Georgia Power Company
Plant Hammond

NPDES Permit No. GA0001457

Ash Pond Dewatering Plan

Revised December 2021

Background

Plant Hammond is located on the Coosa River in Floyd County, Georgia. On July 29, 2019, the Georgia Public Service Commission approved Georgia Power Company (GPC)'s request for decertification of Plant Hammond's Units 1 through 4. This order was effective immediately and as such Plant Hammond was officially retired on July 29, 2019. This steam-electric generating plant had four coal-fired units and began commercial operation in 1954. A dewatering process is necessary to facilitate permanent closure of Ash Ponds 1, 2 and 4 (see the Site Location Map in Figure 3). The site has four ash ponds (Ash Ponds 1, 2, 3 and 4), which are approximately 35, 21, 25 and 54 acres in size, respectively. Ash Pond 3 was permanently capped in 2018. Ash Pond 4 is currently capped but will be closed by removal.

Activities associated with the closure of the ash pond will generate additional volumes of water requiring management in the Treatment System. This additional water will be in the form of contact stormwater, as well as water released from the ash during excavation and dewatering. BMP's will be utilized to minimize ash-contact stormwater, provide detention of collected water (to reduce particulate loading), and to provide hydraulic control prior to treatment. BMPs employed will be varied and implemented as needed to support the ash pond closure activities but may include systems for covering the ash, such as rain flaps, as well as systems to hydraulically control runoff, such as detention ponds.

Purpose

This Ash Pond Dewatering Plan (Plan) describes the additional procedures, safeguards and enhanced wastewater treatment measures that GPC will implement to ensure the facility's NPDES permit effluent limitations continue to be met and the receiving waterbody continues to be protected during the ash pond dewatering process. This Plan provides an overview of the wastewater treatment system, describes the key processes, details the major process control measurements being performed, and explains the effluent monitoring to be completed during dewatering.

The wastewater treatment system (Treatment System) currently treats the site's remaining low volume wastewater, inclusive of leachate. The Treatment System will additionally support dewatering activities during the ash pond closure process. This Plan will be implemented upon commencement of active ash pond closure activities. Prior to the closure process beginning, ash pond discharges will not cause water levels to drop beyond normal historical operational levels. Following approval of the dewatering plan by the Georgia Environmental Protection Division (EPD) and prior to commencement of dewatering, GPC will provide the EPD with notification of dewatering implementation. As explained below, in addition to the requirements implemented during the dewatering process, GPC will continue to meet the effluent limitations of the plant's NPDES permit and comply with all requirements of the NPDES permit.

Wastewater Treatment System

The Treatment System being utilized is a physical-chemical treatment plant that consists of sodium hypochlorite addition, equalization tanks, pH adjustment, solids separation by flocculation/clarification, treated water tank monitoring, and bag filtration. Solids may be dewatered by a filter press and hauled to a permitted landfill for disposal. Figure 1 provides a schematic of the Treatment System.

Location
The Treatment System is located adjacent to the southwest corner and within the drainage area of Plant Hammond's Ash Pond 1. This assures that any wastewater designated for treatment remains within the NPDES wastewater permitted basin until treated for discharge.

The Treatment System will operate on an as-needed basis up to 24 hours per day. Under initial operation, the Treatment System will be configured to treat up to 2,000 gpm; however, the Treatment System may

be upgraded to treat a maximum of 4,000 gpm. In accordance with the NPDES permit, GPC will provide the EPD with advanced notice of any treatment system upgrades.

Influent

As shown in the Process Flow Diagram (Figure 2), wastewater is pumped to the Treatment System directly from the ash ponds. Wastewater may also consist of sources such as the Treatment System from the Low Volume Wastewater System and Leachate Storage Tanks. The intake for the influent pump is operated to minimize solids inflow to the Treatment System. As the water level in the ash pond drops, treatment operations may cease until the volume of water in the pond is adequate for operations, or other measures may be implemented to provide sufficient water volume for pumping to the Treatment System. Water levels in the ash ponds fluctuate based upon storm water inflows, upstream ash pond management, and dewatering activities. As overall water volumes in the ash ponds decrease, operation of the Treatment System may be intermittent and on an "as needed" basis. However, continuous operation may be utilized in response to wet weather conditions.

The system's influent will be monitored for pH and turbidity. These parameters will be used as a guide for treatment requirements. Influent flow rates will be managed to limit ash pond draw-down at a rate of no greater than one foot per week or at a rate to ensure the structural integrity of the impoundment as determined by the Dam Safety Engineer.

