Georgia Power Plant McManus

NPDES Permit No. GA0003794

Ash Pond Dewatering Plan

Revised April 2018

Purpose

This Ash Pond Dewatering Plan (Plan) describes the procedures, safeguards and enhanced wastewater treatment measures that Georgia Power Company (GPC) is implementing 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 of the major process control measurements being performed, and explains the effluent monitoring to be completed during dewatering. There is approximately 3-4 million gallons of water remaining in the ash pond. This volume is subject to change based on weather conditions and dewatering activities.

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 wastewater treatment system for dewatering the ash pond is a physical-chemical treatment plant (Treatment System) that consists of pH neutralization followed by solids separation, flocculation, clarification, and finally filtration. Solids are dewatered by filter-press and hauled off-site for disposal at a permitted facility. Figure 1 provides a description of the Treatment System.

Location

The Treatment System is located adjacent to and within the drainage area of the ash pond. Location of the Treatment System in this area assures that, in the unlikely event of an overflow, any water from the Treatment System remains within the NPDES wastewater drainage area of the ash pond and will not be discharged except in compliance with this Plan and the NPDES permit.

The Treatment System operates on an as-needed basis up to 24 hours per day. The Treatment System is configured to treat up to 2,000 gpm. In accordance with the NPDES permit, GPC will provide EPD with advanced notice of any treatment system upgrades.

Influent

As shown by Figure 2, wastewater is pumped directly to the Treatment System from the ash pond. 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 pond fluctuate based upon storm water inflows and dewatering activities. As overall water volumes in the ash pond decrease, operation of the Treatment System may be intermittent and on an "as needed" basis, although continuous operation may be utilized in response to wet weather conditions.

GPC will monitor the influent 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 dike draw-down at a rate of no greater than one foot per week or a rate to ensure structural integrity of the impoundment as determined by the Dam Safety Engineer.

pH & Coagulant

All water pumped to the Treatment System is pH tested as it enters the system. Based upon the pH measurement, the pH is adjusted to the optimal range for coagulation. Following pH adjustment, a coagulant and polymer may be injected into the flow to aid in flocculation prior to entering the clarifier section(s). After the pH adjustment is performed, the pH of the water pumped to the Treatment System is continuously tested before it enters the clarifier(s). The dosage rates for all chemicals will depend upon the flow rates, sediment loads, and inlet pH. Dosage rates will be documented and kept on-site.

Solids Removal

In the solids removal stage, the incoming water flows across a three-panel vibratory scalper. The scalper is designed to remove all debris and/or objects larger than ¼". All aggregates, organic debris, trash, or other items removed at this point are discharged onto the stockpile conveyor belt system for collection in a roll-off container for off-site and disposal. The remaining wastewater is pumped through (2) sets of hydrocylones. The solids removed by the hydrocylones are discharged onto the stockpile conveyor belt system for collection in a roll-off container for off-site disposal.

Clarifier

The effluent exiting the solids removal system is pumped through the polymer injection and treatment portion of the Treatment System. The effluent then flows through a flow meter to estimate chemical dosage needed for this stage of the Treatment System. Chemical injection aids in the flocculation and settlement of the remaining solids.

The effluent exiting the solids removal system then flows into a clarifier (currently 45,000 gallon capacity) where the flocculated material settles to the bottom of the clarifier. An auger pulls the underflow at the bottom of the clarifier towards the underflow discharge point where it is pumped to a mix tank for homogenization. A final dose of polymer is added to the water from the mix tank to tighten the flocs prior to running through a plate and frame press. After running through the plate and frame press, the dewatered cake is discharged onto a conveyor belt system and collected in a roll-off container for off-site disposal. The filtrate and rinse water from this process is then recycled to the solids removal system for additional processing.

Filtration

The effluent from the clarifier is again tested for pH and turbidity and is pumped through a set of filter pots to further polish the discharge. Depending upon the flow characteristics, the pots are either filled with 5 micron, 20 micron, or a combination of cartridge filters. Samples of the filtered water are tested to verify the Treatment System is working as designed.

Operation

The operational oversight of the Treatment System is performed by a certified wastewater treatment plant operator in accordance with the certification requirements of the Georgia Water and Wastewater Treatment Plant Operator's and Laboratory Analysts rule.

