AMENDED CLOSURE PLAN FOR ASH POND

Plant Gaston

Alabama Power Company

Wilsonville, Alabama

Revision 1 April 2020

AMENDED CLOSURE PLAN REVISION 1
40 C.F.R. § 257.102(b)(3) and ADEM Admin. Code r. 335-13-15-.07(3)(b)3.

Contents

ATTACHMENTS

Table 1 Closure Schedule

Design Drawings

AMENDED CLOSURE PLAN CHECKLIST
40 C.F.R. § 257.102(b)(3) and ADEM Admin. Code r. 335-13-15-.07(3)(b)3.

1. Introduction

This Amended Closure Plan has been prepared to support the permit application previously submitted to the Alabama Department of Environmental Management (ADEM) for the CCR Surface Impoundment known as the Plant Gaston Ash Pond, located in Wilsonville, Shelby County, Alabama. The permit application was submitted in accordance with ADEM Admin. Code r. 335-13-15-.09(1)(c). This Amended Closure Plan, along with other documents, is intended to supplement the previous submittal in response to the ADEM letter dated May 24, 2019 which provided response comments to the original application.

2. General

The Plant Gaston Ash Pond was originally constructed in the early 1950's and was designed to receive and store coal combustion residuals produced during the electric generating process at Plant Gaston, along with low-volume wastes and stormwater sump flows from the plant. It currently stores approximately 24,800,000 cubic yards of CCR.

The Ash Pond is approximately 270± acres in size. The basin was formed by excavating predetermined zones to elevations ranging from 389 ft to 418 ft, with much of the center zone having no excavation. Maximum elevations in the center zone were approximately 420 ft. Material for the perimeter embankment construction was excavated from within the ash pond area adjacent to the embankments. The dike fill material consists mainly of clay. The depth of the soil fill extends up to depths of approximately 50 feet at its deepest. The South Dike was constructed at an elevation of 445 ft, but has been raised as high as 449 ft in some areas. It has a maximum height of approximately 50 feet. The West Dike was constructed at an elevation of 445 ft with a maximum height of 30 ft. The North Dike was constructed at elevations up to 445 ft, with later raises bringing it to a maximum elevation of 447 ft. It has a maximum height of 25 ft.

In the late 1980's, the impoundment was reconfigured to the arrangement that existed at the time the pond ceased receiving CCR. Ash was sluiced into one of two settling ponds located at the eastern edge of the pond. When one cell filled, the sluice was diverted to the alternate cell while the filled cell was dredged. The dredged ash was conditioned and dry stacked further west in the pond. The sluice water, after leaving the settling pond, was diverted to a canal that runs along the perimeter of the pond boundary to another low energy area at the western pond edge where further settling of fines takes place. From there, the water entered another canal which leads to the former discharge structure located at the Coosa River. Water is now diverted to a new NPDES discharge

point, but an auxiliary spillway was constructed near the former discharge structure to manage design storm flows.

The Plant Gaston Ash Pond will be closed by leaving CCR in place, with consolidation of CCR to reduce the closure footprint to approximately 193 acres. The Ash Pond will initially be dewatered sufficiently to remove the free liquids and to provide a stable base for the construction of an ash containment structure for the consolidated footprint, excavation of ash outside the consolidated footprint and, construction of the final cover system. CCR will be excavated from the area outside the consolidated footprint, transported, and disposed of in the consolidated footprint to create a subgrade for the final cover system. Excavation will include removing all visible ash and over excavating into the subgrade soils. Additional details about the dewatering and construction methods to be used can be found within this Amended Closure Plan.

The final cover will be constructed to control, minimize or eliminate, to the maximum extent feasible, post closure infiltration of liquids into the waste and potential releases of CCR from the unit. This will be prevented by providing sufficient grades and slopes to: 1) preclude the probability of future impoundment of water, slurry, or sediment; 2) ensure slope and cover system stability; 3) minimize the need for further maintenance; and 4) be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

3. Notification

Notification of intent to close the Plant Gaston Ash Pond was placed in the plant's Operating Record on April 15, 2019. The notice of intent was subsequently submitted directly to ADEM. The surface impoundment is closing under the requirements of § 257.101(a)(1) and r. 335-13-15-.07(2)(a)1. Closure of the surface impoundment will be conducted under §257.102(d) and r. 335-13-15-.07(3)(d), *closure performance standard when leaving CCR in place*. As described in more detail below, the surface impoundment will be closed in a manner that will control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated runoff to the ground or surface waters or to the atmosphere. Closure will also preclude the probability of future impoundment of water, sediment or slurry. Measures will be taken during design and construction of the closure system that provide for major slope stability to prevent the sloughing or movement of the final cover system. Closure will also minimize the need for further maintenance of the CCR unit.

Major closure activities will commence following receipt of a CCR permit from ADEM pursuant to r. 335-13-15-.09.

4. Written Closure Plan – § 257.102(b)(1)(i),(iii) and r. 335-13-15-.07(3)(b)1.(i),(iii)

a. Overview

A written closure plan to comply with § 257.102(b) was posted to the Plant Gaston Operating Record on October 17, 2016. A revised written closure plan incorporating reference to applicable ADEM Administrative Codes was submitted as a part of the original CCR Permit application.

As required by § 257.102(b)(3)(ii) and r. 335-13-15-.07(3)(b)3.(ii), the written closure plan must be amended whenever (i) there is a change in the operation of the CCR unit that would substantially affect the written closure plan or (ii) before or after closure activities have commenced when unanticipated events necessitate a revision of the written closure plan. The time frames for amendment to the written closure plan is in accordance with those specified in § 257.102(b)(3)(iii) and r. 335-13-15-.07(3)(b)3.(iii).

b. Closure Steps

Ash Pond Cessation

The ash pond ceased operation and receipt of CCR materials and other waste streams in April 2019 pursuant to state and federal regulations (r. 335-13-15-.07(2)(a)1. and § 257.101(a)(1)).

In advance of the ash pond operation cessation, APC modified plant operations for CCR handling from a wet sluicing operation to a dry CCR handling operation where the CCR is disposed of in an offsite lined solid waste landfill or sold for beneficial reuse. This plant modification required the design and construction of infrastructure and equipment to accomplish this changeover before April 2019. Planning for diversion of wastewater streams from the ash pond required the construction of a Wastewater Management Pond (WMP) as part of the Water Treatment Facility. Plant Gaston is currently permitted to discharge wastewater effluent via DSN004 to the Coosa River under the NPDES Permit AL0003140.

A mechanical water treatment system using physical and chemical treatment processes was added for the treatment of ash pond free water and interstitial water in advance of ash pond dewatering activities. Ash Pond dewatering will commence under the revised Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, with approval pending.

Transmission Line Modifications

Modifications to the 230 kV transmission lines and support structures along the eastern end of the ash pond were required to allow for construction of the ash pond closure. This included the construction of new higher support structures located south of the ash pond and removal of the intermediate support structures located within the east end of the ash pond. This work was completed in May 2019.

Demolition of Structures

Demolition of structures and utilities within the ash pond were required prior to significant ash grading activities. Demolition of the fly ash silo located in the eastern end of the ash pond was completed in June 2019. The water treatment building and associated tanks located along the north dike of the ash pond were also demolished and removed from the ash pond in June 2019.

