PERIODIC RUN-ON AND RUN-OFF CONTROL PLAN
391-3-4-.10(5) and 40 C.F.R. PART 257.81
PLANT SCHERER COAL COMBUSTION BY-PRODUCT PRIVATE INDUSTRY SOLID WASTE DISPOSAL FACILITY (PLANT SCHERER LANDFILL)
GEORGIA POWER COMPANY

The Federal CCR Rule, and, for Existing CCR Landfills where applicable, the Georgia CCR Rule (391-3-4-.10) require the owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill to prepare a run-on and run-off control system plan to document how these control systems have been designed and constructed to meet the applicable requirements of this section of the Rule. *See* 40 C.F.R. § 257.81; Ga. Comp. R. & Regs. r. 391.3-4-.10(5)(a). In addition, the Rules require periodic run-on and run-off control system plans every five years. *See* 40 C.F.R. § 257.81(c)(4); Ga. Comp. R. & Regs. r. 391.3-4-.10(4)(b).

The CCR Landfill, known as the Plant Scherer Landfill, is located at Georgia Power Company's Plant Scherer, approximately 8 miles northeast of Forsyth, Georgia and is divided into Cells 1,2, and 3 and a PAC Ash Cell. Cell 1 was designed with South and North Sedimentation Ponds, a Return Water Pond (Clear Pool), a Return Water Pumping Facility, an Emergency Gypsum Slurry Pond, and a Gypsum Slurry Booster Pump Station. Cell 1 is active and was constructed with a composite liner system. All ponds and the Gypsum Slurry Booster Pump Station were constructed along with Cell 1. Cells 2 and 3 are future cells and are permitted with composite liners similar to Cell 1. The PAC Ash Cell is active and was constructed with a composite liner system. The PAC Ash Cell also consists of a Sedimentation Pond, a Clear Pool, and a Return Water Pumping Facility which were constructed along with the PAC Ash Cell. Future Cells 2 and 3 will be designed and constructed in the same manner as Cell 1.

The stormwater flows have been calculated using the Natural Resources Conservation Service (NRCS) method (also known as the Soil Conservation Service (SCS) method) using the 24 hour, 25-year storm event. The stormwater detention system has been designed in accordance with the Georgia Stormwater Management Manual requirements as well as other local, city, and government codes. The post developed stormwater discharge was designed to be less than the pre-developed stormwater discharge in accordance with the requirements of the State of Georgia.

Runoff curve number data was determined using Table 2-2A from Urban Hydrology for Small Watersheds (TR-55). Appendix A and B from 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 NRCS provided information on the soil characteristics and hydrologic groups present at the site. The curve number used is based on the Hydrologic Soil Group (HSG) and type of runoff potential. For the coal combustion by-products (gypsum and PAC ash), the HSG is assumed to be Group C soils with moderately high runoff potential when thoroughly wet. For HSG C, the curve number for bare soil (similar to the gypsum and PAC ash cells) is assumed to be 91. For areas outside of the CCR Landfill cells, HSG B is assumed and for the ponded areas the curve number is 100. For the impervious gravel areas around the ponds, the curve number is assumed to be 85. 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.

The CCR Landfill was designed and constructed with perimeter berms and drainage ditches surrounding the active cells that prevent stormwater run-on from surrounding areas during the peak discharge of a 24-hr, 25-yr storm from flowing onto the active portion of the landfill. Cell 1 is designed to handle normal process flows of 850 gpm as well as the quantity of rainfall from a 24-hr, 25-year storm event, and the PAC Ash Cell is designed to handle the quantity of rainfall from a 24-hr, 25-year storm event. Stormwater run-off from Cell 1 is routed through the South Sedimentation Pond, North Sedimentation Pond and Clear Pool which are designed to handle the run-off from a 24-hr, 25-yr storm and the normal process flows. Stormwater run-off from the PAC Ash Cell is routed through its Sedimentation Pond and Clear Pool which are designed to handle the run-off from a 24-hr, 25-yr storm. This plan is supported by appropriate engineering calculations, summaries of 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 run-on and run-off control system plan meets the requirements of 40 C.F.R. § 257.81.

