

# Groundwater Monitoring Plan

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## PLANT SCHERER - ASH POND AP-1 (AP-1) MONROE COUNTY, GEORGIA

FOR



September 2024

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# Table of Contents

**1.0 INTRODUCTION .....1**

**2.0 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS .....1**

    2.1 Site Geology.....1

    2.2 Site Hydrogeology.....2

    2.3 Uppermost Groundwater Aquifer .....3

    2.4 Groundwater Gradient and Flow Velocity .....3

**3.0 SELECTION OF WELL LOCATIONS .....4**

**4.0 MONITORING WELL DRILLING, CONSTRUCTION ABANDONMENT AND REPORTING .....4**

    4.1 Drilling .....5

    4.2 Design and Construction.....5

        4.2.1 Well Casings and Screens.....5

        4.2.2 Well Intake Design .....5

        4.2.3 Filter Pack and Annular Seal .....6

        4.2.4 Protective Casing and Well Completion .....6

        4.2.5 Well Development.....7

    4.3 Well Abandonment.....7

    4.4 Documentation .....8

**5.0 GROUNDWATER MONITORING PARAMETERS AND FREQUENCY .....9**

**6.0 SAMPLE COLLECTION .....9**

**7.0 SURFACE WATER MONITORING PLAN.....10**

**8.0 CHAIN-OF-CUSTODY .....11**

**9.0 FIELD AND LABORATORY QUALITY ASSURANCE/QUALITY CONTROL .....11**

**10.0 REPORTING RESULTS .....12**

**11.0 STATISTICAL ANALYSES .....13**

**12.0 REFERENCES .....14**

## Table of Contents (continued)

### Tables

TABLE 1:	SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA
TABLE 2:	HORIZONTAL GROUNDWATER VELOCITY CALCULATIONS – FEBRUARY 2024
TABLE 3:	GROUNDWATER MONITORING PARAMETERS AND FREQUENCY
TABLE 4:	ANALYTICAL METHODS
TABLE 5:	SURFACE WATER MONITORING PARAMETERS AND FREQUENCY

### Figures

FIGURE 1:	SITE PLAN AND COMPLIANCE MONITORING NETWORK
FIGURE 2:	POTENTIOMETRIC SURFACE MAP – FEBRUARY 19, 2024
FIGURE 3:	POST-CLOSURE SURFACE WATER SAMPLING LOCATIONS
FIGURE 4:	STATISTICAL ANALYSIS PLAN OVERVIEW
FIGURE 5:	DECISION LOGIC FOR COMPUTING INTERWELL PREDICTION LIMITS

### Appendices

APPENDIX A:	MONITORING SYSTEM DETAILS
	A-1: Ash Pond 1 Detection Monitoring Wells Construction Logs
	A-2: Ash Pond 1 Assessment Monitoring Wells Construction Logs
	A-3: Piezometer Construction Logs
	A-4: Gypsum Cell 1 Monitoring Wells Construction Logs
	A-5: PAC Ash Cell Monitoring Wells Construction Logs
	A-6: Cell 3 Monitoring Wells Construction Logs
	A-7: Driller Bonds
	A-8: Certified Well Survey Report
APPENDIX B:	GROUNDWATER MONITORING WELL DETAIL
APPENDIX C:	GROUNDWATER SAMPLING PROCEDURES
APPENDIX D:	SURFACE WATER SAMPLING PROCEDURES

## Certification

This *Groundwater Monitoring Plan*, Georgia Power Company - Plant Scherer Ash Pond AP-1 has been prepared to meet the requirements of the Georgia Solid Waste Management Rules by a qualified groundwater scientist with WSP USA Inc. References to the appropriate 391-3-4 Rules are incorporated throughout this document.

I certify that I am a qualified groundwater scientist as defined in 391-3-4-.01, who 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. I further certify that this *Groundwater Monitoring Plan* was prepared by myself or by a subordinate working under my direction. The design of the groundwater monitoring system was developed in compliance with the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management, Chapter 391-3-4.10(6).

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## 1.0 INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (GA EPD) to detect and quantify potential changes in groundwater chemistry. This *Groundwater Monitoring Plan* (plan) describes the groundwater monitoring program for the site. This plan meets the requirements of GA EPD rules and uses GA EPD's Manual for Ground Water Monitoring dated September 1991 (EPD 1991) as a guide. Monitoring well and piezometer locations are presented on Figure 1 for Ash Pond 1 (AP-1) at Plant Scherer.

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 GA EPD rules (391-3-4), the GA EPD rules will take precedent. Plant Scherer AP-1 entered into Assessment Monitoring on May 15, 2018. Based on GA EPD's request on August 20, 2021, and in response to statistically significant levels of cobalt observed in groundwater, Georgia Power initiated an assessment of corrective measures (ACM) at AP-1 on November 21, 2021.

In accordance with the United States Environmental Protection Agency (US EPA) Coal Combustion Rule (§257.90), a detection monitoring well network for AP-1 has been installed and certified by a qualified professional engineer. This certification has been placed in the facility's operating record. The existing monitoring wells were installed following the guidelines presented herein. Additionally, this plan documents the methods for future monitoring well installation and/or replacement, and procedures for well abandonment. As required by 391-3-4-.10(6)(g), a minor modification will be submitted to the GA EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment must be directed by a qualified groundwater scientist.

## 2.0 GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Geologic and hydrogeologic conditions for this site are described in a report, *Hydrogeologic Assessment Report Plant Scherer Ash Pond (AP-1)*, prepared by Golder Associates Inc., September 2021 (Golder 2021) and updated August 2024 (WSP 2024). Key elements of the HAR are summarized below. Monitoring wells and piezometers installed at the site are summarized on Table 1.

### 2.1 Site Geology

The site is underlain by regolith consisting of residual soils and saprolite overlying fractured, crystalline bedrock. Bedrock at the site consists of interlayered feldspathic biotite gneiss with discontinuous layers and lenses of chlorite/actinolite schist and feldspathic hornblende gneiss/amphibolite. Large, discontinuous lenses or pods of mafic bodies were locally observed to be interlayered with the gneiss near the central and eastern portions of the site.

The metamorphic and igneous rocks that underlie the area have been subjected to physical and chemical weathering which has created a landscape dissected by creeks and streams forming a dendritic drainage pattern. These rocks are deeply weathered due to the humid climate and bedrock is typically overlain by a variably thick blanket of residual soils and saprolite. Because of such variations in rock types and topography, the depth of weathering can vary significantly over short horizontal distances. Based on boring logs, residual soils, primarily sandy silt, silty sand, sandy clay, and silty clay, occur as a variably thick blanket overlying bedrock across most of the site. The thickness of the residual soil encountered in the borings is variable, ranging from a minimum of approximately 17 feet to as much as 168 feet, with an average residual soil thickness of about 57 feet. Thickness of saprolitic soils and/or saprolitic rock range in thickness across the site. Large, discontinuous lenses or intrusive

mafic and ultramafic bodies were locally observed to be interlayered with the gneiss near the northern, central and eastern portions of the site and south of Lake Juliette. There is also a gabbro in the south-central area of the site (see Figure 3 of the HAR).

## 2.2 Site Hydrogeology

Groundwater occurs within the regolith - fractured bedrock settings of Georgia Piedmont. The water-table occurs within the undifferentiated overburden consisting of saprolite (i.e., residual soils and weathered rock). This is a shallow, transient saturated zone in which groundwater is primarily stored within regolith and is generally unconfined. Groundwater flow occurs through the porous saprolite and is recharged by precipitation stored in residual soils and typically flows toward major streams and rivers. The fractured (crystalline) bedrock includes the upper bedrock and competent bedrock with open fractures sufficient to yield water to a well. Open fractures are the primary conduit for groundwater flow through bedrock because the rocks lack primary porosity. Recharge to bedrock aquifer systems comes from water stored in the saturated regolith, which functions as a sponge of sorts, slowly allowing groundwater to infiltrate the bedrock through areas of enhanced permeability. This rate of infiltration is very slow, as indicated by dating of groundwater in other areas in the Piedmont exceeding 60 years.

Local complexities in groundwater flow within this aquifer are influenced by topographic and related top of rock variations on site, which produces an uppermost aquifer surface that is generally a subdued reflection of topography. Groundwater flow is north toward unnamed tributaries to Berry Creek, east toward Berry Creek and the Ocmulgee River, and south toward the Recycle Pond and Lake Juliette as shown on Figure 2.

Topographically higher areas west of AP-1 represent the only upgradient locations on the property. The first zone of groundwater saturation is generally present in the regolith; however, the water table at topographic highs may occur in the upper bedrock at higher land elevations.

Based on review of the potentiometric contours, horizontal hydraulic gradient is also variable and reflects topography at the site. The horizontal gradient appears to be steeper around the perimeter of the pond, particularly along the embankment where groundwater flow lines are influenced by the constructed slope for the dam. Field hydraulic conductivity tests (i.e., slug tests) performed in a variety of geologic materials indicate an average hydraulic conductivity on the order of  $10^{-4}$  centimeters per second (cm/sec).

Hydraulic conductivity (K) data for the groundwater aquifer were tabulated from several previous reports, AQTESOLV files, and data provided by Georgia Power and SCS. Hydraulic conductivity of 2.27 ft/day has been established for AP-1. A compilation of available site data and calculated hydraulic conductivity values for slug tests completed at the site as well as details for the hydraulic conductivities for each geologic unit included in the groundwater flow model are included in Groundwater Model Summary Report – AP-1 Pre- and Post-Closure Conditions Plant Scherer (AECOM, 2020).

The average hydraulic conductivity value of 2.36 feet/day and median value (1.31 feet/day), which have been previously used for calculating groundwater flow velocities in the annual and semi-annual monitoring reports, were derived from the 58 averaged values, including the abandoned SGYP wells, shown in AECOM's Table 7 of the Groundwater Model Summary Report – AP-1 (AECOM 2020). The average and median hydraulic conductivity values for the site were recalculated in 2024 after removing anomalously high values from May-June 2015 slug tests and the vertical conductivity values. A prior incorrect unit conversion for the value for SGWC-19 was corrected. New data were added to the hydraulic conductivity data set from piezometers PZ-25I, PZ-25S, and PZ-27S. The hydraulic conductivity values used in the calculation of the site average and median values are

presented in the Groundwater Monitoring Plan Table 1, including the values from SGYP wells and previously abandoned wells (AECOM's Table 7). With the updates discussed above, the site average horizontal hydraulic conductivity becomes 2.27 feet/day ( $8.02 \times 10^{-4}$  cm/sec) with a median value of 1.29 feet/day ( $4.55 \times 10^{-4}$  cm/sec).

This hydraulic conductivity is generally consistent with regional measurements within Piedmont overburden. In general, groundwater flow is potentially faster through the transitionally weathered zone; however, the magnitude of difference is nominal enough to not be considered relevant at this site.

## 2.3 Uppermost Groundwater Aquifer

At the site, groundwater within the (saturated) overburden represents the uppermost aquifer. This uppermost aquifer is comprised of both residual soils and transitionally weathered rock and is generally unconfined. It is recharged by precipitation stored in residual soils and typically flows toward major streams and rivers. A series of monitoring wells have been installed within the uppermost aquifer at the site to comprise the detection monitoring well network. These wells are summarized on Table 1.

The bedrock is recharged by groundwater that is stored in the overburden. This groundwater slowly infiltrates underlying bedrock by moving through preferentially weathered discontinuities in the bedrock mass, such as foliation/compositional layering, joints, and faults. Groundwater flow in the bedrock is through inter-connected fractures, and groundwater flows to streams and rivers where the bedrock fractures intersect a surface water drainage. Throughout the Piedmont/Blue Ridge physiographic province, weathering and fractures that produce water generally decrease with depth (Golder 2021).

Local complexities in groundwater flow within this aquifer are influenced by topographic and related top of rock variations on site. The water table surface is a subdued reflection of topography at the site, with groundwater generally flowing radially from the ash pond because it is situated on a topographic high. It appears that groundwater flow is toward the pond from the west and eventually flows north, east, and south.

## 2.4 Groundwater Gradient and Flow Velocity

Hydraulic gradient is calculated as the difference in groundwater elevation (in feet) divided by the distance between two piezometers or wells (in feet). Groundwater elevation data recorded in February 2024 from three piezometer and/or well pairings (SGWC-14/PZ-29S, SGWC-13/PZ-35I, and SGWC-20/PZ-43S), which are located along the groundwater flow path and perpendicular to the potentiometric contours, were used to calculate hydraulic gradients for AP-1.

Average groundwater flow velocities at the site were calculated using hydraulic gradient data, hydraulic conductivity data generated from slug testing results, and an estimated effective porosity of the screened portion of the uppermost aquifer. Based on slug test data, the average hydraulic conductivity for the overburden is approximately 2.27 feet per day (feet/day), with a median value of 1.29 feet/day. An effective porosity of 0.20 was used based on the default values for effective porosity recommended by US EPA for a silty sand-type soil (US EPA, 1996). The hydraulic gradient calculated between well pairs SGWC-14/PZ-29S, SGWC-13/PZ-35I, and SGWC-20/PZ-43S for February 2024 were 0.011, 0.016, and 0.032 ft/ft, as summarized on Table 2.

The horizontal flow velocities were calculated using the commonly used derivative of Darcy's Law:

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

Where:

$V$  = Groundwater flow velocity  $\left( \frac{\text{feet}}{\text{day}} \right)$

$K$  = Hydraulic conductivity of the aquifer  $\left( \frac{\text{feet}}{\text{day}} \right)$

$i$  = Horizontal hydraulic gradient  $\left( \frac{\text{feet}}{\text{feet}} \right)$

$n_e$  = Effective porosity

Using this equation, groundwater flow velocities were calculated for AP-1 using February 2024 groundwater elevation data as shown on Table 2.

Calculated (horizontal) flow velocities range from approximately 0.07 to 0.37 feet/day (27 to 134 feet per year) during the February 2024 event. These estimated flow velocities are consistent with past results and are also generally consistent with other published velocities for regolith-upper bedrock aquifers of the Piedmont (Heath 1984).

### 3.0 SELECTION OF WELL LOCATIONS

Groundwater monitoring wells are installed to monitor the uppermost aquifer beneath the site. Locations are selected based on unit configurations, site geologic and hydrogeologic considerations, proximity to unit boundaries, and access to well locations. Locations are chosen to serve as upgradient (SGWA), lateral or downgradient (SGWC) based on groundwater flow direction determined by potentiometric evaluation as well as shallow (PZ-26S), intermediate (PZ-25I) or deep (PZ-27D) to distinguish relative screen depth interval.

Monitoring wells are located outside of areas with frequent auto traffic; however, wells may be installed in heavily trafficked areas when necessary to meet the groundwater monitoring objectives of the GA EPD rules.

The current monitoring well network consists of 25 wells (seven upgradient and 18 downgradient) located around AP-1 targeted to capture groundwater flow away from AP-1 and serve as detection monitoring network in the uppermost aquifer. An assessment monitoring well network has also been established at the site in response to statistically significant levels of cobalt in site groundwater. Table 1 presents a tabulated list of individual detection monitoring and assessment monitoring wells and piezometers with well construction details such as location coordinates, top-of-casing elevation, well depths and screened intervals. A map depicting monitoring well locations for monitoring is included as Figure 1. Any modification that involves the addition of or a change to the detection monitoring network will be made by a minor modification to the permit pursuant to 391-3-4-.02(3)(b)6.

### 4.0 MONITORING WELL DRILLING, CONSTRUCTION ABANDONMENT AND REPORTING

The existing detection monitoring well network for AP-1 is in place. Existing monitoring wells were installed following Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Design and Installation of Monitoring Wells as a general guide for best practices. Each of the monitoring wells and piezometers was surveyed by Jordan Engineering, Inc., with a horizontal accuracy of 0.5 feet and a vertical accuracy of 0.01 feet referenced to Georgia State Plane Coordinate System (Georgia State Plane, West Zone, NAD83) and vertical datum North American Vertical Datum 1988 (NAVD88). The certified surveyor's report is included in Appendix A. Monitoring well logs, for the existing monitoring well network, are

included in Appendix A. The following sections describe the methods used for well drilling, construction, abandonment, and reporting for modifications to the well network at the site.

## 4.1 Drilling

A variety of well drilling methods are available for 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 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 Region 4 U.S. Environmental Protection Agency (US EPA) Science and Ecosystem Support Division (SESD) *Operating Procedure SESDGUID-101-R2 (US EPA 2018)* as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Laboratory Services and Applied Science Division *Operating Procedure for Field Equipment Cleaning and Decontamination* as a guide. Drilling and well installation activities will be completed under the direction of a qualified groundwater scientist.

Sampling and/or coring may be used to help determine the stratigraphy and geology. Samples will be logged under the oversight of a qualified groundwater scientist. Screen depths will be chosen based on the depth of the uppermost aquifer.

Drilling for any subsurface hydrologic investigation, installation or abandonment of groundwater wells will be performed by driller that has at the time of installation, a performance bond on file with the Water Well Standards Advisory Council. Copies of the bonds for the existing wells are included in Appendix A.

## 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.

### 4.2.1 Well Casings and Screens

American Society for Testing Materials (ASTM), National Sanitation 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 GA EPD.

### 4.2.2 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 and EPD concurrence as to why a longer screen is necessary (e.g., significant variation in groundwater level). If the above techniques 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. Pre-packed well screens will be installed following general industry standards and using the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division *Operating Procedure for Design and Installation of Monitoring Wells* 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.

#### **4.2.3 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 borehole 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 of filter pack depth will be measured, 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 must prevent hydraulic communication between strata and prevent migration from overlying areas into the well screen interval. A minimum of two feet of bentonite (i.e., 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 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.

#### **4.2.4 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 cement grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 2 feet from the well casing and sloped to drain water away from the well. The apron for a flush-mount well will be tied into the surrounding pavement.

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 may 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 protective casing for the drainage of moisture from the casing. Above ground protective covers will be locked.

Protective bollards may 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 Monitoring Well Detail, illustrates the general design and construction details for a monitoring well.

#### **4.2.5 Well Development**

Well development will be conducted under 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 measured turbidity of less than 10 NTUs is achieved. Additionally, the stabilization criteria contained in Appendix C, Groundwater Sampling Procedures, 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 of 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. 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 Well Abandonment**

Monitoring wells will be abandoned using industry-accepted practices and using the Manual for Groundwater Monitoring (1991) and Georgia Water Well Standards Act (1985) [Official Code of Georgia Annotated (O.C.G.A.) 12-5-120, 1985] as guides. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole.

Per Georgia Rule 391-3-4-.10(6)(g): Monitoring wells require abandonment and replacement after two consecutive dry sampling events, unless an alternate schedule is approved by the GA EPD. Well abandonment will be performed under the direction of a qualified groundwater scientist. A minor modification will be submitted to the EPD in accordance with Rule 391-3-4-.02(3)(b)(6) prior to the installation or decommissioning of monitoring wells.

## 4.4 Documentation

The following information documenting the construction and development of each well is provided on the boring logs for the existing monitoring system (Appendix A). Within 60 days of the construction and development or abandonment of each groundwater monitoring well, a well installation/abandonment report will be submitted to the GA EPD by a qualified groundwater scientist or engineer. For installed wells, the following minimal information will be provided:

- Well Identification
- Name of drilling contractor and type of drill rig
- Dates of drilling and initial well emplacement
- Drilling method and drilling fluid, if used
- Borehole diameter and well casing diameter
- Well depth ( $\pm 0.1$  ft.)
- Schematic of well with dimensions
- Lithologic logs
- Well casing materials
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Standards Advisory Council
- Narrative of drilling technique applied, well construction details, and well development procedures, including dates, drilling fluids used (if applicable), well casing and screen materials, screen slot size, and joint type
- Type of protective well cap and sump dimensions for each well.
- Screen materials and design (i.e., interval in feet below ground surface and elevation)
- Screen length and slot size
- Filter pack material/size and volume (placement narrative)
- Seal emplacement method and type/volume of sealant
- Surface seal and volumes/mix of annular seal material
- Documentation of ground surface elevation at well location ( $\pm 0.01$  ft.). Based on survey data recorded from a known datum
- Documentation of top of casing elevation ( $\pm 0.01$  ft.). Based on survey data recorded from a known datum
- Well location data given to within an accuracy of 0.5 feet based on survey data recorded from a known datum
- Well elevation data at concrete pad nail given to within an accuracy of 0.01 feet based on survey data recorded from a known datum



- Well development date
- Well turbidity following development
- Narrative of well development method-specific well development procedure.
- Documentation that water quality field parameters meet well development criteria.
- Documentation stating that a Georgia-registered professional surveyor has certified that the horizontal accuracy for the installed monitoring wells is 0.5 feet, and vertical accuracy for elevations to 0.01 feet using a known datum.

In accordance with the Georgia Water Well Standards Act (O.C.G.A. § 12-5-134(5)(d)(vii), at least once every five years, the owner of the property on which a monitoring well is constructed shall have the monitoring well(s) inspected by a professional engineer or professional geologist, who shall direct appropriate remedial corrective work to be performed if the well does not conform to standards.

## 5.0 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 3 presents the groundwater monitoring parameters and sampling frequency. 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 the Appendix III parameters will be at least semi-annual during the active life of the facility and the post-closure care period. Assessment monitoring was initiated on May 15, 2018, per GA Chapter 391-3-4-.10(6) Rules for Solid Waste Management.

When referenced throughout this plan, Appendix III and Appendix IV parameters refer to the parameters contained in Appendix III and Appendix IV of 40 CFR 257, Subpart D, 80 Fed. Reg. 21468 (April 17, 2015).

As shown on Table 4 the groundwater samples will be analyzed using methods specified in US EPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), US EPA 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 GA EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Program (NELAP). Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

## 6.0 SAMPLE COLLECTION

During each sampling event, samples will be collected and handled in accordance with the procedures specified in Appendix C, Groundwater Sampling Procedures, and Appendix D, Surface Water Sampling Procedures. Sampling procedures were developed using standard industry practice and Region 4 U.S. Environmental Protection Agency, Laboratory Services & Applied Science Division Operating Procedure: *Groundwater Sampling*, (LSASDPROC-301-R6) (US EPA 2023a) as a guide. Low-flow sampling methodology will be utilized for

groundwater sample collection. Alternative industry accepted sampling techniques may be used when appropriate with prior EPD approval. The applied groundwater purging, and sampling methodologies will be discussed in the semi-annual monitoring reports submitted to EPD.

For groundwater sampling, positive gas displacement Teflon 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. Non-dedicated equipment will be decontaminated in accordance with the US EPA LSASDPROC-205-R4 (US EPA 2020).

In accordance with Georgia Rules for Solid Waste Management section 391-3-4-.10(6)(g), groundwater wells that are determined to be dry for two consecutive semi-annual sampling events should be replaced, unless an alternate schedule has been approved by GA EPD. In accordance with the Georgia Rules for Solid Waste Management section 391-3-4-.10(6)(g) monitoring wells require replacement after two consecutive dry sampling events. Well installation must be directed by a qualified groundwater scientist. As appropriate, a minor modification shall be submitted in accordance with Rule 391-3-4-.02 prior to the installation or decommissioning of monitoring wells.

## 7.0 SURFACE WATER MONITORING PLAN

Following the submittal of the final closure certification, during each semi-annual sampling event, surface water samples will be collected from areas that collect watershed from the cap system of closed AP-1. Sample locations include SchAPSWC-1 and SchAPSWC-2. These locations are identified on Figure 3. The surface water monitoring is for the Solid Waste Management Program and is not associated with any existing industrial, industrial stormwater, and/or construction stormwater discharge permitting which are regulated by the National Pollutant Discharge Elimination System (NPDES) requirements of Section 402 of the Clean Water Act. In the event that no flowing water is present at the sampling locations at the time of sampling, it will be noted in the field sampling documents associated with that event and no sample will be collected for that event.

During each sampling event, samples will be collected and handled in accordance with the procedures specified in Appendix D. Surface water samples will be collected and handled in accordance with standard industry practice and US EPA Region 4 LSASD *Surface Water Sampling Procedures* LSASDPROC-201-R6 as a guide (US EPA 2023b). When possible, the sample should be collected directly into the appropriate sample container provided by the analytical laboratory. If the sample location cannot be physically reached, an intermediate collection device may be used (e.g., a “swing sampler” with a 12-foot handle and a single use container) as presented in the current US EPA field guidance document. When non-dedicated equipment is used, it will be decontaminated prior to first use and between surface water sampling locations.

Surface water samples will be analyzed for field parameters, pH, temperature, specific conductance, dissolved oxygen, oxidation reduction potential (ORP), and turbidity and Appendix IV constituents and by the methods as listed in Table 5.

Monitoring results from surface water sampling will be incorporated into semi-annual groundwater monitoring reports. Constituent concentrations from the current monitoring event, as well as each of the historical monitoring events will be provided on a data summary table to assess potential impacts of the facility to adjacent surface waters.

## 8.0 CHAIN-OF-CUSTODY

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
- Dates and times of possession by each individual
- Notated date(s) and time(s) of sample transfer between individuals

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

## 9.0 FIELD AND LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Field quality control samples will be prepared the same as compliance samples with regards 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 20 samples using non-dedicated equipment. Rinsate blanks will be collected following decontamination of, and prior to collection of a field sample with the 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 groundwater monitoring reports. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and any recalibration steps will be documented on field 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 as part of each groundwater report's quality control documentation.

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

## 10.0 REPORTING RESULTS

A semi-annual groundwater report that documents the results of sampling and analysis will be submitted to GA EPD. Semi-annual groundwater monitoring reports will be submitted to the GA 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, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs.
- 2) A record of field sampling conditions including, well signage, well access, sampling and purging equipment condition and site conditions that may affect sampling will be recorded. These records will be included as an appendix to the semi-annual groundwater monitoring reports.
- 3) A brief overview of purging/sampling methodologies
- 4) Discussion of results
- 5) Recommendations for the future monitoring consistent with the Rules
- 6) Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered PG. or PE.
- 7) 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
- 8) Groundwater flow rate and direction calculations
- 9) Identification of any groundwater wells that were installed or decommissioned during the preceding year, along with a narrative description of why these actions were taken
- 10) 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
- 11) Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL)
- 12) Tabular summary of surface water monitoring results including the current monitoring event as well as each of the historical monitoring events. This will be added after final closure certification is submitted.

- 13) If applicable, semi-annual assessment monitoring results
- 14) Any alternate source demonstration completed during the previous monitoring period, if applicable
- 15) Laboratory Reports
- 16) COC documentation
- 17) Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data
- 18) Documentation of non-functioning wells or dry surface water sampling locations
- 19) Statistical analyses, including trend analyses (if applicable)
- 20) Plume delineation (if applicable)
- 21) Updated potable water well survey (annually, if applicable)
- 22) Certification by a qualified groundwater scientist.

## 11.0 STATISTICAL ANALYSES

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. An interwell statistical method will be used to compare Appendix III groundwater monitoring data to background conditions. Confidence intervals will be constructed for each downgradient well and used to compare Appendix IV groundwater monitoring data to the groundwater protection standards. These statistical analyses methods are consistent with the *Statistical Analysis of Groundwater Data at RCRA Facilities Unified Guidance* (Unified Guidance) (US EPA 2009).

According to GA EPD rules (391-3-4-.10(6)(a), which incorporates the statistical analysis requirements of 40 CFR 257.93 by reference), the site must specify in the operating record the statistical methods to be used in evaluating groundwater monitoring data for each constituent. The statistical test chosen shall be conducted separately for each constituent in each well. As authorized by the rule, statistical tests that may 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). 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) and §257.93(f)(5).

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 4 includes a flowchart that depicts the process that will be followed to develop the site-specific plan. Figure 5 presents the logic that will be used to calculate site-specific statistical limits and test compliance results against those limits.

## 12.0 REFERENCES

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## Tables



TABLE 1  
SUMMARY OF MONITORING WELL, ASSESSMENT WELL AND PIEZOMETER CONSTRUCTION DATA  
Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

Well ID	Hydraulic Location	Screened Matrix	NAD 83 Northing <sup>[1]</sup>	NAD 83 Easting <sup>[1]</sup>	Top of Casing Elevation (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation at Concrete Pad (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation (feet NAVD88) <sup>[2]</sup>	Well Depth (feet bgs) <sup>[3]</sup>	Top of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Bottom of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Screen Length (feet)	Date of Installation	Average Horizontal Hydraulic Conductivity (cm/sec)	Average Vertical Hydraulic Conductivity (cm/sec)	Groundwater Elevation February 19, 2024 (feet NAVD88) <sup>[2]</sup>
AP-1 MONITORING WELL NETWORK															
SGWA-1	Upgradient	Overburden	1119233.10	2399899.81	546.83	544.27	544.07	50.9	503.57	493.57	10	2/11/2015	--	5.57E-05	505.53
SGWA-2	Upgradient	Bedrock	1119237.67	2399908.19	546.94	544.20	543.95	95.8	458.55	448.55	10	2/17/2015	1.25E-04 *	--	506.47
SGWA-3	Upgradient	Overburden	1120224.15	2399296.64	545.83	543.03	542.88	50.0	502.88	492.88	10	11/18/2015	1.74E-05 *	--	515.13
SGWA-4	Upgradient	Overburden	1121477.05	2401124.64	547.66	544.96	544.81	60.5	494.31	484.31	10	11/17/2015	3.06E-05 *	--	500.66
SGWA-5	Upgradient	Overburden	1118088.42	2397426.26	508.48	505.93	505.73	30.2	485.53	475.53	10	11/18/2015	1.33E-04 *	--	492.30
SGWC-6	Downgradient	Overburden	1122167.18	2401979.98	510.49	507.87	507.67	25.0	492.67	482.67	10	11/12/2015	3.43E-05 *	--	495.55
SGWC-7	Downgradient	Bedrock	1122668.61	2402259.75	506.40	503.65	503.45	35.0	478.45	468.45	10	11/11/2015	4.55E-04 *	--	492.32
SGWC-8	Downgradient	Overburden/Bedrock	1122865.98	2402979.50	514.28	511.68	511.48	40.0	481.48	471.48	10	11/10/2015	7.84E-04 *	--	492.74
SGWC-9	Downgradient	Overburden	1122634.64	2403455.19	510.62	507.88	507.63	35.0	482.63	472.63	10	11/6/2015	1.48E-04 *	--	488.56
SGWC-10	Downgradient	Overburden	1121895.85	2404046.92	509.41	506.80	506.60	30.0	486.60	476.60	10	11/5/2015	3.73E-05 *	--	490.21
SGWC-11	Downgradient	Overburden	1121542.11	2404332.12	511.47	508.77	508.62	40.0	478.62	468.62	10	10/29/2015	5.78E-05 *	--	491.03
SGWC-12	Downgradient	Overburden	1121576.75	2405009.92	500.53	497.80	497.70	47.6	460.70	450.70	10	10/30/2015	4.77E-05 *	--	483.47
SGWC-13	Downgradient	Overburden	1121274.85	2405761.20	482.71	480.17	479.92	35.0	454.92	444.92	10	11/4/2015	1.32E-04 *	--	478.11
SGWC-14	Downgradient	Overburden	1120966.13	2406329.89	476.72	473.52	473.32	35.3	448.52	438.52	10	2/24/2015	2.97E-03 *	1.30E-05	466.10
SGWC-15	Downgradient	Overburden	1120191.20	2407093.92	482.75	479.76	479.66	45.2	444.86	434.86	10	2/26/2015	2.01E-03 *	4.10E-04	454.42
SGWC-16	Downgradient	Overburden	1119221.42	2407155.89	460.31	457.18	457.03	39.2	428.23	418.23	10	3/3/2015	9.29E-04 *	--	436.45
SGWC-17	Downgradient	Overburden	1118308.77	2407267.44	418.00	415.13	414.93	24.5	400.83	390.83	10	3/11/2015	1.30E-03 *	--	415.45
SGWC-18	Downgradient	Overburden	1116947.75	2406931.32	513.29	510.41	510.31	44.5	476.21	466.21	10	3/17/2015	1.64E-03 *	--	470.31
SGWC-19	Downgradient	Overburden	1116024.59	2406097.05	478.94	476.13	475.83	34.6	451.63	441.63	10	3/18/2015	7.22E-04 *	5.30E-05	462.91
SGWC-20	Downgradient	Overburden	1116020.73	2405307.67	504.60	501.69	501.49	25.0	486.49	476.49	10	11/19/2015	7.94E-05 *	--	491.50
SGWC-21	Downgradient	Overburden	1115409.88	2404197.33	487.67	484.92	484.67	24.9	470.17	460.17	10	5/6/2015	2.16E-03 *	--	487.02
SGWC-22	Downgradient	Overburden	1115540.08	2403001.81	518.02	515.51	515.41	50.1	478.91	468.91	10	1/22/2015	5.10E-04 *	--	492.27
SGWC-23	Downgradient	Bedrock	1116693.80	2402131.07	523.10	520.17	520.02	49.7	480.72	470.72	10	2/3/2015	3.45E-03 *	1.65E-04	490.56
SGWA-24	Upgradient	Overburden	1118121.96	2400743.52	492.38	489.47	489.32	38.1	461.62	451.62	10	2/10/2015	--	2.49E-05	478.47
SGWA-25	Upgradient	Overburen	1120555.28	2400857.08	526.49	523.45	523.20	45.0	488.60	478.60	10	2/18/2015	7.39E-04 *	8.55E-05	499.63



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Monroe County, Georgia

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AP-1 ASSESSMENT MONITORING WELL NETWORK															
PZ-13S	Downgradient	Overburden	1121957.03	2404227.47	520.51	517.68	517.48	45.3	482.58	472.58	10	4/1/2015	1.71E-03 *	--	488.51
PZ-14S	Downgradient	Overburden	1121852.80	2404820.56	512.13	509.03	508.68	44.9	474.18	464.18	10	3/26/2015	5.97E-03 *	--	486.03
PZ-17I	Downgradient	Bedrock	1120190.27	2407107.37	483.03	480.20	479.90	97.3	393.20	383.20	10	2/27/2015	1.52E-04 *	--	454.85
PZ-39S	Downgradient	Overburden	1120178.43	2407470.49	474.58	471.99	471.79	76.4	405.79	395.79	10	8/21/2018	--	--	438.67
PZ-40I	Downgradient	Bedrock	1116960.39	2406934.72	512.55	510.19	510.09	83.4	437.09	427.09	10	8/15/2018	--	--	471.05
PZ-41S	Downgradient	Overburden	1116799.18	2407124.98	491.50	488.66	488.56	45.0	453.56	443.56	5	8/16/2018	--	--	459.09
PZ-42I	Downgradient	Bedrock	1116013.79	2405294.12	503.18	500.65	500.45	96.0	414.45	404.45	10	8/21/2018	--	--	493.38
PZ-43S	Downgradient	Overburden	1115598.12	2405507.16	504.03	501.34	501.19	50.5	460.69	450.69	10	8/17/2018	--	--	475.91
PZ-44I	Downgradient	Bedrock	1121515.40	2404330.23	510.36	507.91	507.86	114.0	403.86	393.86	10	9/5/2018	--	--	490.53
PZ-69I	Downgradient	Bedrock	1121906.36	2404051.35	508.85	506.44	506.00	106.0	410.00	400.00	10	1/12/2022	--	--	490.26
PIEZOMETERS															
PZ-2I	Downgradient	Bedrock	1115544.85	2402990.76	517.56	515.06	514.81	84.3	440.91	430.91	10	1/27/2015	1.89E-04 *	3.36E-05	491.73
PZ-3S	Downgradient	Overburden	1116085.04	2402533.80	517.29	514.57	514.37	50.0	474.77	464.77	10	1/29/2015	--	--	487.89
PZ-5I	Downgradient	Bedrock	1117484.15	2401816.71	523.26	520.73	520.63	47.0	484.03	474.03	10	2/4/2015	6.33E-04 *	--	486.69
PZ-9I	Upgradient	Bedrock	1120562.72	2400862.76	526.57	523.61	523.31	80.2	453.51	443.51	10	2/19/2015	4.70E-04 *	--	499.70
PZ-10S	Downgradient	Overburden	1122338.03	2401768.92	517.53	514.78	514.38	34.9	489.88	479.88	10	5/5/2015	--	--	495.31
PZ-11S	Downgradient	Overburden	1123169.22	2402767.44	529.31	526.19	526.04	46.0	490.04	480.04	10	4/6/2015	1.67E-03 *	--	490.93
PZ-12S	Downgradient	Overburden	1122684.90	2403618.46	517.69	514.64	514.54	44.4	480.54	470.54	10	4/1/2015	3.30E-03 *	--	487.15
PZ-14I	Downgradient	Bedrock	1121866.36	2404822.43	512.89	510.03	509.73	95.2	424.93	414.93	10	3/25/2015	9.22E-04 *	8.29E-08	486.03
PZ-15S	Downgradient	Overburden	1121486.96	2405558.59	500.60	497.59	497.44	40.1	467.74	457.74	10	4/28/2015	--	--	484.41
PZ-19I	Downgradient	Bedrock	1118588.47	2407251.56	417.76	414.74	414.54	71.9	353.04	343.04	10	3/4/2015	2.48E-03 *	--	414.18
PZ-19S	Downgradient	Overburden	1118587.24	2407241.54	417.80	414.79	414.54	25.0	399.94	389.94	10	3/4/2015	6.42E-04 *	--	413.66
PZ-20I	Downgradient	Bedrock	1118318.15	2407273.36	417.41	414.46	414.31	79.6	345.11	335.11	10	3/10/2015	3.95E-04 *	--	413.80
PZ-21S	Downgradient	Overburden	1117639.19	2407006.52	473.74	470.85	470.60	23.4	457.60	447.60	10	3/12/2015	5.77E-04 *	--	462.91
PZ-25I	Downgradient	Overburden	1121837.80	2404573.04	528.39	526.02	525.77	125.0	410.97	400.97	10	5/24/2016	2.29E-04 *	--	488.00
PZ-25S	Downgradient	Overburden	1121848.11	2404567.52	528.24	525.78	525.48	55.0	480.78	470.68	10	5/25/2016	1.62E-04 *	--	487.89

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PIEZOMETERS - continued															
PZ-26S	Downgradient	Overburden	1121696.65	2405733.23	491.65	489.17	489.07	45.0	454.27	444.27	10	6/1/2016	--	--	475.91
PZ-27D	Downgradient	Bedrock	1121558.94	2406023.17	475.43	472.659	472.41	125.0	367.61	347.61	20	6/17/2016	--	--	474.35
PZ-27S	Downgradient	Overburden	1121565.33	2406028.25	475.80	473.175	473.13	45.0	438.33	428.33	10	5/26/2016	5.34E-04 *	--	471.40
PZ-28I	Downgradient	Bedrock	1121394.06	2406373.94	484.18	481.587	481.44	68.8	422.84	412.84	10	6/3/2016	4.53E-04 *	--	476.90
PZ-29S	Downgradient	Overburden	1121269.19	2406618.29	491.31	488.704	488.50	45.0	453.70	443.70	10	5/26/2016	--	--	461.37
PZ-30I	Downgradient	Bedrock	1121073.53	2407078.99	478.31	475.712	475.56	85.3	400.46	390.46	10	6/2/2016	--	--	448.38
PZ-31I	Downgradient	Bedrock	1121204.03	2407445.73	466.89	464.163	463.96	75.1	399.06	389.06	10	6/2/2016	--	--	436.61
PZ-32D	Downgradient	Bedrock	1121089.64	2407719.37	465.42	462.561	462.36	126.0	366.56	336.56	30	6/1/2016	8.48E-06 *	--	435.72
PZ-32S	Downgradient	Overburden	1121089.22	2407698.44	465.06	462.52	462.27	55.0	417.47	407.47	10	6/1/2016	--	--	437.40
PZ-33I	Downgradient	Overburden	1121245.25	2409064.05	469.38	466.547	466.45	76.0	400.65	390.65	10	6/8/2016	--	--	424.32
PZ-34S	Downgradient	Overburden	1121331.59	2409288.37	443.67	441.08	440.83	45.5	405.53	395.53	10	6/4/2016	--	--	424.68
PZ-35I	Downgradient	Overburden	1121598.57	2406058.33	474.40	474.72	474.57	55.5	429.27	419.27	10	6/22/2016	--	--	471.21
PZ-36I	Downgradient	Bedrock	1120410.99	2407256.25	481.52	478.96	478.86	95.5	393.56	383.56	10	6/5/2016	--	--	451.50
PZ-36S	Downgradient	Overburden	1120401.04	2407248.04	482.35	479.50	479.40	55.4	434.40	424.40	10	8/22/2018	--	--	449.35
PZ-37I	Downgradient	Overburden/Bedrock	1121178.48	2408419.19	482.18	479.68	479.48	71.2	418.48	408.48	10	6/2/2016	--	--	431.51
PZ-38I	Downgradient	Overburden	1121475.86	2406352.98	482.24	482.38	482.23	74.0	418.43	408.43	10	6/23/2016	3.04E-04 *	--	467.46
PZ-45D	Downgradient	Bedrock	1125296.24	2400250.55	512.33	509.94	509.74	165.0	399.74	344.74	55	3/9/2020	--	--	483.39
PZ-46D	Downgradient	Overburden/Bedrock	1123512.22	2400923.25	450.28	447.37	447.07	53.5	423.57	393.57	30	3/17/2020	--	--	439.15
PZ-47D	Downgradient	Bedrock	1126623.42	2404366.80	410.01	406.91	406.76	25.1	396.66	381.66	15	3/11/2020	--	--	400.21
PZ-48S	Downgradient	Overburden	1125014.71	2405779.92	444.33	441.45	441.30	61.0	390.55	380.55	10	3/4/2020	--	--	408.25
PZ-49D	Downgradient	Bedrock	1123429.73	2410615.29	367.41	365.13	364.88	106.0	288.88	258.88	30	3/6/2020	--	--	362.22
PZ-49S	Downgradient	Overburden	1123434.46	2410605.99	367.89	365.29	365.19	25.3	350.19	340.19	10	3/7/2020	--	--	361.09
PZ-50D	Upgradient	Bedrock	1103125.91	2408306.87	473.78	470.99	470.66	100.0	380.66	370.66	10	3/18/2020	--	--	NM
PZ-51D	Upgradient	Bedrock	1119239.99	2399955.07	546.04	543.47	543.17	126.0	427.17	417.17	10	3/8/2020	--	--	506.55
PZ-52	Downgradient	Overburden	1122822.91	2403622.69	521.84	519.68	519.43	77.0	452.43	442.43	10	3/17/2020	--	--	486.32
PZ-53	Downgradient	Overburden	1121932.34	2404813.43	516.64	513.81	513.61	45.0	478.61	468.61	10	3/19/2020	--	--	485.75



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Monroe County, Georgia

Well ID	Hydraulic Location	Screened Matrix	NAD 83 Northing <sup>[1]</sup>	NAD 83 Easting <sup>[1]</sup>	Top of Casing Elevation (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation at Concrete Pad (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation (feet NAVD88) <sup>[2]</sup>	Well Depth (feet bgs) <sup>[3]</sup>	Top of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Bottom of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Screen Length (feet)	Date of Installation	Average Horizontal Hydraulic Conductivity (cm/sec)	Average Vertical Hydraulic Conductivity (cm/sec)	Groundwater Elevation February 19, 2024 (feet NAVD88) <sup>[2]</sup>
PIEZOMETERS - continued															
PZ-54	Downgradient	Overburden	1121509.71	2406555.15	492.96	490.27	490.17	45.0	455.17	445.17	10	3/19/2020	--	--	462.22
PZ-55	Downgradient	Overburden	1121931.60	2409132.43	447.21	444.25	444.15	36.0	418.15	408.15	10	3/20/2020	--	--	419.96
PZ-56	Downgradient	Bedrock	1123524.68	2409037.21	433.68	431.10	430.85	46.0	395.10	385.10	10	3/19/2020	--	--	392.29
PZ-57	Downgradient	Overburden/Bedrock	1123405.64	2407361.88	439.51	436.55	436.45	59.0	387.45	377.45	10	3/19/2020	--	--	404.81
PZ-58	Downgradient	Overburden	1123299.43	2405207.09	492.21	489.35	489.25	46.0	453.25	443.25	10	3/16/2020	--	--	444.92
PZ-59S	Downgradient	Overburden	1125213.65	2407658.45	385.93	383.13	382.83	24.0	368.83	358.83	10	3/20/2020	--	--	380.99
PZ-59D	Downgradient	Bedrock	1125229.89	2407668.93	385.86	383.16	382.86	69.0	328.86	313.86	15	3/27/2020	--	--	381.11
PZ-60D	Downgradient	Bedrock	1124410.72	2408242.87	389.34	386.53	386.43	99.7	317.03	286.73	30	3/29/2020	--	--	383.11
PZ-60S	Downgradient	Overburden	1124400.44	2408243.59	389.88	386.66	386.36	20.0	376.36	366.36	10	3/31/2020	--	--	381.35
PZ-61	Downgradient	Overburden/Bedrock	1122537.21	2408531.43	439.27	436.84	436.79	49.5	397.34	387.34	10	4/11/2020	--	--	416.83
PZ-62	Downgradient	Overburden	1122370.34	2406175.11	501.32	498.45	498.25	52.3	456.00	446.00	10	4/9/2020	--	--	459.36
PZ-63	Downgradient	Bedrock	1123955.38	2404060.61	501.54	499.12	498.87	40.0	468.87	458.87	10	4/12/2020	--	--	479.48
PZ-64	Downgradient	Bedrock	1123724.36	2406404.18	479.52	476.09	475.99	70.0	416.99	406.99	10	4/8/2020	--	--	427.82
PZ-65	Downgradient	Overburden	1121937.16	2407733.04	432.42	429.77	429.57	30.3	409.57	399.57	10	4/11/2020	--	--	425.39
PZ-66D	Downgradient	Bedrock	1124644.48	2409028.45	427.60	424.64	424.39	266.0	355.39 <sup>[7]</sup>	-	open borehole	5/6/2020	--	--	379.43
PZ-66	Downgradient	Bedrock	1124664.10	2409115.98	421.24	418.68	418.38	60.0	373.38	358.38	15	4/2/2020	--	--	384.68
PZ-67D	Downgradient	Bedrock	1125764.81	2408259.40	428.48	424.86	424.71	301.0	341.71 <sup>[7]</sup>	-	open borehole	4/25/2020	--	--	386.39
PZ-67	Downgradient	Overburden	1125782.26	2408248.89	425.94	423.37	423.22	39.8	393.47	383.47	10	4/1/2020	--	--	400.97
PZ-68	Downgradient	Overburden	1125116.59	2407181.92	395.55	392.34	392.14	20.0	382.14	372.14	10	4/15/2020	--	--	386.59
LPZ-01	Upgradient	Overburden/Bedrock	1117001.58	2398513.19	553.29	550.47	549.97	65.8	495.97	485.97	10	11/10/2015	--	--	495.15
LPZ-02	Upgradient	Overburden	1119972.34	2398004.93	514.52	511.42	511.07	20.0	501.07	491.07	10	11/20/2015	--	--	512.48
LPZ-03	Upgradient	Overburden	1117883.86	2398657.00	515.45	512.55	512.15	35.0	487.15	477.15	10	11/18/2015	--	3.92E-06	509.56
LPZ-04	Upgradient	Overburden	1115962.59	2397083.47	461.24	458.31	458.11	40.0	440.11	430.11	10	11/19/2015	--	4.51E-08	Destroyed
LPZ-05	Upgradient	Overburden	1115328.95	2399698.53	524.51	521.81	521.51	57.5	479.41	469.41	10	11/5/2015	--	--	476.95



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Well ID	Hydraulic Location	Screened Matrix	NAD 83 Northing <sup>[1]</sup>	NAD 83 Easting <sup>[1]</sup>	Top of Casing Elevation (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation at Concrete Pad (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation (feet NAVD88) <sup>[2]</sup>	Well Depth (feet bgs) <sup>[3]</sup>	Top of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Bottom of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Screen Length (feet)	Date of Installation	Average Horizontal Hydraulic Conductivity (cm/sec)	Average Vertical Hydraulic Conductivity (cm/sec)	Groundwater Elevation February 19, 2024 (feet NAVD88) <sup>[2]</sup>
GYPSUM CELL 1															
GWC-1	Downgradient	Overburden	1120077.85	2411555.32	374.95	371.77	371.60	34.9	346.91	336.91	10	10/28/2009	--	--	366.68
GWC-2	Downgradient	Overburden	1119816.59	2411493.53	380.22	377.02	376.90	54.9	332.12	322.12	10	10/8/2009	1.10E-04 *	--	367.76
GWC-3	Downgradient	Overburden	1119613.94	2411202.40	412.66	409.97	409.60	46.4	373.20	363.20	10	10/29/2009	--	--	375.69
GWC-4	Downgradient	Overburden	1119255.96	2411041.82	411.75	408.50	408.40	39.9	378.70	368.70	10	11/21/2009	--	--	378.86
GWC-5	Downgradient	Overburden	1118897.72	2411025.88	396.69	393.37	393.27	30.7	372.84	362.84	10	10/22/2009	--	--	376.25
GWC-6	Downgradient	Bedrock	1118575.69	2410872.56	415.80	412.48	412.38	45.1	377.52	367.52	10	10/21/2009	8.21E-04 *	--	376.00
GWC-7	Downgradient	Overburden	1118243.67	2410645.91	418.27	414.51	414.41	54.8	369.84	359.84	10	10/20/2009	--	--	375.64
GWC-8A	Downgradient	Overburden	1117917.32	2410375.16	401.62	398.65	398.60	45.0	364.30	354.30	10	3/29/2017	--	--	379.44
GWC-9	Downgradient	Overburden	1117955.40	2410167.75	386.18	383.21	382.81	16.9	376.02	366.02	10	11/4/2009	2.56E-04 *	--	379.50
GWC-10	Downgradient	Overburden	1118306.77	2410018.28	392.87	389.49	388.89	31.7	367.50	357.50	10	11/3/2009	--	--	382.86
GWC-11	Downgradient	Overburden	1118648.98	2409778.84	402.33	399.21	398.81	31.1	377.81	367.81	10	11/3/2009	--	--	385.45
GWC-12	Downgradient	Overburden	1118977.87	2409554.57	412.89	409.66	409.16	34.4	384.94	374.94	10	11/3/2009	--	--	388.59
GWC-13	Downgradient	Overburden	1119338.68	2409390.95	419.77	416.71	416.51	40.1	386.52	376.52	10	11/2/2009	--	--	390.83
GWC-14	Downgradient	Overburden	1119655.05	2409111.75	403.60	400.41	400.16	24.1	386.09	376.09	10	11/4/2009	--	--	391.58
GWA-15	Upgradient	Overburden	1120009.40	2409282.43	415.01	412.00	411.70	26.2	395.51	385.51	10	11/4/2009	8.01E-04 *	--	403.70
GWA-16	Upgradient	Overburden	1120248.68	2409579.75	444.24	441.01	440.91	54.5	396.71	386.71	10	10/13/2009	--	--	411.36
GWA-17	Upgradient	Overburden	1120210.57	2409946.73	445.84	442.92	442.82	43.7	409.27	399.27	10	9/28/2009	--	--	414.39
GWC-18	Downgradient	Overburden	1119998.73	2410261.85	439.66	436.40	436.30	57.0	389.49	379.49	10	9/29/2009	2.23E-04 *	--	404.50
GWC-19	Downgradient	Overburden	1119645.70	2410713.20	430.20	426.34	426.29	54.1	382.45	372.45	10	10/2/2009	--	--	391.74
GWC-20	Downgradient	Overburden	1119950.51	2411195.38	426.30	423.03	422.98	69.4	363.85	353.85	10	10/6/2009	--	--	380.69





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Well ID	Hydraulic Location	Screened Matrix	NAD 83 Northing <sup>[1]</sup>	NAD 83 Easting <sup>[1]</sup>	Top of Casing Elevation (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation at Concrete Pad (feet NAVD88) <sup>[2]</sup>	Ground Surface Elevation (feet NAVD88) <sup>[2]</sup>	Well Depth (feet bgs) <sup>[3]</sup>	Top of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Bottom of Screen Elevation (feet NAVD88) <sup>[2]</sup>	Screen Length (feet)	Date of Installation	Average Horizontal Hydraulic Conductivity (cm/sec)	Average Vertical Hydraulic Conductivity (cm/sec)	Groundwater Elevation February 19, 2024 (feet NAVD88) <sup>[2]</sup>
PAC ASH CELL															
GWA-21	Upgradient	Overburden	1120675.73	2409462.70	422.58	419.81	419.70	17.8	412.04	402.04	10	6/29/2010	--	--	417.83
GWA-22	Upgradient	Overburden/Bedrock	1120962.12	2409473.22	444.50	442.01	442.01	40.0	412.29	402.29	10	6/30/2010	--	--	420.50
GWC-29	Downgradient	Overburden	1119875.58	2408717.95	399.64	396.98	396.88	24.4	382.78	372.78	10	6/28/2010	9.04E-04 *	--	393.84
GWA-45	Upgradient	Overburden	1120669.03	2407889.56	451.08	448.33	448.28	32.7	425.99	415.99	10	6/23/2010	2.33E-04 *	--	435.28
GWA-46	Upgradient	Overburden	1120783.23	2408235.69	461.13	458.37	458.32	44.2	424.38	414.38	10	6/23/2010	--	--	428.18
GWA-47	Upgradient	Overburden	1120862.63	2408585.01	465.77	463.03	462.90	51.3	421.74	411.74	10	6/22/2010	--	--	425.12
GWA-48	Upgradient	Overburden	1120953.42	2408939.48	461.73	459.00	458.85	61.2	407.74	397.74	10	6/22/2010	--	--	423.21
GWA-49	Upgradient	Overburden	1121030.08	2409288.38	432.88	430.16	429.86	38.1	401.81	391.81	10	6/21/2010	2.52E-04 *	--	422.33
GWC-50	Downgradient	Overburden	1119917.51	2408956.10	407.16	404.44	404.34	33.6	380.88	370.88	10	6/28/2010	--	--	398.26
GWC-51	Downgradient	Overburden	1119835.51	2408436.95	410.15	407.37	407.27	24.0	393.78	383.78	10	7/27/2010	--	--	401.54
GWC-52	Downgradient	Overburden	1119972.34	2408203.99	417.13	414.43	414.38	30.2	394.53	384.53	10	6/24/2010	7.26E-04 *	--	407.93
GWC-53	Downgradient	Overburden	1120319.65	2407943.05	435.83	433.10	432.90	30.1	412.84	402.84	10	6/23/2010	--	--	425.03



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CELL 3															
GWC-30	Downgradient	Overburden/Bedrock	1119366.69	2408976.35	394.49	392.19	392.0	18.0	384.04	374.04	10	1/24/2020	--	--	388.72
GWC-31	Downgradient	Overburden	1118970.00	2409062.02	392.78	390.13	390.0	19.3	380.68	370.68	10	1/23/2020	--	--	387.42
GWC-32	Downgradient	Overburden	1118749.53	2409084.83	410.03	407.25	406.9	36.0	381.95	371.95	10	1/21/2020	--	--	386.68
GWC-33A	Downgradient	Overburden	1118458.68	2409359.58	393.96	391.32	390.9	24.0	376.87	366.87	10	5/27/2020	--	--	384.51
GWC-34	Downgradient	Overburden	1118248.26	2409680.41	389.29	386.48	386.2	19.0	377.23	367.23	10	1/13/2020	--	--	381.97
GWC-35	Downgradient	Overburden	1117860.46	2409906.21	387.90	385.35	385.1	21.0	375.10	365.10	10	1/12/2020	--	--	383.35
GWC-36	Downgradient	Overburden	1117561.29	2409681.44	425.12	422.52	422.0	45.4	386.62	376.62	10	1/10/2020	--	--	393.43
GWC-37	Downgradient	Overburden	1117239.70	2409636.56	429.80	427.38	427.2	43.0	395.23	385.23	10	1/8/2020	--	--	407.10
GWC-38	Downgradient	Overburden	1116786.45	2409533.11	418.68	416.23	416.0	39.0	386.98	376.98	10	1/7/2020	--	--	407.71
GWA-39	Upgradient	Bedrock	1116967.57	2408671.68	457.62	454.59	454.2	59.0	405.24	395.24	10	12/20/2019	--	--	429.34
GWA-40	Upgradient	Overburden	1117365.24	2408730.04	463.84	461.25	461.2	44.8	427.15	417.15	10	12/18/2020	--	--	429.22
GWA-41	Upgradient	Overburden	1118096.97	2408412.15	434.12	431.70	431.4	38.7	403.75	393.75	10	1/26/2020	--	--	422.19
GWA-42	Upgradient	Overburden	1118500.68	2408233.53	405.19	402.57	402.2	18.8	393.37	383.37	10	1/27/2020	--	--	400.44
GWA-43	Upgradient	Overburden	1118861.38	2408484.42	400.94	398.42	398.1	19.0	389.12	379.12	10	1/26/2020	--	--	396.97
GWA-44A	Upgradient	Overburden	1119296.99	2408569.76	399.62	396.83	396.5	19.9	386.58	376.58	10	5/21/2020	--	--	395.82
GWA-54	Upgradient	Bedrock	1117751.40	2408588.52	451.49	448.78	448.6	50.0	409.83	399.83	10	12/21/2019	--	--	424.71



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Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

**Notes:**

ft = feet; feet bgs = feet below ground surface; NA = Not Available; NM = Not Measured

[1] Coordinates are in feet relative to North American Datum (NAD) 1983, State Plane, Georgia-West.

[2] Vertical elevations are in feet relative to the North American Vertical Datum (NAVD) 1988.

[3] Total well depth accounts for sump if data provided on well construction logs.

[4] cm/sec = centimeters per second

[5] Survey data provided and certified by Jordan Engineering, Inc., on 6/29/2020, 7/17/2020, 7/29/2020, and 2/21/2022.

[6] - = well was not slug tested

[7] Elevation of the bottom of the outer well casing and elevation of top of open corehole.

\* indicates horizontal hydraulic conductivity value was used to calculate site hydraulic conductivity median value of 1.29 ft/day ( $4.55 \times 10^{-4}$  cm/sec) and average value of 2.27 ft/day ( $8.02 \times 10^{-4}$  cm/sec). The following hydraulic conductivity values from the SGYP wells and previously abandoned wells were also included in the data set used to calculate site median and average hydraulic conductivity values along with the hydraulic conductivity values from the monitoring wells and piezometers indicated above:

SGYP-1	4.64E-04	cm/sec
SGYP-3	2.97E-04	cm/sec
SGYP-9	5.88E-04	cm/sec
SGYP-14	2.05E-04	cm/sec
SGYP-20	1.10E-03	cm/sec
SGYP-29	1.90E-03	cm/sec
SGYP-32	2.81E-04	cm/sec
GWC-8	9.71E-05	cm/sec
PZ-6S	8.37E-05	cm/sec
PZ-33	2.08E-04	cm/sec



**TABLE 2**  
**HORIZONTAL GROUNDWATER VELOCITY CALCULATIONS - FEBRUARY 2024**  
Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

Flow Paths	Groundwater Elevation (feet NAVD88) <sup>[1]</sup>	Δ H (feet) <sup>[2]</sup>	Δ L (feet) <sup>[3]</sup>	Hydraulic Gradient (Δ H/Δ L) <sup>[4]</sup> (feet/feet)	Range of Hydraulic Conductivity, K (feet/day) <sup>[6]</sup>	Estimated Effective Porosity (n <sub>e</sub> ) <sup>[7]</sup>	Horizontal Groundwater Velocity	
							(feet per day) <sup>[5]</sup>	(feet per year) <sup>[5]</sup>
AP-1 February 2024								
SGWC-14/PZ-29S	466.10	4.73	419.95	0.011	1.29 to 2.27	0.2	0.07 to 0.13	27 to 47
	461.37							
SGWC-13/PZ-35I	478.11	6.90	439.65	0.016	1.29 to 2.27	0.2	0.10 to 0.18	37 to 65
	471.21							
SGWC-20/PZ-43S	491.50	15.59	483.73	0.032	1.29 to 2.27	0.2	0.21 to 0.37	76 to 134
	475.91							

Notes:

[1] Elevation in feet relative to North American Vertical Datum of 1988 (NAVD88)

[2]  $\Delta H$  = Change in groundwater elevation

[3]  $\Delta L$  = Distance along flow path

[4]  $i = \Delta H / \Delta L$  = Horizontal hydraulic gradient

[5] Velocity =  $(i * K)/n_e$

[6] Hydraulic conductivity values (K) are based on historic aquifer performance tests (revised 5/2024).

The range of hydraulic conductivity used for calculating the horizontal groundwater velocity is median hydraulic conductivity of 1.29 feet/day and the average hydraulic conductivity of 2.27 feet/day.

[7] Effective porosity based on default values for effective porosity recommended by USEPA for a silty sand-type soil (US EPA, 1996)

**TABLE 3**  
**GROUNDWATER MONITORING PARAMETERS AND FREQUENCY**  
Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

MONITORING PARAMETERS		GROUNDWATER MONITORING	
		BACKGROUND	SEMI-ANNUAL EVENTS
FIELD PARAMETERS	Temperature	x	x
	pH	x	x
	Turbidity	x	x
	Specific Conductance	x	x
	Oxidation Reduction Potential	x	x
	Dissolved Oxygen	x	x
Appendix III (Detection Monitoring)	Boron	x	x
	Calcium	x	x
	Chloride	x	x
	Fluoride	x	x
	pH (field)	x	x
	Sulfate	x	x
	Total Dissolved Solids	x	x
Appendix IV (Assesment Monitoring)	Antimony	x	x
	Arsenic	x	x
	Barium	x	x
	Beryllium	x	x
	Cadmium	x	x
	Chromium	x	x
	Cobalt	x	x
	Fluoride	x	x
	Lead	x	x
	Lithium	x	x
	Mercury	x	x
	Molybdenum	x	x
	Selenium	x	x
	Thallium	x	x
	Radium 226+228	x	x

Note: Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4.10(6)

**TABLE 4**  
**ANALYTICAL METHODS**  
Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

PARAMETERS	EPA METHOD NUMBER
<b>APPENDIX III</b>	
Boron	EPA 6010D/6020B
Calcium	EPA 6010D/6020B
Chloride	EPA 300.0/300.1/9250/9251/9253/9056A
Fluoride	EPA 300.0/300.1/9214/9056A
pH	150.1 field
Sulfate	EPA 9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	EPA 160.1/Standard Method 2540C
<b>APPENDIX IV</b>	
Antimony	EPA 7040/7041/6010D/6020B
Arsenic	EPA 7060A/7061A/6010D/6020B
Barium	EPA 7080A/7081/6010D/6020B
Beryllium	EPA 7090/7091/6010D/6020B
Cadmium	EPA 7130/7131A/6020B
Chromium	EPA 7190/7191/6010D/6020B
Cobalt	EPA 7200/7201/6010D/6020B
Fluoride	EPA 300.0/300.1/9214/9056/9214
Lead	EPA 7420/7421/6010D/6020B
Lithium	EPA 6010D/6020B
Mercury	EPA 7470A
Molybdenum	EPA 6010D/6020B
Selenium	EPA 7740/7741A/6010D/6020B
Thallium	EPA 7840/7841/6010D/6020B
Radium 226 and 228 combined	EPA 903.0/9320/9315

**Notes:**

The water Samples will be tested for total metals by following the SW-846, EPA Methods or the most current approved EPA methods.

**TABLE 5**  
**SURFACE WATER MONITORING PARAMETERS AND FREQUENCY**  
Georgia Power - Plant Scherer - Ash Pond 1 (AP-1)  
Monroe County, Georgia

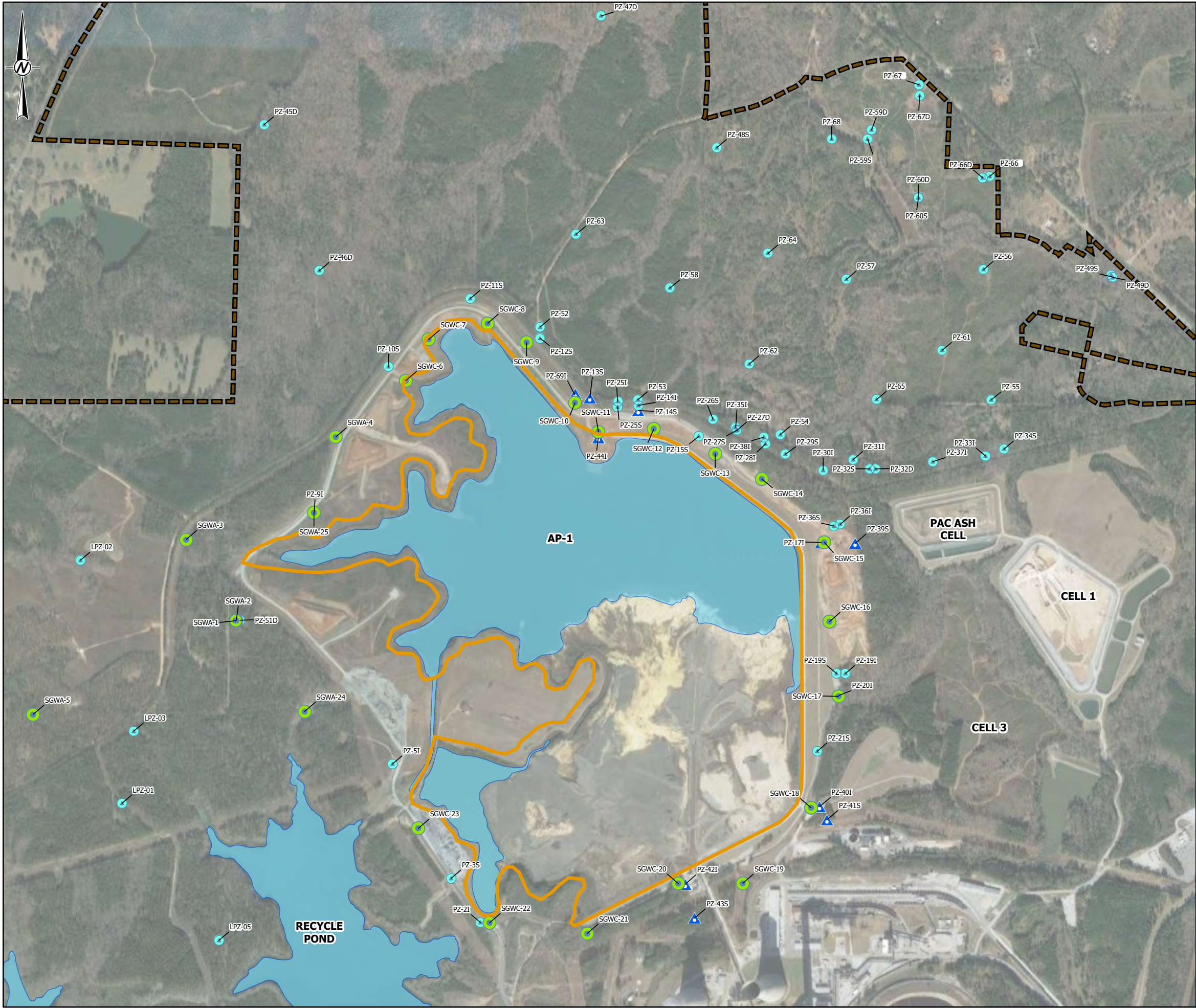
Analyte	SURFACE WATER SAMPLING LOCATIONS	
	SchAP-SWC-1	SchAP-SWC-2
<b>FIELD MONITORING PARAMETERS</b>		
pH	X	X
Oxidation Reduction Potential	X	X
Specific Conductance	X	X
Dissolved Oxygen	X	X
Temperature	X	X
Turbidity	X	X
<b>APPENDIX IV</b>		
Antimony, Total	X	X
Arsenic, Total	X	X
Barium, Total	X	X
Beryllium, Total	X	X
Cadmium, Total	X	X
Chromium, Total	X	X
Cobalt, Total	X	X
Lead, Total	X	X
Lithium, Total	X	X
Mercury, Total	X	X
Molybdenum, Total	X	X
Radium (226 + 228)	X	X
Selenium, Total	X	X
Thallium, Total	X	X

**Notes:**

1. Surface water sampling will commence following certification of closure construction.
2. Surface water is collected semi-annually concurrent with the groundwater sampling event.
3. Any location that is dry at the time of the sampling event will be identified as such.

