GROUNDWATER MONITORING PLAN FOR INACTIVE CCR UNIT

AP2-DAS

FORMER PLANT ARKWRIGHT
MACON-BIBB COUNTY, GEORGIA
FOR

Georgia Power

MAY 2025

Stantec

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CERTIFICATION

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the Rules of Solid Waste Management. According to 391-3-4-.01, a Qualified Groundwater Scientist is "a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action." The design of the groundwater monitoring system was developed in compliance with the Rules of Solid Waste Management, Chapter 391-3-4-.10.

Signature: _____

Date: 5/16/2025

1. INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the Former Plant Arkwright's AP2-DAS (site). This plan meets the requirements of EPD rules and uses EPD's Manual for Groundwater Monitoring dated September 1991 as a guide. Groundwater sampling locations for the site are presented in Figure A1 of Appendix A.

Monitoring will occur in accordance with 391-3-4-.10 of the Georgia Solid Waste Management Rules. If the monitoring requirements specified in this plan conflict with EPD rules (391-3-4), the EPD rules will take precedent.

The Ash Pond 2 Dry Ash Stockpile (AP2-DAS) at Former Plant Arkwright located in Bibb County, Georgia received a closure certificate on July 30, 2010, under Solid Waste Permit Number 011-031D(LI). The site is currently in post-closure care. Per the Closure Plan, CCR will be removed from AP2-DAS, which will significantly affect final (closure) topography and may also affect the site's potentiometric surface.

This plan has been generated with consideration to these factors and in accordance with Solid Waste Management Rule 391-3-4-.10(6). Pursuant to 391-3-4-.02(3)(b)(6), Georgia Power Company (Georgia Power) will submit a minor modification to the EPD prior to the decommissioning of monitoring wells. Well installation and abandonment must be directed by a qualified groundwater scientist. Any changes to the monitoring network, as shown in Figure A1 of Appendix A, will be incorporated via a minor modification to the Groundwater Monitoring Plan.

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

AP2-DAS is generally underlain by alluvial sediments such as sand of varying grain sizes with trace gravel. More consolidated sediments include clays, fine to medium sandy silts to silty sands, and silty to sandy clays, underlain by silty sand saprolite. Borings from recent and historical site investigations indicate parent materials consisting of extremely weathered quartzofeldspathic gneiss, horneblende gneiss and schist with bedrock occurring at depths ranging from approximately 14 to 63 feet below ground surface. Boring logs also indicate a relatively thin zone of partially weathered rock (PWR) above a more competent bedrock, which ranges in thickness from 1 to 4 feet in the southern and eastern portions of the unit, and up to 14 feet in the northeastern portion of the unit.

The uppermost aquifer at the AP-2 DAS consists of water-bearing 1) overburden and 2) weathered margins of PWR and zones of shallow, fractured biotite-gneiss bedrock immediately underlying the overburden or PWR (where present). The fractured bedrock zone is referred to as upper bedrock zone. This zone is characterized by measured hydraulic conductivities similar to those of the overlying silty sand overburden. With little to no primary porosity, the relative ability of the upper bedrock to transmit groundwater is dependent on the presence, density, and interconnection of secondary porosity features (open fractures). Site boring and geophysical logs show that the frequency of the fractures generally decreases with increasing depth below the bedrock contact and that the bedrock becomes increasingly competent with increasing depth. The ability of these deeper fractures to readily transmit groundwater below the upper bedrock zone is considered extremely limited.

Based on the August 2024 readings from the existing monitoring wells, the potentiometric surface ranges from approximately 29 feet below existing ground surface (bgs) at the northern portion of the CCR unit to approximately 8 feet bgs at its southern edge. This equates to potentiometric elevations ranging from approximately 315 feet to 294 feet above mean sea level. A potentiometric surface map with readings recorded in August 2024 of the AP2-DAS area is provided as Figure 3 of Appendix A. The uppermost aquifer typically occurs within the residual soils and saprolite above bedrock. The site is bordered to the south by Beaverdam Creek, which likely has a significant influence on the potentiometric surface at AP2-DAS.

Hydraulic gradients were calculated along the flow path in the central portion of AP2-DAS between wells ARGWA-20 and ARGWA-21 and at the flow path on the east side of AP2-DAS between ARGWA-19 and ARAMW-1 using the groundwater elevation data from the August 19, 2024 gauging event. The hydraulic gradients along these groundwater flow path lines are 0.025 feet per foot (ft/ft) and 0.021 ft/ft, respectively. The supporting calculations are presented in Table A2 of Appendix A. The general trajectory of the flow paths used in the calculations and associated potentiometric contour lines are shown on Figure 3 of Appendix A.

The groundwater flow velocity at AP2_DAS was calculated using a derivation of Darcy's Law. Specifically,

$$V = \frac{K * i}{n_e}$$

Where:

$$V = Groundwater\ Flow\ Velocity\ \left(\frac{feet}{day}\right)$$

$$K = Average\ Hydraulic\ Conductivity\ of\ the\ Aquifer\ \left(\frac{feet}{day}\right)$$

$$i = Horizontal\ Hydraulic\ Gradient\ \left(\frac{feet}{foot}\right)$$

$$n_e = Effective\ Porosity\ (unitless)$$

With these variables determined, and accounting for the averaged hydraulic gradient discussed above for August 19, 2024 event, the groundwater flow velocity through the central and eastern portions of AP2-DAS was calculated to be 0.092 ft/day (34 feet/year) and 0.082 ft/day (30 feet/year), respectively. The flow velocity calculations are provided in Table A2 of Appendix A. Boring logs and well construction diagrams for the existing groundwater monitoring wells are provided in Appendix B.

3. SELECTION OF WELL LOCATIONS

A comprehensive monitoring well network for AP2-DAS is in place to support post closure care for permit number 011-031D(LI). The existing monitoring wells were installed following USEPA Region 4 Science and Ecosystem Support Division Operating Procedure for Design and Installation of Monitoring Wells as a general guide for best practices.

Groundwater monitoring wells were installed to monitor the uppermost aquifer beneath the site. Locations were chosen to serve as upgradient (GWA) and downgradient (GWC) based on groundwater flow direction determined by potentiometric evaluation. The well naming nomenclature is based on Georgia EPD's Industrial Waste Disposal Site Design and Operations Plan – Supplemental Data for Solid Waste Handling Permit (undated).

The currently monitored well network installed between 2008 and 2024 at the AP2-DAS is shown on Figure 2 of Appendix A. A summary table of currently monitored well network details are provided in Table A1 of Appendix A.

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

4.1 Drilling

A variety of well drilling methods are available for the purpose of installing groundwater wells. Drilling methodology may include, but not be limited to hollow stem augers, direct push, air rotary, mud rotary, or rotosonic techniques. The drilling method will be selected to minimize the disturbance of subsurface materials and shall not cause impact to the groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in site-specific geology. Monitoring wells will be installed using the most current version of the USEPA SESD SESDGUID-10-R# as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the most current version of the USEPA SESD Operating Procedure for Field Equipment Cleaning and Decontamination (USEPA, SESDGUID-205R#). Drilling and well installation activities will be directed by a qualified groundwater scientist.

Sampling and/or coring may be used to help determine the stratigraphy and geology at the well location. Samples and cores will be logged by trained personnel working under the direction of a qualified groundwater scientist. Screen depths will be chosen based on the depth of the uppermost aquifer.

All drilling for any subsurface hydrologic investigation, or installation, or abandonment of groundwater wells at a landfill in Georgia will be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council. A copy of the drillers bond that was on file with the Water Well Standards Advisory Council at the time of well installation for the interim monitoring network is provided in Appendix B.

4.2 Design and Construction

Well construction materials will be sufficiently durable to resist chemical and physical degradation and will not interfere with the quality of groundwater samples collected.

WELL CASINGS AND SCREENS

American Society for Testing and Materials (ASTM), National Science Foundation (NSF) rated, Schedule 40, 2-inch polyvinyl chloride (PVC) pipe with flush threaded connections will be used for the well riser and screens. Compounds that can cause PVC to deteriorate (e.g., organic compounds) are not expected at this facility. If conditions warrant, other appropriate materials may be used for construction with prior written approval from the EPD.

WELL INTAKE DESIGN

The design and construction of the intake of the groundwater wells shall: (1) allow sufficient groundwater flow to the well for sampling; (2) minimize the passage of formation materials (turbidity) into the well; and (3) ensure sufficient structural integrity to prevent the collapse of the intake structure.

Each groundwater monitoring well will include a well screen designed to limit the amount of formation material passing into the well when it is purged and sampled. Screens with 0.010 inch slots have proven effective for the earth materials at the site and will be used unless geologic conditions discovered at the time of installation dictate a different size. Screen length shall not exceed 10 feet without justification as to why a longer screen is necessary (e.g. significant variation in groundwater level or areas of limited fractures in bedrock). If these specifications prove ineffective for developing a well with sufficient yield or acceptable turbidity, further steps will be taken to assure that the well screen is appropriately sized for the formation material. This may include performing sieve analysis of the formation material and determining well screen slot size based on the grain size distribution.

Pre-packed dual-wall well screens may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. If utilized, pre-packed well screens will be installed following general industry standards and using the current version of USEPA SESDGUID-101-R# as a general guide. If the dual-wall pre-packed-screened wells do not yield sufficient water or are excessively turbid after development, further steps will be taken to assure that the well screen is appropriately sized for the formation material. This may include performing sieve analysis of the formation material and determining well screen slot size based on the grain size distribution.

FILTER PACK AND ANNULAR SEAL

The materials used to construct the filter pack will be clean quartz sand of a size that is appropriate for the screened formation. Fabric filters will not be used as filter pack material. Sufficient filter material will be placed in the hole and measurements taken to ensure that no bridging occurs. Upon placement of the filter pack, the well may be pumped to assure settlement of the pack. If pumping is performed, the top elevation of filter pack depth will be monitored, and additional sand added if necessary. The filter pack will extend a minimum of two feet above the top of the well screen.

The materials used to seal the annular space in the boring above the well pack must prevent hydraulic communication between strata and prevent migration from overlying areas into the well screen interval. A minimum of two feet of bentonite (chips, pellets, or slurry) will be placed immediately above the filter pack. The bentonite seal will extend up to the base of any overlying confining zone or the top of the water-bearing zone to prevent cementitious grout from entering the water-bearing or screened zone. If dry bentonite is used, the bentonite must be hydrated with potable water prior to grouting the remaining annulus.

The annulus above the bentonite seal will be grouted with a cement and bentonite mixture (approximately 94 pounds cement / 3 to 5 pounds bentonite / 6.5 gallons of potable water) placed via tremie pipe from the top of the bentonite seal. During grouting, care will be taken to assure that the bentonite seal is not disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity.

PROTECTIVE CASING AND WELL COMPLETION

After allowing the grout to settle, the well will be finished by installing a flush-mount or above-ground protective casing as appropriate, and building a surface cap. The use of flush-mount wells will generally be limited to paved surfaces unless site operations warrant otherwise. The surface cap will extend from the

top of the cementitious grout to ground surface, where it will become a concrete apron or well pad extending outward with at least 1 foot from the edge of the well casing and sloped to drain water away from the well.

Each well will be fitted with a cap that contains a hole or opening to allow the pressure in the well to equalize with atmospheric pressure. In wells with above-ground protection, the space between the well casing and the protective casing will be filled with coarse sand or pea-gravel to within approximately 6 inches of the top of the well casing. A small weep hole will be drilled at the base of the metal casing for the drainage of moisture from the casing. Above ground protective covers will be locked.

Protective bollards will be installed around each above-grade groundwater monitoring well. Well construction in high traffic areas will generally be limited unless site conditions warrant otherwise.

The groundwater monitoring well detail attached in Appendix B, Groundwater Well Detail, illustrates the general design and construction details for a monitoring well.

WELL DEVELOPMENT

Well development will be conducted under the direction of a qualified groundwater scientist. After well construction is completed, wells will be developed by alternately purging and surging until relatively clear discharge water with little turbidity is observed. The goal will be to achieve a turbidity of less than 5 nephelometric turbidity units (NTUs); however, formation-specific conditions may not allow this target to be accomplished. Development can be discontinued once a turbidity of 10 NTU is achieved. Additionally, the stabilization criteria contained in Appendix C should be met. A variety of techniques may be used to develop site groundwater monitoring wells. The method used must create reversals or surges in flow to eliminate bridging by particles around the well screen. These reversals or surges can be created by using surge blocks, bailers, or pumps. The wells will be developed using a pump capable of inducing the stress necessary to achieve the development goals. All development equipment will be decontaminated prior to first use and between wells.

In low yielding wells, potable water may be added to the well to facilitate surging of the well screen interval and removal of fine-grained sediment. If water is added, the volume will be documented and at minimum, an equal volume purged from the well.

Many geologic formations contain clay and silt particles that are small enough to work their way through the wells' filter packs over time. Therefore, the turbidity of the groundwater from the monitoring wells may gradually increase over time after initial well development. As a result, the monitoring wells may have to be redeveloped periodically to remove the silt and clay that has worked its way into the filter pack of the monitoring wells. Each monitoring well should be redeveloped when sample turbidity values have significantly increased since initial development or since prior redevelopment. The redevelopment should be performed as described above. Well development data will be included in the well installation report.

4.3 Abandonment

Per Georgia Rule 391-3-4-.14 (10)(b), monitoring wells require abandonment and replacement after two consecutive dry sampling events, unless an alternate schedule is approved by the GA EPD. Monitoring wells will be abandoned using industry-accepted practices and using the *Manual for Groundwater*

Monitoring (1991) and Georgia Water Well Standards Act (1985) as guides. The wells will be abandoned under the direction of a qualified groundwater scientist. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole. Any piezometers or groundwater wells located within the footprint of the CCR unit will be over-drilled prior to abandonment.

4.4 Documentation

Within 60 days of the construction, survey, and development or abandonment of groundwater monitoring wells, a well installation report will be submitted to the Georgia EPD by a qualified groundwater scientist. The following information documenting the construction, development, and/or abandonment of each groundwater well will be included in the report

- Well identification
- Name of driller and identification of drill rig
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Council
- Dates of drilling and initial well emplacement
- Drilling method and drilling fluid used (if applicable)
- Borehole diameter and well casing diameter
- Well depth (±0.1 ft.)
- Well location (±0.5 ft.)
- Lithologic logs
- Well casing materials
- Screen materials and design (i.e. interval in feet below ground surface and elevation)
- Screen length
- Screen slot size
- Filter pack material/size and volume (placement narrative)
- Seal emplacement method and type/volume of sealant
- Surface emplacement method and type/volume of sealant
- Type of protective well cap and sump dimensions for each well
- Documentation of ground surface elevation (+0.01 ft.)

- Documentation of top of casing elevation (+0.01 ft.)
- Certification by Georgia-registered professional surveyor that the horizontal accuracy for the installed monitoring wells in 0.5 feet, and vertical accuracy for top of casing elevations to 0.01 feet using a known datum
- Well development date
- Well turbidity following development
- Narrative of well development method – specific well development procedures
- Schematic of the well with dimensions

5. GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

The following describes groundwater sampling requirements with respect to parameters for analysis, sampling frequency, sample preservation and shipment, and analytical methods. Groundwater samples used to provide compliance monitoring data will not be filtered prior to collection.

Table 1 Groundwater Monitoring Parameters & Frequency, presents the groundwater monitoring parameters and sampling frequency. Following additional well installation, a minimum of eight independent samples from each groundwater well will be collected and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for Appendix I/III will be at least semi-annual during the active life of the facility and the post-closure care period, as shown in Table 1. If required, Georgia Power will conduct assessment monitoring in accordance with the Georgia Rules for Solid Waste Management Chapter 391-3-4-.10 to also include 40 CFR, Subpart D Appendix II/IV test parameters, as shown in Table 1.

