

1.0 General Information and Introduction

1.1 Purpose and Scope

The purpose of this report is to fulfill the requirements of Section 257.83(b) of the Code of Federal Regulations regarding the safety and inspection of CCR surface impoundments. Section 257.83(b) states that "If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment is subject to the periodic structural stability assessment requirements under Section 257.73(d) or 257.74(d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards." The inspection must, at a minimum, include:

i. A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by Section 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under Section 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections)
ii. A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures
iii. A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation

The inspection report must also be written by a qualified professional engineer and must address the following:

i. Any changes in geometry of the impounding structure since the previous annual inspection
    - **No changes noted in the geometry of Ash Pond A**

ii. The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection
    - **Ash Pond A has a staff gauge but no formal dam safety instrumentation (see Section 4.3.3)**

iii. The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection
    - **See Table 1.1 for information on Ash Pond A**

iv. The storage capacity of the impounding structure at the time of inspection
    - **See Table 1.1 for information on Ash Pond A**

v. The approximate volume of the impounding water and CCR at the time of inspection
    - **See Table 1.1 for information on Ash Pond A**

Table 1.1: Impoundment Capacity Information

	Ash Pond A
Surface Area (acre)	127
Approx. Current CCR Storage Volume (acre-feet)	191
Total Storage Capacity (acre-feet)	1,709
Total Water Storage Capacity (acre-feet)	1,518
Crest Elevation (feet)	19.3
Normal Pond Elevation (feet)	10.0
Present Pond Elevation/Depth During Inspection (feet)	Below*
Maximum Pond Level/Depth for 2024 (feet)	Below*
Minimum Pond Level/Depth for 2024 (feet)	Below*
* Water surface was below the bottom of the staff gauge. Impoundment is continuously pumped down to facilitate CCR excavation.	

vi. Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures

- **Three (3) continued observation items and one (1) follow-up item noted on Ash Pond A, as discussed in Executive Summary and Sections 4.2 and 5.4; pond is safe for continued operation**

vii. Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

- **No other changes noted on Ash Pond A that impact the stability or operation of the impounding structure**

2.0 Description of Coal Combustion Residual Management Unit

2.1 Location and General Description

The Jefferies Generating Station (JGS) is located on the east bank of the Tailrace Canal below (south of) the Pinopolis Dam in Berkeley County, South Carolina, approximately 2.0 miles northeast of Moncks Corner on Powerhouse Road. Lake Moultrie is immediately upstream of JGS.

JGS has one (1) applicable Legacy CCR Surface Impoundment defined by the 2024 Legacy CCR Rule: Ash Pond A. The impoundment, formed by a perimeter side-hill dike around the east side and a divider dike to the south, separating it from the Decant Pond, a non-CCR impoundment used for polishing and pH adjustment, as needed. Ash Pond A naturally slopes to the southern end and is hydraulically connected to the Decant Pond via an inlet box riser and a 36-inch RCP culvert through the east end of the non-structural divider dike (cross dike). The perimeter dike and cross dike tie into a massive spoil bank on the west side of the basin; the spoil bank was created by dredging of the Tailrace Canal in the 1940s. The spoil bank is typically some 20 feet higher than the ash pond dike. The east perimeter dike ties into high ground on the north-northeast side of Ash Pond A. The generating station was situated on high ground on the north-northwest side of Ash Pond A; a Seaboard Coast Line railroad embankment lies between the north end of Ash Pond A and the rest of the station. Biggins Swamp extends south from the Decant Pond perimeter dike. Table 2.1 below shows a summary of the size and general dimensions of the CCR management impoundment at JGS:

Table 2.1: Summary of Dam Dimensions and Size[1]

	Ash Pond A
Dam Height (ft)	12.5
Crest Width (ft)	12
Length (ft)[2]	3,500
Design Side Slopes (upstream) H:V	3:1
Design Side Slopes (downstream) H:V	2:1

1 *From Coal Combustion Waste Impoundment Report to EPA dated January 2011.*
2 *Ash Pond A length includes cross dike.*

2.2 Amount and Type of CCRs Currently Stored in Unit and Maximum Capacity

The amount of CCRs currently stored in Ash Pond A and its maximum capacity are summarized in Table 2.2 below. As stated earlier, JGS no longer produces power and Santee Cooper is actively removing all of the ash from the impoundment. The impoundment maintains a "near-dry" status in which minimal water is being stored. Ash Pond A was designed to contain fly ash, bottom ash and boiler slag.