## Figures





**LEGEND**

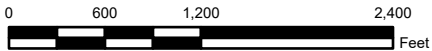
- SCHERER ASH POND-CCR MONITORING WELL
- PIEZOMETER
- ▲ ASSESSMENT MONITORING WELL
- PROPERTY BOUNDARY
- ASH\_POND\_PERMIT\_BOUNDARY
- PONDS

**NOTE(S)**

1. MONITORING WELL LOCATIONS PROVIDED BY JORDAN ENGINEERING.  
2. PIEZOMETER PZ-50D IS NOT LOCATED WITHIN THE CURRENT VIEW. IT IS SITUATED SOUTH OF LAKE JULIETTE. REFER TO THE BORING LOG FOR LOCATION COORDINATES.

**REFERENCE(S)**

1. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST FIPS 1002 FEET.  
2. BACKGROUND IMAGERY: GOOGLE IMAGERY SERVICE. COPYRIGHT GOOGLE 2023. IMAGERY CAPTURED 12/17/2022.



CLIENT  
GEORGIA POWER COMPANY  
PLANT SCHERER  
MONROE COUNTY, GEORGIA

PROJECT  
GROUNDWATER MONITORING PLAN  
PLANT SCHERER - ASH POND 1 (AP-1)

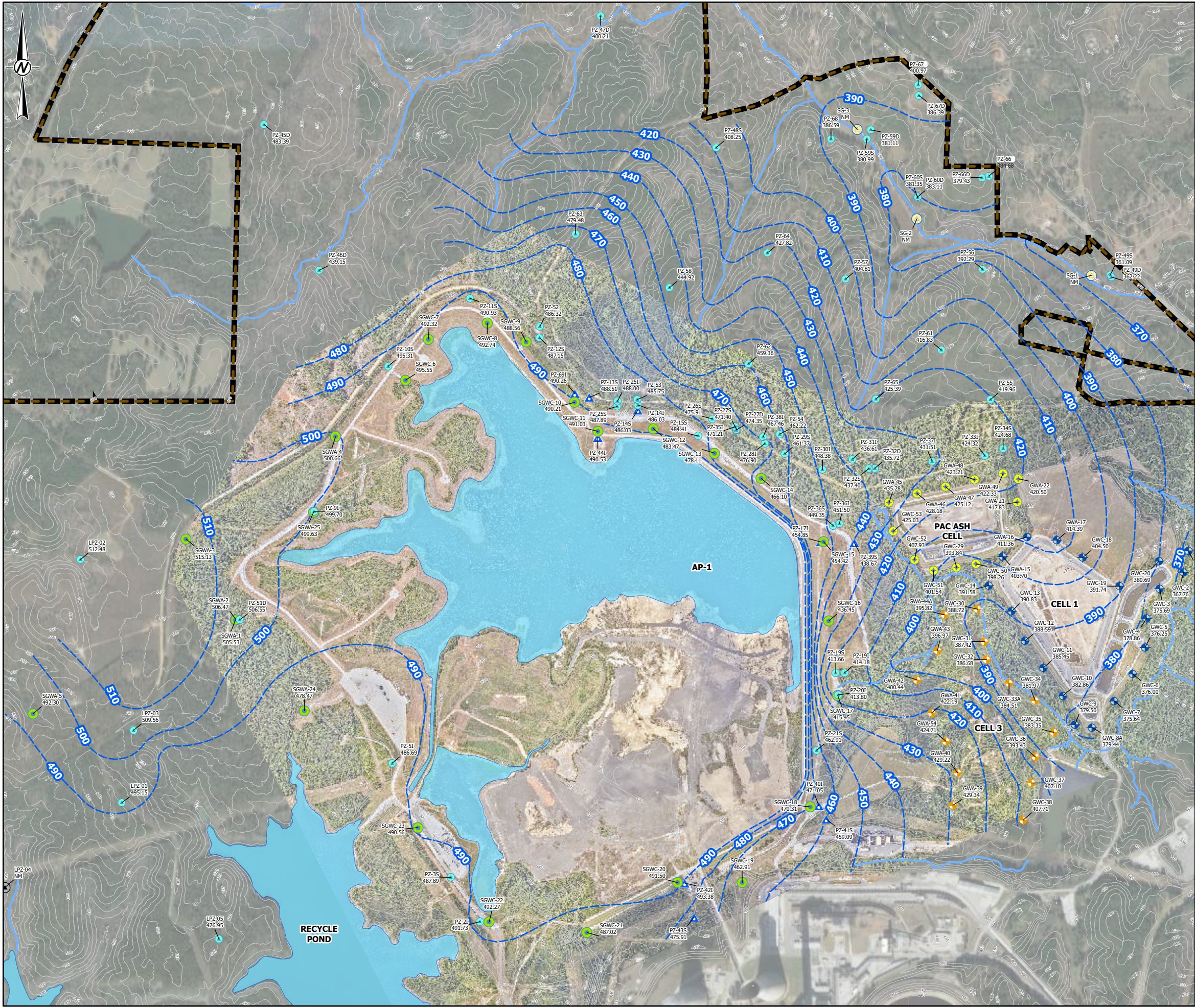
TITLE  
**SITE PLAN AND COMPLIANCE  
MONITORING NETWORK**

	CONSULTANT	YYYY-MM-DD	2024-05-24
	DESIGNED	RHG	
	PREPARED	RHG	
	REVIEWED	RNQ	
	APPROVED	RNQ	

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in





LEGEND

PROPERTY BOUNDARY

STREAM

PONDS

EXISTING TOPOGRAPHY

INFERRED POTENTIOMETRIC SURFACE CONTOUR (FT-NAVD 88)

SCHERER ASH POND-CCR MONITORING WELL

CELL 1 LANDFILL MONITORING WELL

PAC ASH LANDFILL MONITORING WELL

CELL 3 MONITORING WELL

PIEZOMETER

STREAM GAUGE LOCATION

ASSESSMENT MONITORING WELL

PIEZOMETER (DESTROYED)

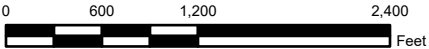
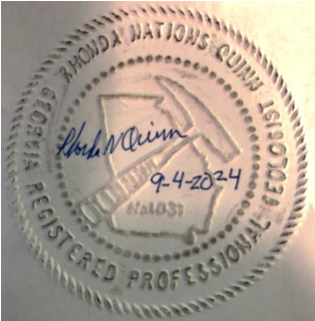
NM ELEVATION NOT MEASURED

NOTE(S)

1. GROUNDWATER ELEVATIONS MEASUREMENTS OBTAINED FEBRUARY 19, 2024 BY WSP STAFF.
2. GROUNDWATER ELEVATIONS DISPLAYED IN FEET-NORTH AMERICAN VERTICAL DATUM (FT-NAVD 88).
3. DEEP AND INTERMEDIATE WELL GROUNDWATER ELEVATIONS WERE NOT USED TO GENERATE POTENTIOMETRIC SURFACE CONTOURS.
4. PZ-50D IS NOT SHOWN; ITS LOCATION IS BEYOND THE MAPPED LIMITS.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATE PLANE GEORGIA WEST FIPS 1002 FEET.
2. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY JORDAN ENGINEERING.
3. SITE IMAGERY: IMAGERY PROVIDED BY CLIENT 07/2024.
4. BACKGROUND IMAGERY: GOOGLE IMAGERY SERVICE. COPYRIGHT GOOGLE 2023. IMAGERY CAPTURED 12/17/2022.



CLIENT

GEORGIA POWER COMPANY  
PLANT SCHERER  
MONROE COUNTY, GEORGIA

PROJECT

GROUNDWATER MONITORING PLAN  
PLANT SCHERER - ASH POND 1 (AP-1)

TITLE

POTENTIOMETRIC SURFACE MAP  
FEBRUARY 19, 2024

CONSULTANT

YYYY-MM-DD	2024-08-07
DESIGNED	RHG
PREPARED	RHG
REVIEWED	RNQ
APPROVED	RNQ

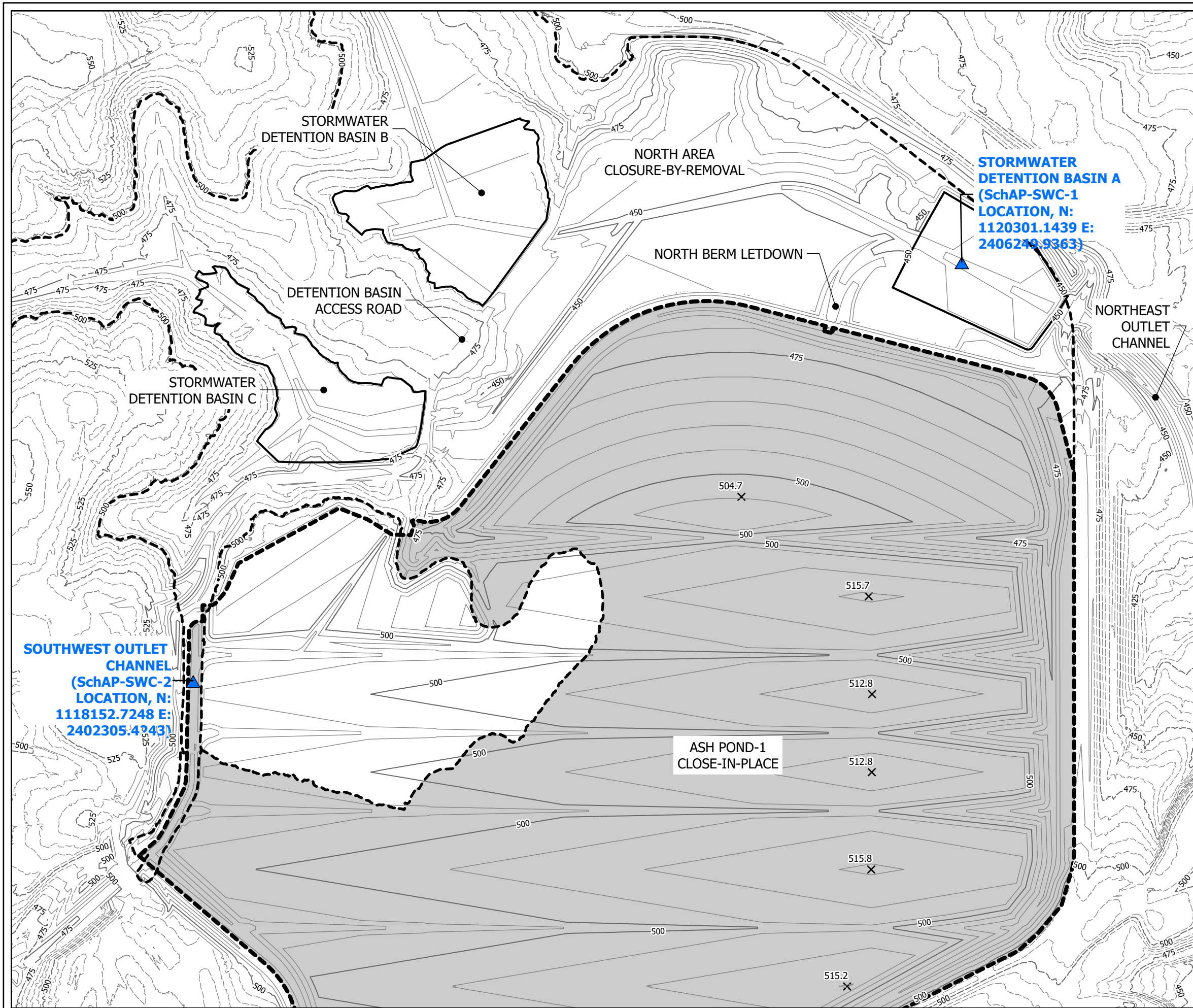
PROJECT NO.

31406440.018

FIGURE

2

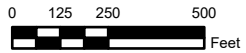




- LEGEND**
- LIMITS OF FINAL CLOSURE
  - PROPOSED MAJOR CONTOUR
  - PROPOSED MINOR CONTOUR
  - EXISTING MAJOR CONTOUR
  - EXISTING MINOR CONTOUR
  - SAMPLE LOCATION

**NOTES**

1. POST-CLOSURE SURFACE WATER SAMPLING LOCATIONS AND CONTOURING DATA DATED 5/9/2021. PROVIDED BY AECOM.



CLIENT  
GEORGIA POWER COMPANY  
PLANT SCHERER  
MONROE COUNTY, GEORGIA

PROJECT  
GROUNDWATER MONITORING PLAN  
PLANT SCHERER - ASH POND 1 (AP-1)

TITLE  
**POST-CLOSURE SURFACE  
WATER SAMPLING LOCATIONS**

CONSULTANT

YYYY-MM-DD	2024-08-22
DESIGNED	AECOM
PREPARED	RHG
REVIEWED	RNQ
APPROVED	RNQ

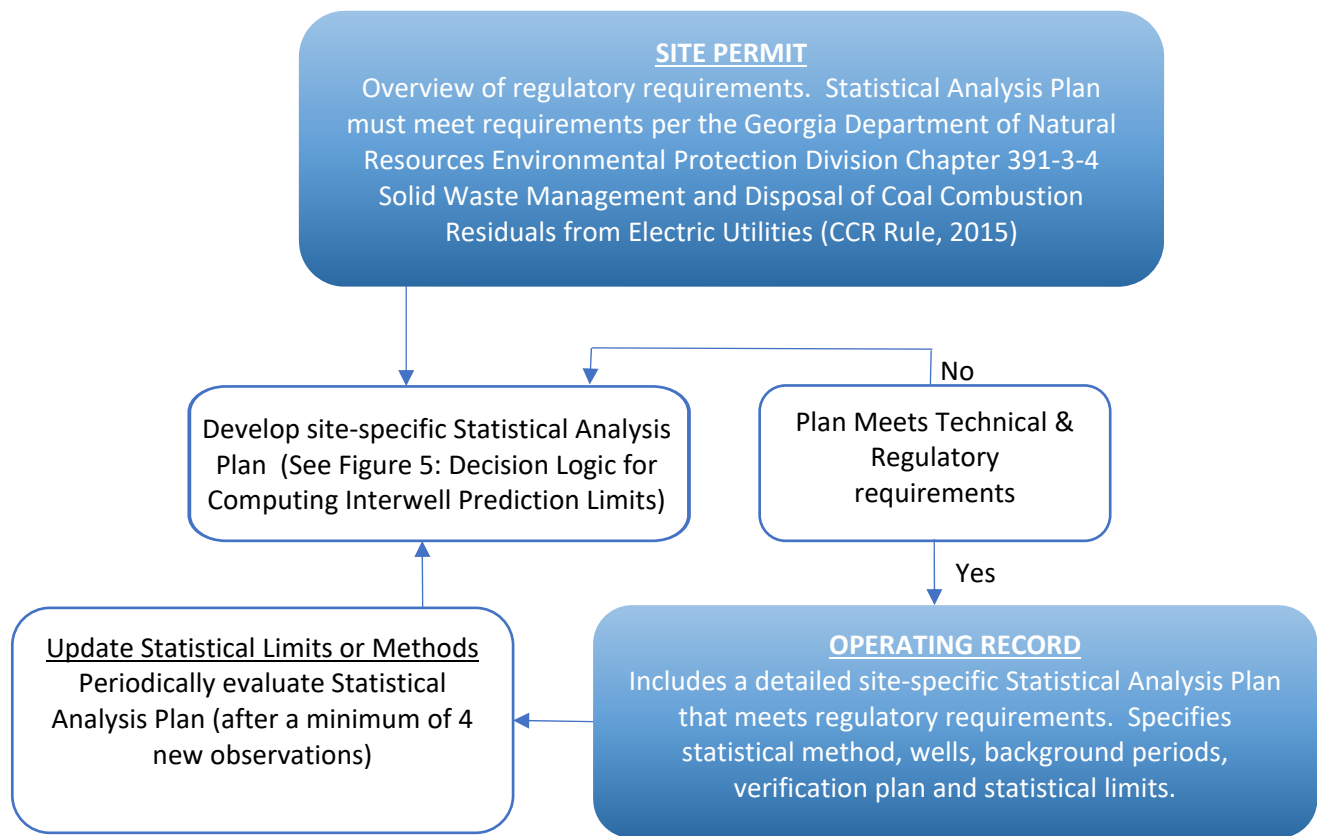
PROJECT NO.  
31406440.018

REV  
5

FIGURE  
3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B





CLIENT  
GEORGIA POWER COMPANY  
PLANT SCHERER  
MONROE COUNTY, GEORGIA

CONSULTANT



YYYY-MM-DD 2022-02-18

DESIGNED DLP

PREPARED DJC

CHECKED DLP

REVIEW/APPROVED RNQ

PROJECT  
GROUNDWATER MONITORING PLAN  
PLANT SCHERER - ASH POND 1 (AP-1)

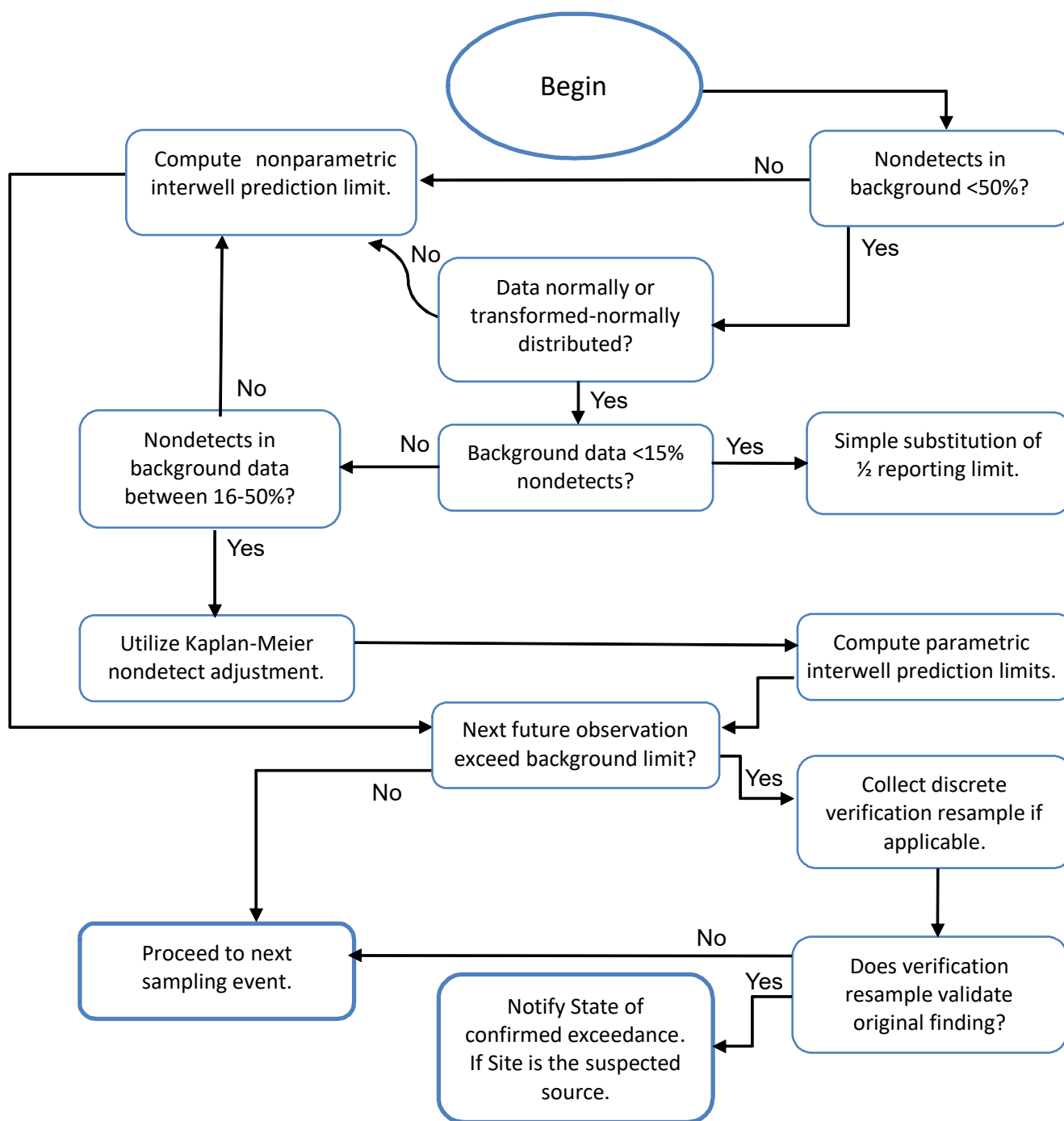
TITLE

**STATISTICAL ANALYSIS PLAN OVERVIEW**

PROJECT NO.  
31406440.018

REV.  
5

FIGURE  
4



CLIENT  
GEORGIA POWER COMPANY  
PLANT SCHERER  
MONROE COUNTY, GEORGIA

CONSULTANT



YYYY-MM-DD 2022-03-09

DESIGNED DLP

PREPARED DJC

CHECKED DLP

REVIEW/APPROVED RNQ

PROJECT  
GROUNDWATER MONITORING PLAN  
PLANT SCHERER - ASH POND 1 (AP-1)

TITLE

**DECISION LOGIC FOR COMPUTING  
INTERWELL PREDICTION LIMITS**

PROJECT NO.  
31406440.018

REV.  
5

FIGURE  
5

## APPENDIX A

# Monitoring System Details

- A-1 ASH POND 1 DETECTION MONITORING  
WELLS CONSTRUCTION LOGS
- A-2 ASH POND 1 ASSESSMENT MONITORING  
WELLS CONSTRUCTION LOGS
- A-3 PIEZOMETER CONSTRUCTION LOGS
- A-4 GYPSUM CELL 1 MONITORING WELLS  
CONSTRUCTION LOGS
- A-5 PAC ASH CELL MONITORING WELLS  
CONSTRUCTION LOGS
- A-6 CELL 3 MONITORING WELLS  
CONSTRUCTION LOGS
- A-7 DRILLER BONDS
- A-8 CERTIFIED WELL SURVEY REPORT

**APPENDIX A**

# Monitoring System Details

## A-1 ASH POND 1 DETECTION MONITORING WELL CONSTRUCTION LOGS

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWA-1/PZ-08S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUP\SPC\GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML) (Con't)</b>			
30		<b>Sandy Elastic Silt (MH)</b> - mottled light red (2.5YR 6/8) and reddish yellow (7.5YR 6/8) saprolite moist, stiff, trace muscovite, biotite, residual quartz, hornblende			SPT N=11bpf(@28.5ft.)(LL=55; PI=13; FC = 51.3%; Gravel = 0%)  (MC = 58.3%; UW(d) = 64.4pcf; PERM. = 5.57E-5cm/sec)
35		<b>Silty Sand (SM)</b> - mottled reddish yellow (5YR 6/8) and red (10R 4/8) saprolite moist, medium dense, very fine to fine grained, with residual quartz, muscovite, biotite, hornblende			SPT N=11bpf(@33.5ft.)
40		- strong brown (7.5YR 5/8) saprolite wet, medium dense, very fine to fine grained			SPT N=19bpf(@38.5ft.)
45		- strong brown (7.5YR 5/8) saprolite wet, medium dense, very fine to fine grained			SPT N=12bpf(@43.5ft.)
50		- gray (7.5YR 5/1) saprolite wet, medium dense, very fine to fine grained, micaceous, with residual quartz, feldspar, muscovite, biotite, weathered rock fragments			SPT N=14bpf(@48.5ft.)
		Bottom of borehole at 50.9 feet.			
55					



# RECORD OF WELL CONSTRUCTION

WELL: SGWA-1/PZ-08S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/11/2015 COMPLETED 2/11/2015 GROUND ELEVATION 544.1 ft COORDINATES N 1119233.1 E 2399899.81

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 50.9 ft.

GROUND WATER DEPTH: DURING 35 ft. COMP. 37.3 ft. DELAYED 37.2 ft. after 24 hrs.

NOTES

## BOREHOLE DATA

## WELL DATA

## COMMENTS

ELEV. Strata

DEPTH (ft)

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 546.83

ELEV.  
(DEPTH)

Surface Seal: concrete

542.1  
(2.0)

531.1

Annular Fill: Cement-Bentonite Grout - 6 bags Typel I/II Portland Cement, 94  
lbs/each

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER LOGS.GPJ

(Continued Next Page)





# RECORD OF WELL CONSTRUCTION

WELL: SGWA-1/PZ-08S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

## BOREHOLE DATA

DEPTH (ft)

## WELL DATA

## COMMENTS

ELEV. Strata

(CONTINUED)

ELEV.  
(DEPTH)

516.1

30

511.1

35

40

45

50

493.2

507.5  
(36.6)

Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each

505.5  
(38.6)

Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each

503.6  
(40.5)

Well: 2" OD PVC (SCH 40)  
Screen: 10 ft. pre-pack

493.6

Sump: 0.40 ft.





# LOG OF TEST BORING

BORING SGWA-2/PZ-081

PAGE 2 OF 3

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE GDT - 6/24/15 07:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZODRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
35		<b>Silty Sand (SM) (Con't)</b> - mottled reddish yellow (7.5YR 6/8) and red (10R 4/8) saprolite moist, loose, very fine to fine grained			SPT N=6bpf(@33.5ft.)
40		- mottled greenish gray (10Y 5/1), grayish olive green (5GY 3/2) and red (10R 4/8) saprolite wet, medium dense, very fine to fine grained, trace mica, residual quartz, feldspar, hornblende			SPT N=13bpf(@38.5ft.)
45		- mottled greenish gray (10Y 5/1), grayish olive green (5GY 3/2) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, chlorite, biotite			SPT N=18bpf(@43.5ft.)
50		- mottled reddish yellow (7.5YR 6/8) and very dark greenish gray (10BG 3/1) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, chlorite, muscovite, biotite			SPT N=14bpf(@48.5ft.)
55		- mottled white / yellowish gray (5Y 8/1) and very dark brown / dusky yellowish brown (10YR 2/2) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, muscovite, biotite, chlorite			SPT N=26bpf(@53.5ft.)
60		- mottled yellow (10YR 7/6) and very dark greenish gray (10BG 3/1) saprolite wet, medium dense, very fine to fine grained, trace medium residual quartz grains, feldspar, biotite, muscovite, hornblende			SPT N=26bpf(@58.5ft.)
65		- mottled very dark bluish gray (5PB 3/1) and white (10R 8/1) saprolite wet, very dense, very fine to coarse grained, trace red staining, weathered rock fragments, residual quartz, feldspar, hornblende, biotite, chlorite, muscovite			SPT N=95bpf(@63.5ft.)
70		<b>Silt (ML)</b> - brown (7.5YR 4/4) saprolite wet, hard, with partially weathered rock fragments			SPT N=37bpf(@68.5ft.)

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWA-2/PZ-08I

PAGE 3 OF 3

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
75		<b>PARTIALLY WEATHERED ROCK</b> - hard to very hard, highly weathered, partially weathered rock fragments			
80		<b>GNEISS</b> - white (N9) and light gray (N7) fine to coarse grain, very soft to soft, highly to completely weathered, inclined, intensely fractured, moderate-angle fractures (30 - 45d) along schistosity, abundant pyrite throughout, orangish-red oxidation along fractures			
85		- black (N1) and dark gray (N3) fine to coarse grain, very soft to soft, highly to completely weathered, inclined, 17 moderate-angle fractures (30 - 45d) along foliation, interbedded with thin layers of Biotite Gneiss, with quartz, feldspar, pyrite, biotite, hornblende, periodic zones of oxidation, no apparent zones of healing			
90		- white (N9) and light gray (N7) fine to coarse grain, very soft to soft, highly to completely weathered, inclined, 23 moderate-angle fractures (30 - 45d) along foliation, very intensely fractured 93.5' - 95.0' bgs, interbedded Amphibolite, heavy oxidation, with quartz, biotite, muscovite, hornblende, pyrite, no apparent healing, feldspar and quartz crystallization in fractures			
95					
		Bottom of borehole at 95.8 feet.			
100					
105					
110					



# RECORD OF WELL CONSTRUCTION

WELL: SGWA-2/PZ-08I  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/12/2015 COMPLETED 2/17/2015 GROUND ELEVATION 544 ft COORDINATES N 1119237.67 E 2399908.19

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 95.8 ft.

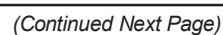
GROUND WATER DEPTH: DURING 38.5 ft. COMP. 37.5 ft. DELAYED 37.3 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 546.94	
			← Surface Seal: concrete	542.0 (2.0)
		5		
		10		
		15		
		20		
		25		
		30		
536.0				
516.0				

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPOCISCHERER LOGS.GPJ

(Continued Next Page)





# RECORD OF WELL CONSTRUCTION

WELL: SGWA-2/PZ-08I  
PAGE 3 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
471.0	(CONTINUED)		Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 546.94	
465.0		75		465.9 (78.1)
		80	Annular Seal: bentonite pellets - 0.75 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	460.8 (83.2)
		85	Filter: Unimin FilterSil - 1 Bag #1A, 50 lbs/each	458.6 (85.4)
		90	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
448.2		95	Sump: 0.40 ft.	448.6



# RECORD OF BOREHOLE SGWA-3/APA-2

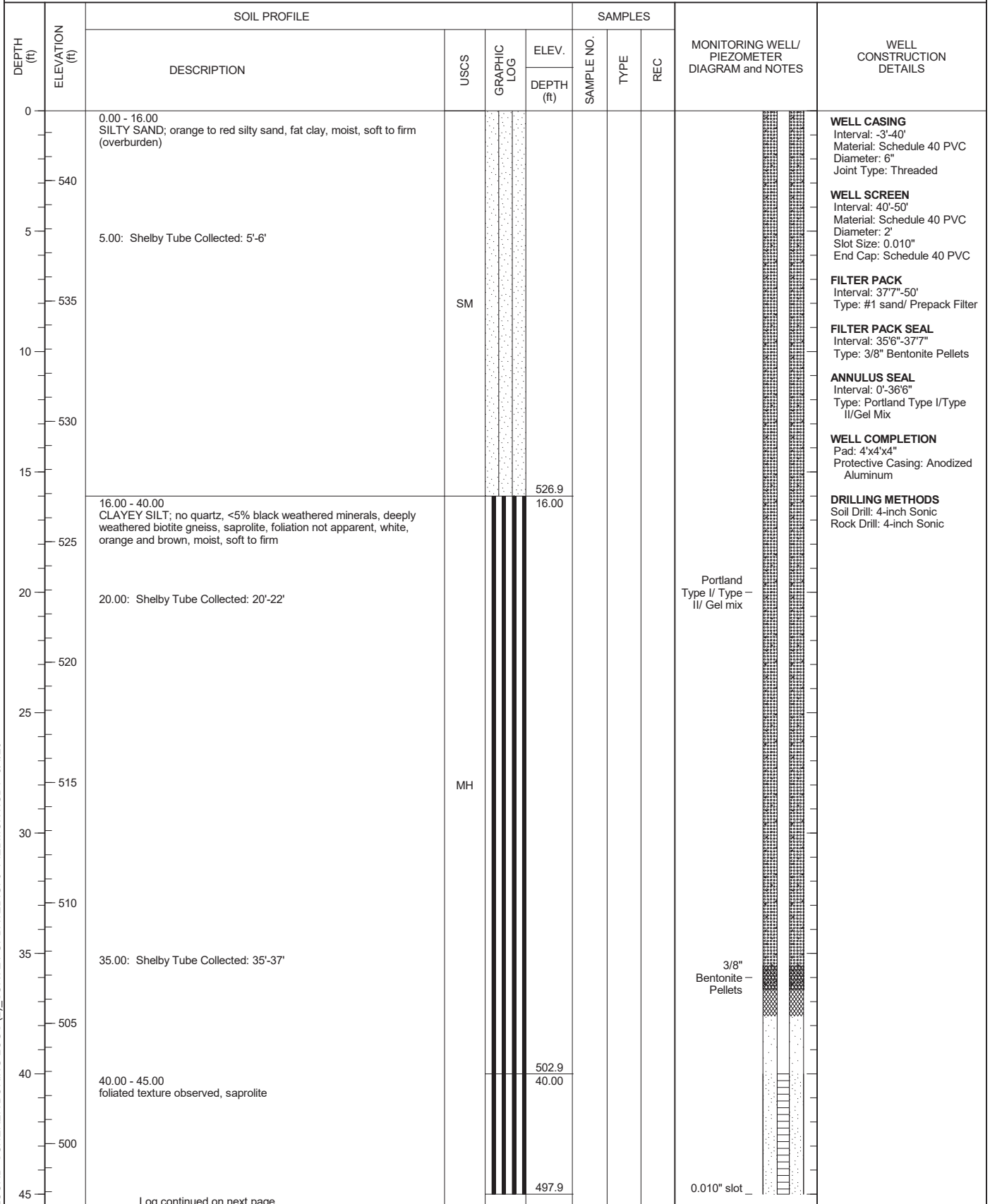
SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 50.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/17/15  
DATE COMPLETED: 11/18/15

NORTHING: 1,120,224.15  
EASTING: 2,399,296.64  
GS ELEVATION: 542.9  
TOC ELEVATION: 545.83 ft

DEPTH W.L.: 32'  
ELEVATION W.L.:  
DATE W.L.: 11/18/15  
TIME W.L.: 08:50



LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: Shannon George, P.G.  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE SGWA-3/APA-2


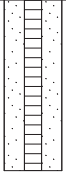
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 50.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/17/15  
DATE COMPLETED: 11/18/15

NORTHING: 1,120,224.15  
EASTING: 2,399,296.64  
GS ELEVATION: 542.9  
TOC ELEVATION: 545.83 ft

DEPTH W.L.: 32'  
ELEVATION W.L.:  
DATE W.L.: 11/18/15  
TIME W.L.: 08:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
45		45.00 - 50.30 light brown clayey silt interbedded with white to black foliations, deeply weathered biotite gneiss, saprolite, orange-brown to light brown clay, moist to wet			45.00				screen  #1 sand — 	<b>WELL CASING</b> Interval: -3'-40' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 40'-50' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 37'7"-50' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 35'6"-37'7" Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-36'6" Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
50		Boring completed at 50.00 ft			492.6 50.30					
495										
50										
490										
55										
485										
60										
480										
65										
475										
70										
470										
75										
465										
80										
460										
85										
455										
90										

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: Shannon George, P.G.  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE SGWA-4/APA-3


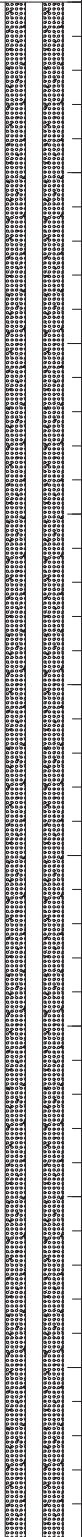








SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 67.0 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/17/15  
DATE COMPLETED: 11/17/15

NORTHING: 1,121,477.05  
EASTING: 2,401,124.64  
GS ELEVATION: 544.8  
TOC ELEVATION: 547.66 ft

DEPTH W.L.: 25.71'  
ELEVATION W.L.:  
DATE W.L.: 11/13/15  
TIME W.L.: 13:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	TYPE	REC		
					DEPTH (ft)				
0		0.00 - 5.00 CLAY (CH); clay, reddish brown, some organic material, trace quartz, trace mica, dry to moist, firm, overburden	CH		539.8				<b>WELL CASING</b> Interval: -3'-50.5' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 50.5'-60.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 49'-61.5' Type: #1 sand/ Prepack Filter Quantity:  <b>FILTER PACK SEAL</b> Interval: 46.7'-49' Type: 3/8" Bentonite Pellets Quantity:  <b>ANNULUS SEAL</b> Interval: 0'-46.7' Type: Portland Type I/Type II/Gel Mix Quantity:  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5	540	5.00 - 10.00 CLAYEY SILT; silt with some clay, reddish brown to yellow saprolite, micaceous, trace quartz, trace biotite, trace weathered rock, dry, firm	MH		534.8				
10	535	10.00 - 15.00 silt, mottled brown/yellow/red/orange saprolite, trace clay, trace quartz, trace mica, some large biotite deposits, moist to wet Shelby Tube Collected: 10'-12'			529.8				
15	530	15.00 - 20.00 silt, mottled brown/yellow/orange saprolite, trace quartz, trace mica, trace biotite, trace clay, soft, moist to wet Shelby Tube Collected: 17'-19'			524.8				
20	525	20.00 - 25.00 mottled orange/brown/yellow silty saprolite, larger biotite deposits, trace quartz and weathered rock, soft, moist to wet			519.8				
25	520	25.00 - 30.00 silt and fine sand, trace quartz (angular ~5-10mm diameter), trace weathered rock, micaceous, mottled orange/reddish/yellow/black saprolite, dry, firm			514.8				
30	515	30.00 - 35.00 mottled orange/yellow/reddish/black silty saprolite, black streaking, trace quartz, trace clays, micaceous, moist, firm			509.8				
35	510	35.00 - 40.00 mottled orange/yellow/white silty saprolite, biotite, mica, trace quartz, trace clay, moist, firm			504.8				
40	505	40.00 - 67.00 SILTY SAND; brown/grey/white/orange silty saprolite, trace quartz, micaceous, fine grains, moist, firm Shelby Tube Collected: 40'-42'	SM		40.00				
45	500	Log continued on next page							

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 11/6/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWA-4/APA-3

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 67.0 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/17/15  
DATE COMPLETED: 11/17/15

NORTHING: 1,121,477.05  
EASTING: 2,401,124.64  
GS ELEVATION: 544.8  
TOC ELEVATION: 547.66 ft

DEPTH W.L.: 25.71'  
ELEVATION W.L.:  
DATE W.L.: 11/13/15  
TIME W.L.: 13:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)		TYPE REC		
45		40.00 - 67.00 SILTY SAND; brown/grey/white/orange silty saprolite, trace quartz, micaceous, fine grains, moist, firm Shelby Tube Collected: 40'-42' (Continued) 45.00 - 50.00 grey/white/orange/brown silty saprolite, medium grain, trace quartz, micaceous, trace iron pyrite							
50	495	50.00 - 55.00 grey/white/brown/orange silty saprolite, medium grain, mica, iron pyrite, trace quartz, trace biotite, moist, firm			494.8 50.00			3/8" Bentonite Pellets #1 sand	
55	490	55.00 - 60.00 grey/white/brown/orange silty saprolite, medium grain sand, mica, iron pyrite, trace quartz, trace biotite, some clay lenses, moist, very firm	SM		489.8 55.00			0.010" slot screen	
60	485	60.00 - 63.00 SANDY SILT; fine to medium sand, grey, saturated, saprolite	SM		484.8 60.00			#1 sand	
65	480	63.00 - 67.00 grey, saprolite biotite gneiss, trace thin clay lenses, grey, very firm			481.8 63.00			3/8" Bentonite Pellets	
		Boring completed at 60.50 ft			477.8 67.00				
70	475								
75	470								
80	465								
85	460								
90	455								

**WELL CASING**  
Interval: -3'-50.5'  
Material: Schedule 40 PVC  
Diameter: 6"  
Joint Type: Threaded

**WELL SCREEN**  
Interval: 50.5'-60.5'  
Material: Schedule 40 PVC  
Diameter: 2"  
Slot Size: 0.010"  
End Cap: Schedule 40 PVC

**FILTER PACK**  
Interval: 49'-61.5'  
Type: #1 sand/ Prepack Filter  
Quantity:

**FILTER PACK SEAL**  
Interval: 46.7'-49'  
Type: 3/8" Bentonite Pellets  
Quantity:

**ANNULUS SEAL**  
Interval: 0'-46.7'  
Type: Portland Type I/Type II/Gel Mix  
Quantity:

**WELL COMPLETION**  
Pad: 4'x4'x4"  
Protective Casing: Anodized Aluminum

**DRILLING METHODS**  
Soil Drill: 4-inch Sonic  
Rock Drill: 4-inch Sonic

BOREHOLE RECORD: SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 11/6/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWA-5/APA-4

SHEET 1 of 1


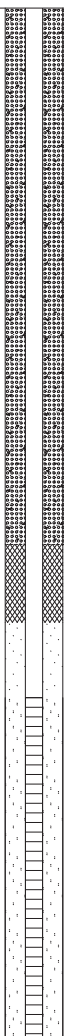


PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 30.00 ft  
LOCATION: Carrollton, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/18/15  
DATE COMPLETED: 11/18/15

NORTHING: 1,118,088.42  
EASTING: 2,397,426.26  
GS ELEVATION: 505.7  
TOC ELEVATION: 508.48 ft

DEPTH W.L.: 15.23'  
ELEVATION W.L.:  
DATE W.L.: 11/18/15  
TIME W.L.: 16:05

BOREHOLE RECORD - SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0	505	0.00 - 5.00 CLAY; red/brown overburden, changes to mottled orange/red/brown/white soils, trace biotite and mica, dry to moist	CH						 <p>Portland Type I/ Type – II/ Gel mix</p> <p>3/8" Bentonite – Pellets</p> <p>0.010" slot screen #1 sand –</p>	<b>WELL CASING</b> Interval: -3'-20.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
5	500	5.00 - 8.00 mottled orange/brown/white clay, trace quartz and biotite, dry to moist, firm, saprolite			500.7 5.00					<b>WELL SCREEN</b> Interval: 20.2'-30.2' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
		8.00 - 10.00 CLAYEY SAND; dry mottled orange/white fine grained saprolite, firm and non cohesive	SC		497.7 8.00			<b>FILTER PACK</b> Interval: 18'-30.2' Type: #1 sand/ Prepack Filter		
10	495	10.00 - 12.00 mottled red/orange/white saprolite, trace quartz and biotite, some large quartz pieces			495.7 10.00			<b>FILTER PACK SEAL</b> Interval: 15.7'-18' Type: 3/8" Bentonite Pellets		
		12.00 - 14.00 mottled orange/brown/red saprolite, some clay, micaceous, moist			493.7 12.00			<b>ANNULUS SEAL</b> Interval: 0'-15.7' Type: Portland Type I/Type II/Gel Mix		
15	490	14.00 - 15.00 brown/orange/grey clayey sand, silt, iron pyrite, mica, trace biotite, moist			491.7 14.00 490.7			<b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum		
		15.00 - 16.50 grey/brown/white saprolite, fine to medium grain sand, trace quartz, trace iron pyrite and mica, moist	ML		489.2 15.00 488.7			<b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic		
		16.50 - 17.00 band of orange/brown/grey clayey sand, weathered biotite, wet			17.00					
20	485	17.00 - 22.00 SILT; grey/white/orange saprolite, trace mica, iron pyrite, medium grained sand, moist								
		22.00 - 25.00 mottled orange/black/dark brown/grey/white saprolite, trace quartz, mica and iron pyrite, foliated and weathered, quartz and deeply weathered biotite layers, wet			483.7 22.00					
25	480	25.00 - 27.00 white/grey/brown medium grained, mottled saprolite with interbedded quartz layers, trace rose quartz and iron pyrite, micaceous, wet			480.7 25.00					
		27.00 - 28.00 brown/orange/grey/white saprolite, micaceous, medium grained sand, wet			478.7 27.00 477.7					
30	475	28.00 - 30.00 brown, medium grained saprolite with orange and white layers, weathered biotite, trace clay, trace quartz, mica and iron pyrite, foliated, wet			475.7					
		Boring completed at 30.00 ft								
35	470									
40	465									
45										

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17





# RECORD OF BOREHOLE SGWC-6/APC-1

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 25.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/12/15  
DATE COMPLETED: 11/12/15

NORTHING: 1,122,167.18  
EASTING: 2,401,979.98  
GS ELEVATION: 507.7  
TOC ELEVATION: 510.49 ft

DEPTH W.L.: 11.4'  
ELEVATION W.L.:  
DATE W.L.: 11/12/15  
TIME W.L.: 15:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 SILTY CLAY (CLY/OVERBURDEN; clay with silt and very fine sand, trace quartz, mica and angular rock pieces, reddish-brown fill, black streaking, dry to moist, firm	MH						<p>Portland Type I/ Type II/ Gel mix</p> <p>3/8" Bentonite Pellets</p> <p>#1 sand -</p> <p>0.010" slot screen</p>	<p><b>WELL CASING</b> Interval: -3'-15' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 15'-25' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p><b>FILTER PACK</b> Interval: 12.9'-25' Type: #1 sand/ Prepack Filter</p> <p><b>FILTER PACK SEAL</b> Interval: 10.1'-12.9' Type: 3/8" Bentonite Pellets</p> <p><b>ANNULUS SEAL</b> Interval: 0'-10.1' Type: Portland Type I/Type II/Gel Mix</p> <p><b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic</p>
5		5.00 - 10.00 CLAYEY SILT (MH)/SAPROLITE; mottled red/brown/orange saprolite with lenses of silty clay, trace mica and quartz, black streaking, moist, firm Shelby Tube Collected: 7'-9'	MH		502.7 5.00					
10		10.00 - 15.00 mottled orange/brown/reddish/yellow saprolite, trace quartz and weathered rock, micaceous, black streaking, wet, firm			497.7 10.00					
15		15.00 - 20.00 SILTY SAND/SAPROLITE; mottled orange/brown/white/yellow saprolite, trace quartz and weathered rock, micaceous, trace clay, medium grain, moist to wet, firm Shelby Tube Collected: 15'-17'	SM		492.7 15.00					
20		20.00 - 25.00 mottled brown/grey/orange saprolite with trace clay, silty gravel with medium grained sands, trace quartz and weathered rock, micaceous, wet			487.7 20.00					
25		Boring completed at 25.00 ft			482.7					

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-7/APC-2

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 35.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/10/15  
DATE COMPLETED: 11/11/15

NORTHING: 1,122,668.61  
EASTING: 2,402,259.75  
GS ELEVATION: 503.5  
TOC ELEVATION: 506.40 ft

DEPTH W.L.: 22'  
ELEVATION W.L.:  
DATE W.L.: 11/11/15  
TIME W.L.: 11:40

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CLAYEY SAND (SC)/OVERBURDEN; top soil followed by transitionally weathered rock pieces and silty gravel, transitions to brown/reddish fill with organic material, some clay, firm	SC						<p>Portland Type I/ Type II/ Gel mix</p> <p>3/8" Bentonite — Pellets</p> <p>#1 sand — 0.010" slot screen</p>	<b>WELL CASING</b> Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 23'-35' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 21'-23' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5		5.00 - 10.00 OVERBURDEN/SAND (SW); densely compacted coarse grained sand, some silt, trace clay, micaceous, loose, W<PL	SW		498.5 5.00					
10		10.00 - 15.00 COARSE SAND and TRANSITIONALLY WEATHERED ROCK/SAPROLITE (GP); brown/grey/orange deeply weathered rock with some larger pieces, coarse sand, trace mica and iron pyrite, dry to moist	GP		493.5 10.00					
15		15.00 - 20.00 SILTY GRAVEL (GM); mottled brown/grey/orange/white weathered rock and saprolite, trace clays and mica, some larger quartz and rock pieces, coarse sand, dry	GM		488.5 15.00					
20		20.00 - 25.00 NO RECOVERY; apparent washout			483.5 20.00					
25		25.00 - 30.00 ROCK (BR); biotite gneiss, ~45° angle on banding, 1 near vertical healed fracture, 3 near horizontal fractures with possible weathering from water movement	BR		478.5 25.00					
30		30.00 - 35.00 biotite gneiss, mica, iron pyrite, some layer quartz pieces, at least 6 apparent fractures with lesser partial fractures along core, some weathering from water apparent			473.5 30.00					
35		Boring completed at 35.00 ft			468.5					
45										

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-8/APC-3

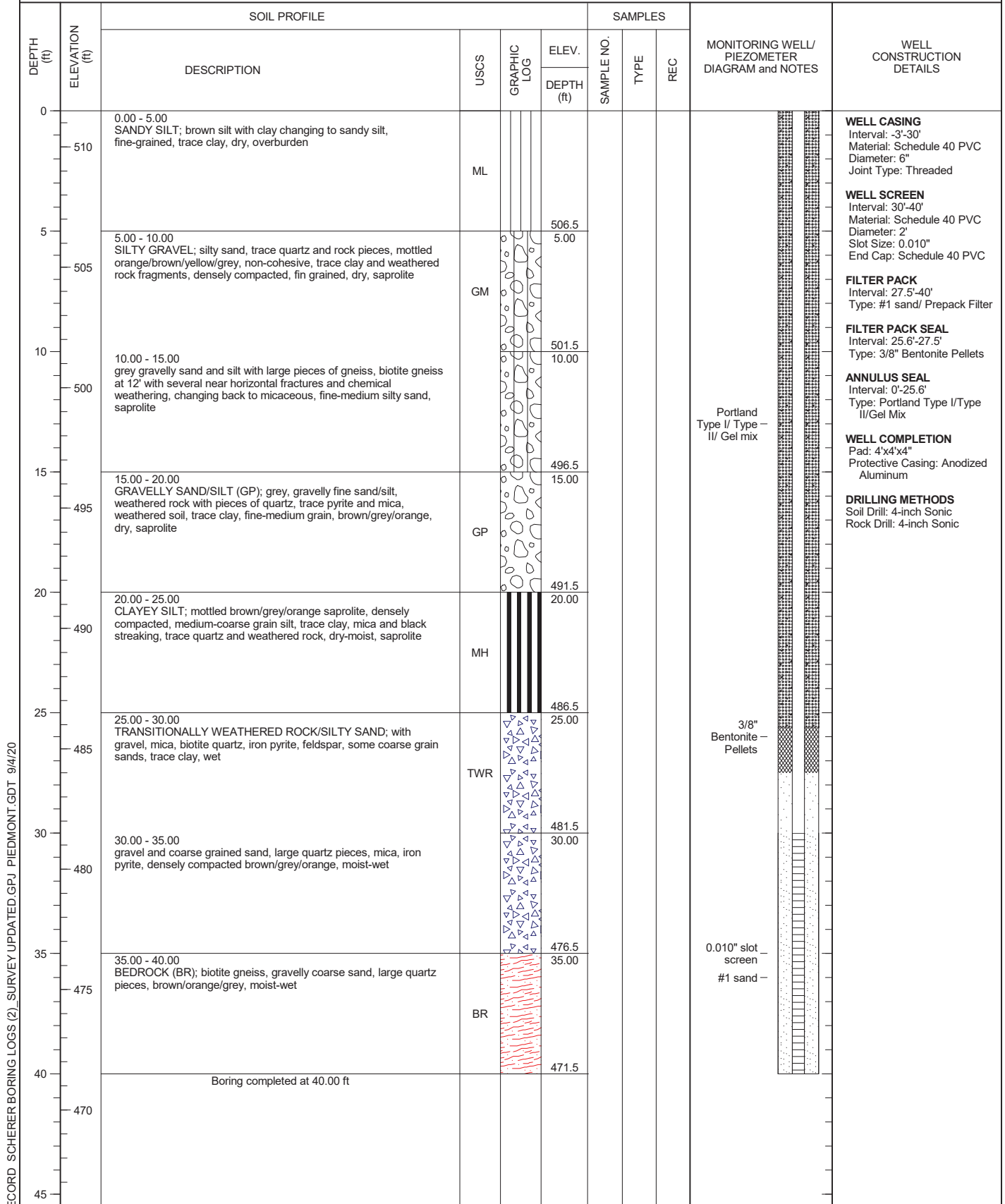
SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 40.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/9/15  
DATE COMPLETED: 11/10/15

NORTHING: 1,122,865.98  
EASTING: 2,402,979.50  
GS ELEVATION: 511.5  
TOC ELEVATION: 514.28 ft

DEPTH W.L.: 25'  
ELEVATION W.L.:  
DATE W.L.: 11/10/15  
TIME W.L.: 13:45



BOREHOLE RECORD - SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-9/APC-4

SHEET 1 of 1


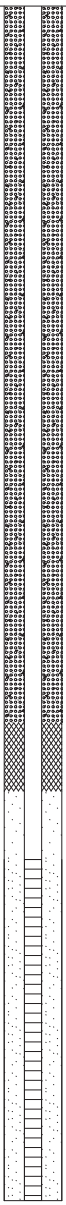






PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 35.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/5/15  
DATE COMPLETED: 11/6/15

NORTHING: 1,122,634.64  
EASTING: 2,403,455.19  
GS ELEVATION: 507.6  
TOC ELEVATION: 510.62 ft

DEPTH W.L.: 18'  
ELEVATION W.L.:  
DATE W.L.: 11/6/15  
TIME W.L.: 10:00

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 OVERBURDEN; reddish brown fill, micaceous, some organic material, dry-moist, firm (fill)	FILL						 <p>Portland Type I/ Type II/ Gel mix</p> <p>3/8" Bentonite -- Pellets</p> <p>0.010" slot screen #1 sand</p>	<b>WELL CASING</b> Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 23'-35' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 21'-23' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4"x4"x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5		5.00 - 10.00 CLAY/SAPROLITE; mottled reddish/brown/orange clay, black streaking, micaceous, dry-moist, firm	CH		502.6 5.00					
10		10.00 - 15.00 CLAYEY SILT (MH)/SAPROLITE; mottled orange/red/brown/yellow silt, black streaking, micaceous, fine grained, trace clay, dry-moist, soft	MH		497.6 10.00					
15		15.00 - 20.00 mottled brown/orange/grey/white silt, trace clay, micaceous, fine-medium grained, black streaking, moist, soft Shelby Tube Collected: 15'-17'			492.6 15.00					
20		20.00 - 25.00 SILT (ML)/SAPROLITE; mottled grey/brown/orange soft saprolite changing to firm grey/white/orange/yellow silt, medium grained, trace clay, trace quartz and weathered rock pieces, black banding, mica and biotite layers, iron pyrite, moist	ML		487.6 20.00					
25		25.00 - 30.00 mottled grey/white/brown saprolite, trace quartz and weathered rock, black banding, iron pyrite, moist, firm			482.6 25.00					
30		30.00 - 35.00 mottled grey/white/brown/orange saprolite, densely compacted, trace quartz and weathered rock, medium to coarse grained, difficult to determine water content but steam generated during drilling			477.6 30.00					
35		Boring completed at 35.00 ft			472.6					

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-10/APC-5




SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 30.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/4/15  
DATE COMPLETED: 11/5/15

NORTHING: 1,121,895.85  
EASTING: 2,404,046.92  
GS ELEVATION: 506.6  
TOC ELEVATION: 509.41 ft

DEPTH W.L.: 17'  
ELEVATION W.L.:  
DATE W.L.: 11/5/15  
TIME W.L.: 13:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 5.00 CLAY/OVERBURDEN; reddish/brown silty fine grained fill, some rock fragments and organic material, trace clay, micaceous, dry-moist, firm, W<PL	CH							
505					501.6					
5		5.00 - 10.00 mottled brown/reddish/orange micaceous fill, changing to saprolite soils with black streaking, trace quartz, moist, firm	CL		5.00					
500					496.6					
10		10.00 - 15.00 SILTY CLAY (CL)/SAPROLITE; mottled orange/brown/yellow/reddish saprolite, micaceous, trace quartz and angular rock fragments, firm to soft, moist			10.00					
495					491.6					
15		15.00 - 20.00 mottled orange/brown/yellow/reddish saprolite, some clay, micaceous, black streaking, trace quartz and weathered rock fragments, soft, wet, ~17'	SM		15.00					
490					486.6					
20		20.00 - 25.00 SILTY SAND (SM)/SAPROLITE; mottled orange/brown/reddish/yellow saprolite, trace clay, trace quartz and weathered rock fragments, micaceous, soft, wet			20.00					
485					481.6					
25		25.00 - 30.00 mottled brown/grey/orange/white saprolite, fin grained, trace clay, trace quartz and weathered rock fragments, soft, wet			25.00					
480					476.6					
30		Boring completed at 30.00 ft								
475										
35										
470										
40										
465										
45										

Portland  
Type I/ Type II/ Gel mix

3/8"  
Bentonite – Pellets

0.010" slot  
screen  
#1 sand –

**WELL CASING**  
Interval: -3'-20'  
Material: Schedule 40 PVC  
Diameter: 6"  
Joint Type: Threaded

**WELL SCREEN**  
Interval: 20'-30'  
Material: Schedule 40 PVC  
Diameter: 2"  
Slot Size: 0.010"  
End Cap: Schedule 40 PVC

**FILTER PACK**  
Interval: 18'-30'  
Type: #1 sand/ Prepack Filter

**FILTER PACK SEAL**  
Interval: 15.5'-18'  
Type: 3/8" Bentonite Pellets

**ANNULUS SEAL**  
Interval: 0'-15.5'  
Type: Portland Type I/Type II/Gel Mix

**WELL COMPLETION**  
Pad: 4'x4'x4"  
Protective Casing: Anodized Aluminum

**DRILLING METHODS**  
Soil Drill: 4-inch Sonic  
Rock Drill: 4-inch Sonic

SCORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17





# RECORD OF BOREHOLE SGWC-11/APC-6

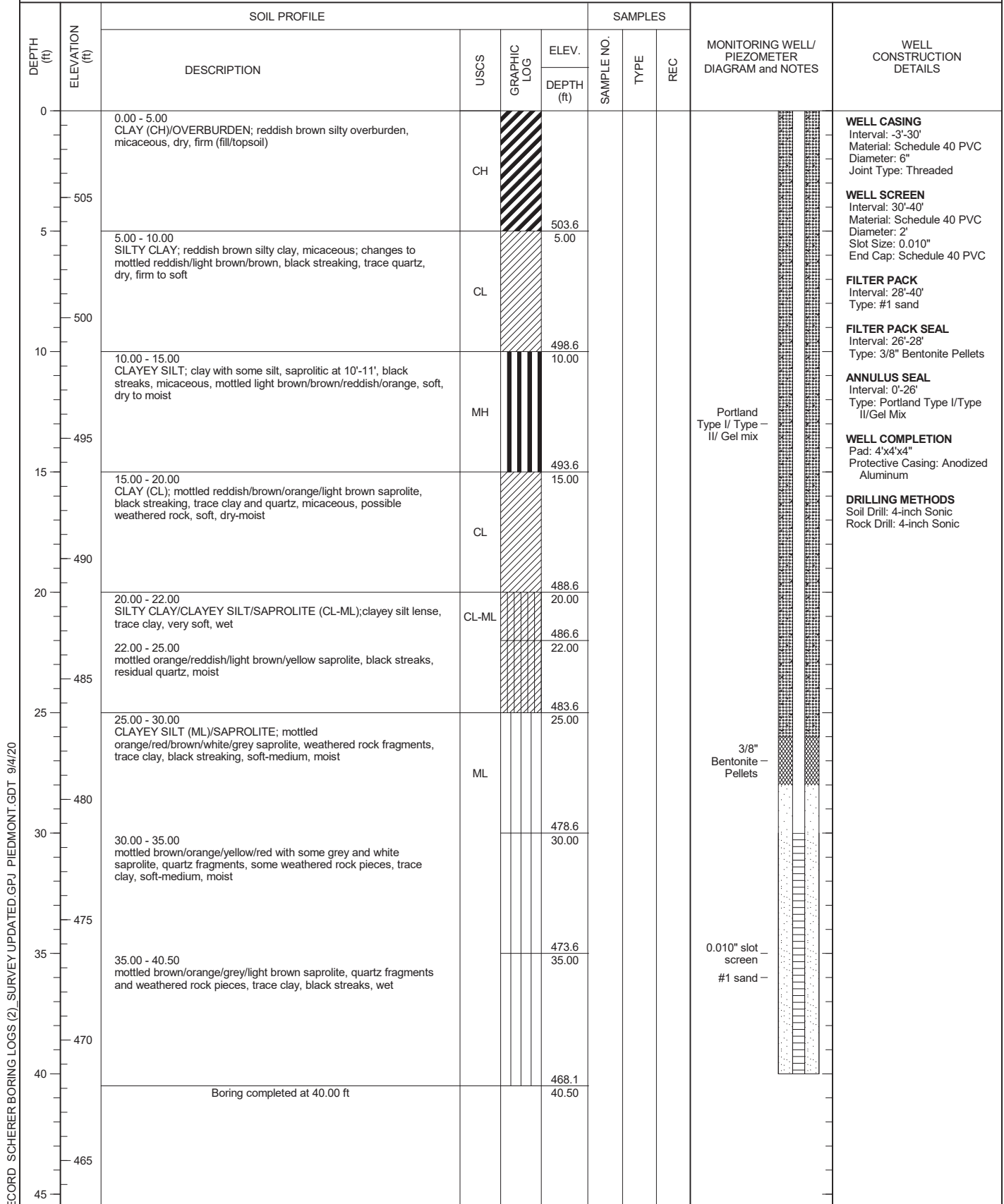
SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 40.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 10/28/15  
DATE COMPLETED: 10/29/15

NORTHING: 1,121,542.11  
EASTING: 2,404,332.12  
GS ELEVATION: 508.6  
TOC ELEVATION: 511.47 ft

DEPTH W.L.: 29'  
ELEVATION W.L.:  
DATE W.L.: 10/29/15  
TIME W.L.: 17:50



BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-12/APC-7


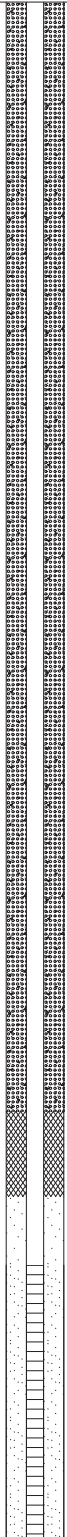









SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 47.60 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 10/29/15  
DATE COMPLETED: 10/30/15

NORTHING: 1,121,576.75  
EASTING: 2,405,009.92  
GS ELEVATION: 497.7  
TOC ELEVATION: 500.53 ft

DEPTH W.L.: 29'  
ELEVATION W.L.:  
DATE W.L.: 10/30/15  
TIME W.L.: 10:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 2.00 OVERBURDEN/FILL (CH); reddish brown silt and fine grained sand	CH		495.7					<b>WELL CASING</b> Interval: -3'-37' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
495		2.00 - 5.00 reddish brown silt with trace clay, micaceous, dry, firm			2.00					<b>WELL SCREEN</b> Interval: 37'-47' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC
5		5.00 - 10.00 SILTY SAND/SAPROLITE (SM); mottled reddish brown and grey saprolite, micaceous, trace quartz fragments, some clay, dry	SM		492.7					<b>FILTER PACK</b> Interval: 35'-47' Type: #1 sand/ Prepack Filter
490					5.00					<b>FILTER PACK SEAL</b> Interval: 32.5'-35' Type: 3/8" Bentonite Pellets
10		10.00 - 15.00 CLAYEY SILT; mottled brown/orange/yellow clayey silt, trace quartz and weathered rock fragments, micaceous, firm trending to stiff, dry-moist	MH		487.7					<b>ANNULUS SEAL</b> Interval: 0'-32.5' Type: Portland Type I/Type II/Gel Mix
485					10.00					<b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum
15		15.00 - 18.00 mottled brown/orange/yellow clayey silt, trace quartz and weathered rock fragments, micaceous, firm-stiff, moist			482.7					<b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
480					15.00					
20		18.00 - 25.00 SANDY SILT; trace biotite, trace quartz, micaceous, mottled brown/orange/reddish/yellow, firm-stiff, fine grained, loose, black streaks, firm-stiff	ML		479.7					
475					18.00					
25		25.00 - 30.00 mottled brown/orange/yellow sandy clay, fine grained, micaceous, some quartz pieces, greyish white with black streaking, trace weathered rock fragments, coarse sand, moist to wet, soft			472.7					
470					25.00					
30		30.00 - 35.00 SILTY SAND; mottled grey/white/reddish sandy silt, fine to medium grained, micaceous, trace clay, some quartz, trace weathered rock fragments, moist, W<PL	SM		467.7					
465					30.00					
35		35.00 - 40.00 mottled brown/grey/black saprolite, fine grained, micaceous, trace clay, trace quartz and weathered rock fragments, W<PL, soft but densely compacted, wet			462.7					
460					35.00					
40		40.00 - 45.00 mottled grey/white/black/brown saprolite, fine grained, trace quartz and weathered rock fragments, micaceous, black streaks, densely compacted, wet			457.7					
455					40.00					
45		Log continued on next page			452.7					

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-12/APC-7



SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 47.60 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 10/29/15  
DATE COMPLETED: 10/30/15

NORTHING: 1,121,576.75  
EASTING: 2,405,009.92  
GS ELEVATION: 497.7  
TOC ELEVATION: 500.53 ft

DEPTH W.L.: 29'  
ELEVATION W.L.:  
DATE W.L.: 10/30/15  
TIME W.L.: 10:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
45		45.00 - 47.00 black/gy/white/brown fine grained saprolite, tightly compacted, trace biotite and mica, soft, moist-wet			45.00					<b>WELL CASING</b> Interval: -3'-37' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 37'-47' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 35'-47' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 32.5'-35' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-32.5' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
450		Boring completed at 47.60 ft			450.7 47.00					
50										
55										
60										
65										
70										
75										
80										
85										
90										

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



# RECORD OF BOREHOLE SGWC-13/APC-8

SHEET 1 of 1


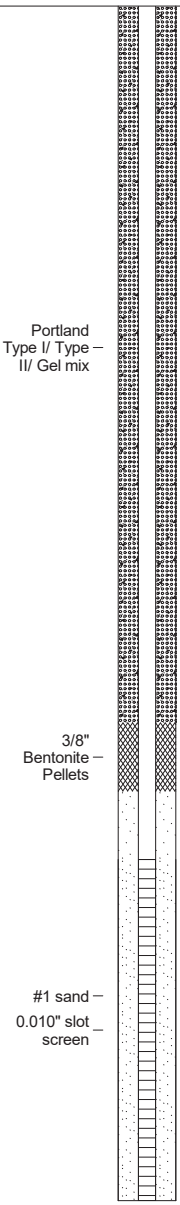



PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 35.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/3/15  
DATE COMPLETED: 11/4/15

NORTHING: 1,121,274.85  
EASTING: 2,405,761.20  
GS ELEVATION: 479.9  
TOC ELEVATION: 482.71 ft

DEPTH W.L.: 22'  
ELEVATION W.L.:  
DATE W.L.: 11/4/15  
TIME W.L.: 13:00

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CLAYEY SILT (MH)/FILL; mottled reddish brown fill, some clay, micaceous, some black streaks and organic material, moist, stiff, W~PL	MH							<b>WELL CASING</b> Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 23'-35' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 21'-23' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4"x4"x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5	475	5.00 - 10.00 overburden, reddish brown fill, some clay, trace mica, firm, moist, W<PL			474.9 5.00					
10	470	10.00 - 15.00 SILT (ML)/SAPROLITE; mottled reddish/brown/orange saprolite, micaceous, trace quartz fragments, fine grained, soft to firm, W<PL	ML		469.9 10.00					
15	465	15.00 - 20.00 mottled brown/orange/reddish saprolite, micaceous, trace quartz, black streaking, fine grained, moist, firm			464.9 15.00					
20	460	20.00 - 25.00 mottled red/orange/brown/yellow saprolite, micaceous, trace quartz and biotite, fine grained, some clays, soft, wet, W~PL	MH		459.9 20.00					
25	455	25.00 - 30.00 SAPROLITE; mottled brown/orange/yellow saprolite, fine gained, trace clay, trace quarts and biotite, micaceous, black streaking/banding, soft, wet, water noted			454.9 25.00					
30	450	30.00 - 35.00 mottled brown/grey/white saprolite, trace quartz weathered rock fragments, micaceous, black streaking, firm-stiff	MH		449.9 30.00					
35	445	Boring completed at 35.00 ft			444.9					
40	440									
45	435									

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jeremy Triepke

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17



(Continued Next Page)





# LOG OF TEST BORING

BORING SGWC-14/PZ-16S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<b>Silty Sand (SM) (Con't)</b>  - mottled reddish yellow (5YR 6/8), pale green (10G 6/2) and white (10YR 8/1) saprolite wet, stiff, gravelly, trace weathered rock fragments			SPT N=13bpf(@28.5ft.)(LL=45; PI=7; FC = 26.1%; Gravel = 0%) (MC = 47.4%; UW(d) = 77.9pcf; PERM. = 2.49E-5cm/sec)
35		- mottled grayish olive (10Y 4/2) and pale green (10G 6/2) saprolite wet, hard, trace weathered rock fragments, residual quartz, biotite			SPT N=38bpf(@33.5ft.)
		Bottom of borehole at 35.3 feet.			
40					
45					
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-14/PZ-16S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

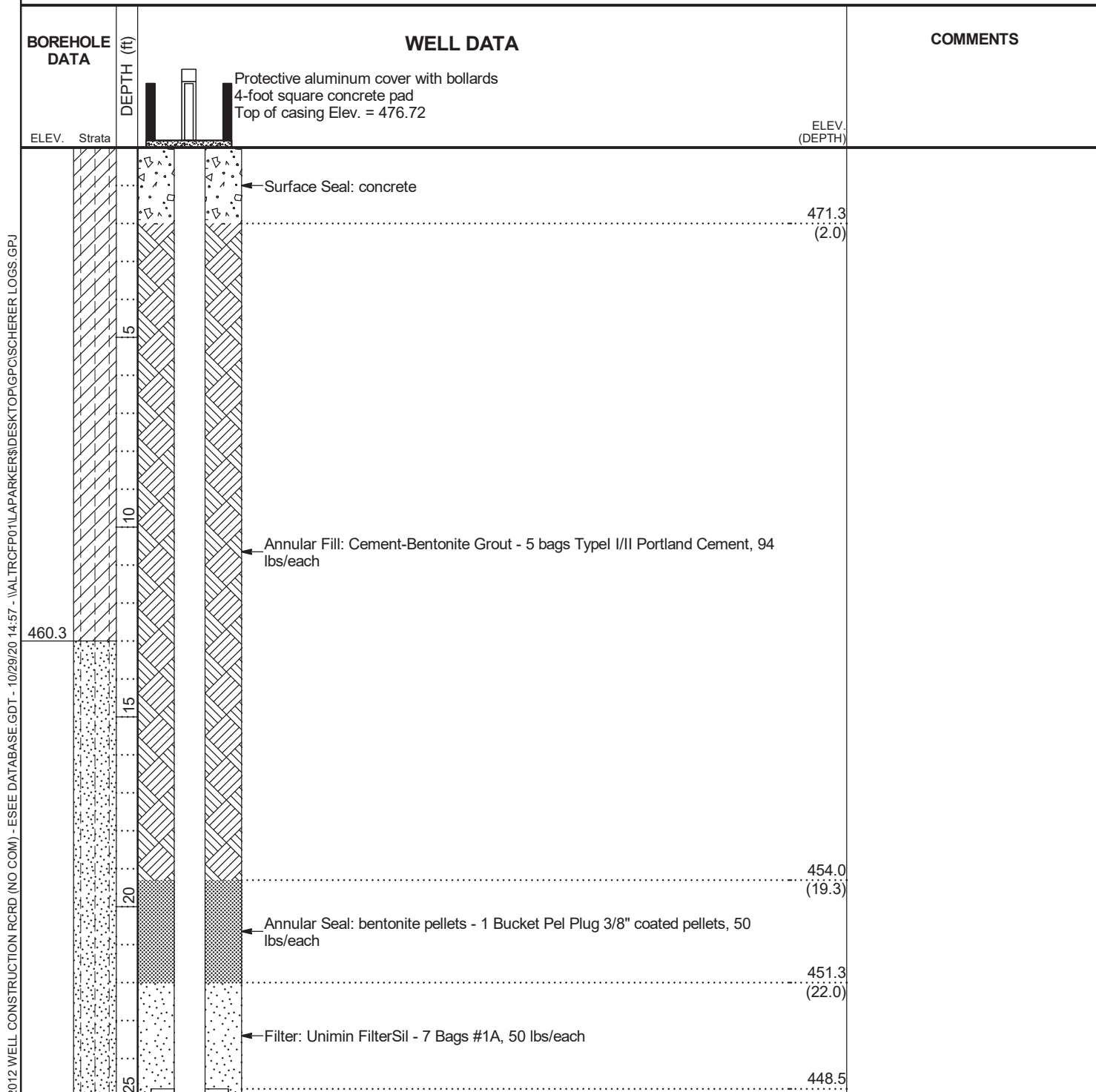
DATE STARTED 2/24/2015 COMPLETED 2/24/2015 GROUND ELEVATION 473.3 ft COORDINATES N 1120966.13 E 2406329.89

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 35.3 ft.

