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COAL COMBUSTION RESIDUAL IMPOUNDMENT INSPECTION – WINYAH GENERATING STATION

Georgetown, South Carolina

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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 assessment of the stability and functionality of the Winyah Generating Station (WGS) coal combustion residual (CCR) management units is based on a review of available documents and an on-site assessment conducted by Santee Cooper engineering staff on December 8, 2015 and December 9, 2015. We found the supporting technical information to be generally adequate. The assessment team had several recommendations based on field observations that may help WGS to continue to maintain the management units in safe condition.

In summary, the WGS CCR management units are in generally satisfactory condition for continued safe and reliable operation. No recognized existing or potential management unit safety deficiencies were identified within the parameters of design and operation.

Summary of Recommendations

Ash Pond A

1. Eroded depression in downstream slope should be filled. This area should be monitored for further displacement of material during weekly inspections.
2. Area eroded on divider dike should be repaired and re-sloped.
3. Wet area on the downstream slope and toe should be monitored during weekly inspections.

Ash Pond B

1. Wet areas on the downstream slope and toe should be monitored during weekly inspections.
2. Area eroded on crest should be repaired.

South Ash Pond

1. Reseeding of bare soil areas should be done as part of routine maintenance
2. Wet areas on the downstream slope and toe should be monitored during weekly inspections.
3. At the toe of the dike where the headwalls drain into the perimeter ditch, vegetation should be cut down to allow for easier monitoring of the headwalls

drains.

4. Eroded areas on the east end of pond should be filled and re-sloped.
5. It is recommended that the station install a new engineered toe drain system on the west end of the pond within the next year. Installing a new toe drain would improve seepage control, relieve pressure within the dike in this area, and address minor wet areas exterior to the pond.

Unit 2 Slurry Pond

There are no recommendations for maintenance or repairs on the Unit 2 Slurry Pond due to the ongoing closure of the pond.

Units 3 & 4 Slurry Pond

1. Reseeding of bare soil areas should be done as part of routine maintenance
2. Wet areas on the downstream slope and toe should be monitored during weekly inspections.

This report presents the opinion of the assessment team as to the potential for catastrophic failure and reports on the condition of the CCR units at Winyah Generating Station. The assessment of dam safety reported herein is based on field observations and review of readily available information provided to the inspection team of the subject coal combustion residual (CCR) management units. Qualified Santee Cooper engineering staff performed the field observations and review of pertinent information and made the assessment in conformance with the requirements of Section 257.83 of the Federal Register and in accordance with reasonable and generally accepted engineering practices.

Coal Combustion Residual Impoundment Inspection – Winyah Generating Station

1.0 General Information and Introduction

1.1 Introduction and Summary Conclusions

This assessment of the stability and functionality of the Winyah Generating Station (WGS) coal combustion residual (CCR) management units is based on a review of available documents and an on-site assessment conducted by Santee Cooper engineering staff on December 8, 2015 and December 9, 2015. We found the supporting technical information to be generally adequate. As detailed in Section 5.2, there are several recommendations based on field observations that may help WGS continue maintaining the management units in safe condition.

In summary, the WGS CCR management units are generally satisfactory for continued safe and reliable operation. No recognized existing or potential management unit safety deficiencies were identified within the parameters of design and operation.

1.2 Purpose and Scope

The purpose of this report is to fulfill the requirements of Section 257.83(b) of the Federal Register 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 (required information on the CCR impoundments at CGS included in bold below the Federal Register excerpt):

i. Any changes in geometry of the impounding structure since the previous annual inspection
    - **No change noted in the geometry of the management units at WGS.**

ii. The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection
    - **Staff gauges are located in the ponding water at Ash Pond B, South Ash Pond, and Units 3 & 4 Slurry Pond. No formal dam safety instrumentation is found on the ponds.**

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 below for information on all WGS Ponds**

iv. The storage capacity of the impounding structure at the time of inspection
    - **See Table 1.1 below for information on all WGS Ponds**

v. The approximate volume of the impounding water and CCR at the time of inspection
    - **See Table 1.1 below for information on all WGS Ponds**