James C. Pegues, P.E.
Licensed State of Georgia PE No. 17419

Run-on and Run-off Control System Plan for Landfills:
Calculation Summary

for

Plant Scherer Gypsum Storage Facility Cell 1

Prepared by:

Southern Company Services
Environmental Solutions

Originator: ______________________ 10/8/21
Jim W. Minor Date

Reviewer: ______________________ 10/10/21
Jason S. Wilson Date

Approval: ______________________ 10/11/21
James C. Pegues Date

1.0 Purpose of Calculation

The Federal CCR Rule, and, for Existing CCR Landfills where applicable, the Georgia CCR Rule (391-3-4-.10) require the owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill to prepare a run-on and run-off control system plan to document how these control systems have been designed and constructed to meet the applicable requirements of this section of the Rule.

The purpose of this report is to provide data that demonstrates the Plant Scherer Gypsum Storage Facility for gypsum disposal for Cell 1 is designed to meet the requirements in the rules listed above from a 24-hour, 25-year storm.

2.0 Summary of Conclusions

2.1 Site Overview

The CCB gypsum storage facility consists of one gypsum cell that is currently in operation (Cell 1). Cell 1 is constructed with a perimeter raised dike that prevents watershed run-on from entering the cell. Run-off within Cell 1 is managed by a system of detention ponds and return water pumps that return stormwater run-off as process flows to the plant. An interior perimeter ditch directs run-off within the cell into the South Sedimentation Pond through 36-in diameter pipe culverts and leachate collection & removal system. This detention pond system includes four ponds that are interconnected by 18-in and 24-in diameter HDPE pipe culverts. The four ponds consist of the South Sedimentation Pond, Clear Pool, North Sedimentation Pond, and Emergency Gypsum Slurry Pond as shown on sketch CS-SK-042121-1 on page 11 of this summary.

Both the South Sedimentation Pond and the North Sedimentation Pond have an auxiliary spillway each at elevation 412.00. These are separate auxiliary spillways for each pond. The normal pool elevation for the Clear Pool, South Sedimentation Pond, and North Sedimentation Pond is approximately 405.60. It is noted that the interconnected system of pond pool elevations will fluctuate between 405.6 and 399.00. For the purposes of this calculation, the maximum normal pool elevation of 405.6 was assumed for the stormwater model.

An overview of the facility is provided in Table 1 below.

Table 1. Plant Scherer Gypsum Storage Facility Landfill Site Characteristics

Pond Description	Gypsum Cell	Emergency Gypsum Slurry Pond	South Sedimentation Pond	North Sedimentation Pond	Clear Pool
Size (Acres)	36.8	2.5	3.8	6.5	1.5
Outlet Type	Eight 36-in HDPE pipes and riser structure connected to a 36-in HDPE pipe	Pumped back to the plant	Trapezoidal Spillway and 24-in HDPE Pipe connected to Clear Pool	Trapezoidal Spillway and 24-in HDPE Pipe connected to Clear Pool	One 18-inHDPE pump line
Outlets To:	South & North Sedimentation Pond and Clear Pool	Pumped back to the plant	Emergency Gypsum Slurry Pond, North Pond, & Clear Pool	Emergency Gypsum Slurry Pond, South Pond, & Clear Pool	Pumped back to the plant

2.2 Run-on Control System Plan

There is no stormwater run-on into the facility because it is contained within earthen berms that prevent stormwater from the surrounding area from entering Cell 1.

2.3 Run-off Control System Plan

A hydrologic and hydraulic model was developed for the Plant Scherer Gypsum Storage Facility Cell 1 area to determine the hydraulic capacity of the cell. The design storm for the purposes of run-off control system plans is the 24-hour, 25-year rainfall event. The results from routing the design storm event through the landfill are presented in Table 2 below.

Table 2. Plant Scherer Gypsum Storage Facility Flood Routing Results

Storage Pond Name	**Normal Pool Elevation* (feet, NAVD 88)**	**Maximum 25-year pool elevation (feet, NAVD 88)**	**Spillway/Top of dike elevation (feet, NAVD 88)**	**Freeboard to Spillway (feet)**	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**
Clear Pool	405.60	409.39	412.00/414.00	2.61	25.89	0
South Sedimentation Pond	405.60	409.38	412.00/414.00	2.62	222.06	0
North Sedimentation Pond	405.60	409.87	412.00/414.00	2.13	58.00	0
Emergency Gypsum Slurry Pond	392	393.42	400±	6.58	20.07	0

*Normal pool is assumed at 405.60 as a conservative case. Pumps will control the water level and the pool elevation will fluctuate between 405.6 and 399.50. Elevation 405.60 was assumed as a worst-case scenario normal pool elevation.