GROUND WATER DEPTH: DURING 18.5 ft. COMP. 9.91 ft. DELAYED 9.91 ft. after 24 hrs.

NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-14/PZ-16S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 476.72	
		(CONTINUED)		
				ELEV. (DEPTH) (24.8)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
438.0		35	Sump: 0.50 ft.	438.5 (34.8)



# LOG OF TEST BORING

BORING SGWC-15/PZ-17S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/25/2015 COMPLETED 2/26/2015 SURF. ELEV. 479.7 COORDINATES: N 1120191.20 E 2407093.92

CONTRACTOR Civil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 45.2 ft. GROUND WATER DEPTH: DURING 23.5 ft. COMP. 33.81 ft. DELAYED 31.66 ft. after 24 hrs.

NOTES \_\_\_\_\_

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZOMETER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
		<b>Silt (ML)</b>			
5		- mottled red (2.5YR 4/8) and dark reddish brown (2.5YR 2.5/4) residuum moist, very stiff, trace clay			SPT N=18bpf(@3.5ft.)
10		- mottled red (2.5YR 4/8) and yellow (10YR 7/8) saprolite moist, stiff, trace coarse sand			SPT N=10bpf(@8.5ft.)
15		- mottled red (2.5YR 4/8) and yellow (10YR 7/8) saprolite moist, medium stiff, with black streaking, trace residual quartz and mica			SPT N=5bpf(@13.5ft.)
20		- mottled reddish brown (2.5YR 4/3) and dusky red / dark reddish brown (10R 3/4) saprolite moist, medium stiff, with black streaking, trace weathered rock fragments, biotite, muscovite, residual quartz			SPT N=6bpf(@18.5ft.)
25		▽ - mottled reddish brown (2.5YR 4/3) and dusky red / dark reddish brown (10R 3/4) saprolite wet, soft, with black spots, trace weathered rock fragments			SPT N=3bpf(@23.5ft.)

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWC-15/PZ-17S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION	COMMENTS
				Weak Moderate Strong	
30		<b>Silt (ML) (Con't)</b>  - mottled light red (2.5YR 6/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, stiff, with black streaking, trace weathered rock fragments			SPT N=9bpf(@28.5ft.)
35		<b>Sandy Elastic Silt (MH)</b> - mottled reddish brown (2.5YR 4/3) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium stiff, with black streaking, trace weathered rock fragments			SPT N=5bpf(@33.5ft.)(LL=55; PI=23; FC = 54.7%; Gravel = 0%)  (MC = 51.6%; UW(d) = 70.3pcf; PERM. = 4.10E-4cm/sec)
40		<b>Silt (ML)</b> - mottled reddish brown (2.5YR 4/3) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium stiff, trace weathered rock fragments, residual quartz, biotite, muscovite			SPT N=8bpf(@38.5ft.)
45		- mottled reddish brown (2.5YR 4/3) and light red / moderate reddish orange (10R 6/6) saprolite wet, stiff, with black streaking, trace weathered rock fragments, biotite, muscovite, residual quartz			SPT N=12bpf(@43.5ft.)
Bottom of borehole at 45.2 feet.					
50					
55					

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

SIMPLE GEOLOGY LOG - ESEE DATABASE GDT - 6/24/15 07:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ





# RECORD OF WELL CONSTRUCTION

WELL: SGWC-15/PZ-17S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/25/2015 COMPLETED 2/26/2015 GROUND ELEVATION 479.7 ft COORDINATES N 1120191.2 E 2407093.92

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 45.2 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 33.81 ft. DELAYED 31.66 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 482.75	
			Surface Seal: concrete	
				ELEV. (DEPTH) 477.7 (2.0)
		5		
		10		
		15	Annular Fill: Cement-Bentonite Grout - 6 bags Typel I/II Portland Cement, 94 lbs/each	
		20		
		25		

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER LOGS.GPJ

(Continued Next Page)



(Continued Next Page)



# LOG OF TEST BORING

BORING SGWC-16/PZ-18S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML) (Con't)</b>			
30		<div>- mottled reddish yellow (5YR 6/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, soft, trace weathered rock fragments</div>			SPT N=3bpf(@28.5ft.)
35		<div>- mottled reddish yellow (5YR 6/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, soft, with white streaking, trace biotite and residual quartz</div>			SPT N=4bpf(@33.5ft.)
40		<div>- mottled reddish yellow (5YR 6/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, soft, with black and white streaking, trace biotite and residual quartz</div>			SPT N=4bpf(@38.5ft.)
		Bottom of borehole at 40.2 feet.			
45					
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-16/PZ-18S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

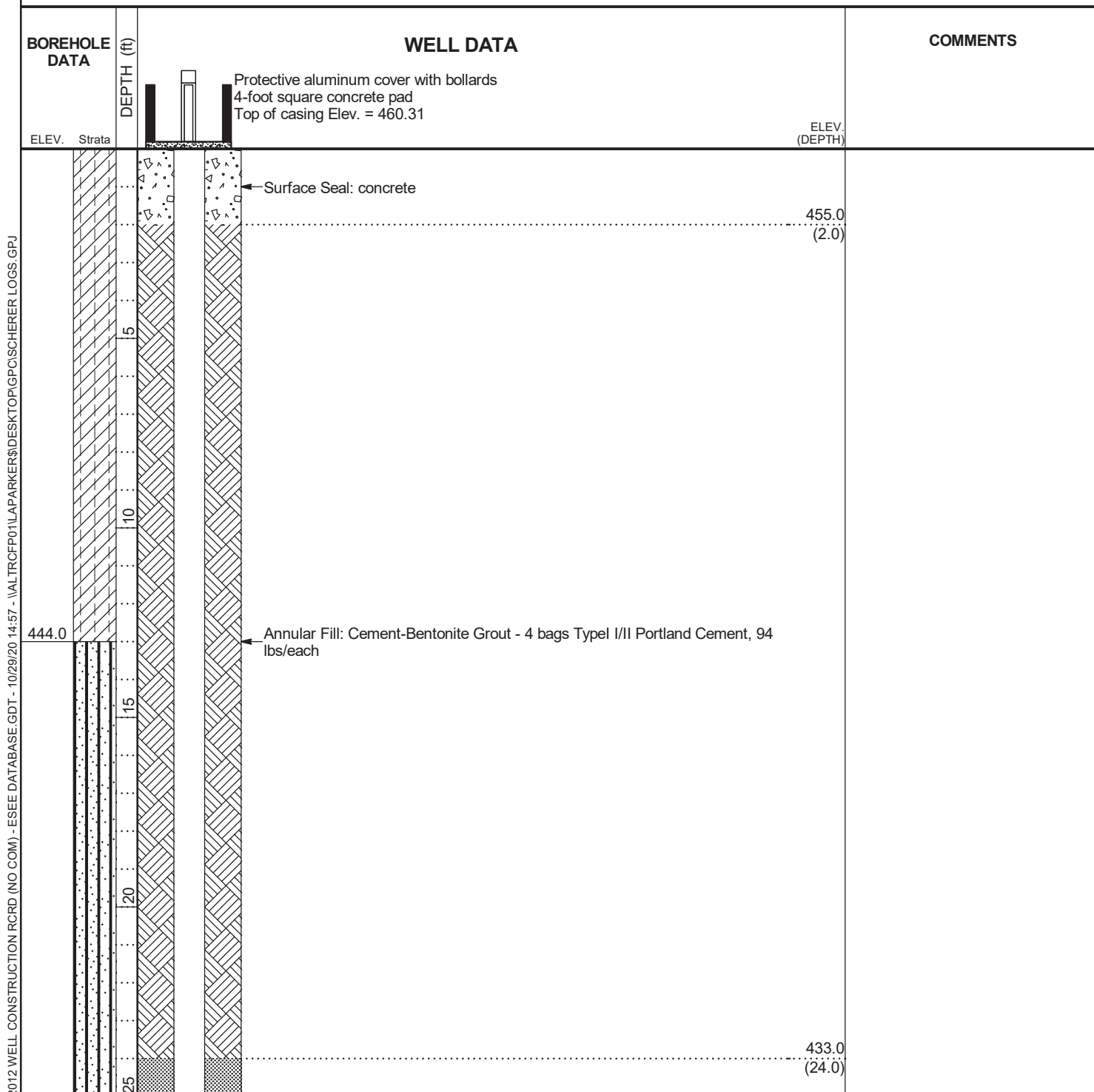
DATE STARTED 3/3/2015 COMPLETED 3/3/2015 GROUND ELEVATION 457 ft COORDINATES N 1119221.42 E 2407155.89

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 40.2 ft.

GROUND WATER DEPTH: DURING 18.5 ft. COMP. 29.95 ft. DELAYED 29.33 ft. after 24 hrs.

NOTES



(Continued Next Page)





# RECORD OF WELL CONSTRUCTION

WELL: SGWC-16/PZ-18S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 460.31	
			Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	
				430.2 (26.8)
			Filter: Unimin FilterSil - 6.5 Bags #1A, 50 lbs/each	
				428.2 (28.8)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
			Sump: 0.40 ft.	
416.8				418.2 (38.8)



# LOG OF TEST BORING

BORING SGWC-17/PZ-20S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/11/2015 COMPLETED 3/11/2015 SURF. ELEV. 414.9 COORDINATES: N 1118308.77 E 2407267.44

CONTRACTOR Civil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 24.5 ft. GROUND WATER DEPTH: DURING 0.5 ft. COMP. 6.1 ft. DELAYED 5.9 ft. after 24 hrs.

NOTES \_\_\_\_\_

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZODRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Fat Clay (CL)</b> - Hand auger 5' for utilities clearance			
10		- mottled strong brown (7.5YR 4/6) and red (10R 4/8) residuum wet, hard, with sand, trace roots and weathered rock fragments			SPT N=50bpf(@8.5ft.)
15		<b>Silty Sand (SM)</b> - mottled gray (7.5YR 5/1) saprolite wet, loose, very fine to fine grained, with white speckling and black streaking, trace weathered rock fragments			SPT N=6bpf(@13.5ft.)
20		- mottled gray (7.5YR 5/1) saprolite wet, medium dense, very fine to fine grained, with white speckling and black streaking, trace weathered rock fragments			SPT N=13bpf(@18.5ft.)
25		- mottled very dark gray (7.5YR 3/1) saprolite wet, medium dense, very fine to fine grained, with white speckling and black streaking, trace residual quartz, iron oxide staining, weathered rock fragments			SPT N=18bpf(@23.5ft.)
		Bottom of borehole at 24.5 feet.			



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-17/PZ-20S

PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/11/2015 COMPLETED 3/11/2015 GROUND ELEVATION 414.9 ft COORDINATES N 1118308.77 E 2407267.44

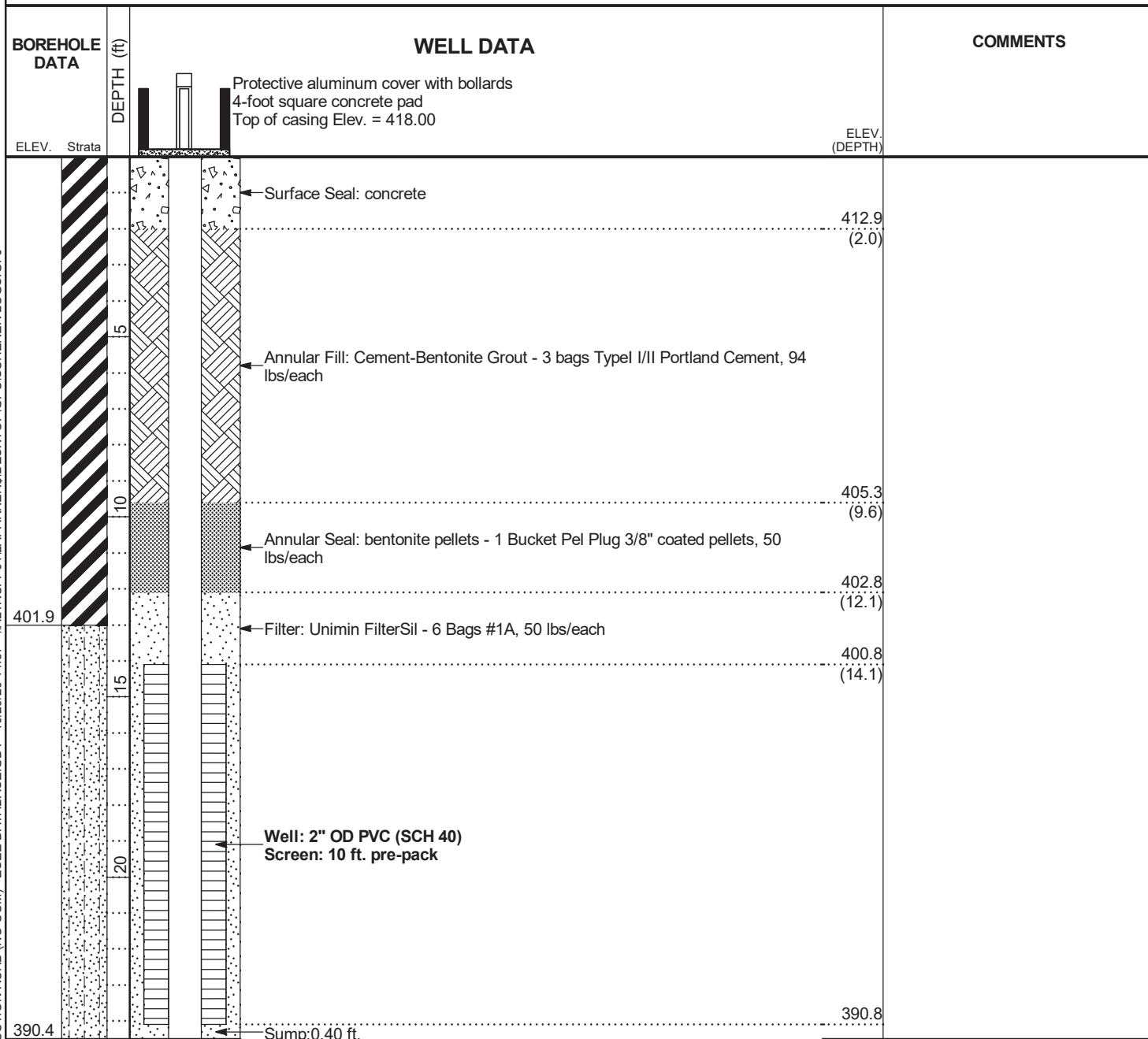
CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 24.5 ft.

GROUND WATER DEPTH: DURING 0.5 ft. COMP. 6.1 ft. DELAYED 5.9 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\IDEKTOP\GPOCISCHERER LOGS.GPJ





# LOG OF TEST BORING

BORING SGWC-18/PZ-22S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/16/2015 COMPLETED 3/17/2015 SURF. ELEV. 510.3 COORDINATES: N 1116947.75 E 2406931.32

CONTRACTOR Civil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 44.5 ft. GROUND WATER DEPTH: DURING 28.5 ft. COMP. 31.4 ft. DELAYED 31.1 ft. after 24 hrs.

NOTES \_\_\_\_\_

SIMPLE GEOLOGY LOG - ESEE DATABASE GDT - 6/24/15 07:59 - S:\WORKGROUP\SPAPC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZODRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Lean Clay (CL)</b> - Hand auger 5' for utilities clearance			
10		- mottled brown (7.5YR 5/2) and yellow (10YR 7/6) fill moist, stiff, micaceous			SPT N=9bpf(@8.5ft.)
15		- mottled brown (7.5YR 5/2) and yellow (10YR 7/6) fill moist, medium stiff, micaceous			SPT N=5bpf(@13.5ft.)
20		<b>Silt (ML)</b> - mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite moist, medium stiff, with black spots, trace weathered rock fragments			SPT N=7bpf(@18.5ft.)
25		- mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite moist, medium stiff, with black spots, trace weathered rock fragments, residual quartz, biotite, muscovite			SPT N=5bpf(@23.5ft.)

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWC-18/PZ-22S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Silt (ML) (Con't)</b>			
30		- mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, black/yellow streaking and spots, trace residual quartz, feldspar, biotite, muscovite			SPT N=5bpf(@28.5ft.)
35		- mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, black/yellow streaking and spots, trace residual quartz, feldspar, biotite, muscovite			SPT N=7bpf(@33.5ft.)
40		- mottled reddish yellow (7.5YR 7/8) and pink (10R 8/3) saprolite wet, stiff, with black streaking, trace residual quartz, feldspar, biotite, muscovite			SPT N=9bpf(@38.5ft.)
45		- mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite wet, stiff, with black streaking, trace residual quartz, feldspar, hornblende, biotite, muscovite			SPT N=10bpf(@43.5ft.)
		Bottom of borehole at 44.5 feet.			
50					
55					

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

<b>DATE STARTED</b>	3/16/2015	<b>COMPLETED</b>	3/17/2015	<b>GROUND ELEVATION</b>	510.3 ft	<b>COORDINATES</b>	N 1116947.75 E 2406931.32
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<b>CONTRACTOR</b>	Civil Field Services	<b>METHOD</b>	Hollow Stem Auger	<b>EQUIPMENT</b>	CME550
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**DRILLED BY** T. Milam      **LOGGED BY** S. Baxter      **CHECKED BY** L. Millet      **BORING DEPTH** 44.5 ft.

**GROUND WATER DEPTH: DURING** 28.5 ft.      **COMP.** 31.4 ft.      **DELAYED** 31.1 ft. after 24 hrs.

## NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		<p>Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 513.29</p>		
		<p>← Surface Seal: concrete</p>		508.3 (2.0)
		<p>← Annular Fill: Cement-Bentonite Grout - 5 bags Type I/II Portland Cement, 94 lbs/each</p>		
492.3				

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



# LOG OF TEST BORING

BORING SGWC-19/PZ-23S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/18/2015 COMPLETED 3/18/2015 SURF. ELEV. 475.8 COORDINATES: N 1116024.59 E 2406097.05

CONTRACTOR Civil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE \_\_\_\_\_ BEARING \_\_\_\_\_

BORING DEPTH 34.6 ft. GROUND WATER DEPTH: DURING 13.5 ft. COMP. 15.1 ft. DELAYED 12.1 ft. after 24 hrs.

NOTES \_\_\_\_\_

SIMPLE GEOLOGY LOG - ESEE DATABASE GDT - 6/24/15 07:59 - S:\WORKGROUP\SPC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZODRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Lean Clay (CL)</b> - Hand auger 5' for utilities clearance  - mottled red (2.5YR 5/8) fill moist, medium stiff, trace mica			SPT N=8bpf(@8.5ft.)
10					
15		<b>Silt (ML)</b> - mottled reddish gray (2.5YR 5/1) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium stiff, black spots, with trace residual quartz			SPT N=5bpf(@13.5ft.)
20		- mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, trace mica			SPT N=6bpf(@18.5ft.)
25		<b>Silty Sand (SM)</b> - mottled white (7.5YR 8/1) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, muscovite, biotite			SPT N=10bpf(@23.5ft.)

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWC-19/PZ-23S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<b>Silty Sand (SM) (Con't)</b>  - mottled white (7.5YR 8/1) saprolite wet, medium dense, very fine to fine grained, black streaking, trace weathered rock fragments and mica  - mottled white (7.5YR 8/1) saprolite wet, dense, very fine to fine grained, black streaking, trace muscovite, biotite, residual quartz			SPT N=20bpf(@28.5ft.)  SPT N=39bpf(@33.5ft.)
35		Bottom of borehole at 34.6 feet.			
40					
45					
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-19/PZ-23S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

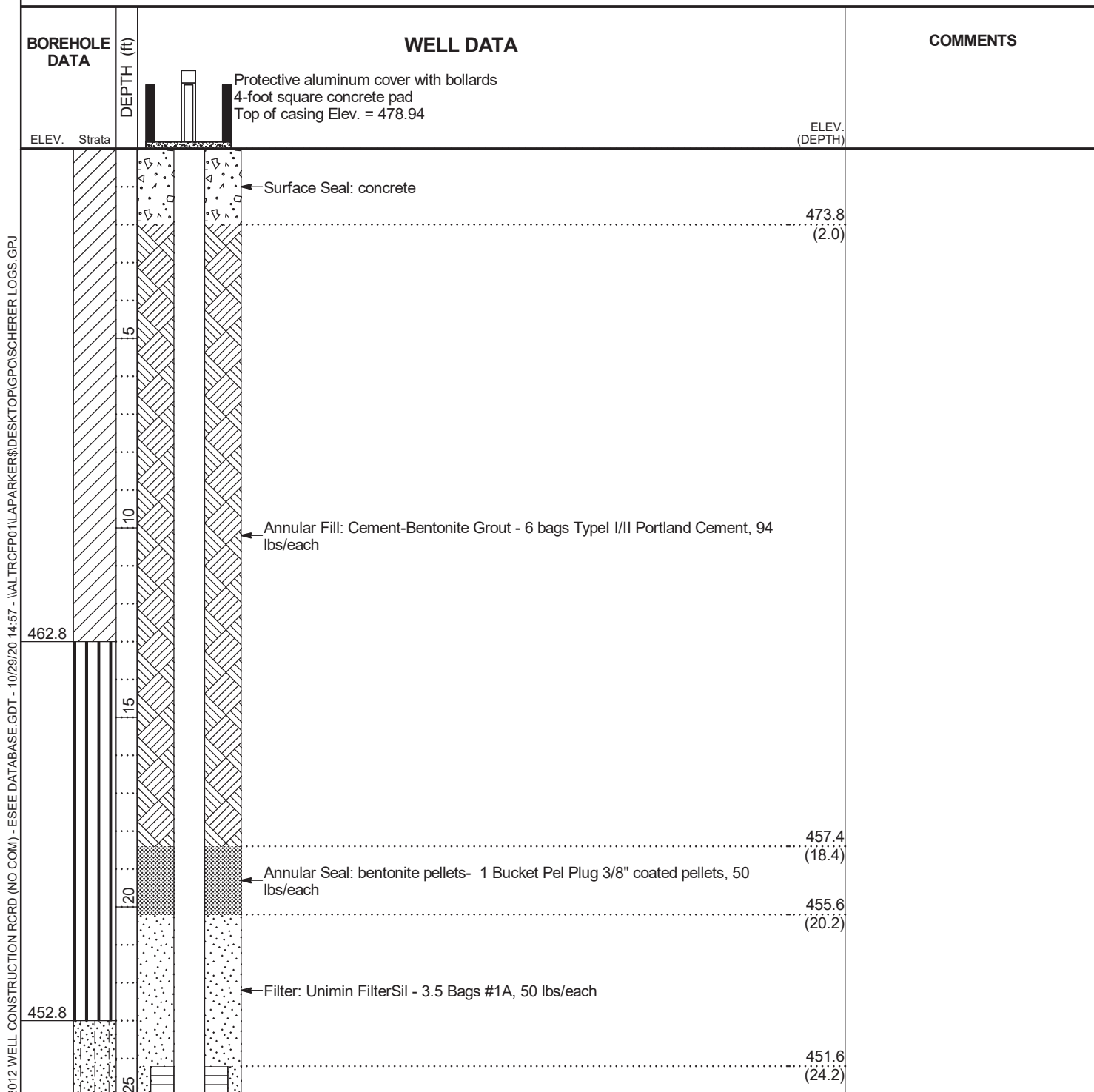
DATE STARTED 3/18/2015 COMPLETED 3/18/2015 GROUND ELEVATION 475.8 ft COORDINATES N 1116024.59 E 2406097.05

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 34.6 ft.

GROUND WATER DEPTH: DURING 13.5 ft. COMP. 15.1 ft. DELAYED 12.1 ft. after 24 hrs.

NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-19/PZ-23S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 478.94	
		(CONTINUED)		
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
441.2		30	Sump: 0.40 ft.	441.6

# RECORD OF BOREHOLE SGWC-20/APC-15

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 25.00 ft  
LOCATION: Juliette, GA

DRILL RIG: C 100 Track Mounted Rig  
DATE STARTED: 11/19/15  
DATE COMPLETED: 11/19/15

NORTHING: 1,116,020.73  
EASTING: 2,405,307.67  
GS ELEVATION: 501.5  
TOC ELEVATION: 504.60 ft

DEPTH W.L.: 8.20'  
ELEVATION W.L.:  
DATE W.L.: 11/20/15  
TIME W.L.: 11:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CLAY (CH)/FILL; clayey silty overburden, red/brown, moist (vacuum cleared by Southern Company Services to 10 feet prior to drilling activities)	CH						<p>Portland Type I/ Type II/ Gel mix</p> <p>3/8" Bentonite - Pellets</p> <p>#1 sand - 0.010" slot screen</p>	<b>WELL CASING</b> Interval: -3'-15' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 15'-25' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 12.7'-25' Type: #1 sand/ Prepack Filter  <b>FILTER PACK SEAL</b> Interval: 10.6'-12.7' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-10.6' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4"x4"x4" Protective Casing: Anodized Aluminum  <b>DRILLING METHODS</b> Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5		5.00 - 10.00 clayey silt, red/brown, moist			496.5 5.00					
10		10.00 - 13.00 CLAYEY SILT (ML)/SAPROLITE; clayey silts, fat clay, trace biotite streaking and mica, red/orange/brown, moist	ML		491.5 10.00					
15		13.00 - 15.00 FAT CLAY (CH)/SAPROLITE; silt and fine sand with trace quartz, micaceous, trace biotite, red/brown, wet	CH		488.5 13.00					
20		15.00 - 20.00 SILT/SAPROLITE; clayey silty, mottled saprolite, trace biotite, red/orange/brown, very soft, wet Shelby Tube Collected: 15'-17'	MH		486.5 15.00					
25		20.00 - 25.00 mottled saprolite, weathered biotite, micaceous, trace quartz, foliation (clayey silt with interbedded fine sand), orange/red/brown, very wet			481.5 20.00					
25		Boring completed at 25.00 ft			476.5					

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vernon Scott

GA INSPECTOR: James Mullooly  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 9/29/17





## LOG OF TEST BORING



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-21/PZ-01S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 5/6/2015 COMPLETED 5/6/2015 GROUND ELEVATION 484.7 ft COORDINATES N 1115409.88 E 2404197.33

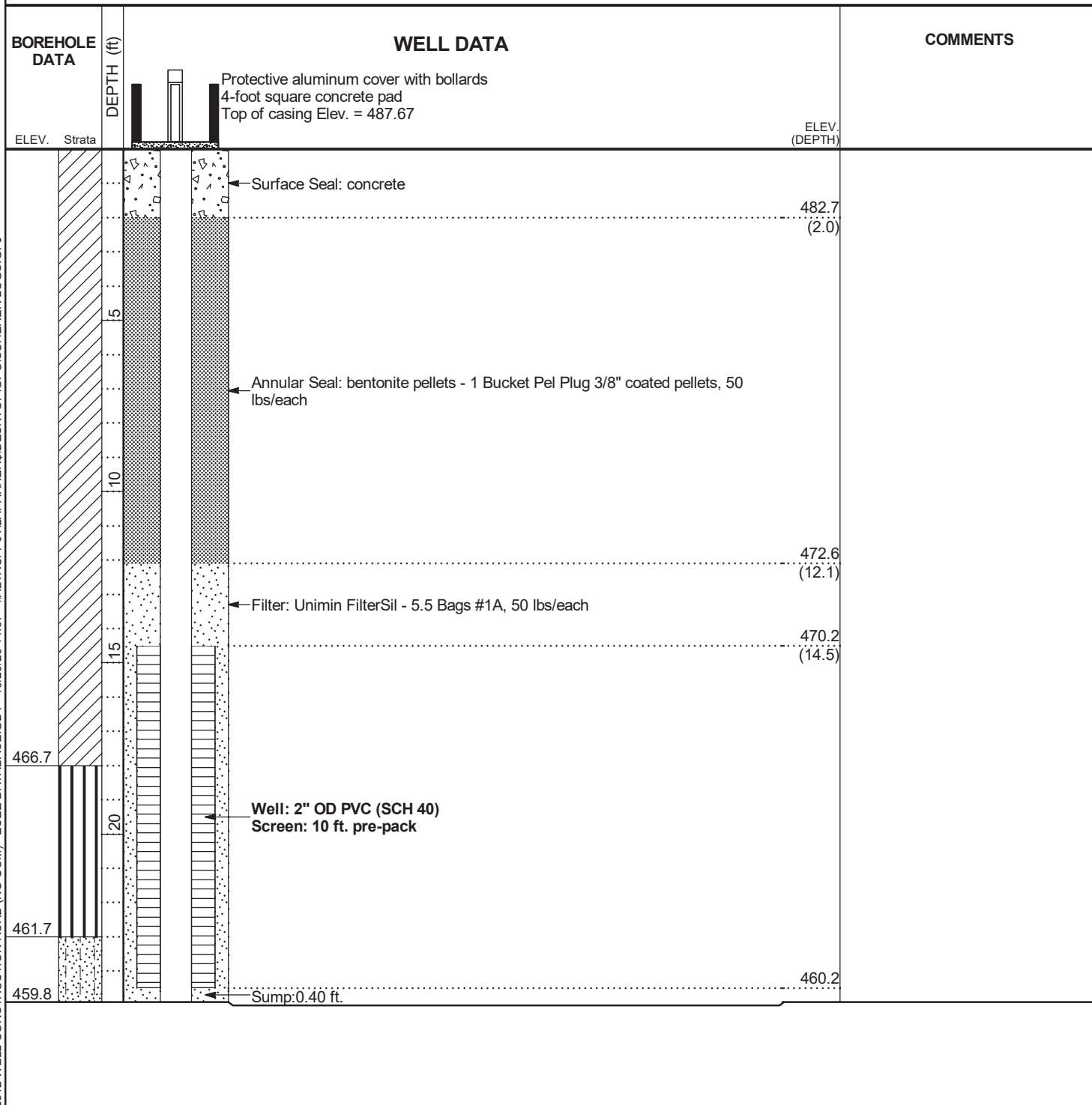
CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 24.9 ft.

GROUND WATER DEPTH: DURING 14.4 ft. COMP. 0 ft. DELAYED 2.7 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ





# BORING LOG

**BORING SGWC-22/PZ-02S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 1/21/2015 COMPLETED 1/22/2015 GROUND ELEVATION 515.4 ft COORDINATES: N 1115540.08 E 2403001.81

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 50.1 ft.

GROUND WATER DEPTH: DURING 25.5 ft. COMP. 25.5 ft. DELAYED 24.51 ft. after 24 hrs.

NOTES \_\_\_\_\_

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	HCL REACTION  Weak Moderate Strong	COMMENTS
5		<b>Lean Clay (CL)</b>  - mottled dusky red (5R 3/4), light red / moderate reddish orange (10R 6/6) and pinkish white / grayish orange pink (10R 8/2) fill moist, very stiff		SPT N=21bpf(@3.5ft.)
10		<b>Silt (ML)</b> - mottled dusky red (5R 3/4), pinkish white (7.5YR 8/2) and pale red / moderate orange pink (10R 7/4) residuum moist, very stiff, white banding, micaceous		SPT N=20bpf(@8.5ft.)
15		- mottled dusky red (5R 3/4), very pale brown / very pale orange (10YR 8/2) and very pale brown / very pale orange (10YR 8/2) saprolite moist, stiff, with black spots		SPT N=9bpf(@13.5ft.)
20		- mottled brown (10YR 4/3), light brown (7.5YR 6/4) and white (2.5YR 8/1) saprolite moist, medium stiff		SPT N=8bpf(@18.5ft.)
25		<b>Silty Sand (SM)</b> - mottled brown (10YR 4/3), very pale brown / very pale orange (10YR 8/2) and pale red / moderate orange pink (10R 7/4) saprolite wet, loose, very fine to fine grained, with black spots		SPT N=6bpf(@23.5ft.)

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:40 - \\ALTRCP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

BORING SGWC-22/PZ-02S

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP001\LA\PARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	HCL REACTION Weak Moderate Strong	COMMENTS
		▼ Silty Sand (SM)(Con't)		
30		- mottled brown (10YR 4/3), very pale brown / very pale orange (10YR 8/2) and pale red / moderate orange pink (10R 7/4) saprolite wet, medium dense, very fine to fine grained, with black spots		SPT N=12bpf(@28.5ft.)
35		- mottled very pale brown / very pale orange (10YR 8/2), very pale brown / very pale orange (10YR 8/2) and light brownish gray / pale yellowish brown (10YR 6/2) saprolite wet, medium dense, very fine to fine grained, with black spots		SPT N=20bpf(@33.5ft.)
40		- mottled light greenish gray (10BG 7/1), white (7.5YR 8/1) and white (10R 8/1) saprolite wet, dense, very fine to fine grained, micaceous, trace weathered rock fragments		SPT N=42bpf(@38.5ft.)
45		- mottled brown (10YR 4/3), very pale brown / very pale orange (10YR 8/2) and white (10R 8/1) saprolite wet, medium dense, very fine to fine grained, micaceous, with black spots		SPT N=27bpf(@43.5ft.)
50		- mottled brown (10YR 4/3), very pale brown / very pale orange (10YR 8/2) and white (10R 8/1) saprolite wet, dense, very fine to fine grained, micaceous, with black spots		SPT N=43bpf(@48.5ft.)
		Bottom of borehole at 50.1 feet.		
55				



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-22/PZ-02S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

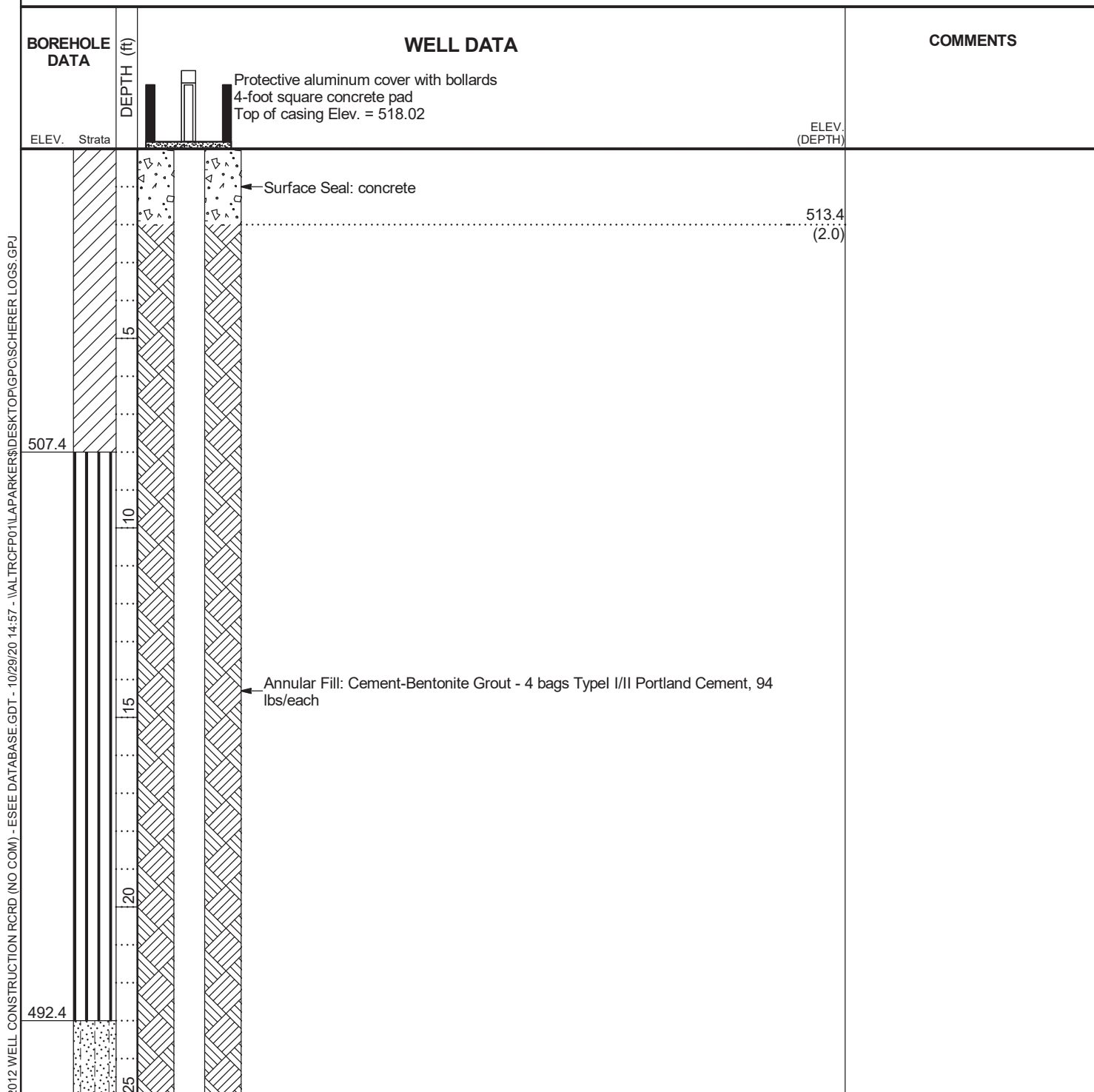
DATE STARTED 1/21/2015 COMPLETED 1/22/2015 GROUND ELEVATION 515.4 ft COORDINATES N 1115540.08 E 2403001.81

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 50.1 ft.

GROUND WATER DEPTH: DURING 25.5 ft. COMP. 25.5 ft. DELAYED 24.51 ft. after 24 hrs.

NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-22/PZ-02S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 518.02	
				488.8 (26.6)
			Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	
		30		486.2 (29.2)
			Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each	
		35		
				478.9 (36.5)
		40		
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
		45		
			Sump: 0.40 ft	468.9 (46.5)
			Backfill:	468.5 (46.9)
465.3		50		



(Continued Next Page)



# LOG OF TEST BORING

BORING SGWC-23/PZ-041

PAGE 2 OF 2


ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML) (Con't)</b>			
30		<b>Silty Sand (SM)</b> - mottled greenish gray (10BG 5/1) and light red / moderate reddish orange (10R 6/6) saprolite moist, medium dense, very fine to fine grained, with white streaking and black spots, trace weathered rock fragments and mica			SPT N=17bpf(@28.5ft.)(PL=NP; FC = 32.5%; Gravel = 0%)  (MC = 23%; UW(d) = 96pcf; PERM. = 1.65E-4cm/sec)
35		 - mottled greenish gray (10BG 5/1) and light red / moderate reddish orange (10R 6/6) saprolite moist, dense, very fine to fine grained, black streaking, with weathered rock fragments, trace mica			SPT N=36bpf(@33.5ft.)
		<b>PARTIALLY WEATHERED ROCK</b> - variegated with greenish gray (10BG 5/1) fine to coarse grain, very soft, highly weathered			
40		<b>GRANITIC GNEISS</b> - variegated with very pale brown / grayish orange (10YR 7/4) coarse grain, hard to very hard, slightly to moderately weathered, massive, banded, 2 low angle-fractures (10 - 25d), 3 moderate-angle fractures (30 - 45d), 2 high-angle fractures (65 - 90d), with iron oxide staining, quartz, feldspar, mica			
45		- variegated with dark gray (N3) coarse to medium grain, very soft to soft, moderately to highly weathered, inclined, banded, moderately fractured, 10 low-angle fractures (10 - 30d), 11 moderate-angle fractures (30 - 45d), with iron oxide staining, quartz, amphibole			
50		- variegated with dark gray (N3) coarse to medium grain, very soft to soft, moderately to highly weathered, inclined, banded, moderately fractured, 16 moderate-angle fractures (30 - 45d), 2 high-angle fractures (60 - 90d), with iron oxide staining, quartz, amphibole			
55		Bottom of borehole at 49.7 feet.			

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

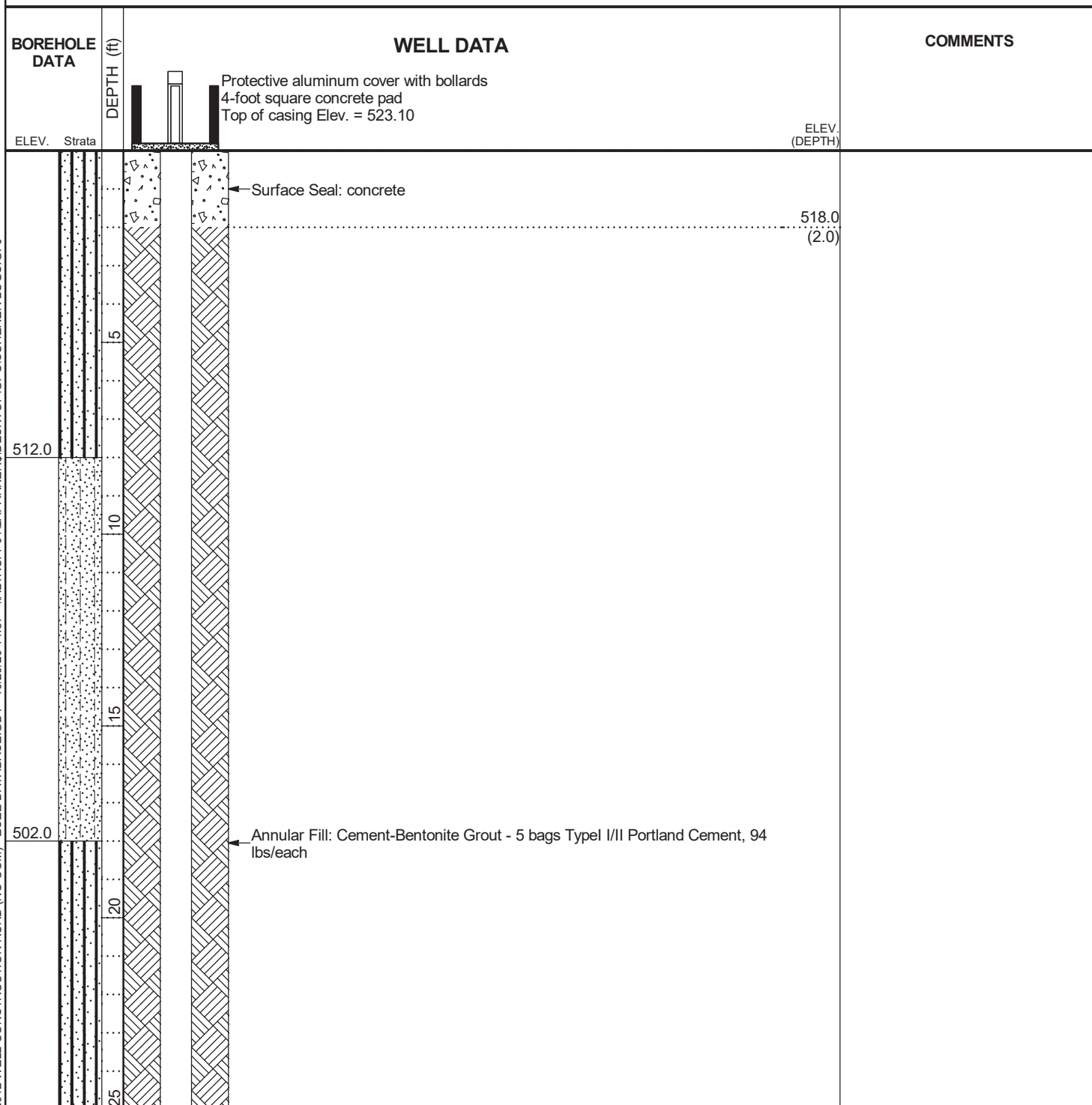
**DATE STARTED** 1/29/2015      **COMPLETED** 2/3/2015      **GROUND ELEVATION** 520 ft      **COORDINATES** N 1116693.8 E 2402131.07

<b>CONTRACTOR</b>	Civil Field Services	<b>METHOD</b>	Hollow Stem Auger; HQ Rock Core	<b>EQUIPMENT</b>	CME550
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**DRILLED BY** T. Milam      **LOGGED BY** S. Baxter      **CHECKED BY** L. Millet      **BORING DEPTH** 49.7 ft.

<b>GROUND WATER DEPTH: DURING</b>	34.9 ft.	<b>COMP.</b>	33.1 ft.	<b>DELAYED</b>	33.9 ft. after 24 hrs.
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## NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: SGWC-23/PZ-04I

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

## BOREHOLE DATA

DEPTH (ft)

## WELL DATA

## COMMENTS

ELEV. Strata

(CONTINUED)

ELEV.  
(DEPTH)

492.0

30

35

485.0

483.5

40

45

470.3

485.9  
(34.1)

483.5  
(36.5)

480.7  
(39.3)

470.7

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 523.10

Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each

Filter: Unimin FilterSil - 1 Bag #1A, 50 lbs/each

Well: 2" OD PVC (SCH 40)  
Screen: 10 ft. pre-pack

Sump: 0.40 ft.

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHEERER LOGS.GPJ





# LOG OF TEST BORING

BORING SGWA-24/PZ-07S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<b>Silty Sand (SM) (Con't)</b>  - mottled yellowish brown (10YR 5/8) and very dark brown / dusky yellowish brown (10YR 2/2) saprolite moist, medium dense, very fine to fine grained, trace biotite layering and zones of platy greenish chlorite			(MC = 13.1%; UW(d) = 119.8pcf; PERM. = 2.49E-5cm/sec)  SPT N=18bpf(@28.5ft.)
35		▽ - mottled reddish brown (2.5YR 5/3) and olive brown (2.5Y 4/4) saprolite wet, dense, very fine to fine grained, trace quartz, coarse silt, sand, biotite			SPT N=36bpf(@33.5ft.)
40		- mottled brown (10YR 5/3) and very pale brown (10YR 8/4) saprolite wet, very dense, very fine to fine grained, trace biotite, residual quartz, feldspar			SPT N=50bpf(@38.5ft.)
45		Bottom of borehole at 40.0 feet.			
50					
55					





# RECORD OF WELL CONSTRUCTION

WELL: SGWA-24/PZ-07S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

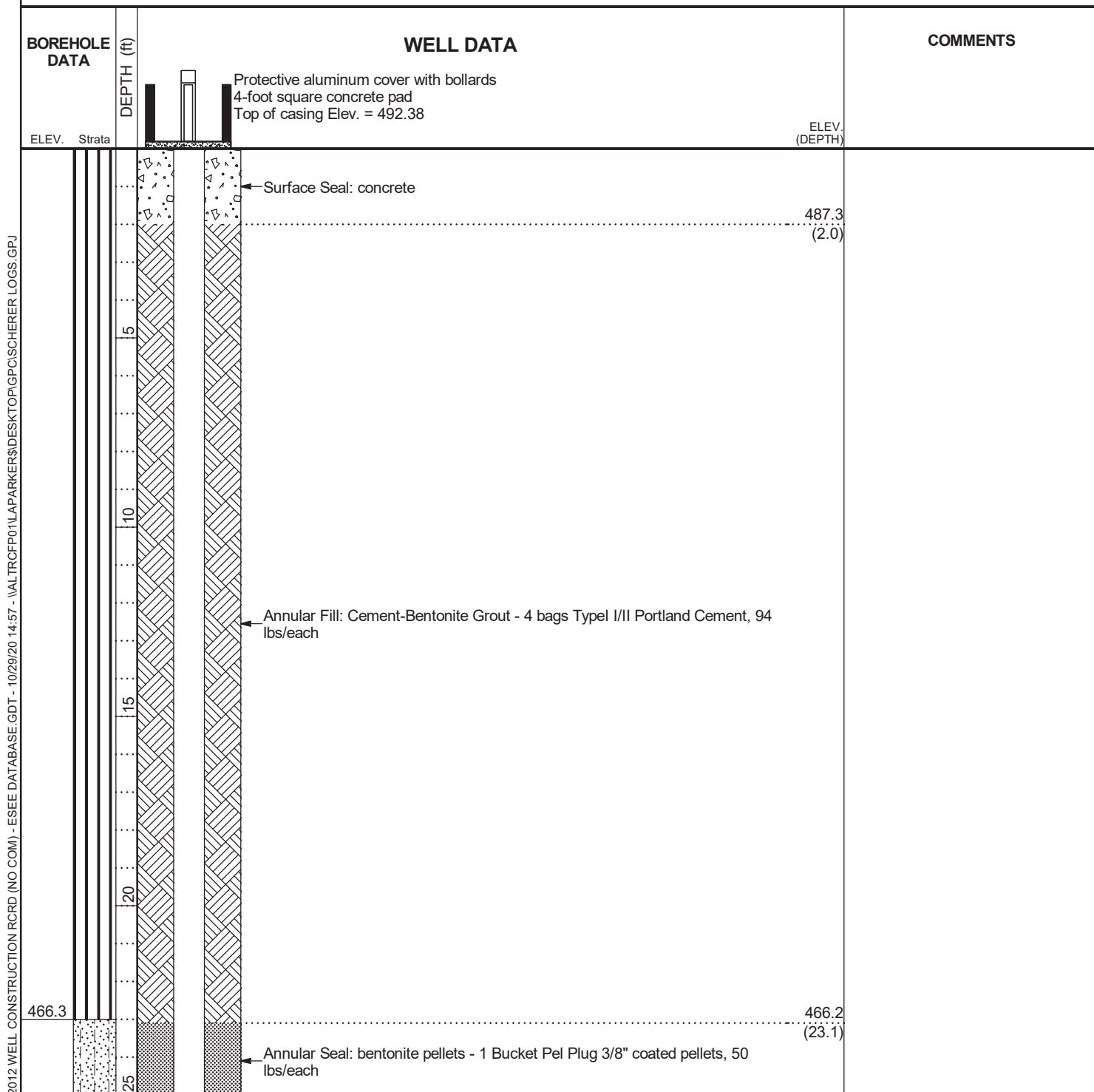
DATE STARTED 2/10/2015 COMPLETED 2/10/2015 GROUND ELEVATION 489.3 ft COORDINATES N 1118121.96 E 2400743.52

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 40 ft.

GROUND WATER DEPTH: DURING 33.5 ft. COMP. 12.1 ft. DELAYED 12.25 ft. after 24 hrs.

NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: SGWA-24/PZ-07S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 492.38	
				ELEV. (DEPTH)
				464.2 (25.1)
			Filter: Unimin FilterSil - 7 Bags #1A, 50 lbs/each	
				461.6 (27.7)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
				451.6 (37.7)
			Sump: 0.40 ft.	451.2 (38.1)
			Backfill:	
449.3		40		

(Continued Next Page)



# LOG OF TEST BORING

BORING SGWA-25/PZ-09S

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZIDRAFT LOGS\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<p>▼ Sandy Silt (ML) (Con't)</p> <p>- mottled brown (7.5YR 5/4) and very pale brown / very pale orange (10YR 8/2) saprolite moist, very stiff, micaceous</p>			SPT N=18bpf(@28.5ft.)
35		<p>▽ - mottled dark yellowish brown (10YR 3/6) and yellow (10YR 7/8) saprolite wet, stiff, micaceous, trace muscovite, biotite, chlorite, hornblende, feldspar, residual quartz</p>			SPT N=15bpf(@33.5ft.)  (MC = 53.6%; UW(d) = 66.1pcf; PERM. = 8.55E-5cm/sec)
40		<p>- mottled light gray (2.5Y 7/1), reddish brown / moderate brown (5YR 4/4) and dark olive brown (2.5Y 3/3) saprolite wet, very stiff, micaceous, trace clay, chlorite, muscovite, biotite, residual quartz, hornblende, feldspar</p>			SPT N=22bpf(@38.5ft.)
45		<p>- mottled grayish olive (10Y 4/2), strong brown (7.5YR 5/8) and weak red / pale reddish brown (10R 5/4) saprolite wet, very stiff, micaceous, trace clay, muscovite, biotite, chlorite, residual quartz, feldspar</p>			SPT N=29bpf(@43.5ft.)
50		Bottom of borehole at 45.0 feet.			
55					



# RECORD OF WELL CONSTRUCTION

WELL: SGWA-25/PZ-09S

PAGE 1 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/17/2015 COMPLETED 2/18/2015 GROUND ELEVATION 523.2 ft COORDINATES N 1120555.28 E 2400857.08

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 45 ft.

GROUND WATER DEPTH: DURING 33.5 ft. COMP. 25.9 ft. DELAYED 25.5 ft. after 24 hrs.

NOTES

## BOREHOLE DATA

## WELL DATA

## COMMENTS

ELEV. Strata

DEPTH (ft)

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 526.49

ELEV.  
(DEPTH)

Surface Seal: concrete

521.2  
(2.0)

Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement, 94  
lbs/each

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LA PARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



**APPENDIX A**

# Monitoring System Details

## A-2 ASH POND 1 ASSESSMENT MONITORING WELLS CONSTRUCTION LOGS



# BORING LOG

**BORING PZ-13S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/31/2015 COMPLETED 4/1/2015 GROUND ELEVATION 517.5 ft COORDINATES N 1121957.03 E 2404227.47

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 45.3 ft.

GROUND WATER DEPTH: DURING 33.5 ft. COMP. 28.6 ft. DELAYED 26.5 ft. after 24 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LA\PARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled red (10R 4/8) and light red / moderate reddish orange (10R 6/6) fill moist, stiff, trace clay			SPT N=9bpf(@8.5ft.)
15		- mottled red (10R 5/6) and yellow (10YR 7/6) saprolite moist, stiff, with black streaking, trace muscovite			SPT N=10bpf(@13.5ft.)
20		- mottled red (10R 5/6) and yellow (10YR 7/6) saprolite moist, medium stiff, with black streaking, trace residual quartz and muscovite			SPT N=6bpf(@18.5ft.)
25		- mottled reddish yellow (5YR 7/8) and light red / moderate reddish orange (10R 6/6) saprolite moist, stiff, trace black streaking and residual quartz			SPT N=10bpf(@23.5ft.)

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SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-13S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/31/2015 COMPLETED 4/1/2015 GROUND ELEVATION 517.5 ft COORDINATES N 1121957.03 E 2404227.47

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 45.3 ft.

GROUND WATER DEPTH: DURING 33.5 ft. COMP. 28.6 ft. DELAYED 26.5 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 520.51	
			Surface Seal: concrete	515.5 (2.0)
			Annular Fill: Cement-Bentonite Grout - 4 bags Type I/II Portland Cement, 94 lbs/each	

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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# RECORD OF WELL CONSTRUCTION

WELL: PZ-13S  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
(CONTINUED)				
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 520.51	
		30	Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	487.9 (29.6)
		35	Filter: Unimin FilterSil - 6.5 Bags #1A, 50 lbs/each	485.5 (32.0)
		40	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	482.6 (34.9)
472.2		45	Sump: 0.40 ft.	472.6



# BORING LOG

**BORING PZ-14S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/25/2015 COMPLETED 3/26/2015 GROUND ELEVATION 508.7 ft COORDINATES N 1121852.8 E 2404820.56

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 44.9 ft.

GROUND WATER DEPTH: DURING 28.5 ft. COMP. 28.8 ft. DELAYED 18.8 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled reddish yellow (5YR 6/8) and yellow (10YR 7/6) saprolite moist, very stiff, trace weathered rock fragments			SPT N=21bpf(@8.5ft.)
15		- mottled reddish yellow (5YR 7/8) and yellow (10YR 7/8) saprolite moist, medium stiff, slight pink hue, trace weathered rock fragments			SPT N=8bpf(@13.5ft.)
20		▼ - mottled reddish yellow (5YR 7/8) and yellow (10YR 7/8) saprolite moist, medium stiff, micaceous, trace biotite and residual quartz			SPT N=7bpf(@18.5ft.)
25		<b>Silty Sand (SM)</b> - mottled pink / moderate orange pink (5YR 8/4) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite moist, loose, very fine to fine grained, black and white streaking, micaceous			SPT N=7bpf(@23.5ft.)

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:40 - \\ALTRCP01\1\APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

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# BORING LOG

**BORING PZ-14S**

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\1\APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Silty Sand (SM)(Con't)</b>			
30		- mottled pink / moderate orange pink (5YR 8/4) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, medium dense, very fine to fine grained, black and white streaking, trace weathered rock fragments			SPT N=11bpf(@28.5ft.)
35		- mottled reddish yellow (5YR 6/8) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, dense, very fine to fine grained, trace angular weathered rock fragments			SPT N=37bpf(@33.5ft.)
40		- mottled reddish yellow (5YR 6/8), brownish yellow / dark yellowish orange (10YR 6/6) and gray (10YR 5/1) saprolite wet, dense, very fine to fine grained, has yellow concretions at 40', trace weathered rock fragments			SPT N=38bpf(@38.5ft.)
45		- mottled reddish yellow (5YR 6/8), brownish yellow / dark yellowish orange (10YR 6/6) and brown (10YR 4/3) saprolite wet, dense, very fine to fine grained, with black streaking, trace weathered rock fragments, biotite, muscovite, residual quartz			SPT N=33bpf(@43.5ft.)
		Bottom of borehole at 44.9 feet.			
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-14S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/25/2015 COMPLETED 3/26/2015 GROUND ELEVATION 508.7 ft COORDINATES N 1121852.8 E 2404820.56

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 44.9 ft.

GROUND WATER DEPTH: DURING 28.5 ft. COMP. 28.8 ft. DELAYED 18.8 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 512.13	
			Surface Seal: concrete	506.7 (2.0)
		5		
		10		
		15		
		20		
		25		
485.7			Annular Fill: Cement-Bentonite Grout - 5 bags Typel I/II Portland Cement, 94 lbs/each	

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



# BORING LOG

**BORING PZ-171**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/26/2015 COMPLETED 2/27/2015 GROUND ELEVATION 479.9 ft COORDINATES N 1120190.27 E 2407107.37

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 97.3 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 28.51 ft. DELAYED 24.75 ft. after 24 hrs.

## NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
		<b>Sandy Silt (ML)</b>			
5		- mottled yellowish red (5YR 5/8) and yellow (10YR 7/8) residuum moist, very stiff, trace clay			SPT N=18bpf(@3.5ft.)
10		- mottled yellowish red (5YR 5/8) and yellow (10YR 8/8) residuum moist, stiff, trace clay			SPT N=9bpf(@8.5ft.)
15		- mottled red (2.5YR 4/8) and red (10R 4/8) saprolite moist, medium stiff, trace residual quartz			SPT N=7bpf(@13.5ft.)
20		- mottled red (2.5YR 4/8) and yellow (10YR 7/6) saprolite moist, medium stiff, with black streaking, trace weathered rock fragments			SPT N=8bpf(@18.5ft.)
25		▽ - mottled yellowish red (5YR 5/8) and red (10R 4/8) saprolite wet, soft, with black banding, trace residual quartz			SPT N=4bpf(@23.5ft.)
30		▼ - mottled strong brown (7.5YR 5/8) and very pale brown / very pale orange (10YR 8/2) saprolite wet, very soft, with black spots			SPT N=2bpf(@28.5ft.)

