PLANT McDONOUGH-ATKINSON
CCR SURFACE IMPOUNDMENTS
(CCR UNIT AP-1)
COBB COUNTY, GEORGIA
PART A SECTION 7 – CLOSURE PLAN

FOR

Georgia Power

November 2018

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GOLDER

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1.0 INTRODUCTION

This Closure Plan for Georgia Power's AP-1 was prepared in accordance with the State of Georgia Solid Waste Management Rule 391-3-4-.10(9)(c)(6)(v) for inactive surface impoundments, 40 CFR Part §257, Subpart D and meets the requirements of 40 CFR §257.102(b).

AP-1 has undergone closure in place in accordance with §257.102(d), and no longer receives CCR.

Facility details are as follows:

Site Name / Address

Plant McDonough – Atkinson
5551 South Cobb Drive SE
Atlanta, GA 30339

Authorized Official / Site Contact

General Manager
Georgia Power Company
241 Ralph McGill Boulevard
Atlanta, GA 30308

404-506-6505

CCR Unit

Ash Pond 1 (AP-1)

Closure Method

Close in Place (AP-1)

2.0 CLOSURE PLAN

The purpose of this Closure Plan is to outline the methods and procedures used to close AP-1 consistent with recognized and generally accepted good engineering practices. A notice of intent to close was completed for AP-1 on December 7, 2015 indicating the Unit would undergo closure in accordance with 40 CFR §257.102(d) and 391-3-4-.10(7)(v). This Closure Plan may be amended in accordance with the requirements of 40 CFR §257.102(b)(3).

2.1 Methods and Procedures

The AP-1 closure plan consists of closure in place of AP-1 with placement of CCR excavated from portions of AP-1, AP-2 and AP-3 to achieve the final grades.

During closure, AP-1 was dewatered as required to facilitate closure. CCR was graded within the consolidated footprint of the impoundment to create a stable subgrade for the final cover system.

The CCR Rule requires closure to be conducted in a manner that minimizes the need for further maintenance and controls, and minimizes or eliminates, to the maximum extent feasible to protect human health and the environment, the post closure infiltration of liquids into the CCR and potential releases of CCR from the unit. For AP-1 this was accomplished by providing sufficient grades and slopes to:

- Preclude the probability of future impoundment of water, sediment, or slurry;
- Ensure slope and cover system stability;
- Minimize the need for further maintenance of the CCR unit; and
- Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

2.1.1 AP-1 Closure Activities

The closure procedures for CCR Unit AP-1 included the following activities:

- Clearing and grubbing of all vegetative intermediate cover present at AP-1 (as well as at adjacent CCR Unit AP-2). All organic material was removed and disposed of off-site;
- Excavation of CCR from AP-2 and placement in AP-1;
- Excavation of CCR from CCR Unit AP-3 and placement in AP-1 to achieve final design grades;
- CCR materials relocated to Unit AP-1 for closure as fill were placed in uniform layers of twelve (12) inches maximum thickness, and upon completion of compaction, the slopes were cut back to the final grades.
- In place CCR materials, and where applicable structural fill, were compacted as a subgrade for the final cover system installation. Compacted structural fill and CCR subgrade beneath the geomembrane component of the final cover were specified to be free of roots, debris, and all stones and clay clods greater than one-quarter ($^1/_4$) inch maximum.
- Placement of the final closure system consisting of the Closure Turf system which consists of a flexible membrane liner (FML) and synthetic turf system to provide erosion control and stormwater management for the completed surfaces.

All CCR from the Plant McDonough CCR Unit AP-2 has been removed at the time of this permit submittal, with AP-3/4 being closed through a combination of closure by removal and closure in place. The AP-2 and AP-3/4 Unit closures are being presented as a separate permit submittal.

Surface water inflow to AP-1 is composed entirely of stormwater runoff from the impoundment footprint, totaling approximately 29.7 acres of contributing area. Based on an engineering analysis, AP-1 is capable of adequately managing the inflow from the 24-hour, 100-year storm event without overtopping the embankment or any of the system's storm channels. The storm water channels have adequate capacity to manage the resulting outflow. The surface water management systems for the closed unit is provided in the Engineering Report located in Part B of this permit submittal.

2.1.2 CCR Material Estimate

The final closed configuration of Unit AP-1 contains approximately 1,400,000 cubic yards of CCR consolidated and closed in place.

2.1.3 Fugitive Dust Control

This fugitive dust control plan identifies and describes the CCR fugitive dust control measures that GPC used to minimize CCR from becoming airborne at the facility, including CCR fugitive dust originating from ash ponds, roads, and material handling activities. GA EPD State CCR Rule 391-3-4-.10(2)(a) (incorporating 40 CFR

§257.53 by reference) defines “fugitive dust” as “solid airborne particulate matter that contains or is derived from CCR, emitted from any source other than through a stack, or chimney.”

