

POST-CLOSURE PLAN

PLANT MCINTOSH EXISTING COAL COMBUSTION RESIDUALS (CCR) LANDFILL NO. 4 EFFINGHAM COUNTY, GEORGIA

FOR



Georgia Power

November 2018



TABLE OF CONTENTS

1.	Post-Closure Plan	1
1.1	Amendments to the Post-Closure Care Plan	1
1.2	Post Closure Care Period	1
1.3	Post-Closure Use of the Property	1
1.4	Final Cover System Maintenance	1
1.5	Environmental Monitoring	2
1.6	Notification of Monitoring Standards Exceeded	2
1.7	Leachate Collection and Treatment	2
1.8	Routine Inspections	2
1.9	Stormwater Management System Maintenance	3
1.10	Limited Access	3
1.11	Supervision	3
1.12	Site Equipment	3
1.13	Removal of CCR for Beneficial Use	3
1.14	Post-Closure Care Cost Estimate	3
1.15	Financial Assurance	4
1.16	Notification and Certification	5
1.17	Recordkeeping/Notifications, and Posting of Information on the Internet	5

1. POST-CLOSURE PLAN

The following Post-Closure Plan includes a narrative of the proposed post-closure use of the property, a description of routine maintenance activities, a description of monitoring and inspections, and a description of the recordkeeping requirements. In addition, the Post-Closure Plan also includes an estimate of the average annual cost for post-closure care of the site.

This Post-Closure Plan fulfills the requirements of Rule 391-3-4-.10(7) for Landfill No. 4 as an Existing CCR Landfill in accordance with Rules 391-3-4-.10(9)(c)3. Georgia Power filed an Initial Post-Closure Plan for McIntosh Landfill No. 4 to the Georgia Power CCR Compliance Website on October 17, 2017.

1.1 Amendments to the Post-Closure Care Plan

Georgia Power may amend the initial or any subsequent plan at any time. Georgia Power must amend whenever there is a change in the operation of the unit that would substantially affect the written post-closure plan, or after post-closure care activities have commenced unanticipated events necessitate a revision of the written plan. The Post-Closure Plan must be amended at least 60 days prior to a planned change in operation of the facility, and no later than 60 days following an unanticipated event, or 30 days following a trigger event. Post-Closure Plan Amendments will be certified by a Georgia Professional Engineer.

1.2 Post Closure Care Period

Post-closure care is required for a period of 30 years and must consist of at least the following:

1. Maintain 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; and
2. Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of Rule 391-3-4-.10(6).

If under assessment monitoring at the end of the post-closure care period, Georgia Power will continue to conduct post-closure care until the site returns to detection monitoring. The release from the post-closure care requirements in this plan must be approved by the Director of the Georgia EPD.

1.3 Post-Closure Use of the Property

The post-closure use of Landfill No. 4 will be for green space. Prior to any other future use, Georgia EPD approval will be obtained by Georgia Power. Georgia Power is responsible for continuing the post-closure care of the property for the 30-year post-closure care period, which will begin upon issuance of the closure certification by the Georgia EPD.

1.4 Final Cover System Maintenance

Georgia Power will maintain the integrity and effectiveness of the final cover system, including making repairs to the final cover, as necessary. Erosion repairs to the vegetation, topsoil, and protective soil layers are typical for maintenance of final cover systems. Erosion repairs will be made as soon as feasible to

prevent damage to the final cover. Any repairs to the liner shall be documented and certified by a professional engineer and placed in the facility Operating Record.

Any identified areas that require repair will be reseeded immediately after any repairs are completed. Areas which are slow to establish vegetation shall receive additional temporary seeding. The operator may submit soil samples to the County Extension Agent for analysis and determination of proper soil conditioners including lime. Planting dates, fertilizer rates, and seeding rates shall meet the requirements in the *Manual for Erosion and Sediment Control in Georgia*.

The erosion control measures shall remain in place until a satisfactory stand of grass is growing. A satisfactory stand of grass is defined as a full cover: 100 percent of the soil surface is uniformly covered in permanent vegetation with a density of 70 percent or greater.

1.5 Environmental Monitoring

All environmental monitoring at Landfill No. 4 shall be conducted in accordance with the approved Groundwater Monitoring Plan. The environmental monitoring shall continue throughout the post-closure care period as described in the Groundwater Monitoring Plan and approved Permit Application.

The Groundwater Monitoring Plan for this site shall be maintained throughout the 30-year post-closure care period. If at the end of the 30-year post-closure care period the owner or operator of the CCR unit is operating under assessment monitoring in accordance with Georgia Rule 391-3-4-.10(6) and 40 CFR 257.95, the owner or operator must continue to conduct post-closure care until the owner or operator returns to detection monitoring.