NPDES Permit application submittal

A NPDES permit renewal application was submitted to ADEM on May 8, 2018 that includes operational changes required due to the federal CCR rule and the Effluent Limitations Guidelines (ELG) Rule. The existing NPDES permit for the facility has been administratively continued and remains in effect while the renewal permit application is being reviewed. Wastewater streams have been rerouted from the ash pond to the Wastewater Management Pond (WMP)for treatment in advance of the ash pond closure.

Dewatering Plan Submittal

The revised Plant Gaston Ash Pond Dewatering Plan was last submitted to ADEM on July 9, 2019.This plan will allow for dewatering both free water and interstitial water in the ash pond to an elevation below 426 feet. Water removed from the ash pond will be pumped to the mechanical treatment system for treatment and discharge under the existing site NPDES permit. This system will include equalization, pH neutralization, flocculation, solids separation, and clarification for discharge to the Wastewater Management Pond upon meeting discharge limitations. Monitoring will be performed in accordance with this Dewatering Plan and the existing NPDES permit.

2. *Contractor mobilization*

The Contractor mobilized in February 2019 to commence preparatory work on access improvements, drainage channel improvements within the ash pond and associated light clearing.

3. Vegetation management – burning/disposal activities throughout closure

Woody vegetation outside of the ash pond limits will be managed as vegetation and wood waste by composting (short term to reduce mass), chipping for use on site as construction best management practice (CBMP) measures, burning through approved methods, or disposing of at an off-site landfill. Woody vegetation waste from within the ash pond limits may be mechanically screened to remove ash, composted (short term to reduce mass), burned through approved methods, or disposed of at an off-site landfill.

The Contractor anticipates utilizing an air curtain destructor (ACD) for all vegetation burning. An ACD permit will be obtained through the local issuing authority with Alabama Forestry Commission approval. Burning with an ACD is allowed during the period November 1 through April 30. This corresponds to the period outside of burning restrictions for Shelby County, unless the Alabama Forestry Commission issues a fire danger warning or alert, if the area is under a current air stagnation advisory issued by the National Weather Service or during a "drought emergency" declared by the Governor due to unfavorable conditions for burning.

The ACD shall be constructed, installed and operated in a manner consistent with good air pollution control practice for minimizing emissions of fly ash and smoke. The cleaning out of the ACD pit shall be performed in a manner to prevent fugitive dust. Burning may be subject to ADEM rules under the Air Division, Air Pollution Control Program Administrative Code Chapter 335-3-3 Open Burning and Incineration, local requirements and any burn permit conditions.

4. Clearing/grading

Minor clearing within the ash pond has commenced along the toe of the ash stack to improve and widen existing access routes for construction equipment and to allow access to the existing drainage channels for cleanout. This vegetation has been stockpiled in the East Area for processing and burning as discussed above. Grading activities have focused on access improvements and maintaining drainage channels to allow gravity flow of stormwater to the Clear Pool area located at the western end of the ash pond.

5. Additional pre-dewatering site specific work

Upon approval of the Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, the free water within the ash pond will be lowered to allow for active interstitial dewatering. A floating barge with a suspended pumping system was installed in the Clear Pool area to

manage water levels within the ash pond as the outlet control structure has been plugged in advance of ash pond closure. This system allows water conveyance from the Clear Pool area via approximately 7,500 linear feet of 14-inch high density polyethylene (HDPE) forcemain to the mechanical water treatment system located east of the ash pond.

Existing free water is generally located within interior ditches, perimeter channels, and in the Clear Pool. Initially, pore water and free water, not utilized for dust control, will be removed from the CCR and from areas within the ash pond and transferred in a controlled manner to the Clear Pool area. Any remaining or excess water within the Clear Pool will be transferred to the mechanical water treatment system prior to discharge. Initial dewatering of the excavation areas will consist of conventional methods such as rim ditching, cross ditching, sumps, stacking, and windrowing of the in-situ material to relieve surface and interstitial water.

Upon approval of the Plant Gaston Ash Pond Dewatering Plan last submitted to ADEM on July 9, 2019, the free water within the ash pond will be lowered to allow for the installation of an active interstitial dewatering system. The floating barge system within the Clear Pool will continue to operate to manage stormwater flows from rainfall events and convey water to the treatment facility. In mass excavation areas, deep wells may be installed to dewater the CCR material ahead of the excavation. As the excavation progresses to lower elevations, well points will be installed to relieve the CCR material of excess water. Installation of the well points shall be repeated with each excavation pass towards the bottom design elevation as needed.

CCR excavation will occur in three distinct areas of the ash pond: West Area, East Area and South Dike Area along the Coosa River. Excavation activities are anticipated to commence in the West Area working from the northern end and continuing in a generally southward direction. The wet CCR will be excavated from these areas for initial dewatering and then loaded, hauled, and placed in the East Area closure-in-place fill area for additional dewatering and processing with drier CCR. As the CCR is excavated and removal verified, soil borrow material from onsite or off-site sources will be hauled in directly to the backfill areas to meet the design backfill grades.

Grading activities will commence simultaneously on the western half of the Ash Stack. This grading would primarily include drier CCR that will be excavated, hauled, and placed within the designed fill areas on the north side of the Ash Stack. This excavation will continue slightly ahead of the West Area's excavation to prevent sloughing of the Ash Stack slope toe material as the West Area excavation operation approaches.

As the wet material from the West Area is hauled to the East Area for drying operations, an additional excavation fleet will simultaneously be excavating dry CCR material from the East Area to be placed and processed with saturated material for final placement. Excavations of the East Area will be backfilled with soil from onsite or offsite borrow areas to work toward establishing a temporary stormwater pond for temporary storage over the duration of the project.

The excavation efforts will also focus heavily on the South Area as soil fill operations continue in the East Area. Deeper excavations in this area are anticipated to encounter interstitial water as operations continue. Dewatering study data will be utilized in developing a dewatering plan comprised of deep wells and well points for a water removal systems coupled with geotechnical monitoring of the excavation slopes. This plan will determine the detailed construction operation in terms of excavation depths per pass and the utilization of toe drains with pumps and similar methods. The excavated materials from this area will be relocated to the East Area fill area. Here it will be mixed with drier material from the previously placed East Area and West Area excavated material to accelerate moisture conditioning.

Excavated material from the West Area will be placed in the East Area and mixed with drier excavated CCR from the East Area. Higher moisture content CCR from the South Area will be mixed with drier CCR from this same area to condition the material for placement and compaction. This material will be placed and compacted as fill material meeting the project moisture and compaction requirements.

Finish grading will be an ongoing process throughout the project as excavation and fill areas approach final design grade elevations. Grading for each area will work from the fill limits and progress upward towards the high point of the area. The CCR fill will be graded to meet the elevations of the four to one (4H:1V) sides slopes with 20 foot wide terraces located at 20 vertical foot intervals.

The graded surface shall be free from irregular surface changes and shall not vary more than 0.10 feet above or below required elevations where shown on the Drawings unless design changes are needed. Material located within 1-foot of geosynthetics shall have a maximum particle size of 3/4 inch in diameter with a maximum protrusion of ¼ inch above surrounding grade. No sharp edges shall be exposed at the subgrade surface.

Shrinkage due to compaction and dewatering can be accommodated by reducing the ultimate height of the East Area fill as needed to adjust to a slightly smaller volume. Final cover system installation will be

accomplished in phases and as soon as practical as areas reach final elevations in order to cover the material to reduce erosion and control fugitive dust.