FIGURE 1

Plant McManus Treatment System Schematic

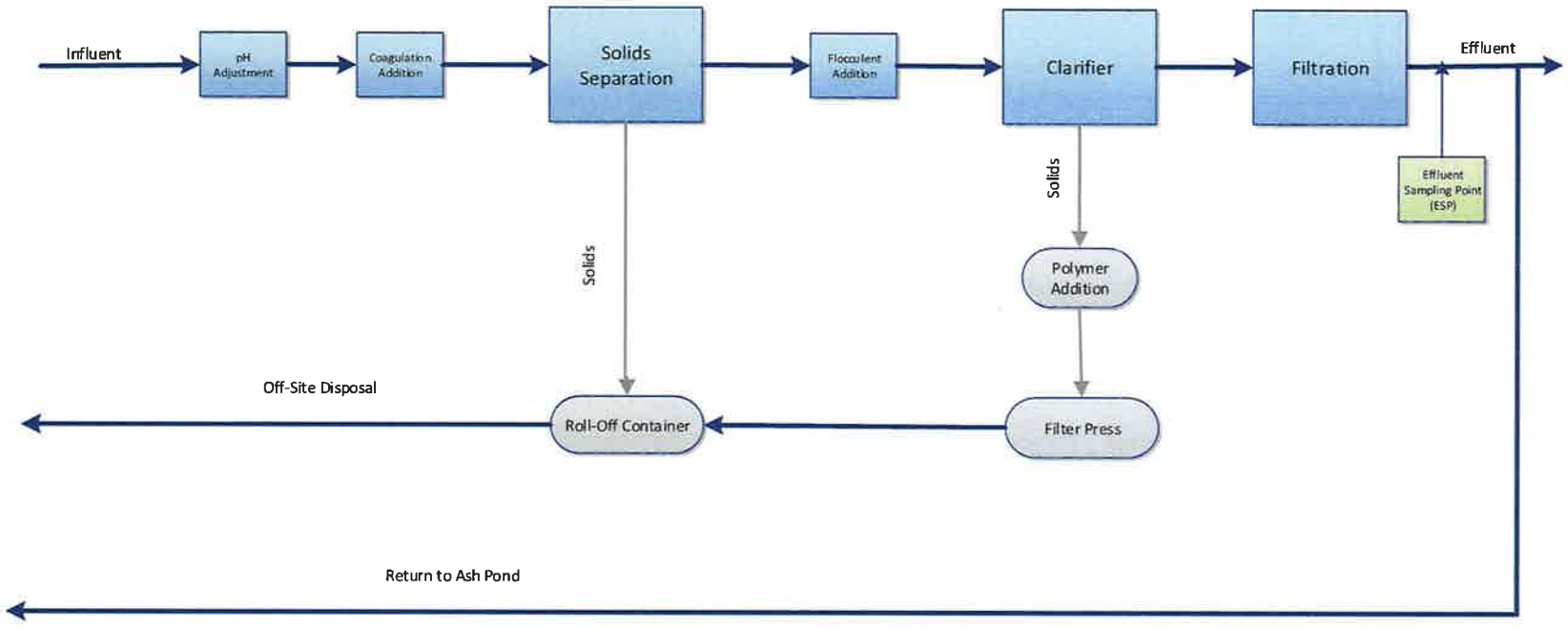
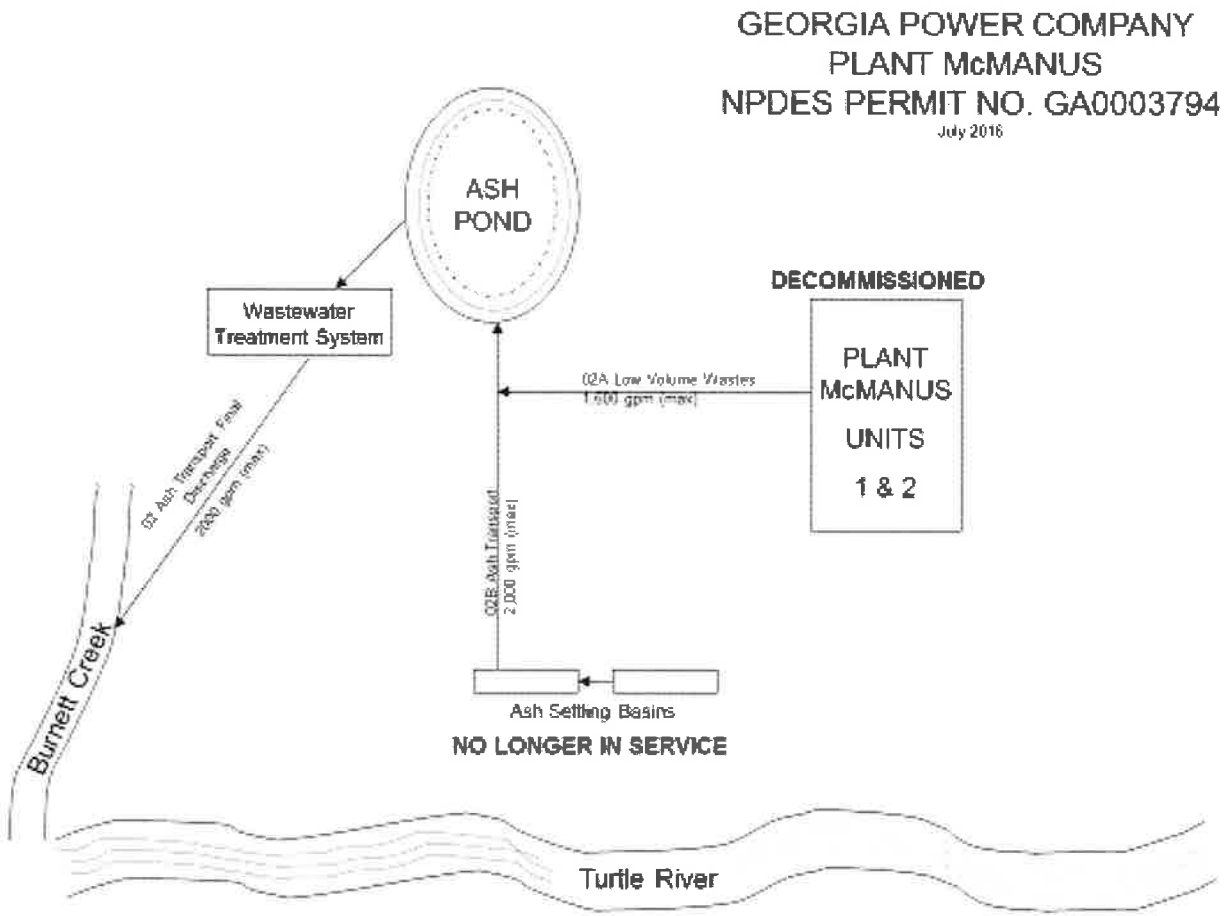