Table 2.2: Amount of CCRs and Maximum Capacity of Unit

	Ash Pond A[2]
Surface Area (acre)[1]	127
Approx. Current CCR Storage Volume (cubic yards)	307,973
Approx. Current CCR Storage Volume (acre-feet)	191
Total Storage Capacity (cubic yards)	2,757,000
Total Storage Capacity (acre-feet)[1]	1,709
Total Water Storage Capacity (acre-feet)[1]	1,518
Crest Elevation (feet)	19.3
Normal Pond Elevation (feet)[3]	10.0
Maximum Pond Elevation[4]/Depth for 2024 (feet)[5]	Below Gauge
Minimum Pond Elevation[4]/Depth for 2024 (feet)[5]	Below Gauge

1 From Santee Cooper response to EPA's RFI dated March 9, 2009.
2 Ash is currently being excavated from Ash Pond A for beneficial use.
3 Normal Pond Elevation reflects current operating procedure.
4 Pond elevation is calculated from staff gauge reading.
5 Pond levels below bottom of gauges.

As stated above, CCR is actively being removed from Ash Pond A for beneficial use. While in operation, the process of filling the pond with CCR naturally filled the northern end closest to the station first. JGS was decommissioned prior to the southern end being filled. Ditches are in place within the stored ash to decant water from the northern end of the pond to the southern end. The only instrumentation within the pond used for monitoring is the staff gauge, located at the outfall in the southeastern corner of the pond. Thus, the depth and elevation recorded in Table 2.2 represent impounded water in Ash Pond A and the CCR Storage Volumes are from Beneficial Use documentation tracking the quantity of removed ash.

2.3 Principal Project Structures

2.3.1 Earth Embankments

Ash Pond A is contained by the high spoil bank on the west side, a railroad (high ground) spanning the northwest to the northeast sides, a relatively short section of perimeter dike along the southeast side, and the cross dike on the south side. Geometric features and crest elevations are shown above in Tables 2.1 and 2.2.

The Decant Pond is contained by the high spoil bank on the west side, the cross dike on the north side, and the perimeter dike along the east and south sides.

The perimeter dike and cross dike embankments are constructed of compacted earth fill. The total length of the perimeter dike is approximately 3,500 feet, including the cross dike. The cross dike has a total length of approximately 1,500 feet. Based on boring information for the Tailrace Canal, the spoil bank created by dredging the Tailrace Canal likely consists of predominantly dumped marl with sandy clays and some gravel. The length of the spoil bank forming the west boundary of the basin is approximately 2,600 feet. As discussed in Section 2.1, Ash Pond A is connected to the Decant Pond via an inlet box riser and a 36-inch RCP culvert through the cross dike. Both Ash Pond A and the Decant Pond are unlined and no internal drainage measures or toe drains for seepage control were included in the design of the low perimeter dikes.

2.3.2 Outlet Structures

Drainage from the northern part of Ash Pond A to the southern part is through excavated interior ditches within the ash. Water ponds at the southern end and passes through the outlet works located at the southeast corner of Ash Pond A and into the Decant Pond. The outlet works consist of a concrete inlet box riser with a 36-inch reinforced concrete pipe (RCP) conduit through the cross dike to discharge into the Decant Pond. The slopes are lined with riprap where the discharge pipe projects from the embankment into the Decant Pond. The submerged inlet prevents the entry of floating ash particles (cenospheres) into the Decant Pond and the top of the box is open for overflow control. The submerged inlet is a 3.7 sq. ft. rectangular opening with an invert elevation of 11.20 feet and the top of the box is set at elevation 16.60 feet. The upstream invert of the 36-inch RCP culvert is at elevation 13.07 feet and the

downstream invert is at elevation 12.24 feet. Water is being manually pumped from Ash Pond A to the Decant pond via diesel pumps to maintain the pond in a dry condition during CCR removal and beneficial use operations.

3.0 Summary of Relevant Reports and Incidents

3.1 Summary of Reports on the Safety of CCR Units

Furnished reports of monthly inspections conducted by JGS personnel for the period January 2024 to September 2024 and weekly inspections from September 25, 2024, to December 25, 2024 indicated no major structural or operational problems. No significant deterioration was indicated in the documentation reviewed.