As shown on Table 2 Analytical Methods, the groundwater samples will be analyzed using methods specified in USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), American Society for Testing and Materials (ASTM), or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility and be less than regulatory standards. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP) and will also have a Stipulation Letter from the Georgia EPD accepting the laboratory's NELAP certification. Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

Table 1. GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

MONITORING PARAMETER		GROUNDWATER MONITORING	
		Background	Semi-Annual Events
Field Parameters	Temperature	X	X
	pH	X	X
	Oxidation Reduction Potential (ORP)	X	X
	Turbidity	X	X
	Specific Conductance	X	X
	Dissolved Oxygen	X	X
Appendix I/III (Detection test parameters from 40 CFR 257, Subpart D)	Boron	X	X
	Calcium	X	X
	Chloride	X	X
	Fluoride	X	X
	pH (field)	X	X
	Silver	X	X
	Sulfate	X	X
	Total Dissolved Solids	X	X
Appendix IV (Assessment test parameters from 40 CFR 257, Subpart D)	Antimony	X	Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4-.10(6).
	Arsenic	X	
	Barium	X	
	Beryllium	X	
	Cadmium	X	
	Chromium	X	
	Cobalt	X	
	Fluoride	X	
	Lead	X	
	Lithium	X	
	Mercury	X	
	Molybdenum	X	
	Selenium	X	
	Thallium	X	
	Radium 226 & 228	X	

Table 2. ANALYTICAL METHODS

Parameters	EPA Method Number
Boron	6010D/6020B
Calcium	6010D/6020B
Chloride	300.0/300.1/9250/9251/9253/9056A
Fluoride	300.0/300.1/9214/9056A
pH	150.1/field/90405C
Silver	6010D/6020B
Sulfate	9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	160.1/ Standard Method 2540C
Antimony	7040/7041/6010D/6020B
Arsenic	7060A/7061A/6010D/6020B
Barium	7080A/7081/6010D/6020B
Beryllium	7090/7091/6010D/6020B
Cadmium	7130/7131A/6020B
Chromium	7190/7191/6010D/6020B
Cobalt	7200/7201/6010D/6020B
Fluoride	300.0/300.1/9214/9056A
Lead	7420/7421/6010D/6020B
Lithium	6010D/6020B
Mercury	7470
Molybdenum	6010D/6020B
Selenium	7740/7741A/6010D/6020B
Thallium	7840/7841/6010D/6020B
Radium 226 and 228 combined	903/9320/9315

6. SAMPLE COLLECTION

During each sampling event, samples will be collected and handled in accordance with the procedures specified in Appendix C, Groundwater Sampling Procedures. Sampling procedures were developed using standard industry practice and USEPA Region 4 *Field Branches Quality System and Technical Procedures* as a guide. Low-flow sampling methodology will be utilized for sample collection. Alternative industry accepted sampling techniques may be used when appropriate with prior EPD approval.

Teflon™ lined, positive gas displacement PVC or stainless steel bladder pumps will be used for purging. If dedicated bladder pumps are not used, portable bladder pumps or peristaltic pumps (with dedicated or disposable tubing) may be used. When non-dedicated equipment is used, it will be decontaminated prior to use and between wells.

Per Georgia Rule 391-3-4-.14(10)(b) monitoring wells are required to be replaced after two consecutive dry sampling events, unless an alternate schedule has been approved by the Division. Well installation must be directed by a qualified groundwater scientist. A minor modification shall be submitted in accordance with Rule 391-3-4.02(b)(6) prior to installation or decommissioning of monitoring wells.

The applied groundwater purging and sampling methodologies will be discussed in the groundwater semiannual monitoring reports submitted to EPD.

7. CHAIN-OF-CUSTODY

All samples will be handled under chain-of-custody (COC) procedures beginning in the field. The COC record will contain the following information:

- Sample identification numbers
- Signature of collector
- Date and time of collection
- Sample type
- Sample point identification
- Number of sample containers
- Signature of person(s) involved in the chain of possession
- Date and time of transfer/possession by each individual

The samples will remain in the custody of assigned personnel, an assigned agent, or the laboratory. If the samples are transferred to other employees for delivery or transport, the sampler or possessor must relinquish possession and the samples must be received by the new owner.

If the samples are being shipped, a hard copy COC will be signed and enclosed within the shipping container.

Samplers will use COC forms provided by the analytical laboratory or use a COC form similarly formatted and containing the information listed above.

8. FIELD AND LABORATORY QUALITY ASSURANCE / QUALITY CONTROL

All field quality control samples will be prepared the same as compliance samples with regard to sample volume, containers, and preservation. The following quality control samples will be collected during each sampling event:

- Field Equipment Rinsate Blanks - Where sampling equipment is not new or dedicated, an equipment rinsate blank will be collected at a rate of one blank per 10 samples using non-dedicated equipment.
- Field Duplicates - Field duplicates are collected by filling additional containers at the same location, and the field duplicate is assigned a unique sample identification number. One blind field duplicate will be collected for every 20 samples.
- Field Blanks - Field blanks are collected in the field using the same water source that is used for decontamination. The water is poured directly into the supplied sample containers in the field and submitted to the laboratory for analysis of target constituents. One field blank will be collected for every 20 samples.

Calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument. Daily calibration will be documented on field forms and these field forms will be included in all groundwater monitoring reports. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and all check and recalibration steps will be documented on filed calibration forms. Calibration of the instruments will also be checked if any readings during sampling activities are suspect. Replacement probes and meters will be obtained as a corrective action in the event that recalibration does not improve instrument function. Calibration field forms will be provided with the semi-annual groundwater monitoring reports.

The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP).

9. REPORTING RESULTS

A semi-annual groundwater report that documents the results of sampling and analysis will be submitted to EPD, added to the site Operating Record, and posted to Georgia Power's CCR Website. Semi-annual groundwater monitoring reports will be submitted to the EPD within 90 days of receipt and analysis of the groundwater analytical data from the laboratory. At a minimum, semi-annual reports will include:

1. A narrative describing sampling activities and findings including a summary of the number of samples collected, and the dates the samples were collected.
2. A brief overview of purging/sampling methodologies.
3. Discussion of results.
4. Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered P.G. or P.E.
5. Table of as-built information for groundwater monitoring wells including top of casing elevations, ground elevations, screened elevations, current groundwater elevations and depth to water measurements.
6. Groundwater flow rate and direction calculations.
7. Identification of any groundwater wells that were installed or abandoned during the preceding year, along with a narrative description of why these actions were taken.
8. Laboratory Reports
9. COC documentation
10. Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data.
11. Field logs and forms for each sampling event to include, but not limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.
12. Documentation of non-functioning wells (i.e., dry wells).
13. Table of current analytical results for each well.
14. Certification by a qualified groundwater scientist.
15. A narrative describing whether the samples were required by the detection or assessment monitoring programs.

16. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels).

17. Recommendations for the future monitoring consistent with the Rules.

18. If applicable, semi-annual assessment monitoring results.

19. Any alternate source demonstration completed during the previous monitoring period, if applicable.

20. Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL).

21. Statistical analyses of Appendix III statistically significant increases (SSI) and Appendix IV statistically significant limits (SSL), including trend analyses of SSLs of Appendix IV constituents if the unit is currently undergoing assessment of corrective measures.

22. Plume delineation (if applicable based on exceedances of groundwater protection standards)

23. Updated potable water well survey (annually, if applicable based on exceedances of groundwater protection standards)

10. STATISTICAL ANALYSIS

Groundwater quality data from each sampling event will be statistically evaluated to determine if there has been a statistically significant change in groundwater chemistry. Historical background data will be used to determine statistical limits. Statistical analysis techniques are consistent with the USEPA document Statistical Analysis of Groundwater Data at RCTA Facilities Unified Guidance (Unified Guidance) (USEPA, 2009).

According to EPD Rule 391-3-4-.10(6)(a), the Site must specify in the operating record the statistical methods to be used in evaluating groundwater monitoring data for each identified constituent. The statistical test chosen shall be conducted separately for each constituent in each well. As authorized by the rule, statistical tests that will be used include:

1. A prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit. [§257.93(f)(3)].
2. A control chart approach that gives control limits for each constituent. [§257.93(f)(4)].
3. Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g) [§257.93(f)(5)]. A justification for an alternative method will be placed in the operating record and the Director notified of the use of an alternative test. The justification will demonstrate that the alternative method meets the performance standards of §257.93(g).

An interwell statistical method will be used to compare Appendix I/III groundwater monitoring data to background conditions. Confidence intervals will be constructed for each downgradient well and used to compare Appendix II/IV groundwater monitoring data to groundwater protection standards.

A site-specific statistical analysis plan that provides details regarding the statistical methods to be used will be placed in the site's operating record pursuant to 391-3-4-.10(6). Figure 1, Statistical Analysis Plan Overview, includes a flowchart that depicts the process that will be followed to develop the site-specific plan. Figure 2, Decision Logic for Computing Prediction Limits, presents the logic that will be used to calculate site-specific statistical limits and test compliance results against those limits.

Figure 1. Statistical Analysis Plan Overview

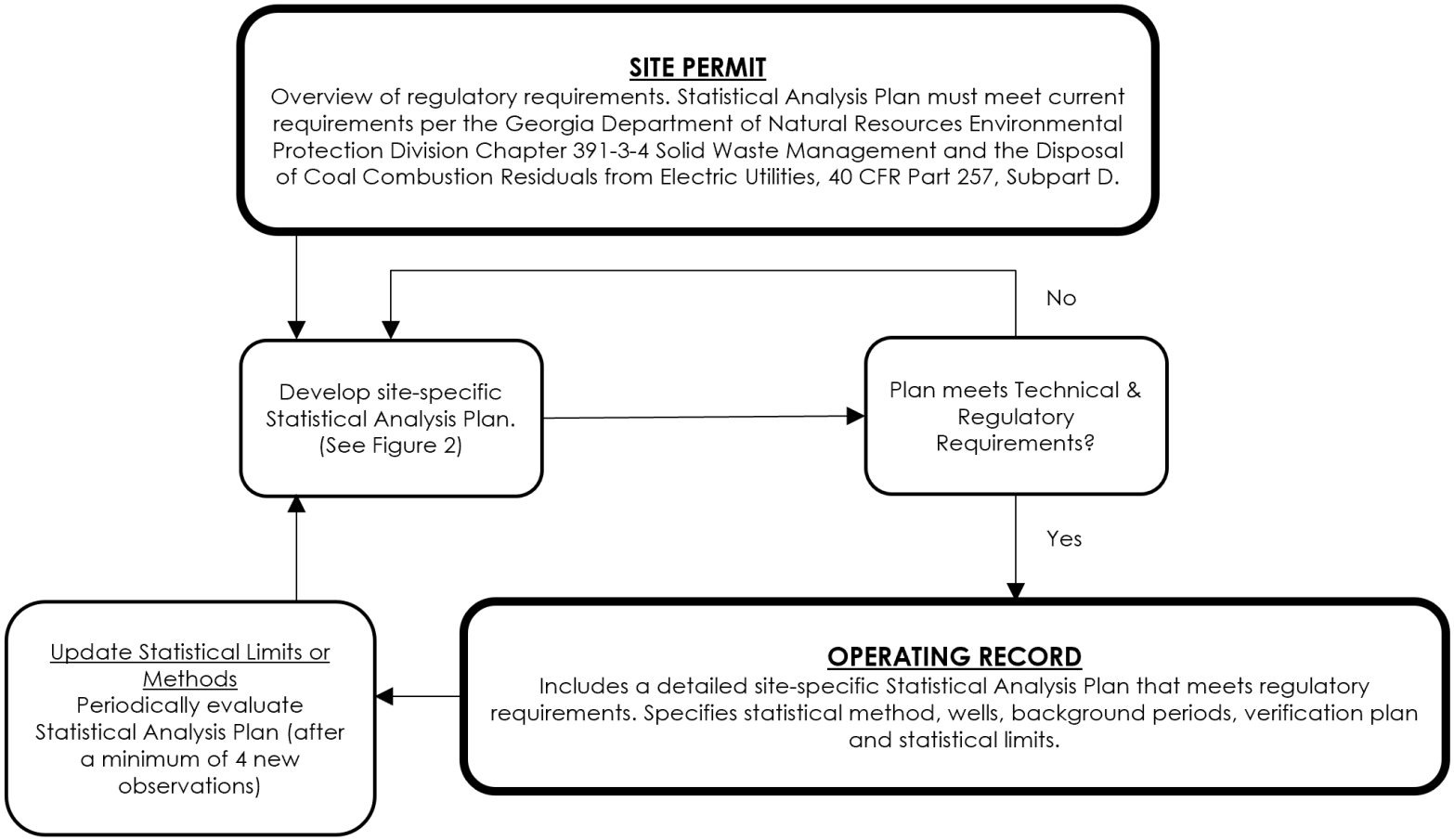
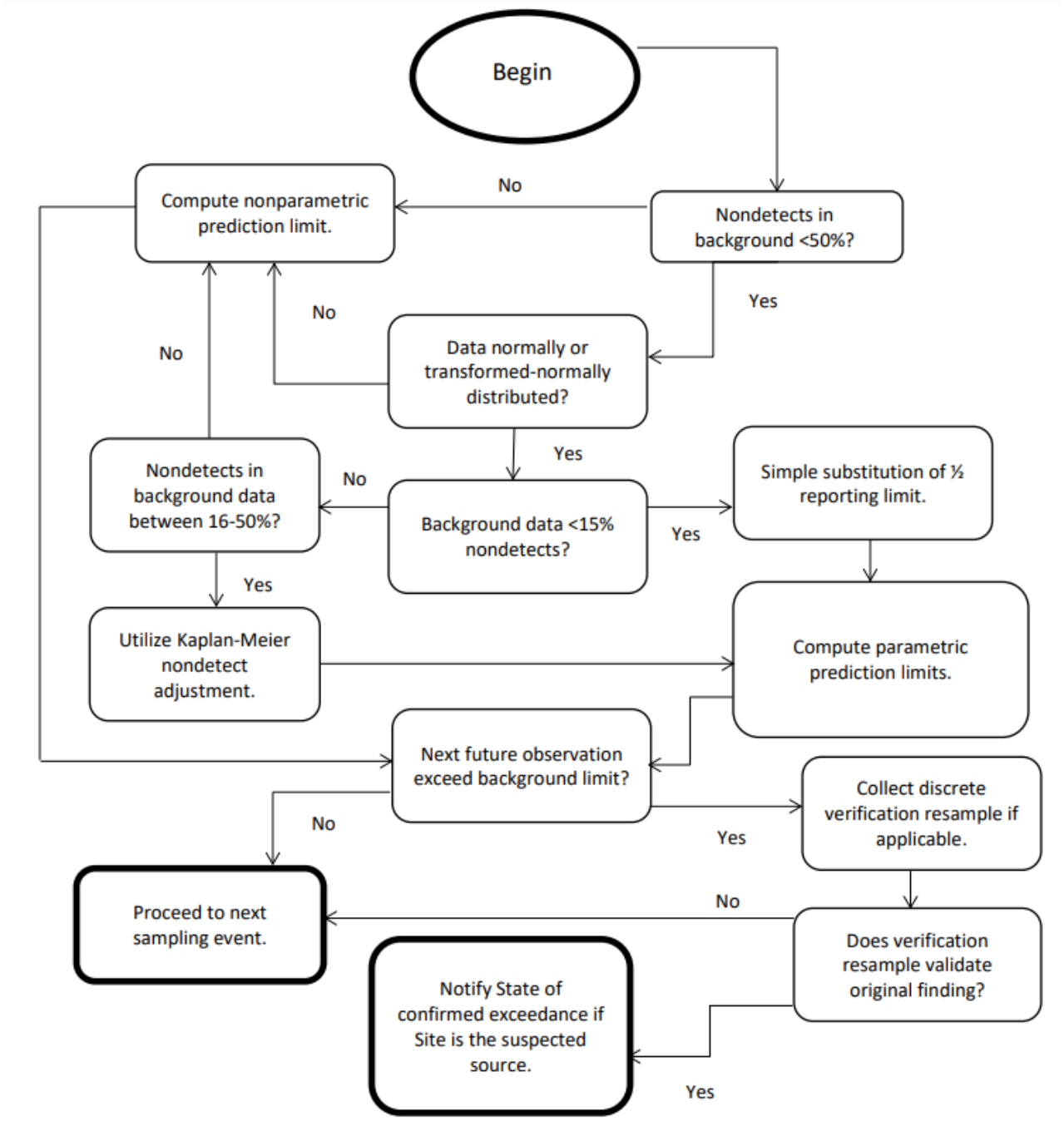


Figure 2. Decision Logic for Computing Prediction Intervals



11. REFERENCES

Freeze, R. A. and Cherry, JA. 1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey 604pp.

Georgia Environmental Protection Division (EPD), 1991. Manual for Ground Water Monitoring.

Georgia Rules and Regulations, 2018. Rule Subject 391-3-4, Solid Waste Management. Revised March 28, 2018.

United States Environmental Protection Agency (USEPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Resource Conservation and Recovery – Program Implementation and Information Division.

USEPA, Region 4 Science and Ecosystem Support Division (SESD), 2013. Operating Procedure for Design and Installation of Monitoring Wells. SESDGUID-101-R1.