Sodium Hypochlorite Addition

Depending on the quality of the influent water coming from the ash ponds, the influent water pumped to the Treatment System may be treated with sodium hypochlorite to control biological growth in the system. Treating the water for biological growth improves the Treatment System efficiency and reduces the amount of maintenance required. Based upon the demand for chlorine in the influent water, sodium hypochlorite addition will be adjusted. The dosage rate for sodium hypochlorite will depend upon the flow rate, sediment load, and water temperature.

Equalization Tanks

Residence time will be provided in the equalization tanks. The equalization tanks also provide a means to recycle water from the treated water tank. Low volume wastewater, including leachate, is currently sent to the equalization tanks. Water from the ash ponds will additionally be sent to the equalization tanks to support dewatering activities during the ash pond closure process.

pH Adjustment & Coagulant Addition

After the equalization tanks, pH adjustment is performed. The pH of the water pumped to the Treatment System will be continuously tested before reaching the clarifier. Based upon the pH measurement, the pH can be adjusted to the optimal range for coagulation. Following pH adjustment, a coagulant and polymer may be injected to aid in flocculation. The dosage rates for all chemicals will depend upon the flow rates, sediment loads, and inlet pH. Dosage rates will be documented and kept onsite.

Clarifier

The chemically treated water flows into a clarifier and the flocculated material gravity-settles to the bottom of the clarifier. A pump pulls the underflow at the bottom of the clarifier towards the underflow discharge point to be pumped to a sludge tank for thickening. The solids will be managed and disposed of at a CCR permitted landfill. The solids may be dewatered through a filter press or solidified to meet moisture disposal requirements. Clarified water is sent to the treated water tanks.

In the event any system issues are identified related to turbidity or pH at the clarifier, the effluent from the clarifier will be sent to the off-spec water tank(s). Effluent from the off-spec water tank(s) will then be recirculated to either the ash pond (if the influent water consists solely of ash pond water) or to the equalization tank (if the system's influent includes any low volume waste/ leachate).

Treated Water Tanks

The treated water is sent from the clarifier to the treated water tanks. As water moves through the Treatment System, some of the free chlorine will be consumed and any remaining chlorine will be neutralized in the treated water tank. Sodium bisulfite will be maintained onsite, as a backup, to remove any residual chlorine.

