HISTORY OF CONSTRUCTION – REVISION 02
40 C.F.R. PART 257.73(c)
CCR UNIT ASH POND 3 (AP-3) AND ASH POND 4 (AP-4)
PLANT MCDONOUGH, GEORGIA POWER COMPANY

This History of Construction was prepared for Georgia Power Company Plant McDonough Ash Pond 3 (AP-3) and Ash Pond 4 (AP-4) located in Cobb County, Georgia. This History of Construction was prepared in accordance with the United States Environmental Protection Agency's (EPA) "Disposal of Coal Combustion Residuals from Electric Utilities" Final Rule (40 C.F.R. Part 257 and Part 261) and meets the requirements of §257.73(c) for the owner or operator of a CCR surface impoundment to compile a history of construction.

HISTORY OF CONSTRUCTION

CCR Unit

AP-3 and AP-4 are located in the northeast part of the Plant McDonough property. The units are bounded on the west and north by a combination of commercial, industrial, and residential areas, on the east by commercial and industrial sites, and on the south by plant infrastructure and the Chattahoochee River. Plant McDonough ownership and contact information is provided below:

1.0 Facility Ownership Information

Site Name and Location

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

Owner Name and Address

Georgia Power Company
241 Ralph McGill Boulevard
Atlanta, GA 30308

CCR Impoundment

Ash Pond 3 (AP-3)
Ash Pond 4 (AP-4)

State Identification No.

Ash Pond 4 Dam, Cobb County
Permit No.: E-033-021-0165
Georgia Environmental Protection Division, Watershed Protection Branch

2.0 Location of the CCR Unit

Site Coordinates

Ash Pond 3 (AP-3): 33°49'44" N, 84°28'39" W
Ash Pond 4 (AP-4): 33°50'51" N, 84°24'37" W

The locations of AP-3 and AP-4 are shown on the United States Geological Survey (USGS) 7½-minute topographic quadrangle map presented in Figure 1.

3.0 Purpose of the CCR Unit

Plant McDonough is a natural gas-fired generating facility that historically operated as a coal fired facility. AP-3 and AP-4 were constructed to receive and store CCRs from the generating process at Plant McDonough, and were used for sluicing operations for fly ash and dry stacking of CCR. AP-3 was commissioned in 1969 and AP-4 was commissioned in 1972, and construction was completed in 1969 and 1974, respectively. AP-4 was put into operation in 1977. In 2012, Plant McDonough ceased coal-fired electric generating activities, and subsequently ceased placing CCR in AP-3 and AP-4 after retiring its coal units.

Closure activities for AP-3 and AP-4 to consolidate and close in place as combined unit AP-3/4 were initiated in January 2016.

4.0 Watershed Description

AP-3 and AP-4 are located within the Proctor Creek – Chattahoochee River Watershed (HUC 12-031300020101). The watershed encompasses 15,229 acres and is part of the larger Middle Chattahoochee – Lake Harding Watershed (HUC 12 – 0313002). AP-3 and AP-4 have a combined drainage area of 86 acres.

5.0 Physical and Engineering Properties of AP-3 and AP-4 Foundation and Abutments

Plant McDonough AP-3 and AP-4 are located in the Piedmont geologic region, characterized by igneous and metamorphic bedrock. In general, underlying rock at the facility consists of schist and gneiss with overlying Piedmont soils formed by the in-place weathering of the parent rock referred to as residuum soils. Weathering is generally most advanced near the surface and decreases with depth. This weathering results in a subsurface profile that consists of finer grained soils at the surface where weathering is more advanced (upper residuum), underlain by sandy silts and silty sands (lower residuum). Surficial soils tend to be featureless and of uniform color, typically reddish brown. With depth, soils often retain recognizable relic structure of the parent rock, producing banding, or mottling in a wide range of colors, and are called “saprolites.” The depth to rock surface varies across the site, but rock is generally encountered 20 to 60 feet below ground surface.

The embankments of AP-3 and AP-4 are formed by perimeter dikes constructed with locally borrowed, compacted soils. The subsurface materials in the area of AP-3 and AP-4 consist of the following major layers:

- Residuum soils
- Saprolite soils
- Partially weathered rock (PWR)
- Schist and Gneiss Bedrock

The AP-3 and AP-4 embankments were constructed in the late 1960’s and early 1970’s. Material properties of the embankment soils are presented in Table 1.

Table 1: Summary of Geotechnical Strength Properties

Selected Strength Parameters							
Material	**Total Unit Weight (pcf)**	**Drained Strength**		**Undrained Strength**		**Post-Earthquake Strength**	
		ϕ' (deg)	**c' (psf)**	**ϕ (deg)**	**c (tsf)**	**ϕ (deg)**	**c (psf)**
Fill Soils	125	30	100	Su = 1.0 tsf		30	100
Upper Residuum	125	30	50	Su/σ'_{vo} = 0.65		30	50
Lower Residuum	125	30	100	Su = 1.5 tsf		30	100
Alluvium	115	28	50	Su = 0.5 tsf		28	50

6.0 Site Preparation and Construction Activities

AP-3 was commissioned in 1969 with a total storage capacity of 1,036,000 cubic yards. AP-3 has a side-hill embankment 31 feet high with an original pond area of 23 acres. Survey data indicates that the minimum elevation of the toe of the dike is approximately 815 ft and the maximum dike elevation is approximately 846 ft. Over the life of AP-3, the dikes have been observed to be adequately maintained and mowed.

