

# POST-CLOSURE PLAN

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## PLANT BOWEN COAL COMBUSTION RESIDUALS (CCR) LANDFILL

BARTOW COUNTY, GEORGIA

FOR



# Georgia Power

NOVEMBER 2018



### HHNT

HODGES, HARBIN,  
NEWBERRY & TRIBBLE, INC.  
*Consulting Engineers*

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### APPENDIX

#### Appendix A – Plant Bowen CCR Landfill Post-Closure Care Cost Estimate

## 1. GENERAL

The Plant Bowen CCR Landfill post-closure plan is prepared to meet the requirements of Rule 391-3-4-.10(7), which requires the owner or operator of an existing CCR Landfill that is closed in place to provide for post-closure care of the existing landfill for a period of at least 30 years. Post-closure care includes maintaining the integrity of the final cover system, the liner and leachate collection system, as well as continuing groundwater monitoring in accordance with Rule 391-3-4-.10(6).

Georgia Power prepared, placed in the facility's operating record and uploaded the initial written post-closure plan for the Plant Bowen CCR Landfill to the Georgia Power website under Environmental Compliance prior to October 17, 2016, as required by 40 CFR §257.104(d)(2).

Georgia Power will amend the initial and subsequent written post-closure plans whenever:

- A change in the operation of the landfill occurs (prior to closure) that substantially affects the written post-closure plan in effect; or
- If after post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan.

Georgia Power will amend the written post-closure plan at least 60 days prior to a planned change in the operation of the CCR Landfill affecting post-closure care, or no later than 60 days after an unanticipated event requires the need to revise the existing written post-closure plan. If the written post-closure plan is revised after post-closure care activities have commenced, Georgia Power will amend the written post-closure plan no later than 30 days following an unanticipated event that necessitates a revision of the written post-closure plan.

All amendments to the approved post-closure plan will include a certification from a professional engineer license to practice in the State of Georgia, that the amended post-closure plan meets the requirements of Rule 391-3-4-.10(7).

The release from the post-closure requirements in this plan must be approved by the Director of the Georgia Environmental Protection Division (EPD).

## 2. POST-CLOSURE USE OF THE PROPERTY

Post closure care for the Plant Bowen CCR Landfill will consist of the following, at a minimum:

1. Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover system 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 system;
2. Maintaining the integrity and effectiveness of the leachate collection and removal system; and
3. Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of Rule 391-3-4-.10(6).

There is no planned use of this property during the post-closure care period at this time. Prior to any future use, EPD approval is required.

### **3. GROUNDWATER MONITORING**

Groundwater monitoring will continue throughout the post-closure care period as described in the approved Groundwater Monitoring Plan. Following each semi-annual sampling event, results will be provided to EPD for its review. The groundwater monitoring wells will be maintained throughout this period.

The CCR Landfill will continue to monitor groundwater according to the Groundwater Monitoring Plan approved for the facility. Georgia Power will be responsible for conducting all monitoring activities. If at any time the monitoring results indicate exceeding of established standards or indicate a threat to human health or the environment, Georgia Power will notify the Environmental Protection Division and comply with all requirements of Georgia Rule 391-3-4-.10(6).

If at the end of the post-closure care period the facility is operating under assessment monitoring in accordance with Rule 391-3-4-.10(6), Georgia Power will continue to conduct post-closure care until the facility returns to detection monitoring in accordance with Rule 391-3-4-.10(6).

### **4. LEACHATE COLLECTION AND TREATMENT**

The leachate collection system will be maintained for a minimum of 30 years or until leachate is no longer produced. These systems will be maintained in good working order throughout the post-closure care period. Leachate, collected during the post-closure care period, will be properly treated in a wastewater treatment plant or circulated back to the plant for re-use.

