PERIODIC INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN
391-3-4-.10(5) and 40 C.F.R. PART 257.82
PLANT WANSLEY ASH POND 1 (AP-1)
GEORGIA POWER COMPANY

The Federal CCR Rule, and, for Existing Surface Impoundments where applicable, the Georgia CCR Rule (391-3-4-.10) require the owner or operator of a CCR surface impoundment to design, construct, operate and maintain an inflow design flood control system capable of adequately managing flow during and following the peak discharge of the specified inflow design flood. The owner or operator must prepare an inflow design flood system written plan documenting how the inflow design flood control system has been designed and constructed. *See* 40 C.F.R. § 257.82; Ga. Comp. R. & Regs. r. 391.3-4-.10(5)(b). In addition, the Rules require periodic inflow design flood control system plans within 5 years of development of the previous plan. *See* 40 C.F.R. § 257.82(c)(4); Ga. Comp. R. & Regs. r. 391.3-4-.10(5)(b).

The CCR surface impoundment known as Plant Wansley AP-1 is located on Plant Wansley property, in Heard and Carroll Counties, Carrollton, Georgia. AP-1 is a 343-acre surface impoundment designed to store CCR and water. The Notification of Intent to Initiate Closure was placed in the Operating Record on 04/17/2019 and closure has been designed to have no negative impacts on the inflow design flood control plan.

The specified inflow design flood was determined by considering rainfall that falls within the limits of the surface impoundment and stormwater runoff from approximately 290 acres of adjoining watershed. Collected stormwater is temporarily stored within the limits of the surface impoundment and discharged through a 42-inch diameter fiberglass pipe that serves as the principal spillway, which is located on the southwestern end of the pond (decant water intake structure). The 42-inchfiberglass pipe splits into a 36-inch diameter and 10-inch diameter pipe, respectively, and discharges water into a detention pond on the south end of the Plant property. An auxiliary spillway system consisting of a 36-inch diameter CMP and a 45-foot wide concrete broad crested weir is located on the west end of the surface impoundment along the western embankment.

The inflow design flood has been calculated using the Natural Resources Conservation Service method (also known as the Soil Conservation Service (SCS) method) for a 100-yr storm event, which is required for a Low hazard potential facility. Runoff curve number data was determined using the National Engineering Handbook Part 630, Chapter 9. Appendix A and B from the TR-55 were used to determine the rainfall distribution methodology. Precipitation values were determined from the National Oceanic and Atmospheric Administration's (NOAA's) Precipitation Frequency Data Server (Atlas-14).

The NCSS online database provided information on the soil characteristics and hydrologic groups present at the site. It was determined that hydrological group "B" best reflects the characteristics of the soils on site and as such was used to develop inputs for the calculations. This information was placed into Hydraflow Hydrographs 2019 and used to generate appropriate precipitation curves, storm basin routing information, and resulting rating curves to evaluate surface impoundment capacity.

Calculations indicate that AP-1 can safely store and pass the specified inflow design storm (24-hr, 100-yr storm event). This plan is supported by appropriate engineering calculations which are attached.

The facility is operated subject to and in accordance with § 257.3-3 of EPA's regulations.

I hereby certify that the inflow design flood control system plan meets the requirements of 40 C.F.R. § 257.82.

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10/15/2021

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Inflow Design Control System Plan:
Hydrologic and Hydraulic Calculation Summary

for

Plant Wansley Ash Pond

Prepared by:

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Ashley O Grissom Date

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Approval: 10/8/21
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1.0 Purpose of Calculation

The purpose of this report is to demonstrate the hydraulic capacity of the subject CCR impoundment in order to prepare an inflow design flood control plan as required by the United States Environmental Protection Agency's (EPA) final rule for Disposal of CCR from Electric Utilities (EPA 40 CFR 257) and the Georgia CCR Rule (391-3-4-.10).

2.0 Summary of Conclusions

A hydrologic and hydraulic model was developed for the Plant Wansley Ash Pond to determine the hydraulic capacity of the impoundment. The design storm for the Plant Wansley Ash Pond is a 100-year rainfall event. Southern Company has selected a storm length of 24-hours for all inflow design flood control plans. The results of routing a 100-year, 24-hour rainfall event through the impoundment are presented in Table 1 below:

Table 1. Flood Routing Results

Plant Wansley	Normal Pool El (ft)	Top of embankment El (ft)	Auxiliary Spillway Crest El (ft)	Peak Water Surface Elevation (ft)	Freeboard* (ft)	Peak Inflow (cfs)	Peak Outflow (cfs)
Ash Pond	783.0	805.0	802.6	784.47	18.13	2200.57	0

*Freeboard is measured from the spillway crest to the peak water surface elevation

3.0 Methodology

3.1 HYDROLOGIC ANALYSES

The Plant Wansley Ash Pond is classified as a low hazard structure. The design storm for a low hazard structure is a 100-year rainfall event. A summary of the design storm parameters and rainfall distribution methodology for these calculations is summarized below in Table 2.