4.0 Field Observations

4.1 Project Overview and Significant Findings

Santee Cooper qualified engineer Michael DuPre II, P.E. visited the JGS site on January 13, 2025, to perform the field inspection. The field inspection began mid-morning and weather conditions on site were overcast and around 50 degrees Fahrenheit. The Ash Pond A water level was below the bottom of the staff gauge during the inspection.

The overall condition of the CCR impoundment dikes was satisfactory with no significant findings noted.

All findings were discussed with station personnel following completion of the field inspection to facilitate monitoring and repair of any deficiencies noted.

4.2 Ash Pond A

4.2.1 Crest

The crest of the Ash Pond A perimeter dike was generally found to be in satisfactory condition. The limestone-surfaced crest road was in good shape. No major sags, depressions, or other signs of significant settlement were observed in the crest. No tension cracks or other signs of incipient mass soil movement were observed in the crest or along the edge of the crest.

4.2.2 Upstream/Inside Slope

The upstream/inside slope of the Ash Pond A perimeter dike was generally found to be in satisfactory condition.

The grass on the inside slope was observed to be maintained in an overall good condition. Minor scalping, related to the slope mowing operations, was observed in isolated areas along the slope of the cross dike.

There was one (1) surficial slide located near the outfall structure that occurred in August 2024 as a direct result of Tropical Storm (TS) Debby. Rainfall from TS Debby began to impact the area on August 6 and the slow-moving storm produced more than 18 inches of rainfall by August 10. Nearly 9 inches of that rainfall occurred in less than 12 hours on

August 10. As a result of the excessive rainfall, the slopes were heavily saturated, and a small surficial slide developed near the outfall structure.

No obvious signs of other slumps, slides, bulges, tension cracks, seepage, or animal burrows were observed on the inside slope.

4.2.3 Downstream/Outside Slope and Toe

The downstream slope and toe of Ash Pond A was found to be in generally satisfactory condition. The grass on the outside slope was observed to be maintained in an overall good condition.

Some minor animal burrows were observed in a few isolated areas. These animal burrows were small in size and confined to within the shallow topsoil layer.

No obvious signs of slumps, slides, bulges, tension cracks, or seepage, or were observed on the outside slope.

4.2.4 Abutments and Groin Areas

The abutments and groin areas were found to be in generally satisfactory condition. No erosion or displacement of material was observed where the cross dike ties into the spoil bank. No erosion, displacements, or noticeable seepage (at outside contact) were observed where the east perimeter dike ties into high ground at the north end.

4.2.5 Overflow Structure/Outlet

Water flows from Ash Pond A through a concrete inlet riser, allowing free flow of decanted water into the Decant Pond. The current operating conditions involve an authorized dewatering process which maintains the water level in Ash Pond A below the operation level of the permanent outlet works via a temporary pump (see Section 4.2.6 for information on the pump discharge line). There were no signs of displacement or deterioration resulting from pumping and the overflow structure/outlet was found to be in generally satisfactory condition.

4.2.6 Outlet Conduit

When JGS was an active coal-fired generation station, water would flow from Ash Pond A to the Decant Pond through the outlet structure discussed in Section 4.2.5 and into a 36-inch RCP conduit through the cross dike. Under the current operating conditions, the ponds are too low to gravity flow through the outlet structure, so the water is pumped through the 36-inch RCP conduit into the Decant Pond on an as-needed basis. There were no major depressions, displacements, or deterioration visible in the cross dike and the outlet conduit was found to be in generally satisfactory condition.

4.2.7 Emergency Spillway

There is no emergency spillway within Ash Pond A. The top of the outlet structure is open for flow to prevent overtopping the cross dike in the event of an emergency.

4.2.8 Other Conduits

There are two (2) abandoned conduits with outfalls into Ash Pond A at the northwest corner. One is a 6-inch force main from the stormwater lift station on JGS grounds and the other is an 8-inch blowdown line from the previously shuttered cooling towers. Demolition of the JGS Steam Plant was completed in 2018 under an approved Construction General Permit and as a result, the lift station, lift pumps, cooling towers and blowdown pumps and associated piping were removed from the plant site. The pipes were left in place and flowable fill was used to plug the entire length below the existing CSX right-of-way. The outfall location of these abandoned pipes was generally found to be in satisfactory condition and there is no concern with potential failure in this area due to its upstream location in natural high ground.

There is one (1) 24-inch steel pipe connecting the former coal yard wetwell to Ash Pond A. Accumulated stormwater is pumped from the wetwell into Ash Pond A. The outfall location of the wetwell discharge pipe was generally found to be in satisfactory condition and there were no major depressions, displacements, or deterioration visible in the area between the coal pile and Ash Pond A.