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GPGC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

BORING PZ-171

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML)(Con't)</b>			
35		<b>Elastic Silt (MH)</b> - mottled strong brown (7.5YR 5/8) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, medium stiff, with black and white banding, trace residual quartz, muscovite, biotite			SPT N=5bpf(@33.5ft.)
40		<b>Silt (ML)</b> - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, with black spots, trace weathered rock fragments			SPT N=9bpf(@38.5ft.)
45		- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole			SPT N=12bpf(@43.5ft.)
50		- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite			SPT N=27bpf(@48.5ft.)
55		- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole			SPT N=20bpf(@53.5ft.)
60		- mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite			SPT N=27bpf(@58.5ft.)
65		- mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biotite			SPT N=84bpf(@63.5ft.)  Switched to casing, advancing into upper weathered rock (Biotite Gneiss/Amphibolite)

(Continued Next Page)



# BORING LOG

BORING PZ-171

Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Silt (ML)(Con't)</b>			
70		<b>Silty Sand (SM)</b> - mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole			SPT N=63bpf(@68.5ft.)
75		- mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole			SPT N=50bpf(@73.5ft.) Top of rock at 74.1 ft bgs, advanced casing to 81.1 ft bgs and began coring.
80		<b>Partially Weathered Rock (PWR)</b> - mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole			
85		<b>AMPHIBOLITE</b> - dark gray (N3) fine to medium grain, soft, slightly to moderately weathered, 12 moderate-angle fractures (30 - 45d), becomes interbedded with Biotite Gneiss			
90		<b>BIOTITE GNEISS</b> - mottled with dark gray (N3) medium grain, soft to medium hard, slightly weathered, inclined, banded, 10 moderate-angle fractures (30 - 45d), oxidized throughout, thin to medium foliation, mechanically fractured along schistosity (35 - 65d), 0.1 to 10 mm thick quartz/feldspar-filled healed fractures			
95		- 4 low-angle fractures (10 - 30d), 2 moderate-angle fractures (30 - 45d), becomes more competent with depth			
		Bottom of borehole at 97.3 feet.			
100					





# RECORD OF WELL CONSTRUCTION

WELL: PZ-171  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/26/2015 COMPLETED 2/27/2015 GROUND ELEVATION 479.9 ft COORDINATES N 1120190.27 E 2407107.37

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 97.3 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 28.51 ft. DELAYED 24.75 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 483.03	
			Surface Seal: concrete	477.9 (2.0)
		5		
		10		
		15		
		20		
		25		
		30		

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
446.9				
441.9		35		
		40		
		45		
		50		
		55		
		60		
		65		

(CONTINUED)

Protective aluminum cover with bollards  
 4-foot square concrete pad  
 Top of casing Elev. = 483.03

Annular Fill: Cement-Bentonite Grout - 10 bags Typel I/II Portland Cement, 94 lbs/each

(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-171  
PAGE 3 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCF001\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)	(CONTINUED)	ELEV. (DEPTH)
411.9		70		
404.9		75		
398.5		80		
		85	Annular Seal: bentonite pellets - 0.5 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	397.2 (82.7)
			Filter: Unimin FilterSil - 2.5 Bags #1A, 50 lbs/each	395.2 (84.7)
391.2		90		393.2 (86.7)
		95	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
382.6			Sump: 0.60 ft.	383.2 (96.7)

# RECORD OF BOREHOLE PZ-39S

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 80.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/21/18  
DATE COMPLETED: 8/21/18

NORTHING: 1,120,178.43  
EASTING: 2,407,470.49  
GS ELEVATION: 471.8  
TOC ELEVATION: 474.58 ft

DEPTH W.L.: 35.9'  
ELEVATION W.L.: 438.59'  
DATE W.L.: 8/24/18  
TIME W.L.: 09:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM AND NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 6.50 clayey SILT with some organic matter; dark reddish brown; non-cohesive; moist; compact; RESIDUUM	ML							
470										
5						S-1	ROTO SONIC	10.00 10.00		<b>WELL CASING</b> Interval: 0-76' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 66-76' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/ 2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 64-79' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 62.5-64' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-62.5' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
465		6.50 - 10.00 silty CLAY; grey to brown; cohesive; w~PL; soft to firm; RESIDUUM	CL		465.3 6.50					
10										
460		10.00 - 20.00 silty CLAY; high plasticity; red to reddish brown; cohesive; w>PL; stiff to very stiff; RESIDUUM	CL		461.8 10.00					
15						S-2	ROTO SONIC	7.50 10.00		
455										
20										
450		20.00 - 30.00 silty-sandy CLAY and clayey SAND mix; sand: fine; red; cohesive; w<PL to w~PL; soft to firm; RESIDUUM	CL-SC		451.8 20.00					
25						S-3	ROTO SONIC	7.50 10.00		
445										
30										
440		30.00 - 35.00 clayey SAND with silt; sand: fine to coarse; red to orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		441.8 30.00					
35										
435		35.00 - 40.00 clayey SAND with silt and gravel; sand: fine to coarse; gravel: fine to coarse; orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		436.8 35.00	S-4	ROTO SONIC	10.00 10.00		
40					431.8					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-39S

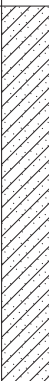
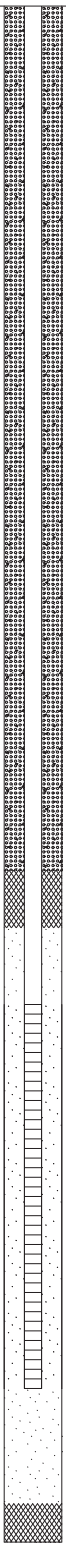
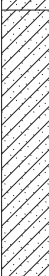



SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 80.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/21/18  
DATE COMPLETED: 8/21/18

NORTHING: 1,120,178.43  
EASTING: 2,407,470.49  
GS ELEVATION: 471.8  
TOC ELEVATION: 474.58 ft

DEPTH W.L.: 35.9'  
ELEVATION W.L.: 438.59'  
DATE W.L.: 8/24/18  
TIME W.L.: 09:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		40.00 - 50.00 clayey SAND with silt; sand: fine to coarse; red to orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		40.00	S-5	ROTO SONIC			<b>WELL CASING</b> Interval: 0-76' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 66-76' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/ 2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 64-79' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 62.5-64' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-62.5' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
430										
45										
425								9.50 10.00		
50		50.00 - 57.00 clayey SAND with silt; sand: fine to coarse; red to orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		421.8 50.00	S-6	ROTO SONIC			
420										
55										
415		57.00 - 60.00 silty SAND with trace clay; micaceous; tan to grey; non-cohesive; moist to wet; compact to dense; SAPROLITE	SM		414.8 57.00	S-7	ROTO SONIC			
60		60.00 - 68.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; tan to grey; micaceous; non-cohesive; moist to wet; compact to dense; SAPROLITE			411.8 60.00					
410										
65			SM			S-7	ROTO SONIC	10.00 10.00		
70		68.00 - 70.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; dark grey; micaceous; non-cohesive; moist; dense; SAPROLITE	SM		403.8 68.00					
75		70.00 - 77.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; dark grey; micaceous; non-cohesive; moist; dense; SAPROLITE			401.8 70.00					
400						S-8	ROTO SONIC	9.00 10.00		
80		77.00 - 80.00 silty SAND with trace clay and some gravel; sand: fine to coarse; gravel: fine to coarse; dark grey; micaceous; non-cohesive; moist; dense to very dense; TWR  Note: Drill chatter at 77'	TWR		394.8 77.00					
		Boring completed at 80.00 ft			391.8					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT SCHERER 2018\_10\_12 SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-401

SHEET 1 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 84.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/15/18  
DATE COMPLETED: 8/15/18

NORTHING: 1,116,960.39  
EASTING: 2,406,934.72  
GS ELEVATION: 510.1  
TOC ELEVATION: 512.55 ft

DEPTH W.L.: 31.8'  
ELEVATION W.L.: 480.42'  
DATE W.L.: 8/17/18  
TIME W.L.: 13:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM AND NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	510	0.00 - 10.00 Hydrovac from 0-10'								<b>WELL CASING</b> Interval: 0-73' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 70-84' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 70-65.5' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-65.5' Type: Portland Cement and Quick Gel Bentonite Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
10	500	10.00 - 20.00 Sandy, Clayey SILT; low to medium plasticity; sand: fine to coarse; red to reddish brown; non-cohesive; moist to wet; compact; trending towards clay downhole; RESIDUUM	MH		500.1 10.00		S-1	ROTO SONIC	7.00 10.00	
20	490	20.00 - 22.80 silty CLAY with some sand; sand: fine to coarse; reddish brown; cohesive; w<PL; compact; soft to firm; RESIDUUM	CL		490.1 20.00					
25	485	22.80 - 27.60 sandy SILT with some clay; sand: fine to coarse; reddish brown with black; micaceous; non-cohesive; moist; loose; RESIDUUM	SM		487.3 22.80		S-2	ROTO SONIC	8.00 10.00	
30	480	27.60 - 30.00 silty CLAY with some sand and nodules of organic matter; sand: fine to coarse; reddish brown; cohesive; w<PL; soft to firm; RESIDUUM	CL		482.5 27.60					
35	475	30.00 - 36.80 silty CLAY; red; cohesive; w>PL; very soft; RESIDUUM	CL		480.1 30.00		S-3	ROTO SONIC	9.50 10.00	
40		36.80 - 40.00 clayey SAND; sand: fine; reddish-pink; micaceous; non-cohesive; wet; compact; SAPROLITE	SC		473.3 36.80					
		Log continued on next page			470.1					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-401

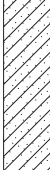
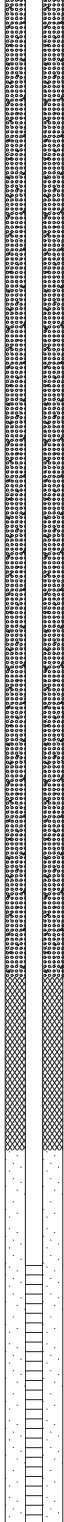

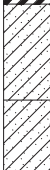
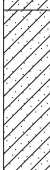
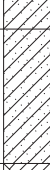


SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 84.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/15/18  
DATE COMPLETED: 8/15/18

NORTHING: 1,116,960.39  
EASTING: 2,406,934.72  
GS ELEVATION: 510.1  
TOC ELEVATION: 512.55 ft

DEPTH W.L.: 31.8'  
ELEVATION W.L.: 480.42'  
DATE W.L.: 8/17/18  
TIME W.L.: 13:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40	470	40.00 - 50.00 clayey SAND; sand: fine; reddish pink; micaceous; cohesive; w<PL; very soft to soft; SAPROLITE	SC		40.00	S-4	ROTO SONIC	5.00 10.00		<b>WELL CASING</b> Interval: 0-73' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 70-84' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 70-65.5' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-65.5' Type: Portland Cement and Quick Gel Bentonite Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
45	465									
50	460	50.00 - 55.00 sandy CLAY; sand: fine to coarse; light tan; micaceous; cohesive; w>PL; soft to firm; SAPROLITE	CH		460.1 50.00	S-5	ROTO SONIC	10.00 10.00		
55	455	55.00 - 57.50 clayey SAND; sand: fine to coarse; brown; micaceous; non-cohesive to cohesive; moist to wet; compact; SAPROLITE	SC		455.1 55.00					
		57.50 - 65.00 clayey SAND; sand: fine to coarse; dark grey; micaceous; highly weathered rock; non-cohesive; moist; compact to dense; SAPROLITE	SC		452.6 57.50	S-6	ROTO SONIC	8.00 10.00		
60	450									
65	445	65.00 - 68.50 clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; light grey to grey; micaceous; some weathered quartz; orange mottling; non-cohesive; moist to wet; dense; TWR	TWR		445.1 65.00	S-7	ROTO SONIC	8.50 10.00		
70	440	68.50 - 70.00 silty GRAVEL; gravel: fine to coarse; dark grey; micaceous; highly weathered rock; non-cohesive; wet; dense to very dense; BEDROCK 70.00 - 80.00 BIOTITE GNEISS; fresh; banded coarse and fine; gneissic banding; crystals fine to coarse; strong	BR		441.6 68.50 440.1 70.00					
75	435		BR							
80					430.1					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20



# RECORD OF BOREHOLE PZ-40I


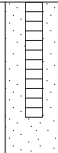
SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 84.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/15/18  
DATE COMPLETED: 8/15/18

NORTHING: 1,116,960.39  
EASTING: 2,406,934.72  
GS ELEVATION: 510.1  
TOC ELEVATION: 512.55 ft

DEPTH W.L.: 31.8'  
ELEVATION W.L.: 480.42'  
DATE W.L.: 8/17/18  
TIME W.L.: 13:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
80	430	80.00 - 84.00 BIOTITE GNEISS; fresh; banded coarse and fine; gneissic banding; crystals fine to coarse; strong	BR		80.00	S-8	ROTO SONIC	4.00 4.00		<b>WELL CASING</b> Interval: 0-73' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 70-84' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 70-65.5' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-65.5' Type: Portland Cement and Quick Gel Bentonite Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
		Boring completed at 84.00 ft			426.1					
85	425									
90	420									
95	415									
100	410									
105	405									
110	400									
115	395									
120										

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY\_UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-41S

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 45.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/16/18  
DATE COMPLETED: 8/16/18

NORTHING: 1,116,799.18  
EASTING: 2,407,124.98  
GS ELEVATION: 488.6  
TOC ELEVATION: 491.50 ft

DEPTH W.L.: 25.8'  
ELEVATION W.L.: 465.55'  
DATE W.L.: 8/17/18  
TIME W.L.: 14:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 12.00 Hydrovac 0-12'								<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 32-45' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 27-32' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-27' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
485										
5										
480										
10										<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 32-45' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 27-32' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-27' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
15		12.00 - 20.00 silty SAND with trace organics and clay; sand: fine to coarse; reddish brown with black and orange mottling; micaceous; non-cohesive; moist; loose to compact; RESIDUUM	SM		476.6 12.00	S-1	ROTO SONIC	5.50 8.00		
475										
20		20.00 - 30.00 silty, clayey SAND; sand: fine to coarse; reddish brown; micaceous; non-cohesive; moist to wet; compact; RESIDUUM	SC-SM		468.6 20.00	S-2	ROTO SONIC	9.00 10.00		
465										<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 32-45' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 27-32' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-27' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
25										
460										
30		30.00 - 35.00 clayey SAND; sand: fine to coarse; light grey to tan; micaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC		458.6 30.00	S-3	ROTO SONIC	10.00 10.00		
455										<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 32-45' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 27-32' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-27' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
35		35.00 - 40.00 silty-sandy CLAY with trace fine gravel; sand: fine to coarse; light grey and tan; micaceous; cohesive; w<PL to w~PL; very soft to firm; SAPROLITE	CL		453.6 35.00	S-3	ROTO SONIC	10.00 10.00		
450										
40		Log continued on next page			448.6					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-41S


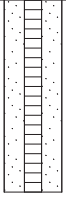


SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 45.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/16/18  
DATE COMPLETED: 8/16/18

NORTHING: 1,116,799.18  
EASTING: 2,407,124.98  
GS ELEVATION: 488.6  
TOC ELEVATION: 491.50 ft

DEPTH W.L.: 25.8'  
ELEVATION W.L.: 465.55'  
DATE W.L.: 8/17/18  
TIME W.L.: 14:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		40.00 - 41.00 silty-sandy CLAY with trace gravel; sand: fine to coarse; gravel: fine to coarse; grey; micaceous; cohesive; w-PL; firm; SAPROLITE	CL		40.00 447.6					<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 32-45' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 27-32' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-27' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
		41.00 - 43.00 silty SAND with trace gravel; sand: fine to coarse; gravel: fine; light grey to grey; micaceous; non-cohesive; dry; dense to very dense; TWR	TWR		41.00					
44.5		43.00 - 45.00 clayey- silty SAND with some silt and gravel; sand: fine to coarse; gravel: fine to coarse; grey; micaceous; non-cohesive; moist to wet; dense; TWR	TWR		445.6 43.00	S-4	ROTO SONIC	3.00 5.00		
45		Boring completed at 45.00 ft			443.6					

BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



# RECORD OF BOREHOLE PZ-421

SHEET 1 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 105.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/20/18  
DATE COMPLETED: 8/21/18

NORTHING: 1,116,013.79  
EASTING: 2,405,294.12  
GS ELEVATION: 500.5  
TOC ELEVATION: 503.18 ft

DEPTH W.L.: 9.5'  
ELEVATION W.L.: 493.47'  
DATE W.L.: 8/22/18  
TIME W.L.: 15:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	500	0.00 - 10.00 Hydrovac 0-10'								<b>WELL CASING</b> Interval: 0-96' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 86-96' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 83-96' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 77-83' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-77' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
5	495									
10	490	10.00 - 20.00 Clayey SILT with some sand; sand: fine to coarse; red; micaceous; non-cohesive; wet; loose to compact; RESIDUUM			490.5 10.00					
15	485		ML			S-1	ROTO SONIC	10.00 10.00		
20	480	20.00 - 30.00 silty CLAY with some sand; sand: fine to coarse; red to reddish brown; micaceous; cohesive; w~PL to w>PL; loose to compact; RESIDUUM			480.5 20.00					
25	475		CL			S-2	ROTO SONIC	10.00 10.00		
30	470	30.00 - 37.00 silty CLAY with some sand; sand: fine to coarse; red to reddish brown; micaceous; cohesive; w~PL to w>PL; loose to compact; RESIDUUM			470.5 30.00					
35	465		CL			S-3	ROTO SONIC	9.50 10.00		
40		37.00 - 40.00 clayey SAND with silt; sand: fine to coarse; brown to grey; micaceous; non-cohesive; wet; compact; SAPROLITE	SC		463.5 37.00					
		Log continued on next page			460.5					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-421

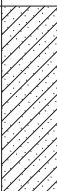








SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 105.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/20/18  
DATE COMPLETED: 8/21/18

NORTHING: 1,116,013.79  
EASTING: 2,405,294.12  
GS ELEVATION: 500.5  
TOC ELEVATION: 503.18 ft

DEPTH W.L.: 9.5'  
ELEVATION W.L.: 493.47'  
DATE W.L.: 8/22/18  
TIME W.L.: 15:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40	460	40.00 - 45.00 clayey SAND with silt; sand: fine to coarse; brown to grey; micaceous; non-cohesive; wet; compact; SAPROLITE	SC		40.00					<b>WELL CASING</b> Interval: 0-96' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 86-96' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 83-96' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 77-83' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-77' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
45	455	45.00 - 50.00 silty SAND with some clay and gravel; sand: fine to coarse; gravel: fine; grey; micaceous; non-cohesive; moist; compact to dense; SAPROLITE	SM		455.5 45.00	S-4	ROTO SONIC	10.00 10.00		
50	450	50.00 - 60.00 silty SAND with some clay and gravel; sand: fine to coarse; gravel: fine; grey; micaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE	SM		450.5 50.00					
55	445		SM			S-5	ROTO SONIC	8.50 10.00		
60	440	60.00 - 70.00 No Recovery  Note: Assumed SAPROLITE based on surrounding samples			440.5 60.00					
65	435		SM			S-6	ROTO SONIC	0.00 10.00		
70	430	70.00 - 77.00 silty SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to coarse; black to dark grey; micaceous; non-cohesive; wet; dense to very dense; SAPROLITE	SM-GM		430.5 70.00					
75	425					S-7	ROTO SONIC	6.00 10.00		
		77.00 - 80.00 silty SAND/GRAVEL ; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micaceous; non-cohesive; dry to moist; dense to very dense; TWR	TWR		423.5 77.00					
80		Log continued on next page			420.5					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-421

SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 105.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/20/18  
DATE COMPLETED: 8/21/18

NORTHING: 1,116,013.79  
EASTING: 2,405,294.12  
GS ELEVATION: 500.5  
TOC ELEVATION: 503.18 ft

DEPTH W.L.: 9.5'  
ELEVATION W.L.: 493.47'  
DATE W.L.: 8/22/18  
TIME W.L.: 15:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
80	420	80.00 - 84.50 silty SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micaceous; non-cohesive; wet; dense to very dense; TWR	TWR		80.00					<b>WELL CASING</b> Interval: 0-96' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 86-96' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 83-96' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 77-83' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-77' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
85	415	84.50 - 85.00 BIOTITE GNEISS; moderately weathered; crystals: medium to coarse; gneissic banding; black/white; strongBEDROCK 85.00 - 90.00 No Recovery  Note: Assumed BEDROCK do to gravel found in previous interval and drill chatter/hard drilling	BR		416 415.5 85.00	S-8	ROTO SONIC	5.00 10.00		
90	410	90.00 - 95.00 BIOTITE GNEISS; moderately weathered; crystals: medium to coarse; gneissic banding; black/white; strong	BR		410.5 90.00					
95	405	95.00 - 100.00 No Recovery; possible high fracture zone  Note: Assumed BEDROCK do to gravel found in previous interval and drill chatter/hard drilling	BR		405.5 95.00	S-9	ROTO SONIC	5.00 10.00		
100	400	100.00 - 105.00 No recovery; rock dropped out of sample  Note: Assumed BEDROCK do to gravel found in previous intervals and drill chatter/hard drilling	BR		400.5 100.00	S-10	ROTO SONIC	0.00 5.00		
105	395	Boring completed at 105.00 ft								
110	390									
115	385									
120										

BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



# RECORD OF BOREHOLE PZ-43S

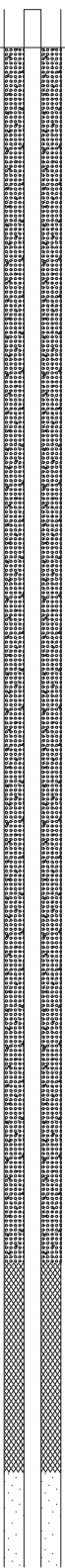
SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 55.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/17/18  
DATE COMPLETED: 8/17/18

NORTHING: 1,115,598.12  
EASTING: 2,405,507.16  
GS ELEVATION: 501.2  
TOC ELEVATION: 504.03 ft

DEPTH W.L.: 19.00  
ELEVATION W.L.: 485.00'  
DATE W.L.: 8/17/18  
TIME W.L.: 15:00:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Hydrovac 0-10'								<b>WELL CASING</b> Interval: 0-50.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 40.5-50.5' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 37.5-52' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 32-37.5' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-32' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
5					491.2					
10		10.00 - 15.00 clayey SILT with some sand; sand: fine to coarse; red; non-cohesive; wet; loose to very loose; RESIDUUM	ML		10.00					
15					486.2	S-1	ROTO SONIC	6.50		
15		15.00 - 20.00 clayey SILT with some sand; sand: fine to coarse; light reddish tan; micaceous; non-cohesive; wet; loose to compact; RESIDUUM	ML		15.00			10.00		
20					481.2					
20		20.00 - 30.00 clayey SILT with sand; sand: fine to coarse; reddish brown to brown; micaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM			20.00					
25			ML			S-2	ROTO SONIC	10.00		
25								10.00		
30					471.2					
30		30.00 - 40.00 silty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; brown; micaceous; non-cohesive; moist to wet; dense; SAPROLITE	SC-SM		30.00					
35						S-3	ROTO SONIC	10.00		
35								10.00		
40					461.2					
40										
40										
40										
40										
40										
40										

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20



# RECORD OF BOREHOLE PZ-43S


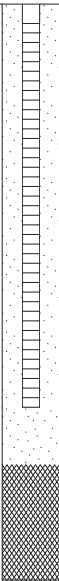


SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 55.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/17/18  
DATE COMPLETED: 8/17/18

NORTHING: 1,115,598.12  
EASTING: 2,405,507.16  
GS ELEVATION: 501.2  
TOC ELEVATION: 504.03 ft

DEPTH W.L.: 19.00  
ELEVATION W.L.: 485.00'  
DATE W.L.: 8/17/18  
TIME W.L.: 15:00:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
40	460	40.00 - 45.00 silty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; brown; micaceous; non-cohesive; moist to wet; dense; SAPROLITE	SC-SM		40.00	S-4	ROTO SONIC	10.00 10.00		<b>WELL CASING</b> Interval: 0-50.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 40.5-50.5' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 37.5-52' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 32-37.5' Type: 3/8" PEL-PLUG  <b>ANNULUS SEAL</b> Interval: 0-32' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
45	455	45.00 - 50.00 silty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; grey; micaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE	SM-GM		456.2 45.00					
50	450	50.00 - 55.00 silty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; grey; micaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE	SM-GM		451.2 50.00	S-5	ROTO SONIC	10.00 10.00		
55		Boring completed at 55.00 ft			446.2					
445										
60	440									
65	435									
70	430									
75	425									
80										

BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



# RECORD OF BOREHOLE PZ-44I

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 114.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/23/18  
DATE COMPLETED: 9/5/18

NORTHING: 1,121,515.40  
EASTING: 2,404,330.23  
GS ELEVATION: 507.9  
TOC ELEVATION: 510.36 ft

SHEET 1 of 3

DEPTH W.L.: 19.8'  
ELEVATION W.L.: 490.39'  
DATE W.L.: 9/7/18  
TIME W.L.: 07:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 silty CLAY with some sand; sand: fine; red; cohesive; w<PL; firm to stiff; FILL	CL							<b>WELL CASING</b> Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 103-114' Type: No. 20-40 Sand Quantity: 200 lbs  <b>FILTER PACK SEAL</b> Interval: 98-103' Type: 3/8" PEL-PLUG Quantity: 5 gallons  <b>ANNULUS SEAL</b> Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 1128 lbs Quick Gel: 150 lbs Water: 120 gallons  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
5		5.00 - 10.00 silty CLAY-clayey SILT with trace sand; sand: fine; red; non-cohesive; wet; loose to compact; RESIDUUM	CL-ML		502.9 5.00	S-1	ROTO 8.00 SONIC 10.00			
10		10.00 - 15.00 clayey SILT with sand; sand: fine to coarse; orange brown; non-cohesive; moist to wet; compact; RESIDUUM	ML		497.9 10.00					
15		15.00 - 20.00 sandy SILT-silty SAND; sand: fine to coarse; orange brown; non-cohesive; wet; loose; RESIDUUM	ML-SM		492.9 15.00	S-2	ROTO 7.60 SONIC 10.00			
20		20.00 - 30.00 clayey-silty SAND with some gravel; sand: fine to coarse; gravel: fine; orange brown; micaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC-SM		487.9 20.00					
25						S-3	ROTO 8.00 SONIC 10.00			
30		30.00 - 35.00 clayey SAND with silt and some gravel; sand: fine to coarse; gravel: fine to coarse; highly weathered rock fragments; orange-brown; micaceous; non-cohesive; moist to wet; dense; RESIDUUM	SC		477.9 30.00					
35		35.00 - 40.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; orange brown; micaceous; weathered rock and black carbon deposits; non-cohesive; moist to wet; dense to very dense; RESIDUUM	SM-GM		472.9 35.00	S-4	ROTO 8.00 SONIC 10.00			
40		Log continued on next page			467.9					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19 Rev. 11/10/2020



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY\_UPDATED.GPJ PIEDMONT.GDT 11/10/20

# Location resurveyed May - July 2020

## RECORD OF BOREHOLE PZ-44I


SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 114.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/23/18  
DATE COMPLETED: 9/5/18

NORTHING: 1,121,515.40  
EASTING: 2,404,330.23  
GS ELEVATION: 507.9  
TOC ELEVATION: 510.36 ft

DEPTH W.L.: 19.8'  
ELEVATION W.L.: 490.39'  
DATE W.L.: 9/7/18  
TIME W.L.: 07:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40		40.00 - 43.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; orange brown;micaceous; weathered rock and black carbon deposits; non-cohesive; moist to wet; dense to very dense; RESIDUUM	SM-GM		40.00					<b>WELL CASING</b> Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 103-114' Type: No. 20-40 Sand Quantity: 200 lbs  <b>FILTER PACK SEAL</b> Interval: 98-103' Type: 3/8" PEL-PLUG Quantity: 5 gallons  <b>ANNULUS SEAL</b> Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 1128 lbs Quick Gel: 150 lbs Water: 120 gallons  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
465		42.00 - 45.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; tan to dark grey; micaceous; weathered rock fragments; non-cohesive; moist to wet; dense; SAPROLITE	SM-GM		464.9					
45		45.00 - 50.00 silty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM		462.9 45.00	S-5	ROTO 8.00 SONIC 10.00			
460										
50		50.00 - 60.00 silty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM		457.9 50.00					
455										
55			SM			S-6	ROTO 8.00 SONIC 10.00			
450										
60		60.00 - 69.50 silty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM		447.9 60.00					
445										
65			SM			S-7	ROTO 8.70 SONIC 10.00			
440										
70		69.50 - 70.00 silty GRAVEL with sand; sand: fine to coarse; gravel: fine; dark grey; micaceous; non-cohesive; moist; dense to very dense; SAPROLITE	GM		438.4 437.9 70.00					
435		70.00 - 80.00 silty SAND and silty GRAVEL; sand: fine to coarse; gravel: fine; dark grey; micaceous; non-cohesive; moist; dense to very dense; SAPROLITE	SM-GM			S-8	ROTO 10.00 SONIC 10.00			
75										
430										
80					427.9					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19 Rev. 11/10/2020



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY\_UPDATED.GPJ PIEDMONT.GDT 11/10/2020

# RECORD OF BOREHOLE PZ-44I


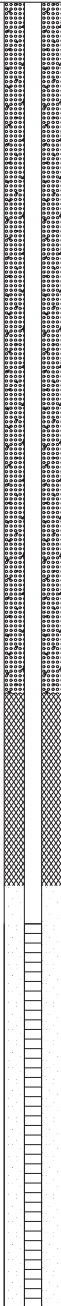






SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 114.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/23/18  
DATE COMPLETED: 9/5/18

NORTHING: 1,121,515.40  
EASTING: 2,404,330.23  
GS ELEVATION: 507.9  
TOC ELEVATION: 510.36 ft

DEPTH W.L.: 19.8'  
ELEVATION W.L.: 490.39'  
DATE W.L.: 9/7/18  
TIME W.L.: 07:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	TYPE	REC			
					DEPTH (ft)					
80		80.00 - 90.00 silty SAND and silty GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE	SM-GM		80.00	S-9	ROTO <u>9.00</u> SONIC 10.00		<b>WELL CASING</b> Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4  <b>FILTER PACK</b> Interval: 103-114' Type: No. 20-40 Sand Quantity: 200 lbs  <b>FILTER PACK SEAL</b> Interval: 98-103' Type: 3/8" PEL-PLUG Quantity: 5 gallons  <b>ANNULUS SEAL</b> Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 1128 lbs Quick Gel: 150 lbs Water: 120 gallons  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic	
425										
85										
420										
90		90.00 - 91.00 silty SAND and GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micaceous; non-cohesive; wet; dense to very dense; SAPROLITE	SM-GM		417.9 90.00 416.9 91.00	S-10	ROTO <u>9.50</u> SONIC 10.00			
415		91.00 - 97.00 silty GRAVEL with sand; sand: fine to coarse; gravel: fine to coarse; dark grey; micaceous; non-cohesive; moist to wet; very dense; weathered; TWR	TWR							
95										
410		97.00 - 100.00 AMPHIBOLITE; fresh to slightly weathered; crystals fine to coarse; strong rock; BEDROCK	BR		410.9 97.00	S-11	ROTO <u>3.00</u> SONIC 10.00			
100		100.00 - 105.00 No Recovery  Note: Assumed BEDROCK based on previous sample and hard drilling	BR		407.9 100.00					
405										
105		105.00 - 110.00 AMPHIBOLITE; fresh to slightly weathered; crystals fine to coarse; strong rock; BEDROCK	BR		402.9 105.00	S-12	ROTO <u>4.00</u> SONIC 4.00			
400										
110		110.00 - 115.00 AMPHIBOLITE; fresh to slightly weathered; crystals fine to coarse; very strong rock; BEDROCK	BR		397.9 110.00					
395										
115		Boring completed at 114.00 ft			392.9 115.00					
390										
120										

BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY\_UPDATED.GPJ PIEDMONT.GDT 11/10/2020

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19 Rev. 11/10/2020



# RECORD OF BOREHOLE PZ-69I



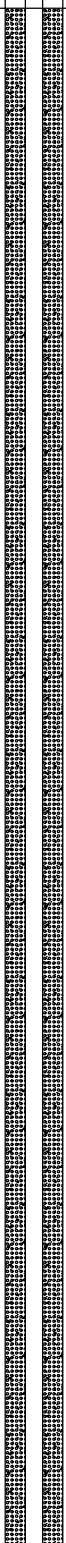







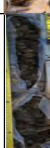






SHEET 1 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI 150  
DATE STARTED: 1/11/22  
DATE COMPLETED: 1/12/22

NORTHING: 1,121,906.36  
EASTING: 2,404,051.35  
GS ELEVATION: 506.0  
TOC ELEVATION: 508.85 ft

DEPTH W.L.: 17.02  
ELEVATION W.L.: 491.83  
DATE W.L.: 1/13/22  
TIME W.L.: 12:58

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PZ-69I MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	PHOTO	REC		
					DEPTH (ft)					
0	505	0.00 - 6.00 CH, red silty CLAY, dry, soft, W>PL	CH			1		4.50 6.00		<b>WELL CASING</b> Interval: 0' - 96' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 96' - 106' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 94' - 106' Type: GP-1 Quantity: 3.5 x 14L bags  <b>FILTER PACK SEAL</b> Interval: 90' - 94' Type: 3/8" PEL Plug bentonite pellets Quantity: 0.5 x 5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 90' Type: Aquaguard bentonite grout Quantity: 6x50 lb bag + 120 gal H2O  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic Sample Type: Roto Sonic
5	500	6.00 - 19.00 ML, sandy SILT with trace organics, dry, red-orange with trace black, very soft to soft, micaceous	ML		500 6.00	2		5.00 10.00		
10	495									
15	490									
20	485	19.00 - 24.00 SM, silty SAND, moist, pinkish-tan, soft, micaceous	SM		487 19.00	3		8.00 10.00		
25	480	24.00 - 26.00 SM, silty SAND, orange-tan-black, moist, soft, micaceous	SM		482 24.00					
30	475	26.00 - 30.00 SM, silty SAND, moist, orange-gray-black, soft, loose, micaceous	SM		480 26.00					
35	470	30.00 - 36.00 SM, silty SAND, moist, brown-gray-black-white, soft, loose, micaceous	SM		476 30.00	4		10.00 10.00		
40		36.00 - 39.00 SM, silty SAND, moist, tan-brown, soft, loose, micaceous	SM		470 36.00	5		10.00 10.00		
		39.00 - 46.00 SM, silty SAND, moist, gray-blue-green, soft, loose, micaceous Log continued on next page	SM		467 39.00					

BOREHOLE RECORD PLANT SCHERER PZ.GPJ PIEDMONT.GDT 2/24/22

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Donald Myles

GA INSPECTOR: Karim Minkara, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 2/24/22

 WSP GOLDER

# RECORD OF BOREHOLE PZ-69I

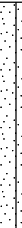



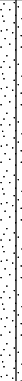

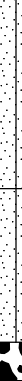


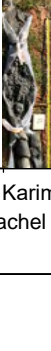


SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI 150  
DATE STARTED: 1/11/22  
DATE COMPLETED: 1/12/22

NORTHING: 1,121,906.36  
EASTING: 2,404,051.35  
GS ELEVATION: 506.0  
TOC ELEVATION: 508.85 ft

DEPTH W.L.:17.02  
ELEVATION W.L.: 491.83  
DATE W.L.:1/13/22  
TIME W.L.:12:58

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PZ-69I MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	PHOTO	REC		
					DEPTH (ft)					
40	465	39.00 - 46.00 SM, silty SAND, moist, gray-blue-green, soft, loose, micaceous (Continued)	SM			5		10.00		<b>WELL CASING</b> Interval: 0' - 96' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded
										10.00
45	460	46.00 - 56.00 SP, fine SAND with some silt, dry, gray, soft, loose, saprolitic	SP		460 46.00	6		9.00		<b>FILTER PACK</b> Interval: 94' - 106' Type: GP-1 Quantity: 3.5 x 14L bags
										10.00
50	455									<b>ANNULUS SEAL</b> Interval: 0' - 90' Type: Aquaguard bentonite grout Quantity: 6x50 lb bag + 120 gal H2O
55	450	56.00 - 66.00 SM, silty SAND, dark gray with green hue, dry, highly weathered saprolite, compact to dense, contains biotite	SM		450 56.00	7		10.00		<b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum
										10.00
60	445									
65	440	66.00 - 71.00 SM, fine silty SAND with some gravel, dry, gray-greenish blue, loose to compact, saprolitic	SM		440 66.00	8		10.00		
										10.00
70	435	71.00 - 75.00 SM, silty SAND with some gravel, biotite gneiss saprolite, micaceous	SM		435 71.00	9		10.00		
									6.00	
75	430	75.00 - 76.00 Transitionally weathered rock (TWR), poorly sorted biotite gneiss GRAVEL with some sand, heavily weathered	TWR		75.00 430					
		76.00 - 82.00 TWR, fine-medium SAND with some biotite gneiss gravel, moist to wet, gray with peppered black-white	TWR		76.00					
80		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER PZ.GPJ PIEDMONT.GDT 2/24/22

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Donald Myles

GA INSPECTOR: Karim Minkara, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 2/24/22





# RECORD OF BOREHOLE PZ-69I

SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI 150  
DATE STARTED: 1/11/22  
DATE COMPLETED: 1/12/22

NORTHING: 1,121,906.36  
EASTING: 2,404,051.35  
GS ELEVATION: 506.0  
TOC ELEVATION: 508.85 ft

DEPTH W.L.: 17.02  
ELEVATION W.L.: 491.83  
DATE W.L.: 1/13/22  
TIME W.L.: 12:58

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			PZ-69I MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	PHOTO	REC		
80	425	76.00 - 82.00 TWR, fine-medium SAND with some biotite gneiss gravel, moist to wet, gray with peppered black-white ( <i>Continued</i> )	TWR		424	9		6.00 10.00		
		82.00 - 86.00 TWR, Biotite Gneiss, moderately weathered, crystals fine-coarse, strong	TWR		82.00					
85	420	86.00 - 96.00 (BEDROCK) Biotite Gneiss, highly weathered	BR		420	10		5.00 10.00	3/8" Pel-Plug bentonite pellets	
90	415				86.00					
95	410	96.00 - 106.00 (BEDROCK), Biotite Gneiss, slightly to moderately weathered, fine to medium grained	BR		410	11		6.00 10.00	GP-1 filter sand	Sch 40 PVC U-Pack 0.010" slotted screen
100	405				96.00					
105	400	Boring completed at 106.00 ft			400				Sump	
110	395									
115	390									
120										

**WELL CASING**  
Interval: 0' - 96'  
Material: Schedule 40 PVC  
Diameter: 2"  
Joint Type: Threaded

**WELL SCREEN**  
Interval: 96' - 106'  
Material: U-Pack Screen  
Diameter: 2"  
Slot Size: 0.010"  
End Cap: 3"

**FILTER PACK**  
Interval: 94' - 106'  
Type: GP-1  
Quantity: 3.5 x 14L bags

**FILTER PACK SEAL**  
Interval: 90' - 94'  
Type: 3/8" PEL Plug bentonite pellets  
Quantity: 0.5 x 5 gal bucket

**ANNULUS SEAL**  
Interval: 0' - 90'  
Type: Aquaguard bentonite grout  
Quantity: 6x50 lb bag + 120 gal H2O

**WELL COMPLETION**  
Pad: 4' x 4'  
Protective Casing: Aluminum

**DRILLING METHODS**  
Soil Drill: Roto Sonic  
Rock Drill: Roto Sonic  
Sample Type: Roto Sonic

BOREHOLE RECORD PLANT SCHERER PZ.GPJ PIEDMONT.GDT 2/24/22

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Donald Myles

GA INSPECTOR: Karim Minkara, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 2/24/22





**APPENDIX A**

# Monitoring System Details

## A-3 PIEZOMETER CONSTRUCTION LOGS



# BORING LOG

**BORING PZ-021**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer InstallationLOCATION Plant SchererDATE STARTED 1/22/2015 COMPLETED 1/27/2015 GROUND ELEVATION 514.8 ft COORDINATES N 1115544.85 E 2402990.76CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 84.3 ft.GROUND WATER DEPTH: DURING 23.51 ft. COMP. 25.61 ft. DELAYED 25.41 ft. after 24 hrs.**NOTES**

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silty Clay (CL)</b>  - mottled dusky red / dark reddish brown (10R 3/4), very pale brown (10YR 7/3) and yellowish brown / moderate yellowish brown (10YR 5/4) fill moist, very stiff			SPT N=20bpf(@3.5ft.)
10		- mottled dusky red / dark reddish brown (10R 3/4), very pale brown (10YR 7/3) and yellow / pale yellowish orange (10YR 8/6) fill moist, very stiff, trace sand			SPT N=29bpf(@8.5ft.)
15		- mottled dusky red / dark reddish brown (10R 3/4) and very pale brown (10YR 7/3) fill moist, stiff			SPT N=10bpf(@13.5ft.)
20		<b>Sandy Silt (ML)</b> - mottled yellow / pale yellowish orange (10YR 8/6), yellow / pale yellowish orange (10YR 8/6) and yellow / pale yellowish orange (10YR 8/6) saprolite moist, stiff, micaceous, with black spots			SPT N=9bpf(@18.5ft.)
25		<b>Silty Sand (SM)</b> - mottled yellow / pale yellowish orange (10YR 8/6), yellow / pale yellowish orange (10YR 8/6) and yellow (10YR 7/8) saprolite wet, medium dense, very fine to fine grained, with black spots, trace rock fragments			SPT N=15bpf(@23.5ft.)(PL=NP; FC = 36.9%; Gravel = 2.2%)  (MC = 20.7%; UW(d) = 106.7pcf; PERM. = 8.60E-9cm/sec)
30		- mottled yellow / pale yellowish orange (10YR 8/6), yellow / pale yellowish orange (10YR 8/6) and yellow (10YR 7/8) saprolite wet, medium dense, very fine to fine grained, with black and gray streaks, trace mica and weathered rock fragments			SPT N=12bpf(@28.5ft.)

(Continued Next Page)



# BORING LOG

BORING PZ-02I

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Silty Sand (SM)(Con't)</b>			
35		- mottled brown (10YR 4/3), reddish gray (10R 6/1) and white (2.5Y 8/1) saprolite wet, medium dense, very fine to fine grained, with black spots, trace mica and weathered rock fragments			SPT N=13bpf(@33.5ft.)
40		- mottled light gray (10R 7/1), white (10R 8/1) and white (10YR 8/1) saprolite wet, medium dense, very fine to fine grained, with black spots, trace mica and weathered rock fragments			SPT N=20bpf(@38.5ft.)(PL=NP; FC = 40.2%; Gravel = 0%) (MC = 23.2%; UW(d) = 100.2pcf; PERM. = 6.71E-5cm/sec)
45		- mottled white (10YR 8/1), pinkish white / grayish orange pink (10R 8/2) and yellow / pale yellowish orange (10YR 8/6) saprolite wet, very dense, very fine to fine grained, with black spots, trace weathered rock fragments			SPT N=70bpf(@43.5ft.)
50		- variegated gray (2.5Y 5/1) and white (10R 8/1) saprolite wet, very dense, very fine to fine grained, with rounded white medium grained quartz fragments, trace weathered rock fragments			SPT N=86bpf(@48.5ft.)
55		- mottled gray (10YR 5/1) and white (10R 8/1) saprolite wet, very dense, very fine to fine grained, white streaking with black spots, partially weathered rock fragments			SPT N=77bpf(@53.5ft.)
60		- mottled gray (10YR 5/1) and white (10R 8/1) saprolite wet, very dense, very fine to fine grained, white banding with black spots, partially weathered rock fragments			SPT N=50bpf(@58.5ft.)
65		- Attempted to start coring, no recovery			

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCS\CHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

BORING PZ-02I

Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCSCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
70		<b>Partially Weathered Rock (PWR)(Con't)</b> - mottled gray (10YR 5/1) and white (10R 8/1) saprolite wet, very dense, very fine to coarse grained, banded white with black spots <b>BIOTITE GNEISS</b> - dark gray (N3) and grayish black (N2) fine to medium grain, soft to medium hard, moderately to highly weathered, inclined, banded, 3 moderate-angle fractures (30 - 45d), oxidized fractures at 69.3' and 70.6'  - dark gray (N3) and grayish black (N2) medium to coarse grain, medium hard, slightly to moderately weathered, inclined, banded, 1 low-angle fracture (10 - 25d), 14 moderate-angle fractures (30 - 45d), 1 high-angle fracture (70 - 90d)  - dark gray (N3) and grayish black (N2) medium to coarse grain, medium hard, slightly to moderately weathered, inclined, banded, 4 low-angle fractures (10 - 25d), 8 moderate-angle fractures (30 - 45d)			SPT N=50bpf(@68.5ft.)
75					
80					
85		Bottom of borehole at 84.3 feet.			
90					
95					
100					
105					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-02I  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 1/22/2015 COMPLETED 1/27/2015 GROUND ELEVATION 514.8 ft COORDINATES N 1115544.85 E 2402990.76

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 84.3 ft.

GROUND WATER DEPTH: DURING 23.51 ft. COMP. 25.61 ft. DELAYED 25.41 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 517.56	
			Surface Seal: concrete	512.8 (2.0)
496.8				
491.8				

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:56 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 517.56	
	(CONTINUED)			
		35		
		40		
		45		
		50		
		55		
		60		
		65		
446.8			Annular Seal: bentonite pellets - 0.5 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	
				450.3 (64.5)
			Annular Fill: Cement-Bentonite Grout - 9 bags Typel I/II Portland Cement, 94 lbs/each	

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# RECORD OF WELL CONSTRUCTION

WELL: PZ-02I  
PAGE 3 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)	(CONTINUED)	ELEV. (DEPTH)
445.8		70	Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 517.56	445.8 (69.0)
		75	Filter: Unimin FilterSil - 5 Bags #1A, 50 lbs/each	440.9 (73.9)
		180	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
430.5			Sump: 0.40 ft.	430.9





# BORING LOG

**BORING PZ-03S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 1/28/2015 COMPLETED 1/29/2015 GROUND ELEVATION 514.4 ft COORDINATES N 1116085.04 E 2402533.8

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 50 ft.

GROUND WATER DEPTH: DURING 48.5 ft. COMP. 28.31 ft. DELAYED 30.11 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML)</b>			
5		- mottled red / moderate reddish brown (10R 4/6) and light yellowish brown (2.5Y 6/4) fill moist, stiff, clayey, trace mica			SPT N=15bpf(@3.5ft.)
10		- mottled red / moderate reddish brown (10R 4/6) saprolite moist, very stiff, with black spots, trace mica			SPT N=18bpf(@8.5ft.)
15		- mottled white (10YR 8/1) and light yellowish brown (2.5Y 6/4) saprolite moist, stiff, trace mica, weathered rock, residual quartz			SPT N=9bpf(@13.5ft.)
20		- mottled dusky red / dark reddish brown (10R 3/4) and yellow (10YR 7/8) saprolite moist, medium stiff, with black streaks, trace weathered rock fragments			SPT N=8bpf(@18.5ft.)
25		- mottled brown (10YR 5/3), black (10YR 2/1) and white (10YR 8/1) saprolite moist, medium stiff, trace quartz and partially weathered rock fragments			SPT N=5bpf(@23.5ft.)

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

**BORING PZ-03S**

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML)(Con't)</b>			
30		 - mottled very pale brown / very pale orange (10YR 8/2) saprolite moist, stiff, white streaking, trace residual quartz and partially weathered rock fragments			SPT N=11bpf(@28.5ft.)
35		- mottled very pale brown / very pale orange (10YR 8/2) and yellow (10YR 7/8) saprolite moist, stiff, white streaking, with partially weathered rock fragments			SPT N=9bpf(@33.5ft.)
40		- mottled very pale brown / very pale orange (10YR 8/2) saprolite moist, very stiff, white and orange streaking with black spots, with partially weathered rock fragments			SPT N=19bpf(@38.5ft.)
45		- mottled light brownish gray / pale yellowish brown (10YR 6/2) and yellowish brown (10YR 5/8) saprolite moist, hard, white and orange streaking, with partially weathered rock fragments			SPT N=34bpf(@43.5ft.)
50		 - mottled gray (10YR 5/1) saprolite wet, very hard, white streaking, with partially weathered rock fragments			SPT N=50bpf(@48.5ft.)
		Bottom of borehole at 50.0 feet.			
55					

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-03S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 1/28/2015 COMPLETED 1/29/2015 GROUND ELEVATION 514.4 ft COORDINATES N 1116085.04 E 2402533.8

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 50 ft.

GROUND WATER DEPTH: DURING 48.5 ft. COMP. 28.31 ft. DELAYED 30.11 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 517.29	
			Surface Seal: concrete	512.4 (2.0)
			Annular Fill: Cement-Bentonite Grout - 7 bags Type I/II Portland Cement, 94 lbs/each	

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



# BORING LOG

**BORING PZ-05I**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/3/2015 COMPLETED 2/4/2015 GROUND ELEVATION 520.6 ft COORDINATES N 1117484.15 E 2401816.71

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 47.2 ft.

GROUND WATER DEPTH: DURING 35.1 ft. COMP. 41.5 ft. DELAYED 36.8 ft. after 24 hrs.

NOTES

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
		Silt (ML)			
5		- mottled red (10R 4/8) and light red / moderate reddish orange (10R 6/6) fill moist, stiff, trace mica, clay, and rock fragments			SPT N=9bpf(@3.5ft.)
10		- mottled white (10YR 8/1) and yellowish brown (10YR 5/8) saprolite moist, stiff, trace sand and rock fragments			SPT N=11bpf(@8.5ft.)
15		- mottled white (10YR 8/1) and yellowish brown (10YR 5/6) saprolite moist, stiff, trace sand and rock fragments			SPT N=10bpf(@13.5ft.)
20		- mottled gray (10YR 6/1) and white (10R 8/1) saprolite moist, stiff, with black streaking, micaceous, trace sand and rock fragments			SPT N=9bpf(@18.5ft.)
25		- mottled white (10YR 8/1) and very dark grayish brown (10YR 3/2) saprolite moist, very stiff, with black streaking, trace mica, sand, and rock fragments			SPT N=25bpf(@23.5ft.)

(Continued Next Page)



# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\IAPARKER\DESKTOP\GFC\SCSCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<b>Silt (ML)(Con't)</b>  - mottled very pale brown / very pale orange (10YR 8/2) and dark gray (10YR 4/1) saprolite moist, stiff, with black streaking, micaceous, trace rock fragments			SPT N=12bpf(@28.5ft.)
35		- mottled white (10YR 8/1) saprolite moist, very hard, with black streaking, micaceous, trace sand, weathered rock fragments, and residual quartz			SPT N=86bpf(@33.5ft.)
		<b>PARTIALLY WEATHERED ROCK</b> - light gray (N7) fine to coarse grain, soft, highly weathered			
40		<b>GNEISS</b> - variegated with medium gray (N5) medium to coarse grain, hard to very hard, not weathered, inclined, blastoporphyratic, banded, 1 low angle fracture (10 - 20d), with amphibole, quartz, biotite			
45		- variegated with medium gray (N5) medium to coarse grain, hard to very hard, not weathered, inclined, blastoporphyratic, banded, 1 low-angle fracture (10 - 30d), 6 moderate-angle fractures (30 - 45d), with amphibole, quartz, biotite			Lost circulation
		- variegated with medium gray (N5) medium to coarse grain, medium hard to hard, slightly to moderately weathered, inclined, pitted, slightly fractured, 1 low-angle fracture (10 - 30d), with amphibole, quartz, biotite, iron oxide staining			
		Bottom of borehole at 47.2 feet.			
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-05I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/3/2015 COMPLETED 2/4/2015 GROUND ELEVATION 520.6 ft COORDINATES N 1117484.15 E 2401816.71

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 47.2 ft.

GROUND WATER DEPTH: DURING 35.1 ft. COMP. 41.5 ft. DELAYED 36.8 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 523.26	
			Surface Seal: concrete	518.6 (2.0)
		5		
		10		
		15		
		20	Annular Fill: Cement-Bentonite Grout - 5 bags Type I/II Portland Cement, 94 lbs/each	
		25		

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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# BORING LOG

**BORING PZ-09I**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/18/2015 COMPLETED 2/19/2015 GROUND ELEVATION 523.3 ft COORDINATES N 1120562.72 E 2400862.76

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 80.2 ft.

GROUND WATER DEPTH: DURING 28.5 ft. COMP. 24.6 ft. DELAYED 24.41 ft. after 24 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
		<b>Sandy Silt (ML)</b>			
		- red (10R 4/8) residuum moist, stiff, micaceous, trace clay			SPT N=10bpf(@3.5ft.)
5					
		- yellowish red (5YR 5/8) residuum dry, medium stiff, micaceous, zone of white/light gray rock fragments			SPT N=7bpf(@8.5ft.)
10					
		- mottled red (2.5YR 5/8) and reddish yellow (5YR 6/8) saprolite moist, medium stiff			SPT N=7bpf(@13.5ft.)
15					
		- mottled reddish yellow (7.5YR 6/8) and red (2.5YR 5/8) saprolite moist, stiff, micaceous, with muscovite			SPT N=9bpf(@18.5ft.)
20					
		- mottled reddish yellow (7.5YR 7/8) and red (2.5YR 5/8) saprolite moist, very stiff, micaceous, trace muscovite and biotite			SPT N=18bpf(@23.5ft.)
25					

(Continued Next Page)



# BORING LOG

**BORING PZ-09I**

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer InstallationLOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
30		<b>Sandy Silt (ML)(Con't)</b>  - mottled yellowish red (5YR 5/8) and red (2.5YR 5/8) saprolite wet, stiff, micaceous, trace residual quartz, feldspar, muscovite			SPT N=14bpf(@28.5ft.)
35		<b>Silty Sand (SM)</b> - mottled yellowish red (5YR 4/6) and brownish yellow (10YR 6/8) saprolite wet, medium dense, very fine to fine grained, micaceous, trace residual quartz, feldspar, weathered rock fragments			SPT N=16bpf(@33.5ft.)(LL=53; PI=6; FC = 32.8%; Gravel = 1.6%)
40		- mottled brown (7.5YR 4/4) and greenish gray (10BG 5/1) saprolite wet, medium dense, very fine to fine grained, micaceous, trace residual quartz, feldspar, muscovite, chlorite, zone of coarse white rock fragments			SPT N=18bpf(@38.5ft.)
45		- mottled greenish gray (10BG 5/1) and strong brown (7.5YR 5/8) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, chlorite, biotite, muscovite			SPT N=19bpf(@43.5ft.)
50		- mottled white (10R 8/1) and greenish gray (10BG 5/1) saprolite wet, very dense, very fine to fine grained, with red staining, trace residual quartz, feldspar, chlorite, muscovite, biotite, hornblende			SPT N=74bpf(@48.5ft.)
55		- mottled white (10R 8/1) and greenish gray (10BG 5/1) saprolite wet, very dense, very fine to fine grained, with red staining, trace residual quartz, feldspar, chlorite, muscovite, biotite, hornblende			SPT N=60bpf(@53.5ft.)

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\IAPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

BORING PZ-09I

Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1\APARKER\DESKTOP\GFC\SCS\CHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
60		<b>Silty Sand (SM)(Con't)</b>  - very dark greenish gray (10BG 3/1) saprolite wet, very dense, very fine to fine grained. trace partially weathered rock fragments, residual quartz, feldspar, biotite, muscovite, hornblende, chlorite			SPT N=50bpf(@58.5ft.)
		<b>Partially Weathered Rock (PWR)</b>			
65		<b>AMPHIBOLITE</b> - black (N1) fine to coarse grain, very soft to soft, highly weathered, horizontal, completely fractured at all angles, low-angle fractures (weathering cracks), no visible healing, with quartz, feldspar, muscovite, biotite, hornblende, pyrite, interbedded Biotite Gneiss - black (N1) fine to coarse grain, soft to medium hard, moderately to highly weathered, inclined, banded, 14 low-angle fractures (10 - 20d), 5 moderate-angle fractures (30 - 45d), not to total healing with some fractures filled with gray mud and/or red oxidation, trace completely healed high-angle fractures, rusty red oxidation, trace yellowish-red oxidation, with pyrite, feldspar, biotite			
70		- black (N1) and white (N9) fine to coarse grain, medium hard, moderately weathered, inclined, banded, moderate-angle fractures along foliation, open verticle fracture at 71.6'-72.6' bgs, healed with quartz and feldspar, 4 low-angle fractures (10 - 20d), 8 moderate-angle fractures (30 - 45d), 1 high-angle fracture (65 - 90d), interbedded with Biotite Gneiss, trace mud filled fractures, oxidation, with quartz, feldspar, pyrite, biotite			
75		- black (N1) and white (N9) fine to coarse grain, medium hard, moderately weathered, inclined, banded, moderate-angle fractures along foliation, healed with quartz and feldspar, 4 low-angle fractures (10 - 30d), 3 moderate-angle fractures (30 - 45d), 2 high-angle fractures (65 - 90d), interbedded with Biotite Gneiss, trace mud filled fractures, oxidation, with quartz, feldspar, pyrite, biotite			
80					
		Bottom of borehole at 80.2 feet.			
85					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-09I  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 2/18/2015 COMPLETED 2/19/2015 GROUND ELEVATION 523.3 ft COORDINATES N 1120562.72 E 2400862.76

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet BORING DEPTH 80.2 ft.

GROUND WATER DEPTH: DURING 28.5 ft. COMP. 24.6 ft. DELAYED 24.41 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 526.57	
			Surface Seal: concrete	521.3 (2.0)
		5		
		10		
		15		
		20		
		25		

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)



**WELL: PZ-09I**  
PAGE 2 OF 3  
ECS38467

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
490.3		30		
		35		
		40		
		45		
		50		
		55		

(Continued Next Page)

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-09I  
PAGE 3 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
462.8		60		
459.4		65		
		65	Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	457.5 (65.8)
		67	Filter: Unimin FilterSil - 6.0 Bags #1A, 50 lbs/each	455.5 (67.8)
		70		453.5 (69.8)
		75	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
443.1		80	Sump: 0.40 ft.	443.5





# BORING LOG

**BORING PZ-10S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 5/5/2015 COMPLETED 5/5/2015 GROUND ELEVATION 514.4 ft COORDINATES N 1122338.03 E 2401768.92

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 34.9 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 19.3 ft. DELAYED 17.1 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled light reddish brown / light brown (5YR 6/4) residuum moist, stiff, with white speckling, trace medium sand and weathered rock fragments			SPT N=15bpf(@8.5ft.)
15		- mottled light reddish brown / light brown (5YR 6/4) saprolite very moist, stiff, micaceous, trace weathered rock fragments			SPT N=10bpf(@13.5ft.)
20		▼ - pinkish gray / grayish orange pink (5YR 7/2) saprolite wet, stiff, micaceous, trace weathered rock fragments			SPT N=13bpf(@18.5ft.)

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)

\\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ - ESEE DATABASE.GDT - 8/27/20 08:40 - ESEE GEOLOGY LOG





# RECORD OF WELL CONSTRUCTION

WELL: PZ-10S  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 517.53	
				ELEV. (DEPTH)
				(19.8)
			Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	
				492.3 (22.1)
			Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each	
				489.9 (24.5)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
				479.9 (34.5)
479.5			Sump: 0.40 ft.	



# BORING LOG

**BORING PZ-11S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 4/1/2015 COMPLETED 4/6/2015 GROUND ELEVATION 526 ft COORDINATES N 1123169.22 E 2402767.44

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 45.9 ft.

GROUND WATER DEPTH: DURING 37.3 ft. COMP. 34.3 ft. DELAYED 33.2 ft. after 24 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled red (10R 5/6) and light yellowish brown (10YR 6/4) saprolite moist, stiff, trace black spots			SPT N=9bpf(@8.5ft.)
15		- mottled red (10R 5/6) saprolite moist, stiff, micaceous, trace orange streaks with black spots			SPT N=9bpf(@13.5ft.)
20		- pinkish white / grayish orange pink (10R 8/2) and very pale brown / very pale orange (10YR 8/2) saprolite moist, stiff, trace mica			SPT N=13bpf(@18.5ft.)
25		- mottled red (10R 5/6) and brown (10YR 5/3) saprolite moist, stiff, micaceous, trace weathered rock fragments			SPT N=13bpf(@23.5ft.)

(Continued Next Page)



# BORING LOG

BORING PZ-11S

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\1\APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML)(Con't)</b>			
30		- mottled reddish brown (5YR 5/4) and dark yellowish brown (10YR 4/6) saprolite moist, very stiff, micaceous, trace weathered rock fragments			SPT N=26bpf(@28.5ft.)
35		▼ - mottled dark gray / brownish gray (5YR 4/1) and brown (7.5YR 4/2) saprolite moist, very hard, micaceous			SPT N=58bpf(@33.5ft.)
40		▼ - mottled dark gray / brownish gray (5YR 4/1) and brown (7.5YR 4/2) saprolite moist, very hard, micaceous			SPT N=56bpf(@38.5ft.)
45		- mottled dark gray / brownish gray (5YR 4/1) and brown (7.5YR 4/2) saprolite wet, very hard, micaceous			SPT N=50bpf(@43.5ft.)
		Bottom of borehole at 45.9 feet.			
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-11S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 4/1/2015 COMPLETED 4/6/2015 GROUND ELEVATION 526 ft COORDINATES N 1123169.22 E 2402767.44

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 45.9 ft.

GROUND WATER DEPTH: DURING 37.3 ft. COMP. 34.3 ft. DELAYED 33.2 ft. after 24 hrs.

NOTES

## BOREHOLE DATA

## WELL DATA

## COMMENTS

ELEV. Strata

DEPTH (ft)

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 529.31

ELEV.  
(DEPTH)

← Surface Seal: concrete

524.0  
(2.0)

← Annular Fill: Cement-Bentonite Grout - 8 bags Type I/II Portland Cement, 94  
lbs/each

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\ALTRCFP01\LAPARKER\$\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

BORING PZ-12S








Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP001\LA\PARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		 Silt (ML)(Con't) 			
30		<b>Silty Sand (SM)</b> - mottled white (10R 8/1) and white (10R 8/1) saprolite moist, medium dense, very fine to coarse grained, trace muscovite and residual quartz			SPT N=18bpf(@28.5ft.)
35		 - mottled red (10R 4/8) and red / moderate reddish brown (10R 4/6) saprolite wet, medium dense, very fine to coarse grained, trace iron oxides, feldspar, residual quartz, muscovite			SPT N=22bpf(@33.5ft.)
40		- mottled red (10R 4/8) and red / moderate reddish brown (10R 4/6) saprolite wet, very dense, very fine to medium grained, trace iron oxides, feldspar, muscovite			SPT N=81bpf(@38.5ft.)
45		- mottled white (10R 8/1) and red / moderate reddish brown (10R 4/6) saprolite wet, very dense, very fine to medium, trace iron oxides, feldspar, residual quartz, muscovite			SPT N=50bpf(@43.5ft.)
		Bottom of borehole at 44.4 feet.			
50					
55					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-12S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/31/2015 COMPLETED 4/1/2015 GROUND ELEVATION 514.5 ft COORDINATES N 1122684.9 E 2403618.46

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 44.4 ft.

GROUND WATER DEPTH: DURING 33.5 ft. COMP. 26.2 ft. DELAYED 25.1 ft. after 24 hrs.

NOTES

## BOREHOLE DATA

## WELL DATA

## COMMENTS

ELEV. Strata

DEPTH (ft)

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 517.69

ELEV.  
(DEPTH)

Surface Seal: concrete

512.5  
(2.0)

Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement, 94  
lbs/each

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)





# BORING LOG

**BORING PZ-141**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer InstallationLOCATION Plant SchererDATE STARTED 3/24/2015 COMPLETED 3/25/2015 GROUND ELEVATION 509.7 ft COORDINATES N 1121866.36 E 2404822.43CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 95.2 ft.GROUND WATER DEPTH: DURING 28.5 ft. COMP. 18.5 ft. DELAYED 28.3 ft. after 24 hrs.

NOTES \_\_\_\_\_

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled yellowish red (5YR 5/8) and light red / moderate reddish orange (10R 6/6) saprolite dry, very stiff			SPT N=20bpf(@8.5ft.)
15		- mottled yellowish red (5YR 5/8) and red (10R 4/8) saprolite moist, medium stiff, trace mica			SPT N=7bpf(@13.5ft.)
20		▼ - mottled reddish brown (5YR 5/4) saprolite moist, medium stiff, trace black spots, muscovite, biotite			SPT N=5bpf(@18.5ft.)
25		<b>Silty Sand (SM)</b> - mottled reddish brown (5YR 5/4) and red (10R 4/8) saprolite moist, medium dense, very fine to fine grained, trace black streaking, muscovite, biotite, weathered rock fragments			SPT N=20bpf(@23.5ft.)(LL=48; PI=9; FC = 48.8%; Gravel = 2.5%)  (MC = 35.6%; UW(d) = 83.2pcf; PERM. = 8.29E-8cm/sec)
30		▼ - mottled yellowish red (5YR 5/8) and yellow (10YR 7/6) saprolite wet, medium dense, very fine to fine grained, with black streaking, trace muscovite, biotite, weathered rock fragments			SPT N=26bpf(@28.5ft.)
35		- mottled yellowish red (5YR 5/8) and yellow (10YR 7/6) saprolite wet, dense, very fine to fine grained, near-vertical 3.0mm thick moderately weathered quartz vein throughout sample, trace muscovite and biotite			SPT N=31bpf(@33.5ft.)

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

(Continued Next Page)



# BORING LOG

**BORING PZ-14I**

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Silty Sand (SM)(Con't)</b>			
40		- mottled yellow (10YR 7/8) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, dense, very fine to fine grained, with black spots, trace residual quartz			SPT N=39bpf(@38.5ft.)
45		- mottled yellow (10YR 7/8) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, dense, very fine to fine grained, with black spots, trace residual quartz and weathered rock fragments			SPT N=33bpf(@43.5ft.)
50		- mottled light brownish gray / pale yellowish brown (10YR 6/2), grayish blue green (5BG 5/2) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, very dense, very fine to fine grained, trace chlorite, residual quartz, biotite, muscovite, feldspar			SPT N=77bpf(@48.5ft.)
55		- mottled light brownish gray / pale yellowish brown (10YR 6/2), grayish blue green (5BG 5/2) and greenish gray (10BG 5/1) saprolite wet, very dense, very fine to fine grained, trace chlorite, feldspar, biotite			SPT N=52bpf(@53.5ft.)
60		- mottled dark greenish gray (5GY 4/1) saprolite wet, dense, very fine to fine grained, white streaking, with weathered rock fragments			SPT N=45bpf(@58.5ft.)
65		- mottled dark greenish gray (5GY 4/1) saprolite wet, dense, very fine to fine grained, white streaking with black spots, abundant weathered rock fragments			SPT N=48bpf(@63.5ft.)
		<b>Partially Weathered Rock (PWR)</b>			
		- very fine to medium grained, white streaking with black spots			
70					
75		<b>BIOTITE GNEISS</b>			
		- mottled with dark gray (N3) medium to coarse grain, very soft to soft, moderately to highly weathered, massive, banded, fracture angles unable to be determined due to poor condition of sample recovered, interbedded with Amphibolite Gneiss, with biotite, quartz, muscovite, hornblende			
80		- becomes more frequently interbedded with Amphibolite Gneiss			

(Continued Next Page)





# BORING LOG

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation  
LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
85		BIOTITE GNEISS(Con't)  - becomes slightly more competent, with pyrite, recovered sample in poor condition			
90					
95					
		Bottom of borehole at 95.2 feet.			
100					
105					
110					
115					
120					
125					

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCS\CHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-14I  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/24/2015 COMPLETED 3/25/2015 GROUND ELEVATION 509.7 ft COORDINATES N 1121866.36 E 2404822.43

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 95.2 ft.

GROUND WATER DEPTH: DURING 28.5 ft. COMP. 18.5 ft. DELAYED 28.3 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 512.89	
			Surface Seal: concrete	507.7 (2.0)
486.7		5		
		10		
		15		
		20		
		25		
		30		
		35		

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:57 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\SCHERER LOGS.GPJ

(Continued Next Page)

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 512.89	
			(CONTINUED)	
		40		
		45		
		50		
		55		
		60		
444.7		65		
		70		
435.5		75		
		80		
				433.5 (76.2)
			Annular Seal: bentonite pellets - 0.5 Bucket Pel Plug 3/8" coated pellets, 50 lbs each	
			Annular Fill: Cement-Bentonite Grout - 8 bags Typel I/II Portland Cement, 94 lbs/each	

(Continued Next Page)

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Piezometer Installation

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 512.89	
	(CONTINUED)			
				426.9 (82.8)
			← Filter: Unimin FilterSil - 1.5 Bags #1A, 50 lbs/each	424.9 (84.8)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
414.5			← Sump: 0.40 ft.	414.9



# BORING LOG

**BORING PZ-15S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 4/28/2015 COMPLETED 4/28/2015 GROUND ELEVATION 497.4 ft COORDINATES N 1121486.96 E 2405558.59

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 40.1 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 19.6 ft. DELAYED 19.6 ft. after 24 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
5		<b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance			
10		- mottled red (10R 5/8) fill moist, stiff, trace clay			SPT N=12bpf(@8.5ft.)
15		- mottled dark reddish gray (10R 4/1) saprolite moist, soft, trace weathered rock fragments, mica			SPT N=4bpf(@13.5ft.)
20		- mottled reddish yellow (7.5YR 7/6) saprolite wet, medium stiff, trace mica			SPT N=6bpf(@18.5ft.)
25		- mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, trace mica			SPT N=6bpf(@23.5ft.)