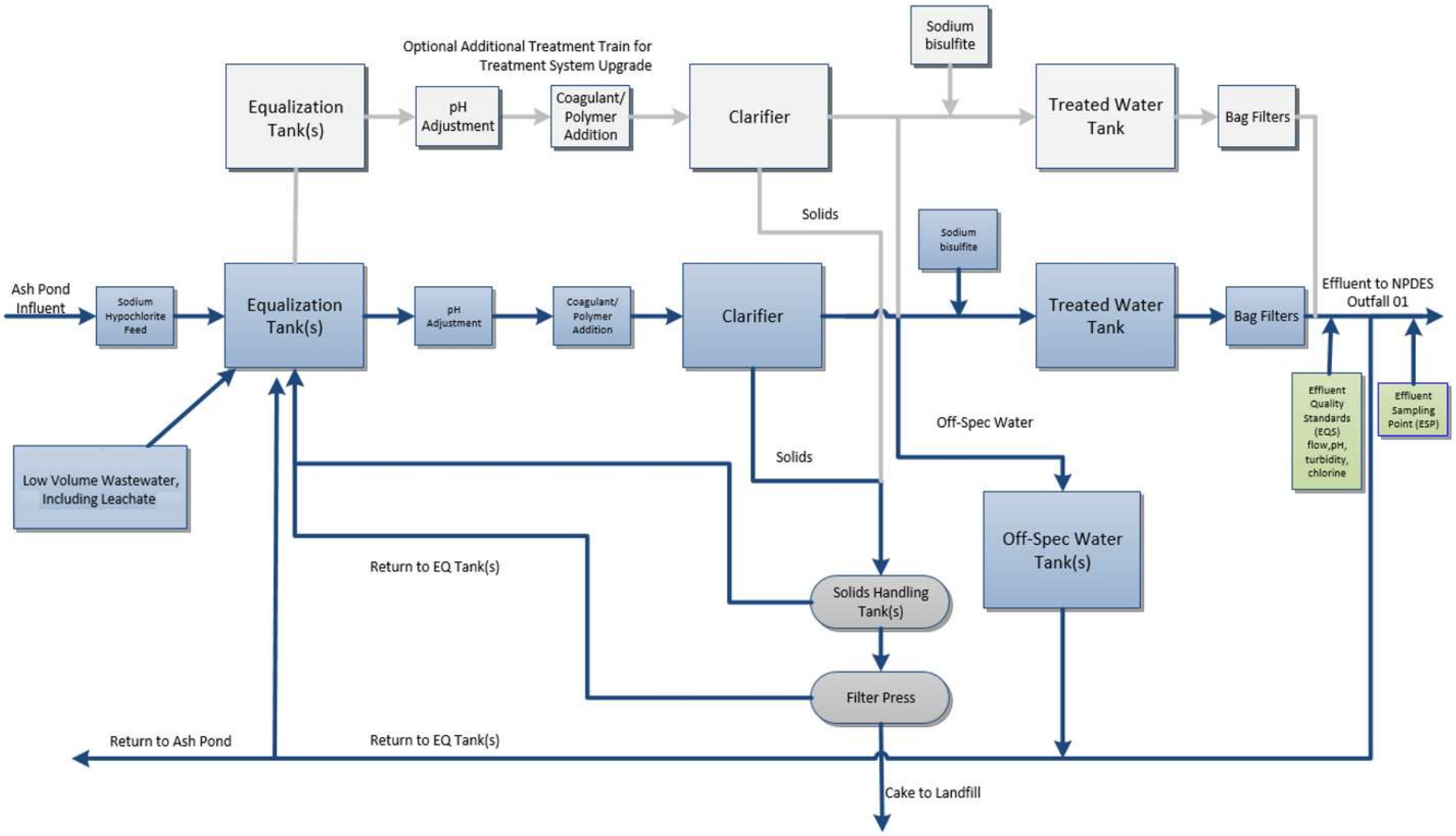
Filters

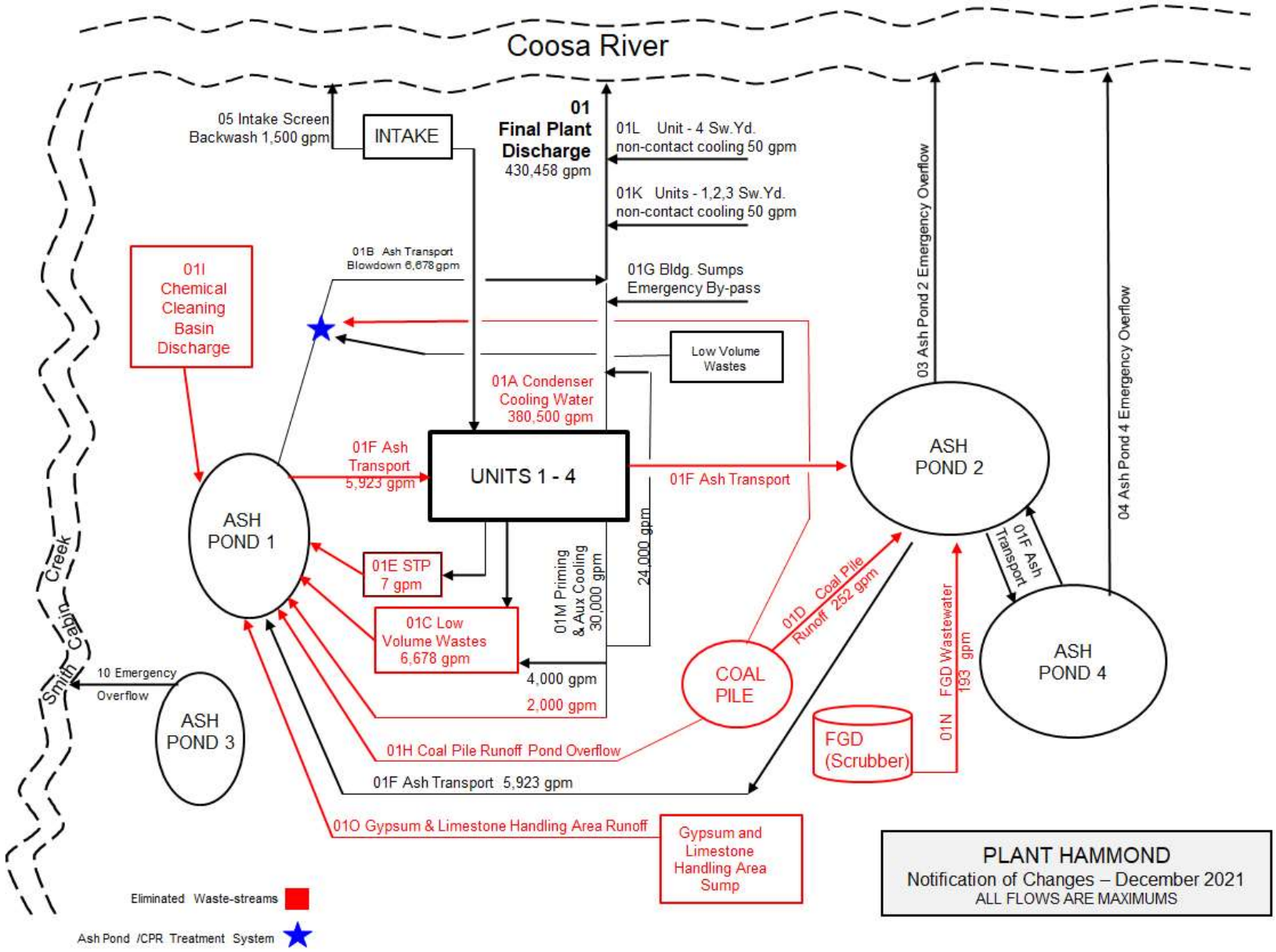
Following the treated water tank, water is then fed into the bag filtration system. The bag filtration system is composed of two housings with sixteen sock filters. Each housing is rated for 100% of the design flowrate, which allows for sock replacement without interruption of operation. The sock filters are initially planned to be 100 microns, but the size can be adjusted during the ash pond closure process to optimize solids removal. The clarified water passes through the bag filter system as the final particulate removal step prior to discharge. The bag filter system has pressure differential gauges that require monitoring to determine when a change of the sock filters is required. The pressure differential gauges are monitored frequently by onsite personnel to ensure change-out of the bag filter when needed.