### **5. ROUTINE INSPECTION OF VEGETATIVE / FINAL COVER / DRAINAGE SYSTEM**

Throughout the post-closure care period, Georgia Power will inspect the CCR landfill on a quarterly basis to ensure that all CCR disposed of in the facility remains properly covered with the approved final closure system for the facility. Any repair work on the soil cover or synthetic cap liner will meet or exceed the original construction requirements. Any areas noted to have less than the required cover from the effects of erosion, vehicular traffic, etc., will be immediately repaired. All areas lacking proper vegetation will be grassed and maintained according to the vegetation and fertilization plans in this plan. Downdrain systems will be maintained in proper working condition in accordance with the permit. The contact person for post-closure care of the facility is provided below:

Facility Contact:           General Manager  
                                  Environmental Affairs  
                                  241 Ralph McGill Blvd NE  
                                  Atlanta, Georgia  
Telephone Number:       (404) 506-6505

**6. SEDIMENT POND MAINTENANCE / CLEAN-OUT**

Throughout the post-closure care period, all ditches, diversion berms, culverts, rip-rap, and other drainage structures will be maintained according to the Operations Plan. Sediment ponds will be cleaned upon the accumulation of the designed depth of sediment within the pond. Erosion control structures will be maintained to prevent damage to the final cover system.

**7. LIMITED ACCESS**

Access to the CCR landfill will be controlled by fencing, gates, buffers, etc.

**8. POST-CLOSURE SUPERVISION**

Post-closure care of the site will be under the supervision of the Plant Manager. Contact information for this person will be provided to EPD at time of closure.

**9. SITE EQUIPMENT**

Georgia Power will make adequate equipment available to ensure that post-closure care requirements are executed correctly and efficiently. Rental equipment will be utilized in the event that equipment dedicated to the CCR landfill should break down during post-closure care procedures.

**10. REMOVAL OF CCR**

If Georgia Power wishes to remove CCR, Georgia Power will request and receive written approval from EPD, prior to conducting any such activity.

**11. POST-CLOSURE CARE COST AND FINANCIAL ASSURANCE**

The third party estimated annual cost for post-closure care of this site is approximately \$371,000 (2018 US dollars), and the total 30-year post-closure costs are estimated to be \$11,130,000 (2018 US dollars). For demonstrating financial assurance, these figures will be updated on an annual basis and submitted to EPD. The post-closure care cost estimate is included in Appendix A.

The post-closure care cost estimate was developed at a level of detail, and from the perspective that, sufficient funding could be set aside in a financial assurance mechanism for a third party (other than GPC) to complete post-closure care activities. The post-closure care cost estimate includes groundwater monitoring, reporting and operations and maintenance for thirty years.

The financial assurance estimates in this application for closure and post-closure were developed by the professional engineers preparing this application. These estimates represent the anticipated financial assurance requirements for the application as submitted.

It is understood that through the review process by the EPD and based on any comments or questions by the EPD, this application may be revised. These revisions could be reason for the financial assurance estimates in this application to change.

Currently, financial assurance for this facility is provided by corporate financial test as described in 40 CFR Part 258, Subpart G and is adjusted annually for inflation. GPC understands there may be changes in the financial assurance estimates, and therefore is prepared to make any necessary changes in the financial assurance instruments that result from any changes in the application.

## **12. NOTIFICATION**

No later than 60 days following the completion of the post-closure care period, Georgia Power must prepare a notification verifying that post-closure care has been completed. The notification must include a certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with this plan. Georgia Power has completed the notification when it has been placed in the facility's operating record as required by Rule 391-3-4-.10(7) and provided to EPD. The release of the CCR landfill from post-closure care must be approved by EPD.

These notifications will be posted to the Georgia Power website under Environmental Compliance.