The first phase of the final closure system installation will begin within the northwest Ash Stack area at the site's westerly high point intersection with the southwest Ash Stack area. Grading and installation of the closure system will progress from this point to the east. Alternating efforts will work westward toward the West Stormwater Pond (see Closure Plan Drawings sheet GAS_3.2.4_400). At completion of the permanent closure system installation within the West Stormwater Pond, an additional liner will likely be installed for protection of the final cover system for stormwater run-off storage as construction continues.

The second phase of final grading and final cover system installation will work the southwest Ash Stack area drainage ditch grade break point progressing west until tying into Phase 1 closure system termination point. From there, installation will continue from the grade break in the southwest Ash Stack area and move east towards the southeast Ash Stack area.

As excavation and fill operations reach final design grades in the northeastern Ash Stack area, the third phase of final grading and closure system installation will progress from the northwest Ash Stack area, moving eastward towards the East Area. Phase 3 of the final grading and final cover system installation will begin near completion of the northeast Ash Stack area closure and move south toward the South Dike. At completion of the final cover system installation, an additional liner will likely be installed within the East Area for final cover system protection and added non-contact water holding storage if needed.

Next, the final cover system installation operation will continue at the Phase 2 termination point and work eastward towards the East Area. During Phase 4 the installation operation will be working simultaneously with the excavation & fill operation of the South Stormwater Pond. This combined effort will be important in final material balancing efforts as design grades are likely to require adjustment. As the final grading and final cover system materials installation operation moves eastward, it will transition into the final Phase 5 application in the South Stormwater Pond. During this phase, the temporary liner systems within the East and West Stormwater Ponds will be converted into the final design state.

c. Procedures During Closure

i. Dewatering

The Contractor will use conventional dewatering methods for initial dewatering of shallow/near surface CCR excavation and a more active

method to dewater deeper CCR excavation. Additionally, pumping of surface water will be performed in the open-water pond in the West Area.

The conventional dewatering method involves gravity (passive) dewatering. An excavator is typically used to excavate CCR and form a network of gravity trenches. The excavated wet CCR is stacked to allow for water to drain and dry prior to loading it into a truck to be hauled away. Windrowing and mixing with the dry CCR can further condition the wetter material. Additionally, rim and cross ditches shall be excavated to promote interstitial water removal.

The active dewatering methods that may be used consist of vacuum wellpoints and deep wells with submersible pumps. The vacuum wellpoint system will contain wellpoints that extend approximately 20 feet (vertical) below the cut-slope surface at the excavation benches. The deep wells with submersible pumps will extend to the bottom of ash for additional water drawdown as the excavation progresses.

The Plant Gaston Ash Pond closure project is using a water treatment system for treating contact and dewatering liquids from the ash pond construction. Water from the ash pond will be pumped to the mechanical treatment system via approximately 7,500 linear feet of 14-inch HDPE forcemain for treatment and discharge under the existing NPDES permit. This system will include equalization, pH neutralization, flocculation, solids separation, and clarification for discharge to the WMP and permitted NPDES discharge point upon meeting discharge limitations. The treatment system has a capacity to treat 2000 gallons per minute (gpm). Monitoring of the effluent will be performed in accordance with the Plant Gaston Ash Pond Dewatering Plan and the existing NPDES permit.

In addition to the 2,000 gpm wastewater treatment capacity, free water drawdown rates will also be controlled by reasonable drawdown rates considering dike stability. The phreatic surface within the dikes may be affected by fluctuations of the water level within the ash pond. As ash pond water levels decline and ash is removed, the dike slopes will be exposed. This exposed slope will be monitored and protected from the dewatering (such as sloughing), and from equipment and human traffic. An initial maximum drawdown rate of 0.5 foot per day (1 foot per five-day work week) will be observed for dike stability. Maximum allowable pumping and phreatic drawdown rates may be modified if field stability assessments of the existing ash pond dike performance prove better than anticipated conditions, subject to review and approval by the Owner and Engineer.

ii. Liquids Management

Contact water shall be pumped through piping, in a controlled effort, to the west impoundment area where it shall be utilized for dust control within the ash pond or pumped to and treated by the mechanical treatment system. Once the contact water is treated, the water will be discharged. As a preventative measure, an automatic recirculation option is constructed as part of the treatment system to recirculate effluent not meeting the discharge limitations back into the ash pond for pumping back through the treatment system.

The turbidity set point will be determined from a total suspended solids vs. turbidity correlation curve developed from data collected in the effluent that is recirculated in the dewatering system. This curve will be periodically refined, as needed, over the life of the ash pond dewatering.

Compliance monitoring and frequencies of various parameters based on NPDES permit requirements at DSN0004 limits will be conducted in accordance with Table 1 of the Plant Gaston Ash Pond Dewatering Plan. In-process monitoring and frequency of various parameters at the mechanical treatment system prior to discharge will be conducted in accordance with Table 2 of the Plant Gaston Ash Pond Dewatering Plan. In-process monitoring of various parameters in the WMP after plant wastewater and mechanical treatment system effluent have commingled will occur twice a month. In-stream monitoring of various parameters during ash pond dewatering will occur once a month and samples will be collected in the Coosa River upstream of the plant and downstream of the permitted discharge point, DSN004.

Contact water that is unable to flow directly to the west impoundment area will be directed to temporary intermediate holding ponds/ditches and be used for dust control within the ash pond. Remaining contact water in the holding ponds/ditches shall be later pumped to the west impoundment area or directly to the mechanical treatment system.

Non-contact water from areas that are non-CCR or have a final cover system installed will be collected and stored in temporary lined ponds established in the perimeter ditches or in the East and West Areas. This water will be managed as stormwater and discharged according to the NPDES permit for construction activities. If the location of the collected stormwater does not allow discharge without significant pumping and piping then it may be used for dust control or sent to the mechanical treatment system for treatment and discharge.

iii. Dredging and CCR Removal Activities

The closure approach employed for the Plant Gaston Ash Pond includes excavation of CCR in areas of the ash pond and consolidation of the CCR into a smaller footprint for closure with a final cover system. Excavations in the West, East and South areas will remove CCR to the bottom of pond down to existing soils. The overall ash pond is approximately 270 acres and the consolidated footprint was designed to be approximately 193 acres. This consolidated footprint is based on location of the existing bottom of the ash pond and may vary based on actual field conditions. Design decisions were made in the planning stages to excavate the identified areas to increase setback buffers from the consolidated footprint resulting in the following:

- 995 feet setback to adjacent residences in the west,
- Setbacks of 360 (at the boathouse cove) to 520 feet from the Coosa River along the South Dike
- Additionalbuffer of approximately 400 feet in the East Area

Removal of CCR will be performed using a combination of conventional and modified earthwork excavation equipment. Excavators working from existing or modified stabilized areas will excavate CCR and place it in off-road dump trucks or stockpiled to decant for subsequent loading and hauling for placement in the consolidated footprint.

Dredging was performed to widen and deepen the west impoundment area during pre-closure activities. Further dredging is not anticipated as water levels are reduced.

Ash will be excavated to the bottom of pond plus an additional six inches of subgrade soil in the excavation areas as shown in the closure design drawings. Excavation depths of 35 to 55 feet are anticipated in the East, up to approximately 55 feet in the South closure by removal areas and approximately 10 to 35 feet in the West Area.

iv. CCR Removal Verification Protocol

1. The ash pond closure design includes relocation of CCR from some areas, thus requiring verification and documentation that CCR have been removed. Construction Quality Assurance (CQA) personnel will document removal of CCR material. The CCR removal verification procedure is outlined in the CQA Plan and as summarized below. For CCR removal preparation and prior to CCR removal, the following steps shall be performed:

- Review topographic mapping, aerial photography, and boring logs to estimate the pre-placement topography and/or CCR/soil interface.
- Prepare a CCR unit map illustrating a grid spacing of 100 feet for Closure by Removal areas. Each grid point will be assigned a unique alphanumeric label for reference and documentation of CCR removal verification.