Based on this analysis, the detention pond system is adequate to collect and control the required volume of water resulting from a 24-hour 25-year storm.

3. Methodology

3.1 Hydrologic Analyses

The design storm for all run-on/run-off analyses is a 24-hour, 25-year rainfall event. A summary of the design storm parameters and rainfall distribution methodology for these calculations is summarized below in Table 3.

Table 3. Design Storm Distribution

Return Frequency (years)	Storm Duration (hours)	Rainfall total (inches)	Rainfall Source	Storm Distribution
25	24	6.35	NOAA Atlas 14	SCS Type II

The drainage basin area for the Plant Scherer Gypsum Storage Facility Cell 1 area was delineated based on topography developed for construction of the facility in 2010, as-built data provided by Metro Engineering and Surveying Co., Inc. in October of 2010, and design grades for the Cell 2 area and North Sedimentation Pond and associated diversion ditch. Run-off characteristics were developed based on the Soil Conservation Service (SCS) methodologies as outlined in TR-55. Soil types were obtained based on the run-off characteristics of the material that is placed within the storage facility. Time of Concentration was also developed based on methodologies prescribed in TR-55.

Pertinent basin characteristics of the landfill are provided below in Table 4.

Table 4. Landfill Hydrologic Information

Drainage Basin Area	36.8
Hydrologic Curve Number, CN	91
Hydrologic Method	SCS Method
Time of Concentration (minutes)	21.76
Hydrologic Software	Autodesk Storm and Sanitary Analysis 2019

Run-off values were determined by importing the characteristics developed above into a hydrologic model with Autodesk Storm and Sanitary Analysis 2019 software.

There are no additional process inflows into the ponds.

3.2 Hydraulic Analyses

Storage values for the Gypsum Storage Facility were determined by developing a stage-storage relationship utilizing contour data. The Clear Pool, South Sedimentation Pond, North Sedimentation Pond and Emergency Gypsum Pond are interconnected by 18-inch and 24-inch diameter HDPE pipes. The Emergency Gypsum Slurry Pond is for emergency storage in the event that the South Sedimentation Pond, North Sedimentation Pond, and Clear Pool water elevation were to rise above elevation 411.00. The Clear Pool, North Sedimentation Pond, and South Sedimentation Pond are interconnected by a 24-inch diameter HDPE pipe and share two principal spillways that are earthen trapezoidal weirs lined with a turf reinforcement mat and sloped at 0.10% slope with a crest elevation of 414.00. A summary of spillway information is presented below in Table 5.

Table 5. Spillway Attribute Table

Spillway Component	US Invert elevation (feet, NAVD 88)	DS Invert elevation (feet, NAVD 88)	Dimension (ft)	Slope	Length	Spillway Capacity (cfs)
Principal	412	411.95	28	0.1	50	140

Based on the spillway attributes listed above, the data was input to Autodesk Storm and Sanitary Analysis to determine the pond performance during the design storm. Results are shown in Table 2.

4. **Supporting Information**

4.1 Curve Number

Table 6. Curve Number Data

Location	Terrain Type	Area	Curve Number
Clear Pool	Water & gravel	1.5	90
South Sedimentation Pond	Water & gravel	3.8	92.11
North Sedimentation Pond	Water, grass, and gravel	6.5	88.2
Emergency Gypsum Slurry Pond	Water & gravel	2.5	89.44
Gypsum Cell	Bare Gypsum	36.8	91

4.2 Stage Storage Tables

South Sedimentation Pond			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	397	9,541	0
1	398	34,205	21,873
2	399	60,888	69,420
3	400	76,105	137,916
4	401	79,592	215,765
5	402	83,117	297,119
6	403	86,681	382,018
7	404	90,282	470,500
8	405	93,922	562,602
9	406	97,600	658,363
10	407	101,317	757,821
11	408	105,072	861,016
12	409	108,865	967,984
13	410	112,696	1,078,765
14	411	116,565	1,193,395
15	412	120,473	1,311,914
16	413	124,419	1,434,360
17	414	128,405	1,560,772

