

# POST-CLOSURE PLAN

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PLANT BOWEN ASH POND 1 (AP-1) CLOSURE

BARTOW COUNTY, GEORGIA

FOR



Georgia  
Power

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Geosyntec   
consultants

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## LIST OF ACRONYMS

BMP	Best Management Practice
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
CQA	Construction Quality Assurance
GA EPD	Georgia Environmental Protection Division
GPC	Georgia Power Company
GSWCC	Georgia Soil and Water Conservation Commission
LCRS	Leachate Collection and Removal System
PCCP	Post-Closure Care Period
P.E.	Professional Engineer
P.G.	Professional Geologist
SCS	Southern Company Services
USEPA	United States Environmental Protection Agency

## 1. INTRODUCTION

This Post-Closure Plan is included as part of the permit application package being submitted to Georgia Environmental Protection Division (GA EPD) to close Ash Pond AP-1, an existing coal combustion residuals (CCR) surface impoundment at Plant Bowen, located in Bartow County near Cartersville, Georgia. This Plan has been prepared for Georgia Power Company (GPC) pursuant to the Federal CCR Rule in Title 40 of the Code of Federal Regulations (CFR) §257 (40 CFR §257) and the State CCR Rule in Chapter 391-3-4-.10 of the Georgia Rules for Solid Waste Management, Coal Combustion Residuals.

This Post-Closure Plan may be amended by GPC at any time. Moreover, as required by State CCR Rule 391-3-4-.10(7)(g), which references 40 CFR §257.104(d)(3)(ii), this plan must be amended whenever: (i) there is a change in the operation of the CCR unit that would substantially affect the plan; or (ii) after post-closure activities have commenced, unanticipated events necessitate a revision of the plan. The timeframes for amendment to the plan will be in accordance with those specified in 40 CFR §257.104(d)(3)(iii).

## 2. GENERAL

In accordance with 40 CFR §257.104(c)(1) (incorporated by reference in State CCR Rule 391-3-4-.10(7)(g)), the post-closure care period (PCCP) will be 30 years. As required by 40 CFR §257.104(c)(2), if at the end of the PCCP the owner or operator of the CCR unit is operating under assessment monitoring in accordance with 40 CFR §257.95, the owner or operator must continue to conduct post-closure care until the owner or operator returns to detection monitoring in accordance with 40 CFR §257.95. The release of CCR units from post-closure care must be approved by GA EPD. GPC (or Southern Company Services (SCS) at the request of GPC) will conduct the following activities during the PCCP:

- Maintaining the integrity and effectiveness of the consolidated lined area final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;
- Maintaining the integrity and effectiveness of the leachate collection and removal system (LCRS) installed in the consolidated lined area, and operating the LCRS and leachate management system as specified herein, consistent with 40 CFR §257.70(d); and
- Maintaining the groundwater monitoring system and monitoring groundwater at AP-1 in accordance with the requirements of 40 CFR §§257.90 through 257.98 (incorporated by reference in State CCR Rule 391-3-4-.10(6)) and the approved Groundwater Monitoring Plan.

## 3. POST-CLOSURE USE OF THE PROPERTY

The primary land use for the site after closure will be open undeveloped green space. No post-closure use of the property will be allowed unless approved by the Director, GA EPD. GA EPD may approve disturbance if the owner or operator demonstrates that disturbance of the final cover system, composite liner, LCRS, or other component of the closure system will not create a potential threat to

human health or the environment. The demonstration will be certified by a qualified professional engineer (P.E.) registered in Georgia, and notification will be provided to GA EPD that the demonstration has been placed in the operating record and on the owner's or operator's publicly-accessible internet site. Prior to implementing any modifications to the post-closure use of the site, this Post-Closure Plan will be amended consistent with the requirements of 40 CFR §257.104(d), and GA EPD approval will be obtained.

Plant operations and maintenance may occur within the permit boundary but outside the limits of the closed AP-1 area (e.g. outside the CCR boundary and final cover system). Activities not directly affecting the final cover system, such as those needed to construct, maintain, replace or repair systems for electric power generation or its delivery (such as subsurface piping, electrical appurtenances, transmission structures, etc.) may be conducted at the discretion of GPC/SCS. However, should utility operations be required such that the final cover system is disturbed, GA EPD's approval is required prior to conducting any utility operations that would disturb the final cover, and, upon completion, GPC/SCS will prepare a report documenting its repair. The repair documentation will include as-builts, CQA information, and certification from a P.E. registered in Georgia. This documentation will be submitted to GA EPD.

#### **4. MONITORING AND MAINTENANCE ACTIVITIES**

##### **4.1 INSPECTION PLAN**

The purpose of the post-closure inspection program is to ensure the adequate functioning of the engineered features of the AP-1 closure system during the PCCP. A visual inspection of the entire closed AP-1 area will be performed at the frequency specified subsequently in this Post-Closure Plan, and a written record will be completed and maintained as part of the facility's operating record. At a minimum, each inspection will document the following information: date and time of inspection, name of inspector, notations of observations made, and nature of any corrective actions to be taken. Items that may be included in the inspection are as follows:

- Site access and security control;
- Site benchmarks;
- Final cover system;
- Vegetation;
- Leachate management system;
- Stormwater management system, including erosion and sediment control features; and
- Groundwater monitoring system.