Table 1.1: Impoundment Capacity Information

	Ash Pond A[2]	Ash Pond B	South Ash Pond	Unit 2 Slurry Pond[2]	Units 3 & 4 Slurry Pond
Surface Area (acre)[1]	88	63	61	34	100
Current CCR and Water Storage Volume (acre-feet)	1641	971	1051	55	1630
Total Storage Capacity (acre-feet)[1]	1641	1040	1129	416	2850
Crest Elevation (feet)	41.5	41.5	37.0	37.0	38.0
Current Water Elevation (feet)[3]	-	33.8	28.2	-	19.6
Maximum Water Elevation in 2015 (feet)	-	33.8	28.2	-	31.6
Minimum Water Elevation in 2015 (feet)	-	32.2	28.1	-	19.6
Approximate Current Depth (feet)	18	18	17	5	12
Maximum Depth (feet)	18	18	17	10	20
Minimum Depth (feet)	18	18	17	5	12

1 From Santee Cooper response to EPA's RFI dated March 9, 2009.
2 CCR is currently being excavated from Ash Pond A and Unit 2 Slurry Pond. Neither pond has a permanent pool of water.
3 Normal Pond Level reflects elevation under current operations.
Note: Some storage capacity values differ from the Dewberry and Davis Report due to additional studies performed in anticipation of pond closures.

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

- **Some maintenance required on the ponds as discussed in Executive Summary and Sections 4.0 and 5.0; however, ponds are 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 that impact the stability or operation of the impounding structures**

2.0 Description of Coal Combustion Residual Management Units

2.1 Location and General Description

The Winyah Generating Station (WGS) is located on Penny Royal Road, Georgetown, South Carolina, near Penny Royal Creek.

WGS has six (6) CCR management impoundments: Ash Pond A, Ash Pond B, South Ash Pond, Unit 2 Slurry Pond, and the Units 3 & 4 Slurry Pond. The impoundments are divided into separate units by internal dikes. The West Ash Pond was closed in 2015 and was not part of this inspection. The Unit 2 Slurry Pond is currently undergoing closure, though it is still part of this inspection. Table 2.1 below shows a summary of the size and general dimensions of the CCR management impoundments at WGS:

Table 2.1: Summary of Dam Dimensions and Size

	Ash Pond A	Ash Pond B	South Ash Pond	Unit 2 Slurry Pond	Units 3 &4 Slurry Pond
Dam Height (ft)	24.5	31	22	12	30
Crest Width (ft)	12	12	15	10	15
Length (ft)	8854	6243	8663	6491	5937
Design Side Slopes (upstream) H:V	2:1	2:1	3:1 & 4:1	2:1	2:1 & 3:1
Design Side Slopes (downstream) H:V	3:1	2:1	3:1 & 4:1	2:1	2:1 & 3:1

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

Ash Ponds A and B were constructed in 1975 and are used for fly ash, bottom ash, and boiler slag. Unit 2 Slurry Pond was constructed in 1977 and closure was initiated in 2015. It was used for flue gas emission control residual. Currently, all slurry is being

removed from this pond and pumps are being used to keep it dry. In 1980, the South Pond was constructed and is used for fly ash, bottom ash, and boiler slag. Also that year, Slurry Pond 3 & 4 was constructed and used for flue gas emission control residual. In 2015, the operation level for the Slurry Pond 3 & 4 was lowered for seismic mitigation. Staff gauges are installed in Ash Pond B, the South Ash Pond and Units 3 & 4 Slurry Pond in order to monitor the water levels within these ponds. The amount of CCRs currently stored in the units and maximum capacities are summarized in Table 2.2 below.

Table 2.2: Amount of CCRs and Maximum Capacity of Units

	Ash Pond A[2]	Ash Pond B	South Ash Pond	Unit 2 Slurry Pond[2]	Units 3 & 4 Slurry Pond
Surface Area (acre)[1]	88	63	61	34	100
Current CCR and Water Storage Volume (acre-feet)	1641	971	1051	55	1630
Total Storage Capacity (acre-feet)[1]	1641	1040	1129	416	2850
Crest Elevation (feet)	41.5	41.5	37.0	37.0	38.0
Current Water Elevation (feet)[3]	-	33.8	28.2	-	19.6
Maximum Water Elevation in 2015 (feet)	-	33.8	28.2	-	31.6
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Approximate Current Depth (feet)	18	18	17	5	12
Maximum Depth (feet)	18	18	17	10	20
Minimum Depth (feet)	18	18	17	5	12

1 *From Santee Cooper response to EPA's RFI dated March 9, 2009.*

2 CCR is currently being excavated from Ash Pond A and Unit 2 Slurry Pond. Neither pond has a permanent pool of water.

3 *Normal Pond Level reflects elevation under current operations.*

Note: Some storage capacity values differ from the Dewberry and Davis Report due to additional studies performed in anticipation of pond closures.