A set of instrumentation that checks the quality of the treated water will be located after the filters. During operation, effluent from the filters will be continuously measured for flow and monitored for pH, turbidity and chlorine. This information will be used to monitor the Treatment System operation. If an inline instrument detects a reading above a quality standard set-point, the effluent will not be discharged and instead will be diverted to the ash pond (if the influent water consists solely of ash pond water) or to an equalization tank (if the system's influent includes any low volume waste/ leachate). The bag filtration system is the final treatment process prior to the discharge to Outfall 01B.

Operation

The operational oversight of the Treatment System will be performed by a certified wastewater treatment plant operator in accordance with the certification requirements of the Georgia Water and Wastewater Treatment Plant Operators and Laboratory Analysts Rule.


Optional Additional Treatment Train for Treatment System Upgrade
Sodium bisulfite
Equalization Tank(s)
pH Adjustment
Coagulant/ Polymer Addition
Clarifier
Treated Water Tank
Bag Filters
Solids
Sodium bisulfite
Ash Pond Influent
Sodium Hypochlorite Feed
Equalization Tank(s)
pH Adjustment
Coagulant/ Polymer Addition
Clarifier
Treated Water Tank
Bag Filters
Effluent to NPDES Outfall 01
Effluent Quality Standards (EQS) flow,pH, turbidity, chlorine
Effluent Sampling Point (ESP)
Off-Spec Water
Solids
Low Volume Wastewater, Including Leachate
Off-Spec Water Tank(s)
Return to EQ Tank(s)
Solids Handling Tank(s)
Filter Press
Return to Ash Pond
Return to EQ Tank(s)
Cake to Landfill


Coosa River
05 Intake Screen Backwash 1,500 gpm
INTAKE
01 Final Plant Discharge 430,458 gpm
01L Unit - 4 Sw.Yd. non-contact cooling 50 gpm
01K Units - 1,2,3 Sw.Yd. non-contact cooling 50 gpm
01B Ash Transport Blowdown 6,678 gpm
01G Bldg. Sumps Emergency By-pass
01I Chemical Cleaning Basin Discharge
Low Volume Wastes
01A Condenser Cooling Water 380,500 gpm
03 Ash Pond 2 Emergency Overflow
04 Ash Pond 4 Emergency Overflow
01F Ash Transport 5,923 gpm
UNITS 1 - 4
01F Ash Transport
ASH POND 2
ASH POND 1
01E STP 7 gpm
01M Priming & Aux Cooling 30,000 gpm
24,000 gpm
01F Ash Transport
01C Low Volume Wastes 6,678 gpm
01D Coal Pile Runoff 252 gpm
COAL PILE
FGD (Scrubber)
01N FGD Wastewater 193 gpm
ASH POND 4
Smith Cabin Creek
10 Emergency Overflow
ASH POND 3
4,000 gpm
2,000 gpm
01H Coal Pile Runoff Pond Overflow
01F Ash Transport 5,923 gpm
01O Gypsum & Limestone Handling Area Runoff
Gypsum and Limestone Handling Area Sump
Eliminated Waste-streams
Ash Pond /CPR Treatment System
PLANT HAMMOND
Notification of Changes – December 2021
ALL FLOWS ARE MAXIMUMS