North Sedimentation Pond			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	395	14,476	0.00
1	396	67,538	41,007.00
2	397	80,510	115,031.00
3	398	86,412	198,492.00
4	399	90,549	286,972.50
5	400	94,718	379,606.00
6	401	98,926	476,428.00
7	402	103,178	577,480.00
8	403	107,479	682,808.50
9	404	111,834	792,465.00
10	405	116,251	906,507.50
11	406	120,748	1,025,007.00
12	407	125,336	1,148,049.00
13	408	130,005	1,275,719.50
14	409	134,742	1,408,093.00
15	410	139,548	1,545,238.00
16	411	144,428	1,687,226.00
17	412	149,403	1,834,141.50
18	413	154,620	1,986,153.00
19	414	160,841	2,143,883.50

Clear Pool			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	397	18,110	0
1	398	19,395	18,753
2	399	20,720	38,810
3	400	22,083	60,212
4	401	23,485	82,996
5	402	24,927	107,202
6	403	26,407	132,869
7	404	27,927	160,036
8	405	29,486	188,742
9	406	31,084	219,027
10	407	32,721	250,930
11	408	34,397	284,489
12	409	36,112	319,743
13	410	37,866	356,732
14	411	39,659	395,495
15	412	41,492	436,070
16	413	43,363	478,498
17	414	45,278	522,818

Emergency Gypsum Slurry Pond			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	391	32,371	0
1	392	34,037	33,204
2	393	35,743	68,094
3	394	37,488	104,710
4	395	39,273	143,090
5	396	41,097	183,275
6	397	42,960	225,304
7	398	44,962	269,265
8	399	46,804	315,148
9	400	48,785	362,942

4.3 Time of Concentration

Time of Concentration (Tc) for the Clear Pool, South Sedimentation Pond, North Sedimentation Pond, and Emergency Gypsum Slurry Pond area are the minimum Tc of 6 minutes. The Time of Concentration for the gypsum storage facility is shown below.

Time of Concentration

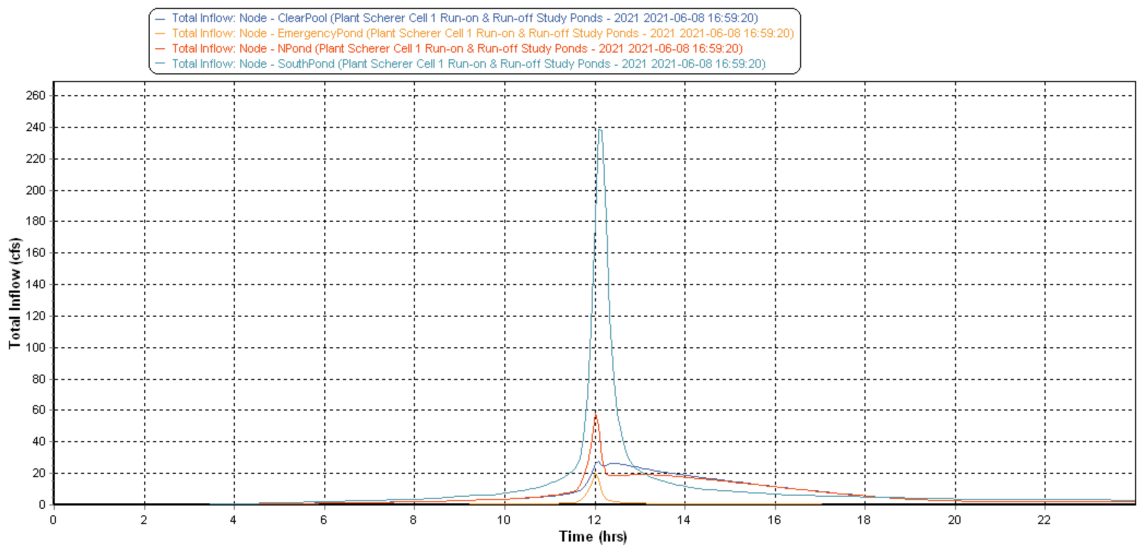
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	.02	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	0.25	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.80	0.00	0.00
Velocity (ft/sec) :	0.50	0.00	0.00
Computed Flow Time (min) :	9.92	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	658	0.00	0.00
Slope (%) :	11.4	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	5.45	0.00	0.00
Computed Flow Time (min) :	2.01	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	.049	0.00	0.00
Flow Length (ft) :	2140	0.00	0.00
Channel Slope (%) :	1.16	0.00	0.00
Cross Section Area (ft^2) :	25.62	0.00	0.00
Wetted Perimeter (ft) :	21.95	0.00	0.00
Velocity (ft/sec) :	3.63	0.00	0.00
Computed Flow Time (min) :	9.82	0.00	0.00