2.3 Principal Project Structures

2.3.1 Earth Embankments

Ash Pond A and Ash Pond B are unlined. The top of Ash Pond A dam elevation from original design plans is 41.5 feet; the original design top of dam elevation for Ash Pond B was 34.5 feet. The perimeter embankment along Ash Pond B was raised in 1997 by approximately 6.8 feet to match the top of dam elevation of Ash Pond A. No internal drainage blankets or toe drains for seepage control were included in the original design of the perimeter dams or in the design of the dam raise for Ash Pond B. The length of the embankment raised was 5,200 feet. The raised embankment outside toe encroached slightly into the adjacent Cooling Pond. In these areas the design called for the foundation of the embankment toe to be constructed of riprap to above the water level and placement of a filter on top of the riprap before constructing the soil embankment on top of it.

The South Ash Pond basin is unlined. A toe drain is used for seepage control and water is pumped back into the South Pond. Seepage water collected in the drain discharges through 4-inch diameter solid-wall PVC pipes extending from the internal drain to daylight at the toe; the design spacing of these seepage drainage pipes is 200 feet. The design drawings show that a 30-inch diameter CMP through a southwest section of the perimeter dike was used for drainage from the basin area during construction. This CMP was plugged with concrete at the upstream and downstream toes of the dam and left in-place at completion of construction in 1980. In 2008, a 60' long slurry wall was installed at the CMP location to a depth of 45' to provide an impermeable barrier within the dike and mitigate seepage in this area.

The Unit 3 & 4 Slurry Pond basin is unlined. No internal drainage blankets or formal toe drains for seepage control were used. The pond shares a common dike on its south side with the West Ash Pond. During construction of the pond a temporary drainage pipe (30-inch CMP) was used for drainage. This CMP was plugged with concrete at the upstream and downstream toes of the dam and left in-place at completion of construction. In 2008, a 225' long slurry wall was installed at the CMP location to a depth of 45' to provide an impermeable barrier within the

dike and mitigate seepage in this area.

The Unit 2 Slurry Pond basin is unlined. Currently the plant is in the process of excavating the material within the Pond to empty and close the structure.

2.3.2 Outlet Structures

Ash Pond A has two abandoned outlet structures located near the southwest corner of the basin. One of these outlet structures discharged treated water toward the west direction through the perimeter dike to outfall into the Discharge Canal to the Cooling Pond; it has been filled with controlled low strength material (CLSM). The other outlet structure discharged through the non-structural cross dike and into Ash Pond B. Since Pond A is full, this outlet structure was not plugged but abandoned in-place.

Ash Pond B's original outlet consists of a rectangular reinforced concrete drawdown structure that discharges treated water into a RCP that extends through the bottom of the perimeter dike to the Discharge Canal to the Cooling Pond. In 2012, a new drawdown structure was installed as a replacement. A 100' long 24" HDPE outfall pipe was also installed. Water level in the pond is controlled by the top elevation where water overflows into the structure. The excavated section of the new outfall pipe which penetrated the existing dike was encased in 134 cubic yards of CLSM. The original outlet was abandoned and the RCP was filled entirely with CLSM once the new structure was installed.

The South Ash Pond outlet is located at the east end of the basin and consist of a rectangular reinforced concrete decant tower with bottom discharge into a 36-inch diameter RCP conduit that extends easterly through the bottom of the perimeter dike; the treated water ultimately outfalls into the Discharge Canal to the Cooling Pond. Stop logs are used to manage the water level in the pond.

The Unit 3 & 4 Slurry Pond had a temporary drainage pipe (30-inch CMP) that was used for drainage during construction that was plugged with a slurry wall in 2008. In 2014, a floating pump station, with an adjustable weir, was installed over the deepest

part of the pond pool. The pump station is anchored to four points with ¼" stainless steel wire rope. The station uses two submersible pumps and approximately 2,500 LF of 14" SDR 17 HDPE pipe that run along the top of the interior slope and then down the downstream slope to discharge to Pump Station No. 1. Seismic stability is maintained at water elevations less than 26 feet. The pump station was installed to drawdown water levels and sustain storage volume between 16 and 26 feet to allow for operational flexibility and additional storage capacity for rain events. Also, in 2015 two 36" HDPE pipes were installed through the divider dike between the West Ash Pond and the Units 3 & 4 Slurry Pond as a result of the West Ash Pond closure to ensure the West Ash Pond does not retain any liquids.