(Continued Next Page)



# BORING LOG

BORING PZ-15S

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
		<b>Sandy Silt (ML)(Con't)</b>			
30		- mottled reddish yellow (7.5YR 6/8) saprolite wet, medium stiff, micaceous, with black streaking			SPT N=7bpf(@28.5ft.)
35		- mottled reddish yellow (7.5YR 6/8) saprolite wet, stiff, micaceous, with black streaking			SPT N=10bpf(@33.5ft.)
40		- mottled gray (7.5YR 6/1) saprolite wet, stiff, trace mica			SPT N=14bpf(@38.5ft.)
		Bottom of borehole at 40.1 feet.			
45					
50					
55					

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-15S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

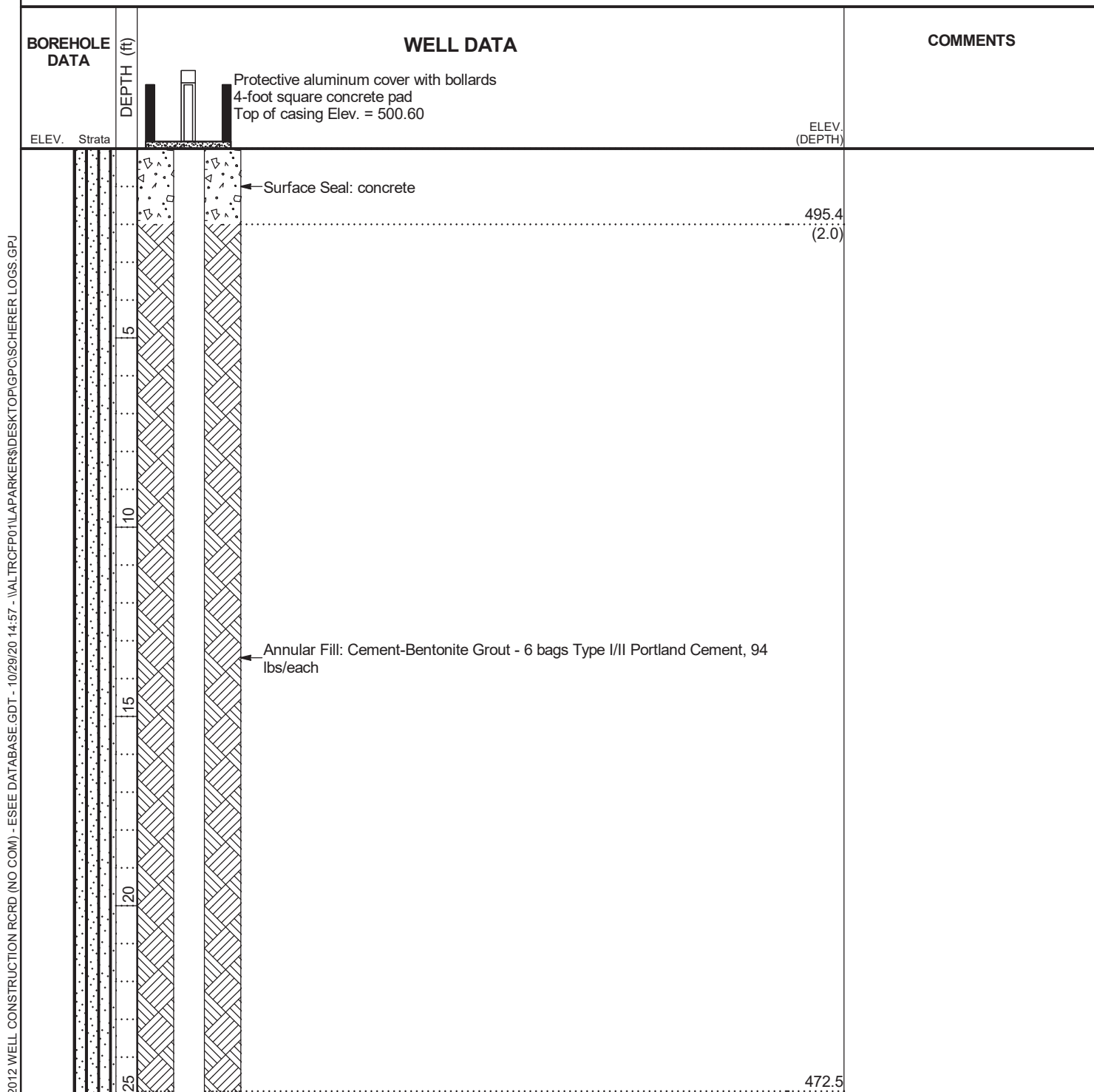
DATE STARTED 4/28/2015 COMPLETED 4/28/2015 GROUND ELEVATION 497.4 ft COORDINATES N 1121486.96 E 2405558.59

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 40.1 ft.

GROUND WATER DEPTH: DURING 23.5 ft. COMP. 19.6 ft. DELAYED 19.6 ft. after 24 hrs.

NOTES



(Continued Next Page)





# RECORD OF WELL CONSTRUCTION

WELL: PZ-15S  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 500.60	
			Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	(24.9)
			Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each	470.1 (27.3)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	467.7 (29.7)
457.3			Sump: 0.40 ft.	457.7



# BORING LOG

**BORING PZ-191**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/3/2015 COMPLETED 3/4/2015 GROUND ELEVATION 414.5 ft COORDINATES N 1118588.47 E 2407251.56

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 71.9 ft.

GROUND WATER DEPTH: DURING 1.5 ft. COMP. 0 ft. DELAYED 0.5 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Lean Clay (CL)</b> - Hand auger 5' for utilities clearance  - mottled red (2.5YR 5/8) and light red / moderate reddish orange (10R 6/6) residuum wet, soft, trace organics			SPT N=4bpf(@8.5ft.)  (MC = 34.7%; UW(d) = 86pcf; PERM. = 1.14E-5cm/sec)
15		<b>Silty Sand (SM)</b> - mottled reddish yellow (7.5YR 7/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, loose, very fine to fine grained, with black streaking, trace residual quartz			SPT N=7bpf(@13.5ft.)(PL=NP; FC = 39.3%; Gravel = 0%)
20		- mottled gray (7.5YR 5/1) and white (10R 8/1) saprolite wet, medium dense, very fine to fine grained, trace biotite, muscovite, residual quartz, amphibole			SPT N=12bpf(@18.5ft.)(LL=34; PI=6; FC = 36.7%; Gravel = 0%)  (MC = 35.4%; UW(d) = 85.5pcf; PERM. = 9.46E-7cm/sec)
25		- mottled gray (7.5YR 5/1) and white (10R 8/1) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, biotite, muscovite, feldspar			SPT N=16bpf(@23.5ft.)
30		- mottled strong brown (7.5YR 5/6) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, biotite, oxides			SPT N=15bpf(@28.5ft.)

(Continued Next Page)



# BORING LOG

**BORING PZ-191**

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCS\HERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION  Weak Moderate Strong	COMMENTS
35		<b>Silty Sand (SM)(Con't)</b> - mottled gray (7.5YR 5/1) saprolite wet, very dense, very fine to fine grained, with white and black and orange streaking, trace oxides, residual quartz, amphibole, biotite			SPT N=59bpf(@33.5ft.)
40		- mottled dusky yellow green (5GY 5/2) saprolite wet, very dense, very fine to fine grained, with white and black and orange streaking, trace iron oxide staining, residual quartz, feldspar, biotite, muscovite, amphibole			SPT N=56bpf(@38.5ft.)
45		- mottled dark gray (N3) saprolite wet, dense, very fine to fine grained, with white streaking, trace iron oxide staining, residual quartz, feldspar, biotite			SPT N=40bpf(@43.5ft.)
50		- mottled dark gray (N3) saprolite wet, very dense, very fine to fine grained, with white speckling, trace biotite, residual quartz, iron oxide staining			SPT N=87bpf(@48.5ft.)
55		<b>Partially Weathered Rock (PWR)</b> - mottled dark gray (N3) saprolite wet, very dense, very fine to coarse grained, weathered Amphibolite			SPT N=50bpf(@53.5ft.)
60		<b>BIOTITE GNEISS</b>  - mottled with dark gray (N3) medium to fine grain, soft to medium hard, slightly to moderately weathered, inclined, banded, 4 moderate-angle fractures (30 - 45d), medium to thin foliation, slight to moderate mechanical fracturing along schistosity (36 - 65d), oxidation, quartz, feldspar, biotite, amphibole - 10 moderate-angle fractures (30 - 45d), becomes thin to laminated banding, interbedded with dark gray to black Amphibolite Gneiss			Lack of recovery likely due to weakness of formation. Core water returns contain medium grained amphibolite and quartz which has been observed at other locations where Amphibolite Gneiss has been collected.
65		- No recovery 60.9' - 71.9' bgs			
70					
Bottom of borehole at 71.9 feet.					

(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-19I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		(CONTINUED)		
		35		
		40		
		45		
		50		
361.5		55		357.9 (56.6)
359.0		60	Annular Seal: bentonite pellets - 0.5 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	355.7 (58.8)
		65	Filter: Unimin FilterSil - 1.25 Bags #1A, 50 lbs/each	353.0 (61.5)
		70	Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
342.6			Sump: 0.40 ft.	343.0



# BORING LOG

**BORING PZ-19S**

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/4/2015 COMPLETED 3/4/2015 GROUND ELEVATION 414.5 ft COORDINATES N 1118587.24 E 2407241.54

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 25 ft.

GROUND WATER DEPTH: DURING 0.5 ft. COMP. 1.5 ft. DELAYED 0.5 ft. after 24 hrs.

## NOTES

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	COMMENTS
		▼ Silty Sand (ML) - Hand auger 5' for utilities clearance ▼			
5					
10		- mottled reddish yellow (7.5YR 6/8), light red / moderate reddish orange (10R 6/6) and light red / moderate reddish orange (10R 6/6) saprolite wet, very loose, very fine to fine grained, trace biotite, residual quartz, feldspar			SPT N=3bpf(@8.5ft.)
15		- mottled strong brown (7.5YR 5/6), light red / moderate reddish orange (10R 6/6) and light red / moderate reddish orange (10R 6/6) saprolite wet, loose, very fine to fine grained, trace residual quartz, biotite			SPT N=9bpf(@13.5ft.)
20		- mottled reddish yellow (7.5YR 6/8), light red / moderate reddish orange (10R 6/6) and light red / moderate reddish orange (10R 6/6) saprolite wet, loose, very fine to fine grained, with black streaking, trace weathered rock fragments			SPT N=5bpf(@18.5ft.)
25		- mottled reddish yellow (7.5YR 6/8), very dark greenish gray (10BG 3/1) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium dense, very fine to fine grained, trace residual quartz and weathered rock fragments			SPT N=12bpf(@23.5ft.)
		Bottom of borehole at 25.0 feet.			



# RECORD OF WELL CONSTRUCTION

WELL: PZ-19S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

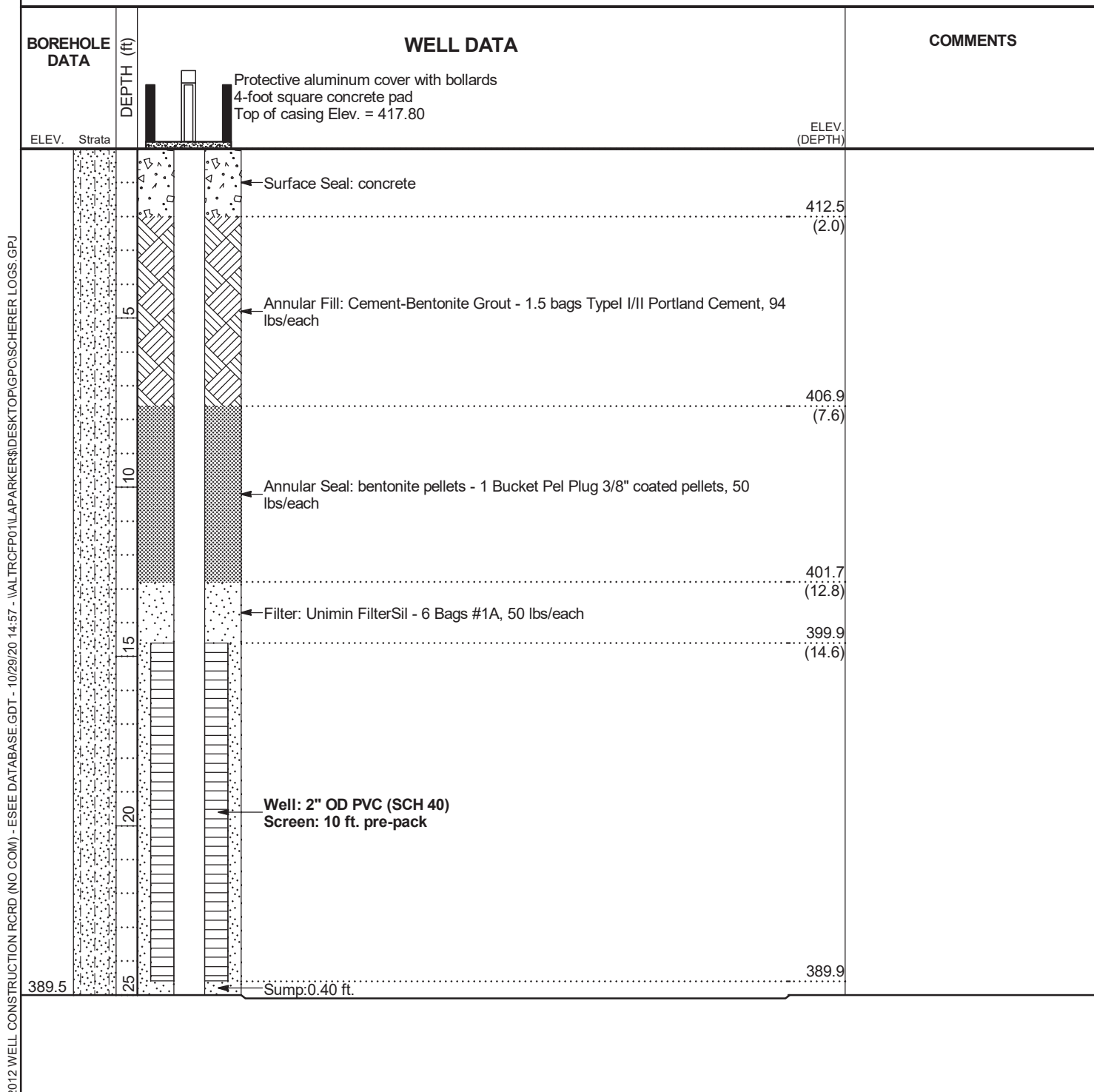
DATE STARTED 3/4/2015 COMPLETED 3/4/2015 GROUND ELEVATION 414.5 ft COORDINATES N 1118587.24 E 2407241.54

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 25 ft.

GROUND WATER DEPTH: DURING 0.5 ft. COMP. 1.5 ft. DELAYED 0.5 ft. after 24 hrs.

NOTES







# BORING LOG

**BORING PZ-20I**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/10/2015 COMPLETED 3/10/2015 GROUND ELEVATION 414.3 ft COORDINATES N 1118318.15 E 2407273.36

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 79.6 ft.

GROUND WATER DEPTH: DURING 5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Fat Clay (CH)</b> - Hand auger 5' for utilities clearance			
10		- mottled light gray (7.5YR 7/1) residuum wet, stiff, moderate plasticity, with sand, trace organics			(MC = 30%; UW(d) = 96.9pcf; PERM. = 1.07E-6cm/sec)  SPT N=11bpf(@8.5ft.)(LL=53; PI=31; FC = 72.3%; Gravel = 0%)
15		<b>Silty Sand (SM)</b> - mottled black (7.5YR 2.5/1) and white (10R 8/1) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, feldspar, biotite			SPT N=20bpf(@13.5ft.)
20		- mottled pinkish white (7.5YR 8/2) and pinkish white / grayish orange pink (10R 8/2) saprolite wet, medium dense, very fine to fine grained, with black streaking, trace biotite, residual quartz, amphibole			SPT N=14bpf(@18.5ft.)  (MC = 27.6%; UW(d) = 99.8pcf; PERM. = 2.97E-9cm/sec)
25		- mottled pinkish gray (7.5YR 7/2) saprolite wet, medium dense, very fine to fine grained, with white banding, trace weathered rock fragments and mica			SPT N=13bpf(@23.5ft.)(PL=NP; FC = 42.7%; Gravel = 0%)
30		- mottled pinkish gray (7.5YR 7/2) saprolite wet, medium dense, very fine to fine grained, with white banding, trace residual quartz, feldspar, biotite, muscovite			SPT N=28bpf(@28.5ft.)
35		- mottled pinkish gray (7.5YR 7/2) saprolite wet, medium dense, very fine to fine grained, with white banding, trace residual quartz, biotite, muscovite, oxides, weathered rock fragments			SPT N=12bpf(@33.5ft.)

(Continued Next Page)

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER LOGS.GPJ



# BORING LOG

BORING PZ-20I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:40 - \\ALTRCP01\LA PARKER\DESKTOP\GFC\SCHERER LOGS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION  Weak Moderate Strong	COMMENTS
40		<b>Silty Sand (SM)(Con't)</b> - mottled gray (7.5YR 6/1) saprolite wet, very dense, very fine to fine grained, with black and white banding, trace residual quartz, mica, weathered rock fragments			SPT N=52bpf(@38.5ft.)
45		- mottled gray (7.5YR 6/1) saprolite wet, dense, very fine to fine grained, with black and white banding, with trace mica, residual quartz, hornblende			SPT N=40bpf(@43.5ft.)
50		- mottled very dark gray (7.5YR 3/1) saprolite wet, very dense, very fine to fine grained, with white speckling, trace oxide staining, mica, residual quartz, amphibole			SPT N=50bpf(@48.5ft.)
55		- mottled very dark gray (7.5YR 3/1) saprolite wet, very dense, very fine to fine grained, with white banding, trace oxide staining, mica, residual quartz, amphibole			SPT N=50bpf(@53.5ft.)
60		- mottled very dark gray (7.5YR 3/1) saprolite wet, very dense, very fine to fine grained, with white and black banding, trace oxide staining, mica, residual quartz, feldspar, amphibole <b>Partially Weathered Rock (PWR)</b> - very fine to medium grained, with white and black banding, trace oxide staining, mica, residual quartz, feldspar, amphibole			SPT N=50bpf(@58.5ft.)
65		<b>AMPHIBOLITE GNEISS</b> - mottled with dark gray (N3) medium to fine grain, soft to medium hard, moderately to highly weathered, inclined, banded, 5 low-angle fractures (10 - 30d), 4 moderate-angle fractures (30 - 45d), thin to laminate banding, slight mechanical fracturing along schistosity (30-50d)			
70		- mottled with dark gray (N3) medium to fine grain, soft to medium hard, moderately to highly weathered, inclined, banded, 2 low-angle fractures (10 - 30d), 8 moderate-angle fractures (30 - 45d), 5 high-angle fractures (65 - 90d), becomes more laminated and competent with depth			
75		- mottled with dark gray (N3) medium to fine grain, soft to medium hard, moderately to highly weathered, inclined, banded, 8 low-angle fractures (10 - 30d), 5 moderate-angle fractures (30 - 45d), 3 high-angle fractures (65 - 90d), becomes slightly less competent			
80		Bottom of borehole at 79.6 feet.			



# RECORD OF WELL CONSTRUCTION

WELL: PZ-20I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

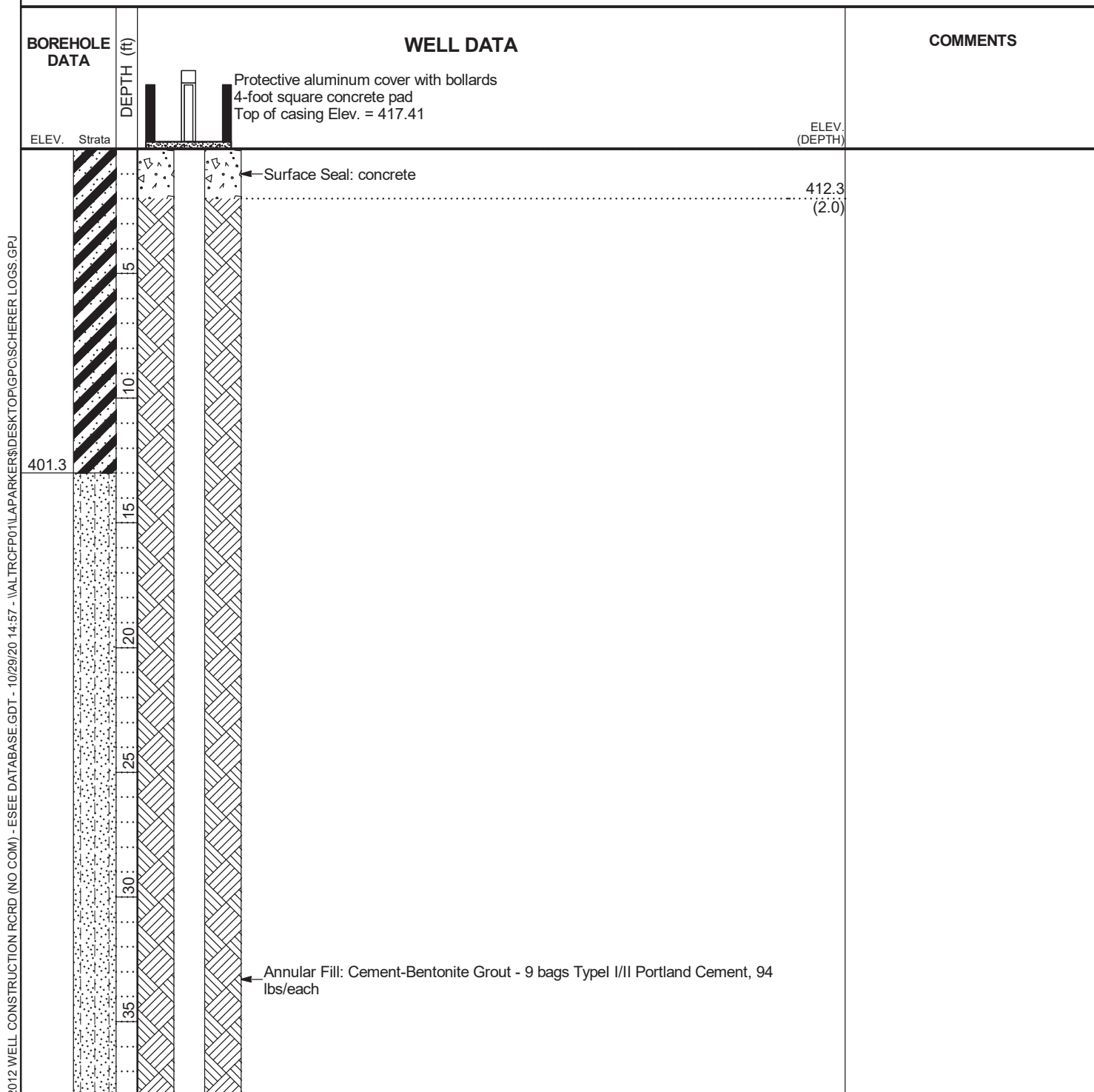
DATE STARTED 3/10/2015 COMPLETED 3/10/2015 GROUND ELEVATION 414.3 ft COORDINATES N 1118318.15 E 2407273.36

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger; HQ Rock Core EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 79.6 ft.

GROUND WATER DEPTH: DURING 5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs.

NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-20I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

## BOREHOLE DATA

DEPTH (ft)

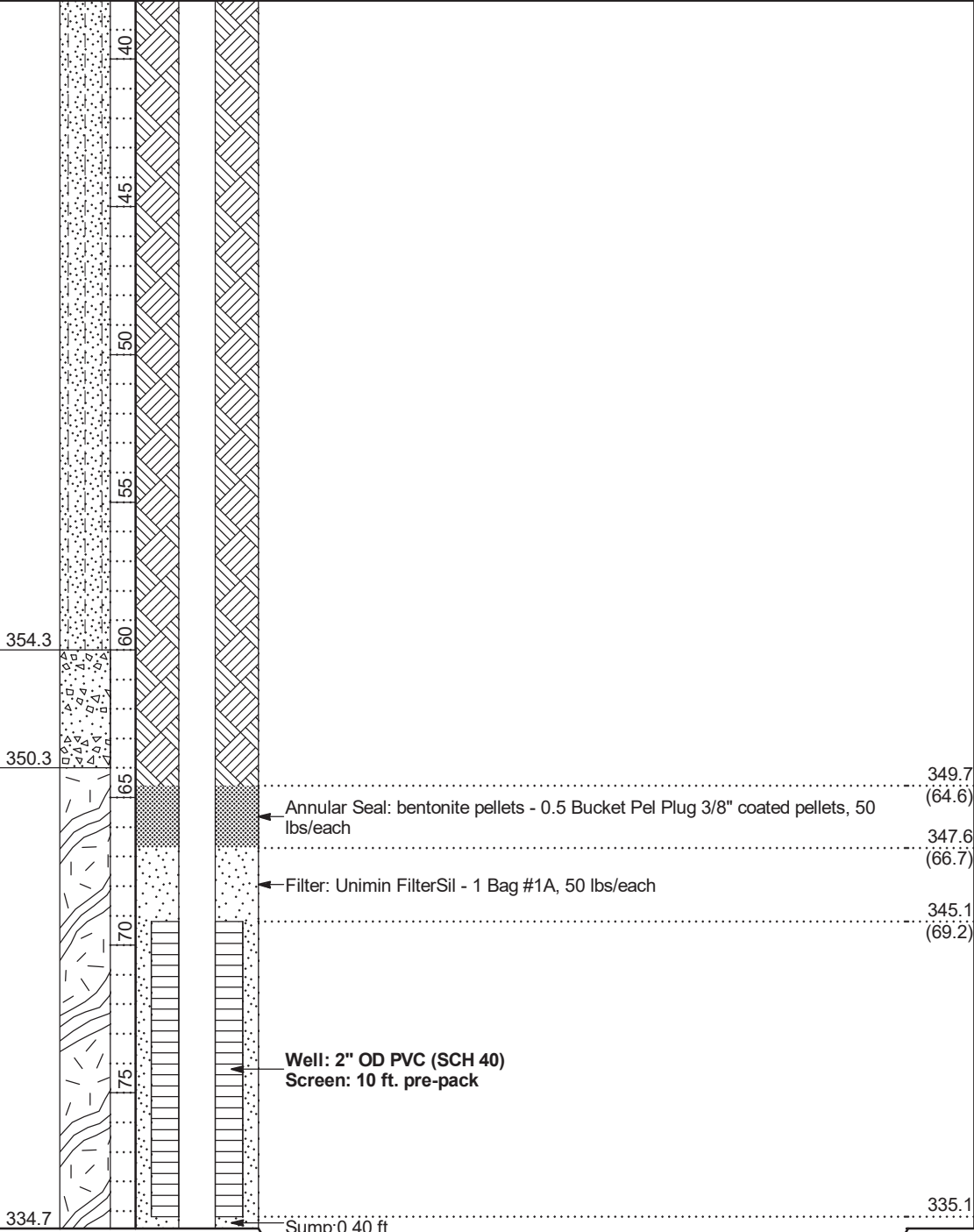
## WELL DATA

## COMMENTS

ELEV. Strata

(CONTINUED)

ELEV.  
(DEPTH)





# BORING LOG

**BORING PZ-21S**

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/11/2015 COMPLETED 3/12/2015 GROUND ELEVATION 470.6 ft COORDINATES N 1117639.19 E 2407006.52

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 25 ft.

GROUND WATER DEPTH: DURING 1.5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
..... ..... ..... 5 ..... ..... 10 ..... ..... 15 ..... ..... 20 ..... ..... 25		<p><b>Sandy Silt (ML)</b> - Hand auger 5' for utilities clearance</p> <p>- mottled reddish yellow (7.5YR 6/8) and light red / moderate reddish orange (10R 6/6) residuum wet, soft, trace mica</p> <p>- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/6) saprolite wet, medium stiff, with black streaking</p> <p>- mottled light gray (7.5YR 7/1) saprolite wet, very stiff, with white and black spots, trace residual quartz, feldspar, biotite, muscovite, weathered rock fragments</p> <p>- mottled white (7.5YR 8/1) and light red / moderate reddish orange (10R 6/6) saprolite wet, very stiff, micaceous, with black banding, trace weathered rock fragments</p>			<p>SPT N=4bpf(@8.5ft.)</p> <p>SPT N=5bpf(@13.5ft.)</p> <p>SPT N=17bpf(@18.5ft.)</p> <p>SPT N=22bpf(@23.5ft.)</p>
..... .....		Bottom of borehole at 25.0 feet.			

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:41 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCS\CHERER LOGS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-21S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE STARTED 3/11/2015 COMPLETED 3/12/2015 GROUND ELEVATION 470.6 ft COORDINATES N 1117639.19 E 2407006.52

CONTRACTOR Civil Field Services METHOD Hollow Stem Auger EQUIPMENT CME550

DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BORING DEPTH 25 ft.

GROUND WATER DEPTH: DURING 1.5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs.

NOTES

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 473.74	
			Surface Seal: concrete	468.6 (2.0)
			Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement, 94 lbs/each	461.6 (9.0)
			Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	458.6 (12.0)
			Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each	457.6 (13.0)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
			Sump: 0.40 ft	447.6 (23.0)
445.6		25		



# BORING LOG

BORING PZ-25 I

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/22/2016 COMPLETED 5/24/2016 GROUND ELEVATION 525.8 ft COORDINATES N 1121837.8 E 2404573.04

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126 ft.

GROUND WATER DEPTH: DURING COMP. 32.5 ft. DELAYED 30.6 ft. after 24 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCP001\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Well-graded Sand with Clay (SW-SC)</b> - mottled red (2.5YR 4/6) dry, fine to medium-grained, with magnetite and illmenite			
10		- yellowish red (5YR 4/6) dry, with silt			
15		- reddish yellow (7.5YR 6/8) with black and white mottling, weathered feldspar			
20		- mottled strong brown (7.5YR 5/8), light gray (2.5Y 7/2) and pale red (10R 6/3) dry, fine to coarse-grained, trace fine quartz gravel - with magnetite and illmenite			
25		- strong brown (7.5YR 5/8), black (7.5YR 2.5/1) and very pale brown / grayish orange (10YR 7/4) with mica			
30		<b>Sandy Silt (ML)</b> - mottled dark reddish brown (2.5YR 3/4) and dark reddish gray (2.5YR 3/1) moist, with sandy clay (CL) bedding			
35		- mottled strong brown (7.5YR 5/8) and black (7.5YR 2.5/1)			
40		- dark red (2.5YR 3/6), red (2.5YR 4/6) and reddish gray (2.5YR 5/1) wet, flow-banded fabric			
45		<b>Elastic Silt (MH)</b> - mottled weak red (10R 5/3) and reddish black (10R 2.5/1) wet, medium, with sandy clay (CH) bedding			
50		- mottled strong brown (7.5YR 5/8), light brownish gray (2.5Y 6/2) and black (2.5Y 2.5/1)			
		- reddish brown (2.5YR 4/4), reddish yellow (7.5YR 6/6) and black (7.5YR 2.5/1) wet, with sandy clay (CH) bedding			

(Continued Next Page)





# BORING LOG

**BORING PZ-25 I**  
Page 2 of 3

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Additional Hydrogeological Investigation (2016)

**LOCATION** Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GPGCISCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Elastic Silt (MH)(Con't)</b>  - yellowish red / light brown (5YR 5/6)			
60		<b>Well-graded Sand with Clay (SW-SC)</b> - yellowish red / light brown (5YR 5/6) saprolite wet, medium dense, fine to coarse-grained, cohesive			
65		- dark grayish brown / dark yellowish brown (10YR 4/2) with gravel (residual diabase)			
70		- dark gray / olive gray (5Y 4/1) and strong brown (7.5YR 5/6) moist			
75		- mottled very dark gray (5Y 3/1) and white (N9)			
80		- dark brown (10YR 3/3) with interlayered clay bedding			
85		- gray (10YR 5/1) moist			
90		- very dark gray (2.5Y 3/1) regolith moist, dense			
95		- very dark gray (5Y 3/1)			
100		- with interlayered clay bedding			
105		- dark yellowish brown (10YR 4/6) and olive (5Y 5/4)			
110		- mottled black (2.5Y 2.5/1), dark gray (2.5Y 4/1) and white (N9)			

(Continued Next Page)



# BORING LOG

**BORING PZ-25 I**  
Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)  
LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
115		Well-graded Sand with Clay (SW-SC)(Con't)  - grayish brown (2.5Y 5/2)  - dark yellowish brown (10YR 3/6)			
120					
125		- very dark gray (2.5Y 3/1)			
		Bottom of borehole at 126.0 feet.			
130					
135					
140					
145					
150					
155					
160					
165					
170					

SAMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\VALTRCFP01\LPARKER\DESKTOP\GPGC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-25 I  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)  
LOCATION Plant Scherer

DATE STARTED 5/22/2016 COMPLETED 5/24/2016 GROUND ELEVATION 525.8 ft COORDINATES N 1121837.8 E 2404573.04

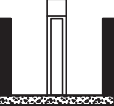
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. 32.5 ft. DELAYED 30.6 ft. after 24 hrs.

NOTES \_\_\_\_\_

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ

BOREHOLE DATA	DEPTH (ft)	WELL DATA	COMMENTS
ELEV. Strata		 <p>Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 528.39</p>	ELEV. (DEPTH)
	5 10 15 20 25 30 35 40 45 50	<p>← Surface Seal: concrete</p> <p>522.8 (3.0)</p> <p>499.8</p> <p>489.8</p>	

(Continued Next Page)

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Additional Hydrogeological Investigation (2016)

**LOCATION** Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 528.39	
		(CONTINUED)		
469.8		55	Annular Fill: Cement-Bentonite Grout (8 - 94# bags PC, 1 - 55# bag gel, 210 gal. water)	
		60		
		65		
		70		
		75		
		80		
		85		
		90		
		95		
		100		
		105		
		110	Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)	
				418.8 (107.0)
				415.8

(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-25 I  
PAGE 3 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 528.39	
				ELEV. (DEPTH)
				(110.0)
			Filter: 20/40 silica filter sand (6 - 0.5 cubic ft. bags)	
				411.0
				(114.8)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	
			Sump: 0.20 ft.	
				401.0
				(124.8)
				400.8
				(125.0)

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPO\SCHERER ADDITIONAL PZS\_UPDATED.GPJ



# BORING LOG

**BORING PZ-25 S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/24/2016 COMPLETED 5/25/2016 GROUND ELEVATION 525.5 ft COORDINATES N 1121848.11 E 2404567.52

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 56 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 32.6 ft. after 48 hrs.

**NOTES**

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCP001\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Well-graded Sand with Clay (SW-SC)</b> - mottled red (2.5YR 4/6) dry, fine to medium-grained, with magnetite and illmenite			
10		- yellowish red (5YR 4/6) dry, with silt			
15		- reddish yellow (7.5YR 6/8) with black and white mottling, weathered feldspar			
20		- mottled strong brown (7.5YR 5/8), light gray (2.5Y 7/2) and pale red (10R 6/3) dry, fine to coarse-grained, trace fine quartz gravel - with magnetite and illmenite			
25		- strong brown (7.5YR 5/8), black (7.5YR 2.5/1) and very pale brown / grayish orange (10YR 7/4) with mica			
30		<b>Sandy Silt (ML)</b> - mottled dark reddish brown (2.5YR 3/4) and dark reddish gray (2.5YR 3/1) moist, with sandy clay (CL) bedding			
35		▼ - mottled strong brown (7.5YR 5/8) and black (7.5YR 2.5/1) - dark red (2.5YR 3/6), red (2.5YR 4/6) and reddish gray (2.5YR 5/1) wet, flow-banded fabric			
40		<b>Elastic Silt (MH)</b> - mottled weak red (10R 5/3) and reddish black (10R 2.5/1) wet, medium, with sandy clay (CH) bedding			
45		- mottled strong brown (7.5YR 5/8), light brownish gray (2.5Y 6/2) and black (2.5Y 2.5/1)			
50		- reddish brown (2.5YR 4/4), reddish yellow (7.5YR 6/6) and black (7.5YR 2.5/1) wet, with sandy clay (CH) bedding			

(Continued Next Page)



# BORING LOG

**BORING PZ-25 S**

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
..... ..... ..... 55		Elastic Silt (MH)(Con't)  - yellowish red / light brown (5YR 5/6)	..... ..... ..... .....	..... ..... ..... .....	
..... 60 ..... ..... 65 ..... 70 ..... 75 ..... 80 ..... 85 ..... 90 ..... 95 ..... 100 ..... 105 ..... 110		Bottom of borehole at 56.0 feet.			

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\1APARKER\DESKTOP\GPGCISCHERER ADDITIONAL PZS.GPJ





# RECORD OF WELL CONSTRUCTION

WELL: PZ-25 S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/24/2016 COMPLETED 5/25/2016 GROUND ELEVATION 525.5 ft COORDINATES N 1121848.11 E 2404567.52

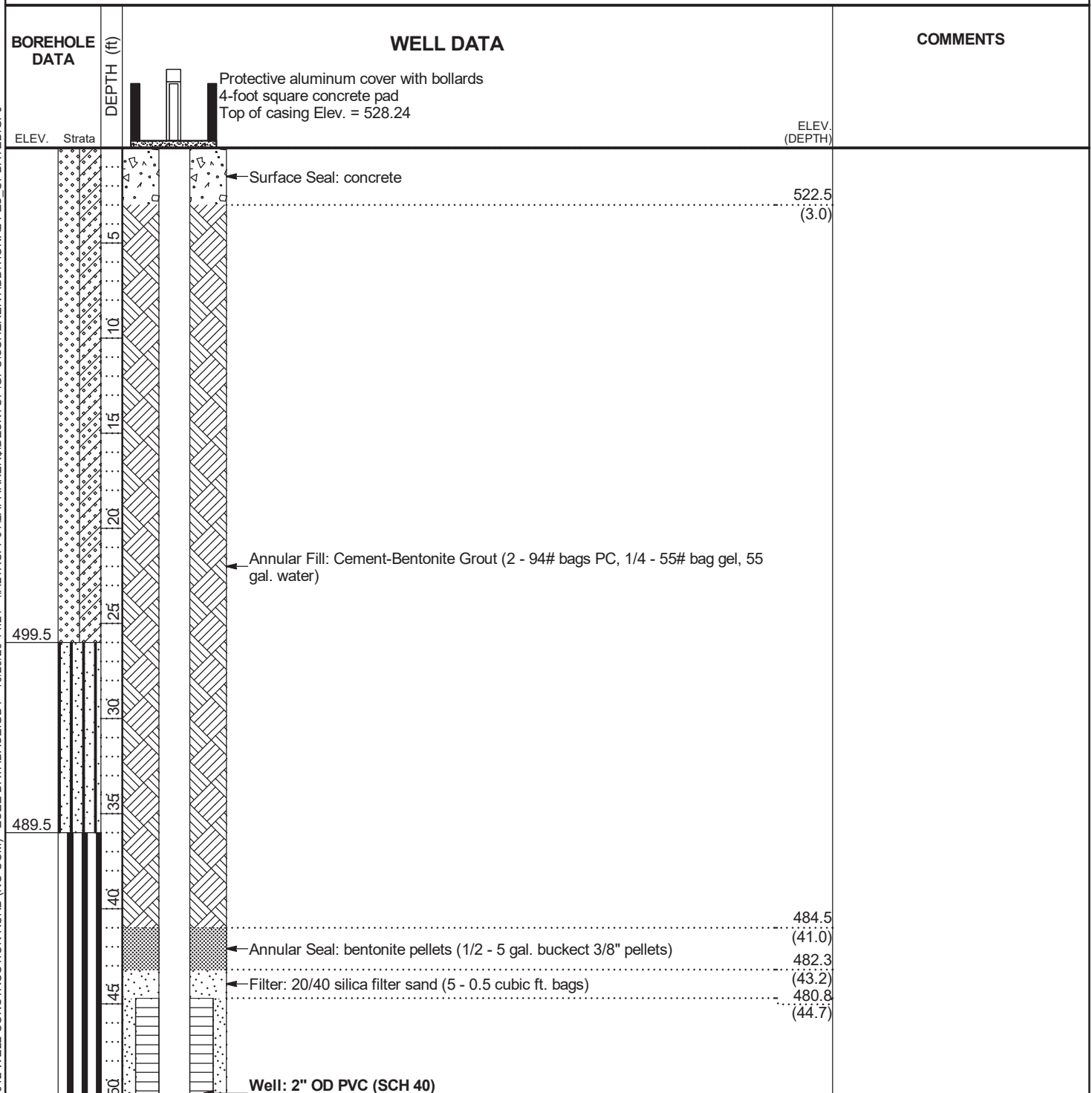
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 56 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 32.6 ft. after 48 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\ALTRCF001\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-25 S  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 528.24	
		(CONTINUED)		
			Screen: 10 ft. 0.010" Slot Prepack	
469.5		54	Sump: 0.20 ft.	470.7 (54.8) 470.5 (55.0)



# BORING LOG

**BORING PZ-26 S**

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/1/2016 COMPLETED 6/1/2016 GROUND ELEVATION 489.1 ft COORDINATES N 1121696.65 E 2405733.23

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 12.5 ft. after 72 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Lean Clay (CL)</b> - dark red (2.5YR 3/6) dry, with silt  - red (2.5YR 4/6)  - red (2.5YR 4/8)			
10		<b>Sandy Silt (ML)</b> - red (2.5YR 4/6) and reddish black (2.5YR 2.5/1) dry, with mica  - yellowish red (5YR 4/6) damp, with mica - red (2.5YR 4/6) wet			
15					
20		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled yellowish red (5YR 5/8) and black (5YR 2.5/1) fine-grained, with mica  - mottled strong brown (7.5YR 4/6) and black (7.5YR 2.5/1)			
25					
30					
35		<b>Elastic Silt (MH)</b> - olive brown (2.5Y 4/4) wet, with fine sand, micaceous			
40		<b>Silty Sand (SM)</b> - light olive brown (2.5Y 5/6) fine-grained, micaceous			
45		<b>Poorly-graded Sand (SP)</b> - gray / light olive gray (5Y 6/1) and white / yellowish gray (5Y 8/1) fine to coarse-grained			
50		<b>Silty Sand (SM)</b> - light olive brown (2.5Y 5/6) fine-grained, micaceous  Bottom of borehole at 46.0 feet.			



# RECORD OF WELL CONSTRUCTION

WELL: PZ-26 S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/1/2016 COMPLETED 6/1/2016 GROUND ELEVATION 489.1 ft COORDINATES N 1121696.65 E 2405733.23

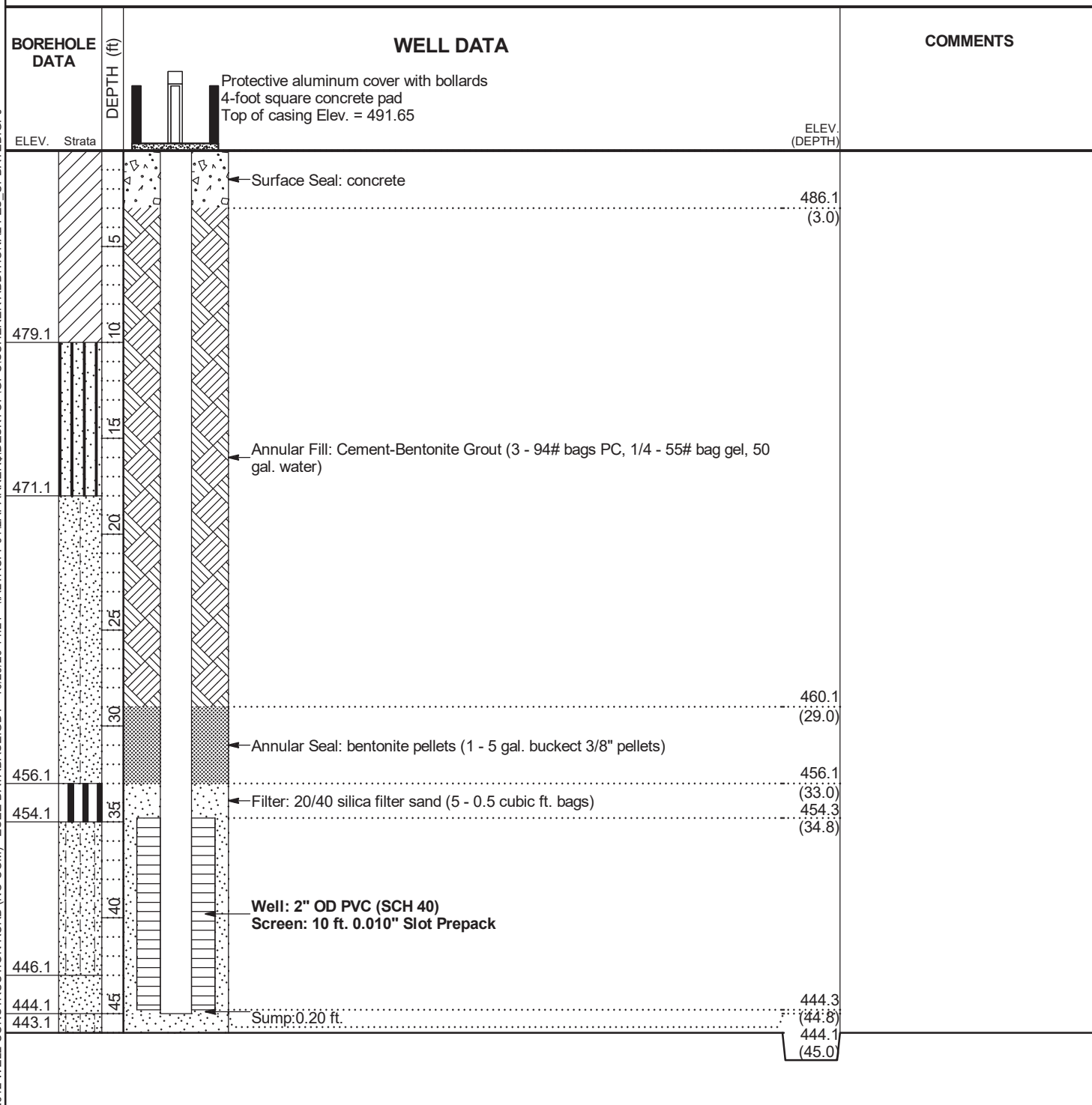
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 12.5 ft. after 72 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ





# BORING LOG

**BORING PZ-27 D**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/14/2016 COMPLETED 6/17/2016 GROUND ELEVATION 472.4 ft COORDINATES N 1121558.94 E 2406023.17

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 10 ft. after 24 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Clayey Sand (SC)</b> - dark brown (7.5YR 3/3) damp, fine to medium-grained			
		<b>Lean Clay (CL)</b> - mottled yellowish red (5YR 4/6) and yellowish brown (10YR 5/6) damp, medium, with mica			
10		- dark brown (10YR 3/3) with fine quartz gravel			
15		<b>Well-graded Sand with Silt (SW-SM)</b> - yellowish red / light brown (5YR 5/6) and yellowish brown (10YR 5/6) moist, fine to coarse-grained, with mica			
20		- very dark gray (10YR 3/1) black (10YR 3/1) oxidation mottling			
25		- dark brown (7.5YR 3/4) wet			
30		- brown (7.5YR 4/3) and strong brown (7.5YR 4/6) fine to coarse-grained			
		- dark yellowish brown (10YR 4/4) wet			
35		<b>Clayey Sand (SC)</b> - grayish brown (2.5Y 5/2) wet, with mica			
40		<b>Well-graded Sand with Silt (SW-SM)</b> - grayish brown (2.5Y 5/2) and white / yellowish gray (5Y 8/1) partially weathered rock biotite gneiss, fine to coarse-grained,			
45		- olive gray (5Y 4/2) wet, fine to coarse-grained			
50		- mottled olive gray (5Y 4/2) and white / yellowish gray (5Y 8/1)			
		- UD tube attempted, crushed due to dense soils			
		- dark grayish brown (2.5Y 4/2) and yellow (2.5Y 7/6) saprolite wet, fine to coarse-grained, with mica			
		<b>Well-graded Sand (SW)</b>			

(Continued Next Page)



# BORING LOG

BORING PZ-27 D

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCP001\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Well-graded Sand (SW)(Con't)</b> - very dark gray (2.5Y 3/1) and dark grayish brown (2.5Y 4/2) wet, fine to coarse-grained, with mica - very dark greenish gray (10Y 3/1) and greenish black (10Y 2.5/1) with gravel and clay (pulverized rock), biotite gneiss, fresh to highly weathered			
60		<b>Biotite Gneiss</b> - dark gray / olive gray (5Y 4/1) and light gray (5Y 7/1) coarse grain, medium hard to hard, not to slightly weathered, banded, moderately fractured, sub-horizontal fractures - medium hard to hard, inclined, white feldspar and quartz banding, thin to medium bedded - increased granitic composition 61 to 63 ft., light gray with black banding			
65					
70		- very dark gray (5Y 3/1) and black (5Y 2.5/2) coarse grain, medium hard to very hard, not weathered, inclined, intensely to moderately fractured, white banding, thin bedded - increased granitic composition 71 to 73 ft., light gray with black banding			
75					
80		- gray (2.5Y 5/1) coarse grain, medium hard to very hard, folded, moderately fractured, black and white banding			
85					
90					
95		- very dark gray (2.5Y 3/1) completely weathered, 93 to 95 ft.			
100		- light gray (2.5Y 7/1) hard, inclined and folded bedding, moderately fractured, white and dark gray banding, thin to medium bedded, sub-vertical fractures - intensely fractured, 100 to 101 ft.			
105					
110		- gray (2.5Y 5/1) and very dark gray (2.5Y 3/1) coarse grain, hard, not weathered, inclined and folded bedding, moderately fractured, white banding - near vertical bedding 109 to 111 ft.			

(Continued Next Page)



# BORING LOG

BORING PZ-27 D

Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
115		<b>Biotite Gneiss (Con't)</b>			
120		- gray (2.5Y 6/1) coarse grain, hard, not weathered, inclined, intensely fractured, white and dark gray banding, near horizontal fractures			
125		- soft			
		Bottom of borehole at 126.0 feet.			
130					
135					
140					
145					
150					
155					
160					
165					
170					

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\VALTRCFP01\1APARKER\DESKTOP\GPGC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-27 D  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/14/2016 COMPLETED 6/17/2016 GROUND ELEVATION 472.4 ft COORDINATES N 1121558.94 E 2406023.17

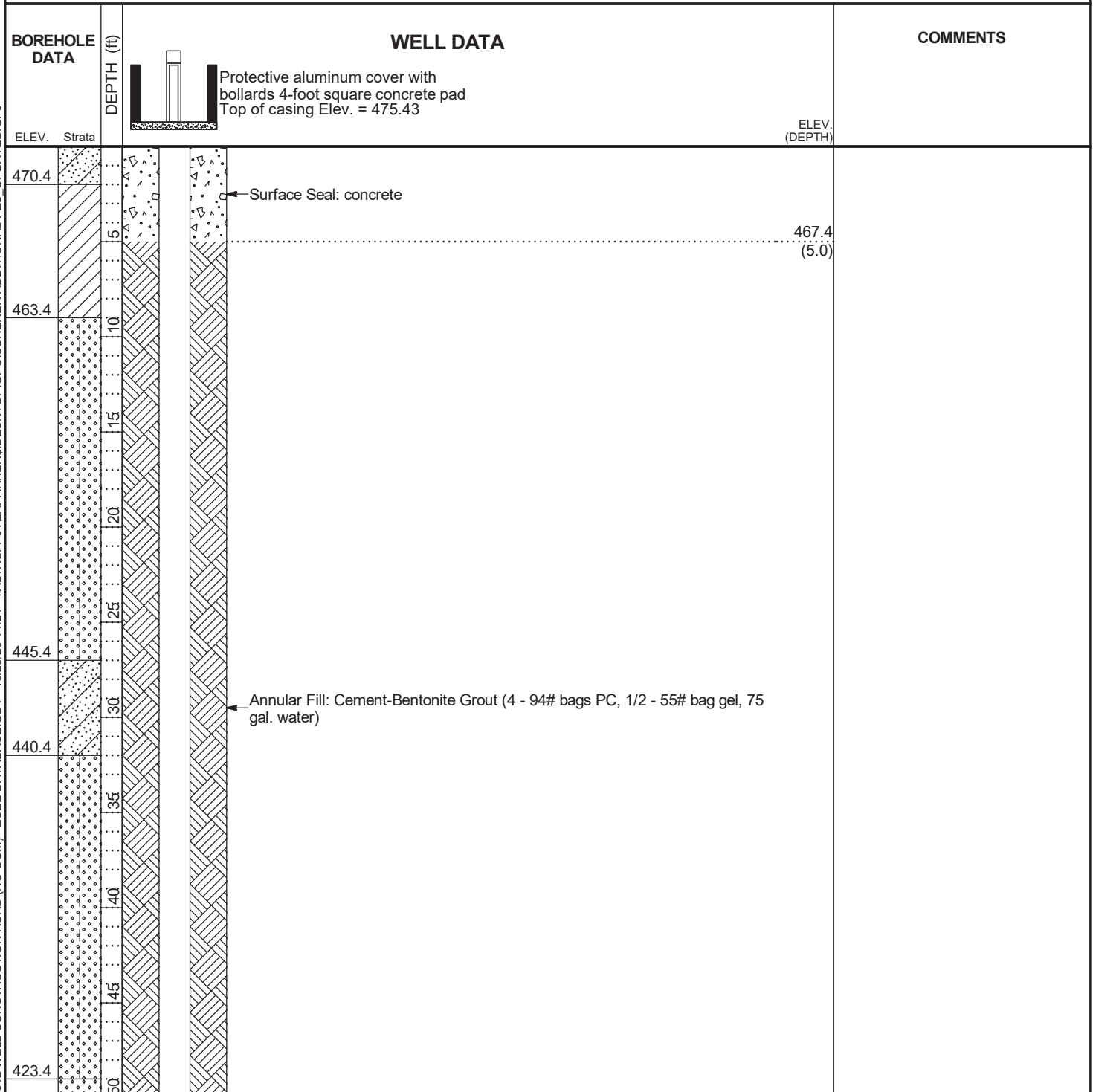
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 10 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCF001\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS UPDATED.GPJ



(Continued Next Page)





# RECORD OF WELL CONSTRUCTION

WELL: PZ-27 D  
PAGE 2 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
		(CONTINUED)		
416.4		55	Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 475.43	ELEV. (DEPTH) 418.4 (54.0)
		60		
		65		
		70		
		75		
		80	Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets (98-102.5 ft.), 6 - 50# bags 3/8" chips (54-98 ft.)	
		85		
		90		
		95		
		100		
		105	Filter: 20/40 silica filter sand (10 - 0.5 cubic ft. bags)	369.9 (102.5)
		110		367.6 (104.8)

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCF001\LPARKER\DESKTOP\GP\CSCHERER ADDITIONAL PZS\_UPDATED.GPJ

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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE:GDT - 10/29/20 14:21 - \\ALTRCF01\LAPARKER\$\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



# BORING LOG

**BORING PZ-27 S**

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/25/2016 COMPLETED 5/26/2016 GROUND ELEVATION 473.1 ft COORDINATES N 1121565.33 E 2406028.25

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 3.5 ft. DELAYED 5.8 ft. after 200 hrs.

## NOTES

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCF001\LPARKER\DESKTOP\GPC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Clayey Sand (SC)</b> - dark brown (7.5YR 3/3) damp, fine to medium-grained			
		<b>Lean Clay (CL)</b> - mottled yellowish red (5YR 4/6) and yellowish brown (10YR 5/6) damp, medium, with mica			
10		- dark brown (10YR 3/3) with fine quartz gravel			
15		<b>Well-graded Sand with Silt (SW-SM)</b> - yellowish red / light brown (5YR 5/6) and yellowish brown (10YR 5/6) moist, fine to coarse-grained, with mica			
20		- very dark gray (10YR 3/1) black (10YR 3/1) oxidation mottling			
25		- dark brown (7.5YR 3/4) wet			
30		- brown (7.5YR 4/3) and strong brown (7.5YR 4/6) fine to coarse-grained			
		- dark yellowish brown (10YR 4/4) wet			
35		<b>Clayey Sand (SC)</b> - grayish brown (2.5Y 5/2) wet, with mica			
40		<b>Well-graded Sand with Silt (SW-SM)</b> - grayish brown (2.5Y 5/2) and white / yellowish gray (5Y 8/1) partially weathered rock biotite gneiss, fine to coarse-grained,			
45		- olive gray (5Y 4/2) wet, fine to coarse-grained			
		- mottled olive gray (5Y 4/2) and white / yellowish gray (5Y 8/1)			
50		Bottom of borehole at 46.0 feet.			



# RECORD OF WELL CONSTRUCTION

WELL: PZ-27 S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/25/2016 COMPLETED 5/26/2016 GROUND ELEVATION 473.1 ft COORDINATES N 1121565.33 E 2406028.25

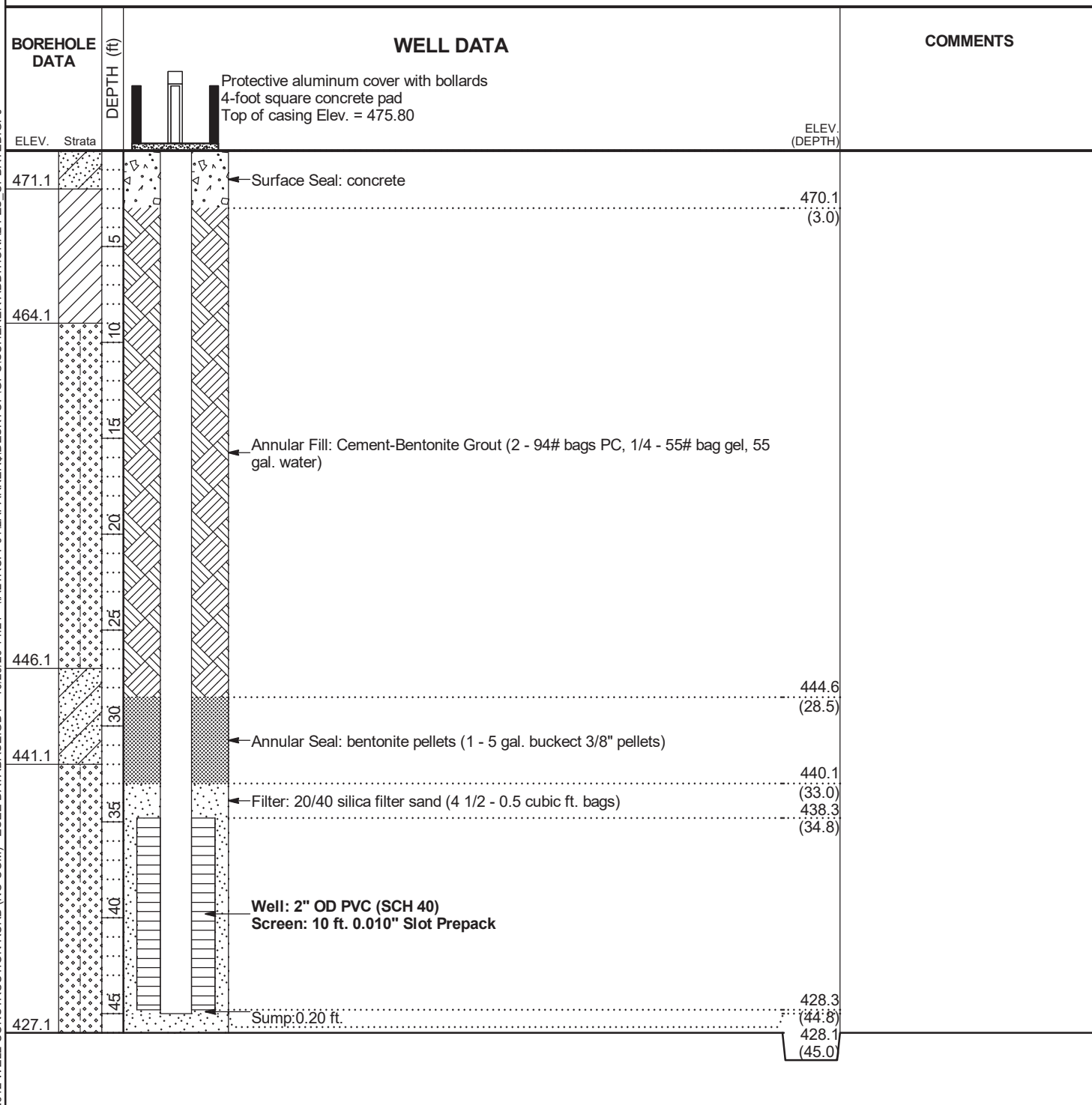
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 3.5 ft. DELAYED 5.8 ft. after 200 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS UPDATED.GPJ





# BORING LOG

BORING PZ-28 I

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/3/2016 COMPLETED 6/3/2016 GROUND ELEVATION 481.4 ft COORDINATES N 1121394.06 E 2406373.94

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 70 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 15.5 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - red (2.5YR 5/8) residuum dry, medium stiff, no, micaceous			
10					
15		<b>Poorly-graded Sand with Silt (SP-SM)</b> - yellowish red (5YR 5/8) saprolite moist, loose, fine-grained, with mica, oxidation			
20					
25		<b>Silt (ML)</b> - mottled red (2.5YR 5/6), reddish gray (10R 6/1) and reddish yellow (5YR 6/6) saprolite moist, medium stiff, no, fine-grained, some mica, oxidation			
30		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled light gray (2.5Y 7/2), olive brown (2.5Y 4/3) and dusky yellow green (5GY 5/2) saprolite moist, loose			
35					
40					
45		- greenish gray (10Y 5/1) moist			
50		<b>Well-graded Sand (SW)</b> - greenish gray (10Y 5/1), black (N1) and white (N9) moist, loose, biotite and feldspar, some mica			

(Continued Next Page)



# BORING LOG

BORING PZ-28 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		- yellowish brown / moderate yellowish brown (10YR 5/4) and white (2.5Y 8/1) very soft, highly weathered, banded <b>Biotite Gneiss (Cont)</b> - yellowish brown / moderate yellowish brown (10YR 5/4), white (2.5Y 8/1) and dark greenish gray (10Y 4/1) very soft to soft, banded, horizontal to sub-vertical fractures			
60		- dark bluish gray (5PB 4/1) and very light gray (N8) hard to very hard, slightly weathered, banded, horizontal to sub-vertical fractures, intensely fractured			
65					
70		- greenish black (5GY 2.5/1) and medium light gray (N6) slightly to moderately weathered, banded, horizontal to sub-vertical fractures, intensely fractured			
Bottom of borehole at 70.0 feet.					
75					
80					
85					
90					
95					
100					
105					
110					

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GPGC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-28 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/3/2016 COMPLETED 6/3/2016 GROUND ELEVATION 481.4 ft COORDINATES N 1121394.06 E 2406373.94

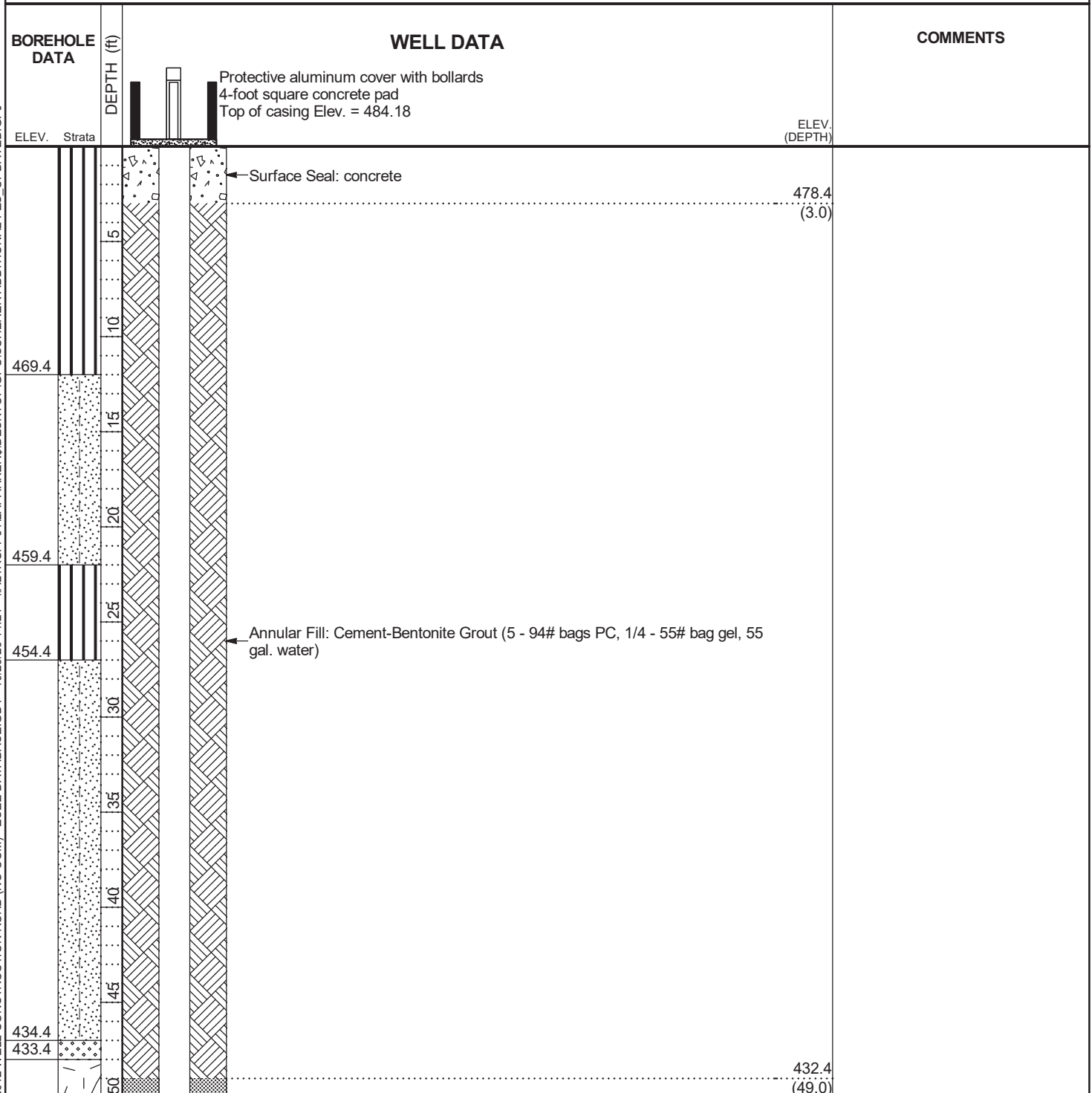
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 70 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 15.5 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-28 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 484.18	
		(CONTINUED)		
			Annular Seal: bentonite pellets (3/4 - 5 gal. bucket 3/8" pellets)	
		55		427.4 (54.0)
			Filter: 20/40 silica filter sand (4 1/2 - 0.5 cubic ft. bags)	
		60		422.8 (58.6)
		65	Well: 2" OD PVC (SCH 40) Screen: 9.999999999999999 ft. 0.010" Slot Prepack	
411.4		70	Sump: 0.20 ft	412.8 (68.6) 412.6 (68.8)





# BORING LOG

BORING PZ-29 S

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/26/2016 COMPLETED 5/26/2016 GROUND ELEVATION 488.5 ft COORDINATES N 1121269.19 E 2406618.29

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 22 ft. DELAYED 26.9 ft. after 100 hrs.

## NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Lean Clay (CL)</b> - red (2.5YR 4/8) dry, with mica			
10		<b>Sandy Silt (ML)</b> - red (2.5YR 4/8) with mica			
15		- mottled strong brown (7.5YR 5/6) and black (7.5YR 2.5/1) dry			
20					
25		<b>Well-graded Sand with Silt (SW-SM)</b> - dark yellowish brown (10YR 4/4) damp, fine to medium-grained			
30		- olive brown (2.5Y 4/4)			
35		- light olive brown (2.5Y 5/6)			
40		- mottled olive (5Y 4/3) and pale yellow (5Y 7/4)			
45		- olive brown (2.5Y 4/3)			
50		- mottled olive gray / light olive gray (5Y 5/2) and dark greenish gray (10Y 4/1) weathered biotite gneiss			
		Bottom of borehole at 46.0 feet.			