Table 2. Ash Pond Storm Distribution

Hazard Classification	Return Frequency (years)	Storm Duration (hours)	Rainfall Total (Inches)	Rainfall Source	Storm Distribution
Low	100	24	7.92	NOAA Atlas 14	SCS Type II

The drainage area for the Plant Wansley Ash Pond was delineated based on LiDAR data acquired for the Plant in 2014. Runoff characteristics were developed based on the Soil Conservation Service (SCS) methodologies as outlined in TR-55. An overall SCS curve number for the drainage area was developed based on the National Engineering Handbook Part 630,

Chapter 9 which provides a breakdown of curve numbers for each soil type and land use combination. Soil types were obtained from the NCSS online soils database. Land use areas were delineated based on aerial photography. Time of Concentration was developed using TR-55.

A table of the pertinent basin characteristics of the Ash Pond is provided below in Table 3.

Table 3. Ash Pond Hydrologic Information

Drainage Basin Area (acres)	634
Hydrologic Curve Number, CN	72
Hydrologic Methodology	SCS Method
Time of Concentration (minutes)	34.8
Hydrologic Software	Hydraflow Hydrographs

Runoff values were determined by importing the characteristics developed above into a hydrologic model with the Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2019.

3.2 HYDRAULIC ANALYSES

Storage values for the Ash Pond were determined by developing a stage-storage relationship utilizing contour data. The discharge system at the Plant Wansley Ash Pond consists of a primary discharge structure and an auxiliary spillway. The primary discharge structure consists of a 42” gravity flow pipe. The invert elevation of the pipe is EL 781.5. The auxiliary spillway is a concrete trapezoidal weir with a crest elevation of EL 802.6. To evaluate a worst-case scenario, it is assumed the discharge pipe is closed.

Based on the discharge data listed previously, the data was inserted into Hydraflow Hydrographs to determine the pond performance during the design storm. Results are shown in Table 1.

4.0 SUPPORTING INFORMATION

4.1 CURVE NUMBER

Terrain Type	Area (ac)	Curve Number
Water	190	100
Bare Gypsum/Ash	150	79
Woods	294	50

4.2 STAGE-STORAGE TABLE

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	783.00	7,012,937	0	0
1.00	784.00	7,304,331	7,157,424	7,157,424
3.00	786.00	7,547,517	14,849,700	22,007,124
5.00	788.00	7,779,370	15,324,772	37,331,896
7.00	790.00	8,109,667	15,886,304	53,218,200
9.00	792.00	8,465,844	16,572,576	69,790,776
11.00	794.00	8,921,380	17,383,496	87,174,272
13.00	796.00	9,687,336	18,601,600	105,775,872
15.00	798.00	10,939,280	20,611,880	126,387,752
17.00	800.00	11,747,750	22,679,960	149,067,712
19.00	802.00	12,191,010	23,935,008	173,002,720
19.60	802.60	12,249,195	7,331,328	180,334,048

4.3 TIME OF CONCENTRATION

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.92		0.00		0.00		
Land slope (%)	= 6.70		0.00		0.00		
Travel Time (min)	**= 28.81**	**+**	**0.00**	**+**	**0.00**	**=**	**28.81**
Shallow Concentrated Flow							
Flow length (ft)	= 720.00		0.00		0.00		
Watercourse slope (%)	= 9.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=5.03		0.00		0.00		
Travel Time (min)	**= 2.39**	**+**	**0.00**	**+**	**0.00**	**=**	**2.39**
Channel Flow							
X sectional flow area (sqft)	= 168.00		0.00		0.00		
Wetted perimeter (ft)	= 47.00		0.00		0.00		
Channel slope (%)	= 4.50		0.00		0.00		
Manning's n-value	= 0.100		0.015		0.015		
Velocity (ft/s)	=7.42						
			0.00				
					0.00		
Flow length (ft)	({0})1620.0		0.0		0.0		
Travel Time (min)	**= 3.64**	**+**	**0.00**	**+**	**0.00**	**=**	**3.64**
Total Travel Time, Tc							**34.80 min**

4.4 DRAINAGE BASIN