Fugitive dust originating from the ash ponds and ash pond closure activities were controlled using water suppression or polymer tackifiers.

The fugitive dust control measures identified and described in this plan were adopted and implemented based upon an evaluation of site-specific conditions and are determined to be applicable and appropriate for the Plant McDonough ash pond closures. Evaluation included assessing the effectiveness of the fugitive dust control measures for the facility, taking into consideration various factors such as site conditions, weather conditions, and operating conditions.

CCR that is transported via truck to stockpiling prior to loading in trucks for hauling will be conditioned to appropriate moisture content to reduce the potential for fugitive dust.

Water suppression or polymer tackifiers will be used as needed to control fugitive dust on facility roads used to transport CCR and other CCR management areas. Speed limits will be utilized to reduce the potential for fugitive dust. Trucks used to transport CCR will be filled to or under capacity to reduce the potential for material spillage.

GPC and construction personnel will assess the effectiveness of the control measures by performing visual observations of the ash ponds and surrounding areas and implementing appropriate corrective actions for fugitive dust, as necessary.

Any complaint received from a citizen regarding a CCR fugitive dust event at the facility will be documented and investigated. Appropriate steps will be taken, including any corrective action, if needed.

2.1.4 Stabilization of CCR

Unit AP-1 was originally formed by construction of a contiguous set of side-hill embankments. The closure design of Unit AP-1 includes a combination of ash and soil slopes and embankments to achieve stable closure. Final slopes comprised of compacted ash are a maximum of 4H:1V, and the earthen dams around the perimeter are nominally 2.5H:1V or shallower. Golder evaluated the stability of the dikes and closure faces surrounding AP-1 in the four loading conditions in accordance with section §257.73(e) of the CCR Rule:

- Maximum Pool Storage (§ 257.73(e)(i))
- Maximum Pool Surcharge (§ 257.73(e)(ii))
- Seismic Loading Conditions (§ 257.73(e)(iii))
- Post-Seismic Liquefaction Conditions (when liquefaction susceptible materials are present; § 257.73(e)(iv))

For each loading case, the dikes and closure conditions were calculated to meet the target factor of safety presented in the CCR Rule. Additional detail is presented in the Engineering Report provided in Part B of the permit application.

2.1.5 Dewatering

Dewatering during closure activities includes removing water using a variety of methods, including but not limited to passive, gravity-based methods (e.g. rim ditches) and/or active dewatering methods (e.g. pumps and well points) as needed to allow for CCR excavation and transportation.

In addition to dewatering, Georgia Power developed and implemented a plan for water treatment at the site during closure consisting of a range of treatment technologies, compliance sampling (constituents, frequency, and locations) for compliance with both the site's National Pollutant Discharge Elimination System (NPDES) permit and the CCR Rule to provide treatment and management of discharge of contact water from the units.

At the time of this permit application, closure efforts for the closure in place of AP-1 are complete. CCR contact water continues to be treated by an on-site wastewater treatment system (WWTS) to support other ongoing ash pond closure activities in compliance with the EPD approved Ash Pond Dewatering Plan (Dewatering Plan). This plan provides a summary of previously completed dewatering activities during the closure of the CCR Ponds at Plant McDonough. The Dewatering Plan provides the generic framework for these activities during removal, relocation, and consolidation of CCRs during the Plant McDonough CCR pond closure project. Variations in site conditions, construction means and methods, climate conditions, and other factors impact the dewatering sequencing and/or approach to the project. During the closure project, specific construction means and methods were reviewed and approved by the construction management and oversight team.

2.1.5.1 Initial Ponded Water Removal

Initial stages of construction and dewatering included the removal of ponded water contained in the CCR units. AP-1 is an inactive surface impoundment that was in service until 1968 when Georgia Power ceased placing CCR in AP-1 upon reaching nominal storage capacity. AP-1 was covered with an intermediate system and the unit was utilized as a lay down area. Prior to closure activities in 2016, there was heavy vegetation and trees in the west and north portions of AP-1.

At the start of closure construction, ponded water within AP-1 was managed and lowered via pumping to the AP-3 S-ditch feeding to the AP-4 supernatant pond area and water treatment was established at the site. Primary outflow from the CCR water treatment units was through the NPDES permitted outfall.

The CCR closure wastewater treatment system (WWTS) facility is located on a built platform over an area of natural high ground to the south of and between AP-3 and AP-4 adjacent to the AP-4 outfall area. Once water treatment was established and confirmed to provide treatment within compliance with the selected water treatment constituent and parameter limits, the AP-4 outlet was closed off from regular flows from the AP-4 supernatant settling pond

Wastewater treatment was completed on an as needed demand basis during closure of AP-1 and was adjusted as applicable to meet the changes in volumetric demands during closure and in post-closure.