The original Unit 2 Slurry Pond outlet consists of a pump structure made of a rectangular reinforced concrete box that was abandoned. Currently, a submersible pump is in place to remove storm water runoff as it drains into the structure. The storm water is discharged through a 4" flexible HDPE line to Ash Pond A. The intent is to keep the pond in a dry state; however, recently following the 1000 year storm event some water has been retained in the pond and is currently in the process of being pumped out.

3.0 Summary of Relevant Reports and Incidents

3.1 Summary of Reports on the Safety of CCR Units

Furnished reports of weekly inspections, conducted by WGS personnel for the period January 2015 to November 2015 indicated no major structural or operational problems. In addition, previous annual inspection reports were reviewed by Civil Projects. Several minor, potential maintenance items were noted in the report and were carefully observed during the field inspection.

4.0 Field Observations

4.1 Project Overview and Significant Findings

Santee Cooper qualified engineer Mikki Crocker, P.E. performed a site visit to WGS on December 8th, 2015 and December 9th, 2015. The site visit began in the morning of December 8th and continued the following day until the late afternoon of December 9th, 2015. Weather conditions during the visit were approximately 70 degrees Fahrenheit, sunny, and dry. The overall condition of the CCR impoundment dikes was satisfactory with no significant findings 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. Erosion was observed on the divider dike between Ash Pond A and Ash Pond B on the crest road on the Pond B side. No other major sags, depressions, or other signs of significant settlement were observed in the crest. No tension cracks were observed in the crest or along the edge of the crest.

4.2.2 Upstream/Inside Slope

The inside slope of the Ash Pond A embankment dam was observed to be generally filled with ash. No obvious signs of slumps, slides, bulges, tension cracks, seepage, or animal burrows were observed on the inside slope. The surface of the exposed ash fill is generally covered with tall weeds and low-growing bushes. No significant erosion was observed.

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 good condition with a minimal amount of rutting and surface erosion in a few isolated areas. An eroded depression, measuring approximately 4' in diameter and 3' in depth, was observed on the west side of the pond. A wet area approximately 100' feet in length

was observed on the west side of the pond as well. Some other areas along the downstream toe were observed to have wet soils with some ponding water, which is not alarming due to recent heavy rainfall events.

4.2.4 Abutments and Groin Areas

Not applicable; there are no abutments or groins in the perimeter ring-dam.

4.2.5 Outlet Works

Ash Pond A has two abandoned outlet structures located near the southwest corner of the basin. The conduits could not be observed. As mentioned, the conduit through the perimeter dike was properly abandoned and filled with flowable fill. The other conduit through the internal divider dike was abandoned in place and there was no visible evidence at the surface of any problems with the conduit.

4.2.6 Emergency Spillway

No emergency spillway was observed, although the design plans indicate that there was to be an emergency overflow on the perimeter dam on the west side of the basin. Santee Cooper has not found any evidence that the emergency spillway was constructed as part of original construction.

4.3 Ash Pond B

4.3.1 Crest

The crest of the Ash Pond B perimeter dike was generally found to be in satisfactory condition. Some surface erosion was observed on the crest road. No major sags, depressions, or other signs of significant settlement were observed in the crest. No tension cracks were observed in the crest or along the edge of the crest.

4.3.2 Upstream/Inside Slope

The upstream/inside slope of the Ash Pond B perimeter dike was observed to be generally covered with ash. No obvious signs of slumps, slides, bulges, tension cracks,

seepage, or animal burrows were observed on the inside slope.

4.3.3 Downstream/Outside Slope and Toe

The downstream/outside slope and toe of Ash Pond B was found to be in generally satisfactory condition. Some areas of bare soil and sparse grass cover were observed. Some areas along the downstream toe were observed to have wet soils with some ponding water. There were also some areas along the downstream toe that contained ponding water, which is not alarming due to recent heavy rainfall events.

4.3.4 Abutments and Groin Areas

Not applicable; there are no abutments or groins in the perimeter ring-dam.