2. Steps to visually verify CCR removal:
    - CCR will be excavated until there is no visible CCR present. This surface will be referred to as the bottom of ash pond.
    - CQA personnel will locate each grid point by GPS or survey control, and estimate the elevation in the field.
    - CQA personnel will observe the surface area represented by the grid point to note if visible CCR is present at the surface. Observations will include, but not be limited to, taking photographs, classifying soils by the visual-manual classification method (ASTM D2488), and describing soil color. CQA personnel will document observations in field logs or reports. The classification indicator for fly ash will be grey to black silt-size particles with very low to no plasticity. The classification indicator for bottom ash will be grey to black, sand to gravel-sized particles.
        i. If CCR is present, the location should be documented, and CCR removal should continue until soils are observed. This step will be repeated until no CCR is visible.
        ii. If the observations and evaluations above indicate visual CCR is not present at the final excavated surface for the grid point, CQA personnel may conclude the primary source is removed at that location.
3. Final removal and overexcavation
    - After completing the steps above, the bottom of ash pond surface will be surveyed.
    - The excavation will then continue to a depth of 6 inches below the bottom of ash pond surface. This surface will be referred to as the bottom of excavation and final excavated subgrade. Excavated soil will be placed in the onsite CCR consolidated footprint closure area.

- The color of the exposed soil will then be specified and documented by using the Munsell color system in accordance with ASTM D1535.
- At least one hand auger will be advanced to a depth of 12 inches below the final excavated subgrade for verification of color.
- The bottom of excavation surface will be surveyed and confirmed to be a minimum of 6 inches below the bottom of ash pond surface.
- Once the removal is deemed complete with CQA engineer's approval for a given area, photographs will be taken to document condition of the subgrade. These photographs will be maintained at the site and will be available for review by project team members and ADEM personnel as necessary. After photo documentation and final CQA approval, the backfilling operations will commence.

v. CCR Placement

The Contractor will place all compacted fill material at locations and to the required elevations as shown on the Drawings. Prior to filling, the subgrade surface will be scarified to depth of two (2) inches, then fill materials will be placed in layers not more than eight (8) inches in loose depth for material to be compacted by heavy compaction equipment and not more than four (4) inches in loose depth for material compacted by hand-operated tampers. Each lift will be compacted to a minimum of 95 percent (95%) of the material's maximum dry density and to within 3 percent (3%) of optimum moisture content as determined by ASTM D698.

Fill shall be placed in a manner and sequence that shall provide proper drainage at all times, and uniformly grade the top of compacted fill material to the required elevations. Fill material shall not be placed on surfaces that are muddy, frozen, or contain frost or ice. Areas in the bottom of the ash pond may experience wet conditions where a rock fill layer may be placed for stabilization prior to soil backfilling. The Contractor's CQC Team shall observe and document the condition of the base surface and the surface of the previous lift. Wet material may be removed and replaced, placed in temporary windrows, or scarified and air dried. Materials not meeting density specifications shall be scarified, the moisture content adjusted, and the area re-compacted and re-tested.

Field quality control testing shall be performed by the Contractor's CQC Team. The CQA Team will be responsible for verification of the materials and constructed work with the Specifications.

CCR design parameters presented below were obtained from geotechnical investigation and laboratory analysis of the CCR within the ash pond. The following represent the parameters of the CCR:

Density/Unit Weight

- In-Situ Dry Unit Weight: Average of 63 pounds per cubic foot (pcf); range of 45 pcf to 86 pcf
- In-Situ Total Unit Weight: Average of 98 pcf; range of 79 psf to 111 pcf
- Maximum Realizable Dry Density: 74 pcf
- Minimum Realizable Dry Density: 35 to 54 pcf for ash containing 80 to 95 percent fines passing the #200 sieve (i.e. fly ash) and 52 to 73 pcf for mixed ash containing 60 to 70 percent fines passing the #200 sieve.

Shear Strength

- Undrained Shear Strength in Soft Ash: Average 545 psf; range of 345 psf to 2,800 psf
- Residual Undrained Shear Strength in Soft Ash: Average 70 psf; range of 50 psf to 940 psf
- Drained Shear Strength – Effective Stress Friction Angle, φ' Firm Ash: 36 degrees with no effective cohesion (c' = 0); range of 36 degrees to 42 degrees

  Soft Ash: 27 degrees with no effective cohesion (c' = 0); range of 26 degrees to 38 degrees

Settlement Parameters

- Constrained Modulus of Deformation, M:
  - *Firm Ash: Average: M = 460 tons per square foot (tsf); range of 100 tsf to 1,400 tsf*
  - *Soft Ash: Average: M = 105 tsf; range of 15 to 300 tsf*
- Primary consolidation:
  - *Firm Ash:*

  Coefficient of compression, Cc = 0.18
  Coefficient of recompression, Cr = 0.019
  Coefficient of consolidation, Cv = 4.1 ft2/day
  Overconsolidation ratio, OCR = 10

  Soft Ash:
  Coefficient of compression, Cc = 0.43

Coefficient of recompression, Cr = 0.026
Coefficient of consolidation, Cv = 3.4 ft2/day
Overconsolidation ratio, OCR = 1.4; range of 0.7 to 2.1

Seismic Parameters

- Shear wave velocity, Vs: Firm Ash: Vs = 1,300 feet per second (ft/s); range of 1,000 to 1,500 ft/s

  Soft Ash: Vs = 700 ft/s (average); range of 450 to 1,000 ft/s

- P-wave velocity, Vp = 1,500 feet per second; range of 600 to 3,000 feet per second for Poisson's ratios of 0.3 to 0.4.

The above parameters were used in the design engineering to arrive at a stable design for the final stack

The Contractor shall implement procedural controls to limit the amount of exposed areas at any one time. Existing vegetation will be left in place as long as possible, minimizing the amount of CCR exposed at any one time. CCR will be stabilized for dust control, erosion and sloughing with the dispersion of water using water trucks and water wagons. Extreme weather conditions may require the use of polymers and products such as Wind Defender when conventional methods are not successful. Temporary liner systems or tarps may be used to cover stockpiles exposed for longer periods to control dust, prevent erosion and sloughing.

Handling of CCR for closure will be performed in a controlled manner. CCR excavation and handling will be performed using excavators, articulated off-road dump trucks, tractors with pull behind scrapers. Dry and moist CCR will be excavated and loaded directly into trucks or scrapers for placement in the fill areas or stockpiled for future placement, mixing with wet CCR or fine grading placement. Hauling and stockpiling operations will require dust control measures with stockpiles potentially covered with Wind Defender or temporary liner materials for longer storage to control rainfall infiltration and erosion.

Wet CCR may be casted and stacked for decanting prior to hauling and placement. This material may also be loaded into trucks and/or scrapers and moved to an appropriate decanting area in the East Area for windrowing, turning and mixing with drier CCR material to relieve surface and interstitial water. Care will be taken to minimize spillage within the ash pond, damage to interior roads and increased maintenance of access and drainage channels.

Twenty-one (21) piezometers were installed within the ash pond in 2017 and 2018. Ten (10) were installed from June through July of 2017, of which 6 wells were installed within the ash or soil and 4 were advanced

into bedrock. Eleven (11) wells were installed from February through March 2018, of which 8 wells were installed within the ash or soil and 3 were installed into bedrock.