2.1.5.2 Contact Water Removal During Closure

Water level lowering within the Units will occur naturally as free water is removed and CCR areas are capped and closed. Additionally, in order to allow for safe excavation and working on ash areas it was necessary to lower water levels below the surface and back behind cut slope areas.

During closure construction, run-on stormwater and run-off contact water (e.g. stormwater that has come into contact with CCR) was controlled with best management practices such as channels, diversion berms, and pumps and managed in accordance with the NPDES Construction Storm Water, Industrial Storm Water and Industrial Wastewater Discharge permit(s). Phased erosion and sediment control plans were developed for the closure construction activities, as needed.

Additionally, to facilitate safe construction and to accelerate drainage active dewatering techniques may be used. Both passive and active dewatering occurred throughout the construction process to provide for moisture conditioning and slope stability and as progress towards the long-term dewatering of capped CCR materials.

Removal of contact water was completed within the limits of the CCR units using both in-situ (in place prior to excavation / handling) and ex-situ (with means after initial handling / excavation) techniques. In-situ dewatering techniques consist of but are not limited to the following: trench drains, rim ditching, wick points, well points, and deep wells. Ex-situ dewatering techniques consist of but are not limited to the following: gravity dewatering (settling basins and/or lateral trenching), racking and windrowing, filter press drying, centrifuge dewatering, geotextile tube dewatering, paste thickening, and absorbent desiccation.

2.1.5.3 Dewatering for AP-1

Following free water removal, dewatering for the closure of AP-1 progressed with a combination of in-situ and ex-situ dewatering techniques as required to moisture condition CCR materials for safe excavation, grading activities, and to prepare them for placement as fill within the AP-1 closure area.

A combination of well points, rim ditches, windrows, trenches, racking, preferential sloping to drain, gravity drainage, and natural drying were used during the safe closure of AP-1 which was completed prior to the timing of this permit submittal.

2.2 Identification of Pipes and Utilities

Several pipes and utilities were present at Unit AP-1 prior to closure and some remain in service as part of Plant or municipal operations post-closure. These utilities are summarized below.

- Existing 24 to 30-inch natural gas pipelines are located to the south and east of AP-1 and within the gas conditioning yard to the NE of Unit AP-1. The gas lines are a part of the plant's power generation infrastructure.
- Existing overhead electric lines are located above and adjacent to AP-1; these lines are specified to remain following closure. Existing transmission line structure foundations are located in and adjacent to AP-1. Appropriate excavation methods were utilized to take care around these existing structures during closure, including hand excavation around the existing foundations. These transmission lines remain within and surrounding the closed AP-1 Unit and are located on the Closure Design Plan as part of this permit application.
- Existing historic storm drain inlets and piping were abandoned during closure via a combination of removal or grouting for portions left in place.
- A historic 8 inch oil line existed within AP-1 prior to closure and this pipeline was abandoned by a combination of removal or grouting for portions left in place.
- Existing Cobb County water and sewer utility lines are located to the west and south of AP-1 and remained in place during and following closure.

It should be noted that Plant McDonough is an operating power generation facility, and has been in operation since the 1930's. As such, there is plant infrastructure integral to power generation located in close proximity to the permit boundary for AP-1, as well as historical plant infrastructure no longer in use.

2.3 Inspections and Reporting

2.3.1 7-day Inspections

Prior to the completion of closure construction for the Units, GPC inspected the soil embankments of the Units at intervals not exceeding seven (7) days. The 7-day inspections are made by a Qualified Person and include observation and documentation of any appearance of actual or potential structural weakness and other conditions

which are disrupting or have the potential to disrupt the closure activities or the safety of the surface impoundment.

GPC records these inspections on a form that is filed in the facility's operating record.

If a potential deficiency or release is identified during an inspection, GPC will remedy the deficiency or release as soon as feasible. GPC will prepare documentation detailing the corrective measures taken and place it in the facility's operating record.

2.3.2 Annual Inspections

As required by Chapter 391-3-4-.10(5)(b), which incorporates the operating criteria listed in 40 CFR 257.80, 40 CFR 257.82, and 257.84 of the Federal CCR Rules, a Professional Engineer registered in Georgia has completed annual inspections of AP-1 on an annual basis through the completion of closure construction. The inspection includes, at a minimum:

- A visual inspection of the Units to identify signs of distress or malfunction of the compacted soil embankment and/or the principal spillway.
- A review of available information regarding the status and condition of the Units, including, but not limited to, files available in the facility's operating record such as:
  - The results of weekly inspections and the results of previous annual inspections,
  - Files available in the operating record and other conditions which have disrupted or have the potential to disrupt the closure activities or safety of the Units.