Total TOC (min) 21.76

4.4 RESULTS



Total Inflow Summary Table

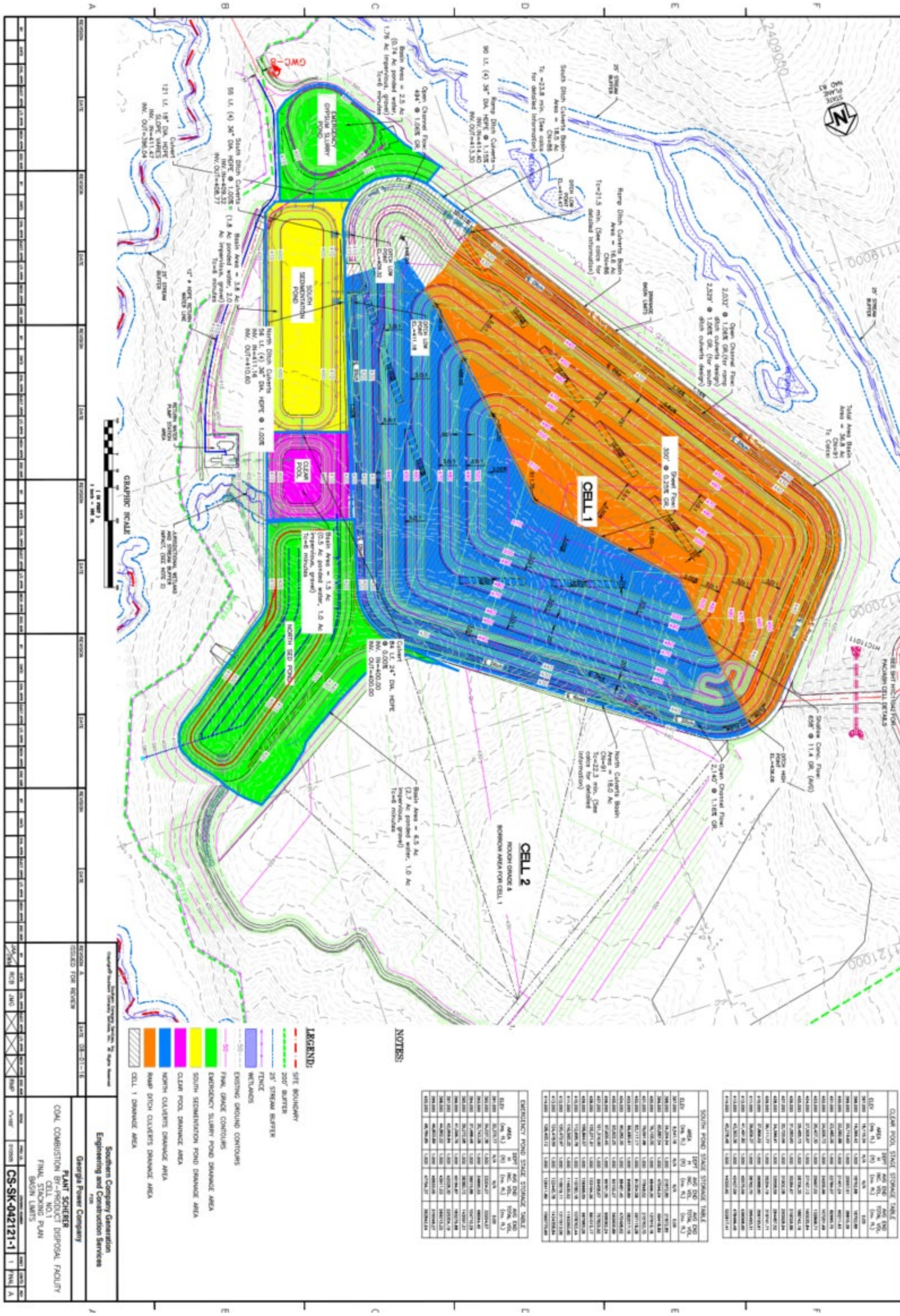
Time period
From: 07/06/2016, 12:00:00 AM
To: 07/07/2016, 12:00:00 AM