4.3.5 Outlet Works

The 24" HDPE outfall pipe was observed at its inlet during the inspection and appears to be in good condition. Other sections of the pipe were below grade and below water levels and therefore could not be observed.

4.3.6 Emergency Spillway

No emergency spillway was observed, although the design plans indicate that there was to be an emergency overflow on the original perimeter dam on the west side of the basin. Santee Cooper has not found any evidence that the emergency spillway was constructed as part of original construction.

4.4 South Ash Pond

4.4.1 Crest

The crest was observed to be in overall good condition. No major sags, depressions, or other signs of significant settlement were observed in the crest. No tension cracks were observed in the crest or along the edge of the crest.

4.4.2 Upstream/Inside Slope

The inside slope of the South Ash Pond embankment dam was observed to be filled with ash in most of the basin. At the east end of the pond, the section of the slope above the water level was found to be in good condition. No slumps, slides, or other signs of shear failure were observed in the visible parts of the slopes above the ash and water levels. No significant erosion was noted.

4.4.3 Downstream/Outside Slope and Toe

Wet areas were observed along the downstream slope in several locations on the South Ash Pond. Also several areas of minor erosion, bare earth, and sparse vegetation were observed. Some areas with bare earth were caused by maintenance equipment.

4.4.4 Abutments and Groin Areas

Not applicable; there are no abutments or groins in the perimeter ring-dam.

4.4.5 Outlet Works

The South Ash Pond outlet is located at the east end of the basin and consist of a rectangular reinforced concrete decant tower with bottom discharge into a 36-inch diameter RCP conduit that extends easterly through the bottom of the perimeter dike; the discharge ultimately outfalls into the Discharge Canal via a ditch. Water level in the pond is controlled by stop logs in the outlet. The outlet is located below grade and below water levels and therefore could not be observed; however, there were no signs of failure.

4.4.6 Emergency Spillway

There is no emergency spillway.

4.5 Unit 2 Slurry Pond

4.5.1 Crest

The surface of the crest was observed to be in generally fair condition. Due to the ongoing excavation and decommissioning, there are some ruts and sags on the crest. Several minor areas of erosion were observed on both sides of the crest road.

4.5.2 Upstream/Inside Slope

In several areas of the upstream slope minor erosion was observed; however, these eroded areas are due to the ongoing construction and excavation in the pond. No signs of shear failure were observed.

4.5.3 Downstream/Outside Slope and Toe

Several tractor ruts along the slope were observed. No significant erosion was noted.

4.5.4 Abutments and Groin Areas

Not applicable; there are no abutments or groins in the perimeter ring-dam.

4.5.5 Outlet Works

The submersible pump in place to remove storm water runoff could not be directly observed during the inspection; however, there were no detected signs of failure. As previously stated, the intent is to keep the pond dry; however, due to a recent 1000 year storm event there is ponding water inside the pond which is currently being pumped out and into Ash Pond A.

4.5.6 Emergency Spillway

There is no emergency spillway.

4.6 Units 3 & 4 Slurry Pond

4.6.1 Crest

The surface of the crest was observed to be in good condition. No major depressions,

sags, cracks or other signs of settlement were observed. No tension cracks which might suggest soil shear failure were observed in the crest or along the edge of the crest.

4.6.2 Upstream/Inside Slope

No slumps, slides, or other signs of shear failure were observed in the visible parts of the slopes above the water level. No significant erosion was noted.

4.6.3 Downstream/Outside Slope and Toe

Wet areas were observed along the downstream slope in several areas on the Pond. Areas of minor erosion, bare earth, and sparse vegetation were observed, particularly along the toe. Some areas with bare earth were caused by maintenance equipment.

4.6.4 Abutments and Groin Areas

Not applicable; there are no abutments or groins in the perimeter ring-dam.

4.6.5 Outlet Works

The floating pump station was observed; however, its condition could not be determined due to its distance from the dike.

4.6.6 Emergency Spillway

A spillway was construction over the divider dike between the Units 3 & 4 Pond and the West Pond in 2012. As previously stated, due to seismic mitigation operating level are being maintained at elevations under 26' and the elevation for the spillway is at elevation 36; therefore, the spillway will no longer be utilized.

4.7 Adequacy of Maintenance, Operating, and Surveillance Procedures

4.7.1 Adequacy of Maintenance Procedures

Overall, maintenance of the impounding embankments and outlet works of all ponds appears to be adequate. No major maintenance issues were noted during the field

inspection or in the weekly inspection reports completed by WGS personnel and reviewed by the inspection team. No changes to maintenance procedures are recommended at this time.