2.3.3 Annual Reporting

At the completion of each annual inspection, the Professional Engineer who completed the inspection prepares an annual report that includes the following:

- Any changes in geometry of the soil embankments since the previous annual inspection;
- The approximate volume of CCR contained in the Units at the time of the inspection;
- Any appearances of an actual or potential structural weakness of the CCR within the Units, or any existing conditions that are disrupting or have the potential to disrupt the closure activities and stability of the CCR within the Units; and
- Any other change(s) which may have affected the stability or operation of the soil embankments since the previous annual inspection.

Annual Inspection Reports for the Plant McDonough Inactive CCR Units, which meet the requirement of Chapter 391-3-4-.10(5) of the Georgia Rules, can be found online at Georgia Power Company website under Environmental Compliance Information.

2.3.4 Recordkeeping / Notification / Internet Requirements

GPC will comply with the requirements of State CCR Rule 391-3-4-.10(8) which reference the closure recordkeeping, notification, and internet posting requirements listed in 40 CFR 257.105(i), 40 CFR 257.106(i) and 40 CFR 257.107(i) of the Federal Rules.

2.3.5 Reporting - Certification of Closure and CCR Removal

Upon completion of the closure construction for AP-1, a professional engineer registered in Georgia will prepare and GPC will submit a Closure Construction Certification Report and a Removal Certification Report to GA EPD documenting the completion of closure activities.

Pursuant to State CCR Rule 391-3-4-.10(7)(e), once all groundwater monitoring concentrations have been demonstrated not to exceed the applicable Federal and State groundwater protection standards, GPC will submit a Closure Report to the EPD Director. The Closure Report will be completed on forms provided by GA EPD.

GPC, as required by EPD, will submit confirmation that a notation on the property deed has been recorded in accordance with State CCR Rule 391-3-4-.10(7)(f).

2.4 Final Cover

The final cover system for AP-1 was designed in accordance with 40 CFR 257.102(d)(3)(ii) to minimize maintenance after closure of the CCR units. The final cover system was designed to prevent the future impoundment of water, and includes measures to prevent infiltration, sloughing, minimize erosion from wind and water, settling, and subsidence. The area requiring a final cover is just under 30 acres. The engineered final cover system consists of the following minimum components, listed from top to bottom.

- Specified final cover infill as outlined in final closure plan design;
  - 1/2” minimum sand infill
  - 1/2" minimum sand infill with ArmorFill® application
  - 3/4” minimum HydroBinder® infill
  - Specified rock/stone gradations overlying a geosynthetic separation and protection layer
- Engineered Synthetic Turf (ClosureTurf®); and
- 40 mil minimum low density polyethylene geomembrane liner.

The final cover system, consisting of engineered synthetic turf with run-on and run-off controls, meets the closure standards of §257.102(d)(3)(i). Engineering calculations for the final cover design are presented in Section 4 of the Engineering Report located in Part B of this permit submittal.

2.5 Future Perimeter Barrier Wall

The future construction of a perimeter barrier groundwater cutoff wall around AP-1 is being considered and a conceptual design alignment is shown on the Closure Plan Drawings. In order to prepare the design, additional data will be obtained by geotechnical and hydrogeologic investigations that will be conducted within the permit boundary. As permitting requires, Georgia Power will provide EPD with a permit modification request in which the permit level design for the barrier wall will be provided. The depth and plan alignment of the wall presented in this permit application may change based upon requirements identified during the final engineering design.

3.0 SCHEDULE AND COST

Closure activities for AP-1 are outlined in the schedule presented in Table 1. AP-1 has undergone closure in accordance with §257.102(d) and no longer receives CCR. Final capping and closure in place of Unit AP-1 was completed in 2017. Following closure activities, future development for AP-1 includes the proposed installation of a perimeter barrier wall in 2019-2020, as well as potential future solar development.

Table 1: AP-1 Closure Milestones Schedule

Closure Activity	Completion Date
Notice of Intent to Close	December 7, 2015
Begin Dewatering Activities	Q1 2016
Begin Final Closure Construction Activities	Q4 2016
End Final Cap Construction Activities	Q1 2017
Construction of Perimeter Barrier Wall (Future Development)	2019-2020

In compliance with applicable securities laws and regulations, Georgia Power will provide specific cost estimates for remaining closure activities and post-closure care during the permit application review process as estimates are developed and finalized. It is anticipated these estimates will be available to EPD in the first half of 2019. Georgia Power will provide a demonstration of financial assurance upon approval of closure and post-closure care cost estimates by EPD.