Fourteen (14) wells were selected for long-term water level monitoring observations starting in May 2018: 11 observation wells (7 in ash/soil, 4 in bedrock) and 3 monitoring wells located outside the ash pond around the perimeter. Water level transducers were programmed to record groundwater elevations, barometric pressure and temperature.

This data is important for dewatering activities, performing CCR excavations and targeting dewatering levels for slope stability. Data collection will continue into the construction period with additional equipment planned to monitor for changing conditions due to dewatering and excavation.

The ash pond is approximately 270 acres in total size. With the planned closure, the consolidated CCR footprint was designed to be approximately 193 acres. This consolidation area may vary slightly due to the actual location of the excavation limits and the bottom of ash pond location. CCR will be placed in a consolidated footprint from excavations of the West Area, eastern end of the East Area and the excavation along the South Dike.

Hauling distances vary across the site depending on the location of the CCR excavations and placement. The longest CCR haul distance is that from excavations in the West Area and placement in the East Area. An average haul distance of 5,400 feet can be expected with some distances as high as 7,000 feet.

If CCR from the center West Area is placed on the north side of the Ash Stack then an average hauling distance of about 2,800 feet could be expected. CCR grading from the western slopes of the Ash Stack for placement on the north side of Ash Stack would be an average of around 1,000 feet or an average of about 3,600 feet for placement in the East Area.

The general dimensions of the East Area are approximately 2,000 feet long by 1,600 feet wide. Excavations in the East Area for the eastern end and along the South Dike would average 1,000 feet and 800 feet, respectively.

Soil hauling from the onsite borrow area to the eastern end of the East Area is a haul distance of about 4,100 feet. The West Area and the South

Dike area soil backfill haul distance from the onsite borrow area would average 1,900 feet and 2,800 feet, respectively.

Stormwater Management, interstitial water controls and construction sequencing are important factors for preventing failures during construction.

Stormwater

The Updated Inflow Design Control System Plan: Hydrologic and Hydraulic Calculation Summary dated June 5, 2018 performed for the ash pond shows that the existing ash pond will be able to safely manage flow from a Probable Maximum Precipitation (PMP) 6-hour storm event consistent with the current hazard classification for the ash pond. Construction of the ash pond auxiliary spillway completed in January 2018 comprised of an articulated concrete block revetment that offers and controlled discharge with protection from scour and erosion if the PMP storm event was to occur during construction. During construction, the existing stormwater management within the ash pond manages this PMP storm event without overtopping. Additional water storage is gained as the CCR excavations are performed allowing for better stormwater performance as construction continues.

Interstitial Water Control

Control of interstitial water is important for slope stability during CCR excavations near or below the phreatic surface. A dewatering system will be implemented to allow for drawdown of the water surface to allow for safe access and excavation. Water will be pumped to the mechanical treatment system for treatment or to temporary lined ponds constructed in the East and West Areas for contact water. The installation of a toe drain system with pump stations at the toe of excavation at the bottom of pond in the West Area, eastern excavation area and along the south dike for water collection and conveyance will provide a water removal system as the areas are backfilled with soil. The pump stations will include risers that will extend up to the surface after construction to support access for maintaining the pump systems into post-closure if needed.

Soil Backfill and Buttressing

The excavated CCR slopes were analyzed for stability and show acceptable factors of safety with management of water levels. The design includes soil backfill in the closure by removal areas offering additional buttressing of the slopes to support long-term performance.

Construction phasing is another important aspect of excavation stability in some areas. Specifically, the design requires that the western slope grading of the Ash Stack be performed to attain 4H:1V slopes in advance of excavation at the western toe of the Ash Stack.

Excavation Slope Monitoring

Water levels and pore pressures, slope deflection, settlement and changing conditions will be monitored during excavation and grading activities. Geotechnical instrumentation shall be included in the project to monitor these elements and provide automated notifications when conditions trigger predetermined set points. During construction this instrumentation and data collection will be intensive with some strategic instruments extending into the post-closure period.

vi. Fugitive Dust Control Plan

This site has a variety of identified potential fugitive dust sources. The dust sources anticipated on this project include:

- CCR excavation in the drier portions of the impoundment
- Existing CCR areas not covered with vegetation
- Designated areas where CCR is being stockpiled for dewatering purposes
- Transfer of CCR from the excavation area to the fill area around the existing stack
- Transport of offsite borrow soil material to the designated stockpile area
- Borrow Material Stockpile Area
- Transport of borrow soil material from the stockpile area to soil backfill areas onsite
- Placement of sand, hydro-binder, or similar products in the proposed CCR capped area

To combat fugitive dust during the excavation and placement of CCR, the Contractor will utilize a variety of methods including:

- Limiting vehicular traffic to active areas of the site
- Limiting the amount of area exposed at any one time
- Leaving existing vegetation in place as long as possible
- Minimizing the amount of CCR exposed at any one time
- Dispersion of water with water trucks and water wagons

The Contractor will implement procedural type controls which limit the amount of area exposed at any one time. Existing vegetation will be left in place as long as possible, minimizing the amount of ash exposed at any one time. Conventional dust control for the project will include the dispersion of water with water trucks and water wagons.

When practical and feasible, irrigation systems will be used to control dust in exposed areas where minimal construction activity is taking place. Extreme conditions may cause for the use of polymers and products like Wind Defender® when conventional methods are not successful. Each activity and area of construction will be evaluated and addressed by each area's specific characteristics and needs.

Water for the ongoing dust control efforts will be provided by multiple sources depending on which stage of construction. During the initial and intermediate stages of construction, utilization of the temporary holding ponds will supply a majority of the water needed. Water provided from the river and potentially the plant's WMP will also be utilized as needed. As the project progresses and CCR is covered with the designed final cover system there will be less volume of water required for dust control. However, dust suppression will still be needed until project completion. During these final stages of construction, clean water collected and held in temporary holding areas atop the closure turf can also be utilized as a source of water to assist with dust control.

The owner and the Contractor will assess the effectiveness of fugitive dust control measures by performing visual observations of the ash pond and surrounding areas and implementing appropriate corrective actions, as necessary. The Contractor shall maintain logs to record daily observations and application/utilization of fugitive dust control measures.

If fugitive dust complaints are received, the owner will document and investigate the complaint with the Contractor's cooperation. The Contractor will implement corrective actions as needed.

vii. Stormwater Management

Management of non-contact stormwater will be implemented to reduce the amount of stormwater requiring treatment through the onsite mechanical treatment facility as areas of CCR are closed, either by excavation and removal or with final cover system materials. Temporary dams will be established in the perimeter ditches to capture the stormwater before entering areas still containing ash. This water will then be pumped to an existing stormwater run-off area. As more areas of CCR are covered with closure turf, additional temporary dams will be

established, and additional pumps utilized to continue this process until the project is completed and stormwater can be discharged as designed.

viii. Equipment Decontamination

The CCR will be transported only within the current ash pond boundary, and the equipment used for transportation will be stored in a prepared area of the ash pond. Prior to leaving the project area, all equipment that has worked within the ash pond will go through an extensive wash down process onsite to mitigate any CCR from the leaving the project.