USEPA, Region 4 Science and Ecosystem Support Division, 2013. Operating Procedure for Design and Installation of Monitoring Wells. SESDGUID-101-R1

USEPA, Region 4 Science and Ecosystem Support Division, 2015. Operating Procedure for Field Equipment Cleaning and Decontamination. SESDPROC-205- R3.

USEPA, Region 4 Science and Ecosystem Support Division, 2017. Operating Procedure for Groundwater Sampling. SESDPROC-304-R4.

USEPA, 2015. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System, Disposal of Coal Combustion Residuals from Electric Utilities, Final Rule.

USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20).

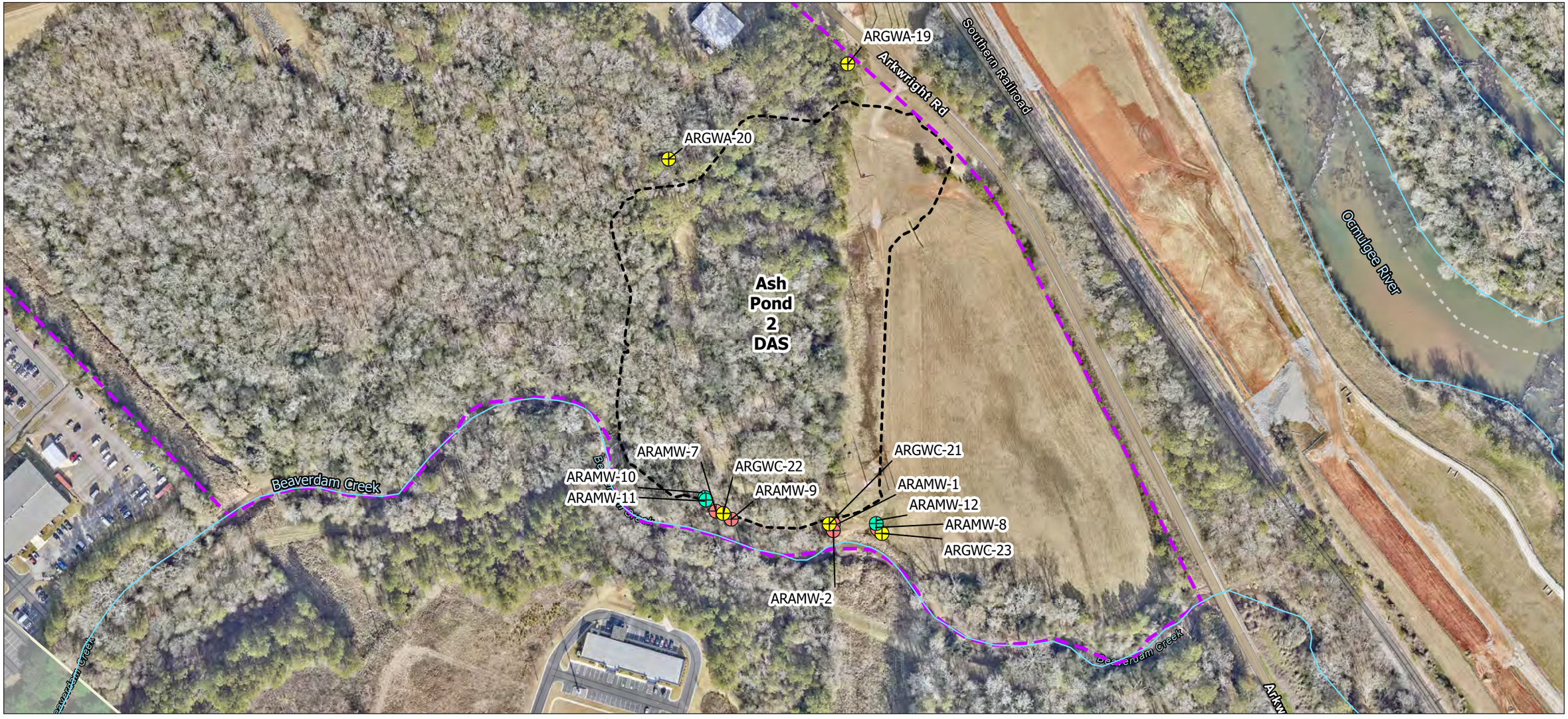
APPENDICES

A. MONITORING SYSTEM DETAILS

B. GROUNDWATER MONITORING WELL DETAILS

C. GROUNDWATER SAMPLING PROCEDURES

A. MONITORING SYSTEM DETAILS



Legend

- Detection Monitoring Well
- Assessment Monitoring Well
- Piezometer
- Beaverdam Creek/Ocmulgee River (Approximate)
- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)
- Limit of Client Imagery (dated 1/22/2024)

Piezometers ARAMW-10, ARAMW-11 and ARAMW-12 were installed in November 2024.

0 200 400 Feet

(At original document size of 11x17)
1:2,400

N

Stantec

Georgia Power

Project Location
Macon, Georgia

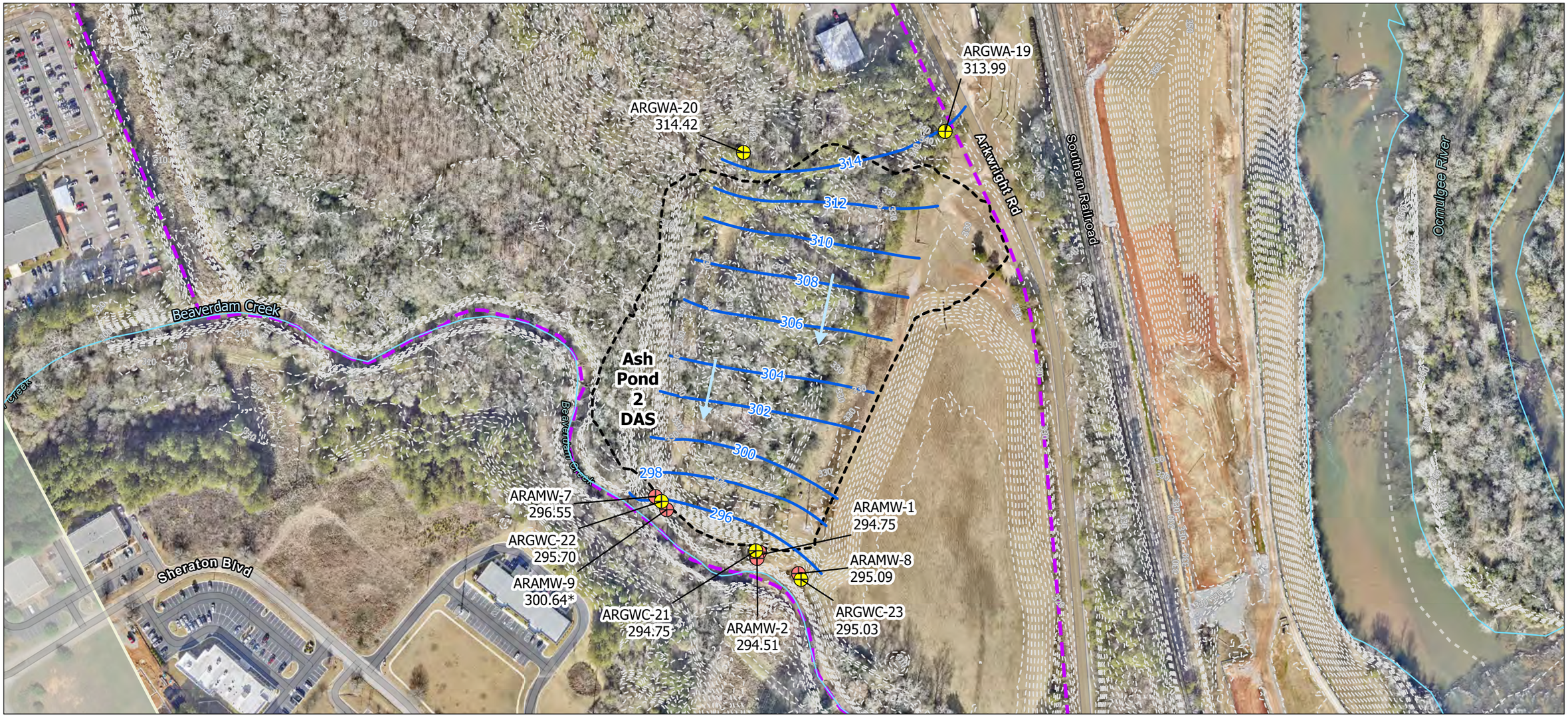
Prepared by DMB on 2/10/2025
TR by PD on 2/10/2025
IR by AW on 2/10/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
A.1

Title
Monitoring Well and Piezometer Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Ash Pond Boundaries, Monitoring Wells, Piezometers, Property Boundary, and Beaverdam Creek locations provided by Southern Company Services, Wood Environment & Infrastructure Solutions, and Stantec.
3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Plant imagery provided by client and is dated 1/22/2024.



Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet

2. Data Sources: Ash Pond Boundaries, Monitoring Wells, Property Boundary, Topography, and Beaverdam Creek provided by Southern Company Services and Wood Environment & Infrastructure Solutions; Contours, Flow Arrow, and Ocmulgee River provided by Stantec

3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Plant imagery provided by client and is dated 1/22/2024.

Legend

- Detection Monitoring Well
- Assessment Monitoring Well
- Interpreted Groundwater Flow Direction
- Potentiometric Surface Contour (feet (ft) NAVD88)
- Beaverdam Creek/Ocmulgee River (Approximate)
- Topographic Contour 2024 (2 ft interval)
- Approximate Property Boundary
- Ash Pond 2 Dry Ash Stockpile (DAS) (approximate location)
- Limit of Client Imagery (dated 1/22/2024)

294.75 Groundwater Elevation (ft NAVD88)
An "*" indicates groundwater elevation for ARAMW-9 was not used in contouring.
NAVD88 - North American Vertical Datum of 1988

KATIE T. ROSS
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1775

0 200 400 Feet
(At original document size of 11x17)
1:2,400

N

Stantec

Georgia Power

Project Location
Macon, Georgia

Prepared by DMB on 1/23/2025
TR by PD on 1/23/2025
IR by JK on 1/23/2025

Client/Project 175569434
Georgia Power
Hydrogeologic Assessment Report
Plant Arkwright Ash Pond 2 Dry Ash Stockpile

Figure No.
A.2

Title
Potentiometric Surface Contour Map
Ash Pond 2 DAS – August 19, 2024

TABLE A.1
AP-2 DAS MONITORING WELL AND PIEZOMETER CONSTRUCTION DETAILS
Hydrogeologic Assessment Report
AP-2 Dry Ash Stockpile
Georgia Power Company - Plant Arkwright
Macon, Georgia

Well/Piezometer	Installation Date	Northing [1] (feet)	Easting [1] (feet)	Top of Casing Elevation[2] (feet NAVD88)	Ground Surface Elevation[2] (feet NAVD88)	Top of Screen Elevation[2] (feet NAVD88)	Bottom of Screen Elevation[2] (feet NAVD88)	Screen Length (feet)	Groundwater Zone Screened	Hydraulic Position[3]	Horizontal Hydraulic Conductivity (K_h) Values [4] (cm/s)
Detection Monitoring Wells											
ARGWA-19	12/16/2008	1063774.45	2439488.71	343.30	339.86	300.18	290.18	10.0	Upper Bedrock	Upgradient	5.34E-03
ARGWA-20	12/4/2008	1063732.73	2439088.01	331.28	327.73	303.18	293.18	10.0	Overburden	Upgradient	2.84E-04
ARGWC-21	12/1/2008	1062941.24	2439112.52	309.15	305.97	291.7	281.7	10.0	Overburden	Downgradient	--
ARGWC-22	11/19/2019	1063039.36	2438925.04	309.95	307.01	292.01	282.01	10.0	Overburden	Downgradient	7.56E-04
ARGWC-23	11/20/2019	1062884.38	2439202.38	307.70	304.29	289.29	279.29	10.0	Overburden	Downgradient	8.32E-05
Assessment Monitoring Wells											
ARAMW-1	11/20/2019	1062938.38	2439120.01	308.51	305.07	271.07	261.07	10.0	Upper Bedrock	Downgradient	--
ARAMW-2	11/20/2019	1062925.96	2439114.97	308.27	305.12	293.12	283.12	10.0	Overburden	Downgradient	--
ARAMW-7[5]	11/14/2020	1063049.07	2438913.27	309.81	307.13	269.43	259.43	10.0	Partially Weathered Rock/ Upper Bedrock	Downgradient	3.79E-04
ARAMW-8[5]	11/13/2020	1062895.98	2439197.40	307.36	304.53	267.83	257.83	10.0	Upper Bedrock	Downgradient	9.86E-06
ARAMW-9[6]	10/7/2022	1063022.92	2438935.47	309.28	306.31	213.91	203.91	10.0	Bedrock	Downgradient	--
Piezometers											
ARAMW-10[7]	11/9/2024	1063082.33	2438902.85	308.49	308.39	260.89	250.89	10.0	Upper Bedrock	Downgradient	--
ARAMW-11[7]	11/10/2024	1063077.03	2438902.96	308.09	308.02	278.02	268.02	10.0	Overburden	Downgradient	--
ARAMW-12[7]	11/21/2024	1062906.98	2439199.15	309.08	305.80	255.90	240.90	15.0	Bedrock	Downgradient	--

Notes:

1. Unless otherwise noted, horizontal locations referenced to Georgia State Plane West, North American Datum (NAD) of 1983. Location coordinates were updated following a Donaldson & Garrett Associates survey on June 26, 2020.
2. Vertical elevations are feet referenced to North American Vertical Datum of 1988 (NAVD88). Unless othwise noted, elevations were updated following a Donaldson & Garrett Associates survey on June 26, 2020.
3. Hydraulic gradient position relative to AP-2 DAS.
4. Average value of rising and falling head slug test values at well location reported in *Semi-Annual Remedy Selection and Design Progress Report, Georgia Power Company – Plant Arkwright Ash Pond 2 Dry Ash Stockpile, Macon, Georgia, (Jacobs, July 30, 2021)* .
5. ARAMW-7 and ARAMW-8 were surveyed by Donaldson & Garrett Associates and certified on December 18, 2020.
6. ARAMW-9 was surveyed and certified by Metro Engineering & Surveying Co., Inc. on November 22, 2022.
7. ARAMW-10, ARAMW-11, and ARAMW-12 were surveyed and certified on December 9, 2024, by Southern Company Services.

TABLE A.2
GROUNDWATER FLOW VELOCITY CALCULATIONS
Hydrogeologic Assessment Report
Ash Pond 2 Dry Ash Stockpile
Georgia Power Company - Plant Arkwright
Macon, Georgia

Potentiometric Map Date	Location	Groundwater Elevations in Well Pairs (h_1, h_2)		Change in Groundwater Elevation (dh)	Distance Measured (dl)	Hydraulic Gradient (i)	Average Hydraulic Conductivity[1][2] (K)		Effective Porosity[3] (n_e)	Calculated Groundwater Flow Velocity (V)	
		h_1 (feet)	h_2 (feet)	(feet)	(feet)	(feet/foot)	(cm/sec)	(feet/day)	-	(feet/day)	(feet/year)
August 19, 2024	ARGWA-20 to ARGWC-21	314.42	294.75	19.67	792	0.025	2.61E-04	0.74	0.20	0.092	**34**
	ARGWA-19 to ARAMW-1	313.99	294.75	19.24	907	0.021	2.72E-04	0.77	0.20	0.082	**30**

Notes:

1. Hydraulic conductivity (K) for the ARGWA-20 to ARGWC-21 well pair is the geometric mean K value determined via slug testing at three AP-2 DAS Uppermost Aquifer monitoring well locations screened in the.overburden. Refer to Table 1 for applied K values.

2. Hydraulic conductivity (K) for the ARGWA-19 to ARAMW-1 well pair is the geometric mean value determined via slug testing completed at three AP-2 DAS Uppermost Aquifer monitoring well locations screened in the upper bedrock. Refer to Table 1 for applied K values.

3. An estimated Effective porosity of 0.20 was selected for the silty sand to sandy silt gradation of the overburden based on a review of several sources, including Driscoll, 1986; US EPA, 1989; Freeze and Cherry, 1979.