Thresholds
Exceedance: 0
Deficit: 0

Detention storage
Max flow: 0

Element ID	ClearPool	EmergencyPond	NPond	SouthPond
Maximum Total Inflow (cfs)	27.47	20.05	58.37	238.29
Minimum Total Inflow (cfs)	0.00	0.00	0.00	0.00
Event Mean Total Inflow (cfs)	5.62	0.58	5.61	9.82
Duration of Exceedances (hrs)	N/A	N/A	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A	N/A	N/A
Number of Exceedances	N/A	N/A	N/A	N/A
Number of Deficits	N/A	N/A	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A	N/A	N/A
Total Inflow Volume (ft³)	483186.28	50213.22	483051.37	844862.55
Detention Storage (ft³)	N/A	N/A	N/A	N/A

4.5 DRAINAGE BASIN



Sketch CS-SK-042121-1

Run-on and Run-off Control System Plan for Landfills:
Calculation Summary

for

Plant Scherer Coal Combustion By-product Disposal Facility PAC/Ash Cell

Prepared by:

Southern Company Services
Environmental Solutions

Originator: ____________________ 10/8/21
Jim W. Minor Date

Reviewer: ____________________ 10/10/21
Jason S. Wilson Date

Approval: ____________________ 10/11/21
James C. Pegues Date

1.0 Purpose of Calculation

The Federal CCR Rule, and, for Existing CCR Landfills where applicable, the Georgia CCR Rule (391-3-4-.10) require the owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill to prepare a run-on and run-off control system plan to document how these control systems have been designed and constructed to meet the applicable requirements of this section of the Rule.

The purpose of this report is to provide data that shows the Plant Scherer Coal Combustion By-Product (CCB) Disposal Facility for the PAC/Ash Cell is designed to meet the requirements in the rules listed above to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

2.0 Summary of Conclusions

2.1 Site Overview

The CCB disposal facility consists of one PAC/Ash Cell that is currently in operation. The cell is constructed with a perimeter raised dike and diversion ditch that prevents watershed run-on from entering the cell. Run-off within the cell is managed by a system of detention ponds and return water pumps that return stormwater run-off as process flows to the plant. An interior perimeter ditch directs run-off within the cell into the detention pond system through 24-in diameter pipe culverts and a leachate collection & removal system. The detention pond system includes two ponds (sedimentation pond and clear pool) that are interconnected by a 36-in diameter HDPE pipe culvert, as shown on sketch CS-SK-071416-1 on page 9 of this summary.

An auxiliary spillway is located in the sedimentation pond at elevation 434.00. The normal pool elevation for the clear pool and sedimentation pond is approximately 420.43. Pumps will be used to control the water level in the clear pool between elevation 421.00 and 418.00. For this calculation, the ponds were modelled using the worst-case scenario normal pool elevation of 421.00.

An overview of the facility is provided in Table 1 below.

Table 1. Plant Scherer PAC/Ash Landfill site characteristics

Pond Description	PAC/Ash Cell	Sedimentation Pond	Clear Pool
Size (Acres)	16.6	2.48	1.03
Outlet Type	Three 36-in HDPE pipes	Trapezoidal spillway and two 36-in HDPE pipes connected to clear pool	Connected to Sedimentation Pond by a 36-in HDPE pipe
Outlets To:	Sedimentation Pond	Clear pool and auxiliary spillway	Pumped back to the plant and a 36-in HDPE pipe connected to sedimentation pond.

2.2 Run-on Control System Plan

There is no stormwater run-on into the facility because it is contained within earthen berms and a diversion ditch that prevent stormwater from the surrounding area from entering the cell.

2.3 Run-off Control System Plan

A hydrologic and hydraulic model was developed for the Plant Scherer Gypsum Storage Facility PAC/Ash Cell to determine the hydraulic capacity of the cell. The design storm for the purposes of run-off control system plans is the 24-hour, 25-year rainfall event. The results from routing the design storm event through the cell are presented in Table 2 below.