Borrow soil material will be imported from onsite or offsite borrow areas for backfilling the West, South, and East closure by removal areas. Whenever possible, the Contractor will deliver the borrow soil material directly to the location of the backfill operations, and make every effort to keep the delivery trucks from coming into contact with CCR material. Trucks entering and leaving the site will travel through an established construction exit and will be checked for CCR contamination prior to leaving the impoundment.

ix. Site Security

Existing site security is enforced full time as an operational practice by Plant Gaston personnel. Construction personnel undergo background checks and drug screening and require registered badges and identification to enter the Plant site. Additional security measures have been developed by the Plant to surveil the ash pond area using real-time radar and camera based security systems. Additional measures may be employed to include security fencing along the Coosa River and other physical access controls.

The ash pond closure Contractor will employ access control measures for ingress and egress to and from the ash pond. Physical barriers will be used to separate the construction area from Plant operations and to control working areas.

x. Groundwater Monitoring

A groundwater monitoring plan was submitted with the original Gaston Ash Pond permit application. Please refer to Appendix 8 of the original permit application.

xi. Operational Inspections

Inspections will be conducted by a Qualified Person at intervals not exceeding 7 days to look for appearances of structural weakness and for proper operation of all outlet structures maintained for use during closure. Furthermore, an annual inspection will continue to be conducted by a qualified Professional Engineer throughout the closure process.

d. Closure Design Features

Grading

The grading approach was designed using the ADEM closure performance standards and drainage design constraints. The CCR fill was designed with maximum of 25% (4H:1V) sides slopes with horizontal terraces every 20 feet of rise in elevation. These terraces are 20 feet wide with a 5% cross slope and 3% slope along the drainage flow line. The top of the ash fill was designed with 5% minimum slopes with a high ridge in the center directing drainage flow to the perimeter and into the down slope channels.

The perimeter channels were designed sloping from the Coosa River to the high point located at the northwest cover of the existing Ash Stack. The Federal Energy Regulatory Commission (FERC) provides licensing and oversight of operations of hydroelectric projects. FERC oversees the operation of the Coosa River/Lay Lake complex and conserves an easement along its banks up to elevation 406 along the ash pond South Dike. Locations just above this FERC easement were used to grade the stormwater management system and perimeter channels around the eastern/north side and around the southern/western side of the Ash Stack to the high point. This grading along with the closure by removal areas set the perimeter of the new ash fill and closure limits.

Stormwater Management System

The stormwater management system design for the ash pond closure was based on the final design conditions with the installed final cover system. This approach is most conservative since the highest stormwater runoff will occur in this condition relative to conditions during construction. The stormwater management system for the ash pond closure design consists of the following components:

- Final cover system
- Top deck collection and conveyance swales

- Side slope terraces
- Down slope channels/chutes
- Perimeter channels
- Stormwater culvert pipes
- Stormwater management ponds and outlet control structures

The stormwater components convey runoff flows to the proposed stormwater management ponds where they will discharge to the Coosa River/Lay Lake. The stormwater pond outlet pipes were designed to discharge just above the FERC easement around elevation 407.

APC has applied for a new NPDES permit that will allow dewatering of the ash pond. Until the new NPDES permit is obtained, the water level within the pond can be lowered 5 feet to elevation 426. Contractor mobilization occurred in February 2019 with initial site preparation. The Contractor is expected to construct temporary water ponds to accommodate stormwater and contact water from a 10-year 24-hour storm event or similar rainfall depth. The Contractor will construct these temporary ponds with a liner system at locations that coordinate with their phasing.

The existing auxiliary spillway, with a crest at elevation 439', will remain throughout the construction and post-closure periods. This existing spillway was designed by SCS/APC to accommodate the probable maximum precipitation (PMP), and is armored with articulated concrete block mats for scour protection.

The final condition stormwater management system was designed with the following criteria:

- Stormwater conveyances such as drainage channels, down slope channels, terraces, and culverts were designed to accommodate the 25-year, 24-hour storm event.
    - 0.5% minimum slope was used for surface water channels, culverts and stormwater pond outlet pipes.
    - Horizontal terraces were designed at 20-foot vertical intervals, with 20-foot width and 5% cross slopes and 3% longitudinal slopes along the flow line. Terraces convey runoff to the down slope channels.
    - Down slope channels are 8 feet wide, 2 feet deep with 4H:1V sideslopes. These channels extend from the top of slope of the ash fill to the perimeter channel at a 4H:1V slope. These channels include a pozzolanic infill in the

engineered turf (HydroBinder®) utilized for the higher flow velocities experienced with these conveyances.

  - The perimeter channel that discharges to the South Stormwater Pond was calculated for flow depths ranging from 1.2 to 2.5 feet with freeboard ranging from 1.8 to over 10 feet.
  - The perimeter channels that discharge to the West Stormwater Pond was calculated for flow depths ranging from 0.9 to 1.7 feet with freeboard ranging from 1.6 to 3.1 feet.

- Stormwater ponds were designed to manage the 2-, 10-, 25-, and 100-year storm events.
- A composite liner system is planned for the stormwater ponds consisting of 24-inches of a soil infiltration layer with a maximum permeability of $1x10^{-5}$ cm/sec covered with a 50-mil thick LLDPE structured geomembrane overlain with an engineered turf similar to the final cover system with ½-inch minimum sand infill.
- Outlet pipes are nominal 30-inch (inside diameter - 26.3 inches) high density polyethylene (HDPE) smooth-wall butt-fusion welded pipes installed through the existing dike by jack and boring, directional drilling, or conventional trench excavation.
- Four storm drain culverts on the south side of the Clear Pool are designed to accommodate stormwater run-on from offsite areas. These pipes are 24 and 30 inches in diameter and are dual-walled corrugated HDPE pipes with smooth interiors and watertight joints.
- Headwalls are Alabama Department of Transportation (ALDOT) standard details and include precast concrete standard headwalls and cast-in-place concrete slope headwalls.

e. Final Cover System

A geosynthetic engineered turf final cover system is proposed for the ash pond closure. This final cover system consists of a 50-mil thick structured linear low density polyethylene (LLDPE) geomembrane overlain with a synthetic engineered turf product with a ½-inch thick layer of sand infill ballast.

The cover system incorporates an integrated drainage layer between the geomembrane and engineered turf to remove water and prevent the buildup of hydraulic head within the final cover system. The 50-mil LLDPE structured geomembrane barrier for the system is Super Gripnet® and MicroDrain® produced by AGRU America. The Super Gripnet®

geomembrane contains spikes on the underside to increase interface friction with the underlying subgrade, while the MicroDrain® contains a textured surface on the underside to maintain interface friction for flatter areas. The top of the structured geomembrane for both materials contains raised studs that create the integrated drainage layer.

The engineered turf is composed of high density polyethylene (HDPE) grass blades tufted through two layers of polypropylene geotextile backing. The turf is designed for installation on top of the structured geomembrane and is stitched together at the seams. A half inch of sand infill is placed between the blades of the turf to provide additional weathering protection, ballast, and also to allow limited equipment traffic loads on the system. The sand infill will be specified to comply with the ASTM C33 standard for well-graded sand. The turf and sand provide aesthetics to the system while protecting the geomembrane from weathering. Additional armoring or surface treatment will be needed for areas of concentrated stormwater flows such as the down slope channels to prevent erosion of the sand infill.

Expected Final Cover System Performance

The final cover system includes the engineered turf, sand ballast and the integrated drainage layer between the geomembrane and engineered turf to remove water and prevent the buildup of hydraulic head within the final cover system. This system allows for potentially less leakage rates as the hydraulic heads are quickly dissipated. The 50-mil LLDPE Structured Geomembrane (20% thicker than the geomembrane allowed under Subtitle D regulatory requirements) offers better resistance from puncture.