1.6 Notification of Monitoring Standards Exceeded

Georgia Power will be responsible for conducting all monitoring activities. If at any time the monitoring results indicate an exceedance of established standards or indicate a threat to human health or the environment, Georgia Power shall notify the Georgia EPD and comply with all requirements of Georgia Rule 391-3-4-.10(6).

1.7 Leachate Collection and Treatment

The leachate collection system shall be maintained and shall collect leachate for a minimum of 30 years or until leachate does not provide a potential for impact or is no longer generated. These systems shall be maintained in good working order throughout the post-closure care period. Leachate, collected during the post-closure care period, shall be properly treated in a wastewater treatment plant prior to discharge.

1.8 Routine Inspections

Throughout the post-closure care period, the site will be inspected on an annual basis to identify any maintenance or repairs needed to ensure that all CCR disposed of in the facility remains properly covered. The inspection will focus on the ditches, storm water diversion berms, let down pipes, rock lined flume, and sedimentation ponds, and check the entirety of the final cover. Repairs to the final cover system will be made as necessary to maintain the integrity and effectiveness of the final cover system. The repairs shall meet or exceed the original construction requirements. Areas noted to have less than the required cover from the effects of erosion, vehicular traffic, settlement, subsidence, or other events will be repaired as soon as practical. All areas lacking proper vegetation will be grassed and maintained according to the vegetation and fertilization plans.

The storm water management system will be maintained in proper working condition in accordance with the permit application to prevent run-on and runoff from eroding or otherwise damaging the final cover. Repairs or maintenance to deficiencies identified during the annual inspection shall be completed as soon as practical.

1.9 Stormwater Management System Maintenance

Throughout the post-closure care period, the storm water management system, including all ditches, diversion berms, culverts, rip-rap, and other drainage structures will be maintained according to the Engineering Report and Design and Operations Drawings. Sediment ponds shall be cleaned upon the accumulation of the designed depth of sediment within the pond. Erosion control structures shall be maintained to prevent damage to the final cover. All permanent ditches, pipes, culverts, silt fences, sedimentation ponds, and other permanent drainage structures shall be inspected and maintained. Erosion control structures shall be maintained to prevent damage to the final cover. Maintenance activities will include clean-out erosion control structures, including the sedimentation pond, on an as needed basis.

1.10 Limited Access

The site is entirely on Georgia Power property. Access to the site is controlled by fencing, gates, buffers, etc. Access will be limited to authorized personnel and to those time periods when the site is undergoing maintenance or inspection activities.

1.11 Supervision

The post-closure care of the site will be the responsibility of the Vice President of Environmental and Natural Resources. The contact information is:

Facility Contact:	General Manager Environmental Affairs Georgia Power Company
Address:	241 Ralph McGill Boulevard Atlanta, Georgia 30308
Telephone Number:	(404) 506-6505

1.12 Site Equipment

Georgia Power will make available necessary equipment to ensure that post-closure care requirements are executed correctly and efficiently. Dedicated landfill or rental equipment shall be used as necessary. The equipment required will depend on the type and extent of the necessary repair.

1.13 Removal of CCR for Beneficial Use

Georgia Power will request and receive written approval from Georgia EPD prior to conducting any activities to remove CCR from the landfill for beneficial use.

1.14 Post-Closure Care Cost Estimate

The third-party cost estimate for post-closure care of the site is presented in Table 13.1. The cost estimate was prepared by GEI Consultants, Inc. This cost estimate assumes that the Cell 2A is the last phase to be developed, and that Cells 2B, 3, and 4 are never constructed. The total closure area for Cell 1 and 2A is

17.6 acres. Final cover maintenance, revegetation, erosion control, and sediment basin clean out activities are not expected to occur every year but are anticipated to average the units shown below. The post-closure care cost estimate, in 2018 dollars, is \$129,218/year or \$3,876,528 for the entire 30-year period, adjusted annually for inflation

Table 9.1 Annual Post-Closure Care Costs (2018 Dollars)