Table 2. Plant Scherer Gypsum Storage Facility PAC/Ash Cell Flood Routing Results

Storage Pond Name	**Normal Pool Elevation (feet, NAVD 88)**	**Maximum 25-year pool elevation (feet, NAVD 88)**	**Spillway/Top of dike elevation (feet, NAVD 88)**	**Freeboard to Spillway (feet)**	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**
Clear Pool	421	427.4	434.00/436.00	6.6/8.6	52.15	0
Sedimentation Pond	421	427.4	434.00/436.00	6.6/8.6	137.23	0

Based on this analysis, the detention pond system is adequate to collect and control the required volume of water resulting from a 24-hour 25-year storm.

3.0 Methodology

3.1 Hydrologic Analyses

The design storm for all run-on/run-off analyses is a 24-hour, 25-year rainfall event. A summary of the design storm parameters and rainfall distribution methodology for these calculations is summarized below in Table 3.

Table 3. Design Storm Distribution

Return Frequency (years)	Storm Duration (hours)	Rainfall total (inches)	Rainfall Source	Storm Distribution
25	24	6.35	NOAA Atlas 14	SCS Type II

The drainage basin area for the Plant Scherer Gypsum Storage Facility PAC/Ash Cell was delineated based on topography developed for construction of the facility in 2010 and as-built data provided by Metro Engineering and Surveying Co., Inc. in October of 2010. Run-off characteristics were developed based on the Soil Conservation Service (SCS) methodologies as outlined in TR-55. Soil types were obtained based on the run-off characteristics of the material that is placed within the storage facility. Time of Concentration was also developed based on methodologies prescribed in TR-55.

Pertinent basin characteristics of the landfill are provided below in Table 4.

Table 4. Landfill Hydrologic Information

Drainage Basin Area	16.6
Hydrologic Curve Number, CN	91
Hydrologic Method	SCS Method
Time of Concentration (minutes)	10.02
Hydrologic Software	Autodesk Storm and Sanitary Analysis 2015

Run-off values were determined by importing the characteristics developed above into a hydrologic model with Autodesk Storm and Sanitary Analysis 2015 software.

3.2 Hydraulic Analyses

Storage values for the cell were determined by developing a stage-storage relationship utilizing contour data. The clear pool and sedimentation pond are interconnected by a 36-in HDPE pipe and share a primary spillway that is an earthen trapezoidal weir lined with a turf reinforcement mat and sloped at 0.10% slope with a crest elevation of 433.50. A summary of spillway information is presented below in Table 5.

Table 5. Spillway Attribute Table

Spillway Component	US Invert elevation (feet, NAVD 88)	DS Invert elevation (feet, NAVD 88)	Dimension (ft)	Slope	Length	Spillway Capacity (cfs)
Principle	433.50	433.47	28	0.1	35	140

Based on the spillway attributes listed above, the data was input to Autodesk Storm and Sanitary Analysis to determine the pond performance during the design storm. Results are shown above in Table 2.

4.0 Supporting Information

4.1 Curve Number

Table 6. Curve Number Data

Location	Terrain Type	Area	Curve Number
Clear Pool	Water & gravel	1.03	87.33
Sedimentation Pond	Water & gravel	2.48	88.08
PAC/Ash Cell	Bare Gypsum	16.6	91

4.2 Stage Storage Tables

Sedimentation Pond			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	416	8,566	0
2	418	13,665	22,231
4	420	19,308	55,204
6	422	25,388	99,900
8	424	31,516	156,804
10	426	37,844	226,164
12	428	44,369	308,377
14	430	51,094	403,840
16	432	58,088	513,022
18	434	65,113	636,223
20	436	72,426	773,762

Clear Pool			
Stage	Elevation	Contour Area (s.f.)	Volume (c.f.)
0	416	2,552	0
2	418	4,110	6,662
4	420	5,871	16,643
6	422	7,833	30,347
8	424	10,002	48,182
10	426	12,372	70,556
12	428	14,945	97,873
14	430	17,719	130,537
16	432	20,696	168,952
18	434	23,847	213,495
20	436	27,203	264,545

4.3 Time of Concentration

Time of Concentration (Tc) for the clear pool and south sedimentation pond area are the minimum Tc of 6 minutes. The Time of Concentration for the PAC/Ash Cell area is shown below.