B. GROUNDWATER MONITORING WELL DETAILS

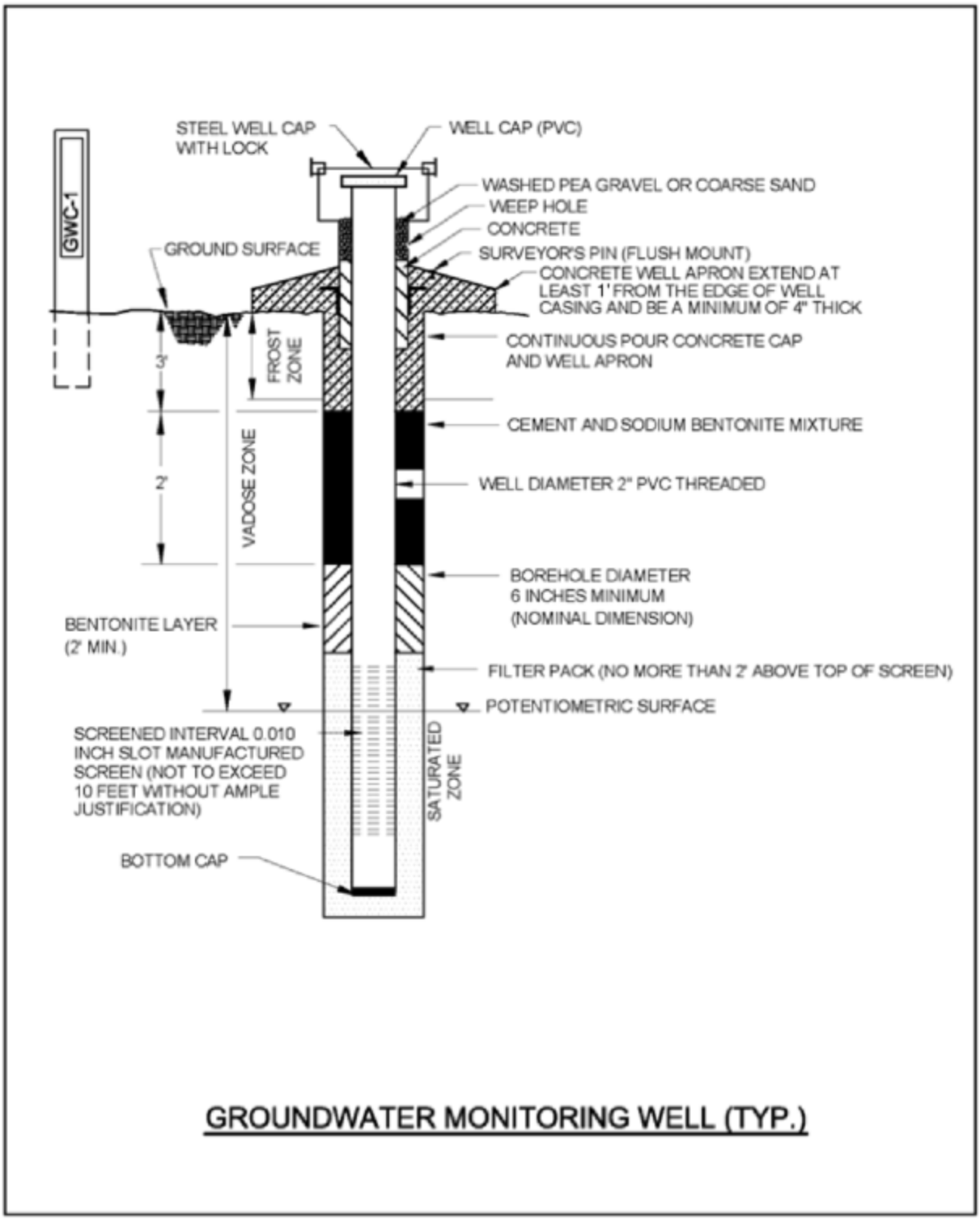


Figure B1. Typical Groundwater Monitoring Well – Stick Up

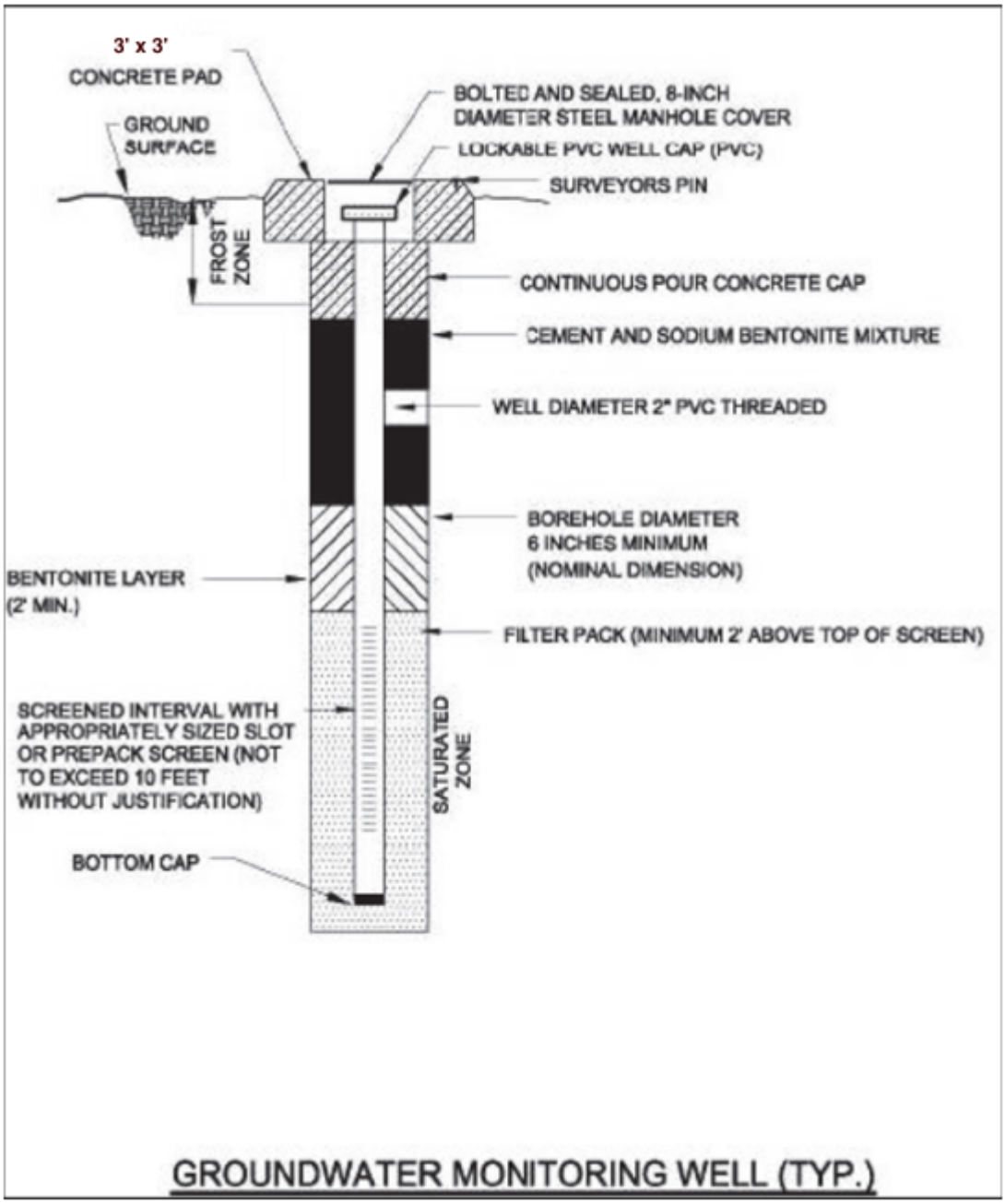


Figure B2. Typical Groundwater Monitoring Well – Flush Mount

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-19
Sheet 1 of 2

SITE: Former Plant Arkwright | HOLE DEPTH: 49.7 | SURF.ELEV.: 340.65
LOCATION: Solid Waste Management Area | COORDINATES N: 1063774.217 | E: 2439487.88
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA/HQ Rock core with water | NO. SAMPLES: 6 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 28.1 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/5/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/16/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	340.65								
1	339.65								
2	338.65								
3	337.65								
4	336.65								
5	335.65	Yellow brown sandy SILT	1	4.5-6	5-5-5	10			
6	334.65								
7	333.65								
8	332.65								
9	331.65								
10	330.65	Same as above	2	9.5-11	5-5-5	10			
11	329.65								
12	328.65								
13	327.65								
14	326.65								
15	325.65	Same as above	3	14.5-16	5-7-9	14			
16	324.65								
17	323.65								
18	322.65								
19	321.65								
20	320.65	Same as above	4	19.5-21	6-9-11	20			
21	319.65								
22	318.65								
23	317.65								
24	316.65								

Form GS9901 8-19-2008

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-19
Sheet 2 of 2

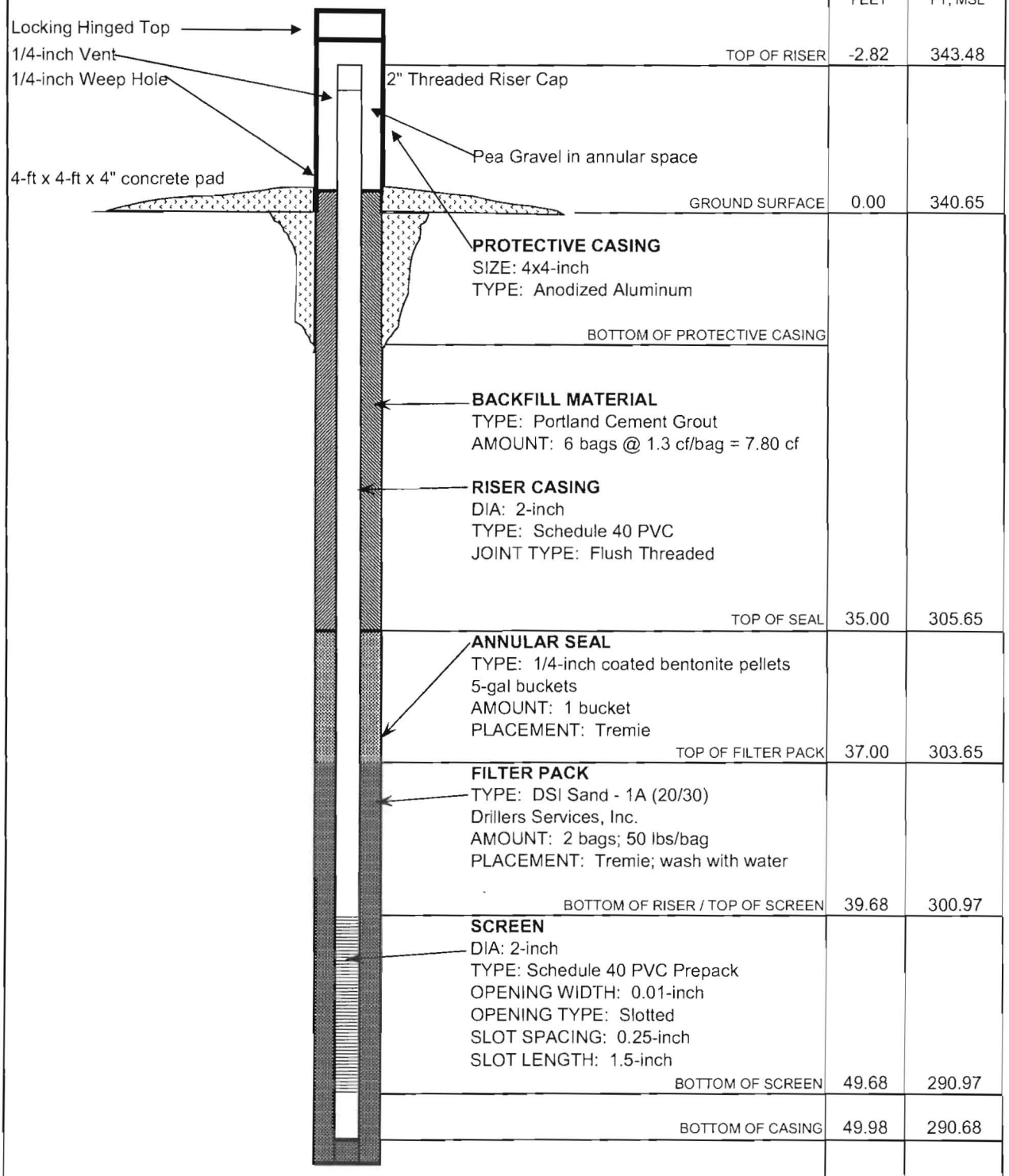
SITE **Former Plant Arkwright** TOTAL DEPTH **49.7** SURF.ELEV. 340.6522

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	315.65	Yellow and brown silty SAND, medium to fine grained	5	24.5-26	16-50/2	R			
26	314.65								
27	313.65								
28	312.65								
29	311.65								
30	310.65	Same as above	6	29.5-31	50/4	R			
31	309.65								
32	308.65								
33	307.65	Auger refusal 32.8'							
34	306.65	Biotite gneiss, highly weathered, heavily fractured, heavy weathering on fracture faces		33-34.7				100	
35	305.65								
36	304.65	Same as above with less weathering		34.7-39.7				96	
37	303.65								
38	302.65								
39	301.65								
40	300.65								
41	299.65	Biotite gneiss, unweathered to slightly weathered, moderately to heavily fractured, with slight to moderatly weathered fracture faces		39.7-44.7				84	
42	298.65								
43	297.65								
44	296.65								
45	295.65								
46	294.65	Same as above		44.7-49.7				76	
47	293.65								
48	292.65								
49	291.65								
50	290.65	49.7' - Bottom of boring							
51	289.65								
52	288.65								
53	287.65								
54	286.65								
55	285.65								
56	284.65								

Form GS9901 8-19-2008

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA, HQ Rock Core	GWA-19
DATE CONSTRUCTED: 12/16/2008		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.82	343.48
GROUND SURFACE	0.00	340.65
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	35.00	305.65
TOP OF FILTER PACK	37.00	303.65
BOTTOM OF RISER / TOP OF SCREEN	39.68	300.97
BOTTOM OF SCREEN	49.68	290.97
BOTTOM OF CASING	49.98	290.68

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-20
Sheet 1 of 2

SITE: Former Plant Arkwright | HOLE DEPTH: 36 | SURF.ELEV.: 328.63
LOCATION: Solid Waste Management Area | COORDINATES N: 1063732.851 | E: 2439088.116
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 7 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 15 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/4/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/4/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	328.63								
1	327.63								
2	326.63								
3	325.63								
4	324.63								
5	323.63	Reddish brown sandy SILT, with clay	1	4.5-6	3-3-3	6			
6	322.63								
7	321.63								
8	320.63								
9	319.63								
10	318.63	Same as above	2	9.5-11	3-4-5	9			
11	317.63								
12	316.63								
13	315.63								
14	314.63								
15	313.63	Grayish yellow clayey SILT, with sand	3	14.5-16	3-6-8	14			
16	312.63								
17	311.63								
18	310.63								
19	309.63								
20	308.63	Dark yellow brown silty SAND, fine to medium grained, micaceous	4	19.5-21	6-4-5	9			
21	307.63								
22	306.63								
23	305.63								
24	304.63								