AP-4 was commissioned in 1972 with a total storage capacity of 3,220,000 cubic yards, and was completed in 1974. AP-4 was completed by constructing earthen dams and appurtenant structures including a 90-inch corrugated metal pipe (CMP) to convey existing stream flows beneath the earthen dams and the ash pond. In 2007, the CMP was relined with a 78-inch diameter fiberglass reinforced polymer (FRP) pipe. This culvert enters the pond area under the north embankment of AP-4 and exits under the south embankment of AP-4. Survey data indicates that the minimum elevation of the toe of the dike is approximately 763 ft and the maximum dike elevation is approximately 846 ft. AP-4 has an 83-foot high earthen embankment, and an original pond area of 41 acres. Additionally, the approximately 15-acre area between the two units was utilized for CCR management. The areas of AP-3 AP-4, and in between the two units used for CCR management combined represent a pre-closure CCR boundary totaling 79 acres.

The embankments of AP-3 and AP-4 were constructed with native soils, including clayey silts, sandy clays, and silty clays. CCR placement at AP-3 began in 1969 and in AP-4 in 1977. Improvements and repairs on the embankments of AP-4 were conducted in 1978 and 1990 for erosion control improvements following routine inspections, and enhancements to provide for the collection of fluids from the toe drain system were added in 2011. CCR placement ceased at the surface impoundments in 2012 following the closure of the coal combustion units at Plant McDonough.

Currently, AP-3 and AP-4 are being consolidated and closed in place as combined unit AP-3/4 in accordance with 40 CFR §257.102(d) and the combined units are in the process of obtaining a solid waste permit under the Georgia Rules for Solid Waste Management, 391-3-4-.10. The closure design for AP-3/4 consists of an engineered final cover system that is designed to prevent the future impoundment of water, and includes measures to prevent infiltration, sloughing, minimize erosion from wind and water, and settling.

7.0 Engineering Diagram

Historical construction drawings for AP-3 and AP-4 can be found in Appendix A.

8.0 Description of Instrumentation

Prior to closure construction activities, there were three temporary piezometers located within the boundaries of AP-3. Piezometers were used to monitor water levels in and around the embankments. There is currently no instrumentation in AP-3. There are 22 piezometers used to monitor water levels within the boundaries of AP-4 (Appendix A) prior to the initiation of closure activities. Following closure construction, instrumentation in combined CCR Unit AP-3/4 will consist of temporary dewatering wells for enhanced water removal and piezometers.

9.0 Area-Capacity Curves

At the time of this submittal, AP-3 and AP-4 are undergoing construction activities to partially excavate, consolidate, and close in place as combined CCR unit AP-3/4. The interim conditions during construction were evaluated, and this analysis considered hydrology conditions of AP-3 and AP-4 as were captured through LiDAR in August 2020. The topography analyzed represents construction conditions in progress towards the closure of AP-3 and AP-4. Construction has progressed to the point that the final design Detention Ponds 1 and 3 are completed and can accommodate all runoff from the Detention Pond 1 and Detention Pond 3 stormwater basins. Detention Pond 2 is currently under completion and is able to store all runoff from the Detention Pond 2 basin portion of the closure. The stage storage curve for the above referenced conditions within AP-3/4 is presented below:

Table 3: Stage-Storage for AP-3/4 based on August 2020 Survey (Detention Pond 2 Area)