Time of Concentration

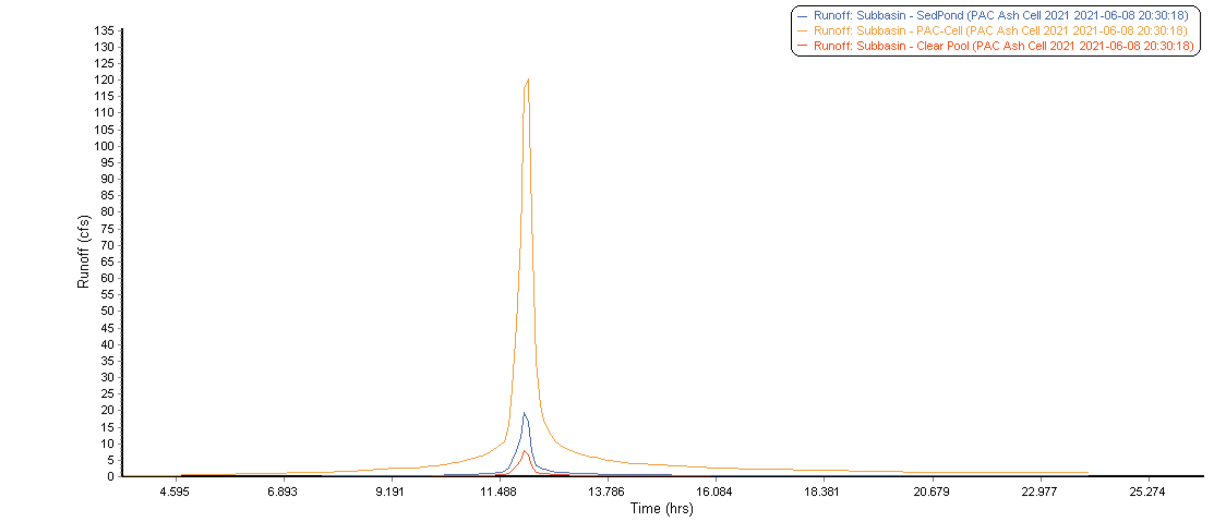
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	.02	0.00	0.00
Flow Length (ft) :	300	0.00	0.00
Slope (%) :	3.64	0.00	0.00
2 yr, 24 hr Rainfall (in) :	3.80	0.00	0.00
Velocity (ft/sec) :	1.47	0.00	0.00
Computed Flow Time (min) :	3.40	0.00	0.00

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	307	0.00	0.00
Slope (%) :	11.50	0.00	0.00
Surface Type :	Unpaved	Unpaved	Unpaved
Velocity (ft/sec) :	5.47	0.00	0.00
Computed Flow Time (min) :	0.94	0.00	0.00

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	.038	0.00	0.00
Flow Length (ft) :	1331	0.00	0.00
Channel Slope (%) :	0.76	0.00	0.00
Cross Section Area (ft^2) :	22.8	0.00	0.00
Wetted Perimeter (ft) :	18.7	0.00	0.00
Velocity (ft/sec) :	3.90	0.00	0.00
Computed Flow Time (min) :	5.69	0.00	0.00

Total TOC (min) 10.02

4.4 RESULTS



Runoff Summary Table

Time period
From: 05/07/2021, 12:00:00 AM
To: 05/08/2021, 12:00:00 AM

Thresholds
Exceedance: 0
Deficit: 0

Detention storage
Max flow: 0

Element ID	SedPond	PAC-Cell	Clear Pool
Maximum Runoff (cfs)	19.54	120.22	8.01
Minimum Runoff (cfs)	0.00	0.00	0.00
Event Mean Runoff (cfs)	0.56	4.01	0.23
Duration of Exceedances (hrs)	N/A	N/A	N/A
Duration of Deficits (hrs)	N/A	N/A	N/A
Number of Exceedances	N/A	N/A	N/A
Number of Deficits	N/A	N/A	N/A
Volume of Exceedance (ft³)	N/A	N/A	N/A
Volume of Deficit (ft³)	N/A	N/A	N/A
Total Runoff (ft³)	48511.92	344919.23	19815.84
Detention Storage (ft³)	N/A	N/A	N/A

4.5 DRAINAGE BASIN