FIGURE 2


GEORGIA POWER COMPANY
PLANT McMANUS
NPDES PERMIT NO. GA0003794
July 2016
ASH POND
Wastewater Treatment System
DECOMMISSIONED
PLANT McMANUS UNITS 1 & 2
02A Low Volume Wastes
02B Ash Transport
2,000 gpm (max)
02 Ash Transport Final Discharge
2000 gpm (max)
Burnett Creek
Ash Setting Basins
NO LONGER IN SERVICE
Turtle River

Process Control Monitoring

Each day following Treatment System startup, pH and turbidity of the influent and effluent of the Treatment System is verified prior to discharge of treated water to the permitted outfall. Effluent sampling of the Treatment System discharge for turbidity and pH is performed every two hours in the discharge line following the filtration process. This sampling point is labeled as ESP (Effluent Sampling Point). Upon verification the Treatment System performs as expected, the discharge is routed to Outfall 02.

During discharge operations, pH, turbidity and a correlated TSS are continuously measured in the clarification process and the discharge is visually inspected. If the treated effluent exceeds the Effluent Quality Standards (EQSs listed below) during operations, discharge to the permitted outfall is automatically diverted and the treated water is recycled to the ash pond while adjustments are made. After any issues are resolved, the Treatment System is returned to normal operation with discharge to Outfall 02 following verification the system performs as expected.

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

Testing
Samples are collected from both the influent (ash pond) and the Treatment System ESP to guide system operation and compare against the EQSs listed below. The results are 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 treatment system efficient operation that is correlated to metals removal efficiencies as further confirmed by weekly monitoring results. All EQSs results including TSS and turbidity correlations will be available onsite for EPD review. TSS correlation to turbidity is used to establish a turbidity set-point for the effluent. Effluent reaching this set-point is recycled back to the ash pond for additional treatment.

Effluent Quality Standards (EQSs)

- **pH**: 6.4 to 8.6 operational limits
- **Turbidity**: <10.0 NTU; determined by TSS correlation
- **Flow rate**: <2,000 gpm
- **Total Suspended Solids** (TSS): <26 mg/L; monitored by turbidity correlation and compared to weekly laboratory results
- **Oil & Grease**: <15 mg/L daily average with 20 mg/L daily maximum over a monthly period

Analytical Instrument Description

The following instrumentation (or equivalent) will be used:

- **pH**: E+H Orbisint CPS11D Memosens CPS11D-7BA21 with E+H Liquiline CM448R Transmitter
- **Turbidity**: E+H Turbimax CUS51D Sensor Head with E+H Liquiline CM448R Transmitter
- **Flow rate**: E+H Prosonic Flow 93W Clamp on Flow Meter
- **TSS**: E+H Turbimax CUS51D Sensor Head with Liquiline CM442-FKA5/0 Transmiiter

TSS Meter
In an effort to immediately monitor TSS, a TSS probe is installed after the clarification process. The readings from the probe are correlated to the turbidity measurement and compared to laboratory TSS measurements for process control monitoring.

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*
Ammonia	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	Report	2/Month	Grab	Upstream & Downstream*
Ortho-phosphorus	Report	2/Month	Grab	Upstream & Downstream*
Hardness	Report	2/Month	Grab	Upstream & Downstream*

Sampling and monitoring to be performed using standard methods as provided for in 40 CFR Part 136, which will be sufficiently sensitive.

* Instream sampling shall occur at approximately 1000 ft upstream and downstream of the final discharge to Burnett Creek. Sampling shall occur during the receding tide.

Effluent Monitoring

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

Sampling and monitoring to be performed using standard methods as provided for in 40 CFR Part 136, which will be sufficiently sensitive.

Samples are collected at the Effluent Sampling Point (ESP)

Reporting and Notification

Effluent and instream monitoring result will be submitted to 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 on site.

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, turbidity or correlated TSS are not achieved and the automatic recirculation system fails or visible foam other than trace amounts is discharged to waters of the State.