No.	Item	Quantity	UOM	Unit Price	Total
1	Cover Maintenance				
1A	Erosion repair, fertilizer, seed/mulch	0.59	AC	\$6,410	\$3,761 ^{1,2}
1B	Vegetation mowing	7.04	AC	\$250	\$1,760 ^{3,4}
1C	Road maintenance	1	EA	\$750	\$750 ^{5,6}
2	Storm Water Management System Maintenance				
2A	Sediment basin cleaning (2 Ponds)	0.13	EA	\$50,000	\$6,667 ^{7,8}
2B	Wheel wash makeup reservoir cleaning	0.07	EA	\$20,000	\$1,333 ^{7,8}
2C	Site storm water system maintenance	1	EA	\$750	\$750 ^{5,6}
3	Site Inspections				
3A	Inspection of final cover system (Annual)	1	LS	\$10,000	\$10,000 ⁹
4	Groundwater Sampling and Analysis (Semi-Annual)				
4A	Field preparation & coordination	2	EA	\$4,000	\$8,000 ^{10,14}
4B	Field sampling & field parameters (20 wells)	2	EA	\$7,600	\$15,200 ^{11,12,15}
4C	Laboratory analytical testing services (20 wells)	40	EA	\$375	\$15,000 ^{13,14,15}
4D	Lab. analytical testing (3 duplicates, 3 free field)	6	EA	\$375	\$2,250 ^{13,14,15}
5	Groundwater Reporting and Expense				
5A	Semi-annual groundwater reporting	2	EA	\$13,000	\$26,000 ^{10,15}
5B	Field expense, equip.rental, H&S, & misc.	2	EA	\$10,000	\$20,000 ^{10,15}
6	Leachate System				
6A	Leachate Management and Maintenance	1	LS	\$6,000	\$6,000 ¹⁶
Subtotal Post-Closure Care Cost Per Year					\$117,471
<i>Contingency (10%)</i>					\$11,747
Total Post-Closure Care Cost Per Year					\$129,218
Total Post-Closure Cost					\$3,876,528

Notes:

1. Cost source per site restoration and seeding unit rates - Georgia Pacific Savannah River Mill Project Cell 9 Const. (2014).
2. Quantity assumes re-seed entire cover once during PCC period 17.6 ac / 30 yr = 2.13 ac/yr.
3. Cost source from mowing estimate with Riverview Construction Project (2017).
4. Quantity assumes 17.6 acre area is mowed 1/yr for first 10 yrs to establish vegetation, then 1/5 yr to control shrubs/trees.
5. Cost source is based on values presented in the 2008 GPC ARO Update Costs 12-05-2017 Spreadsheet.
6. Quantity assumes that half 2008 GPC ARO Dike and Road Maintenance budget for this care item.
7. Cost source based on a 2018 GEI estimate developed for basin sediment removal.
8. Quantity assumes that the existing basin will be cleaned out twice during the 30-yr closure period.
9. Cost source generally based on a 2018 GEI estimate for annual inspection and letter report production.
10. Estimate based on budgets from previous sampling events.
11. Cost source based on similar costs projected in 2018 approved GEI Groundwater Monitoring Plan.
12. Cost assumes: 2 people 40 hrs/event@ \$95/hr each = \$7,600
13. Cost source per 2018 PACE Analytical reference.
14. Analytical testing for Approved Groundwater Monitoring Plan, Appendix III Parameters.
15. Assumes that groundwater monitoring plan will be conducted semi-annually (twice a year) for 30 years.
16. Cost based on previous Southern Company estimate (Calc. No. TV-MC-GPC294369-006) with added inflation.

1.15 Financial Assurance

Rule 391-3-4-.10(10)(a) requires financial assurance for all CCR units be provided in accordance with Rule 391-3-4-.13. Per 391-3-4-.13, financial responsibility shall be required for any solid waste handling facility and shall provide adequate financial responsibility to ensure the satisfactory maintenance, closure and

post-closure care of such facility or to carry out any corrective action which may be required as a condition of permit.

Georgia Power will submit the financial assurance mechanism for closure on forms as provided or in a format as prescribed by the Director, Georgia EPD. Georgia Power will provide a demonstration of financial assurance upon approval of closure cost estimates by Georgia EPD.

1.16 Notification and Certification

Georgia Power shall obtain written certification from a professional engineer registered in the State of Georgia that the post-closure care plan meets the requirements of Rule 391-3-4-.10(7).

No later than 60 days following the completion of the post-closure care period, the owner or operator of the CCR unit must prepare a notification verifying that post-closure care has been completed. The notification must include the certification by a qualified professional engineer verifying that post-closure care has been completed in accordance with this plan. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by 391-3-4-.10(8) and provided to the Director of Georgia EPD. The release of the CCR unit of post-closure care must be approved by the Georgia EPD.

1.17 Recordkeeping/Notifications, and Posting of Information on the Internet

Georgia Power will comply with all recordkeeping, notification, and posting of information on the internet in accordance with 391-3-4-.10(8)(a). The quality control records of inspection and testing during the post-closure care period will be compiled and maintained in accordance with the solid waste handling permit and post-closure care responsibilities by Georgia Power.

As required by the requirements of Rule 391-3-4-.10(8), Georgia Power shall comply with all recordkeeping requirements of 40 CFR 257.105(i), post-closure notification at the completion of the post-closure care period specified in 40 CFR 257.106(i) and post-closure internet requirements in 40 CFR 257.107(i).