Elevation	Volume (acre-feet)
770	1.2
780	14.6
790	73.8
800	169.8
802	192.5

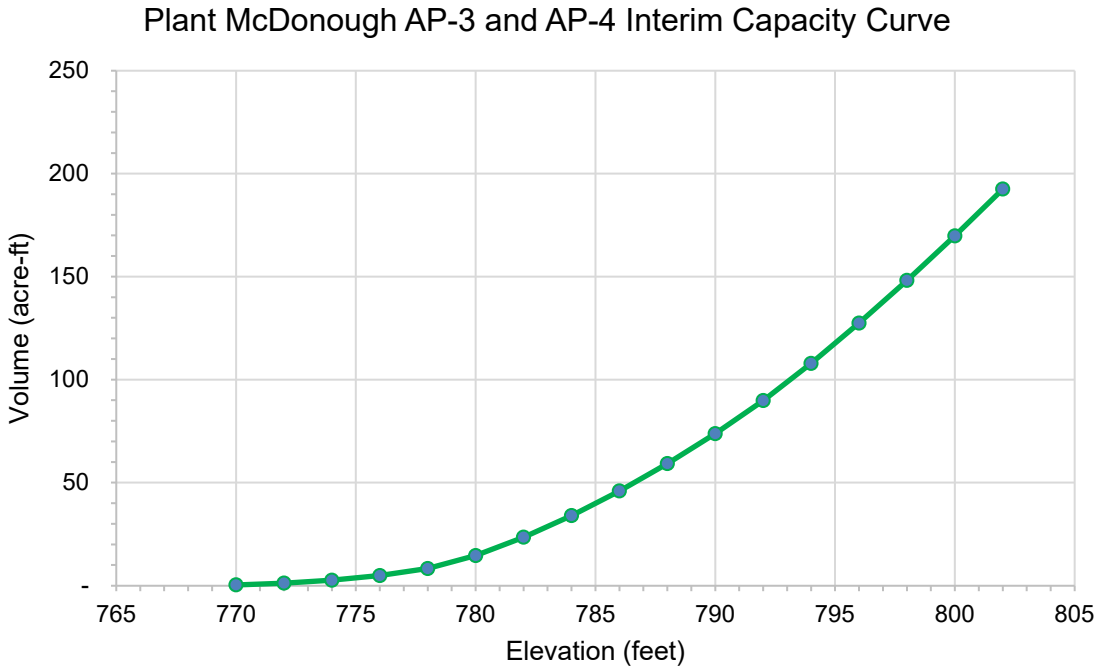
Table 4: Stage-Storage for AP-3/4 based on Final Design (Detention Pond 1 Area)

Elevation	Volume (acre-feet)
828	0.0
830	1.0
832	2.4
834	4.2

836	6.5
838	9.2
840	12.5
842	16.2

Table 5: Stage-Storage for AP-3/4 based on Final Design (Detention Pond 3 Area)

Elevation	Volume (acre-feet)
832.8	0.0
834	0.0
836	0.4
838	1.3
840	3.2
842	6.4
844	10.5



10.0 Spillway and Diversion Design

The original design of AP-3 included a riser structure at the northeast corner of the impoundment and emergency spillway consisting of a trapezoidal channel between AP-3 and AP-4. When operations of AP-3 and AP-4 were combined a serpentine channel was constructed to connect the operations between the two impoundments. The original riser structure for AP-3 was abandoned prior to the initiation of closure activities in 2016.

Prior to the initiation of closure activities in 2016, the primary outlet for AP-4 was a sloping concrete structure connected to a 24-inch diameter fiberglass pipe. The 24-inch diameter pipe was placed inside an existing 36-inch diameter pipe and outer area grouted closed to initiate water reuse. The inlet to the structure was located along the southern edge of AP-4, and discharge flow from the AP-4 outlet was conveyed to the power plant for reuse and recycling purposes.

Prior to initiation of closure activities in 2016, water exited AP-4 through the 24-inch diameter pipe and discharged at the Plant's permitted NPDES Discharge.

As stated in Section 9.0, AP-3 and AP-4 are undergoing construction activities to partially excavate, consolidate, and close in place as combined CCR Unit AP-3/4. The interim condition during construction allows all runoff during storm events to enter the storage volume within the final design Detention Ponds 1, 2, and 3.

11.0 Provisions for Surveillance, Maintenance, and Repair

Inspections of AP-3 and AP-4 dikes are conducted on a regular basis – at least annually by professional dam safety engineers and at least weekly by trained plant personnel. Dam safety engineers inspect any maintenance or repair performed since the previous inspection, check the status of work recommended at prior inspections, ensure that emergency notification information is current and evaluate any items noted during plant personnel inspections. Inspections are also performed after unusual circumstances, including (but not limited to):

- Severe rain event
- Hurricane, tornado, or other storm event
- Earthquake activity

These inspections include numerous items. Specific items may include (but are not limited to):

- Pond levels
- Rainfall since the prior inspection
- Instrument readings
- Conditions of slopes and drains
- Erosion and animal damage
- Alignment of retaining structures
- Assess instrument readings (piezometers)

Additionally, inspections at AP-4 are performed by professional dam safety engineers in compliance with the Georgia Safe Dams Program on a two-year cycle.

12.0 Post Closure Care Maintenance

Following closure in place of AP-1, maintenance activities and inspections will be completed by competent personnel and will be recorded and kept at the facility. The following cover system and unit components will be monitored and maintained:

- Security and site access
- Final cover (Closure Turf) integrity
- Vegetation maintenance
- Stormwater controls
- Groundwater monitoring

13.0 Known Record of Structural Instability

There are no known instances of structural instability at AP-3 and AP-4 at the time of this submittal.

14.0 References

AMEC (2010). "Report of Dam Safety Assessment of Coal Combustion Surface Impoundments Plant McDonough, Smyrna, GA." December 2010

Golder Associates (2018), “Geotechnical Material Property Package.” February 2018