#### **4.2 INSPECTION FREQUENCY**

Inspections will be conducted semi-annually. If any deficiencies are identified during the inspections, an assessment and corrective action plan will be implemented as soon as practical.

#### **4.3 SITE ACCESS AND SECURITY CONTROL**

AP-1 is located completely within the Plant Bowen property boundary, and access to the property is restricted to only authorized personnel. Access will be controlled by a chain link security fence and gates that are kept locked. During the PCCP, fences, gates and locks, and barriers around the site will be checked during the routine inspections and maintained/repaired as necessary.

Access roads will be maintained to provide appropriate access within the facility. Maintenance will include repairing potholes and washouts as well as periodic regrading as necessary.

#### **4.4 SITE BENCHMARKS**

Routine inspections will include verifying integrity and accessibility of site benchmarks. If site benchmarks are damaged, obstructed due to vegetation, or otherwise inaccessible, proper actions will be taken to restore integrity and access to the benchmarks.

#### **4.5 FINAL COVER SYSTEM**

Routine inspections will include checking the final cover system for conditions that could impact cover system integrity and effectiveness. These include, for example, excessive erosion, soil sloughing, inadequate vegetation, animal burrowing, vehicular disturbance, and subsidence. If the routine inspection program reveals any areas with an unacceptable magnitude of cover system settlement, subsidence, erosion, soil sloughing, animal or vehicular disturbance, or other damage to the final cover system, or damage or deterioration to ClosureTurf® if used, the areas will be repaired to restore the integrity and effectiveness of the system. Any identified areas of water ponding on the final cover system will likewise be repaired. If a final cover system alternative using ClosureTurf® is utilized, maintenance (e.g., replenishment of sand infill) and repairs will be performed in accordance with the manufacturer's design and installation manuals [WatershedGeo, 2018a, 2018b].

#### **4.6 VEGETATION**

Routine inspections will include checking the condition of vegetation on the final cover system of the consolidated lined area and of the adjacent features of the closed AP-1 area (e.g., perimeter containment dike slopes, adjacent stormwater management features). Any locations found to lack proper vegetation will be evaluated to assess the problem, and then appropriate actions will be taken to restore the vegetation and maintain the area. Revegetation and fertilization will be performed as described in the Closure Plan.

Vegetation will be mowed at least twice a year to maintain its health, avoid die-out due to shading, eliminate woody-stemmed vegetation, and provide for adequate visibility of the site during inspections.

#### **4.7 LEACHATE MANAGEMENT SYSTEM**

The leachate management system is composed of the LCRS, along with the riser pipes, leachate riser pad, and leachate transmission system (valves, flowmeters, manholes, and other appurtenances). The leachate management system will be operated and maintained to collect and remove leachate from the consolidated lined area during the PCCP, consistent with 40 CFR §257.70(d).

During the PCCP, the leachate management system will be operated and maintained as set forth in the Leachate Management Plan. Routine maintenance and inspections of the leachate management system will include: (i) checking the condition of leachate system pumps and control systems; and (ii) checking and cleaning (if needed) the LCRS and leachate transmission system piping to ensure that the system features are operational and functioning as intended. Abnormal flow rates, unusual noises or odors, or other anomalies will be noted and addressed, and damaged or inoperable features will be repaired as necessary to restore function.

#### **4.8 STORMWATER MANAGEMENT SYSTEM AND EROSION AND SEDIMENT CONTROL**

The stormwater management system is composed of the drainage conveyances located on the final cover system (top deck let-downs and diversion berms, sideslope drainage benches, and downchutes), as well as the adjacent drainage conveyances and features that route stormwater away from the consolidated lined area to off-site discharge points (perimeter channels and lined stormwater ponds with associated inlet and outlet structures).

Inspection and maintenance of the stormwater management system will be performed in accordance with the recommendations contained in the Best Management Practice Operations & Maintenance Guidance Document, Appendix E of the Georgia Stormwater Manual, Volume 2, 2016 Edition [AECOM, 2016]. Inspection and maintenance practices will include: (i) removing built up sediment, debris, and trash; (ii) removing debris from the inflow and outflow structures; (iii) improving erosion and sediment control practices where stabilization features are missing or in poor condition; and (iv) inspecting the structural integrity and functionality of the system components.

During periods when vegetation may not be fully established (e.g., just after completion of closure, or just after performing PCCP construction or maintenance activities), temporary erosion and sediment control best management practices (BMPs) will be installed in accordance with recommendations provided in the Georgia Soil and Water Conservation Commission's (GSWCC) Manual for Erosion and Sediment Control in Georgia [GSWCC, 2016]. These temporary BMPs will be maintained until the disturbed areas are stabilized.