According to Watershed Geo, "Based on several years of real world experience on over 40 million square feet installed, and extensive university and ASTM lab evaluations, the ClosureTurf® system has shown to have a leakage rate over 40 times less than subtitle D prescriptive cover and an erosion loss of over 100 times less than subtitle D prescriptive cover."

Erosion and maintenance of the final cover system is minimal compared with soil final cover systems. The engineered turf final cover system offers superior protection against wind and water erosion. Standard maintenance for the engineered turf component of the final cover system typically includes primarily visual observations during the site's periodic inspections. According to Watershed Geo at five-year intervals, it should

be expected that a small percentage (i.e. 2%) of sand infill may need to be re-graded into place.

f. Achievement of Closure Performance Standards

The ash pond closure is designed to achieve Closure Performance Standards When Leaving CCR in Place (ADEM Standards for the Disposal of Coal Combustions Residuals in Landfills and Surface Impoundments, Chapter 335-13-15-.07(3)(d) and § 257.102(d)). Free water will be removed, and interstitial water will be lowered to accomplish the CCR removal from the closure by removal areas and to close within a consolidated footprint.

With the installation of the final cover system on the consolidated footprint the control, minimization or elimination to the maximum extent feasible of post-closure infiltration of liquids into the waste and releases of CCR, leachate, contaminated run-off to the ground or surface waters or to the atmosphere will be accomplished. In addition, the design also includes a toe drain system to collect leachate and pump to the Wastewater Treatment Facility for treatment and instrumentation to monitor water levels and for slope movement into the post-closure period.

The grading will not allow the future impounding of water, sediment or slurry on the closure. The design utilizes appropriate final cover slopes, terraces and stormwater controls to meet the performance criteria. The stormwater management ponds include a composite liner system to improve drainage and minimize any infiltration.

The design of soil backfill in the closure by removal areas offers additional buttressing of slopes coupled with the control of water within the CCR and instrumentation to monitor water levels and for slope movement will improve slope stability to prevent sloughing or movement of slopes and the final cover system during construction and post closure.

The engineered turf final cover system allows for closure in the shortest amount of time while minimizing erosion and maintenance post closure. The final cover system also has a lower permeability than conventional soil cover systems thereby reducing infiltration to maintain a stable CCR fill.

An Assessment of Corrective Measures (ACM) for the Plant Gaston Ash Pond was placed in the Plant's Operating Record in June 2019 and submitted to the Department in July 2019. The development of the ACM

considered the planned closure approach which will include dewatering, consolidating the footprint of the ash, and constructing a cover system over the consolidated footprint that meets the requirements of r. 335-13-15-.07(3)(d). This closure approach will effectively control the source of CCR constituents to groundwater by removing free water and some interstitial water from the ash, reducing the footprint area of the ash and preventing further infiltration of surface water resulting from rainfall through the ash. Removal of the free liquid will reduce the volume of water available to flow from the Ash Pond during and after closure, while also minimizing the hydraulic head driving water through the subsurface.

Outside the consolidated footprint, ash will be excavated to remove all visible ash and a minimum of 6 inches of the underlying subgrade soils, thereby removing the source from these areas. The cover system that will be constructed over the consolidated footprint will have a permeability several magnitudes lower than the permeability of the natural clay subsoils beneath the impoundment, reducing the likelihood of future migration of water through the ash below the cover.

At the present time, a combination of the closure process and source control measures discussed above along with Monitored Natural Attenuation and adaptive site management are anticipated to provide the necessary remedy for this facility. However, in an adaptive site management process, system performance is monitored, and one or more of the technologies identified in the ACM will be used to supplement the remedy as needed if the selected approach is not performing as intended or corrective action goals are not met. If necessary, modifications to the closure plan may also be amended or supplemented to include other protective measures.

5. Maximum Inventory of CCR– § 257.102(b)(1)(iv) and r. 335-13-15-.07(3)(b)1.(iv)

The maximum inventory of CCR with the ash pond was calculated to be approximately 24,800,000 cubic yards. AutoCAD Civil 3D 2016 was used to calculate this quantity by generating 3D model surfaces from digital data from the ash pond closure design drawings using existing topography, bathymetry and historical design drawings.

6. Largest Area Requiring Final Cover – § 257.102(b)(1)(v) and r. 335-13-15-.07(3)(b)1.(v)

The existing ash pond encompasses approximately 270 acres. The proposed closure approach will consolidate the closure footprint by CCR removal from along the South Dike, East Area and from the West Area and grading the Ash Stack and East Area for closure with a geosynthetic final cover system. The proposed footprint of the consolidated CCR closure area represents the largest area requiring a final cover system and is approximately 193 acres. The final cover system will be extended to cover the stormwater management ponds, and slopes outside the proposed CCR footprint for anchoring into the existing berms along the North, South and southwest dikes. This additional final cover system equates to approximately 41acres outside the proposed CCR footprint for a total final cover system area of 229 acres.

7. Schedule for Completing Closure Activities § 257.102(b)(1)(vi) and r. 335-13-15-.07(3)(b)1.(vi)

The ash pond is anticipated to be closed in approximately 8 years. The following is a general description of activities and durations for closure. Many of these activities will be performed concurrently in different areas of the ash pond.

Activity	Duration
Clearing and Processing	60 months
Dewatering	80 months
CCR Excavation	80 months
CCR Placement	80 months
Process and Place Soil Backfill	90 months
Final Cover Installation	34 months
Site Stabilization	4 months

8. Certification of Closure

The Contractor shall retain the services of an approved independent Construction Quality Control (CQC) Team to perform specified inspection and testing throughout the construction. The Purchaser's Construction Quality Assurance (CQA) Team will verify conformance of the materials, testing and constructed work with the specifications.

In accordance with §257.102(h) and r. 335-13-15-.07(3)(h), within 30 days of completion of closure of the CCR unit, the owner or operator will prepare a notification of closure of the CCR unit. The notification will include the certification by a qualified professional engineer licensed in the State of Alabama verifying that closure has been completed in accordance

with the closure plan as required by 335-13-15-.07(3)(b) including the submittal of a Final Certification Report. The Final Certification Report will serve as the permanent record of the completed construction for the ash closure so as to assure regulatory agencies that the components were constructed in substantial accordance with the State permits, CQA Plan and any construction-level specifications and drawings. The owner or operator has completed the notification when it has been submitted to the Department and placed in the facility's operating record.