Form GS9901 8-19-2008

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-20
Sheet 2 of 2

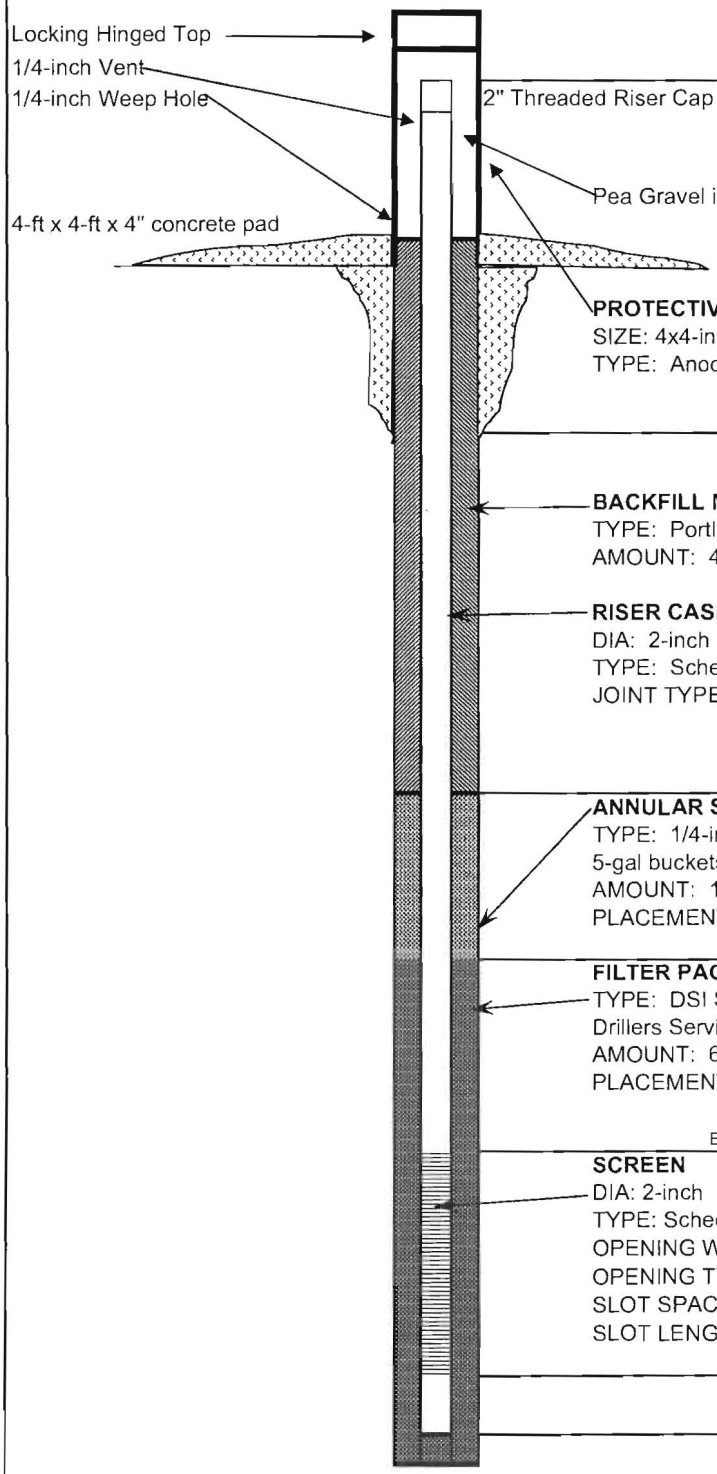
SITE **Former Plant Arkwright** TOTAL DEPTH **36** SURF.ELEV. 328.63308

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	303.63	Tan silty SAND, fine to coarse grained	5	24.5-26	6-8-9	17			
26	302.63								
27	301.63								
28	300.63								
29	299.63								
30	298.63	Dark yellow and brown sandy SILT, micaceous	6	29.5-31	4-4-12	16			
31	297.63								
32	296.63								
33	295.63								
34	294.63								
35	293.63	Dark gray and yellow silty SAND, fine to medium grained, micaceous	7	34.5-36	14-25-26	51			
36	292.63								
37	291.63	36' - bottom of boring							
38	290.63								
39	289.63								
40	288.63								
41	287.63								
42	286.63								
43	285.63								
44	284.63								
45	283.63								
46	282.63								
47	281.63								
48	280.63								
49	279.63								
50	278.63								
51	277.63								
52	276.63								
53	275.63								
54	274.63								
55	273.63								
56	272.63								

Form GS9901 8-19-2008

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA	GWA-20
DATE CONSTRUCTED: 12/4/2008		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.85	331.48
GROUND SURFACE	0.00	328.63
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	19.00	309.63
TOP OF FILTER PACK	22.50	306.13
BOTTOM OF RISER / TOP OF SCREEN	24.55	304.08
BOTTOM OF SCREEN	34.55	294.08
BOTTOM OF CASING	34.85	293.78

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21
Sheet 1 of 1

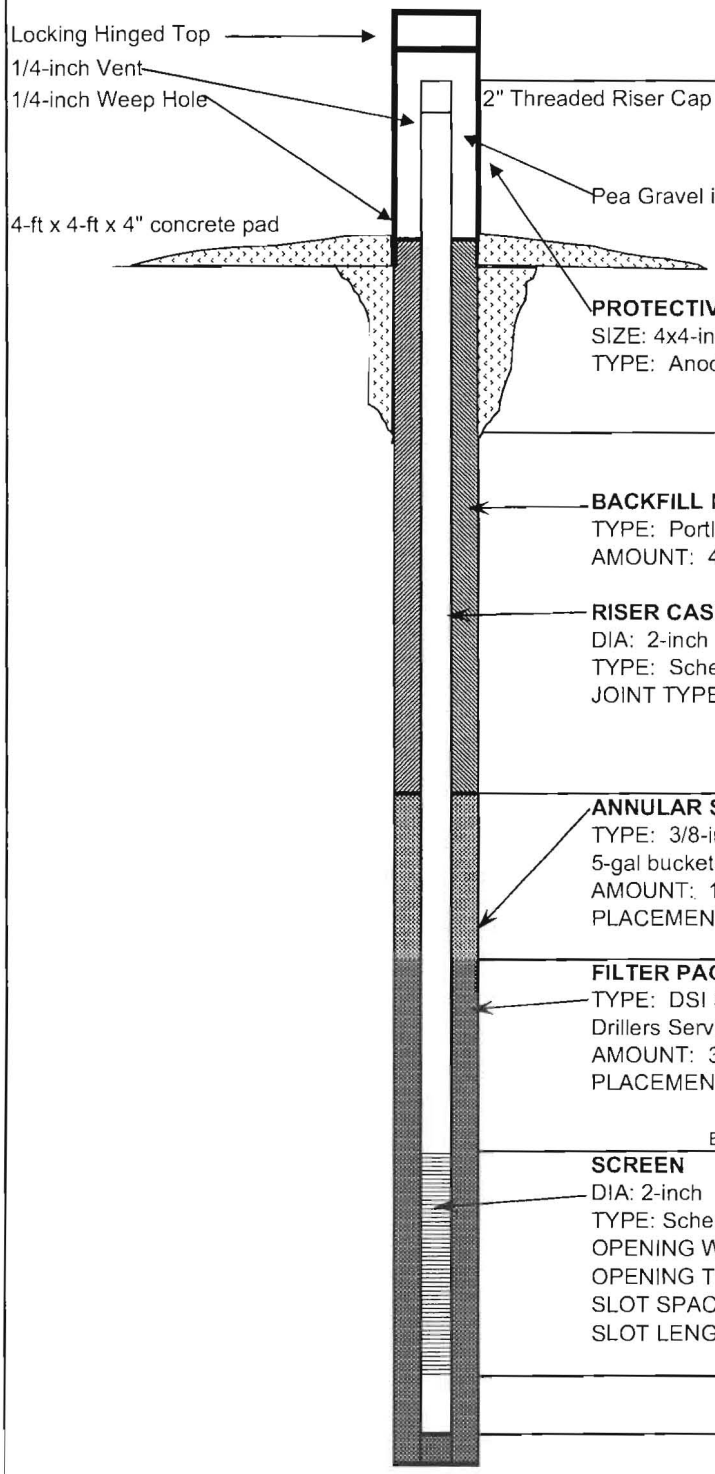
SITE: Former Plant Arkwright | HOLE DEPTH: 24 | SURF.ELEV.: 306.68
LOCATION: Solid Waste Management Area | COORDINATES N: 1062940.974 | E: 2439112.393
ANGLE: | BEARING: | CONTRACTOR: SCS, Inc. | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 4 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 10.5 | ELEV.: | TIME AFTER COMP.: | DATE TAKEN: 12/18/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 12/1/2008
DRILLER: S. Milam | RECORDER: L. Garland | APPROVED: | DRILLING COMP. DATE: 12/1/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	306.68								
1	305.68								
2	304.68								
3	303.68								
4	302.68								
5	301.68	Dark reddish brown silty SAND, fine grained	1	4.5-6	6-5-6	11			
6	300.68								
7	299.68								
8	298.68								
9	297.68								
10	296.68	Brown sandy SILT, with gray mottling and organics	2	9.5-11	1-2-2	4			
11	295.68								
12	294.68								
13	293.68								
14	292.68								
15	291.68	Gray sandy GRAVEL, with some silt and organics to medium grained sand	3	14.5-16	2-4-9	13			
16	290.68								
17	289.68								
18	288.68								
19	287.68								
20	286.68	Dark yellow and gray silty SAND, coarse to fine grained, with gravel, decomposed rock	4	19.5-21	21-50/4	R			
21	285.68								
22	284.68								
23	283.68								
24	282.68	24' - Bottom of boring							

Form GS9901 8-19-2008

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Former Plant Arkwright	DRILLING CO.: SCS, Inc.	WELL NAME
Solid Waste Management Unit	DRILLER: S. Milam	
LOCATION: Ash Ponds 1, 2, 3	RIG TYPE: CME 550	
LOGGER: L. Garland	DRILLING METHODS: HSA	GWC-21
DATE CONSTRUCTED: 12/2/2008		



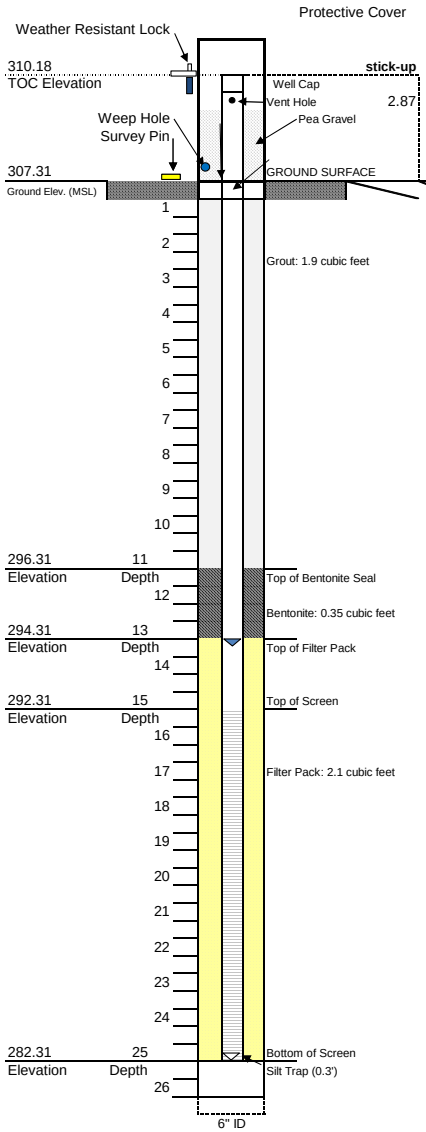
	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	-2.71	309.40
GROUND SURFACE	0.00	306.68
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	9.60	297.08
TOP OF FILTER PACK	12.00	294.68
BOTTOM OF RISER / TOP OF SCREEN	14.27	292.41
BOTTOM OF SCREEN	24.27	282.41
BOTTOM OF CASING	24.57	282.12

ATLANTIC COAST CONSULTING, INC.

ARGWC-22

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.78 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	19-Nov-2019	**DRILLER:**	Jaime Everson
DATE COMPLETE:	19-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	13.03' BTOC		



Northing: 1063038.395
Easting: 2438925.733

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-10' Red silty clay (CL). Micaceous. Slight plasticity. Color change to a light brown/gray color at 7.0' BGS. Hand augered

10-15' Dark gray silty clay (CL). Wet at ~10' bgs. High plasticity. Micaceous

15-20' Dark gray silty sand (SC). Very coarse. Wet. Color change to a brown silty sand at ~17'. Sand grains remain course and wet. High plasticity

20-25' Brown silty sand (SC) with some gravel pieces. Change to gray coarse sand at ~22'. Wet. High plasticity.

Total well depth 25.0' BGS

Core Photos

MATERIALS:

GROUT:		Bentonite Grout
MANUFACTURER:		AquaGuard
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		Pel-Plug
FILTER PACK SAND:		20/30 Mesh
MANUFACTURER:		Standard Sand & Silica
WELL SCREEN:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

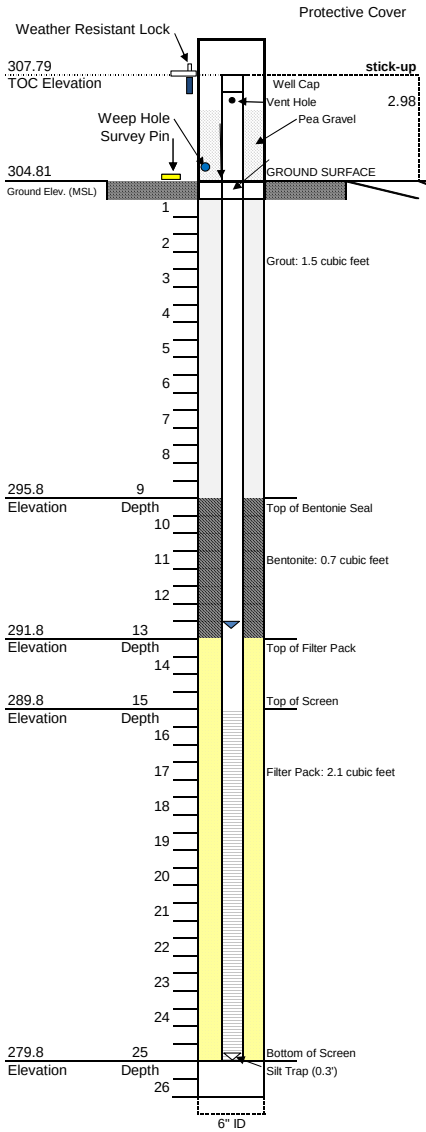
EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

ATLANTIC COAST CONSULTING, INC.

ARGWC-23

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	27.21 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	10.95' BGS		
WATER AFTER 48 HOURS:	12.51' BTOC		



Northing: 1062885.484
Easting: 2439201.881

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-9' Red silty clay (CL). Slight plasticity. Color change to a light brown at ~7.0 bgs. Hand augered

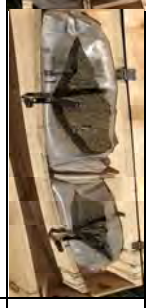
9-14' Light brown silty sand (SC). Micaceous. Dry. Progression to a darker brown silty sand at ~11' bgs. Moist after this point.

14-19' Dark brown/gold colored silty sand (SC). Moist. Mottled white and black.

19-25' Brown/gray silty sand (SC) with some gravel pieces. Moist. Progresses to a coarse gray sand at ~22. bgs. Very wet.

Total well depth 25.0' BGS

Core Photos



MATERIALS:

GROUT:		Bentonite Grout
MANUFACTURER:		AquaGuard
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		Pel-Plug
FILTER PACK SAND:		20/30 Mesh
MANUFACTURER:		Standard Sand & Silica
WELL SCREEN:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

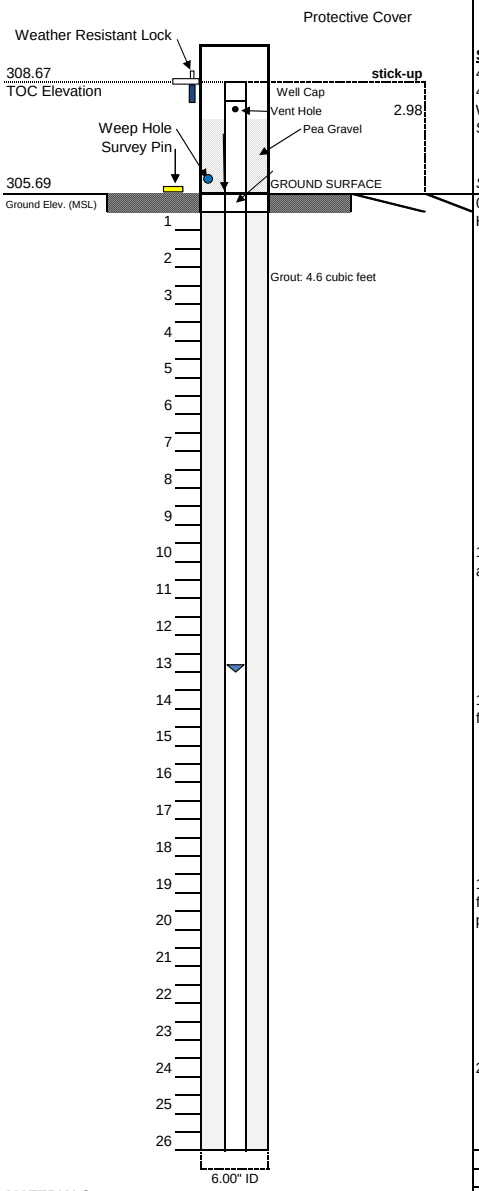
EVAN B. PERRY
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1744

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



Northing: 1062937.141
Easting: 2439119.673

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-10' Red silty clay (CL). Micaceous. Color change to light brown. Hang augered

10-14' No recovery when driller switched to rock coring techniques at 14' bgs

14-19' Rock. Gneiss with high quartz content. Iron staining and light fracturing evident from 14-17'. Harder rock from 17-19'

19-24' Extremely fractured section. Mottled dark brown moist silty sand from 19-20'. Return to gneiss found above at 20'. Extremely large core pieces. No fracturing or iron staining.