#### **4.9 GROUNDWATER MONITORING SYSTEM**

As required by State CCR Rule 391-3-4.10(6) and 40 CFR §257.90(c), groundwater monitoring, sampling, and corrective action (if applicable) will be conducted throughout the PCCP in accordance with the facility Groundwater Monitoring Plan. In addition to groundwater monitoring and sampling, groundwater monitoring system components, including wells, well risers, well pads and seals, casings, caps, locks, and bollards, will be routinely inspected, maintained, and repaired or replaced, as necessary.

At least once every five years, monitoring wells will be inspected by a P.E. or professional geologist (P.G.) registered in Georgia, who will direct and document appropriate remedial corrective work to be performed on any well that does not conform to standards, pursuant to the State of Georgia Water Well Standards Act of O.C.G.A. § 12-5-120.

#### **5. RESPONSIBLE PERSON**

The GPC person or office to contact about the facility during the PCCP is provided below:

Contact: General Manager  
Address: Georgia Power Environmental Affairs  
241 Ralph McGill Boulevard,  
Atlanta, GA 30308  
Phone Number: 404-506-6505  
Email Address: [gpcenv@southernco.com](mailto:gpcenv@southernco.com)

#### **6. SITE EQUIPMENT**

GPC/SCS or its designated contractor will make adequate equipment available (either its own equipment, or rental equipment) to execute the post-closure care requirements correctly and efficiently.

#### **7. POST-CLOSURE CARE COST ESTIMATE AND FINANCIAL ASSURANCE**

The post-closure care cost estimate is provided in Table 1 at the end of this document. In compliance with applicable securities laws and regulations, GPC will provide unredacted cost estimates for post-closure care to GA EPD under separate cover. The post-closure care costs include all items necessary for a third-party to conduct post-closure care maintenance and monitoring in accordance with the Post-Closure Plan as set forth herein. The cost estimate is generated in current dollars and will be adjusted annually for inflation. GPC will provide a demonstration of financial assurance upon approval of closure and post-closure care cost estimates by GA EPD.

#### **8. NOTIFICATION OF MONITORING STANDARDS EXCEEDED**

GPC/SCS will be responsible for conducting monitoring activities. If at any time, the monitoring results indicate the exceedance of established standards or a threat to human health or the environment,



GPC will promptly notify GA EPD in accordance with the requirements of State CCR Rule 391-3-4-.10(6).

#### **9. NOTIFICATION OF COMPLETION OF POST-CLOSURE CARE PERIOD**

No later than 60 days following the completion of the PCCP, GPC will prepare a notification verifying that post-closure care has been completed. The notification will include a certification by a qualified P.E. registered in Georgia verifying that post-closure care has been completed in accordance with this Post-Closure Plan. GPC will complete the post-closure process by: (i) placing the notification in the facility's operating record, as required by 40 CFR §257.105(i)(13); and (ii) providing the notification to the Director of GA EPD.

#### **10. RECORDKEEPING / NOTIFICATION / INTERNET REQUIREMENTS**

During post-closure care, recordkeeping, notifications, and internet postings will be performed as required by the following sections of 40 CFR §257 (incorporated by reference in State CCR Rule 391-3-4-.10(8)):

- Recordkeeping in accordance with 40 CFR §257.105(i);
- Notifications in accordance with 40 CFR §257.106(i); and
- Internet posting requirements in accordance with 40 CFR 257.107(i).

## 11. REFERENCES

AECOM (2016). "Operations & Maintenance Guidance Document", Georgia Stormwater Management Manual, Appendix E.

Georgia Soil and Water Conservation Commission (GSWCC) (2016). Manual for Erosion and Sediment Control in Georgia, Athens, GA.

WatershedGeo (2018a). "ClosureTurf Design Guidelines Manual," January 2018.

WatershedGeo (2018b). "ClosureTurf Installation Guidelines Manual," March 2018.

**TABLE 1**  
**Post-Closure Care Cost Estimate**

**Table 1 - Closure Cost Estimate  
 Ash Pond 1 Post-Closure Cost Estimate**

Item Description		Quantity	Unit	Unit Cost	Cost
<b>Post Removal Cost</b>					
	Maintenance - Grass/Turf <sup>1</sup>				
	Dike, Road, and Maintenance				
	Water Treatment				
	Inclinometer / Stability				
<b>Environmental Monitoring</b>					
	Groundwater Monitoring & Reporting <sup>2</sup>				
	Sampling				
	Reporting				
	Laboratory Analysis <sup>3</sup>				
	Groundwater Well Maintenance and Abandonment				
	Well Maintenance & Replacement <sup>4</sup>				
	Well Abandonment <sup>5</sup>				
				Subtotal	
				Contingency	
				<b>30 Year Post Removal Cost Estimate</b>	
<b>Total Financial Assurance Required (Closure Cost + 30 Year Post Removal Care Cost)</b>					

Notes:

1. Maintenance - Grass includes cost for mowing the site five times per year. Turf includes costs for material replacement.