Site Location Map
Plant Hammond
Floyd County, Georgia

Process Control Monitoring

Following each Treatment System startup, pH and turbidity of the influent and effluent of the Treatment System will be verified prior to discharge of treated water to the permitted outfall. Upon verification that the Treatment System performs as expected, the discharge will be routed to Outfall 01B.

During discharge operations, pH, chlorine and turbidity are continuously measured at the Effluent Quality Standards sampling point, and the discharge will be visually inspected, to ensure the Effluent Quality Standards listed below are met. If the treated effluent indicates a significant change during operations, discharge to the permitted outfall will be automatically diverted and the treated water will be recycled to the equalization tank or to the ash pond while adjustments are made. After any issues are resolved, the Treatment System will be returned to normal operation with discharge to Outfall 01B, following verification that the system performs as expected.

Maintenance

Instrumentation for use on the site will be maintained to ensure optimal performance and provide accurate results. Each piece of technical equipment will be calibrated at the manufacturer's recommended intervals and more often if deemed necessary by onsite personnel. The instrumentation includes a turbidity meter, a pH meter, flow meters, and the chemical feed pumps.

Testing

Samples are collected from both the influent and the Treatment System Effluent Sampling Point (ESP) to guide system operation and compare against the continuous monitoring results for the Effluent Quality Standards (EQSs) listed below. The results will be used to verify that the Treatment System is performing optimally, as well as to obtain data to establish and update the correlation between the total suspended solids (TSS) and turbidity of the Treatment System effluent. TSS/turbidity control is an indicator of the Treatment System's efficient operation and is correlated to metals removal efficiencies, as further confirmed by weekly monitoring results. The initial TSS and turbidity correlation curve and EQS results will be provided to the EPD prior to commencement of dewatering activities and updated quarterly or more frequently on an as needed basis. Furthermore, the TSS/turbidity correlation will be updated if the EQS for TSS is exceeded. EQS results, including TSS and turbidity correlation curves, will be available onsite for EPD review. TSS correlation to turbidity will be used to establish a turbidity set-point for the effluent. Effluent reaching this set-point will be recycled back to the ash pond or equalization tank for additional treatment, as appropriate.

Effluent Quality Standards (EQSs)

- **pH**: 6.4 to 8.6 operational limits
- **Turbidity**: Determined by TSS correlation
- **Flow rate**: 2,000 gpm initial maximum (4,000 gpm upgrade maximum)
- **Total Suspended Solids** (TSS): 26 mg/L maximum, determined by turbidity correlation
- **Oil & Grease**: 20 mg/L daily maximum with ≤15 mg/L daily average over a month
- **Total Residual Chlorine:** Zero

Analytical Instrument Description

The following instrumentation (or equivalent) will be used:

- **pH**: Hach DPD1P1, pH probe with a Hach SC200 transmitter
- **Turbidity**: Hach LXG324.99 with a Hach SC200 transmitter
- **Chlorine**: Hach CL17 with personal transmitter
- **Flow rate**: Siemens Sitrans F M Mag 6000 10" magnetic flow meter