24-29' As above.

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Standard Sand & Silica
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

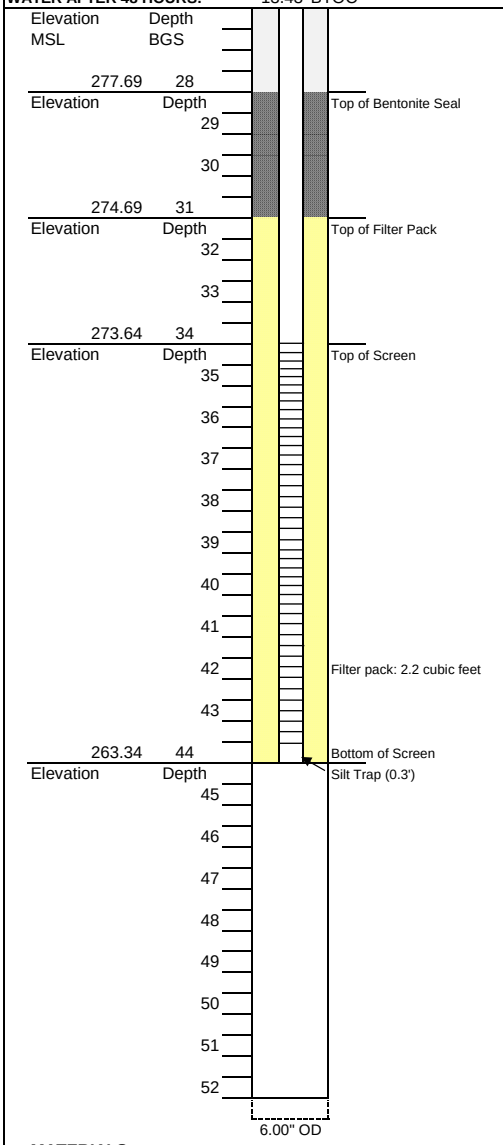
BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

ARAMW-1

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	45.33 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	14' BGS		
WATER AFTER 48 HOURS:	13.43' BTOC		



29-34' As above. Some fracturing and iron staining present. Layer of mottled gold and black sand, moist, from 32-34'

34-39' Hard gneiss. No fracturing or iron staining. Large pieces.

39-44' As above. Some fracturing and iron staining ~44'. Limited recovery

Total well depth 44.0' BGS

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Silver-Line

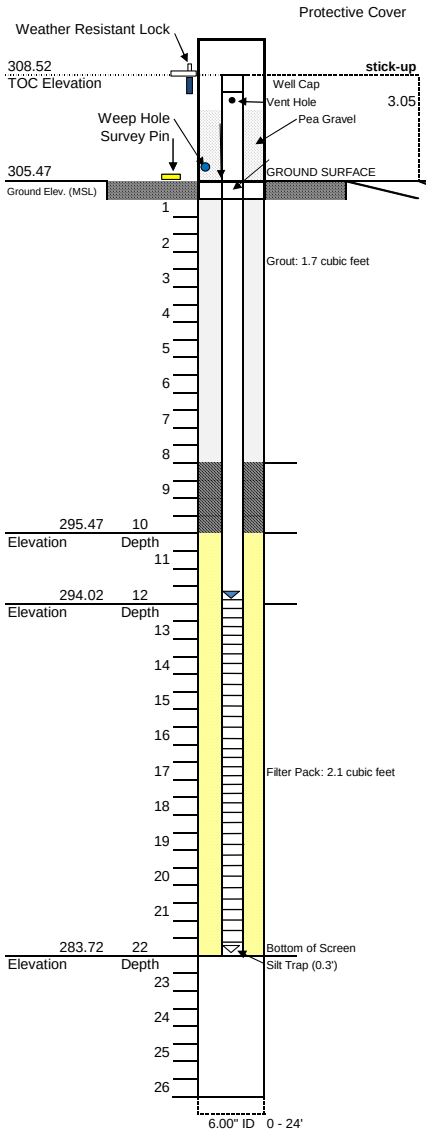
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

ARAMW-2

BORING ID

PROJECT:	Plant Arkwright	**PROJECT NO.:**	I054-110
TOTAL DEPTH:	24.80 ft. BTOC	**SITE LOCATION:**	Macon, Georgia
DATE BEGIN:	20-Nov-2019	**DRILLER:**	Isaac Young
DATE COMPLETE:	20-Nov-2019	**RIG TYPE:**	T-300 Rotosonic
INSTALLED BY:	Cascade	**METHOD:**	Rotosonic
SUPERVISED BY:	Taylor Goble		
WATER 1ST ENCOUNTERED:	12.0' BGS		
WATER AFTER 48 HOURS:	13.49' BTOC		



Northing: 1062926.908
Easting: 2439115.223

SURFACE COMPLETION:
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

SOIL DESCRIPTION

0-9' Red silty clay (CL). Micaceous. Color change to light brown. Hand augered.

9-15' Gray silty sand (SC). Dry. Becomes wet around 12'. Changes in color to a red brown coarse sand (S) around 13.5'.

15-22' Continue gray coarse sand (S). Moist. Transitions into a dry and gravelly brown sand at 19'. Bigger gravel pieces and rock pieces apparent from 19-22' (SG).

Total well depth 22.0' BGS

Core Photos

MATERIALS:

GROUT:	Bentonite Grout
MANUFACTURER:	AquaGuard
BENTONITE SEAL:	3/8" Bentonite Pellets
MANUFACTURER:	Pel-Plug
FILTER PACK SAND:	20/30 Mesh
MANUFACTURER:	Filter Media
WELL SCREEN:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex
SLOT SIZE:	0.010-Inch Slot
WELL CASING:	Sch. 40 - 2" PVC
MANUFACTURER:	Campbell Monoflex

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

wood.

BORING ARAMW-7

CLIENT Georgia Power
PROJECT NAME Plant Arkwright
PROJECT NUMBER 6122201429
PROJECT LOCATION Bibb County, Georgia
DATE STARTED 11/14/20 **COMPLETED** 11/14/20
GROUND ELEVATION 307.13 ft **HOLE SIZE** 6-in
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Sonic
AT TIME OF DRILLING ---
LOGGED BY KN **CHECKED BY** NJM
AT END OF DRILLING ---
COORDINATES N:1063049.07, E: 2438913.27
AFTER DRILLING 12.81ft (11/18/2020)

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						Casing Top Elev: 309.81 (ft) Casing Type: 2 in SCH 40 PVC
					-SILTY SAND (SM), reddish brown, loose, moist, with some clay.	
10					10.0 / 297.1	
					-POORLY GRADED GRAVELLY SAND (SG), gray, loose, moist, with organics.	
					13.5 / 293.6	
15					-SAND (SP), gray-brown, medium dense, moist, with some silt and clay.	
					15.5 / 291.6	Grout
					16.5 / 290.6 -CLAYEY SAND (SC), gray-brown, dense with some silt and trace cobbles.	
20					-SILTY SAND (SM), yellow-brown to brown, medium dense, saprolitic, wet, with plagioclase/quartz rich areas.	2 in SCH 40 PVC
25						
30					(Same as above) small schist fragments.	
					32.0 / 275.1	Top of Bentonite Seal 276.1
					-PARTIALLY WEATHERED GNEISS, brown-gray, highly fractured.	Bentonite seal
35						Top of Filter Pack 272.6
						Top of Screen 269.3
40					-GNEISS, competent with some fractures.	Gravel Pack #1-Southern Product and Silica Co.
						10 feet of 0.01-inch slotted 2" OD PVC (SCH 40)
45						Bottom of Screen 259.3
					48.0 (Same as above) weathered. 259.1	Sump and cap (0.3 ft)

Boring terminated at 48 feet.

wood.

BORING ARAMW-8

CLIENT Georgia Power
PROJECT NAME Plant Arkwright
PROJECT NUMBER 6122201429
PROJECT LOCATION Bibb County, Georgia
DATE STARTED 11/13/20 **COMPLETED** 11/13/20
GROUND ELEVATION 304.53 ft **HOLE SIZE** 6-in
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Sonic
AT TIME OF DRILLING ---
LOGGED BY KN **CHECKED BY** NJM
AT END OF DRILLING ---
COORDINATES N:1062895.98, E: 2439197.40
AFTER DRILLING 11.97ft (11/17/2020)

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						Casing Top Elev: 307.36 (ft) Casing Type: 2 in SCH 40 PVC
					-CLAYEY SAND (SC), brownish orange, loose to medium dense, moist	
12.5					292.0	
					-SILTY SAND (SM), grayish brown, saprolitic, medium dense, wet, with quartz and plagioclase grain rich areas.	Grout
						2 in SCH 40 PVC
					trace clay and mica.	
					(Same as above) poor recovery from 30-35 feet, saprolite and PWR.	Top of Bentonite Seal 273.5
						Bentonite seal
35.0					269.5	Top of Filter Pack 270.5
					-GNEISS, fractured, slightly weathered.	Top of Screen 268.1
						Gravel Pack #1-Southern Product and Silica Co.
					micaceous seam.	10 feet of 0.01-inch slotted 2" OD PVC (SCH 40)
						Bottom of Screen 258.1
47.0					257.5	Sump and cap (0.3 ft)

Boring terminated at 47 feet.

SUBSURFACE LOG

Client Borehole ID	ARAMW-9	Stantec Boring No.	**ARAMW-9**
Client	Georgia Power Company	Boring Location	1,063,022.92 N; 2,438,935.47 E
Project Number	175569434	Surface Elevation	306.31 ft
		Elevation Datum	NAVD88
Project Name	AP-2 ARAMW-9 Installation	Date Started	10/4/22
		Completed	10/7/22
Project Location	Bibb Co, Macon, Georgia	Depth to Water	43.3 ft
		Date/Time	10/11/22
Inspector	B. Steele, PG	Logger	J. Bankston
Depth to Water	24.6 ft	Date/Time	10/20/22
Drilling Contractor	Cascade Drilling / C. Franklin	Drill Rig Type and ID	TSI 150 CC Sonic
Overburden Drilling and Sampling Tools (Type and Size)	4" x 6" Rotosonic		
Sampler Hammer Type	N/A	Weight	N/A
Drop	N/A	Efficiency	N/A
Reviewed By	B. Steele, PG	Approved By	E. Smith, PG

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	306.3	Top of Hole						
0.1	306.2	Topsoil						
		SILTY SAND WITH CLAY, fine to medium, non-plastic, loose, dry to moist, Reddish-brown		RS01	0.0 - 10.0	3.2	N/A	
13.3	293.0	SANDY POORLY GRADED GRAVEL, medium to coarse, non-plastic, loose, moist, Gray		RS02	10.0 - 20.0	7.4	N/A	
16.5	289.8	SILTY SAND, non-plastic, loose, moist, Yellow brown to brown						
20.0	286.3							

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
20		SILTY SAND WITH CLAY, very fine to medium, non-plastic, medium dense to loose, moist, no staining, Blocky, Red brown to brown						
25				RS03	20.0 - 30.0	10.0	N/A	
30.0	276.3	WELL GRADED SAND, coarse, non-plastic, loose, wet, Light brown to dark gray						
35.0	271.3	GRAVELLY POORLY GRADED SAND WITH CLAY, very fine to coarse, non to low plasticity, medium dense, wet, Gray-brown		RS04	30.0 - 40.0	6.3	N/A	ARAMW-9 30.0 - 40.0 collected for treatability analysis
38.5	267.8	SANDY WELL GRADED GRAVEL WITH SILT, fine to coarse, non-plastic, loose, Dark brown						
40								
41.0	265.3	Gneiss, white to black, medium crystalline to finely crystalline, very hard, dry, biotite, plagioclase, quartz, Quartz cemented fracture present at 41.5'						ARAMW-9 41.0 - 43.0 collected for geochemical and treatability analysis

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
45		Gneiss, white to black, medium crystalline to finely crystalline, very hard, dry, biotite, plagioclase, quartz, Quartz cemented fracture present at 41.5' *(Continued)*		RS05	40.0 - 50.0	3.6	N/A	
		Minor iron oxide discoloration 47.4' remainder of run competent						
50		Fractures present at 51.2-51.9 and 55-56.1 feet (no weathering discoloration present)						
55				RS06	50.0 - 60.0	9.2	N/A	
		Higher plagioclase and quartz content, trace muscovite from 57.7 to 58.4 feet						
60								
		Highly fractured from 62.0 to 65.0 feet. Weathering discoloration suggests water-bearing fractures in this zone. Fractures appear to be hydraulically connected to fractures present in screened interval of ARAWM-7.						
65	65.0 241.3	Gneiss, very competent, non-fractured		RS07	60.0 - 70.0	8.9	N/A	

SUBSURFACE LOG

Client Borehole ID: ARAMW-9 | Stantec Boring No.: **ARAMW-9**

Client: Georgia Power Company | Boring Location: 1,063,022.92 N; 2,438,935.47 E

Project Number: 175569434 | Surface Elevation: 306.31 ft | Elevation Datum: NAVD88

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
70		Gneiss, very competent, non-fractured *(Continued)*						
75				RS08	70.0 - 80.0	7.9	N/A	
80								
85				RS09	80.0 - 90.0	8.4	N/A	
90								

SUBSURFACE LOG

Client Borehole ID ARAMW-9 | Stantec Boring No. **ARAMW-9**

Client Georgia Power Company | Boring Location 1,063,022.92 N; 2,438,935.47 E

Project Number 175569434 | Surface Elevation 306.31 ft | Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample[1] / RQD %	Depth Ft[2] / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft[2]	Elevation								
95			Gneiss, very competent, non-fractured *(Continued)* Heavily fractured from 95.2 to 96.0 (weathering discoloration present)		RS10	90.0 - 100.0	8.3	N/A	ARAMW-9 95.0 - 96.5 collected for geochemical and treatability analysis
100			Heavily fractured from 100.7 to 102.0 (weathering discoloration present)						ARAMW-9 100.7 - 102.0 collected for geochemical and treatability analysis
					RS11	100.0 - 105.0	5.0	N/A	
105	105.0	201.3	No Refusal / Bottom of Hole at 105.0 Ft.						