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \VALTRCFP01\APARKER\DESKTOP\GPC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-29 S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/26/2016 COMPLETED 5/26/2016 GROUND ELEVATION 488.5 ft COORDINATES N 1121269.19 E 2406618.29

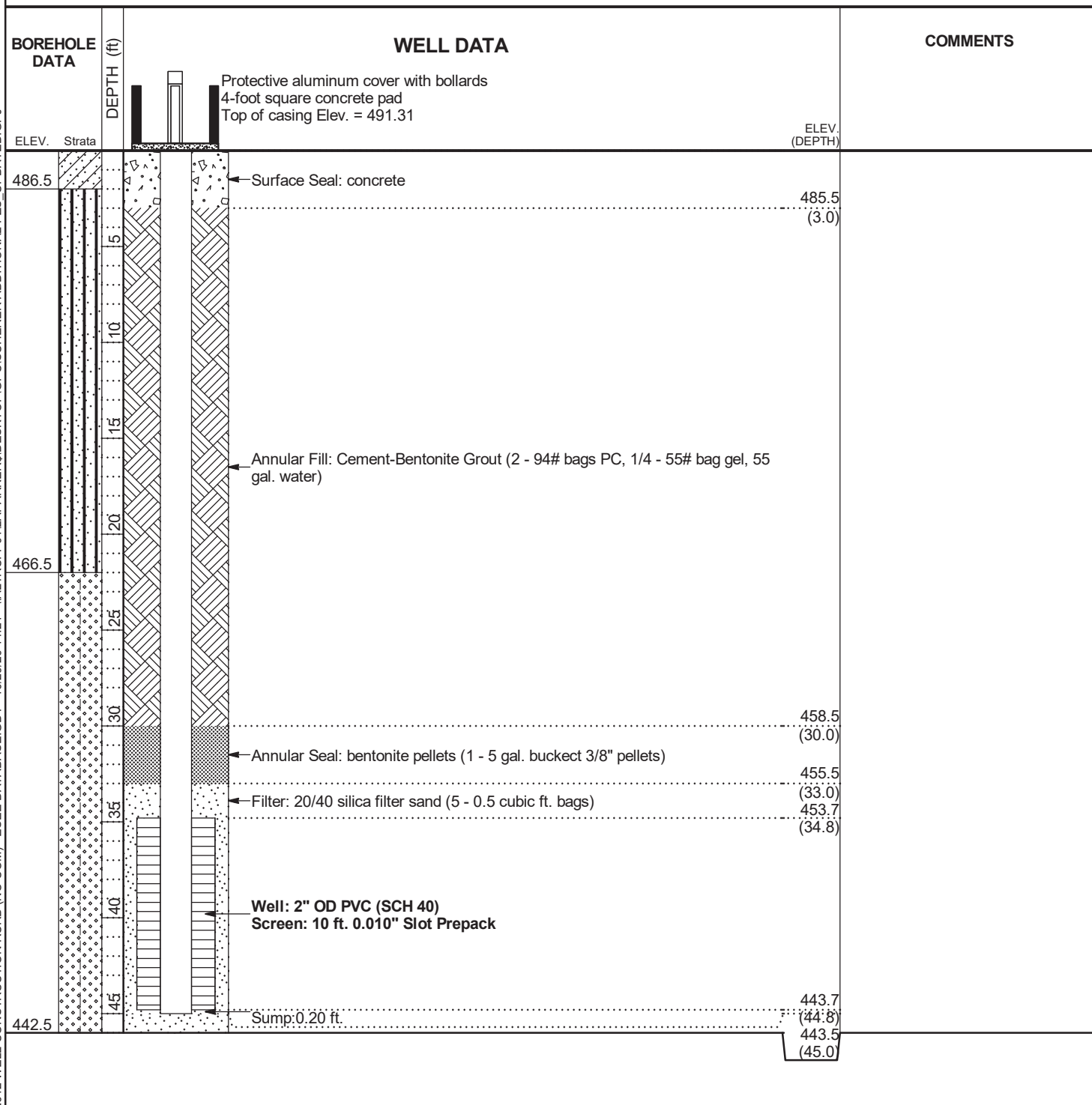
CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 22 ft. DELAYED 26.9 ft. after 100 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS UPDATED.GPJ





# BORING LOG

**BORING PZ-30 I**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/2/2016 COMPLETED 6/2/2016 GROUND ELEVATION 475.6 ft COORDINATES N 1121073.53 E 2407078.99

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 87 ft.

GROUND WATER DEPTH: DURING \_\_\_\_\_ COMP. \_\_\_\_\_ DELAYED 18.9 ft. after 24 hrs.

NOTES \_\_\_\_\_

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \VALTRCFP01\APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Silt (ML)</b> - red (2.5YR 5/6) residuum dry, stiff, no, fine-grained, trace mica			
10		- damp			
15		<b>Silt (ML)</b> - mottled yellowish red / light brown (5YR 5/6) and strong brown (7.5YR 5/6) residuum dry, soft, low, fine-grained, trace mica, oxidation			
20		<b>Poorly-graded Sand with Silt (SP-SM)</b> - brown (7.5YR 5/4) residuum moist, loose, fine-grained, with mica			
25					
30					
35		<b>Sandy Silt (ML)</b> - mottled brown (7.5YR 5/4) and reddish yellow (7.5YR 8/6) saprolite moist, no, with mica, oxidation			
40		<b>Poorly-graded Sand with Silt (SP-SM)</b> - light brownish gray (2.5Y 6/2) moist, loose, fine-grained  - sub-vertical fractures - mottled light red / moderate reddish orange (10R 6/6) and very pale brown / very pale orange (10YR 8/2) saprolite folded fabric			
45					
50		- white (N9), very pale brown (10YR 7/3) and reddish brown (2.5YR 4/4)  - very dark grayish brown (2.5Y 3/2) moist, fine-grained, some mica			

(Continued Next Page)



# BORING LOG

BORING PZ-30 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCP001\APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		Poorly-graded Sand with Silt (SP-SM)(Con't)			
60		<b>Biotite Gneiss</b> - olive gray / light olive gray (5Y 5/2) and pale yellow (2.5Y 8/4) very soft, highly weathered, banded			
65		- dark gray (N3) and very light gray (N8) soft, highly weathered, banded			
70		- black (5Y 2.5/1) and light olive brown (2.5Y 5/4) moderately to highly weathered			
75					
80		- very dark greenish gray (10Y 3/1) and very light gray (N8) soft, moderately weathered, foliated			
85					
90		Bottom of borehole at 87.0 feet.			
95					
100					
105					
110					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-30 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/2/2016 COMPLETED 6/2/2016 GROUND ELEVATION 475.6 ft COORDINATES N 1121073.53 E 2407078.99

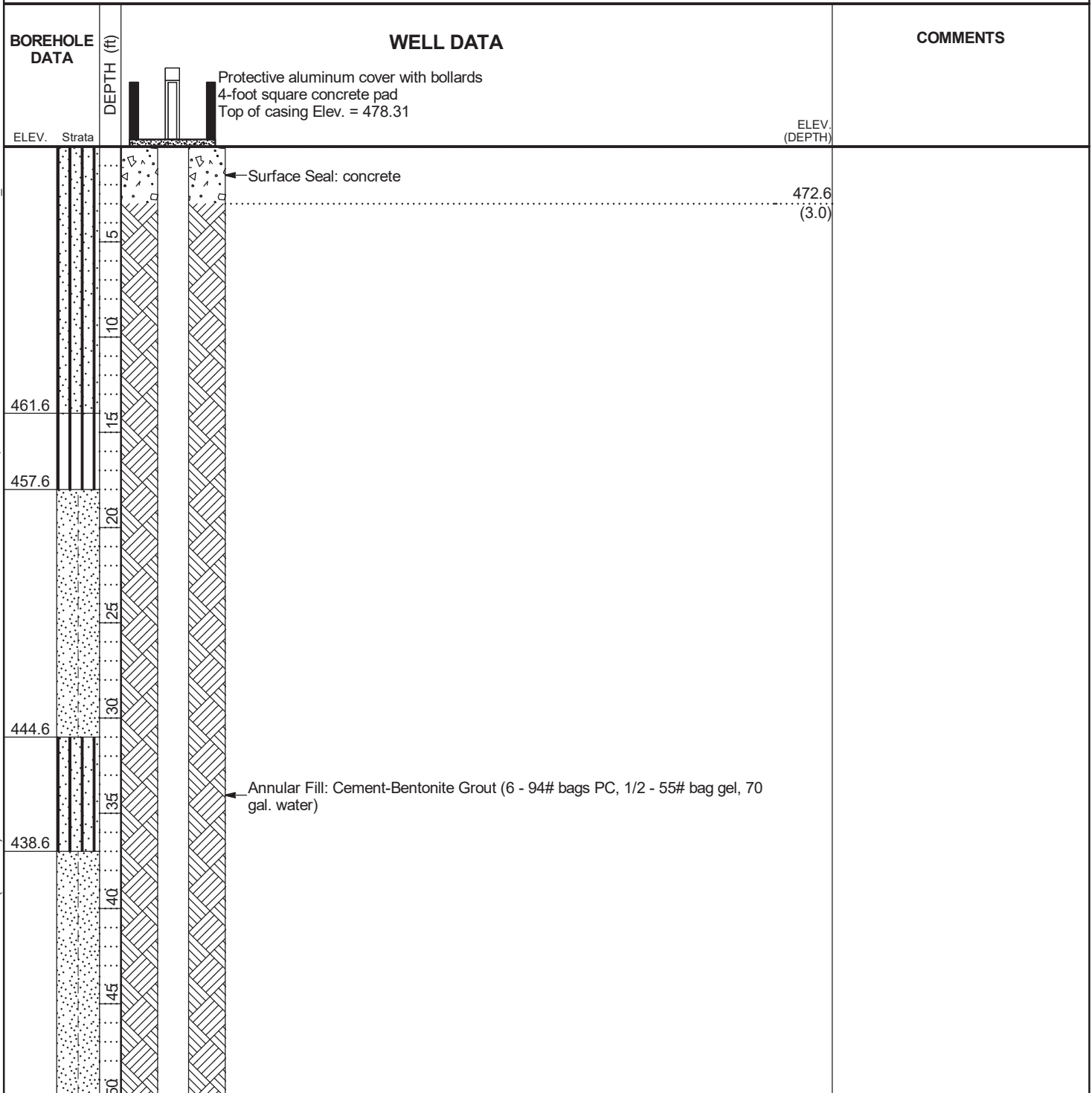
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 87 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 18.9 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPOCISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-30 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
419.6		55	Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 478.31	
		60		
		65		
		70	Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)	410.5 (65.1)
		75	Filter: 20/40 silica filter sand (6 - 0.5 cubic ft. bags)	405.6 (70.0)
		80	Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	400.5 (75.1)
		85	Sump: 0.20 ft.	390.5 (85.1)
388.6				390.3 (85.3)



# BORING LOG

BORING PZ-31 I

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/1/2016 COMPLETED 6/2/2016 GROUND ELEVATION 464.0 ft COORDINATES N 1121204.03 E 2407445.73

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 77 ft.

GROUND WATER DEPTH: DURING COMP. 24 ft. DELAYED 28.1 ft. after 200 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\1\APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - red (10R 5/6) residuum dry, stiff, no, trace mica			
10					
15		- red (2.5YR 5/8) residuum dry, some mica - oxidation			
20		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled reddish yellow (7.5YR 6/6) and pink / moderate orange pink (5YR 8/4) residuum damp, loose, fine-grained			
25		<b>Silt (ML)</b> - strong brown (7.5YR 4/6) and white (N9) residuum moist, soft, fine-grained, feldspar and biotite			
30		<b>Poorly-graded Sand with Silt (SP-SM)</b> - greenish gray (5G 5/1) and very light gray (N8) saprolite moist, fine-grained, some mica			
35					
40		<b>Biotite Gneiss</b> - yellowish brown / moderate yellowish brown (10YR 5/4), light greenish gray (10Y 7/1) and white (N9) highly weathered, feldspar banding			
45		- greenish gray (5GY 5/1) and greenish black (5GY 2.5/1) soft, highly weathered, feldspar banding			
50					

(Continued Next Page)



# BORING LOG

BORING PZ-31 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCS\HERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Biotite Gneiss(Con't)</b>			
60		- dark gray (N3) and very light gray (N8) soft to medium hard, moderately weathered, felspar banding			
65					
70		- bluish black (10B 2.5/1) and white (N9) very hard, slightly weathered, horizontal and sub-vertical fractures, felspar banding			
75					
80		Bottom of borehole at 77.0 feet.			
85					
90					
95					
100					
105					
110					





# RECORD OF WELL CONSTRUCTION

WELL: PZ-31 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/1/2016 COMPLETED 6/2/2016 GROUND ELEVATION 464 ft COORDINATES N 1121204.03 E 2407445.73

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 77 ft.

GROUND WATER DEPTH: DURING COMP. 24 ft. DELAYED 28.1 ft. after 200 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPOCISCHERER ADDITIONAL PZS\_UPDATED.GPJ

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 466.89	
			Surface Seal: concrete	461.0 (3.0)
448.0		5		
		10		
		15		
443.0		20		
		25		
436.0		30		
		35		
425.0		40		
		45		
		50		
			Annular Fill: Cement-Bentonite Grout (6 - 94# bags PC, 1/2 - 55# bag gel, 70 gal. water)	

(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-31 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		(CONTINUED)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 466.89	
		55		408.0 (56.0)
		60	← Annular Seal: bentonite pellets (3/4 - 5 gal. bucket 3/8" pellets)	403.0 (61.0)
		65	← Filter: 20/40 silica filter sand (7 1/2 - 0.5 cubic ft. bags)	399.1 (64.9)
		70	Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	
		75	Sump: 0.20 ft.	389.1 (74.9)
387.0				388.9 (75.1)



# BORING LOG

**BORING PZ-32 D**

Page 1 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/31/2016 COMPLETED 6/1/2016 GROUND ELEVATION 462.4 ft COORDINATES N 1121089.64 E 2407719.37

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126.5 ft.

GROUND WATER DEPTH: DURING COMP. 23.5 ft. DELAYED 24.5 ft. after 24 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - red (2.5YR 4/6) residuum dry, stiff, no			
10		<b>Clayey Sand (SC)</b> - red (10R 5/6) dry, loose, fine-grained, some oxidation			
15		<b>Sandy Silt (ML)</b> - reddish yellow (5YR 6/6) dry			
20		<b>Silty Sand (SM)</b> - mottled reddish brown (5YR 5/4) and very dark gray (7.5YR 3/1) dry, loose, fine-grained, trace mica - strong brown (7.5YR 5/8) moist			
25		<b>Light Brown (7.5YR 6/4)</b> - mottled light yellowish brown (10YR 6/4) and light olive brown (2.5Y 5/4)			
30		<b>Sandy Silt (ML)</b> - bluish gray (10B 5/1) and white (N9) moist, medium stiff, some clay, varying amounts of sand			
35					
40		<b>Poorly-graded Sand with Clay (SP-SC)</b> - white (7.5YR 8/1), very dark bluish gray (10B 3/1) and very dark gray (10YR 3/1) moist, loose, fine-grained - 2" sand (SW) seam at 41 ft.			
45					
50		<b>Well-graded Sand (SW)</b> - greenish black (10GY 2.5/1) saprolite medium to coarse-grained, weathered biotite gneiss, some silt, pulverized rock (sand with gravel)			

(Continued Next Page)



# BORING LOG

BORING PZ-32 D

Page 2 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Well-graded Sand (SW)(Con't)</b>  - SW: - greenish black (10GY 2.5/1) medium to coarse-grained, weathered biotite gneiss, some silt - very dark greenish gray (5GY 3/1)			
60					
65		<b>Well-graded Sand with Silt (SW-SM)</b> - very dark gray (7.5YR 3/1) medium to coarse-grained, some gravel (slightly decomposed biotite gneiss)  - mottled very dark greenish gray (10GY 3/1) and white (7.5YR 8/1) weathered biotite gneiss			
70		<b>Biotite Gneiss</b> - dark gray (7.5YR 4/1) medium to coarse grain, medium hard to hard, slightly to highly weathered, thin to medium bedding, vuggy, moderately fractured, white feldspar and quartz banding  - yellowish red (5YR 5/8) water staining  - dark gray / brownish gray (5YR 4/1) and black (5YR 2.5/1) medium to coarse grain, not to slightly weathered, inclined, white banding - slightly fractured  - not to moderately weathered  - slightly fractured, feldspar rich 84-86 ft.			
75					
80					
85					
90		<b>Granitic Gneiss</b> - white (10YR 8/1) and gray (10YR 6/1) medium to coarse grain, hard, not to slightly weathered, inclined, banded, slightly fractured			
95					
100		<b>Biotite Gneiss</b> - dark gray (10YR 4/1) and black (10YR 2/1) medium to coarse grain, not to slightly weathered, medium bedded, white banding			
105		<b>Granitic Gneiss</b> - gray (10YR 6/1) and pink (5YR 7/3) medium to coarse grain, not weathered			
110		<b>Biotite Gneiss</b> - dark gray (10YR 4/1), black (10YR 2/1) and white (10YR 8/1) not weathered, medium bedded, slightly to moderately fractured, sub-horizontal			

(Continued Next Page)



# BORING LOG

**BORING PZ-32 D**  
Page 3 of 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)  
LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
115		fractures <b>Biotite Gneiss (Con't)</b> - quartz healed fractures (sub-vertical) - medium to coarse sand in fractures			
120		- coarse grain, not to highly weathered, medium bedded, moderately fractured, alternating competent rock and sand filled fractures			
125					
		Bottom of borehole at 126.5 feet.			
130					
135					
140					
145					
150					
155					
160					
165					
170					

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\VALTRCFP01\1APARKER\DESKTOP\GPGC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-32 D  
PAGE 1 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/31/2016 COMPLETED 6/1/2016 GROUND ELEVATION 462.4 ft COORDINATES N 1121089.64 E 2407719.37

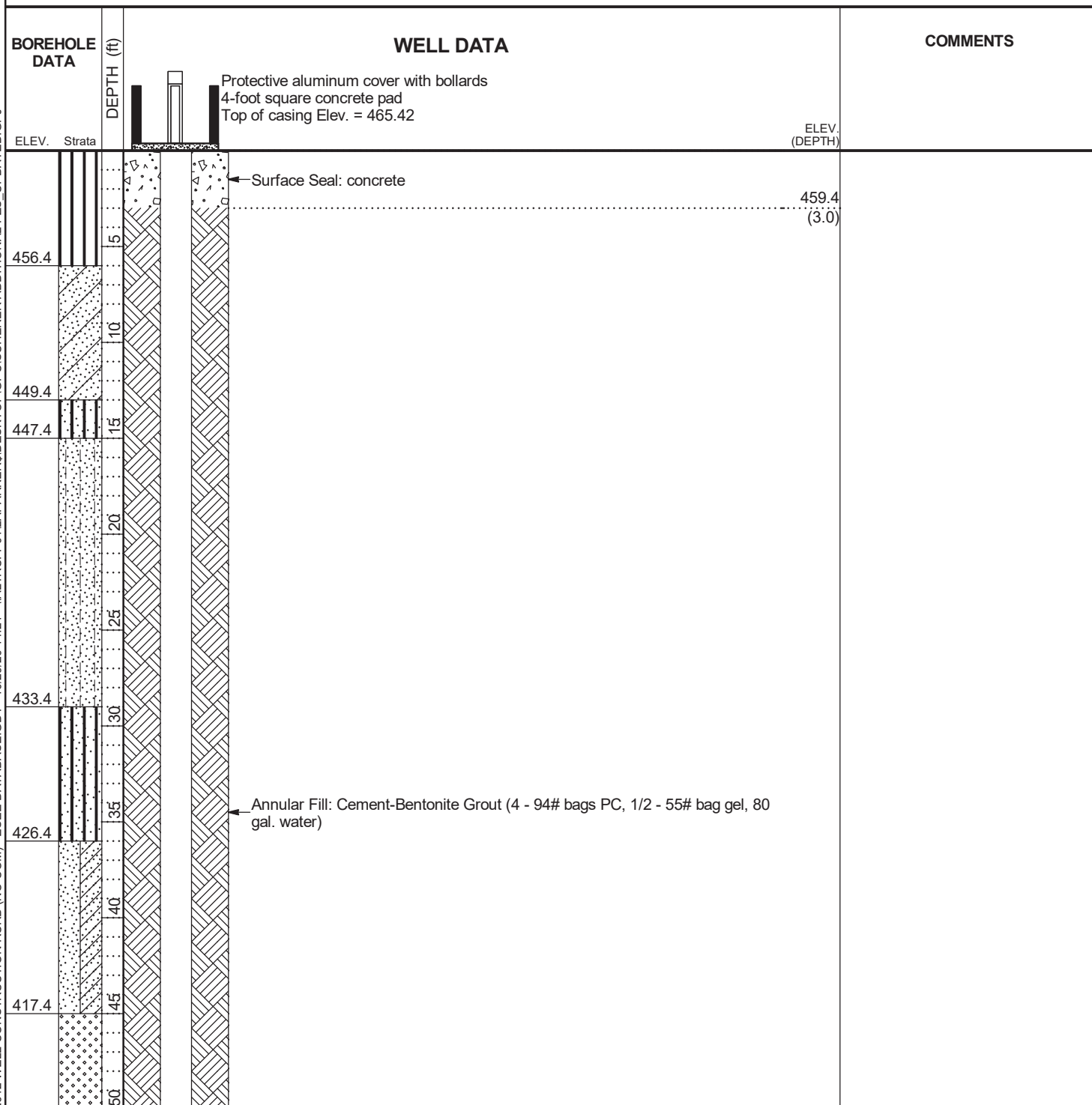
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 126.5 ft.

GROUND WATER DEPTH: DURING COMP. 23.5 ft. DELAYED 24.5 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPOCISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-32 D  
PAGE 2 OF 3  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCF001\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)	(CONTINUED)	ELEV. (DEPTH)
399.4		55		
		60		
393.4		65		396.4 (66.0)
		70		
		75		
		80		
		85		
372.4		90		369.4 (93.0)
		95		366.6 (95.8)
362.4		100		
358.4		105		
356.4		110		

Protective aluminum cover with bollards  
4-foot square concrete pad  
Top of casing Elev. = 465.42

Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets (89-93 ft.), 6 - 50# bags 3/8" chips (66-89 ft.))

Filter: 20/40 silica filter sand (15 1/2 - 0.5 cubic ft. bags)

(Continued Next Page)

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE:GDT - 10/29/20 14:21 - \\ALTRCF01\LAPARKER\$\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ





# BORING LOG

**BORING PZ-32 S**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)  
LOCATION Plant Scherer

DATE STARTED 5/31/2016 COMPLETED 6/1/2016 GROUND ELEVATION 462.3 ft COORDINATES N 1121089.22 E 2407698.44

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 57 ft.

GROUND WATER DEPTH: DURING 26 ft. COMP. 21.3 ft. DELAYED 23.8 ft. after 200 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \VALTRCFP01\APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - red (2.5YR 4/6) residuum dry, stiff, no			
10		<b>Clayey Sand (SC)</b> - red (10R 5/6) dry, loose, fine-grained, some oxidation			
15		<b>Sandy Silt (ML)</b> - reddish yellow (5YR 6/6) dry			
20		<b>Silty Sand (SM)</b> - mottled reddish brown (5YR 5/4) and very dark gray (7.5YR 3/1) dry, loose, fine-grained, trace mica - strong brown (7.5YR 5/8) moist			
25		- light brown (7.5YR 6/4) - mottled light yellowish brown (10YR 6/4) and light olive brown (2.5Y 5/4)			
30		<b>Sandy Silt (ML)</b> - bluish gray (10B 5/1) and white (N9) moist, medium stiff, some clay, varying amounts of sand			
35					
40		<b>Poorly-graded Sand with Clay (SP-SC)</b> - white (7.5YR 8/1), very dark bluish gray (10B 3/1) and very dark gray (10YR 3/1) moist, loose, fine-grained - 2" sand (SW) seam at 41 ft.			
45					
50		<b>Well-graded Sand (SW)</b> - greenish black (10GY 2.5/1) saprolite medium to coarse-grained, weathered biotite gneiss, some silt, pulverized rock (sand with gravel)			

(Continued Next Page)



# BORING LOG

**BORING PZ-32 S**  
Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)  
LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION	COMMENTS
..... ..... 55 .....		Well-graded Sand (SW)(Con't)	..... ..... ..... .....	Weak ..... Moderate ..... Strong .....	
..... 60 ..... ..... ..... 65 ..... ..... 70 ..... ..... 75 ..... ..... 80 ..... ..... 85 ..... ..... 90 ..... ..... 95 ..... ..... 100 ..... ..... 105 ..... ..... 110		Bottom of borehole at 57.0 feet.			

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GPGC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-32 S  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 5/31/2016 COMPLETED 6/1/2016 GROUND ELEVATION 462.3 ft COORDINATES N 1121089.22 E 2407698.44

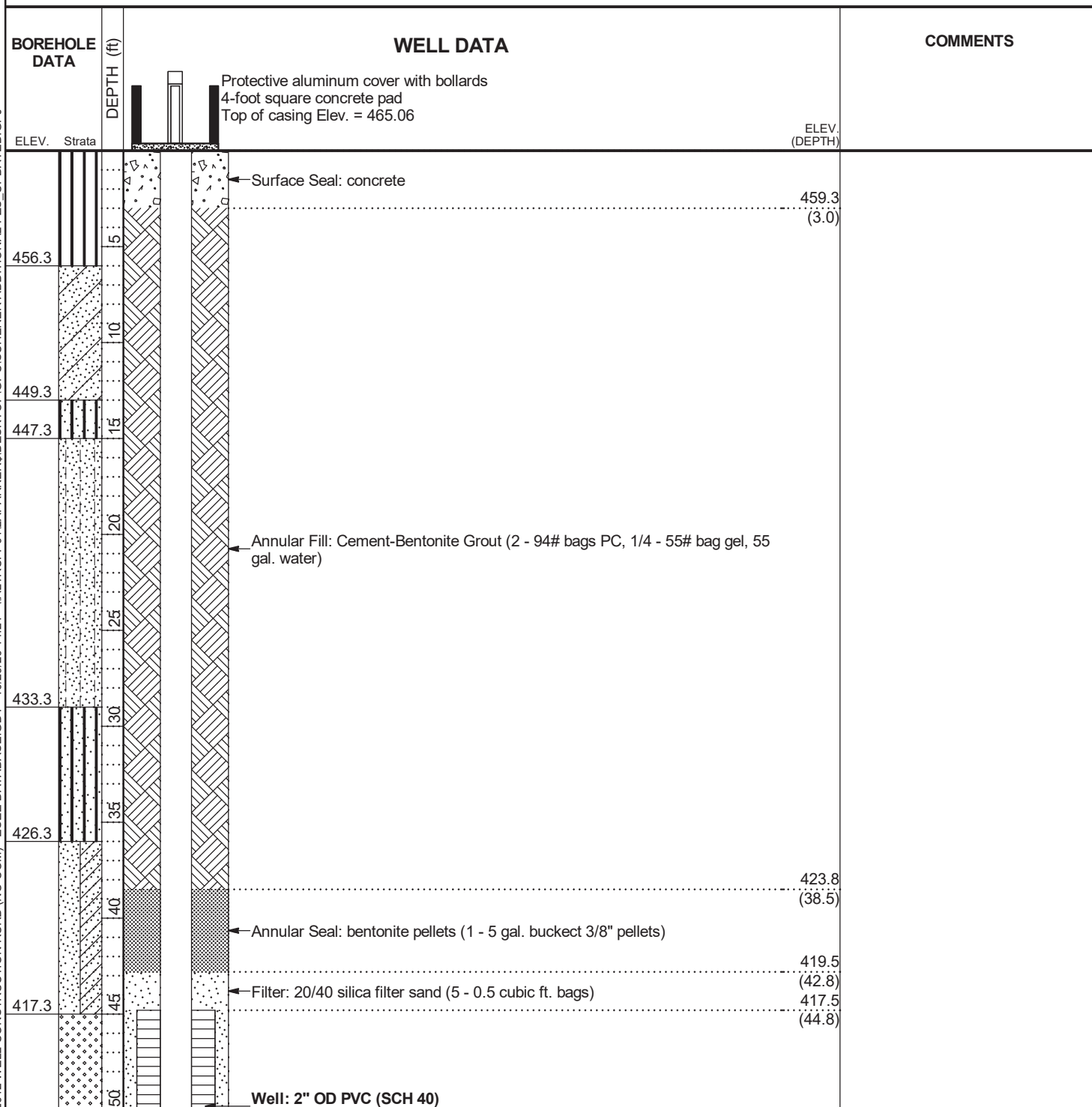
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 57 ft.

GROUND WATER DEPTH: DURING 26 ft. COMP. 21.3 ft. DELAYED 23.8 ft. after 200 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCF001\LPARKER\DESKTOP\GPOCISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-32 S  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 465.06	
		(CONTINUED)		
			Screen: 10 ft. 0.010" Slot Prepack	
			Sump: 0.20 ft.	
405.3				407.5 (54.8) 407.3 (55.0)



# BORING LOG

BORING PZ-33 I

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/7/2016 COMPLETED 6/8/2016 GROUND ELEVATION 466.4 ft COORDINATES N 1121245.25 E 2409064.05

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 76.5 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 39 ft. after 100 hrs.

NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Lean Clay (CL)</b> - red (2.5YR 4/6) dry, no			
10		<b>Sandy Silt (ML)</b> - red (2.5YR 4/6) dry, no  - yellowish red / light brown (5YR 5/6)			
15		<b>Well-graded Sand with Silt (SW-SM)</b> - mottled yellowish red / light brown (5YR 5/6) and black (5YR 2.5/1) dry, fine to coarse-grained			
20					
25					
30		<b>Clayey Sand (SC)</b> - mottled strong brown (7.5YR 5/8), yellowish brown (10YR 5/8) and white (10YR 8/1) dry, fine to medium-grained			
35					
40		<b>Well-graded Sand with Silt (SW-SM)</b> - mottled light olive brown (2.5Y 5/3), white (2.5Y 8/1) and black (2.5Y 2.5/1) damp, fine to coarse-grained, with mica			
45					
50		<b>Well-graded Sand (SW)</b> - olive gray / light olive gray (5Y 5/2), greenish gray (5GY 5/1) and white (2.5Y 8/1) saprolite wet, fine to coarse-grained, weathered gneiss			

(Continued Next Page)



# BORING LOG

BORING PZ-33 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Well-graded Sand (SW)(Con't)</b>  - mottled dark gray (7.5YR 4/1) and white (N9)			
60		<b>Well-graded Sand with Silt (SW-SM)</b> - very dark greenish gray (10Y 3/1) wet, fine to coarse-grained, with gravel (pulverized rock/biotite gneiss)			
65					
70					
75		<b>Biotite Gneiss</b> - dark greenish gray (10G 4/1) coarse grain, medium hard to soft, moderately to highly weathered, vuggy, black and white banding, quartz and feldspar - Driller indicated competent rock at 76.5 ft.			
80		Bottom of borehole at 76.5 feet.			
85					
90					
95					
100					
105					
110					

SIMPLE GEOLOGY LOG - ESEE DATABASE.GDT - 8/27/20 08:45 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCS\CHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-33 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/7/2016 COMPLETED 6/8/2016 GROUND ELEVATION 466.4 ft COORDINATES N 1121245.25 E 2409064.05

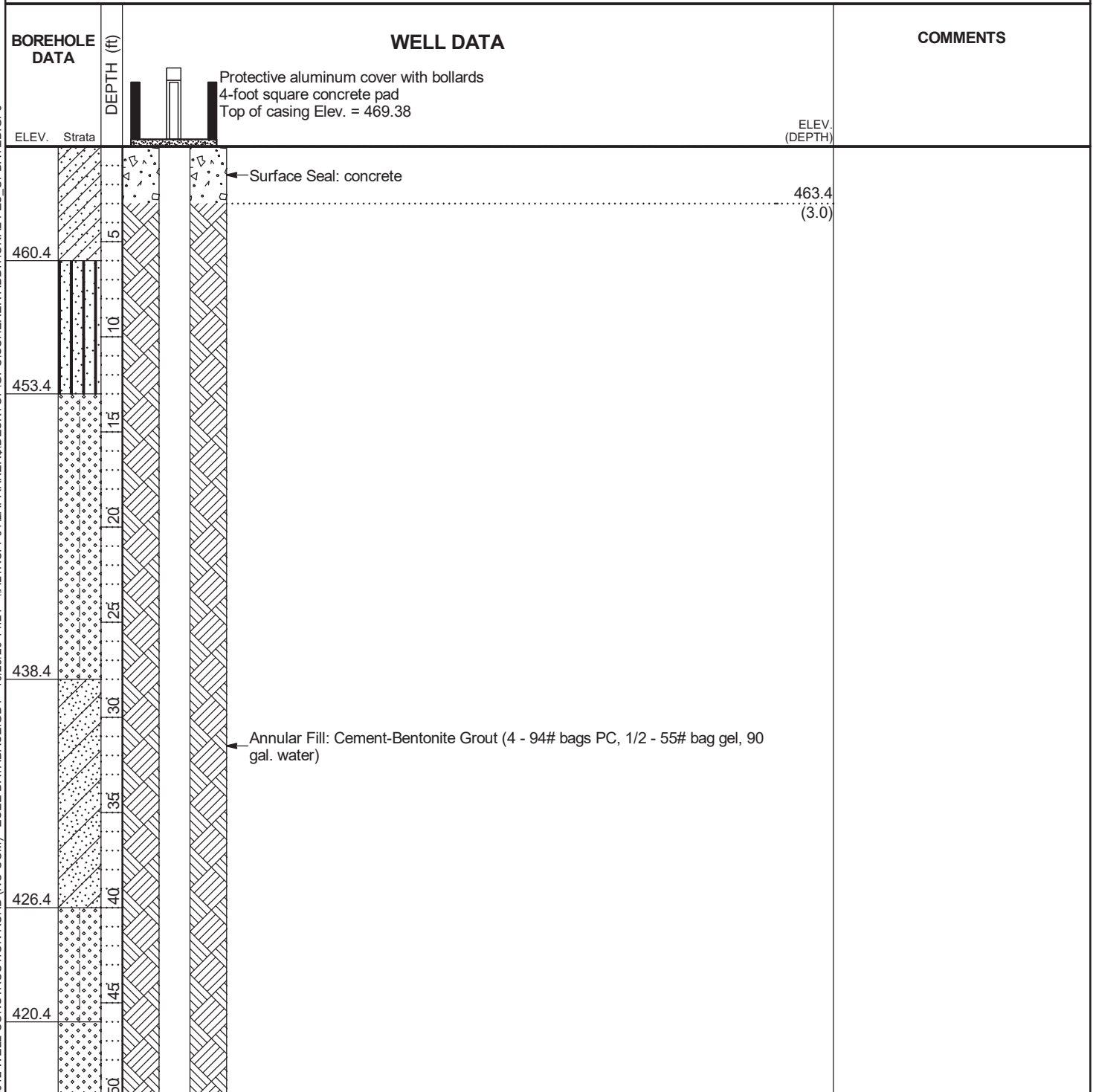
CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 76.5 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 39 ft. after 100 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



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2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE:GDT - 10/29/20 14:21 - \\ALTRCF01\LAPARKER\$\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ





# BORING LOG

**BORING PZ-34 S**

Page 1 of 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/3/2016 COMPLETED 6/4/2016 GROUND ELEVATION 440.8 ft COORDINATES N 1121331.59 E 2409288.37

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 13 ft. DELAYED

## NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Lean Clay (CL)</b> - red (2.5YR 4/6) dry, no			
10		<b>Sandy Silt (ML)</b> - reddish brown (2.5YR 4/4) <b>Elastic Silt (MH)</b> - mottled strong brown (7.5YR 5/6) and black (7.5YR 2.5/1) damp, medium			
15		<b>Well-graded Sand with Silt (SW-SM)</b> - mottled yellowish brown (10YR 5/6), black (10YR 2/1) and white (10YR 8/1) damp, fine to medium-grained			
20		- mottled light olive brown (2.5Y 5/4), black (10YR 2/1) and white (10YR 8/1) saprolite			
25		- light olive brown (2.5Y 5/3) moist			
30		- mottled olive (5Y 5/3) and strong brown (7.5YR 5/6) wet			
35		- olive gray / light olive gray (5Y 5/2)			
40		- mottled olive gray / light olive gray (5Y 5/2), strong brown (7.5YR 5/6) and white (7.5YR 8/1) weathered feldspar			
45		- mottled dark gray (2.5Y 4/1) and white (7.5YR 8/1) weathered biotite gneiss			
50		Bottom of borehole at 46.0 feet.			

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\1APARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ



# RECORD OF WELL CONSTRUCTION

WELL: PZ-34 S  
PAGE 1 OF 1  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/3/2016 COMPLETED 6/4/2016 GROUND ELEVATION 440.8 ft COORDINATES N 1121331.59 E 2409288.37

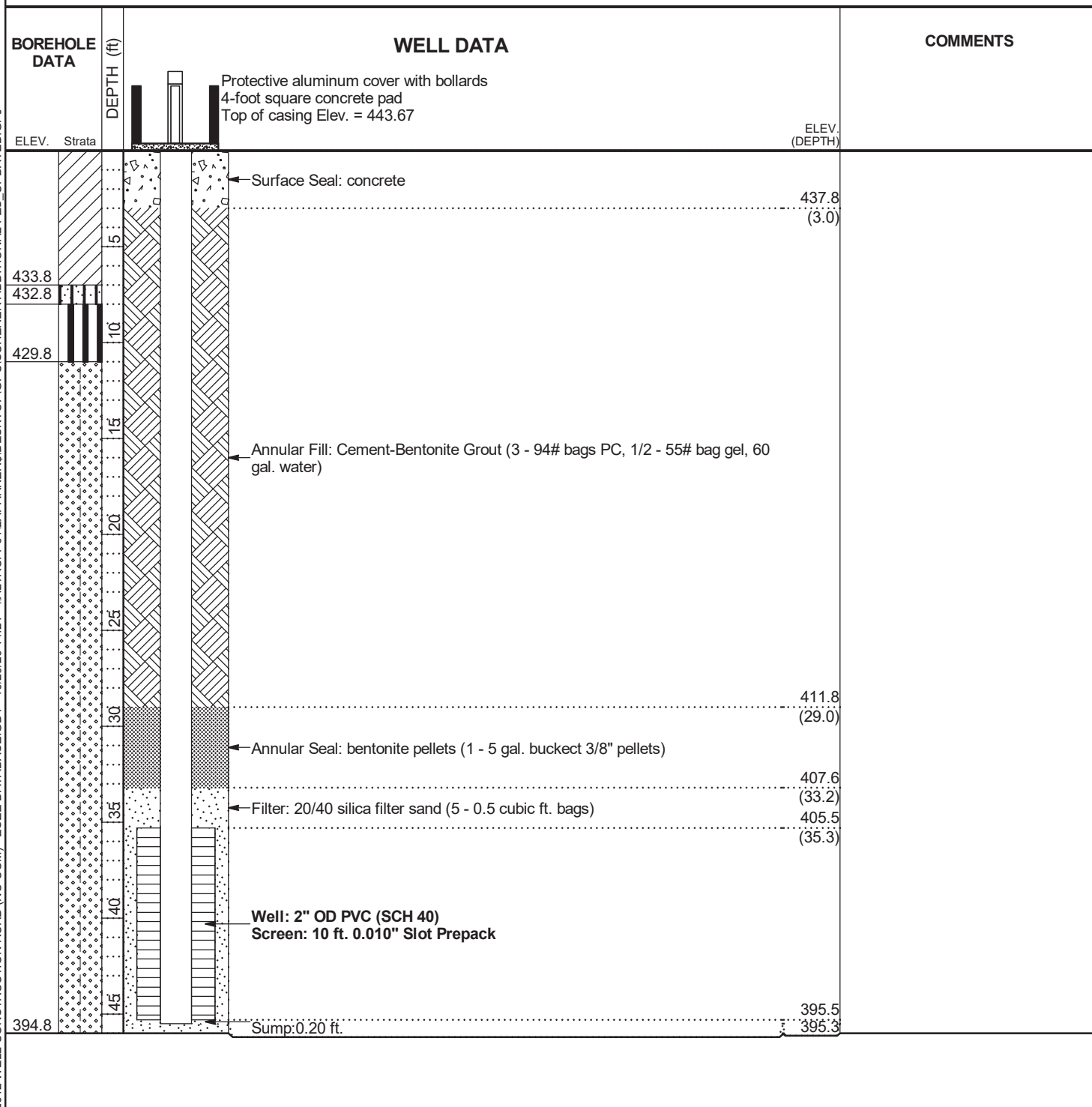
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 46 ft.

GROUND WATER DEPTH: DURING COMP. 13 ft. DELAYED

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ





# BORING LOG

**BORING PZ-35 I**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/22/2016 COMPLETED 6/22/2016 GROUND ELEVATION 474.6 ft COORDINATES N 1121598.57 E 2406058.33

CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 56 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 5.3 ft. after 100 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Sandy Silt (ML)</b> - dark red (2.5YR 3/6) dry			
		<b>Poorly-graded Sand with Silt (SP-SM)</b> - dark red (10R 3/6) dry			
10		<b>Clayey Sand (SC)</b> - dark reddish brown (2.5YR 3/4) dry, cohesive - yellowish red / light brown (5YR 5/6)			
15		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled red (2.5YR 4/6) and brown (7.5YR 4/4) moist, fine-grained, micaceous			
20		- mottled light yellowish brown (10YR 6/4), red (2.5YR 4/6) and black (N1) micaceous (biotite and muscovite), oxidation - mottled brown (7.5YR 4/4), yellowish red / light brown (5YR 5/6) and black (N1) saprolite wet, micaceous			
25		- mottled light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8)			
30		<b>Well-graded Sand with Silt (SW-SM)</b> - mottled strong brown (7.5YR 4/6) and black (N1) wet, fine to coarse-grained, micaceous			
35		- mottled brown (10YR 5/3) and white (N9) weathered feldspar			
40		<b>Poorly-graded Sand (SP)</b> - mottled dark gray (2.5Y 4/1) and light olive brown (2.5Y 5/6) fine-grained			
45		<b>Well-graded Sand with Silt (SW-SM)</b> - damp - olive brown (2.5Y 4/3) fine to coarse-grained - SW: - olive brown (2.5Y 4/3), white (N9) and light gray (10YR 7/1) with gravel (residual/pulverized rock)			
50		<b>Well-graded Sand with Clay (SW-SC)</b> - dark greenish gray (10Y 4/1) with gravel (residual/pulverized rock)			

(Continued Next Page)



# BORING LOG

BORING PZ-35 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		<b>Biotite Gneiss</b> - dark gray (10YR 4/1) and light gray (10YR 7/1) medium to coarse grain, medium hard to hard, slightly to highly weathered, inclined, moderate to intensely fractured, white banding			
		Bottom of borehole at 56.0 feet.			
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					



# RECORD OF WELL CONSTRUCTION

WELL: PZ-35 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/22/2016 COMPLETED 6/22/2016 GROUND ELEVATION 474.6 ft COORDINATES N 1121598.57 E 2406058.33

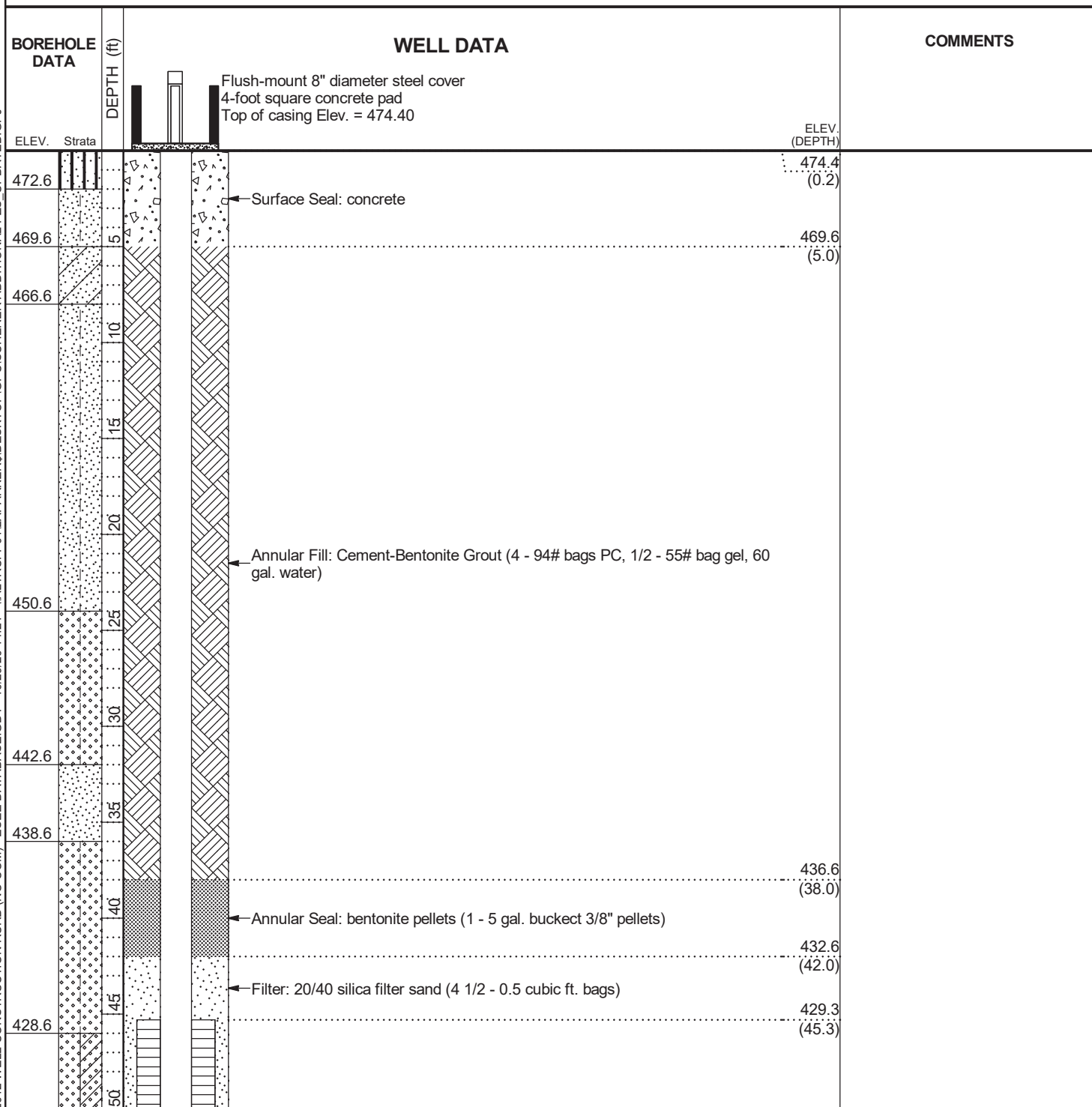
CONTRACTOR Cascade METHOD Rotasonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 56 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 5.3 ft. after 100 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCF001\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-35 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
423.6	(CONTINUED)		Flush-mount 8" diameter steel cover 4-foot square concrete pad Top of casing Elev. = 474.40	ELEV. (DEPTH)
418.6			Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	
			Sump: 0.20 ft.	419.3 419.1



# BORING LOG

**BORING PZ-36 I**

Page 1 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/4/2016 COMPLETED 6/5/2016 GROUND ELEVATION 478.9 ft COORDINATES N 1120410.99 E 2407256.25

CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 97 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 49.8 ft. after 24 hrs.

## NOTES

SIMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GFC\SCHERER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
5		<b>Silt (ML)</b> - red (2.5YR 4/6) dry, stiff, no			
10					
15		- red (2.5YR 5/6) dry, stiff, some mica			
20		- saprolite			
25		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled reddish brown (5YR 5/4) and white (N9) damp, loose - mottled strong brown (7.5YR 5/6), pink (5YR 7/3) and light red (2.5YR 6/6) - slight oxidation			
30		<b>Well-graded Sand with Silt (SW-SM)</b> - red (2.5YR 5/6), pink (2.5YR 8/4) and strong brown (7.5YR 5/6) saprolite moist, loose, banded, some mica			
35		- mottled brown (7.5YR 5/3), reddish brown (2.5YR 5/4) and light gray (2.5Y 7/2) moist, horizontal and sub-vertical banding			
40		- relict fractures 38 to 43 ft.			
45		<b>Poorly-graded Sand with Silt (SP-SM)</b> - mottled reddish yellow (7.5YR 6/6), yellow (10YR 7/6) and light yellowish brown (2.5Y 6/3) saprolite wet, very loose, some mica - relict fractures 46 to 48 ft. (horizontal and sub-vertical)			
50		<b>Poorly-graded Sand with Clay (SP-SC)</b> - mottled light gray (10YR 7/2), light reddish brown (2.5YR 6/3) and light			

(Continued Next Page)



# BORING LOG

BORING PZ-36 I

Page 2 of 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

SAMPLE GEOLOGY LOG - ESEE DATABASE:GDT - 8/27/20 08:45 - \\ALTRCFP01\LPARKER\DESKTOP\GPC\SCS\CHER ADDITIONAL PZS.GPJ

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION Weak Moderate Strong	COMMENTS
55		reddish brown (2.5YR 7/4) saprolite moist, loose, some mica, some oxidation 47 to 56 ft., foliation 55 to 57 ft. <b>Poorly-graded Sand with Clay (SP-SC)(Con't)</b>			
60		- mottled gray (2.5Y 6/1), olive gray / light olive gray (5Y 5/2) and very dark gray (5Y 3/1) saprolite moist, loose, some mica			
65					
70		<b>Biotite Gneiss</b> - greenish gray (10Y 6/1), white (7.5YR 8/1) and dark greenish gray (10GY 4/1) very soft to soft, highly weathered, banded - bluish gray (10B 5/1) and light bluish gray (5PB 8/1) soft, highly weathered, banded, water staining, moderately disintegrated			
75		- white (10YR 8/1) and greenish gray (5BG 5/1) very soft to soft, moderately weathered, banded, water staining, moderately disintegrated			
80		- medium light gray (N6), white (N9) and dark bluish gray (10B 4/1) hard, slightly weathered, banded, horizontal and sub-vertical fractures, water staining, slightly disintegrated			
85		- dark bluish gray (10B 4/1) hard, slightly weathered, banded, slightly disintegrated			
90		- white (N9) and bluish gray (10B 5/1) hard, slightly weathered, banded, sub-vertical fractures, water staining, slightly disintegrated			
95		- intensely fractured - hard, not to slightly weathered, massive, horizontal and sub-vertical fractures, slightly disintegrated			
100		Bottom of borehole at 97.0 feet.			
105					
110					





# RECORD OF WELL CONSTRUCTION

WELL: PZ-36 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/4/2016 COMPLETED 6/5/2016 GROUND ELEVATION 478.9 ft COORDINATES N 1120410.99 E 2407256.25

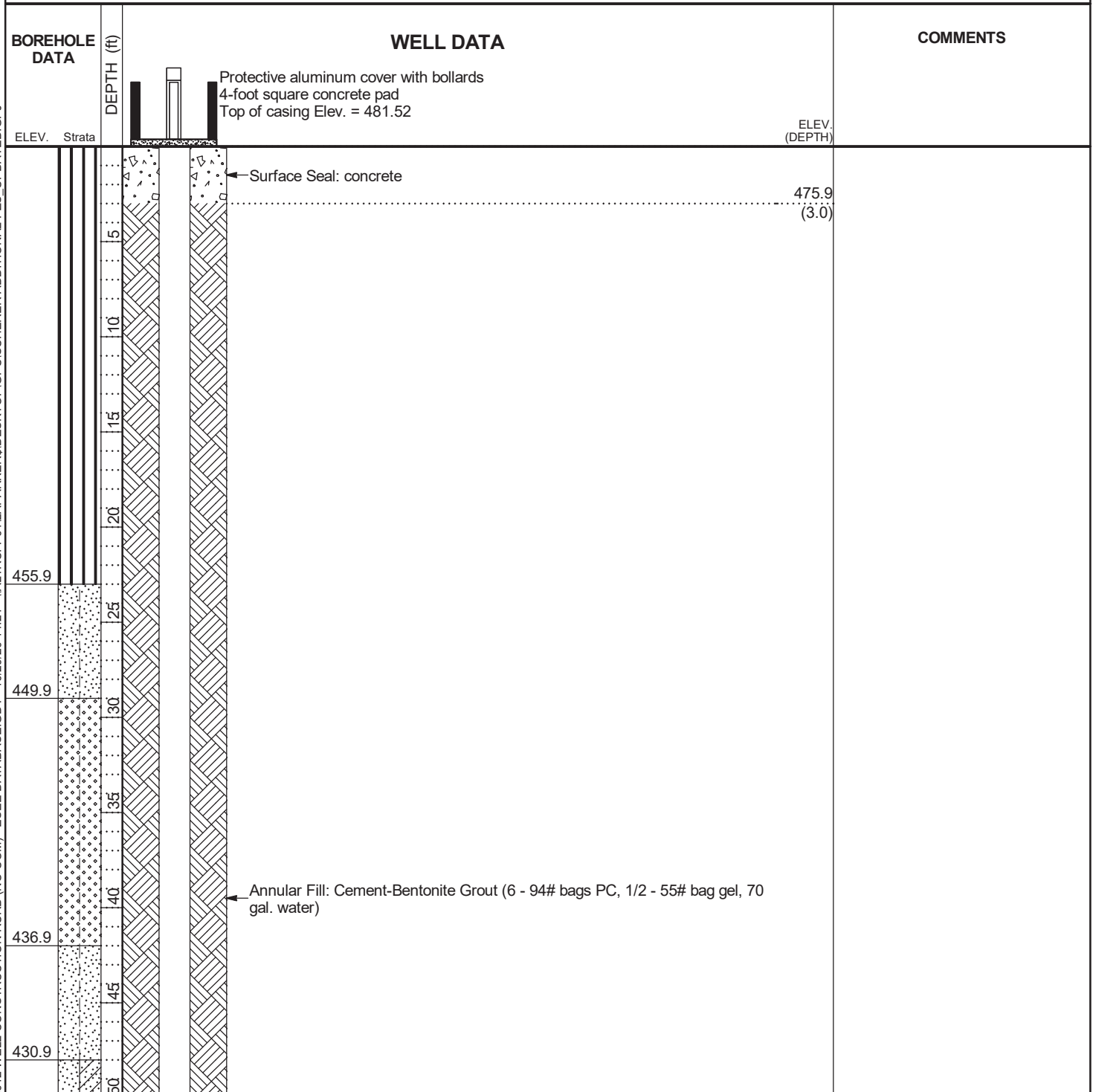
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser BORING DEPTH 97 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 49.8 ft. after 24 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-36 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

## BOREHOLE DATA

DEPTH (ft)

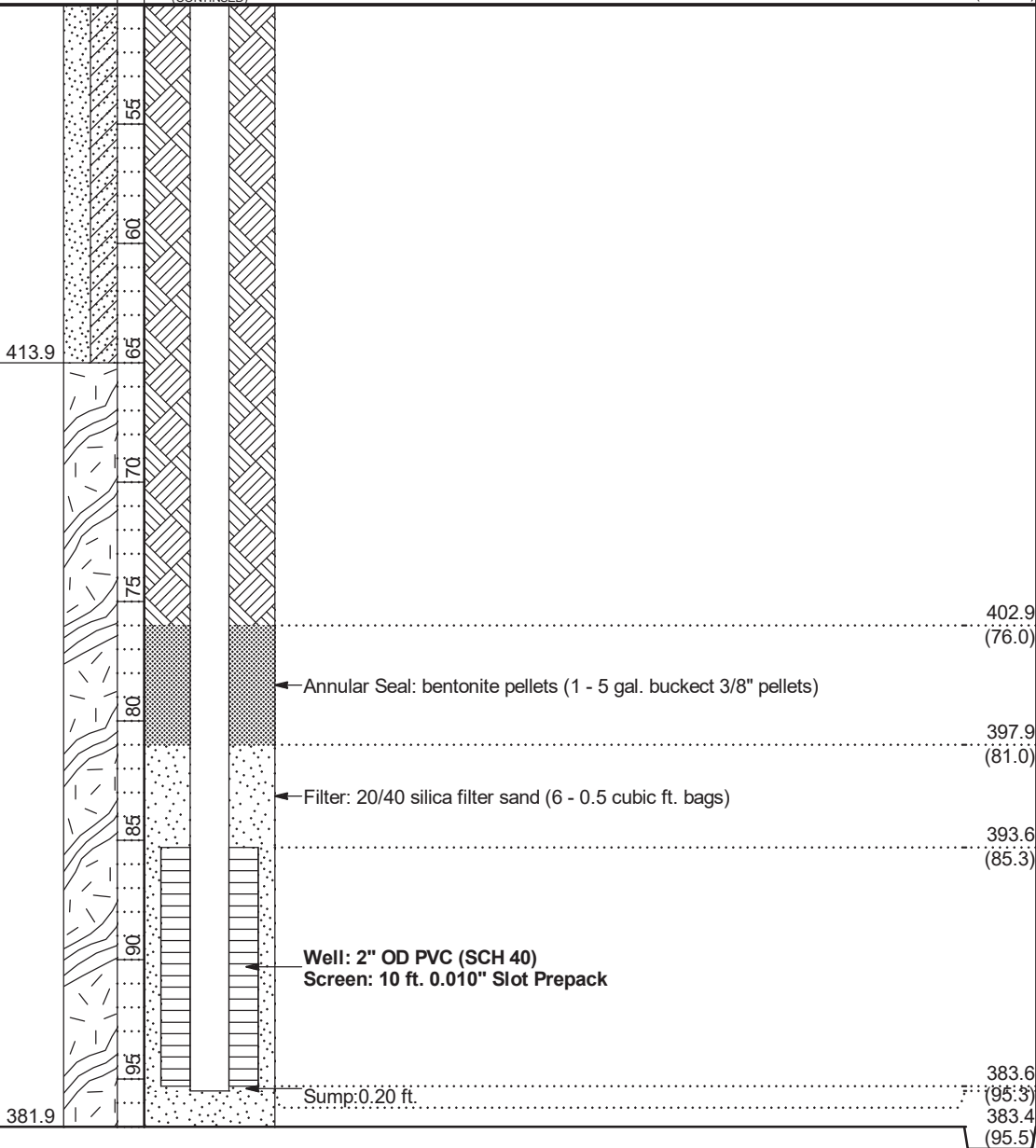
## WELL DATA

## COMMENTS

ELEV. Strata

(CONTINUED)

ELEV.  
(DEPTH)



# RECORD OF BOREHOLE PZ-36S

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 56.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/22/18  
DATE COMPLETED: 8/22/18

NORTHING: 1,120,401.04  
EASTING: 2,407,248.04  
GS ELEVATION: 479.4  
TOC ELEVATION: 482.35 ft

DEPTH W.L.: 35.5'  
ELEVATION W.L.: 446.69'  
DATE W.L.: 8/24/18  
TIME W.L.: 09:05

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 4.00 Clayey SILT with trace sand and organic matter; sand: fine; red to dark reddish brown; non-cohesive; moist to wet; compact; RESIDUUM	ML							<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 45-55' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 43-55' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 38.8-43' Type: 3/8" Pel-Plug  <b>ANNULUS SEAL</b> Interval: 0-38.8' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
475		4.00 - 10.00 Silty CLAY with trace organics; red to reddish brown; cohesive; w~PL to w>PL; firm to very stiff; RESIDUUM	CL		475.4 4.00	S-1	ROTO SONIC	7.50 10.00		
470		10.00 - 20.00 Silty CLAY with some sand; sand: fine to coarse; red; cohesive; w<PL to w~PL; firm to stiff; RESIDUUM	CL		469.4 10.00					
465			CL			S-2	ROTO SONIC	2.00 10.00		
460		20.00 - 25.00 Clayey SAND; sand: fine to coarse; reddish-pink to red; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC		459.4 20.00					
455		25.00 - 30.00 Clayey SAND; sand: fine to coarse; reddish brown; micaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC		454.4 25.00	S-3	ROTO SONIC	8.50 10.00		
450										
445		30.00 - 40.00 Clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; red to light grey; micaceous; non-cohesive; moist; compact to dense; SAPROLITE	SC		449.4 30.00					
440						S-4	ROTO SONIC	10.00 10.00		
439.4		Log continued on next page			439.4					

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE PZ-36S


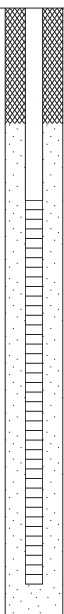

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 166235004  
DRILLED DEPTH: 56.00 ft  
LOCATION:

DRILL RIG: Geoprobe 8140LC  
DATE STARTED: 8/22/18  
DATE COMPLETED: 8/22/18

NORTHING: 1,120,401.04  
EASTING: 2,407,248.04  
GS ELEVATION: 479.4  
TOC ELEVATION: 482.35 ft

DEPTH W.L.: 35.5'  
ELEVATION W.L.: 446.69'  
DATE W.L.: 8/24/18  
TIME W.L.: 09:05

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
40		40.00 - 50.00 Clayey-Silty SAND; orange to light tan; micaceous; non-cohesive; wet; compact to dense; SAPROLITE	SC-SM		40.00	S-5	ROTO SONIC			<b>WELL CASING</b> Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread  <b>WELL SCREEN</b> Interval: 45-55' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4  <b>FILTER PACK</b> Interval: 43-55' Type: No. 20-40 Sand  <b>FILTER PACK SEAL</b> Interval: 38.8-43' Type: 3/8" Pel-Plug  <b>ANNULUS SEAL</b> Interval: 0-38.8' Type: Portland Cement and Quick Gel Bentonite Mix  <b>WELL COMPLETION</b> Pad: 4'x4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
435								10.00 10.00		
45										
430										
50		50.00 - 56.00 Clayey-Silty SAND; orange to light tan; micaceous; non-cohesive; wet; compact to dense; SAPROLITE	SC-SM		429.4 50.00	S-6	ROTO SONIC			
55								5.00 10.00		
425		Boring completed at 56.00 ft			423.4					
420										
60										
415										
65										
410										
70										
405										
75										
400										
80										

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade  
DRILLER: M. Rodrigues

GA INSPECTOR: C. Tidwell  
CHECKED BY: Timothy Richards, PG  
DATE: 10/31/19



BOREHOLE RECORD PLANT\_SCHERER\_2018\_10\_12\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20



S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\GA-SCHERER\SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG



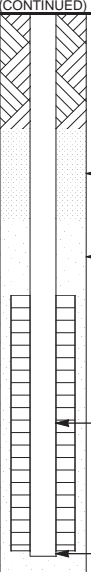
# LOG OF TEST BORING

**BORING PZ-37 I**  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	GROUNDWATER OBSERVATIONS	WELL DATA
						Completion: protective aluminum cover with bollards; 4-foot square concrete pad Top of casing Elev. = 482.18
		<b>Silt (ML) (Con't)</b>				<div>(CONTINUED)</div> <div><p>Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 90 gal. water)</p><p>Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)</p><p>Filter: 20/40 silica filter sand (5 - 0.5 cubic ft. bags)</p><p>Standpipe: 2" OD PVC (SCH 40)</p><p>Screen: 10 ft; 0.010" Slot Prepack</p><p>Sump: 0.2000000000000003 ft.</p><p>Cave-in to 72.5 ft.</p></div>
55		<b>Silty Sand (SM)</b> - olive brown (2.5Y 4/4) and olive gray / light olive gray (5Y 5/2) saprolite fine to coarse-grained, with mica				
60						
65		<b>Well-graded Sandy Gravel (GW)</b> - dark gray (10YR 4/1) and white (10YR 8/1) transition zone pulverized rock, biotite gneiss, feldspar and quartz				
70		<b>Biotite Gneiss</b> - black (5Y 2.5/1) and white / yellowish gray (5Y 8/1) coarse grain, hard, not to slightly weathered, banded, moderately fractured, sub-horizontal fractures - yellowish red (5YR 5/8) water staining				
		Bottom of borehole at 72.5 feet.				
75						
80						
85						
90						
95						
100						
105						
110						

**SOUTHERN COMPANY SERVICES, INC.**  
**EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING**

**PROJECT** Additional Hydrogeological Investigation (2016)

**LOCATION** Plant Scherer

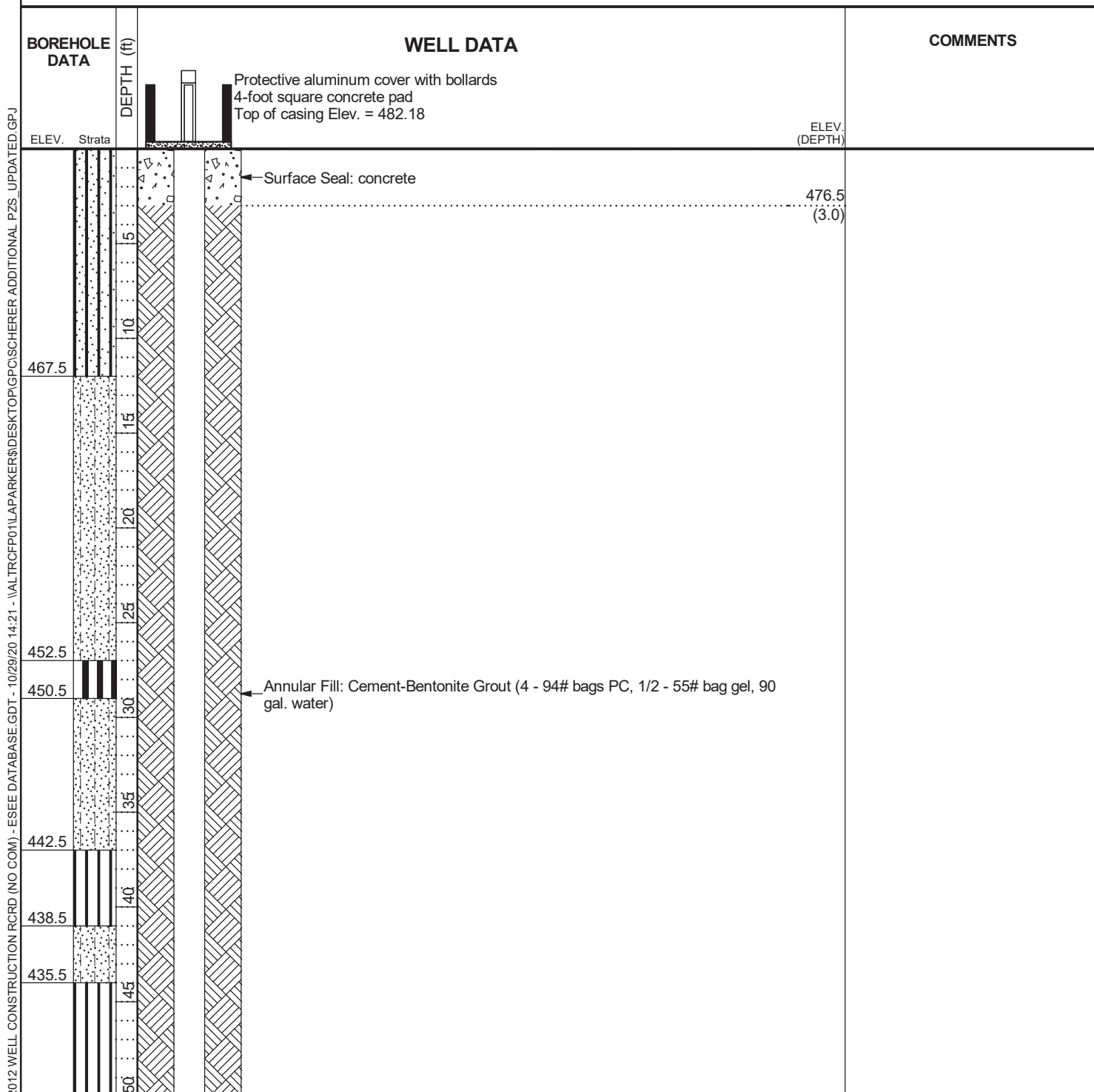
<b>DATE STARTED</b>	6/2/2016	<b>COMPLETED</b>	6/2/2016	<b>GROUND ELEVATION</b>	479.5 ft	<b>COORDINATES</b>	N 1121178.48 E 2408419.19
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<b>CONTRACTOR</b>	Cascade	<b>METHOD</b>	Rotosonic	<b>EQUIPMENT</b>	Tracked
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**DRILLED BY** J. Asua      **LOGGED BY** W. Shaughnessy      **CHECKED BY** B. Smelser      **BORING DEPTH** 72.5 ft.