The two (2) 8-inch HDPE ash lines that were formerly used to convey ash from the generating station into the ponds are now inactive. The outfall location of these pipes

was generally found to be in satisfactory condition and there is no concern with potential failure in this area due to its upstream location in natural high ground.

4.3 Adequacy of Maintenance, Operating, and Surveillance Procedures

4.3.1 Adequacy of Maintenance Procedures

Overall, maintenance of the impounding embankment and outlet works of Ash Pond A appears to be adequate. No major maintenance issues were noted during the field inspection or in the monthly inspection reports completed by JGS personnel and reviewed by the inspection team.

4.3.2 Adequacy of Operating Procedures

Based on field observations and discussions with JGS personnel, the operating procedures for Ash Pond A appear to be adequate.

4.3.3 Adequacy of Surveillance Procedures

JGS personnel complete daily informal inspections, and weekly and monthly formal inspections on the Ash Pond A dikes in accordance with good engineering practice and Section 257.83(a) of the Code of Federal Regulations. These inspections are being properly documented and should continue as they are currently being conducted in accordance with the regulations.

Ash Pond A has no dam performance monitoring instrumentation. A staff gauge is installed at the outlet structure of each pond to monitor water levels.

5.0 Conclusions and Recommendations

Conclusions are based on visual observations from a one-day site visit on January 13, 2025, and review of documentation and information collected by the inspection team.

5.1 Conclusions Regarding the Structural Soundness of the Management Unit

Based on a review of the information collected and the observations of the inspector during the site visit, the embankments and outlet structures of Ash Pond A appear to be structurally sound under static loading conditions. As noted in the January 2011 report to the EPA by Dewberry & Davis, the low height of the dikes, low head in the pond and the static stability performance over the last 40 years of service are favorable indications that the dikes may perform satisfactorily under seismic loading.

5.2 Conclusions Regarding the Hydrologic/Hydraulic Safety of the Management Unit

Offsite stormwater bypasses the ash ponds and flows directly into the exterior perimeter ditch. The current operating procedure involves an authorized dewatering process which maintains the water level in Ash Pond A to a near-dry state via temporary pumps.

5.3 Conclusions Regarding Field Observations

The inspector was provided access to all areas in the vicinity of the ash pond as required, to conduct a thorough field inspection. The embankment dikes and outlet structure were observed to have no signs of overstress, significant settlement, shear failure, or other signs of instability. The embankment dikes and outlet structure appear structurally sound. There are no apparent indications of unsafe conditions or conditions needing emergency remedial action. Recommended maintenance can be found in Sections 5.4.

5.4 Recommendations

The following maintenance and monitoring items were noted during the field inspection.

Recommendations for repair and/or monitoring are as follows:

1. Scalped areas should be monitored for erosion during routine inspections and after rain events. If erosion occurs before the grass regrows in these areas, then any eroded areas should be repaired by placing topsoil to grade and establishing grass to stabilize the bank.

2. A localized surficial slide in the slope near the outfall structure appears to have reached a state of equilibrium and should be monitored for progression until repairs can be made. Repairs shall be made by removing incompetent/loose material and replaced with suitable fill placed in lifts one (1) foot thick or less to ensure adequate compaction is achieved. Compaction of the material is achieved utilizing a sheepsfoot vibratory roller, traveling parallel to the centerline of the structure. Compaction shall be 95% of its Modified Proctor Test density or better. Upon completion of placement, compaction, and fine grading, a maximum of four (4) inches of topsoil is placed and tracked, tacked, and seeded with permanent vegetation to stabilize the repair area.

3. Monitor shallow animal burrows for progression. If warranted, contact a trapper to assist in removing burrowing animals.

4. There is a localized surficial slide noted in the weekly inspections that is outside of the perimeter of Ash Pond A, in the stormwater canal that parallels the dike on the eastern side. Though there is no threat to the integrity of the impoundment as a result of this slide, it should be monitored for significant progression. If the slide were to progress significantly, and the bulk of the loose material were to slide into the channel, then the resulting blockage could potentially cause a backwater effect upstream, resulting in stormwater flowing into the pond instead of around it. It should be noted that this is a very low potential scenario and highly unlikely to occur. If this slide were to progress to the point of blocking the offsite flow through the canal, then the material should be removed from the flow path.