4.7.2 Adequacy of Operating Procedures

Based on field observations and discussions with WGS personnel, the operating procedures for the ponds appear to be adequate.

4.7.3 Adequacy of Surveillance Procedures

WGS personnel complete daily informal inspections and weekly formal inspections on the ash ponds in accordance with good engineering practice and Section 257.83 of the Federal Register. These inspections are being properly documented and should continue as they are currently being conducted.

5.0 Conclusions and Recommendations

5.1 Conclusions

Conclusions are based on visual observations from a two-day site visit and review of technical and historical documentation provided to the inspection team.

5.1.1 Conclusions Regarding the Structural Soundness of the Management Unit(s)

Santee Cooper engaged a third party consultant (ARCADIS) to review the existing information for the impoundment dikes and submitted a report to the USEPA on 29 March 2012. The ARCADIS report recommended that a seismic stability and liquefaction evaluation be performed for the Units 3 & 4 Slurry Pond perimeter dikes. Santee Cooper retained Geosyntec Consultants to perform subsurface investigation and seismic and liquefaction evaluations of the perimeter dikes associated with the Units 3 & 4 Slurry Pond and the West Ash Pond. The investigation and evaluation results were summarized in a Seismic Investigation Report prepared by Geosyntec in July 2013 and

submitted to USEPA and the South Carolina Department of Health and Environmental Control (DHEC) on July 26th, 2013.

Conclusions of this report suggest drawdown of the Unit 3 &4 Slurry Pond and West Ash Pond as mitigation measures for increasing seismic stability. Since this report, the Unit 3 & 4 Slurry Pond's operating level has been lowered and the West Ash Pond has been closed.

5.1.2 Conclusions Regarding Field Observations

The inspection team was provided access to all areas in the vicinity of the ash ponds as required, to conduct a thorough field inspection. The embankment dikes and outlet structures were observed to have no signs of significant settlement, shear failure, or other signs of instability. There are no apparent indications of unsafe conditions or conditions needing emergency remedial action. Suggested maintenance can be found in Sections 5.2.

5.2 Recommendations

The following recommendations refer to issues observed during the field inspection that are summarized in Section 4.0 of this report.

5.2.1 Ash Pond A

Maintenance and monitoring recommendations:

1. Eroded depression in downstream slope should be filled within the next 90 days. This area should be monitored for further displacement of material during weekly inspections.
2. Area eroded on divider dike should be repaired and re-sloped within the next 90 days.
3. Wet area on the downstream slope and toe should be monitored during weekly inspections. If conditions worsen, an engineered solution specific to the area should be followed when making the repair.

5.2.2 Ash Pond B

Maintenance and monitoring recommendations:

1. Wet areas on the downstream slope and toe should be monitored during weekly inspections. If conditions worsen, an engineered solution specific to the area should be followed when making the repair.
2. Area eroded on crest should be repaired within 90 days.

5.2.3 South Ash Pond

Maintenance and monitoring recommendations:

1. Reseeding of bare soil areas should be done within 90 days and continued as part of routine maintenance.
2. At the toe of the dam where the headwalls drain into the perimeter ditch, vegetation should be cut down within 90 days to allow for easier monitoring of the headwalls drains.
3. Eroded areas on the east end of pond should be filled and re-sloped within 90 days. Wet areas on the downstream slope and toe should be monitored during weekly inspections.
4. Wet areas on the downstream slope and toe should be monitored during weekly inspections. If conditions worsen, an engineered solution specific to the area should be followed when making the repair.
5. It is recommended that the station install a new engineered toe drain system on the west end of the pond within the next year. Installing a new toe drain would improve seepage control, relieve pressure within the dike in this area, and address minor wet areas exterior to the pond.

5.2.4 Unit 2 Slurry Pond

There are no recommendations for maintenance or repairs on the Unit 2 Slurry Pond due to the ongoing closure of the pond.

5.2.5 Units 3 & 4 Slurry Pond

Maintenance and monitoring recommendations:

1. Reseeding of bare soil areas should be done within the next 90 days and continued as part of routine maintenance.
2. Wet areas on the downstream slope and toe should be monitored during weekly inspections. If conditions worsen, an engineered solution specific to the area should be followed when making the repair.