GROUND WATER DEPTH: DURING	COMP.	DELAYED	43 ft. after 48 hrs.
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## NOTES



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-37 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		
			(CONTINUED)	
426.5				
		55		
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 482.18	
				ELEV. (DEPTH)
				425.0 (54.5)
			Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)	
		60		
			Filter: 20/40 silica filter sand (5 - 0.5 cubic ft. bags)	
				421.5 (58.0)
416.5		65		
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	
412.5		70		
			Sump: 0.20 ft.	
407.0				408.5 (71.0)
				408.3 (71.2)



S:\WORKGROUP\SPAC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\GA-SCHERER\SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG



# LOG OF TEST BORING

**BORING PZ-38 I**  
PAGE 1 OF 2  
**ECS38467**

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/22/2016 COMPLETED 6/23/2016 SURF. ELEV. 482.2 COORDINATES: N 1121475.86 E 2406352.98

CONTRACTOR Cascade EQUIPMENT Tracked METHOD Rotosonic

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser ANGLE BEARING

BORING DEPTH 76 ft. GROUND WATER DEPTH DURING COMP. DELAYED 16.3 ft. after 100 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	GROUNDWATER OBSERVATIONS	WELL DATA
5		<b>Sandy Silt (ML)</b> - dark red (2.5YR 3/6) dry  - with mica				Completion: flush-mount 8" diameter steel cover; 4-foot square concrete pad
10		<b>Poorly-graded Sand with Silt (SP-SM)</b> - yellowish red / light brown (5YR 5/6) dry, fine-grained				
15		<b>Elastic Silt (MH)</b> - yellowish red / light brown (5YR 5/6) and brown (7.5YR 5/4) micaceous - brown (7.5YR 5/3) damp				
20		<b>Poorly-graded Sand with Silt (SP-SM)</b> - grayish brown (10YR 5/2) fine-grained, micaceous				
25		<b>Well-graded Sand (SW)</b> - black (N1) and very light gray (N8) coarse-grained, weathered feldspar seam <b>Poorly-graded Sand with Silt (SP-SM)</b> - grayish brown (10YR 5/2) and strong brown (7.5YR 4/6) saprolite wet, fine-grained, white banding, interbedded by weathered feldspar and quartz seams				
30						
35						
40		<b>Well-graded Sand with Silt (SW-SM)</b> - mottled olive gray / light olive gray (5Y 5/2) and pale yellow (5Y 8/2) saprolite wet, fine to coarse-grained  - mottled grayish olive (10Y 4/2) and pale yellow (2.5Y 7/4)  - mottled grayish brown (2.5Y 5/2) and pale yellow (2.5Y 7/4) with mica				
45						
50						

Surface Seal:  
concrete

Annular Fill:  
Cement-Bentonite Grout (4 - 94#  
bags PC, 1/2 - 55# bag gel, 90  
gal. water)

(Continued Next Page)

SAMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 9/7/16 11:23 - S:\WORKGROUP\SPC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\GA-SCHERER\SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG



## LOG OF TEST BORING

**BORING PZ-38 I**

PAGE 2 OF 2

ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Additional Hydrogeological Investigation (2016)

**LOCATION** Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION <small>Weak Moderate Strong</small>	GROUNDWATER OBSERVATIONS	WELL DATA
						Completion: flush-mount 8" diameter steel cover; 4-foot square concrete pad
						(CONTINUED)
55		<b>Well-graded Sand with Silt (SW-SM)(Con't)</b>  - mottled olive gray / light olive gray (5Y 5/2), brown (7.5YR 4/4) and white (N9) weathered biotite gneiss  - mottled dark grayish brown (2.5Y 4/2) and white (N9)  - mottled black (N1) and white (N9)				Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 90 gal. water)
60		<b>Poorly-graded Sand (SP)</b> - yellowish brown (10YR 5/6) and dark grayish brown (2.5Y 4/2) fine-grained				Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)
65		<b>Biotite Gneiss</b> - grayish brown (2.5Y 5/2) fine to coarse grain, gravelly sand (pulverized weathered rock)				Filter: 20/40 silica filter sand (4 1/2 - 0.5 cubic ft. bags)
70						<b>Standpipe:</b> 2" OD PVC (SCH 40)
75						Screen: 10 ft; 0.010" Slot Prepack
						Sump:0.200000000000003 ft.
						Cave-in to 76 ft.
80						
85						
90						
95						
100						
105						
110						

Bottom of borehole at 76.0 feet.



# RECORD OF WELL CONSTRUCTION

WELL: PZ-38 I  
PAGE 1 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

DATE STARTED 6/22/2016 COMPLETED 6/23/2016 GROUND ELEVATION 482.2 ft COORDINATES N 1121475.86 E 2406352.98

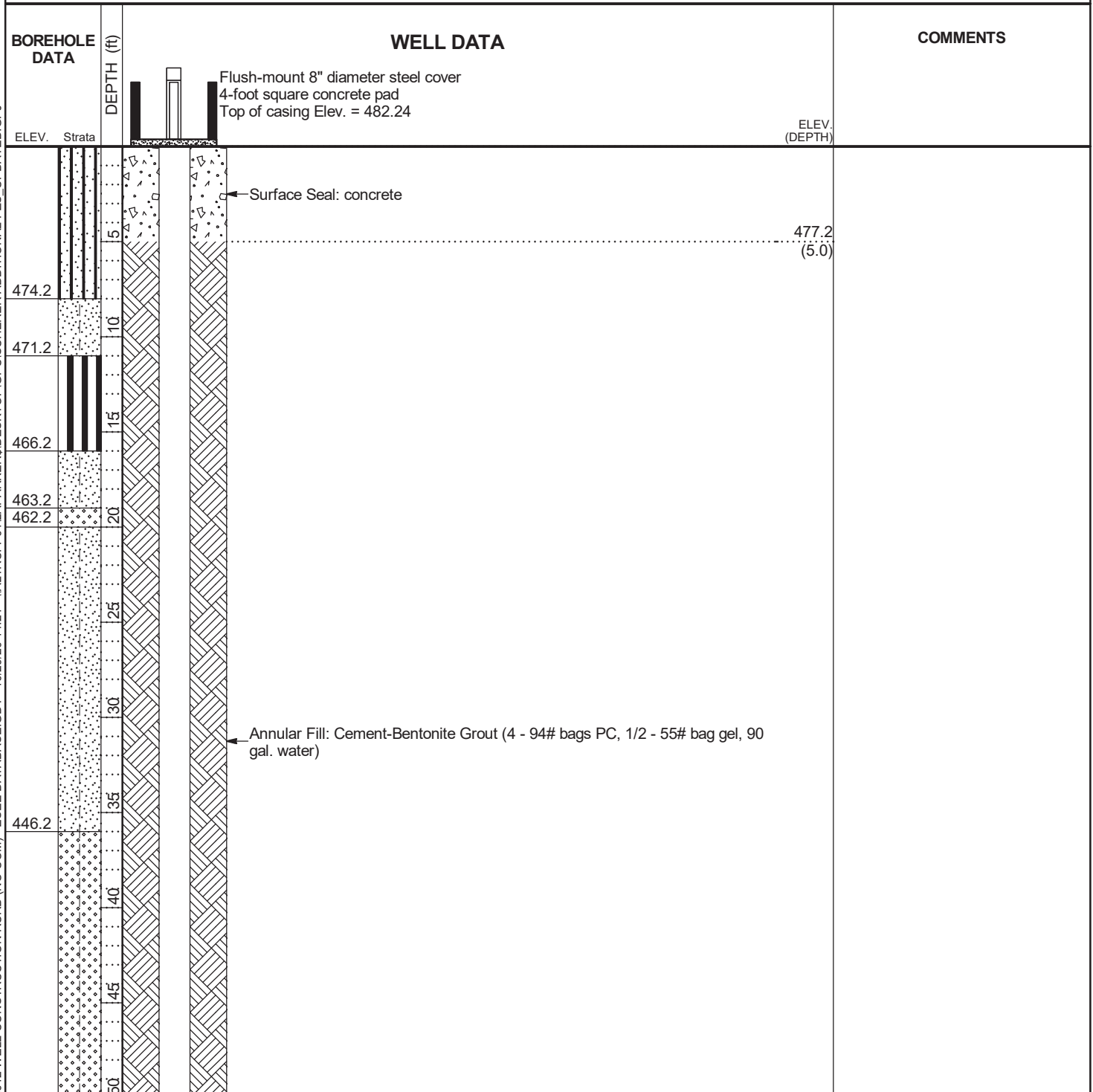
CONTRACTOR Cascade METHOD Rotosonic EQUIPMENT Tracked

DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser BORING DEPTH 76 ft.

GROUND WATER DEPTH: DURING COMP. DELAYED 16.3 ft. after 100 hrs.

NOTES

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ



(Continued Next Page)



# RECORD OF WELL CONSTRUCTION

WELL: PZ-38 I  
PAGE 2 OF 2  
ECS38467

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Additional Hydrogeological Investigation (2016)

LOCATION Plant Scherer

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 10/29/20 14:21 - \\VALTRCFP01\LPARKER\DESKTOP\GPC\ISCHERER ADDITIONAL PZS\_UPDATED.GPJ

BOREHOLE DATA		WELL DATA		COMMENTS
ELEV.	Strata	DEPTH (ft)		ELEV. (DEPTH)
		(CONTINUED)		
423.2		55		424.7 (57.5)
		60	Annular Seal: bentonite pellets (1 - 5 gal. bucket 3/8" pellets)	420.7 (61.5)
419.2		65	Filter: 20/40 silica filter sand (4 1/2 - 0.5 cubic ft. bags)	418.4 (63.8)
		70	Well: 2" OD PVC (SCH 40) Screen: 10 ft. 0.010" Slot Prepack	
		75	Sump: 0.20 ft.	408.4 (73.8)
406.2				408.2 (74.0)

# RECORD OF BOREHOLE PZ-45D

SHEET 1 of 5

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 165.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/8/20  
DATE COMPLETED: 3/9/20

NORTHING: 1,125,296.24  
EASTING: 2,400,250.55  
GS ELEVATION: 509.7  
TOC ELEVATION: 512.33 ft

DEPTH W.L.: 23.50'  
ELEVATION W.L.: 488.66'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
0		0.00 - 10.00 Hydro-vac to clear utilities								
5	505									
10	500	10.00 - 14.00 CL, CLAY, low to moderate plasticity, dark red, moist, w-PL, soft, quartz, vermiculite, plagioclase	CL		499.7 10.00	1	ROTO 7.70 SONIC 5.00			
15	495	14.00 - 15.00 CL, CLAY, low to moderate plasticity, orange-red brown, moist, w-PL, soft, quartz, vermiculite, plagioclase	CL		495.7 14.00 494.7					
		15.00 - 25.00 CL, CLAY, low to moderate plasticity, dark red, moist, w-PL, soft, quartz, vermiculite, plagioclase,			15.00					
20	490	23.5' - 25', SM, SILTY SAND, fine to medium sand, silvery white to tan, non to low plasticity, w<PL, soft/loose, quartz, biotite, feldspar	CL			2	ROTO 7.00 SONIC 10.00			
25	485	25.00 - 35.00 CL, CLAY, low plasticity, orange red clay, soft, w-PL			484.7 25.00					
30	480	33'-35' SM, SILTY SAND, fine to medium sand, silvery white to tan, non to low plasticity, w<PL, soft/loose, quartz, biotite, feldspar	CL			3	ROTO 6.00 SONIC 10.00			
35	475	35.00 - 53.50 SM, SILTY SAND, fine to medium sand, tannish brown, non to low plasticity, w<PL, soft/loose, quartz, biotite, feldspar, saprolitic	SM		474.7 35.00	4	ROTO 9.50 SONIC 10.00			
40	470	Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olsen

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-45D

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 165.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/8/20  
DATE COMPLETED: 3/9/20

NORTHING: 1,125,296.24  
EASTING: 2,400,250.55  
GS ELEVATION: 509.7  
TOC ELEVATION: 512.33 ft

SHEET 2 of 5

DEPTH W.L.:23.50'  
ELEVATION W.L.: 488.66'  
DATE W.L.:3/31/20  
TIME W.L.:8:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		35.00 - 53.50 SM, SILTY SAND, fine to medium sand, tannish brown, non to low plasticity, w<PL, soft/loose, quartz, biotite, feldspar, saprolitic (Continued)	SM			4	ROTO SONIC	9.50 10.00		<b>WELL CASING</b> Interval: 0' - 110' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 110' - 165' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 105' - 165' Type: #1 Sand Quantity: 20.5bags  <b>FILTER PACK SEAL</b> Interval: 101.8' - 105' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 101.8' Type: Cement-Bentonite Quantity: 1100lbs Cement, 20lbs Bentonite, 160gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	465									
50	460					5	ROTO SONIC	11.00 10.00		
55	455	53.50 - 55.00 SC, CLAYEY SAND, fine to coarse sand, dark green and white, loose/compact, soft, non to low plasticity, w<PL	SC		456.2 53.50 454.7					
60	450	55.00 - 65.00 SM, SILTY SAND, very fine grain, medium to dark green, low to non plastic, moist to wet, decreases with depth	SM		55.00	6	ROTO SONIC	10.00 10.00		
65	445	65.00 - 75.00 SM, SILTY SAND, fine to coarse, medium to dark green, low to non plastic, moist, decreases with depth			444.7 65.00					
70	440		SM			7	ROTO SONIC	10.00 10.00		
75	435	75.00 - 85.00 SM, SILTY SAND, fine to coarse, medium to dark green, low to non plastic, dry to moist, chlorite, "schistose"/"meta-proxenite"			434.7 75.00					
80	430	massive water staining from 78'-80'  83'-85' metagabbro Log continued on next page	SM			8	ROTO SONIC	9.00 10.00		

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olsen

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-45D

SHEET 3 of 5

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 165.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/8/20  
DATE COMPLETED: 3/9/20

NORTHING: 1,125,296.24  
EASTING: 2,400,250.55  
GS ELEVATION: 509.7  
TOC ELEVATION: 512.33 ft

DEPTH W.L.:23.50'  
ELEVATION W.L.: 488.66'  
DATE W.L.:3/31/20  
TIME W.L.:8:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
80			SM			8	ROTO SONIC	9.00 10.00		<b>WELL CASING</b> Interval: 0' - 110' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 110' - 165' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 105' - 165' Type: #1 Sand Quantity: 20.5bags  <b>FILTER PACK SEAL</b> Interval: 101.8' - 105' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 101.8' Type: Cement-Bentonite Quantity: 1100lbs Cement, 20lbs Bentonite, 160gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
85	425	85.00 - 103.50 SM, SILTY SAND, Metagabbro/metapyroxenite, interlayered, light to dark green, gabbro- trace gravel, some clay, low plasticity, loose, dry to moist pyroxenite - moist, fine to moderate sand, trace gravel, non plastic, compact			424.7 85.00					
90	420		SM			9	ROTO SONIC	13.50 10.00		
95	415		SM							
100	410					10	ROTO SONIC	12.00 10.00		
105	405	103.50 - 165.00 METAGABBRO, fine grain, pyrite, biotite, hornblende, unfoliated, poorly jointed, slightly to moderately weathered, medium strong			406.2 103.50					
110	400	Rock sample collected 136.5'-137.0'				11	ROTO SONIC	1.20 10.00		
		Rock sample collected 158.8'-159.4'	BR							
115	395									
120	390					12	ROTO SONIC	2.90 10.00		
		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olsen

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20









# RECORD OF BOREHOLE PZ-45D

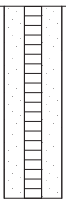
SHEET 5 of 5

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 165.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/8/20  
DATE COMPLETED: 3/9/20

NORTHING: 1,125,296.24  
EASTING: 2,400,250.55  
GS ELEVATION: 509.7  
TOC ELEVATION: 512.33 ft

DEPTH W.L.: 23.50'  
ELEVATION W.L.: 488.66'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	TYPE	REC		
160			BR			16	ROTO 8.80 SONIC 10.00		<b>WELL CASING</b> Interval: 0' - 110' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 110' - 165' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 105' - 165' Type: #1 Sand Quantity: 20.5bags  <b>FILTER PACK SEAL</b> Interval: 101.8' - 105' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 101.8' Type: Cement-Bentonite Quantity: 1100lbs Cement, 20lbs Bentonite, 160gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
165	345	Boring completed at 165.00 ft			344.7				
170	340								
175	335								
180	330								
185	325								
190	320								
195	315								
200	310								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olsen

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-46D


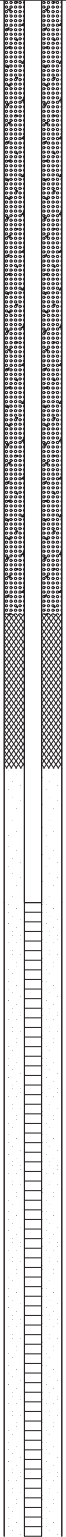



SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 53.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/16/20  
DATE COMPLETED: 3/17/20

NORTHING: 1,123,512.22  
EASTING: 2,400,923.25  
GS ELEVATION: 447.1  
TOC ELEVATION: 450.28 ft

DEPTH W.L.: 12.42'  
ELEVATION W.L.: 427.11'  
DATE W.L.: 3/31/20  
TIME W.L.: 12:42

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 5.00 Hand auger	CL						<b>WELL CASING</b> Interval: 0' - 23.5' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 23.5' - 53.5' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 20' - 53.5' Type: #1 Sand Quantity: 9.5 Bags  <b>FILTER PACK SEAL</b> Interval: 16' - 20' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 16' Type: Cement-Bentonite Quantity: 300lbs Cement, 10lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
445		CL, SILTY CLAY, little to very fine sand, 7.5 YR 3/3 dark brown, vein quartz cobbles throughout, residual soil/colluvium							
5		5.00 - 15.00 Hand auger and core barrel overdrill	ML		442.1			Riser --	
440		ML, sandy CLAYEY SILT, very fine to medium sand, 5Y 4/2 olive gray, deeply weathered amphibolite with some partially weathered to unweathered amphibolite (river terrace deposits), foliated, quartz-plagioclase-biotite			5.00				
10								Grout --	
435									
15		15.00 - 33.00 Transitionally Weathered Rock, amphibolite/hornblende gneiss, gley 2.5/1 blueish black to 5G 2/1 greenish black, fine grained quartz-plagioclase, biotite-hornblende, foliated, trace very fine pyrite (metallic luster, gold color).	TWR		432.1			Bentonite --	
430		Driller notes rock interlayered with weathered material			15.00	1	8.00 10.00		
20								Sand --	
425									
25									
420						2	8.00 10.00		
30									
415									
35		33.00 - 53.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fine grained, minor oxidation at 38' and 42.5', quartz-plagioclase-biotite-hornblende, trace pyrite, foliated	BR		414.1				
410					33.00	3	10.00 10.00		
40		Rock sample collected 49.0'-49.5'							
		Log continued on next page							

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-46D


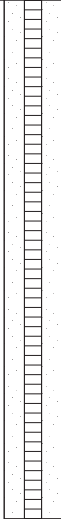
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 53.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/16/20  
DATE COMPLETED: 3/17/20

NORTHING: 1,123,512.22  
EASTING: 2,400,923.25  
GS ELEVATION: 447.1  
TOC ELEVATION: 450.28 ft

DEPTH W.L.: 12.42'  
ELEVATION W.L.: 427.11'  
DATE W.L.: 3/31/20  
TIME W.L.: 12:42

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		33.00 - 53.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fine grained, minor oxidation at 38' and 42.5', quartz-plagioclase-biotite-hornblende, trace pyrite, foliated	BR			3		10.00		<b>WELL CASING</b> Interval: 0' - 23.5' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 23.5' - 53.5' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 20' - 53.5' Type: #1 Sand Quantity: 9.5 Bags  <b>FILTER PACK SEAL</b> Interval: 16' - 20' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 16' Type: Cement-Bentonite Quantity: 300lbs Cement, 10lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
405								10.00		
45		Rock sample collected 49.0'-49.5' (Continued)				4		8.00 10.00		
45										
400										
50										
395					394.1					
		Boring completed at 53.00 ft								
55										
390										
60										
385										
65										
380										
70										
375										
75										
370										
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-47D

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 26.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/11/20  
DATE COMPLETED: 3/11/20

NORTHING: 1,126,623.42  
EASTING: 2,404,366.80  
GS ELEVATION: 406.8  
TOC ELEVATION: 410.01 ft

DEPTH W.L.: 9.70'  
ELEVATION W.L.: 400.19'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	405	0.00 - 6.00 GRANITE, N4 medium dark grey, hard, quartz, plagioclase, biotite, no fractures.	BR			1	ROTO 1.00 SONIC 6.00		Sch 40 PVC Riser Grout Bentonite	<b>WELL CASING</b> Interval: 0' - 10.1' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 10.1' - 25.1' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 8' - 25.1' Type: 20/30 Sand Quantity: 5.5 Bags  <b>FILTER PACK SEAL</b> Interval: 6' - 8' Type: Pel Plug Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 0' - 6' Type: Cement-Bentonite Quantity: 95lbs Cement, 5lbs Bentonite, 10gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	400	6.00 - 16.00 GRANITE, strong, medium dark grey, 10R 5/4, pale reddish brown, quartz-rich, biotite, muscovite, plagioclase, thick lens of K-feldspar dominant, no fractures, very hard.	BR		400.8 6.00	2	ROTO 4.70 SONIC 10.00			
10	395									
15	390	16.00 - 26.00 GRANITE, 5B 5/1, N4 medium blue-gray, small fractures at 16.5, 16.9, 17.7, 18.6, 22.1, 23.1, 24, 24.5, and 25 feet. No discoloration from weathering, breaks potential mechanical. Mineralogy consists of quartz, plagioclase, K-spar, biotite	BR		390.8 16.00	3	ROTO 10.00 SONIC 10.00		0.010" Slotted Screen	
20	385	Rock sample collected 19.7'-20.3'	BR							
25	380	Boring completed at 26.00 ft			380.8					
30	375									
35	370									
40										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: B. Steele, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-48S

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 65.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/4/20  
DATE COMPLETED: 3/4/20

NORTHING: 1,125,014.71  
EASTING: 2,405,779.92  
GS ELEVATION: 441.3  
TOC ELEVATION: 444.33 ft

DEPTH W.L.: 30.50'  
ELEVATION W.L.: 413.56'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	440	0.00 - 10.00 CL, SILTY CLAY, 2.5 YR 4/6 red, residual soil, very weathered biotite gneiss, no foliation, very fine muscovite throughout, moist, very soft.	CL						Grout —  Riser —	<b>WELL CASING</b> Interval: 0' - 50.75' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 50.75' - 60.75' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 48' - 60.75' Type: #1 Sand Quantity: 4 Bags  <b>FILTER PACK SEAL</b> Interval: 44' - 48' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 44' Type: Cement-Bentonite Quantity: 600lb Cement, 30lb Bentonite, 70gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	435				431.3					
10	430	10.00 - 14.00 CL, SILTY CLAY, 2.5 YR 4/6 red, residual soil, very weathered biotite gneiss with interlayers of very weathered amphibolite (10 YR 5/6 yellowish brown), relict foliation not observed, very fine muscovite within very weathered biotite, moist, soft.	CL		10.00	1	ROTO	5.00		
15	425	14.00 - 23.00 ML, CLAYEY SILT, residual soil, very weathered biotite gneiss, relict foliation, very weathered biotite-muscovite-plagioclase with trace quartz, moist, soft.	ML		427.3					
20	420				14.00	2	ROTO	10.00		
25	415	23.00 - 30.00 ML, CLAYEY SILT, trace fine to medium sand, 2.5 Y 6/3 light yellowish brown, very weathered biotite gneiss, relict foliation, very weathered biotite-muscovite-plagioclase with trace quartz, moist, soft.	ML		418.3					
30	410	30.00 - 36.00 ML, CLAYEY SILT, 10 YR 5/4 yellowish brown, very weathered biotite gneiss, relict foliation, thin 1" lens of slightly weathered biotite gneiss, some minerals highly weathered to a light green color (amphibolite).	ML		411.3	3	ROTO	10.00		
35	405	36.00 - 39.00 ML, SILT, with very fine to fine sand, gley 3/1 very dark greenish grey and 10 YR 5/4 yellowish brown, ~6" very weathered amphibolite interlayered within biotite gneiss unit - two 6" layers weathered to highly weathered biotite gneiss, biotite-muscovite-plagioclase with some quartz, amphibolite-hornblende and plagioclase, SAPROLITE	ML		405.3	4	ROTO	10.00		
40			ML		36.00					
					402.3					
					39.00					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-48S

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 65.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/4/20  
DATE COMPLETED: 3/4/20

NORTHING: 1,125,014.71  
EASTING: 2,405,779.92  
GS ELEVATION: 441.3  
TOC ELEVATION: 444.33 ft

DEPTH W.L.: 30.50'  
ELEVATION W.L.: 413.56'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40	400	39.00 - 61.00 ML, sandy SILT, very fine to fine sand, 2.5 Y 5/2 greyish brown, weathered biotite gneiss, muscovite rich layer, muscovite-biotite-plagioclase with trace quartz, moist, firm SAPROLITE (Continued)	ML			4	ROTO 10.00 SONIC 10.00		Bentonite --	<b>WELL CASING</b> Interval: 0' - 50.75' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 50.75' - 60.75' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 48' - 60.75' Type: #1 Sand Quantity: 4 Bags  <b>FILTER PACK SEAL</b> Interval: 44' - 48' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 44' Type: Cement-Bentonite Quantity: 600lb Cement, 30lb Bentonite, 70gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	395									
50	390					5	ROTO 10.00 SONIC 10.00			
55	385		TWR						0.010" Slotted -- Screen	
60	380	61.00 - 65.00 ML, sandy SILT, Transitionally Weathered Rock, weathered biotite gneiss, driller noted first rock encountered at 61'			380.3 61.00	6	ROTO 5.00 SONIC 10.00			
65		Boring completed at 65.00 ft			376.3					
70	375									
75	370									
80	365									

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-49D

SHEET 1 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/3/20  
DATE COMPLETED: 3/6/20

NORTHING: 1,123,429.73  
EASTING: 2,410,615.29  
GS ELEVATION: 364.9  
TOC ELEVATION: 367.41 ft

DEPTH W.L.: 4.50'  
ELEVATION W.L.: 362.79'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 2.00 SM, SILTY SAND, fine sand, brown, wet, w<PL, non-plastic, loose/soft, biotite and quartz	SM						Grout —	<div><b>WELL CASING</b> Interval: 0' - 76' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded</div> <div><b>WELL SCREEN</b> Interval: 76' - 106' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"</div> <div><b>FILTER PACK</b> Interval: 73.5' - 106' Type: #1 Sand Quantity: 9 Bags</div> <div><b>FILTER PACK SEAL</b> Interval: 69.8' - 73.5' Type: Pel Plug Quantity: 5gal Bucket</div> <div><b>ANNULUS SEAL</b> Interval: 0' - 69.8' Type: Cement-Bentonite Quantity: 554lbs Cement, 20lbs Bentonite, 60gal Water</div> <div><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</div> <div><b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic</div>
		2.00 - 4.00 SP, SAND, fine sand, non-plastic, w<PL, moist, compact, Salt and pepper with green hue, uniform graded	SP							
5	360	4.00 - 8.00 SP, SAND, coarse sand, non-plastic, w<PL, moist, compact, Salt and pepper with green hue, uniform graded	SP							
10	355	8.00 - 15.00 SM, SAND and SILT, moist, dark green,w<PL, non-plastic, loose, firm, large white grain, plagioclase	SM							
						1	ROTO 11.00 SONIC 5.00			
15	350	15.00 - 35.00 SM, Sand and Silt, moist, medium green,w<PL, non-plastic, loose, firm, large white grain, plagioclase, RESIDUUM/SAPROLITE								
20	345					2	ROTO 10.00 SONIC 10.00			
25	340		SM							
30	335					3	ROTO 10.00 SONIC 10.00			
35	330	35.00 - 55.00 DIORITE, plagioclase, biotite, hornblende, medium grained, fresh to slightly weathered, poorly foliated, poorly jointed, light grey to dark green/black, dry to wet, last foot multiple fractures	BR			4	ROTO 6.00 SONIC 10.00			
40	325									

Log continued on next page

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-49D


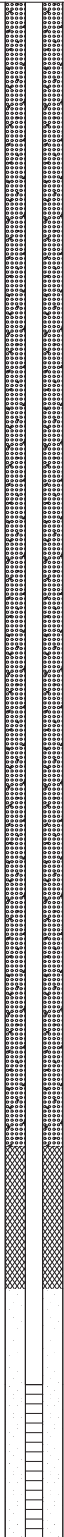



SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/3/20  
DATE COMPLETED: 3/6/20

NORTHING: 1,123,429.73  
EASTING: 2,410,615.29  
GS ELEVATION: 364.9  
TOC ELEVATION: 367.41 ft

DEPTH W.L.: 4.50'  
ELEVATION W.L.: 362.79'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40		35.00 - 55.00 DIORITE, plagioclase, biotite, hornblende, medium grained, fresh to slightly weathered, poorly foliated, poorly jointed, light grey to dark green/black, dry to wet, last foot multiple fractures <i>(Continued)</i>	BR			4	ROTO 6.00 SONIC 10.00		<b>WELL CASING</b> Interval: 0' - 76' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 76' - 106' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 73.5' - 106' Type: #1 Sand Quantity: 9 Bags  <b>FILTER PACK SEAL</b> Interval: 69.8' - 73.5' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 69.8' Type: Cement-Bentonite Quantity: 554lbs Cement, 20lbs Bentonite, 60gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic	
45	320									
50	315					5	ROTO 10.00 SONIC 10.00			
55	310	55.00 - 75.00 DIORITE, plagioclase, biotite, hornblende, medium grained, fresh to slightly weathered, poorly foliated, poorly jointed, light grey to dark green/black, dry to wet  broken core at 58'-59' and 61'-62'  Fractures at 66.2', 74.5'	BR		309.9 55.00					
60	305					6	ROTO 9.70 SONIC 10.00			
65	300									
70	295		BR			7	ROTO 7.80 SONIC 10.00	Bentonite —		
75	290									
80	285		BR		289.9 75.00	8	ROTO 10.00 SONIC 10.00	Sand —		
Log continued on next page										

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20



# RECORD OF BOREHOLE PZ-49D

SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 106.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/3/20  
DATE COMPLETED: 3/6/20

NORTHING: 1,123,429.73  
EASTING: 2,410,615.29  
GS ELEVATION: 364.9  
TOC ELEVATION: 367.41 ft

DEPTH W.L.: 4.50'  
ELEVATION W.L.: 362.79'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:35

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
80		75.00 - 85.00 DIORITE, plagioclase, biotite, hornblende, medium grained, fresh to slightly weathered, poorly foliated, poorly jointed, light grey to dark green/black, dry to wet,  at 77'-78' fine grain amphibolite, salt and pepper, plagioclase, quartz, hornblende, poorly foliated, poorly jointed, freshley weathered  Rock sampled collected at 77.8' - 78.9'  78-85' weakly foliated  Fractures at 82.8', 83.1' (Continued) 85.00 - 95.00 DIORITE, plagioclase, biotite, hornblende, medium grained, fresh to slightly weathered, poorly foliated, poorly jointed, light grey to dark green/black, dry to wet, starts to become more gneissic/foliated	BR		279.9 85.00	8	ROTO 10.00 SONIC 10.00	0.010" Slotted - Screen	<b>WELL CASING</b> Interval: 0' - 76' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 76' - 106' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 73.5' - 106' Type: #1 Sand Quantity: 9 Bags  <b>FILTER PACK SEAL</b> Interval: 69.8' - 73.5' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 69.8' Type: Cement-Bentonite Quantity: 554lbs Cement, 20lbs Bentonite, 60gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
85	280								
90	275		BR		269.9 95.00	9	ROTO 8.50 SONIC 10.00		
95	270								
100	265	95.00 - 106.00 Intermixed DIORITE and HORNBLENDE GNEISS, weak to well foliated, poorly jointed, fine to large grain, evidence of water at 96.2'	BR		258.9	10	ROTO 7.70 SONIC 11.00		
105	260								
110	255								
115	250								
120	245								
		Boring completed at 106.00 ft							

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-49S

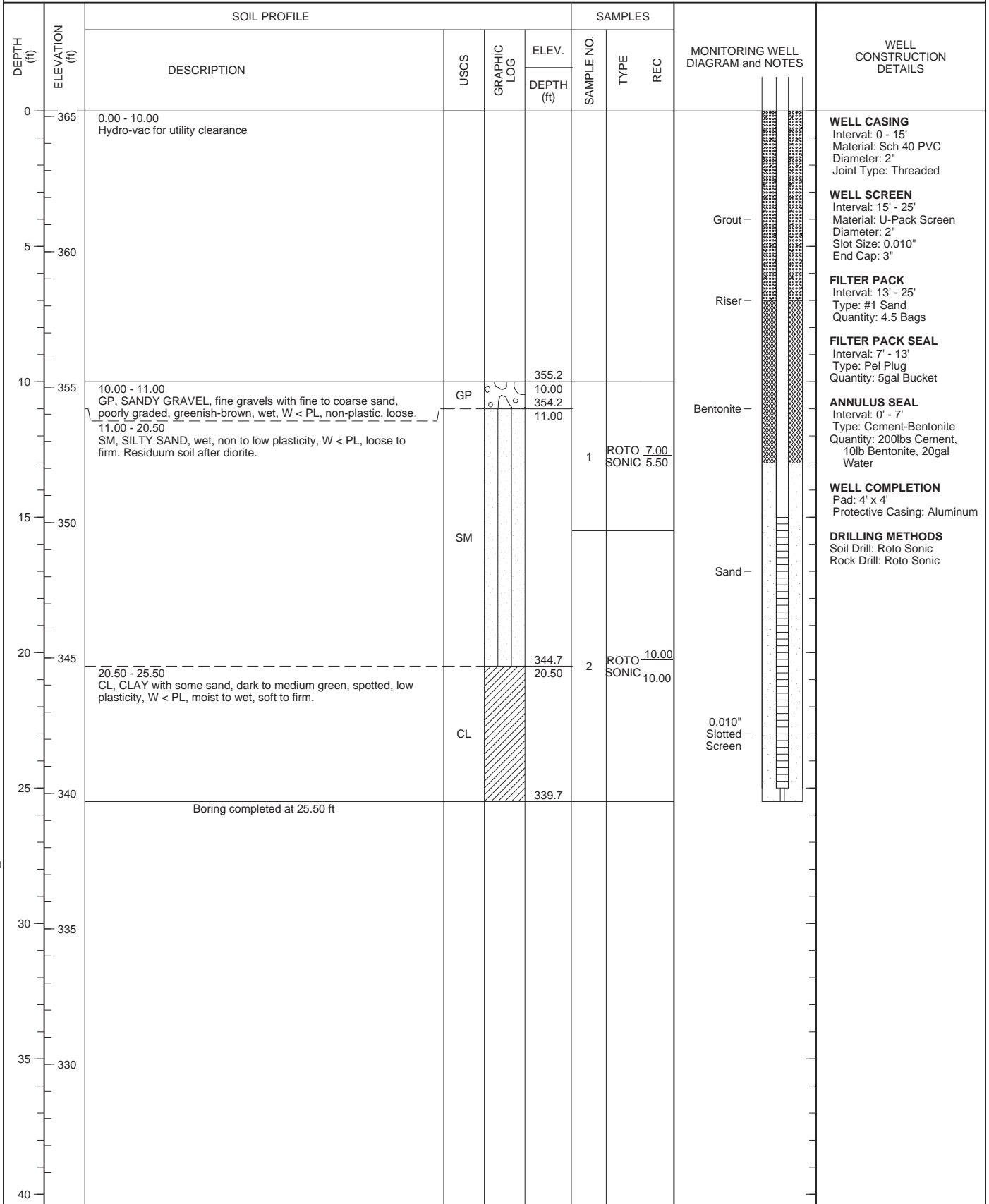
SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 25.50 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/7/20  
DATE COMPLETED: 3/7/20

NORTHING: 1,123,434.46  
EASTING: 2,410,605.99  
GS ELEVATION: 365.2  
TOC ELEVATION: 367.89 ft

DEPTH W.L.: 6.70'  
ELEVATION W.L.: 361.01'  
DATE W.L.: 3/31/20  
TIME W.L.: 8:30



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-50D

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/17/20  
DATE COMPLETED: 3/18/20

NORTHING: 1,103,125.91  
EASTING: 2,408,306.87  
GS ELEVATION: 470.66  
TOC ELEVATION: 473.78 ft

SHEET 1 of 3

DEPTH W.L.: 26.05  
ELEVATION W.L.: 447.73  
DATE W.L.: 3/21/2020  
TIME W.L.: 10:15

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED (1).GPJ PIEDMONT.GDT 8/13/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0	470	0.00 - 10.00 Hand auger for utility clearance.							<b>WELL CASING</b> Interval: 0' - 90' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 90' - 100' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 87' - 100' Type: U-Pack Prepack Quantity: 4 bags  <b>FILTER PACK SEAL</b> Interval: 84' - 87' Type: Pel Plug Quantity: 2.5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 84' Type: Cement-Bentonite Quantity: 277.2lbs Cement, 7lbs Bentonite, 17gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	465								
10	460	10.00 - 20.00 CL, CLAY with little silt and trace fine sand, dark green and white speckled, low PL, W < PL, soft to firm, residuum after metagabbro, plagioclase, moist.	CL		460.66 10.00	1	ROTO 5.00 SONIC 5.00		
15	455								
20	450	20.00 - 29.00 SM, SILTY SAND, non to low PL, dry to moist, dark green with weathering, W < PL, loose to compact, same host rock as above with less plagioclase and more mafic minerals.	SM		450.66 20.00	2	ROTO 10.00 SONIC 10.00		
25	445								
30	440	29.00 - 40.00 CL, CLAY with little silt and trace fine sand, dark green and white speckled, low PL, W < PL, soft to firm, residuum after metagabbro, plagioclase, moist.	CL		441.66 29.00	3	ROTO 10.00 SONIC 10.00		
35	435								
40		Log continued on next page			430.66	4	ROTO 10.00 SONIC 10.00		

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-50D

SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/17/20  
DATE COMPLETED: 3/18/20

NORTHING: 1,103,125.91  
EASTING: 2,408,306.87  
GS ELEVATION: 470.66  
TOC ELEVATION: 473.78 ft

DEPTH W.L.: 26.05  
ELEVATION W.L.: 447.73  
DATE W.L.: 3/21/2020  
TIME W.L.: 10:15

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED (1).GPJ PIEDMONT.GDT 8/13/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40	430	40.00 - 41.50 SC, CLAYEY SAND with trace to little fine gravels, dark green, low to moderate PL, W ~ PL, compact to firm, moist, subround to subangular gravels, vein quartz, fluvial/alluvial.	SC		40.00 429.16	4	ROTO 10.00 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 90' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 90' - 100' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 87' - 100' Type: U-Pack Prepack Quantity: 4 bags  <b>FILTER PACK SEAL</b> Interval: 84' - 87' Type: Pel Plug Quantity: 2.5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 84' Type: Cement-Bentonite Quantity: 277.2lbs Cement, 7lbs Bentonite, 17gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	425	41.50 - 50.00 SM-GM, SILTY SAND to SILTY GRAVEL, well graded, light to dark green-black, non PL, W < PL, dry to wet (~45'), dense to very dense.	SM-GM		41.50					
50	420	50.00 - 55.00 SM, SILTY SAND, dark green, non-PL, W < PL, loose, dry to moist.	SM		420.66 50.00	5	ROTO 7.40 SONIC 10.00			
55	415	55.00 - 70.00 Deeply weathered METAGABBRO, extremely weak to weak, plagioclase-amphibole, weathering rhine where fresher, salt/pepper fine to medium grained.  65-70 assumed same as above, washed out.	TWR		415.66 55.00	6	ROTO 8.20 SONIC 10.00			
60	410									
65	405									
70	400	70.00 - 75.00 METAGRABBRO, dark green and white, fresh to slightly weathered, medium strong to strong, most of core is broken to fractures - indicative of water movement.	BR		400.66 70.00	7	ROTO 2.90 SONIC 10.00			
75	395	75.00 - 100.00 METAGABBRO, fine to medium grained, dark green to black and white, amphiboles and plagioclase, unfoliated, fresh to slightly weathered, medium strong to strong.  Highly fractured zone 78'-80', water staining, appaers as gravel sized particles.  Rock sample collected 94.0'-94.5'	BR		395.66 75.00	8	ROTO 7.75 SONIC 10.00			
80		Log continued on next page								

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-50D

SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/17/20  
DATE COMPLETED: 3/18/20

NORTHING: 1,103,125.91  
EASTING: 2,408,306.87  
GS ELEVATION: 470.66  
TOC ELEVATION: 473.78 ft

DEPTH W.L.: 26.05  
ELEVATION W.L.: 447.73  
DATE W.L.: 3/21/2020  
TIME W.L.: 10:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
80	390	75.00 - 100.00 METAGABBRO, fine to medium grained, dark green to black and white, amphiboles and plagioclase, unfoliated, fresh to slightly weathered, medium strong to strong.  Highly fractured zone 78'-80', water staining, appaers as gravel sized particles.  Rock sample collected 94.0'-94.5' (Continued)	BR			8	ROTO 7.75 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 90' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 90' - 100' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 87' - 100' Type: U-Pack Prepack Quantity: 4 bags  <b>FILTER PACK SEAL</b> Interval: 84' - 87' Type: Pel Plug Quantity: 2.5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 84' Type: Cement-Bentonite Quantity: 277.2lbs Cement, 7lbs Bentonite, 17gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
85	385									
90	380					9	ROTO 7.20 SONIC 10.00			
95	375					10	ROTO 4.60 SONIC 5.00			
100	370	Boring completed at 100.00 ft			370.66					
105	365									
110	360									
115	355									
120										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED (1).GPJ PIEDMONT.GDT 8/13/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-51D

SHEET 1 of 4







PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 126.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/6/20  
DATE COMPLETED: 3/8/20

NORTHING: 1,119,239.99  
EASTING: 2,399,955.07  
GS ELEVATION: 543.2  
TOC ELEVATION: 546.04 ft

DEPTH W.L.: 38.4'  
ELEVATION W.L.: 507.58'  
DATE W.L.: 3/17/2020  
TIME W.L.: 13:30

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC				
					DEPTH (ft)							
0		0.00 - 10.00 CL, SILTY CLAY, trace very fine to fine sand, 2.5 YR 4/6 red, deeply weathered biotite gneiss, little to no relict foliation, very weathered biotite-muscovite-plagioclase, trace quartz, moist, very soft to soft, residual soil	CL						Riser —  Grout —	<b>WELL CASING</b> Interval: 0' - 116' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 116' - 126' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 113' - 126' Type: 20/30 Sand Quantity: 6 Bags  <b>FILTER PACK SEAL</b> Interval: 109.8' - 113' Type: Pel Plug Quantity: 5gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 109.8' Type: Cement-Bentonite Quantity: 250lbs Cement, 15lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic		
540												
5												
535												
10		10.00 - 16.00 CL, SILTY CLAY, trace very fine to fine sand, 2.5 YR 4/6 Red, deeply weathered to very weathered biotite gneiss, little to no relict foliation, very weathered biotite-muscovite-plagioclase, trace quartz, moist, very soft to soft, residual soil	CL		533.2							
530					10.00	1		<u>5.00</u> 6.00				
15												
525		16.00 - 20.00 CL, SILTY CLAY, trace very fine to fine sand, 2.5 YR 4/6 red, deeply weathered to very weathered biotite gneiss, little to no relict structure/foliation, very weathered biotite-muscovite-plagioclase, trace quartz, moist, very soft to sft, 6' lens of 5 YR	CL		527.2							
20					16.00							
520		20.00 - 21.00 ML, sandy CLAYET SILT, very fine to fine sand, 2.5 YR 5/4 reddish brown, very weathered biotite gneiss, very weathered biotite-muscovite-plagioclase, little quartz, moist, soft 21.00 - 26.00 No Recovery			523.2							
25			ML		20.00 522.2 21.00	2		<u>5.00</u> 10.00				
515		26.00 - 32.50 ML, CLAYEY SILT, some fine sand, 5 YR 5/6 yellowish red, very weathered biotite gneiss, very weathered biotite-muscovite quartz, moist, soft, SAA from 27.5-28.75, < 1mm pyrolucite	ML		517.2							
30					26.00							
510		32.50 - 36.00 Wash out			510.7	3		<u>6.50</u> 10.00				
35					32.50							
505		36.00 - 39.00 ML, CLAYEY SILT, some fine to medium sand, 5 YR 5/8 yellowish red, very weathered biotite gneiss, muscovite, biotite, some quartz, moist, very soft	ML		507.2							
40					36.00	4		<u>10.00</u> 10.00				
					504.2 39.00							
		Log continued on next page										

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: C. Hall

GA INSPECTOR: B. Steele, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-51D

SHEET 2 of 4

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 126.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/6/20  
DATE COMPLETED: 3/8/20

NORTHING: 1,119,239.99  
EASTING: 2,399,955.07  
GS ELEVATION: 543.2  
TOC ELEVATION: 546.04 ft

DEPTH W.L.: 38.4'  
ELEVATION W.L.: 507.58'  
DATE W.L.: 3/17/2020  
TIME W.L.: 13:30

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC				
					DEPTH (ft)							
40		39.00 - 50.00 ML, CLAYEY SILT, little fine sand, 5 YR 5/6 yellowish red, very weathered biotite gneiss, muscovite rich, little quartz, moist, soft to firm <i>(Continued)</i>	ML			4		<u>10.00</u> 10.00		<b>WELL CASING</b> Interval: 0' - 116' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 116' - 126' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 113' - 126' Type: 20/30 Sand Quantity: 6 Bags  <b>FILTER PACK SEAL</b> Interval: 109.8' - 113' Type: Pel Plug Quantity: 5gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 109.8' Type: Cement-Bentonite Quantity: 250lbs Cement, 15lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic		
500												
45												
495												
50		50.00 - 52.50 ML, sandy SILT, little clay, 5YR 5/3 olive, very weathered biotite gneiss, rich in biotite-muscovite-quartz, moist, soft	ML	493.2 50.00	5		<u>9.00</u> 10.00					
490		52.50 - 56.00 Transitionally Weathered Rock, weathered BIOTITE GNEISS, 5Y 5/3 olive, rich in muscovite, biotite, plagioclase, quartz, amphibolite bands, dry, compact	TWR	490.7 52.50								
55												
485		56.00 - 59.50 MLS, sandy SILT, fine sand, 7.5 YR 5/3 brown, very weathered biotite gneiss, amphibolite, rich in muscovite-biotite, some quartz, moist, soft	ML	487.2 56.00								
60		59.50 - 66.00 Transitionally Weathered Rock, BIOTITE GNEISS with some amphibolite, grey 1 5/1 greenish grey, rich in hornblende, biotite, muscovite, plagioclase, compact	TWR	483.7 59.50								
480				6		<u>10.00</u> 10.00						
65												
475		66.00 - 68.00 MLS, sandy SILT, compact to loose sand, rich in muscovite-biotite, quartz, amphibolite, grey 1 5/1 greenish grey, wet, loose	ML								477.2 66.00	
70		68.00 - 76.00 Wash out			475.2 68.00	7		<u>2.00</u> 10.00				
470												
75												
465		76.00 - 80.90 BIOTITE GNEISS, 5Y 4/1 olive grey, biotite, plagioclase, quartz, weathered from fractures, hard	BR		467.2 76.00	8		<u>4.90</u> 10.00				
80		Log continued on next page										

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: C. Hall

GA INSPECTOR: B. Steele, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-51D


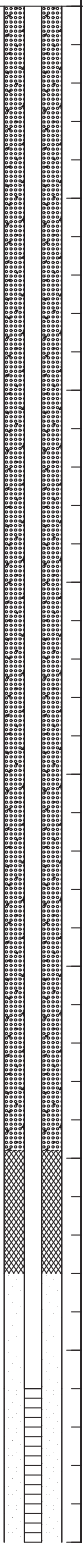






SHEET 3 of 4

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 126.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/6/20  
DATE COMPLETED: 3/8/20

NORTHING: 1,119,239.99  
EASTING: 2,399,955.07  
GS ELEVATION: 543.2  
TOC ELEVATION: 546.04 ft

DEPTH W.L.: 38.4'  
ELEVATION W.L.: 507.58'  
DATE W.L.: 3/17/2020  
TIME W.L.: 13:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
80		80.90 - 86.00 No Recovery	BR		462.3 80.90	8		4.90 10.00		<b>WELL CASING</b> Interval: 0' - 116' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 116' - 126' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 116' - 126' Type: 20/30 Sand Quantity: 6 Bags  <b>FILTER PACK SEAL</b> Interval: 109.8' - 113' Type: Pel Plug Quantity: 5gal bucket  <b>ANNULUS SEAL</b> Interval: 113' - 126' Type: Cement-Bentonite Quantity: 250lbs Cement, 15lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
460					457.2 86.00					
85		86.00 - 91.00 BIOTITE GNEISS, 5Y 4/1 olive grey to N4 medium dark grey, predominantly quartz, biotite, plagioclase, amphibolite, hard. Fractures at 86.6, 88.2, 89, 90, 91.	BR		452.2 91.00	9		6.00 10.00		
455					451.2 92.00					
90		91.00 - 92.00 BIOTITE GNEISS, 5Y 4/1 olive grey, biotite, plagioclase, quartz, weathered from fractures, hard	BR		447.2 96.00					
450		92.00 - 96.00 No Recovery			443 100.20	10		5.20 10.00		
95					441.8 101.40					
445		96.00 - 100.20 BIOTITE GNEISS, 5Y 4/1 olive grey to N4 medium dark grey, fractures at 97, 97.4, 98, 99, 100, rich in biotite-plagioclase-quartz, very little amphibolite, compact	BR		437.2 106.00					
100		100.20 - 101.40 Transitionally Weathered Rock, silty SAND, rich in amphibolite-plagioclase-muscovite, some quartz, loose, highly weathered	BR		427.2 116.00					
440		101.40 - 106.00 No Recovery								
105										
435		106.00 - 116.00 BIOTITE GNEISS, thin lens of Transitionally Weathered Rock (same as 100.2-101.4), weathered fractures throughout, rich in biotite-plagioclase-muscovite. N4 medium dark grey, compact, some broken	BR			11		3.80 10.00		
110										
430										
115										
425		116.00 - 126.00 BIOTITE GNEISS, N4 medium dark grey, biotite-plagioclase-muscovite-quartz, heavily fractured. Quartz vein at 117', compact	BR			12		5.50 10.00		
120		Rock sample collected 118.0'-118.5'								
		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: C. Hall

GA INSPECTOR: B. Steele, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-51D

SHEET 4 of 4

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 126.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/6/20  
DATE COMPLETED: 3/8/20

NORTHING: 1,119,239.99  
EASTING: 2,399,955.07  
GS ELEVATION: 543.2  
TOC ELEVATION: 546.04 ft

DEPTH W.L.: 38.4'  
ELEVATION W.L.: 507.58'  
DATE W.L.: 3/17/2020  
TIME W.L.: 13:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
120		116.00 - 126.00 BIOTITE GNEISS, N4 medium dark grey, biotite-plagioclase-muscovite-quartz, heavily fractured. Quartz vein at 117', compact							<div> <div>Sand --</div> </div>	<p><b>WELL CASING</b> Interval: 0' - 116' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 116' - 126' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 113' - 126' Type: 20/30 Sand Quantity: 6 Bags</p> <p><b>FILTER PACK SEAL</b> Interval: 109.8' - 113' Type: Pel Plug Quantity: 5gal bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0' - 109.8' Type: Cement-Bentonite Quantity: 250lbs Cement, 15lbs Bentonite, 30gal Water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic</p>
420		Rock sample collected 118.0'-118.5' (Continued)	BR			12		5.50 10.00		
125		Boring completed at 126.00 ft			417.2					
125										
130										
135										
140										
145										
150										
155										
160										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: C. Hall

GA INSPECTOR: B. Steele, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-52

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 77.00 ft  
LOCATION: Juliette, GA

DRILL RIG: GSI CC Crawler  
DATE STARTED: 3/17/20  
DATE COMPLETED: 3/17/20

NORTHING: 1,122,822.91  
EASTING: 2,403,622.69  
GS ELEVATION: 519.4  
TOC ELEVATION: 521.84 ft

DEPTH W.L.: 32.50'  
ELEVATION W.L.: 489.12'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 9.50 Hydro-vac for utility clearance								<b>WELL CASING</b> Interval: 0' - 67' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 67' - 77' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 65' - 77' Type: #6 Sand Quantity: 3 bags  <b>FILTER PACK SEAL</b> Interval: 61.5' - 65' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 61.5' Type: Cement-Bentonite Quantity: 554.4lbs Cement, 20lbs Bentonite, 70gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	515									
10	510	9.50 - 13.70 ML, sandy SILT, low plasticity, fine sand, reddish brown, plagioclase-biotite, biotite gneiss parent, non-cohesive, moist, loose. Residual soil	ML		509.9 9.50					
15	505	13.70 - 30.00 ML, sandy SILT, low plasticity, fine sand, bronze to light yellowish brown, plagioclase, increasing weathering of biotite, relict foliation, biotite gneiss parent, non-cohesive, moist to dry, loose. SAPROLITE			505.7 13.70	1	ROTO	7.80		
20	500		ML							
25	495					2	ROTO	10.00		
30	490	30.00 - 33.00 SP, SAND, fine to medium grained, light yellowish-brown, plagioclase-quartz, non-cohesive, moist, loose.	SP		489.4 30.00					
35	485	33.00 - 34.00 SP, SAND, medium grained, white, quartz-plagioclase-pegmatite, non-cohesive, moist, dense to loose. SAPROLITE	SP		486.4 33.00	3	ROTO	9.60		
40	480	34.00 - 37.00 ML, sandy SILT, low plasticity, fine sand, grey to yellowish brown, plagioclase-quartz-illite-biotite, relict foliation biotite gneiss parent, non-cohesive, moist, compact. SAPROLITE	ML		485.4 34.00					
		37.00 - 39.00 SP, SAND, medium grained with some coarse gravel, white, quartz-plagioclase-pegmatite, non-cohesive, moist, dense to loose. SAPROLITE	SP		482.4 37.00					
		Log continued on next page	SM		480.4 39.00	4	ROTO	SONIC		

BOREHOLE RECORD PLANT SCHERER CRG INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jimmy Hall

GA INSPECTOR: H. Brissey  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-52

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 77.00 ft  
LOCATION: Juliette, GA

DRILL RIG: GSI CC Crawler  
DATE STARTED: 3/17/20  
DATE COMPLETED: 3/17/20

NORTHING: 1,122,822.91  
EASTING: 2,403,622.69  
GS ELEVATION: 519.4  
TOC ELEVATION: 521.84 ft

DEPTH W.L.: 32.50'  
ELEVATION W.L.: 489.12'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		39.00 - 49.00 SM, SILTY SAND, fine sand, low plasticity, light olive grey to light olive brown, quartz-illite-plagioclase, relict foliation biotite gneiss parent, non-cohesive, moist, dense to loose. SAPROLITE (Continued)								<b>WELL CASING</b> Interval: 0' - 67' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 67' - 77' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 65' - 77' Type: #6 Sand Quantity: 3 bags  <b>FILTER PACK SEAL</b> Interval: 61.5' - 65' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 61.5' Type: Cement-Bentonite Quantity: 554.4lbs Cement, 20lbs Bentonite, 70gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	475		SM			4	ROTO SONIC	10.00		
50	470	49.00 - 54.00 SC, CLAYEY SAND, medium to high plasticity, fine grained sand, grey with trace dark yellowish orange, plagioclase-illite, no structure observed, cohesive, W > PL, firm.	SC		470.4					
55	465	54.00 - 77.00 SM, SILTY SAND, fine sand, low plasticity, blueish grey to greenish black, quartz-illite-biotite-hornblende/biotite interlayered. Biotite amphibolite gneiss with hornblende gneiss at 74' and 76', some relict foliation, non-cohesive, moist, dense to loose. SAPROLITE			465.4	5	ROTO SONIC	7.50 10.00		
60	460									
65	455		SM			6	ROTO SONIC	10.00 10.00		
70	450									
75	445					7	ROTO SONIC	10.50 8.00		
80	440	Boring completed at 77.00 ft			442.4					

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jimmy Hall

GA INSPECTOR: H. Brissey  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-53

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 45.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/18/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,121,932.34  
EASTING: 2,404,813.43  
GS ELEVATION: 513.6  
TOC ELEVATION: 516.64 ft

DEPTH W.L.: 26.20'  
ELEVATION W.L.: 490.29'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC				
					DEPTH (ft)							
0		0.00 - 8.00 Hydro-vac for utility clearance  Soil type based on visual inspection of hole and surface soil - CL, silty CLAY, residual soil.								Grout —	<b>WELL CASING</b> Interval: 0' - 35' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded	
510			CL									<b>WELL SCREEN</b> Interval: 35' - 45' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"
5												<b>FILTER PACK</b> Interval: 32' - 35' Type: #1 Sand Quantity: 3 Bags
505		8.00 - 13.00 CL, SILTY CLAY, 7.5 YR 5/8 strong brown, no relict foliation, deeply weathered biotite-hornblende gneiss. Residual soil.	CL		505.6 8.00	1	ROTO 7.00 SONIC 7.00			Riser —	<b>FILTER PACK SEAL</b> Interval: 27' - 32' Type: Pel Plug Quantity: 5gal Bucket	
10												<b>ANNULUS SEAL</b> Interval: 0' - 27' Type: Cement-Bentonite Quantity: 450lbs Cement, 17lbs Bentonite, 45gal Water
500		13.00 - 17.00 ML, CLAYEY SILT, strong brown, minor relict foliation, deeply weathered biotite-hornblende gneiss. Residual soil.	ML		500.6 13.00						<b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum	
15											<b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic	
495		17.00 - 20.00 ML, CLAYEY SILT, 7.5 YR 5/8 strong brown, very weathered hornblende gneiss, relict foliation.	ML		496.6 17.00							
20												
490		20.00 - 25.00 ML, CLAYEY SILT, trace fine sand, 7.5 YR 5/4 weak red to pink to 10 YR 5/4 yellowish brown, deeply weathered biotite gneiss, weak relict foliation, cohesive, soft to firm, moist, deeply weathered quartz-muscovite-plagioclase-biotite, fine to medium grained minerals weathered to clay and silty. SAPROLITE.	ML		493.6 20.00	2	ROTO 10.00 SONIC 10.00					
25												
485		25.00 - 32.00 ML, CLAYEY SILT, trace fine sand, 7.5 YR 5/4 weak red to pink 10 YR 5/4 yellowish brown, deeply weathered biotite gneiss, foliation present, deeply weathered quartz-muscovite-plagioclase-hornblende-biotite, cohesive, soft to firm, moist to wet, W > PL. SAPROLITE.	ML		488.6 25.00					Bentonite —		
30												
480		32.00 - 35.00 No recovery			481.6 32.00	3	ROTO 7.00 SONIC 10.00					
35												
475		35.00 - 45.00 ML, CLAYEY SILT, some fine to very fine sand, strong brown 7.5 YR 5/8 to orange brown, lenses of light olive green, very weathered biotite-hornblende gneiss, foliation present, cohesive, firm to stiff, moist, moist to wet at 36', contact between biotite gneiss and biotite hornblende gneiss.	ML		478.6 35.00	4	ROTO 6.00 SONIC 10.00			Sand —		
40		Log continued on next page										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-53

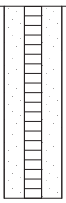
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 45.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/18/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,121,932.34  
EASTING: 2,404,813.43  
GS ELEVATION: 513.6  
TOD ELEVATION: 516.64 ft

DEPTH W.L.: 26.20'  
ELEVATION W.L.: 490.29'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		35.00 - 45.00 ML, CLAYEY SILT, some fine to very fine sand, strong brown 7.5 YR 5/8 to orange brown, lenses of light olive green, very weathered biotite-hornblende gneiss, foliation present, cohesive, firm to stiff, moist, moist to wet at 36', contact between biotite gneiss and biotite hornblende gneiss. (Continued)	ML			4	ROTO 6.00 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 35' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 35' - 45' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 32' - 35' Type: #1 Sand Quantity: 3 Bags  <b>FILTER PACK SEAL</b> Interval: 27' - 32' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 27' Type: Cement-Bentonite Quantity: 450lbs Cement, 17lbs Bentonite, 45gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45		Boring completed at 45.00 ft			468.6					
46										
47										
48										
49										
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51										
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BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



## SHEET 1 of 2

DEPTH W.L.:29.00'  
ELEVATION W.L.: 463.62'  
DATE W.L.:3/31/20  
TIME W.L.:9:45

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-54

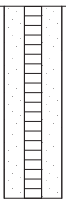
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 45.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/19/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,121,509.71  
EASTING: 2,406,555.15  
GS ELEVATION: 490.2  
TOC ELEVATION: 492.96 ft

DEPTH W.L.: 29.00'  
ELEVATION W.L.: 463.62'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40	450	31.00 - 45.00 ML, SILT with trace to some fine to medium sand, brown to bronze, non-plastic, dry to wet, W < PL, quartz-plagioclase-biotite. (Continued)	ML			4	ROTO 8.20 SONIC 10.00		0.010" Slotted - Screen 	<b>WELL CASING</b> Interval: 0' - 35' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 35' - 45' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 33' - 45' Type: #1 Sand Quantity: 4 Bags  <b>FILTER PACK SEAL</b> Interval: 29' - 33' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 29' Type: Cement-Bentonite Quantity: 500lbs Cement, 17lbs Bentonite, 45gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	445	Boring completed at 45.00 ft			445.2					
50	440									
55	435									
60	430									
65	425									
70	420									
75	415									
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Vern Olson

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-55


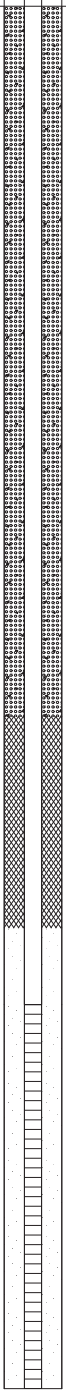



SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 35.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/20/20  
DATE COMPLETED: 3/20/20

NORTHING: 1,121,931.60  
EASTING: 2,409,132.43  
GS ELEVATION: 444.2  
TOC ELEVATION: 447.21 ft

DEPTH W.L.: 20.00'  
ELEVATION W.L.: 426.98'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	TYPE	REC		
0		0.00 - 10.00 Hydro-vac for utility clearance.  Logged by visual inspection and surface soil. CL, SILTY CLAY, 5 YR 5/8 yellowish red, no relict foliation, deeply weathered hornblende-biotite gneiss.	CL						<b>WELL CASING</b> Interval: 0' - 26' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 26' - 36' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 24' - 36' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 18.5' - 24' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 18.5' Type: Cement-Bentonite Quantity: 300lbs Cement, 15lbs Bentonite, 35gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
440									
5									
435									
10		10.00 - 23.50 CL, SILTY CLAY, 5 YR 5/8 yellowish red, little to no relict foliation, deeply weathered hornblende-biotite gneiss. Residual soil.	CL		434.2 10.00	1	ROTO 3.00 SONIC 5.00		
430									
15									
425									
20									
420		23.50 - 25.00 ML, SILT, weathered amphibolite, hornblende rich, gley 2 4/1 dark greenish grey. Saprolite.  25' driller noted top of transitionally weathered rock, hard rock encountered interlayered with weathered saprolite. 25.00 - 36.00 Transitionally weathered rock, interlayered unweathered rock and saprolite, poor recovery (saprolite washed out).	ML		420.7 23.50 419.2 25.00				
25									
415			TWR						
30						3	ROTO 4.00 SONIC 10.00		
410									
35									
405		Boring completed at 35.00 ft			408.2 36.00				
40									

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-56

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 46.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/19/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,123,524.68  
EASTING: 2,409,037.21  
GS ELEVATION: 430.8  
TOC ELEVATION: 433.68 ft

DEPTH W.L.: 36.60'  
ELEVATION W.L.: 396.96'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
0	430	0.00 - 10.00 Hydro-vac for utility clearance								
5	425							Grout —		
10	420	10.00 - 18.80 SP, SAND, medium to some coarse and some fine, well sorted, primarily quartz, Na-plagioclase, biotite throughout, increased biotite content 12.5'-13.5', deeply weathered biotite gneiss, relict foliation present in some 1" pieces, dry to moist. Saprolite.	SP		420.8 10.00	1	ROTO 6.00 SONIC 6.00	Riser —		
15	415									
20	410	18.80 - 20.60 ML, CLAYEY SILT, very fine sand, weathered hornblende gneiss, some relict foliation, gley 1 4/1 dark greenish grey, dry to moist.	ML		412 18.80	2	ROTO 5.00 SONIC 5.00			
		19.5-20.6 pulverized predominantly Na-plagioclase layer, 2.5 Y 7/3 pale brown.	TWR		410.2					
		20.60 - 21.00 TWR, weathered BIOTITE GNEISS, very dark grey to black, medium grained.			21.00	3	ROTO 4.00 SONIC 5.00			
25	405	21.00 - 34.00 TWR, weathered BIOTITE GNEISS, slight to moderate oxidation throughout. oxidation staining at 28', fracture 30'-30.5'	TWR							
30	400					4	ROTO 8.00 SONIC 10.00	Benonite —		
35	395	34.00 - 36.00 Core barrel drop in soft zone, no recovery.			396.8 34.00					
		36.00 - 46.00 BIOTITE GNEISS, fine to medium grained, hornblende-quartz-plagioclase-biotite.	BR		394.8 36.00	5	ROTO 8.50 SONIC 10.00	#1 Sand —		
40		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-56

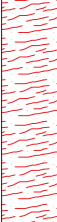

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 46.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/19/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,123,524.68  
EASTING: 2,409,037.21  
GS ELEVATION: 430.8  
TOC ELEVATION: 433.68 ft

DEPTH W.L.: 36.60'  
ELEVATION W.L.: 396.96'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40	390	36.00 - 46.00 BIOTITE GNEISS, fine to medium grained, hornblende-quartz-plagioclase-biotite. (Continued)	BR			5	ROTO 8.50 SONIC 10.00		 <p>0.010" Slotted Screen</p>	<b>WELL CASING</b> Interval: 0' - 35.75' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 35.75' - 45.75' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 33' - 46' Type: #1 Sand Quantity: 4 bags  <b>FILTER PACK SEAL</b> Interval: 30' - 33' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 30' Type: Cement Quantity: 600lbs Cement, 70gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45	385	Boring completed at 46.00 ft			384.8					
50	380									
55	375									
60	370									
65	365									
70	360									
75	355									
80										

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-57

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 59.00 ft  
LOCATION: Juliette, GA

DRILL RIG: GSI CC Crawler  
DATE STARTED: 3/18/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,123,405.64  
EASTING: 2,407,361.88  
GS ELEVATION: 436.4  
TOC ELEVATION: 439.51 ft