Depths are reported in feet below ground surface

Well Installation Field Log

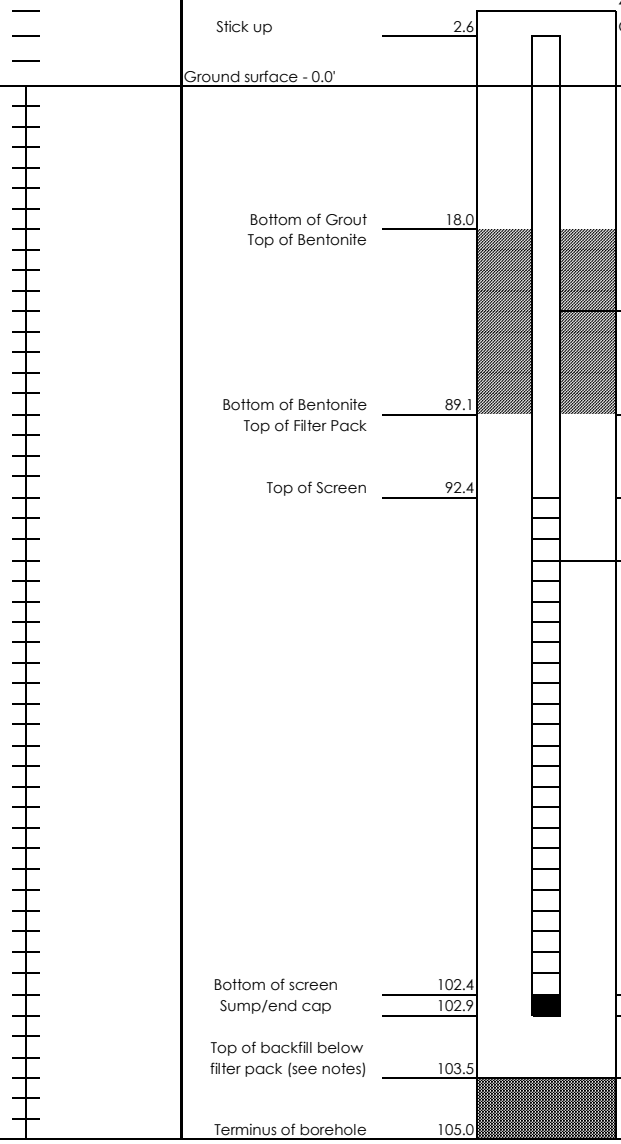
Georgia Power

Project Name:	Plant Arkwright Vertical Groundwater Delineation	Date Started:	10/4/2022	Date Completed:	10/7/2022
Borehole/Well No:	ARAMW-9	Northing (ft):	1063022.92	Easting (ft):	2438935.47
Plant Name:	Arkwright	Latitude:	32.921665	Longitude:	-83.702746
Plant Address:	5241 Arkwright Road, Macon, Georgia, 31210	Location Datum:	NAD83	Elevation Datum:	NAVD88
Project & Task Number:	175569434/ 2.3	Surface/ Ground Elevation (ft):	306.31	Stickup (ft, ags):	2.**6**
Goals/Task:	AP-2 ARAMW-9 Well Installation	Borehole Diameter (in):	6.0	Borehole Depth (ft, bgs):	105.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2.0	Well Depth (ft, bgs):	102.9
Drilling Equipment/Rig Type:	TSI-150CC	Top of Casing elev (ft):	309.28	Screen length (ft):	10
Drilling Method:	4" x 6" Rotosonic	DTW at Completion (ftoc):	43.30		
Sampling Method:	Sonic 4" core barrel				
Prepared By:	Jackson Bankston				
Review By:	Edgar Smith				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.6 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): 2" ID PVC

Casing Top: 2.6 ft, ags Bottom: 92.4 ft, bgs

Screen Type: PVC U-Pack Type II

Screen Slot Size: 0.010

Screen Top: 92.4 ft, bgs Bottom: 102.4 ft, bgs

Sump/end cap Top: 102.4 ft, bgs Bottom: 102.9 ft, bgs

Grout Quantity: 2 (50 lb) bags of Aqua Guard and 30 gallons H2O

Grout Type: Baroid Aqua Guard 30% Solids Grout.

Grout Top: 0.0 ft, bgs Bottom: 18.0 ft, bgs

Bentonite Type: Pel Plug 3/8" PDS TR30 pellets / Halliburton 3/8" uncoated chips

Bentonite Quantity: 12 (50 lb) bags

Bentonite Seal Top: 18.0 ft, bgs Bottom: 89.1 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Product & Silica Co. Filter Sand and Gravel #1. Used 4.5 (14 L) bags

Filter Pack: Top: 89.1 ft, bgs Bottom: 103.5 ft, bgs

Notes: Bentonite seal hydrated 2-hours prior to grout backfill placement.

Backfill was not necessary due to crushed rock that settled at the bottom of the bore hole from 105-103.5

Elevation in feet NAVD88 (North American Vertical Datum 1988)

Stantec **ARAMW-10** BORING LOG

PROJECT NUMBER 175569434	**DRILLING COMPANY** Southern Company C.F.S.	**BORING LOCATION** N1063082.33, E2438902.85
PROJECT NAME Plant Arkwright	**DRILLER** S. Denty	**COMPLETION** Flush-mount with 3 ft x 3 ft pad
CLIENT Georgia Power	**RIG TYPE/ METHOD** CME 550/ HSA & wireline	**SURFACE ELEVATION** 308.39 ft
ADDRESS 5241 Arkwright Road, Macon, Ga	**TOOL DIA.** 5.63-in OD/ 2.25-in ID Aug, PQ core	**WELL TOC** 308.49 ft
LOCATION AP-2. Lower bench	**BORING DEPTH** 74.8 ft	**COORD SYS** NAD83, NAVD88

COMMENTS Started drilling on 10/22/2024 and completed drilling on 10/26/2024. Well construction completed on 11/21/2024 with installation of manhole, locking cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-1.5 (SPT01)		1-1-1	0.95	HSA w/ SPT			0.3-0.5 ft: CCR fly ash, blue grey Silty SAND, red, loose, moist, rootlets	SM		308
1											
2											307
3											
4	3.5-5.0 (SPT02)		3-2-2	1.35				SAA - No CCR, loose, moist			306
5											
6											305
7											
8	8.5-10 (SPT03)		2-4-4	1.4							304
9								CLAY trace fine grained sand, dark brown, non-plastic to low plasticity, soft, moist	CL		
10											303
11											
12											302
13											
14	13.5-15.0 (SPT04)		WH-2-4	1.5				Sandy CLAY, grey, soft to medium stiff, medium plasticity, moist	CL-SC		301
15											
										Bentonite grout	300
											299
											298
											297
											296
											295
											294

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											293
17											292
18											291
19	18.5-20.0 (SPT05)		8-10-8	1.4				Silty SAND trace sub-rounded gravel and silt, brown/ grey/ tan, loose, wet, fine to coarse grained, micaceous, saprolitic	SP		290
20											289
21											288
22											287
23											286
24	23.5-25.0 (SPT06)		21-50/5	0.92						Bentonite grout	285
25	25.0-27.0 (SPT07)		50/5	0.42				Silty gravelly SAND, brown/ white, loose, dry, fine to coarse grained, saprolitic	SP-SM		284
26											283
27	27.0-29.0 (SPT08)		50/5	0.42							282
28											281
29	29.0-31.0 (SPT09)	ARAMW-10 -SOIL (29.0-31.0 ft)	50/5	0.42				Saprolite with very weathered rock lenses, dry			280
30											279
31	31.0-33.0 (SPT10)	ARAMW-10 -SOIL (31.0-33.0 ft)	28-50/3	0.75				31.6 ft: Very weathered rock lens, dry			278
32											277
											276

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
33	33.0-35.0 (SPT11)		50/2	0.0							275
34											274
35	NS										273
36											272
37											271
38										Bentonite grout	270
39											269
40											268
41											267
42											266
43	NS				WL w/ PQ core			Weathered rock, auger refusal at 42.5 ft.	PWR		265
44								Temporary steel surface casing set to 44.1 ft.			264
45	44.8-49.8 (P01)			5.0		76		Gravel, sub-angular, fine to coarse grained Biotite gneiss, black/grey/white, mod to intensely fractured, 45° mineral banding, alternating qtz veins with dark biotite/hornfels zones, mod weathering 45.0-45.8 ft: 70° fracture, brown surface staining, mod weathering	-	Bentonite plug	263
46								46.0 ft: 45° fracture, med decomp, slight staining			262
47		ARAMW-10 -ROCK (47.7-47.9 ft) (545 g)						46.5-46.8 ft: 2x45° bisecting fractures, staining, slight decomp 47.4-47.8 ft: 45° fracture, highly weathered zone, qtz veins w/ coarse sand on planes			261
48								48.0-48.1 ft: 45° fracture wide, mod weathering, coarse gravel SAA, slight to mod fracturing	-	U-pack & annular sand pack	260
49								49.1-49.6 ft: 80° healed fracture			259
50	49.8-54.8 (P02)			4.8		96		50.6-52.0 ft: 80° healed fracture			258

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
51											257
52								52.0 ft: 45° fracture, metallic red/ bn minerl inclusions 0.75-in dia			256
53											255
54								54.1 ft: 45° fracture, metallic minerals, slight weathering		U-pack & annular sand pack	254
55	54.8-56.8 (P03)	ARAMW-10 -ROCK (55.7-55.9 ft) (545 g)		2.2		100		55.7 ft: 45° fractures, black fracture surface, micaceous fine sand on plane, slightly weathered			253
56								56.4 ft: Sub-horizontal fracture, brown/red staining, slight to mod weathering, very narrow aperture			252
57	56.8-59.8 (P04)			2.9		87		57.1 ft: 45° fracture, green minerals, mod disintegration 57.6 ft: 45° fracture, green minerals, slight weathering			251
58								58.8 ft: 45° fracture, green minerals, mod disintegration			250
59								59.2 ft: Partial 45° fracture, brown staining along edge			249
60	59.8-64.8 (P05)			5.1		89		59.9-60.0 ft: qtz vein			248
61								61.1 ft: 45° fracture, slight brown staining			247
62								62.4 & 62.6 ft: 45° fracture, slight brown staining			246
63		ARAMW-10 -ROCK (64.3-64.5 ft) (480 g)								Bentonite sump backfill	245
64								63.9 ft: 45° fracture, slight brown staining			244
65	64.8-69.8 (P06)			5.0		91		64.4 ft: 45° fracture, slight brown staining, metallic minerals present 64.6-64.8 ft: qtz vein			243
66								66.1 & 66.4 ft: 45° fracture, slight brown staining			242
67											241
68								67.6 ft: 45° fracture, slight brown staining, slight decomp.			240

Stantec **ARAMW-10** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
69											239
70	69.8-74.8 (P07)			4.7		100		70.6 ft: Partial 45° fracture, metallic minerals present			238
71											237
72										Bentonite sump backfill	236
73								73.0-73.8 ft: 70° healed fracture, dark fine grained crystals w/ intense foliation, metallic minerals present			235
74											234
75								BOH 74.8 ft bgs. Boring terminated at a predetermined depth.			233
76											232
77											231
78											230
79											229
80											228
81											227
82											226
83											225
84											224
85											223
86											222

Stantec ARAMW-11 BORING LOG

PROJECT NUMBER 175569434	**DRILLING COMPANY** Southern Company C.F.S.	**BORING LOCATION** N1063077.03, E2438902.96
PROJECT NAME Plant Arkwright	**DRILLER** A. Castleberry	**COMPLETION** Flush-mount with 3 ft x 3 ft pad
CLIENT Georgia Power	**RIG TYPE/ METHOD** CME 550/ HSA	**SURFACE ELEVATION** 308.02 ft
ADDRESS 5241 Arkwright Road, Macon, Ga	**TOOL DIA.** 5.63-in OD/ 2.25-in ID Augers	**WELL TOC** 308.09 ft
LOCATION AP-2. Lower bench	**BORING DEPTH** 40.5 ft	**COORD SYS** NAD83, NAVD88

COMMENTS Started and completed drilling on 11/10/2024. Well construction completed on 11/21/2024 with installation of manhole, locking cover and concrete pad. Lithologic description from 0.0 to 33.5 based on adjacent boring ARAMW-10.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0					HSA w/ SPT			0.3-0.5 ft: CCR fly ash, blue grey Silty SAND, red, loose, moist, rootlets	SM		308
1											307
2											306
3											305
4											304
5											303
6											302
7										Bentonite grout	301
8											300
9								CLAY, dark brown, non plastic to low plasticity, soft, moist, fine grained sand mixed in	CL		299
10											298
11											297
12											296
13											295
14								Sandy CLAY, grey, soft to medium stiff, medium plasticity, moist	CL-SC		294
15											293

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											292
17											291
18											290
19								Silty SAND trace sub-rounded gravel and silt, brown/ grey/ tan, loose, wet, fine to coarse grained, micaceous, saprolitic	SP		289
20										Bentonite grout	288
21											287
22											286
23											285
24											284
25								Silty gravelly SAND, brown/ white, loose, dry, fine to coarse grained, saprolitic	SM		283
26											282
27										Bentonite plug	281
28											280
29								Saprolite with very weathered rock lenses, dry			279
30										U-pack & annular sand pack	278
31								31.6 ft: Very weathered rock lens, dry			277
32											276

Stantec **ARAMW-11** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft)	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
33											275
	33.5-35.0 (SPT01)	ARAMW-11 -SOIL (33.5-35.0 ft)	44-50/2	0.67				Silty SAND with sub-rounded to sub-angular gravel, brown/ black, dense, wet, fine gravel to fine sand			
34											274
35											273
36											272
37										U-pack & annular sand pack	271
38											270
	38.5-40.0 (SPT02)		50/2	0.0							
39											269
40											268
41								BOH 40.5 ft bgs. Boring terminated at auger refusal depth.			267
42											266
43											265
44											264
45											263
46											262
47											261
48											260
49											259
50											258

Stantec ARAMW-12 BORING LOG

PROJECT NUMBER 175569434
PROJECT NAME Plant Arkwright
CLIENT Georgia Power
ADDRESS 5241 Arkwright Road, Macon, Ga
LOCATION AP-2. Lower bench

DRILLING COMPANY Southern Company C.F.S.
DRILLER S. Denty
RIG TYPE/ METHOD CME 550/ HSA & wireline
TOOL DIA. 5.63-in OD/ 2.25-in ID Aug, PQ core
BORING DEPTH 65.4 ft

BORING LOCATION N1062906.98, E2439199.15
COMPLETION Stick-up with 3 ft x 3 ft pad
SURFACE ELEVATION 305.80 ft
WELL TOC 309.08 ft
COORD SYS NAD83, NAVD88

COMMENTS Started drilling on 10/28/2024 and completed drilling on 11/8/2024. Well construction completed on 11/21/2024 with installation of 6-in stick-up protective cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY E. Smith

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-1.5 (SPT01)		3-4-4	1.3	HSA w/ SPT			Silty SAND (Fill), red/ brown, loose, moist, rootlets, fine grained, grass cover 0.7-0.8 ft: Gravel seam	SM GS		305
1								Silty SAND (Fill), red/ brown, loose, dry, trace clay	SM-CL		
2								Medium dense with some clay			304
3											303
4	3.5- 5.0 (SPT02)		4-4-6	0.5							302
5											301
6											300
7										Bentonite grout	299
8											298
9	8.5- 10 (SPT03)		1-1-1	1.4				Sandy CLAY, dark grey, soft, medium to high plasticity, moist, fine grained	CL-SC		297
10											296
11											295
12											294
13								▽			293
14	13.5- 15.0 (SPT04)		3-5-6	1.5				Gravelly SAND, brown/ grey, loose, wet, coarse grained	SW		292
								CLAY, grey, medium stiff, high plasticity, wet	CH		
								Gravel, brown/ tan, loose, wet, angular, fine grained with medium sand mixed in	GS SM		
15								Silty gravelly SAND, brown/ white, loose, moist, fine to coarse grained, micaceous, saprolitic			291

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
16											290
17											289
18											288
19	18.5-20.0 (SPT05)	ARAMW-12-SOIL (18.5-20.0 ft) (202 g)	30-25-50/3	1.2							287
20											286
21											285
22											284
23											283
24	23.5-25.0 (SPT06)		20-49-50/1	1.1						Bentonite grout	282
25											281
26											280
27											279
28								29.2-29.4 ft: Qtz gravel lens, white, loose, fine grained, micaceous, saprolitic			278
29	28.5-30.0 (SPT07)		16-34-29	1.5							277
30											276
31											275
32											274
33											273

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
34	33.5-35.0 (SPT08)		6-20 -50/4	1.3							272
35											271
36								Weathered rock (drilling response)	PWR		270
37	36.9-42.1 (P01)	ARAMW-12 -ROCK (39.1-39.6 ft) (500 g)		5.2	WL w/ PQ core	100		Auger refusal depth Biotite gneiss, black/ grey/ white, slightly weathered, 45° mineral banding, alternating quartz veins with dark biotite/ hornfels zones	-		269
38											268
39								39.0-39.6 ft: 70° frac, brown surface staining, moderate weathering, dark brown to black weathered nodules, adjacent re-mineralized healed fractured		Bentonite grout	267
40											266
41											265
42	42.1-46.9 (P02)			4.7		100					264
43								43.0-43.3 ft: Quartz vein, 0.1 ft thick			263
44											262
45											261
46										Bentonite plug	260
47	46.9-51.9 (P03)			4.8		100					259
48											258
49											257
50										U-pack & annular sand pack	256
51											255

Stantec **ARAMW-12** BORING LOG

Depth (ft)	Samples (ft)	Soil sample ID & depth taken (ft)	Blow counts	Recovery (ft 0	Drilling Method	RQD (%)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
52	51.9-56.9 (P04)			5.3		100		Amphibolite biotite gneiss, black/ dark grey, fine crystalline			254
53											253
54											252
55											251
56											250
57	56.9-61.9 (P05)			4.8		100		57.0-57.6 ft: Quartz vein, white, 0.1-0.3 ft wide, green mineral discoloration, pocked surface features			249
58											248
59		ARAMW-12-ROCK (59.6-59.9 ft) (608 g)								U-pack & annular sand pack	247
60											246
61											245
62	61.9-65.4 (P06)			3.7		100		61.8-62.4 ft: 70° Partial to fully healed fracture			244
63		ARAMW-12-ROCK (64.3-64.4 ft) (493 g)									243
64								64.2 ft: Mineral foliation direction change, possible joint			242
65								65.4 ft green mineral discoloration			241
66								BOH 65.4 ft bgs. Boring terminated at a predetermined depth.			240
67											239
68											238
69											237
											236