The Final Certification Report is anticipated to include the following:

1. *Certification Letter containing a certification from the CQA engineer working on the project, registered to practice in the State of Alabama, that the project was performed in accordance with the Closure Plan permit and any construction-level specifications and drawings*
2. *Pond Closure Technical Specifications*
3. *As applicable, associated permits and filings, such as Notice of Intent (NOI), local permits and any US Army Corp of Engineers (COE) correspondence and approvals*
4. *Soil, CCR, and any other material laboratory test results*
5. *Onsite and off-site borrow source test results that support acceptance of borrow soils.*
6. *Subgrade Proofroll Acceptance Forms with required signatures*
7. *Soil, CCR, concrete and any other material field test results*
8. *CCR Fill Density Test Summary and test locations*
9. *Soil Fill Density Test Summary and test locations*
10. *One Point Proctor and Drive Tube Density Summary*
11. *Sand infill thickness and test locations*
12. *HydroBinder thickness and test locations*
13. *Manufacturer's Quality Control Certifications*
    a. *Geosynthetic materials*
    b. *Engineered turf*
    c. *HydroBinder*
    d. *HDPE pipe*
    e. *Drainage Geocomposites*
    f. *Geotextile*
    g. *Welding rods*
14. *Close by Removal Certification*
15. *Geomembrane Installation Logs*
    a. *Geomembrane Panel Deployment Log*
    b. *Geomembrane Repair Log*
    c. *Geomembrane Seaming and Testing Log*
    d. *Geomembrane Trial Seam Log*
    e. *Geomembrane Destructive Samples Laboratory Results*
16. *Certification Subgrade Surveys*
17. *Daily CQC Field Monitoring Reports*
18. *Daily CQA Field Reports*

19. *Record As-Built Drawings*
    a. *Geomembrane As-Built Drawings*
    b. *Periodic Topographic Survey*
    c. *Top of Subgrade As-Built Drawings*
20. *Certifications for quality control*

9. Directional Informational Signs

During construction the Contractor will control access points for ash pond ingress and egress. He will provide signage, fencing and barriers to control traffic within the ash pond and working areas. Post-closure signage and barriers will be provided for limiting access to the ash pond and prohibiting individuals from driving on the closure turf.

10. Vegetative Plan

Temporary and permanent seeding will be provided in accordance with CBMP Plans in the Closure Plan drawings.

11. Site Equipment Needed

The Contractor selected to perform closure construction will be responsible for all equipment needed during the construction period. For post-closure care, Alabama Power will provide all necessary company owned, leased or contracted equipment needed to perform maintenance and any necessary repairs.

12. Sediment Removal

On a periodic basis during closure, accumulated sediment will be removed when necessary from drop inlets, drainage pipes, diversion ditches, and other drainage structures.

13. Erosion and Sediment Control

The construction of the ash pond closure will largely occur with the limits of the dikes and is not expected to require significant measures to control sediment and erosion. There are some supporting operations such as access improvements on the dikes, onsite soil borrow areas and stormwater pond outlet pipes and structures that will require additional CBMP measures to control surface runoff. Erosion and sediment control measures shall be in accordance with Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee (ASWCC) published at the time permit coverage is obtained.

The Contractor will install CBMPP measures prior to land disturbing activities and shall maintain all CBMPP measures in continuous effective operating order until such time as they are removed. The Contractor shall be responsible for repairing or replacing, as applicable, any CBMPP measures which have been rendered inoperable for any reason.

CBMPP measures shall remain in place and be properly maintained by Contractor until relevant areas of site are considered closed.

CBMP measures will be provided in accordance with CBMP Plans in the Closure Plan drawings.

14. Cost of Closure

Through coordination with the engineering design team and the subcontractor selected to execute the closure activities, the estimated cost of closing Plant Gaston's ash pond is approximately $360 million. The estimate is considered to be at control level with a high level of project definition. However, due to the complexity, quantities, and duration of the overall project, some variability in costs is expected. Additional expenses of post closure care, maintenance, and corrective action are currently estimated at $22 million. Fully detailed long-term maintenance and corrective action strategies have not yet been determined which have the potential to influence current estimates.

Some of the most significant cost items include:

- Water management including contact and noncontact water;
- ClosureTurf® cover system;
- Construction management and construction quality control (CQC);
- Offsite fill materials such as soil and clay fill, gravel and riprap;
- Excavation, placement, compaction, and grading of CCR into the consolidated footprint;
- Construction quality assurance (CQA);
- Dust control management;
- Engineering support; and
- General contingency and inflation on construction items.

15. Closure Schedule

The closure of Plant Gaston's Ash Pond is expected to exceed the closure activity timeline of five years (§ 257.102(f)(1)(ii) and r. 335-13-15-.07(3)(f)1.(ii)) and is expected to require the allowable two-year extensions to complete the closure due to the excavation moisture conditioning, placement, compaction, and grading of approximately 6,000,000 cubic yards of CCR and underlying soil. The ash pond closure schedule is included as **Table 1**.

16. Recordkeeping/Notification/Internet Requirements

As outlined in § 257.105 and r. 335-13-15-.08(1), each Owner or Operator of a CCR unit subject to the Department regulations must maintain files of certain information in an operating record at the facility. Each file is to be retained for at least five years following the date of each occurrence, measurement, maintenance, corrective action, report, record or study. Electronic storage of the records is acceptable. These records are to be made available to the Department upon request.

Certain notifications are to be made in accordance with the requirements of § 257.106 and r. 335-13-15-.08(2). In many instances, such notifications are to be placed in the facility's Operating Record. In certain instances, further notifications are to be made to the Department Directory within 30 days of placement of a notification into the Operating Records. Furthermore, a publicly accessible internet site must be established for posting of certain notifications and compliance information within 30 days of it being placed in the Operating Record.

Alabama Power and Plant Gaston maintain an electronic Operating Record for the facility. In addition, a publicly accessible internet site has already been established for compliance with EPA's CCR Rule. Required notifications and compliance data, as outlined in § 257.105 through § 257.107 and r. 335-13-15-.08 and as applicable to the Plant Gaston Ash Pond, will be maintained in the electronic Operating Record, and as required, made available on the publicly accessible internet site within 30 days of placement in the Operating Record. Furthermore, required notifications will be made to the Department Director within 30 days of placement in the Operating Record.

Certain plans and assessments are required to be updated at specified intervals and/or upon modification of certain components of the facility. If and when applicable, updates will be made to the respective plans and assessments, and notifications placed in the Operating Record, posted to the publicly accessible internet site, and communicated in writing to the Department Director in accordance with the Department rules.

17. Written Post-Closure Plan

40 CFR § 257.104 and ADEM Administrative Code r. 335-13-15-.07(5) requires the owner or operator of an existing CCR surface impoundment that is closed in place to provide for post-closure care of the unit for a period of at least 30 years. Post-closure care includes maintenance of the facility, as well as groundwater monitoring in accordance with § 257.90 through § 257.98 and r. 335-13-15-.06(1) through r. 335-13-15-.06(9).

The Plant Gaston Ash Pond is currently expected to be closed in place under the performance standards outlined in § 257.102(d) and r. 335-13-15-.07(3)(d). Following

closure, maintenance will be provided on the final cover system for the required post-closure care period so that the integrity and effectiveness of the final cover system will be maintained. Maintenance activities will include, as needed, repairs to the final cover to correct any effects related to settlement, subsidence, erosion or other events, and will be performed to prevent run-on or run-off from eroding or otherwise damaging the final cover. Maintenance tasks could include, but not be limited to, repair of subsidence or erosion features, replacement of sand in-fill within the synthetic turf and re-establishment of vegetation, where applicable. Maintenance will be performed on a semi-annual schedule, or more frequently if needed.
The groundwater monitoring system will be maintained throughout the required post-closure care period. Groundwater monitoring will be performed on a semiannual basis during the required post-closure care period as well.

The following office(s) can be contacted about the facility during the post-closure care period.

Gaston Steam Plant
Environmental Manager
31972 Highway 25, Wilsonville, AL 35186
1-205-669-8075
G2CCRPostGAS@southernco.com

At the present time, there is no planned use of the facility after closure. If current plans change, they will be noted in an amendment to this post-closure care plan. Any future use of the property after closure will not disturb the integrity of the final cover, liner or any other component of the containment system. Furthermore, the functionality of the groundwater monitoring system will be maintained.

No later than 60 days following completion of the post-closure care period of 30 years, Alabama Power Company will prepare a notification verifying completion of the post-closure care.