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

The requirements set forth in this Post Closure Plan comply with the recordkeeping requirements of Rule 391-3-4-.10(8), closure and post-closure notification requirements specified in Rule 391-3-4-.10(8) and internet requirements in Rule 391-3-4-.10(8). A summary of the specific recordkeeping, notification and internet posting requirements for post-closure care are listed below:

### *Recordkeeping Requirements*

Georgia Power will maintain these documents in the facility's operating record as soon as the required document/information is available or applicable and approved by EPD:

- (a) The written post-closure plan, and any amendment made to the initial plan, will be kept in the Plant Bowen CCR Landfill facility's operating record. Georgia Power may elect to maintain only the most recent post-closure plan approved by EPD in the facility's operating record.
- (b) The notification of completion of post-closure care period as required by Rule 391-3-4-.10(8) will be added to the Plant Bowen CCR Landfill facility's operating record.

### *Notification Requirements*

The requirements for notification consist of informing EPD when information has been placed in the facility's operating record and on Georgia Power website under Environmental Compliance. EPD reviews and approves the post-closure plan and is also the regulatory agency responsible for releasing the Plant Bowen CCR Landfill from post-closure care, therefore the requirements specified in Rule 391-3-4-.10(8) are met during the State's CCR landfill permitting process.

*Publicly accessible Internet Site Requirements*

Georgia Power will post the information required by Rule 391-3-4-.10(8) for the Plant Bowen CCR Landfill within 30 days of review and approval by EPD. The information required to be posted on the Georgia Power website under Environmental Compliance will remain available at least five (5) years following the date on which Georgia Power first posts the information.

The following information related to post-closure will be posted on the Georgia Power website under Environmental Compliance:

- (a) The most recent post-closure plan, and any amendment made to the initial plan,
- (b) The notification of completion of post-closure care period.

**14. CERTIFICATION**

This post-closure plan meets the requirements of Rule 391-3-4-.10(7).

## **APPENDIX A – POST-CLOSURE CARE COST ESTIMATE**

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## Plant Bowen

### CCR Landfill Post Closure Cost Estimate

	Units	Quantity	Unit Cost	TOTAL
<b>Groundwater Monitoring System</b>				
Groundwater Well Monitoring (Semi-Annual)	Ea	142	\$750	\$106,500
Groundwater Well Maintenance	Ea	2	\$1,000	\$2,000
Groundwater Well Abandonment	Ea	4.73	\$1,500	\$7,100
<b>Surface Water Monitoring</b>				
Surface Water Monitoring Point(s) (Semi-Annual)	Ea	12	\$400	\$9,600
<b>Leachate Collection System</b>				
Leachate Monitoring and Analysis	LS	1	\$5,000	\$5,000
Leachate Treatment	LS	1	\$15,000	\$15,000
Leachate Disposal	LS	1	\$10,000	\$10,000
Leachate System Maintenance	LS	1	\$2,000	\$2,000
<b>Engineering</b>				
Engineering	LS	1	\$3,500	\$3,500
Engineering Inspections	Ea	4	\$1,800	\$7,200
<b>Landfill Maintenance</b>				
Mowing (2 x year)	Ac	147	\$250	\$73,500
Grassing / Landscaping	Ac	14.7	\$3,000	\$44,100
Access Road Maintenance	LF	500	\$40	\$20,000
Final Cap Repairs	LS	1	\$50,000	\$50,000
Sediment Basin Cleanout	Ea	2	\$2,500	\$5,000
Storm water Ditch Maintenance / Repair	LF	200	\$10	\$2,000
Storm water Structure Maintenance / Repair	Ea	1	\$2,500	\$2,500
<b>Other</b>				
Surveying	LS	1	\$1,000	\$1,000
Independent Construction Manager	LS	1	\$2,500	\$2,500
Electrical Power	LS	1	\$1,000	\$1,000
Administration	LS	1	\$1,500	\$1,500

**Total Annual Post-Closure Cost:                   \$371,000**

**Total Post-Closure Cost (30 Years):                   \$11,130,000**

1. All costs shown include labor, materials, and equipment and are in 2018 dollars.
2. Costs of water monitoring is based on current costs for these services.
3. During the active life of the landfill and during the post-closure care period, Georgia Power will annually adjust the post-closure cost estimation for inflation.