AP-2 DAS
Monitoring Well and Piezometer
Survey Certifications

12/18/20
11/22/22
12/09/2024 (ARMWA-10,11,12)

GEORGIA POWER
PLANT ARKWRIGHT
MONITORING WELL SURVEY DATA
December 18, 2020
DGA JOB # 6620-002-D1, C1335

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND	NAIL	TOP OF	TOP OF
			ELEVATION	IN CONCRETE	WELL PAD	CASING
AP3PZ-1	1066652.20	2436953.26	361.53		NO PAD	364.22
AP3PZ-1A	1066656.17	2436950.62	361.37		NO PAD	364.36
AP3PZ-2	1065960.86	2437314.65	361.69		NO PAD	364.93
AP3PZ-2A	1065955.86	2437317.22	361.55		NO PAD	364.74
AP3PZ-3	1065501.28	2437527.97	360.11		NO PAD	362.69
AP3PZ-3A	1065495.58	2437530.17	360.25		NO PAD	363.23
AP3PZ-4	1065047.94	2437729.54	358.54		NO PAD	361.32
AP3PZ-4A	1065042.69	2437732.09	358.56		NO PAD	361.57
AP3PZ-5A	1064633.46	2437909.87	357.02		NO PAD	360.14
ARAMW-1	1062938.38	2439120.01	305.07		305.49	308.51
ARAMW-2	1062925.96	2439114.97	305.12		305.23	308.27
ARAMW-3	1064530.73	2437569.81	352.20		352.41	355.39
ARAMW-4	1065463.83	2438004.43	364.56	364.83		367.86
ARAMW-6	1064439.35	2437606.99	334.23		334.56	337.46
ARAMW-7	1063049.07	2438913.27	307.13	307.13		309.81
ARAMW-8	1062895.98	2439197.40	304.53	304.94		307.36
ARGWA-12	1067003.79	2436788.45	369.27		369.56	372.72
ARGWA-13	1065951.25	2438129.93	368.10		368.72	371.57
ARGWA-14	1066023.70	2438384.80	384.94		385.46	388.25
ARGWA-19	1063774.45	2439488.71	339.86		340.38	343.30
ARGWA-20	1063732.73	2439088.01	327.73		328.37	331.28
ARGWA-24	1066895.28	2437012.63	370.85	371.08		373.75
ARGWA-3	1066899.39	2437431.05	386.53		386.94	388.33
ARGWA-5	1066885.12	2437209.22	373.51		373.69	376.15
ARGWC-10	1065419.44	2437192.51	367.56		367.77	370.67
ARGWC-15	1065475.43	2438360.90	371.76		372.51	375.64
ARGWC-16	1065263.69	2438174.15	361.52		361.98	364.90
ARGWC-17	1065458.82	2438009.52	365.04		365.31	368.24
ARGWC-18	1064482.45	2437961.15	351.92		352.42	355.20
ARGWC-21	1062941.24	2439112.52	305.97		306.34	309.15
ARGWC-22	1063039.36	2438925.04	307.01		307.08	309.95
ARGWC-23	1062884.38	2439202.38	304.29		304.67	307.70
ARGWC-7	1064410.59	2438355.19	348.97		349.13	352.42
ARGWC-8	1064521.98	2437572.92	352.19		352.26	355.53
ARGWC-9	1065139.64	2437297.96	363.44		363.87	367.07
CCRLF-1	1065801.62	2437806.69	354.06	354.39		357.51
CCRLF-2	1066565.98	2437457.04	367.27	367.64		370.67
CCRLF-3	1066338.44	2437920.60	372.06	372.37		375.19
CCRLF-4	1066801.77	2437509.61	370.11	370.47		373.35
CCRLF-5	1066251.06	2438257.93	385.88	386.16		388.73
INV. 24" PIPE	1064401.47	2437857.62	318.50			
WET WELL	1064422.09	2437710.35			330.81	329.20 (TOP OF WELL PIPE)

COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD 83.
ELEVATIONS ARE BASED ON MEAN SEA LEVEL, NAVD 88.

Survey data shown below has a horizontal positional tolerance of +/-0.5 feet and a vertical positional tolerance of +/- 0.01 feet at the 95% level of confidence.
Equipment used to obtain horizontal and vertical coordinates was a LEICA SYSTEM 1200 GPS RECEIVER WITH A LEICA RX1200 DATA COLLECTOR.
Benchmark used to establish horizontal and vertical positions was established from LEICA SMARTNET REAL TIME NETWORK.

METRO ENGINEERING & SURVEYING CO., INC.
SURVEYORS - ENGINEERS - PHOTOGRAMMETRISTS
PROVIDING PROFESSIONAL SERVICE SINCE 1967

1469 HIGHWAY 20 WEST • MCDONOUGH, GA 30253
phone: 770-707-0777 fax: 770.707-0755
WWW.METRO-ENGINEERING.COM

SURVEYOR'S REPORT

SCOPE OF WORK:

Field survey of existing monitoring wells at Georgia Power Company, Plant Arkwright in Macon, GA.

Horizontal and vertical datum was derived from provided coordinates of nails at existing monitoring wells ARAMW-7 and ARGWC-22 using conventional surveying methods and equipment. Horizontal datum is Georgia State Plane, West Zone, NAD83(2011) and vertical datum is NAVD88.

PROVIDED COORDINATES:

ARAMW-7, NORTH=1,063,049.07, EAST=2,438,913.27, EL=307.13, PK NAIL
ARGWC-22, NORTH=1,063,039.36, EAST=2,438,925.04, PK NAIL

EQUIPMENT USED TO ESTABLISH THE MONITORING WELL LOCATIONS:

Leica TS16 Total Station
Leica DNA10 Digital Level

CERTIFICATION:

I hereby certify that based on the provided coordinates list above that the center of well casing has a horizontal accuracy of 0.5+/- feet or better referencing the Georgia State Plane, West Zone, NAD83(2011) coordinate system in US survey feet. The top of well, nail in the concrete pad and rebar set elevations was determined to be accurate within 0.01 foot through a closed level check loop with a Leica DNA10 digital level having a published accuracy of 0.9mm per dual-traverse kilometer.

James R. Green R.L.S. No. 2543

GEORGIA REGISTERED NO. LS002543 PROFESSIONAL LAND SURVEYOR JAMES RANDOLPH GREEN

Date: 11/22/2022

WELL	LATITUDE	LONGITUDE	WELL NORTH	WELL EAST	TOP OF CASING	NAIL NORTH	NAIL EAST	NAIL EL	GRD SUR NORTH	GRD SUR EAST	GRD SUR ELEV	PAD EL
ARAMW-9	32.921665	-83.702746	1063022.92	2438935.47	309.28	1063024.53	2438936.09	306.83	1063023.52	2438937.49	306.31	306.87

	TOP ELEV	BASE ELEV
CREEK GAUGE	297.02	293.60

PLANT ARKWRIGHT AS-Built Wells 12-09-2024 FL Bullard - Surveyor, Southern Company CFS

WELL ID	NORTHING	EASTING	GROUND	TOP REFERENCE NAIL	BLACK MARK AT TOP CASING
ARAMW - 1	1062937.58	2439119.98	305.33	305.63	308.35
ARAMW - 2	1062926.40	2439115.34	305.08	305.48	308.28
ARAMW - 7	1063048.60	2438912.71	306.83	307.13	306.95
ARAMW - 8	1062885.53	2439112.34	304.90	305.20	307.62
ARAMW - 9	1063023.25	2438935.02	306.54	306.83	306.72
ARAMW - 10	1063082.33	2438902.85	308.39	308.69	308.49
ARAMW - 11	1063077.03	2438902.96	308.02	308.32	308.09
ARAMW - 12	1062906.98	2439199.15	305.80	306.13	309.08
GWA - 19	1063774.24	2439488.29	340.24	340.53 (Top slab no nail))	343.35
GWA - 20	1063726.52	2439080.28	327.48	327.78 (Top slab no nail)	330.63
GWC - 21	1062940.78	2439112.34	305.47	305.76	308.46
ARAMW - 22	1063038.84	2438924.29	306.74	307.04	306.80
ARGWC - 23	1062885.59	2439201.99	304.42	304.72	307.73

12-09-2024

SURVEY DATA CERTIFICATION
REFERENCE NAIL VERTICAL 0.01' HORIZ 0.10'
BLACK MARK ON PVC CASING 0.001'

Horizontal Datum is Georgia
State Plane West Zone Coordinate System,
North American Datum of 1983 (NAD83)
Elevation Datum referenced to NGVD 1988
Both measured in US Feet

PLANT ARKWRIGHT AS-Built Wells 12-09-2024

FL Bullard - Surveyor, Southern Company CFS

WELL ID	NORTHING	EASTING	GROUND	TOP REFERENCE NAIL	BLACK MARK AT TOP CASING
ARAMW - 12	1062906.98	2439199.15	305.80	306.13	309.08

12-09-2024

SURVEY DATA CERTIFICATION
REFERENCE NAIL VERTICAL 0.01' HORIZ 0.10'
BLACK MARK ON PVC CASING 0.001'

Horizontal Datum is Georgia
State Plane West Zone Coordinate System,
North American Datum of 1983 (NAD83)
Elevation Datum referenced to NGVD 1988
Both measured in US Feet

AP-2 DAS
Drillers Bonds

COPY

CONTINUATION CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. **800031223**

dated effective June 30, 2017
(MONTH-DAY-YEAR)

on behalf of Michael C. Rice and Cascade Drilling, L.P., any and all employees, officers and partners
(PRINCIPAL)

and in favor of State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2019
(MONTH-DAY-YEAR)

and ending on June 30, 2021
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and Zero/100 ($30,000.00)

Description of bond Water Well Contractor Performance Bond

Premium: $1,200.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on May 9, 2019
(MONTH-DAY-YEAR)
Atlantic Specialty Insurance Company

By _____
Attorney-in-Fact Elizabeth R. Hahn

Parker, Smith & Feek, Inc.
Agent

2233 112th Ave NE Bellevue, WA 98004
Address of Agent

(425) 709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

OneBeacon
INSURANCE GROUP

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher, Andrew P. Larsen, Nicholas Fredrickson**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars ($60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-sixth day of October, 2017.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this twenty-sixth day of October, 2017, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

TARA JANELLE STAFFORD
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2020

_____
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 9 day of May 2019

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
October 1, 2019

_____
Christopher V. Jerry, Secretary

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. 800033976

dated effective 09/27/2017
(MONTH-DAY-YEAR)

on behalf of Ricky Davis / Cascade Drilling, L.P.
(PRINCIPAL)

and in favor of Department of Natural Resources, State of Georgia
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on 06/30/2021
(MONTH-DAY-YEAR)

and ending on 06/30/2023
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and 00/100 Dollars ($30,000.00)

Description of bond Performance Bond for Water Well Contractors

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on April 12th , 2021
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By Andrew P. Larsen
Attorney-in-Fact Andrew P. Larsen

Parker, Smith & Feek, Inc.
Agent

2233 112th Ave NE Bellevue, WA 98004
Address of Agent

425-709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher, Andrew P. Larsen, Nicholas Fredrickson, William M. Smith, Derek Sabo, Charla M. Boadle**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-seventh day of April, 2020.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this twenty-seventh day of April, 2020, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

ALISON DWAN NASH-TROUT
NOTARY PUBLIC - MINNESOTA
My Commission Expires
January 31, 2025

_____
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 12 day of April, 2021.

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
January 31, 2025

_____
Kara Barrow, Secretary

Please direct bond verifications to surety@intactinsurance.com

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective June 30, 1987
(MONTH-DAY-YEAR)

on behalf of Southern Company Services, Inc.
(PRINCIPAL)

and in favor of Georgia Department of Natural Resources, Environmental Protection Division
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2024
(MONTH-DAY-YEAR)

and ending on June 30, 2025
(MONTH-DAY-YEAR)

Amount of bond Fifteen Thousand Dollars and 00/100 ($15,000.00)

Description of bond Water Well Contractors & Drillers

Premium: $100.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on 05/31/2023
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

By _____
Attorney-in-Fact Jeffrey M. Wilson, Attorney-in-Fact

McGriff Insurance Services, LLC
Agent

2211 7th Avenue South, Birmingham, AL 35233
Address of Agent

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDF

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Jeffrey M Wilson** of **BIRMINGHAM**, **Alabama**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **31st** day of **May**, **2023**.

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

C. GROUNDWATER SAMPLING PROCEDURE

Groundwater sampling will be conducted using most current USEPA Region 4 Field Quality and Technical Procedures as a guide. The following procedures describe the general methods associated with groundwater sampling at the site. Prior to sampling, the well must be evacuated (purged) to ensure that representative groundwater is obtained. Any item coming in contact with the inside of the well casing or the well water will be kept in a clean container and handled only with gloved hands.

GPC will follow the procedures below at each well to ensure that a representative sample is collected:

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify GPC if it appears that the well has been compromised.
2. Measure and record the depth to water in all wells to be sampled prior to purging using a water measuring device consisting of probe and measuring tape capable of measuring water levels with accuracy to 0.01 foot. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well.
3. Install Pump: If a dedicated pump is not present, slowly lower the pump (or tubing if a peristaltic pump is used) into the well to the midpoint of the well screen or a depth otherwise approved by the hydrogeologist or project scientist. The pump intake must be kept at least two (2) feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. All non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the USEPA Region 4 Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.
4. Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.
5. Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (ml/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 ft. or less of variability. Avoid entraining air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.
6. Monitor Indicator Parameters: Monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, oxidation reduction potential (ORP), and DO) approximately every five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings at a minimum:
    - pH ±0.1 Standard Units (S.U.)
    - Specific Conductance ±5% (conductivity)
    - DO ±10 percent or ±0.2 milligrams per liter (mg/L) (whichever is greater) for DO where DO> 0.5 mg/L. If DO< 0.5 mg/L no stabilization criteria apply.
    - Turbidity measurements ≤ 5 nephelometric turbidity units (NTUs) or between 5 and 10 NTUs after 3 hours of purging.

- Temperature – Record only, not used for stabilization criteria
- ORP – Record only, not used for stabilization criteria.

7. Collect samples at a low flow rate according to the most current version of USEPA Region 4 SESD guidance document, Operating Procedure – Groundwater Sampling (EPA, SESDPROC-301-R#), and such that drawdown of the water level within the well is stable. Flow rate must be reduced if excessive drawdown is observed during sampling. All sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.
8. Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results, duplicate samples may be filtered in the field prior to being placed in a sample container clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45 micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity.
9. All sample bottles will be filled, capped, and placed in an ice-containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.
10. Sample containers and preservative will be appropriate for the analytical method being used.
11. Information contained on sample container labels will include:
    a. Name of facility
    b. Date and time of sampling
    c. Sample description (well number)
    d. Sampler's initials
    e. Preservatives
    f. Analytical method(s)
12. After samples are collected, samplers will remove all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.
13. Samples will be delivered to the laboratory following appropriate COC and temperature control requirements. The goal for sample delivery will be within 48 hours of collection; however, at no time will samples be analyzed after the method-prescribed hold time.

Throughout the sampling process new latex or nitrile gloves will be worn by the sampling personnel. A clean pair of new, disposable gloves will be worn each time a different location is sampled and new gloves donned prior to filling sample bottles. Gloves will be discarded after sampling each well and before sampling the next well.

The goal when sampling is to attain a turbidity of less than 5 NTU; however, samples may be collected where turbidity is less than 10 NTU and the stabilization criteria described above are met.

If sample turbidity is greater than 5 NTU and all other stabilization criteria have been met, samplers will continue purging for 3 additional hours in order to reduce the turbidity to 5 NTU or less.

- If turbidity remains above 5 NTU but is less than 10 NTU, and all other parameters are stabilized, the well can be sampled.
- Where turbidity remains above 10 NTU, an unfiltered sample will be collected followed by a filtered sample that has passed through an in-line 0.45-micron filter attached to the discharge (sample collection) tube. Data from filtered samples will only be used to quantify the effects of turbidity on sample results.

Samplers will identify the sample bottle as containing a filtered sample on the sample bottle label and on COC form.

A brief overview of purging and sampling methodologies, including the type of sampling equipment used will be provided in routine monitoring reports.