Effluent Monitoring and Reporting

Stream Monitoring

Effluent Characteristics mg/L or (Units)	Requirement	Measurement Frequency	Sample Type	Sample Location
pH (s.u.)	Report	2/Month	Grab	Upstream & Downstream*
TSS	Report	2/Month	Grab	Upstream & Downstream*
Oil & Grease	Report	2/Month	Grab	Upstream & Downstream*
Turbidity (NTU)	Report	2/Month	Grab	Upstream & Downstream*
TDS	Report	2/Month	Grab	Upstream & Downstream*
$BOD_{5\text{-day}}$	Report	2/Month	Grab	Upstream & Downstream*
Copper, total	Report	2/Month	Grab	Upstream & Downstream*
Selenium, total	Report	2/Month	Grab	Upstream & Downstream*
Arsenic, total	Report	2/Month	Grab	Upstream & Downstream*
Mercury, total	Report	2/Month	Grab	Upstream & Downstream*
Chromium, total	Report	2/Month	Grab	Upstream & Downstream*
Lead, total	Report	2/Month	Grab	Upstream & Downstream*
Cadmium, total	Report	2/Month	Grab	Upstream & Downstream*
Zinc, total	Report	2/Month	Grab	Upstream & Downstream*
Nickel, total	Report	2/Month	Grab	Upstream & Downstream*
Antimony, total	Report	2/Month	Grab	Upstream & Downstream*
Thallium, total	Report	2/Month	Grab	Upstream & Downstream*
Ammonia-N	Report	2/Month	Grab	Upstream & Downstream*
TKN	Report	2/Month	Grab	Upstream & Downstream*
Nitrate/Nitrite	Report	2/Month	Grab	Upstream & Downstream*
Organic Nitrogen	Report	2/Month	Grab	Upstream & Downstream*
Phosphorus, total	Report	2/Month	Grab	Upstream & Downstream*
Orthophosphate-P	Report	2/Month	Grab	Upstream & Downstream*
Hardness	Report	2/Month	Grab	Upstream & Downstream*

Notes:

Sampling and monitoring to be performed using test procedures specified in U.S. EPA 40 CFR Part 136, which will be a "sufficiently sensitive analytical method".

* Instream sampling shall occur at approximately 1,000 ft upstream and downstream of the final discharge (Outfall 01) to the Coosa River and as depicted on Figure 3.

Effluent Monitoring

Effluent Characteristics mg/L or (Units)	Monthly Average	Daily Maximum	Measure Frequency	Sample Type	Sample Location
Flow (MGD)	Report	Report	Daily	Continuous	Effluent Quality Standard (EQS)
pH (s.u.)	Report	Report	Daily	Continuous	EQS
Turbidity (NTU)	Report	Report	Daily	Continuous	EQS
TRC	Report	Report	Daily	Continuous	EQS
TSS	Report	Report	Weekly	Grab	Effluent Sampling Point (ESP)
Oil & Grease	Report	Report	Weekly	Grab	ESP
TDS	Report	Report	Weekly	Grab	ESP
$BOD_{5\text{-day}}$	Report	Report	Weekly	Grab	ESP
Copper, total	Report	Report	Weekly	Grab	ESP
Selenium, total	Report	Report	Weekly	Grab	ESP
Arsenic, total	Report	Report	Weekly	Grab	ESP
Mercury, total	Report	Report	Weekly	Grab	ESP
Chromium, total	Report	Report	Weekly	Grab	ESP
Lead, total	Report	Report	Weekly	Grab	ESP
Cadmium, total	Report	Report	Weekly	Grab	ESP
Zinc, total	Report	Report	Weekly	Grab	ESP
Nickel, total	Report	Report	Weekly	Grab	ESP
Antimony, total	Report	Report	Weekly	Grab	ESP
Thallium, total	Report	Report	Weekly	Grab	ESP
Ammonia-N	Report	Report	Weekly	Grab	ESP
TKN	Report	Report	Weekly	Grab	ESP
Nitrate/Nitrite	Report	Report	Weekly	Grab	ESP
Organic Nitrogen	Report	Report	Weekly	Grab	ESP
Phosphorus, total	Report	Report	Weekly	Grab	ESP
Orthophosphate-P	Report	Report	Weekly	Grab	ESP
Hardness	Report	Report	Weekly	Grab	ESP

Notes:

Sampling and monitoring to be performed using test procedures specified in U.S. EPA 40 CFR Part 136, which will be a "sufficiently sensitive analytical method". ESP is the discharge from the WWTS prior to Outfall 01B and prior to mixing with other waste-streams.

Reporting and Notification

Effluent and instream monitoring results will be submitted to the EPD via e-mail by the 15th day of the month following the sampling period. Results shall be submitted in an Excel spreadsheet to both the EPD Compliance Office and the EPD Industrial Permitting Unit. Laboratory analysis and data sheets shall be retained onsite. The first sampling report will be submitted the month following Treatment System startup. In addition, quarterly updates of the TSS vs. Turbidity correlation curve and other updates based on an exceedance of the EQS for TSS, will also be submitted to EPD via e-mail by the 15th of the month following the end of the quarter or the month after the EQS exceedance.

Immediate (within 24 hours) notification to both the EPD Compliance Office and Industrial Permitting Unit will occur and a corrective action plan implemented if any of the EQSs for pH, total residual chlorine, or turbidity are not achieved and the automatic recirculation system fails or if there is visible foam other than trace amounts discharged to waters of the State of Georgia.