DEPTH W.L.: 33.60'  
ELEVATION W.L.: 405.66'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	435	0.00 - 5.00 Hand auger for utility clearance.							Grout —	<b>WELL CASING</b> Interval: 0' - 49' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 49' - 59' Material: U-Pack Prepack Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 46' - 59' Type: #6 Sand Quantity: 3 bags  <b>FILTER PACK SEAL</b> Interval: 43' - 46' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 43' Type: Cement-Bentonite Quantity: 277.2lbs Cement, 10lbs Bentonite, 35gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	430	5.00 - 13.00 ML, sandy SILT, low PL, fine sand, dry - 2/5 Y 6/3 light yellowish brown, wet - gley G1 greenish grey, plagioclase-quartz-biotite weathered to illite, relict foliation, non-cohesive, dry to moist, dense. SAPROLITE.	ML		431.4 5.00	1	ROTO 7.00 SONIC 4.00			
10	425	13.00 - 15.00 ML, sandy SILT, low PL, fine sand, dry - 2.5 Y 5/2 greyish brown, wet - gleu 1 4/1 very dark greenish grey, quartz-plagioclase-biotite, hornblende gneiss parent rock, non-cohesive, dry to moist, dense. SAPROLITE.	ML		423.4 13.00	2	ROTO 10.00 SONIC 10.00		Riser —	
15	420	15.00 - 18.00 ML, sandy SILT, low PL, fine sand, dry - 2/5 Y 6/3 light yellowish brown, wet - gley G1 greenish grey, plagioclase-quartz-biotite weathered to illite, relict foliation, non-cohesive, dry to moist, dense. SAPROLITE.	ML		421.4 15.00					
20	415	18.00 - 19.00 ML, sandy SILT, low PL, fine sand, dry - 2.5 Y 5/2 greyish brown, wet - gleu 1 4/1 very dark greenish grey, quartz-plagioclase-biotite, hornblende gneiss parent rock, non-cohesive, dry to moist, dense. SAPROLITE.	ML		418.4 18.00					
		19.00 - 23.00 Transitionally weathered rock, highly weathered fracture zone, weakly foliated, very dark greenish grey, plagioclase-illite-hornblende amphibolite GNEISS.	TWR		417.4 19.00					
25	410	23.00 - 30.10 Transitionally weathered rock, moderately weathered oxidation throughout, well foliated, grey and white medium to coarse grained, strong, quartz-plagioclase-biotite/illite BIOTITE GNEISS.	TWR		413.4 23.00	3	ROTO 4.50 SONIC 10.00			
30	405	30.10 - 33.00 Transitionally weathered rock, highly weathered weakly foliated, porous, dark blue grey, fine to medium grained, weak, fracture zone 32'-33', plagioclase-illite hornblende/amphibolite GNEISS.	TWR		406.3 30.10					
35	400	33.10 - 40.00 Transitionally weathered rock, slightly to moderately weathered, foliated, grey and white, fine to medium grained, very strong, quartz-plagioclase BIOTITE GNEISS.	TWR		403.4	4	ROTO 8.20 SONIC 10.00			
40		Log continued on next page			396.4	5	ROTO 9.00 SONIC 10.00			

BOREHOLE RECORD PLANT SCHERER CRG INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jimmy Hall

GA INSPECTOR: H. Brissey  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-57


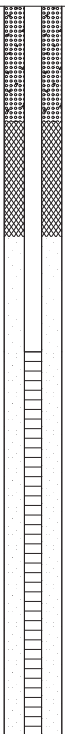
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 59.00 ft  
LOCATION: Juliette, GA

DRILL RIG: GSI CC Crawler  
DATE STARTED: 3/18/20  
DATE COMPLETED: 3/19/20

NORTHING: 1,123,405.64  
EASTING: 2,407,361.88  
GS ELEVATION: 436.4  
TOC ELEVATION: 439.51 ft

DEPTH W.L.: 33.60'  
ELEVATION W.L.: 405.66'  
DATE W.L.: 3/31/20  
TIME W.L.: 9:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC	
					DEPTH (ft)						
40		40.00 - 41.20 Transitionally weathered rock, moderately weathered, weakly foliated, dark blue grey, fine grained, weak to medium strength, plagioclase-illite/biotite hornblende GNEISS.	TWR		40.00	5	ROTO 9.00 SONIC 10.00		<b>WELL CASING</b> Interval: 0' - 49' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 49' - 59' Material: U-Pack Prepack Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 46' - 59' Type: #6 Sand Quantity: 3 bags  <b>FILTER PACK SEAL</b> Interval: 43' - 46' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 43' Type: Cement-Bentonite Quantity: 277.2lbs Cement, 10lbs Bentonite, 35gal water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic		
395		41.20 - 59.00 Transitionally weathered rock, moderately weathered to fresh (50'-59'), well foliated, grey and white, medium to coarse grained, very strong, fracture zone 43.5'-45.5', quartz-plagioclase BIOTITE GNEISS.			395.2						
					41.20						
45											
390											
50			TWR								
385											
55											
380							ROTO 8.70 SONIC 10.00				
		Boring completed at 59.00 ft			377.4						
60											
375											
65											
370											
70											
365											
75											
360											
80											

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jimmy Hall

GA INSPECTOR: H. Brissey  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-58

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 46.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/16/20  
DATE COMPLETED: 3/16/20

NORTHING: 1,123,299.43  
EASTING: 2,405,207.09  
GS ELEVATION: 489.3  
TOC ELEVATION: 492.21 ft

DEPTH W.L.: 39.60'  
ELEVATION W.L.: 452.09'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:05

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 11.50 (0'-10') Hydro-vac for utility clearance.  (10'-11.5') Core loss.							<p>Grout —</p> <p>Riser —</p> <p>Bentonite —</p> <p>Sand —</p>	<p><b>WELL CASING</b> Interval: 0' - 36' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 36' - 46' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 33.5' - 46' Type: #1 Sand Quantity: 5 Bags</p> <p><b>FILTER PACK SEAL</b> Interval: 30.5' - 33.5' Type: Pel Plug Quantity: 5gal Bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0' - 30.5' Type: Cement-Bentonite Quantity: 277lbs Cement, 10lbs Bentonite, 30gal Water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic</p>
485										
5										
10										
480										
15										
475		11.50 - 13.50 CL, CLAY with trace fine sand, red brown, low to medium PL, W < PL, moist, soft to firm, vermiculite after biotite.	CL		477.8 11.50	1	ROTO	4.50		
		13.50 - 20.00 SM, SILTY SAND with trace clay and gravels, yellow brown, non PL, W < PL, dry to moist, loose.	SM		475.8 13.50		SONIC	6.00		
20										
470										
25										
465										
30										
460										
35										
455										
450										
40										

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-58

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 46.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 3/16/20  
DATE COMPLETED: 3/16/20

NORTHING: 1,123,299.43  
EASTING: 2,405,207.09  
GS ELEVATION: 489.3  
TOD ELEVATION: 492.21 ft

DEPTH W.L.: 39.60'  
ELEVATION W.L.: 452.09'  
DATE W.L.: 3/31/20  
TIME W.L.: 10:05

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		36.00 - 46.00 SP-SM, SAND to SILTY SAND, fine to medium with some silt, trannish brown with light green hue, non to low PL, wet, W < PL, loose to compact. <i>(Continued)</i>	SP-SM			4	ROTO SONIC	10.00 10.00	0.010" Slotted - Screen	<b>WELL CASING</b> Interval: 0' - 36' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 36' - 46' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 33.5' - 46' Type: #1 Sand Quantity: 5 Bags  <b>FILTER PACK SEAL</b> Interval: 30.5' - 33.5' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 30.5' Type: Cement-Bentonite Quantity: 277lbs Cement, 10lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
445					443.3					
45		Boring completed at 46.00 ft								
440										
50										
435										
55										
430										
60										
425										
65										
420										
70										
415										
75										
410										
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ. PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Tom Ardito

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-59S

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 24.00 ft  
LOCATION: Juliette, GA

DRILL RIG: GSI CC Crawler  
DATE STARTED: 3/19/20  
DATE COMPLETED: 3/20/20

NORTHING: 1,125,213.65  
EASTING: 2,407,658.45  
GS ELEVATION: 382.8  
TOC ELEVATION: 385.93 ft

DEPTH W.L.: 3.23'  
ELEVATION W.L.: 383.48'  
DATE W.L.: 3/24/2020  
TIME W.L.: 14:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 7.00 Hand auger for utility clearance.							<p>Grout —</p> <p>Riser —</p> <p>Bentonite —</p> <p>#6 Sand —</p> <p>0.010" Slotted — Screen</p>	<p><b>WELL CASING</b> Interval: 0' - 14' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded</p> <p><b>WELL SCREEN</b> Interval: 14' - 24' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3'</p> <p><b>FILTER PACK</b> Interval: 11.5' - 24' Type: #6 Sand Quantity: 3 bags</p> <p><b>FILTER PACK SEAL</b> Interval: 7' - 11.5' Type: Pel-Plug Quantity: 5gal Bucket</p> <p><b>ANNULUS SEAL</b> Interval: 0' - 7' Type: Cement-Bentonite Quantity: 46.2lbs Cement, 2lbs Bentonite, 10gal Water</p> <p><b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic</p>
380										
5										
375		7.00 - 8.75 SC, CLAYEY SAND, high PL, fine to medium sand increasing with depth, red brown to greenish grey, quartz - biotite gneiss, cohesive, W>PL to W~PL, firm. Residual soil.	SC		375.8 7.00	1	ROTO 6.00 SONIC 2.00			
10		8.75 - 11.75 SP, SAND, fine to medium grained, greenish grey, illite-hornblende/amphibolite-quartz, non-cohesive, wet, loose.	SP		8.75					
370		11.75 - 19.00 ML, sandy SILT, low PL, fine sand, light yellowish brown, relict foliation, quartz-plagioclase-biotite weathered to illite/biotite gneiss, non-cohesive, moist, loose. SAPROLITE.	ML		371.05 11.75	2	ROTO 6.00 SONIC 10.00			
15										
365										
20		19.00 - 20.50 SP, SAND, medium to coarse grained, trace coarse gravel, greenish grey, hornblende-plagioclase-quartz, non-cohesive, wet to moist, loose.	SP		363.8 19.00					
360		20.50 - 21.00 ML, sandy SILT, low PL, fine sand, light yellowish brown, relict foliation, quartz-plagioclase-biotite weathered to illite/biotite gneiss, non-cohesive, moist, loose. SAPROLITE.	ML		362.3 21.00	3	ROTO 6.50 SONIC 5.00			
25		21.00 - 22.00 SP, SAND, fine to medium grained, greenish grey, illite-hornblende/amphibolite-quartz, non-cohesive, wet, loose.	SP		361.8 21.00					
35		22.00 - 24.00 ML, sandy SILT, low PL, fine sand, light yellowish brown, relict foliation, quartz-plagioclase-biotite weathered to illite/biotite gneiss, non-cohesive, moist, loose. SAPROLITE.	ML		360.8 22.00					
345										
40		Boring completed at 24.00 ft								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Jimmy Hall

GA INSPECTOR: H. Brissey  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-59D

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 69.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/26/20  
DATE COMPLETED: 3/27/20

NORTHING: 1,125,229.89  
EASTING: 2,407,668.93  
GS ELEVATION: 382.9  
TOC ELEVATION: 385.86 ft

DEPTH W.L.: 7.50'  
ELEVATION W.L.: 378.13"  
DATE W.L.: 4/7/2020  
TIME W.L.: 14:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Hydro-vac for utility clearance  Description from visual observation of hole and surface soil: CL SILTY CLAY, 7.5 YR 3/2 dark brown, cohesive, moist to wet, very soft, W -PL.								<b>WELL CASING</b> Interval: 0' - 54' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 54' - 69' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 52' - 64' Type: #1 Sand Quantity: 5 bags  <b>FILTER PACK SEAL</b> Interval: 49.7' - 52' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 49.7' Type: Cement-Bentonite Quantity: 900lbs Cement, 60lbs Bentonite, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
380					372.9					
5					10.00					
375					371.12					
10		10.00 - 11.78 SP, SAND poorly graded, fine to coarse with some silt, gley 1 2.5/1 greenish black, primarily quartz-hornblende, some cobbles up to 2" diameter, weathered amphibolite. Residual soil/alluvium.	SP		11.78					
370		11.78 - 27.00 ML, sandy CLAYEY SILT, very weathered amphibolite interlayered with biotite gneiss with varying amounts of biotite-plagioclase-quartz, 10 YR 4/3 brown to 5Y 4/3 olive, some relict foliation, moist, non-cohesive, very loose to dense. Saprolite				1	ROTO 9.00 SONIC 9.00			
15										
365										
20			ML			2	ROTO 8.00 SONIC 8.00			
360										
25										
355		27.00: Driller noted top of rock at 27' 27.01 - 30.00 AMPHIBOLITE/HORNBLLENDE GNEISS, quartz-plagioclase-biotite-hornblende with trace pyrite < 1mm diameter unweathered, fine to medium grained, well foliated	BR		355.9	3	ROTO 3.00 SONIC 3.00			
30		30.00 - 39.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fracture/oxidized zone at ~38', moderate to strong, foliation, fine to medium grained, unweathered, competent, greenish black with white.			352.9					
350					30.00	4	ROTO 7.00 SONIC 9.00			
345			BR							
40		38.00: Fracture/oxidized zone			343.9					
		Log continued on next page	BR		39.00	5	ROTO 9.00 SONIC 10.00			

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-59D

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 69.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/26/20  
DATE COMPLETED: 3/27/20

NORTHING: 1,125,229.89  
EASTING: 2,407,668.93  
GS ELEVATION: 382.9  
TOC ELEVATION: 385.86 ft

DEPTH W.L.: 7.50'  
ELEVATION W.L.: 378.13"  
DATE W.L.: 4/7/2020  
TIME W.L.: 14:20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		39.00 - 59.00 AMPHIBOLITE/HORNBLLENDE GNEISS, moderate to strong foliation, pyrite-quartz-plagioclase-biotite-hornblende, greenish black with white, competent to slightly weathered. (Continued) 41.00: 41-42' Fracture/oxidized zones	BR							<b>WELL CASING</b> Interval: 0' - 54' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 54' - 69' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 52' - 64' Type: #1 Sand Quantity: 5 bags  <b>FILTER PACK SEAL</b> Interval: 49.7' - 52' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 49.7' Type: Cement-Bentonite Quantity: 900lbs Cement, 60lbs Bentonite, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
340		44.00: 44-45" Fracture/oxidized zones				5	ROTO	9.00		
45		46.60: fracture/oxidized zones								
335		48.00: 48-50' Fracture/oxidized zones								
50										
330		53.00: fracture/oxidized zones				6	ROTO	10.00		
55								10.00		
325										
60		59.00: fracture/oxidized zones 59.01 - 69.00 BIOTITE GNEISS, moderate to well foliation, noticeably more competent than 49'-59' run, plagioclase-hornblende-quartz-biotite, predominately fine-grained. 61.50: minor oxidation staining at 61.5'	BR		323.9					
320						7	ROTO	9.00		
65		66.00: 66-67' interlayers of hornblende-rich rock						SONIC 10.00		
315		68.00: "soft or fractured" at 68' (not recovered for verification)								
70		Boring completed at 69.00 ft			313.9					
310										
75										
305										
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-60D








PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/28/20  
DATE COMPLETED: 3/29/20

NORTHING: 1,124,410.72  
EASTING: 2,408,242.87  
GS ELEVATION: 386.4  
TOC ELEVATION: 389.34 ft

SHEET 1 of 3

DEPTH W.L.: 1.3'  
ELEVATION W.L.: 387.78'  
DATE W.L.: 3/30/2020  
TIME W.L.: 8:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	385	0.00 - 5.00 CL, SILTY CLAY, 25 YR 4/6 Red, deeply weathered biotite gneiss, cohesive, w>PL, moist, very soft, very fine mica flakes, residual soil	CL		381.4				Grout —	<b>WELL CASING</b> Interval: 0' - 69.4' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 69.4' - 99.7' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 66.6' - 99.7' Type: #1 Sand Quantity: 8.5 Bags  <b>FILTER PACK SEAL</b> Interval: 62.3' - 66.6' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 66.6' Type: Cement-Bentonite Quantity: 1,050lbs Cement, 42lbs Bentonite, 140gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	380	5.00 - 10.00 ML, CLAYEY SILT, 7.5 YR 6/8 reddish yellow, mottled, deeply weathered, biotite gneiss, cohesive, some very fine sand, coarse gravel, plagioclase, w-PL	ML		5.00					
10	375	10.00 - 13.00 CL, SILTY CLAY, trace very fine to fine sand, 5YR 5/8 yellowish red, deeply weathered biotite gneiss, mottled, very fine mica flakes, cohesive, moist, w-PL, very soft to soft, med plasticity, residual soil	CL		376.4				Riser —	
15	370	13.00 - 20.00 ML, CLAYEY SILT, some sand, vf to fine sand, faint relict foliation, yellowish red to red to light brown layer of hornblende gneiss, moist, cohesive, W<PL, slightly plastic, soft to firm	ML		373.4	1	ROTO	10.00		
20	365	20.00 - 30.00 ML, SILT, some clay and sand, very fine to fine sand, 10 YR 5/3 brown, very weathered biotite gneiss, very weathered muscovite-biotite-plagioclase, moist, non-cohesive, loose, residual soil, SAPROLITE, some foliation visible throughout, very weathered hornblende gneiss near bottom of run	ML		366.4	2	ROTO	8.50		
25	360	30.00 - 37.00 ML, sandy CLAYEY SILT, some relict foliation present interlayered biotite hornblende gneiss. SAPROLITE	ML		356.4	3	ROTO	10.00		
30	355	37.00 - 40.00 Transitionally weathered rock, slightly weathered to weathered biotite gneiss	TWR		349.4					
40		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-60D

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/28/20  
DATE COMPLETED: 3/29/20

NORTHING: 1,124,410.72  
EASTING: 2,408,242.87  
GS ELEVATION: 386.4  
TOC ELEVATION: 389.34 ft

SHEET 2 of 3

DEPTH W.L.: 1.3'  
ELEVATION W.L.: 387.78'  
DATE W.L.: 3/30/2020  
TIME W.L.: 8:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	TYPE	REC				
					DEPTH (ft)						
40		40.00 - 45.50 Transitionally weathered rock, weathered to slightly weathered biotite gneiss at 40'-44'	TWR		40.00				<b>WELL CASING</b> Interval: 0' - 69.4' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 69.4' - 99.7' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 66.6' - 99.7' Type: #1 Sand Quantity: 8.5 Bags  <b>FILTER PACK SEAL</b> Interval: 62.3' - 66.6' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 66.6' Type: Cement-Bentonite Quantity: 1,050lbs Cement, 42lbs Bentonite, 140gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic		
345		brown quartz-plagioclase-hornblende-biotite, slightly weathered hornblende gneiss 44'-45.5', dry to moist, foliation in cobbled size				4	ROTO <u>6.00</u> SONIC 6.00				
45		45.50 - 52.00 BIOTITE GNEISS interlayered with HORNBLLENDE GNEISS, fine grained, well foliated, primarily biotite gneiss	BR		340.9 45.50					5	ROTO <u>6.00</u> SONIC 6.00
340		Biotite slight oxidation zone at 46', trace <1mm-2mm red garnets throughout									
50		slight oxidation zone at 50.5'									
335		Migmatitic texture at 51'-52'	BR		334.4					6	ROTO <u>7.00</u> SONIC 8.00
55		52.00 - 60.50 BIOTITE GNEISS, well foliated, greenish black and white layers, fine grained plagioclase-quartz-hornblende-biotite			52.00						
330											
60		60.50 - 70.00 HORNBLLENDE GNEISS, less quartz than above, fine grained, med grained biotite gneiss, greenish black and white, no fracture/oxidation observed, trace pyrite, plagioclase-quartz-hornblende-biotite	BR		325.9 60.50					7	ROTO <u>11.00</u> SONIC 10.00
325											
65			BR								
320											
70		70.00 - 80.00 BIOTITE GNEISS, fine to medium grained, greenish black to black and white, well foliated, migmatitic texture in some intervals with ptygmatic folds, plagioclase-quartz-hornblende-biotite, no oxidation zones observed	BR		316.4 70.00					8	ROTO <u>10.00</u> SONIC 10.00
315											
75			BR								
310											
80		Log continued on next page			306.4						

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-60D


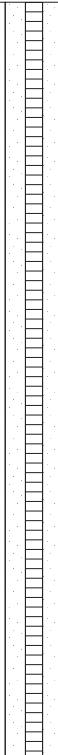

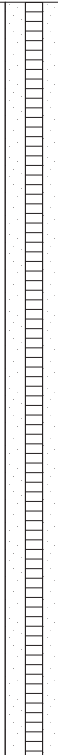

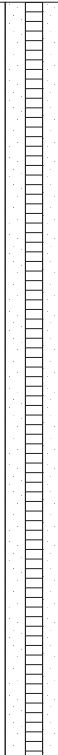

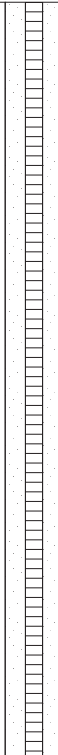
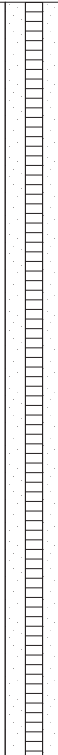
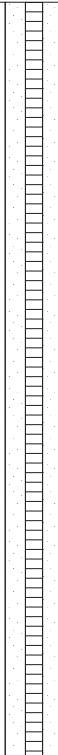
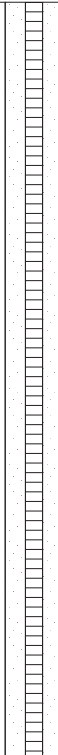
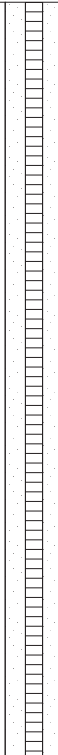
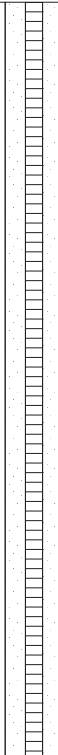
SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 100.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/28/20  
DATE COMPLETED: 3/29/20

NORTHING: 1,124,410.72  
EASTING: 2,408,242.87  
GS ELEVATION: 386.4  
TOC ELEVATION: 389.34 ft

DEPTH W.L.: 1.3'  
ELEVATION W.L.: 387.78'  
DATE W.L.: 3/30/2020  
TIME W.L.: 8:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
80		80.00 - 90.00 BIOTITE GNEISS, fine to medium grained, coarse grained migmatitic texture at 84'-85'	BR		80.00	9	ROTO 8.00 SONIC 10.00		<b>WELL CASING</b> Interval: 0' - 69.4' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 69.4' - 99.7' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 66.6' - 99.7' Type: #1 Sand Quantity: 8.5 Bags  <b>FILTER PACK SEAL</b> Interval: 62.3' - 66.6' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 66.6' Type: Cement-Bentonite Quantity: 1,050lbs Cement, 42lbs Bentonite, 140gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic	
305		Possible fracture at 87'-87.5'								
		very slight oxidation staining on break at a 60 degree to vertical								
		trace pyrite-plagioclase-quartz-hornblende-biotite, well foliated								
85			BR		296.4	10	ROTO 10.00 SONIC 10.00			
300										
90		90.00 - 100.00 BIOTITE GNEISS, well foliated	BR		90.00	10	ROTO 10.00 SONIC 10.00			
295										
95			BR		286.4	10	ROTO 10.00 SONIC 10.00			
290										
100		Boring completed at 100.00 ft								
285										
105										
280										
110										
275										
115										
270										
120										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ. PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-60S


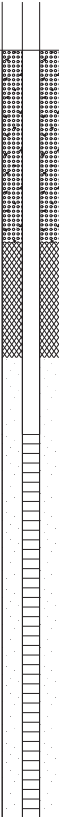




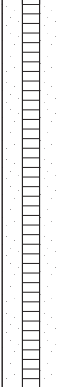

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 20.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 3/31/20  
DATE COMPLETED: 3/31/20

NORTHING: 1,124,400.44  
EASTING: 2,408,243.59  
GS ELEVATION: 386.4  
TOC ELEVATION: 389.88 ft

DEPTH W.L.: 6.8'  
ELEVATION W.L.: 382.86'  
DATE W.L.: 4/8/2020  
TIME W.L.: 10:25

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 2.00 CL, SILTY CLAY, 2.5 YR 3/4 dark reddish brown, deeply weathered biotite gneiss, no structure observed, some mica flakes, very fine, cohesive, moist, plastic, w<PL, RESIDUUM	CL		384.4	1	ROTO SONIC	10.00 10.00		<b>WELL CASING</b> Interval: 0' - 10' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 10' - 20' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 10' - 20' Type: #1 Sand Quantity: 3 Bags  <b>FILTER PACK SEAL</b> Interval: 5' - 8' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 5' Type: Cement-Bentonite Quantity: 200lbs Cement, 14lbs Bentonite, 30gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
385		2.00 - 4.00 CL, SILTY CLAY, 2.5 YR 4/6 red, deeply weathered biotite gneiss, no structure observed, some mica flakes, very fine, cohesive, moist, plastic, w<PL, RESIDUUM	CL		382.4					
		4.00 - 5.50 CL, SILTY CLAY, 5 YR 4/6 yellowish red, deeply weathered biotite gneiss, slightly mottled, moist, plastic, w<PL, RESIDUUM	CL		380.9					
5		5.50 - 10.00 ML, CLAYEY SILT, cobble/gravel layer at 5.5' diameter up to 1.5", 5 YR 4/6 yellowish red, mottled, moist 5'-9', to wet 9'-10', non-cohesive, loose, w<PL, RESIDUUM	ML		5.50					
380										
		10.00 - 12.50 ML, CLAYEY SILT, cobble/gravel layer at 5.5' diameter up to 1.5", 5 YR 4/6 yellowish red, mottled, very wet, non-cohesive, very loose, RESIDUUM	ML		376.4	2	ROTO SONIC	10.00 10.00		
10		12.50 - 20.00 ML, SILT, some clay, sandy silt at 14' - 16', mottled with relict foliations, varigated yellowish red to dark brown to brown, very weathered biotite gneiss, non-cohesive, loose to compact, non-plastic, moist to wet	ML		373.9					
375										
370										
		Boring completed at 20.00 ft								
20					366.4					
365										
25										
360										
30										
355										
35										
350										
40										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-61

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 50.00 ft  
LOCATION: Juliette, GA

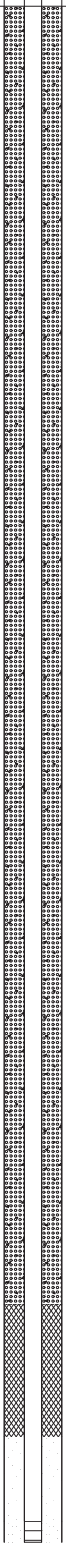










DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/10/20  
DATE COMPLETED: 4/11/20

NORTHING: 1,122,537.21  
EASTING: 2,408,531.43  
GS ELEVATION: 436.8  
TOC ELEVATION: 439.27 ft

SHEET 1 of 2

DEPTH W.L.: 12.80'  
ELEVATION W.L.: 426.37'  
DATE W.L.: 4/13/2020  
TIME W.L.: 14:10

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 Hydro-vac for utility clearance.								<b>WELL CASING</b> Interval: 0' - 39.45' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 39.45' - 49.45' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 37.25' - 49.45' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 33.8' - 37.25' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 33.8' Type: Cement-Bentonite Quantity: 900lbs Cement, 45lbs Bentonite, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
435										
5										
430										
10					426.8					
425		10.00 - 11.50 CL, SILTY CLAY, yellowish red, deeply weathered biotite gneiss, slightly plastic, no structure, cohesive, moist, very soft, w-PL, RESIDUUM	CL		10.00					
		11.50 - 19.50 ML, CLAYEY SILT and SILT, yellowish brown, deeply weathered biotite gneiss, faint to no structure, plagioclase and biotite rich, cohesive, soft, non-plastic, moist, w-PL, RESIDUUM	ML		425.3					
15						1	ROTO	10.00		
420							SONIC	10.00		
20		19.50 - 20.00 SM, SILTY SAND, yellowish brown, fine to coarse sand, slightly to moderately weathered biotite gneiss, quartz rich, non-cohesive, non-plastic, wet, w-PL, compact	SM		417.3					
		20.00 - 21.00 SM, SILTY SAND, fine to medium sand, yellowish brown, very weathered biotite gneiss, cohesive, moist, loose to compact, non-plastic, SAPROLITE	SM		416.8					
415					20.00					
		21.00 - 24.00 ML, sandy SILT, very fine to fine sand, very pale brown, dry, non-cohesive, metagranitic, slight foliation, SAPROLITE	ML		415.8					
25					21.00					
		24.00 - 26.00 ML, SILT, weathered biotite gneiss, some relict foliation with clay lined slickenlines, moist, loose to compact, non-plastic, w-PL	ML		412.8					
410					24.00					
		26.00 - 32.00 ML, SILT, weathered amphibolite, olive grey, fine grained, slight to some relict foliation, moist, very stiff to hard, w-PL	ML		410.8					
30					26.00					
405										
		32.00 - 35.00 ML, SILT, Transitionally weathered rock, very pale brown, metagranitic, slightly foliated, medium grained, slightly weathered, dry	TWR		404.8					
35					401.8					
		35.00 - 38.00 ML, sandy CLAYEY SILT, very weathered biotite gneiss, greyish brown, well foliated, fine to medium grained, moist	ML		401.8					
400					35.00					
		38.00 - 40.00 SP/SM, SAND to SILTY SAND, Transitionally weathered rock, weathered biotite gneiss, bottom is unweathered to slightly weathered	TWR		398.8					
40					38.00					
					396.8					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-61

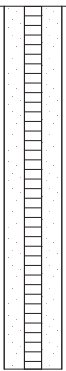
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 50.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/10/20  
DATE COMPLETED: 4/11/20

NORTHING: 1,122,537.21  
EASTING: 2,408,531.43  
GS ELEVATION: 436.8  
TOC ELEVATION: 439.27 ft

DEPTH W.L.: 12.80'  
ELEVATION W.L.: 426.37'  
DATE W.L.: 4/13/2020  
TIME W.L.: 14:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		40.00 - 42.00 ML, CLAYEY SILT, Transitionally weathered rock, interlayered unweathered and weathered metagranite, moderately to well foliated, grey clay throughout	TWR		40.00					<b>WELL CASING</b> Interval: 0' - 39.45' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 39.45' - 49.45' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 37.25' - 49.45' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 37.25' - 37.25' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 33.8' Type: Cement-Bentonite Quantity: 900lbs Cement, 45lbs Bentonite, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
395		42.00 - 46.00 ML, CLAYEY SILT, grey clay, no structure, non-cohesive, compact, SAPROLITE	ML		394.8	4	ROTO 6.00 SONIC 6.00			
45		46.00 - 50.00 METAGRANITE, medium grained, moderately foliated at 46', 47-50' BIOTITE GNEISS, fine grained, well foliated, fractured with oxidation staining throughout	BR		390.8	5	ROTO 4.00 SONIC 4.00			
390					46.00					
50		Boring completed at 50.00 ft			386.8					
385										
55										
380										
60										
375										
65										
370										
70										
365										
75										
360										
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-62


SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 52.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/9/20  
DATE COMPLETED: 4/9/20

NORTHING: 1,122,370.34  
EASTING: 2,406,175.11  
GS ELEVATION: 498.3  
TOC ELEVATION: 501.32 ft

DEPTH W.L.: 41.00'  
ELEVATION W.L.: 460.23'  
DATE W.L.: 4/16/2020  
TIME W.L.: 14:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 10.00 CL, SILTY CLAY, red, no structure, deeply weathered biotite gneiss, cohesive, soft, moist, w<PL, RESIDUUM	CL						Grout —  Riser —	<b>WELL CASING</b> Interval: 0' - 42.25' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 42.25' - 52.25' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 40' - 52.25' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 36.5' - 40' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 36.5' Type: Cement-Bentonite Quantity: 450lbs Cement, 30lbs Bentonite, 60gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
4.95										
5										
4.90										
10		10.00 - 15.00 ML, SILT, very weathered biotite gneiss, yellowish brown, mica flakes, SAPROLITE	ML		488.3 10.00					
4.85										
15		15.00 - 20.00 ML, SILT to CLAYEY SILT, brown to yellowish brown, very weathered, biotite gneiss, dry to moist, loose, w<PL, trace relict foliation	ML		483.3 15.00	1	ROTO 8.00 SONIC 10.00			
4.80										
20		20.00 - 30.00 ML, CLAYEY SILT, primarily biotite and plagioclase, very weathered with some amphibolite and trace quartz, brown, cohesive, moist, soft to firm, w<PL, SAPROLITE	ML		478.3 20.00					
4.75										
25			ML			2	ROTO 8.00 SONIC 10.00			
4.70										
30		30.00 - 35.00 ML, SILT, very weathered to weathered amphibolite, brownish green to greenish brown, fine to medium grained, weakly foliated, oxidated at 34', SAPROLITE	ML		468.3 30.00					
4.65										
35		35.00 - 40.00 ML, SILT and clayey SILT, weathered biotite gneiss, mica flakes, brown to greyish brown, mottled, some foliation present, SAPROLITE	ML		463.3 35.00	3	ROTO 10.00 SONIC 10.00		Bentonite —	
4.60										
40		Log continued on next page			458.3					

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-62

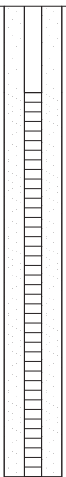
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 52.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/9/20  
DATE COMPLETED: 4/9/20

NORTHING: 1,122,370.34  
EASTING: 2,406,175.11  
GS ELEVATION: 498.3  
TOC ELEVATION: 501.32 ft

DEPTH W.L.: 41.00'  
ELEVATION W.L.: 460.23'  
DATE W.L.: 4/16/2020  
TIME W.L.: 14:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		40.00 - 46.00 ML, SILT and clayey SILT, brown to greyish brown, weathered to very weathered biotite gneiss, no to faint relict foliation, mica flakes, moist to wet, soft to stiff, SAPROLITE	ML		40.00	4	ROTO 7.00 SONIC 6.00			<b>WELL CASING</b> Interval: 0' - 42.25' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 42.25' - 52.25' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 40' - 52.25' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 36.5' - 40' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 36.5' Type: Cement-Bentonite Quantity: 450lbs Cement, 30lbs Bentonite, 60gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
45		46.00 - 50.00 Wash out			452.3 46.00					
45						5	ROTO 0.00 SONIC 4.00		0.010" Slotted - Screen	
50		50.00 - 52.00 ML, sandy SILT, very fine to fine sand, brownish grey to greyish brown, relict foliation, weathered biotite gneiss, very stiff, SAPROLITE	ML		448.3 50.00	6	ROTO 2.50 SONIC 2.00			
45		Boring completed at 52.00 ft			446.3					

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-63

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 40.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/12/20  
DATE COMPLETED: 4/12/20

NORTHING: 1,123,955.38  
EASTING: 2,404,060.61  
GS ELEVATION: 498.9  
TOC ELEVATION: 501.54 ft

DEPTH W.L.: 20.0'  
ELEVATION W.L.: 481.29'  
DATE W.L.: 4/22/2020  
TIME W.L.: 15:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 10.00 Hydro-vac for utility clearance.								
495										
5									Grout –	
490										
10					488.9					
		10.00 - 11.50 SM, SILTY SAND, fine to medium sand, brown, weathered biotite gneiss, no structure, quartz-biotite-plagioclase, loose, moist, w<PL, SAPROLITE	SM		10.00					
		11.50 - 14.50 ML, sandy CLAYEY SILT, fine sand, yellowish brown, very weathered biotite gneiss, no structure, moist, non-cohesive, loose, w<PL	ML		487.4					
485					11.50					
					484.4					
15		14.50 - 18.50 CL, CLAY, white to very pale brown, non-plastic, dry, soft	CL		14.50	1	ROTO	10.00		
					480.4			SONIC	10.00	
480		18.50 - 20.00 SM, SILTY SAND, weathered biotite gneiss, greyish brown, trace relict foliation, fine grained, quartz-biotite-plagioclase, dry to moist, compact to dense, SAPROLITE	SM		18.50					
20		20.00 - 22.00 ML, sandy CLAYEY SILT, brown, relict foliation, with clay lenses, weathered biotite gneiss, compac, moist, w<PL, SAPROLITE	ML		478.9					
		22.00 - 23.00 CL, SILTY CLAY, no structure, olive brown, cohesive, soft to firm, moist	CL		476.9					
475		23.00 - 26.00 ML, sandy CLAYEY SILT, brown, relict foliation with clay lenses, weathered biotite gneiss, compact, moist, w<PL	ML		22.00	2	ROTO	6.00		
					475.9			SONIC	6.00	
25					23.00					
		26.00 - 28.00 BIOTITE GNEISS unweathered, well foliated, medium to fine grained, quartz-hornblende-blagioclase, dry	BR		472.9					
		28.00 - 30.00 Transitionally Weathered Rock interlayered saprolite and unweathered BIOTITIE GNEISS, well foliated, fine to medium grained, moist, clay lenses throughout, moist to wet	BR		26.00	3	ROTO	4.00		
470					470.9			SONIC	4.00	
30		30.00 - 40.00 BIOTITE GNEISS, medium grained, moderately to well foliatd, fractured throughout, puck shaped discs primarily 2" thick or less, oxidation staining throughout, quartz-hornblendeds-plagioclase			468.9					
					30.00					
465									Sand –	
35			BR			4	ROTO	10.00		
								SONIC	10.00	
460									0.010" Slotted – Screen	
40		Boring completed at 40.00 ft			458.9					

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-64

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 70.00 ft  
LOCATION: Juliette, GA





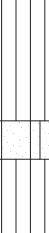



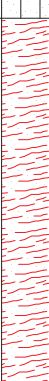
DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/8/20  
DATE COMPLETED: 4/8/20

NORTHING: 1,123,724.36  
EASTING: 2,406,404.18  
GS ELEVATION: 476.0  
TOC ELEVATION: 479.52 ft

SHEET 1 of 2

DEPTH W.L.: 53.62'  
ELEVATION W.L.: 425.74'  
DATE W.L.: 4/15/2020  
TIME W.L.: 17:30

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	475	0.00 - 1.50 CL, SILTY CLAY, red, deeply weathered, no structure, deeply weathered biotite gneiss, cohesive, dry to moist, very soft to soft	CL		474.5				Grout --	<b>WELL CASING</b> Interval: 0' - 59' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 59' - 69' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 57' - 69' Type: #1 Sand Quantity: 4.5 Bags  <b>FILTER PACK SEAL</b> Interval: 53.3' - 57' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 53.3' Type: Cement-Bentonite Quantity: 600lbs Cement, 50lbs Bentonite, 80gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	470	1.50 - 10.00 ML, CLAYEY SILT, light reddish brown to brown, deeply weathered biotite, w<PL, gneiss, some relict foliation, cohesive, dry to moist, soft to firm, non-plastic	ML		1.50	1	ROTO 6.00 SONIC 10.00			
10	465	10.00 - 14.00 ML, SILT, brown, weathered biotite gneiss	ML		466 10.00				Riser --	
15	460	14.00 - 15.00 SP/SM, SAND and SILTY SAND, fine to medium sand, granitic, dry to moist, plagioclase rich	SP-SM		462 14.00 461	2	ROTO 10.00 SONIC 10.00			
		15.00 - 17.00 ML, SILT, cobble sized granitic pieces, tan, slightly foliated, plagioclase rich, soft, dry, w<PL, non-plastic	ML		15.00					
		17.00 - 20.00 ML/CL, interlayered SILT and CLAY lenses, brown, weathered biotite gneiss, dry to moist, cohesive, hard, w<PL, SAPROLITE	ML		459 17.00					
20	455	20.00 - 26.00 SM, SILTY SAND, biotite gneiss, pale brown to bro, dry to wet, SAPROLITE	SM		456 20.00	3	ROTO 6.00 SONIC 6.00			
25	450	26.00 - 30.00 SM, SILTY SAND, Transitionally weathered rock, foliated, biotite rich, oxidation zones within transitionally weathered rock, medium grained, brown, wet, SAPROLITE	TWR		450 26.00	4	ROTO 4.00 SONIC 4.00			
30	445	30.00 - 40.00 BIOTITE GNEISS, biotite is medium grained, oxidation, amphibolite gneiss is foliated and fine grained	BR		446 30.00	5	ROTO 5.50 SONIC 10.00			
40		Log continued on next page								

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



## SHEET 2 of 2

DEPTH W.L.:53.62'  
ELEVATION W.L.: 425.74'  
DATE W.L.:4/15/2020  
TIME W.L.:17:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
40	435	40.00 - 50.00 BIOTITE GNEISS, poor recovery, weathered and highly fractured	BR		40.00	6	ROTO 1.50 SONIC 10.00	  Bentonite —  		

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-65








SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 30.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/11/20  
DATE COMPLETED: 4/11/20

NORTHING: 1,121,937.16  
EASTING: 2,407,733.04  
GS ELEVATION: 429.6  
TOC ELEVATION: 432.42 ft

DEPTH W.L.: 15.46'  
ELEVATION W.L.: 416.89'  
DATE W.L.: 4/16/2020  
TIME W.L.: 1515

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 2.00 CL, SILTY CLAY, 2.5 YR 4/6 red, no structure, deeply weathered, cohesive, firm to stiff, dry to moist, trace very fine mica, RESIDUUM	CL		427.6				Grout --	<b>WELL CASING</b> Interval: 0' - 20' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 20' - 30' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 17.5' - 30' Type: #1 Sand Quantity: 3.5 Bags  <b>FILTER PACK SEAL</b> Interval: 14' - 17.5' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 14' Type: Cement-Bentonite Quantity: 400lbs Cement, 24lbs Bentonite, 60gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
2.00 - 13.00		ML, CLAYEY SILT, 10 YR 5/3 brown, deeply weathered, little to no structure, mica flakes, dry to moist, cohesive, soft to firm, some mottling at 12', RESIDUUM	ML		2.00	1	ROTO 7.00 SONIC 10.00			
425									Riser --	
420										
10									Bentonite --	
415		13.00 - 20.00 ML, SILT, some clay, trace fine sand, 10 YR 5/3 brown to olive brown, deeply weathered, interlayered biotite gneiss-amphibolite, trace to faint relict foliation, cohesive, firm to stiff, moist, biotite-hornblende-plagioclase, SAPROLITE	ML		416.6	2	ROTO 9.50 SONIC 10.00			
15									Sand --	
20		20.00 - 23.50 SM, SILTY SAND, fine sand, weathered biotite gneiss with higher quartz content, faint relict foliation, mottling, moist to wet, stiff to very stiff, cohesive, SAPROLITE	SM		409.6					
23.50 - 26.50		ML, CLAYEY SILT, trace very fine sand, brown to live brown to yellowish brown, deeply weathered biotite gneiss and amphibolite interlayered, trace quartz, mottled, faint relict foliation, moist, firm to very stiff, cohesive, SAPROLITE	ML		406.1	3	ROTO 12.00 SONIC 10.00		0.010" Slotted -- Screen	
25										
26.50 - 28.50		SM, clayey SILTY SAND, yellowish brown to brown, deeply weathered, interlayered biotite gneiss and amphibolite, mottled, moist to wet, trace relict foliation, soft to firm, SAPROLITE	SM		403.1					
28.50 - 30.00		SM-ML, SILT and SILTY SAND, very fine to fine sand, brown to olive brown, weathered interlayered biotite amphibolite, relict foliation, SAPROLITE	SM-ML		401.1					
30		Boring completed at 30.00 ft			399.6					
35										
395										
390										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66D

SHEET 1 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
0		0.00 - 6.00 Hand auger for utility clearance.							<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'- 69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic	
420					418.4					
5		6.00 - 16.00 SM, SILTY SAND, brown dark brown and grey, some clay, loose, rich in muscovite and weathered biotite, soft dry			6.00					
415			SM			1	ROTO <u>5.00</u> SONIC 10.00	Grout –		
10										
410					408.4					
15		16.00 - 33.00 SM, SILTY SAND, tan, brown and grey, with clay, loose, weathered biotite, soft, dry, some weathered amphibolite			16.00					
405						2	ROTO <u>4.50</u> SONIC 10.00			
20			SM							
400										
25										
395						3	ROTO <u>10.00</u> SONIC 10.00			
35		33.00 - 36.00 SM, SILTY SAND, grey dark brown, weathered biotite gneiss, rich in biotite-plagioclase-quartz, SAPROLITE	SM		391.4 33.00					
390										
385		36.00 - 46.00 SM, SILTY SAND, greenish grey, transitionally weathered rock biotite gneiss, rich in biotite-plagioclase-quartz-hornblende, soft, loose, moist	TWR		388.4 36.00	4	ROTO <u>10.00</u> SONIC 10.00	6" Casing –		
40		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66D

SHEET 2 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
40		36.00 - 46.00 SM, SILTY SAND, greenish grey, transitionally weathered rock biotite gneiss, rich in biotite-plagioclase-quartz-hornblende, soft, loose, moist ( <i>Continued</i> )	TWR			4	ROTO 10.00 SONIC 10.00		Open Boring --	<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'-69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
380					378.4					
45		46.00 - 56.00 BIOTITE GNEISS, fine grained, well foliated, black, white and grey, rich in quartz-hornblende-plagioclase-biotite, very hard, stiff, no obvious fractures	BR		46.00	5	ROTO 9.00 SONIC 10.00			
375										
50										
370		56.00 - 69.00 BIOTITE GNEISS, black white grey, fine grained, well foliated, small fractures, weathering discoloration observed at 58'-59', rich in hornblende-plagioclase-biotite-quartz, hard, very dense	BR		368.4					
55					56.00					
365						6	ROTO 10.00 SONIC 10.00			
60			BR							
360										
65						7	ROTO 3.00 SONIC 3.00			
355		69.00 - 76.00 BIOTITE GNEISS, black white grey, fine grained, some fractures at 69'-70', moderately foliated, quartz-hornblende-plagioclase-biotite, hard, very dense	BR		355.4					
70					69.00	8	ROTO 7.00 SONIC 7.00			
350			BR							
75										
345		76.00 - 86.00 BIOTITE GNEISS, black white grey, fine grained, well foliated, rich in plagioclase-quartz-biotite, some fractures at 79' and 82', hard, very dense  Some amphibolite from 79'-81' and 83'-84'	BR		348.4	9	ROTO 10.00 SONIC 10.00			
80		Log continued on next page			76.00					

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-66D

SHEET 3 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
80		76.00 - 86.00 BIOTITE GNEISS, black white grey, fine grained, well foliated, rich in plagioclase-quartz-biotite, some fractures at 79' and 82', hard, very dense  Some amphibolite from 79'-81' and 83'-84' (Continued)	BR			9	ROTO 10.00 SONIC 10.00			<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'- 69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
340		86.00 - 96.00 BIOTITE GNEISS, black white grey, moderately foliated, rich in plagioclase-biotite, some hornblende, very hard, little fractures	BR		338.4 86.00					
85										
90										
335										
95		96.00 - 106.00 BIOTITE GNEISS and AMPHIBOLITE, black white grey, amphibolite from 99'-101.6' and 105.5'-106', biotite gneiss has hornblende-plagioclase-biotite, amphibolite with pyrite-hornblende-amphibole, fractures throughout, hard, dense	BR		328.4 96.00	10	ROTO 9.50 SONIC 10.00			Open Boring _ 6" Diameter
325										
100										
320										
105										
315		106.00 - 116.00 BIOTITE GNEISS, feldspar, quartz, fine to medium grained, weakly to strongly foliated, poorly jointed, fresh to slightly weathered  Fractures at 109.5'	BR		318.4 106.00	12	ROTO 10.00 SONIC 10.00			
110										
310										
115										
305		116.00 - 126.00 AMPHIBOLITE/HORNBLLENDE GNEISS, salt and pepper to dark green, fine to moderately grained, poorly jointed, moderately foliated, quartz-biotite-hornblende, fresh to moderately weathered, deeply weathered almost saprolitic  Fractures 122.1', 124.75'	BR		308.4 116.00	13	ROTO 9.60 SONIC 10.00			
120		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-66D

SHEET 4 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
120		116.00 - 126.00 AMPHIBOLITE/HORNBLLENDE GNEISS, salt and pepper to dark green, fine to moderately grained, poorly jointed, moderately foliated, quartz-biotite-hornblende, fresh to moderately weathered, deeply weathered almost saprolitic  Fractures 122.1', 124.75' (Continued)	BR			13	ROTO 9.60 SONIC 10.00			<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'- 69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
300		126.00 - 136.00 AMPHIBOLITE/HORNBLLENDE GNEISS, salt and pepper to dark green, fine to moderately grained, poorly jointed, moderately foliated, quartz-biotite-hornblende, fresh to moderately weathered, deeply weathered  Fractures 127.9', 133', 133.6'	BR		298.4 126.00	14	ROTO 8.50 SONIC 10.00			
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BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66D

SHEET 5 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
160		156.00 - 166.00 HORNBLLENDE/BIOTITE GNEISS, quartz, well foliated, slightly jointed, fresh to moderately weathered  164' Amphibolite, salt and pepper, fresh weathered  Fracture 157.75', 160.4', 161.4', 161.4', 162.4', 164' (Continued)	BR			17	ROTO SONIC	9.75 10.00	<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'-69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
260					258.4 166.00				
165		166.00 - 186.00 BIOTITE/HORNBLLENDE GNEISS, fine to medium grained, fresh to slightly weathered, well foliated, poorly jointed				18	ROTO SONIC	10.00 10.00	
255			BR						
170						19	ROTO SONIC	10.00 10.00	
250									Open Boring _ 6" Diameter
175			BR						
245									
180									
240									
185		186.00 - 198.75 BIOTITE GNEISS, feldspar, quartz, biotite, black to light grey, fresh to moderately weathered, fine to medium grained, feldspar has weathered out,  Fractures 194', 197.45'			238.4 186.00				
235			BR			20	ROTO SONIC	10.00 10.00	
190									
230						21	ROTO SONIC	9.00 10.00	
195			BR		225.65 198.75				
225									
200		Log continued on next page							

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66D

SHEET 6 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
200		198.75 - 206.00 AMPHIBOLITE/ BIOTITE GNEISS, fine grained, weakly foliated, poorly jointed ( <i>Continued</i> )	BR			21	ROTO SONIC	9.00 10.00		<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'- 69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
205					218.4					
210		206.00 - 216.00 HORNBLLENDE/BIOTITE GNEISS, fresh to slightly weathered, locally contained quartz, well foliated well jointed, water staining 212.5'-214'  Fractures, 207', 207.5', 208.2', 209.5', 209.6', 209.9', 212.25'	BR		206.00	22	ROTO SONIC	10.00 10.00		
215					208.4					
220		216.00 - 236.00 HORNBLLENDE/BIOTITE GNEISS, fresh to slightly weathered, locally contained quartz, well foliated well jointed,	BR		216.00	23	ROTO SONIC	8.75 10.00	Open Boring _ 6" Diameter	
225										
230						24	ROTO SONIC	10.00 10.00		
235										
240		236.00 - 246.00 HORNBLLENDE/BIOTITE GNEISS, fresh to slightly weathered, locally contained quartz, well foliated well jointed, gneiss becoming more migmatite, locally contains pygmatite folds starting at 241'	BR		188.4 236.00	25	ROTO SONIC	9.00 10.00		

Log continued on next page

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66D

SHEET 7 of 7

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 266.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/26/20  
DATE COMPLETED: 5/6/20

NORTHING: 1,124,644.48  
EASTING: 2,409,028.45  
GS ELEVATION: 424.4  
TOC ELEVATION: 427.60 ft

DEPTH W.L.: 39.70  
ELEVATION W.L.: 387.90  
DATE W.L.: 5/8/2020  
TIME W.L.: 12:15

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
240		236.00 - 246.00 HORNBLLENDE/BIOTITE GNEISS, fresh to slightly weathered, locally contained quartz, well foliated well jointed, gneiss becoming more migmatite, locally contains pygmatic folds starting at 241' (Continued)	BR			25	ROTO SONIC	9.00 10.00	Open Boring _ 6" Diameter	<b>WELL CASING</b> Interval: 0'-69' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0'-69' Type: Cement Quantity: 1504lbs Cement, 120gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
245	180				178.4					
250	175	246.00 - 256.00 MIGMATIT, plagioclase quartz biotite with hornblende, fresh to moderately weathered, poorly foliated, poorly jointed, entire run has water staining, fractures every 1/4'	BR		246.00	26	ROTO SONIC	10.00 10.00		
255	170				168.4					
260	165	256.00 - 266.00 HORNBLLENDE/BIOTITE GNEISS, fresh to slightly weathered, locally contained quartz, well foliated well jointed  Fracture 257'	BR		256.00	27	ROTO SONIC	7.00 10.00		
265	160				158.4					
270	155	Boring completed at 266.00 ft								
275	150									
280	145									

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-66





SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 60.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/1/20  
DATE COMPLETED: 4/2/20

NORTHING: 1,124,664.10  
EASTING: 2,409,115.98  
GS ELEVATION: 418.4  
TOC ELEVATION: 421.24 ft

DEPTH W.L.: 31.83'  
ELEVATION W.L.: 389.30'  
DATE W.L.: 4/7/2020  
TIME W.L.: 15:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CL, SILTY CLAY, red, deeply weathered biotite gneiss, no structure, trace mica, cohesive, firm to stiff, dry to moist, w<PL	CL						Cement --	<b>WELL CASING</b> Interval: 0' - 45' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 45' - 60' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 41.8' - 60' Type: #1 Sand Quantity: 5.5 Bags  <b>FILTER PACK SEAL</b> Interval: 38' - 41.8' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 38' Type: Cement-Bentonite Quantity: 600lbs Cement, 46lbs Bentonite, 70gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
415					413.4	1	ROTO 8.50			
5		5.00 - 10.00 ML, CLAYEY SILT, red, deeply weathered biotite gneiss, no structure, trace mica, cohesive, soft, dry to moist, w<PL	ML		5.00		SONIC 10.00		Riser --	
410					408.4					
10		10.00 - 30.00 ML, CLAYEY SILT, yellowish brown to strong brown to brown, deeply weathered biotite gneiss, some relict foliation, cohesive, sft, moist, w<PL			10.00					
405						2	ROTO 6.50			
15							SONIC 10.00			
400										
20			ML							
395						3	ROTO 9.50			
25							SONIC 10.00			
390										
30		30.00 - 39.00 ML, SILT, brown, very weathered biotite gneiss, cohesive, moist, soft w<PL			388.4					
385					30.00					
35			ML			4	ROTO 10.00			
380							SONIC 10.00			
40			SM		379.4				Bentonite --	
					39.00					

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-66

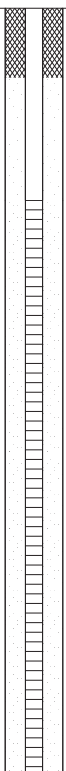
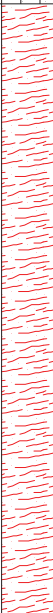
SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 60.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/1/20  
DATE COMPLETED: 4/2/20

NORTHING: 1,124,664.10  
EASTING: 2,409,115.98  
GS ELEVATION: 418.4  
TOC ELEVATION: 421.24 ft

DEPTH W.L.: 31.83'  
ELEVATION W.L.: 389.30'  
DATE W.L.: 4/7/2020  
TIME W.L.: 15:55

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40		39.00 - 44.00 SM, SILTY SAND, gley, very dark greenish grey, very weathered hornblende gneiss, non ohesive, loose to compact, moist, to wet, SAPROLITE (Continued)	SM			5	ROTO 4.00 SONIC 4.00		<b>WELL CASING</b> Interval: 0' - 45' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded	
375					374.4				<b>WELL SCREEN</b> Interval: 45' - 60' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"	
45		44.00 - 60.00 BIOTITE GNEISS, oxidation staining, well foliated, fine grained, greenish black to black with white foliations 44.50: Oxidation staining	BR		44.00	6	ROTO 6.00 SONIC 6.00		<b>FILTER PACK</b> Interval: 41.8' - 60' Type: #1 Sand Quantity: 5.5 Bags	
370										<b>FILTER PACK SEAL</b> Interval: 38' - 41.8' Type: Pel Plug Quantity: 5gal Bucket
50		50.00: Oxidation staining								<b>ANNULUS SEAL</b> Interval: 0' - 38' Type: Cement-Bentonite Quantity: 600lbs Cement, 46lbs Bentonite, 70gal Water
365								<b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum		
55		54.80: Oxidation staining 55.50: Oxidation staining				7	ROTO 10.00 SONIC 10.00	<b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic		
360		58.00: Oxidation staining								
60		60.00: Oxidation staining Boring completed at 60.00 ft			358.4					
355										
65										
350										
70										
345										
75										
340										
80										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-67D

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

SHEET 1 of 8  
DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 6.00 SM, SILTY SAND with trace clay, low to non plastic, non-cohesive, w<PL, loose/soft, high mica content	SM			1	ROTO 2.20 SONIC 6.00		Grout —	<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
5	420				418.7 6.00					
10	415	6.00 - 16.00 ML, SILT, with trace sand and clay, red brown to bronze, non to low plasticity, dry to moist, loose, w<PL, high mica content, RESIDUUM	ML			2	ROTO 5.25 SONIC 10.00			
15	410				408.7 16.00					
20	405	16.00 - 26.00 ML, SILT, with trace sand and clay, red brown, non to low plasticity, dry to moist, loose, w<PL, high mica content, RESIDUUM	ML			3	ROTO 5.00 SONIC 10.00			
25	400				398.7 26.00					
30	395	26.00 - 29.50 ML, SILT, with trace sand and clay, red brown to bronze, non to low plasticity, dry to moist, loose, w<PL, high mica content, RESIDUUM	ML							
35	390	29.50 - 36.00 GW, sandy GRAVEL, Transitionally weathered rock, well graded, fine to coarse, non-plastic, loose, dry, w<PL, amphibolite, fine-medium grained, moderately weathered, quartz, plagioclase, hornblende	TWR		395.2 29.50	4	ROTO 9.50 SONIC 10.00			
40	385	36.00 - 42.00 CL, CLAY, some very fine sand, low plasticity, dark green, wet to moist, very soft, w<PL	CL		388.7 36.00	5	ROTO 9.20 SONIC 10.00			

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-67D

SHEET 2 of 8


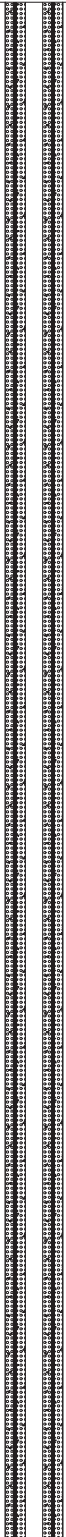













PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
40		36.00 - 42.00 CL, CLAY, some very fine sand, low plasticity, dark green, wet to moist, very soft, w<PL ( <i>Continued</i> )	CL		382.7	5	ROTO 9.20 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
		42.00 - 44.00 SM, SILTY SAND, with trace gravel, medium green to brown green non-plastic, w<PL, compact to dense	SM		42.00					
		44.00 - 46.00 SM, SILTY SAND, trace gravel, tan to brown, fine to coarse sand, gravel quartz and feldspar, dry to moist, w<PL, non to low plasticity, loose-compact, biotite gneiss	SM		44.00					
45	380	46.00 - 49.00 CL, CLAY, with sand and trace gravel, medium green to dark green, moist to dry, w<PL, non-cohesive, compact, RESIDUUM	CL		378.7	6	ROTO 9.50 SONIC 10.00			
		49.00 - 53.50 ML, SILT, with trace fine gravel, light green, low plasticity, loose, dry, w<PL,	ML		49.00					
		53.50 - 56.00 SM, SILTY SAND, trace clay, fine to medium sand, low plasticity, dry to moist, w<PL, compact, RESIDUUM	SM		53.50					
		56.00 - 66.00 AMPHIBOLITE, black and white with dark green/black and white quartz, biotite, plagioclase, hornblende, fresh to moderately weathered, poorly jointed, weakly to slightly foliated			371.2					
		59.50: Fracture 59.80 - 61.10 large vein quartz zone	BR		363.6	7	ROTO 9.60 SONIC 10.00			
		61.40: Fracture								
65	360	66.00 - 76.00 AMPHIBOLITE,,white to green, medium grained, fresh to slightly weathered			358.7	8	ROTO 10.00 SONIC 10.00			
		68.60: Fracture	BR		66.00					
		75.00: Fracture								
75	350	76.00 - 86.00 AMPHIBOLITE, fresh rock, medium grained, white to green	BR		348.7	9	ROTO 7.00 SONIC 7.00			
					76.00					
80	345	Log continued on next page								

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE PZ-67D


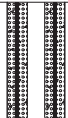



SHEET 3 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS								
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC										
					DEPTH (ft)													
80		76.00 - 86.00 AMPHIBOLITE, fresh rock, medium grained, white to green <i>(Continued)</i>	BR			9	ROTO 7.00 SONIC 7.00			<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic								
		81.90: Fracture																
85	340	84.70: Fracture				10	ROTO 3.00 SONIC 3.00											
		86.00 - 96.00 AMPHIBOLITE, fresh rock, medium grained, white to green, pyrite throughout	BR		338.7 86.00	11	ROTO 7.00 SONIC 10.00	Open Boring –										
90	335																	
		92.00: Rock becomes more gneissic 92.01: Fracture 92.85: Fracture																
95	330	94.20: Fracture																
		95.50: Fracture																
		96.00 - 106.00 AMPHIBOLITE, fresh rock, medium grained, white to green, pyrite throughout	BR		328.7 96.00	12	ROTO 10.00 SONIC 10.00											
		98.20: Fracture																
100	325																	
		106.00 - 166.00 AMPHIBOLITE, black to white to dark green, fine to medium grained, poorly jointed, weakly foliated, fresh to slightly weathered									BR		318.7 106.00	13	ROTO 10.00 SONIC 10.00			
		106.80: Fracture																
110	315																	
115	310					14	ROTO 9.40 SONIC 10.00											
120	305																	

Log continued on next page

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-67D

SHEET 4 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
120		106.00 - 166.00 AMPHIBOLITE, black to white to dark green, fine to medium grained, poorly jointed, weakly foliated, fresh to slightly weathered (Continued)				14	ROTO 9.40 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
125	300									
130	295					15	ROTO 8.50 SONIC 10.00			
135	290								Open Boring _ 6" Diameter	
140	285		BR			16	ROTO 8.80 SONIC 10.00			
145	280									
150	275					17	ROTO 10.00 SONIC 10.00			
155	270									
160	265	157.00: Fracture				18	ROTO 10.00 SONIC 10.00			

Log continued on next page

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-67D

SHEET 5 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
160		106.00 - 166.00 AMPHIBOLITE, black to white to dark green, fine to medium grained, poorly jointed, weakly foliated, fresh to slightly weathered (Continued) 160.15: Fracture	BR			18	ROTO SONIC	10.00 10.00		<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
165	260	164.50: Fracture 165.20: Fracture 165.60: Fracture 166.00 - 176.00 AMPHIBOLITE, quartz, plagioclase, biotite, fine to moderately grained, weakly foliated, poorly jointed, fresh to slightly weathered, locally contains pyrite and vein quartz 168.40: Fracture			258.7 166.00					
170	255	171.20: Fracture 172.20: Fracture	BR			19	ROTO SONIC	10.00 10.00		
175	250				248.7 176.00					
180	245	176.00 - 186.00 AMPHIBOLITE, quartz, plagioclase, biotite, fine to moderately grained, moderately foliated, poorly jointed, fresh to slightly weathered, locally contains pyrite and vein quartz 176.80: Fracture  180.10: Fracture	BR			20	ROTO SONIC	8.50 10.00	Open Boring _ 6" Diameter	
185	240				238.7 186.00					
190	235	186.00 - 196.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fine to moderately grained, moderately to well foliated, poorly jointed, fresh to slightly weathered, locally contains pyrite and vein quartz. 187.00: Fracture  189.25: Fracture 189.50: Fracture  191.10: Fracture	BR			21	ROTO SONIC	8.80 10.00		
195	230	194.00: Fracture								
200	225	196.00 - 226.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fine to medium grained, fresh to slightly weathered, moderately foliated	BR		228.7 196.00	22	ROTO SONIC	9.50 10.00		
		Log continued on next page								

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-67D


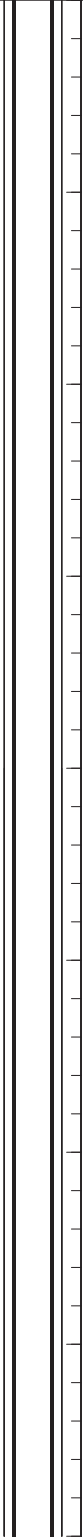
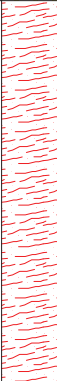
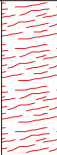
SHEET 6 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
200		196.00 - 226.00 AMPHIBOLITE/HORNBLLENDE GNEISS, fine to medium grained, fresh to slightly weathered, moderately foliated ( <i>Continued</i> )	BR			22	ROTO SONIC	9.50 10.00		<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
205	220									
210	215					23	ROTO SONIC	10.00 10.00		
215	210	215.85: Fracture								
220	205					24	ROTO SONIC	10.00 10.00	Open Boring _ 6" Diameter	
225	200				198.7 226.00					
230	195	226.00 - 236.00 BIOTITE GNEISS feldspar, garnet, biotite, weak to well foliated, fine to medium grained, black to gray, locally contains quartz veins	BR			25	ROTO SONIC	10.00 10.00		
235	190									
240	185	236.00 - 246.00 BIOTITE GNEISS, interlayered with amphibolite, black and white to dark grey, fine to medium grained, fair to weakly foliated, poorly jointed, fresh, gneiss locally contains garnets, locally contain quartz veins 236.60: Fracture 238.30: Fracture	BR		188.7 236.00	26	ROTO SONIC	9.70 10.00		

Log continued on next page

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

# RECORD OF BOREHOLE PZ-67D

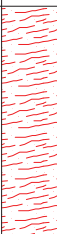



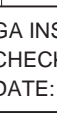
SHEET 7 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
240		236.00 - 246.00 BIOTITE GNEISS, interlayered with amphibolite, black and white to dark grey, fine to medium grained, fair to weakly foliated, poorly jointed, fresh, gneiss locally contains garnets, locally contain quartz veins ( <i>Continued</i> )	BR			26	ROTO 9.70 SONIC 10.00			<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
245	180	244.40: Fracture								
		246.00 - 276.00 AMPHIBOLITE/HORNBLende GNEISS, quartz and plagioclase, locally contains small pyrite, fresh, medium grained, weak to moderately foliated, poorly jointed  Amphibolite and hornblende have dark green hue starting 266'  Fractures 246.8', 252.7', 256', 258.1', 265.8' 267.3', 273.9' 246.80: Fracture	BR		178.7 246.00	27	ROTO 9.60 SONIC 10.00			
250	175	252.70: Fracture								
255	170	256.00: Fracture								
		258.10: Fracture								
260	165					28	ROTO 10.00 SONIC 10.00			
		265.80: Fracture								
265	160	267.30: Fracture	BR			29	ROTO 10.00 SONIC 10.00			
270	155									
		273.90: Fracture								
275	150									
			BR		148.7 276.00	30	ROTO 10.00 SONIC 10.00			
280	145									
		Log continued on next page								

Open Boring \_  
6" Diameter

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-67D




SHEET 8 of 8

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 301.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TS 150  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/25/20

NORTHING: 1,125,764.81  
EASTING: 2,408,259.40  
GS ELEVATION: 424.7  
TOC ELEVATION: 428.48 ft

DEPTH W.L.: 40.32  
ELEVATION W.L.: 388.16  
DATE W.L.: 5/6/2020  
TIME W.L.: 10:24

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE			REC
					DEPTH (ft)					
280		276.00 - 286.00 AMPHIBOLITE, black/white/dark green, hornblende gneiss, fine to medium grained, weakly to slightly foliated, poorly jointed, fresh  Approximately 282' amphibolite becomes coarse grained, minor quartz biotite amphiboles and plagioclase  appears to be more dioritic (Continued)	BR			30	ROTO 10.00 SONIC 10.00		<b>WELL CASING</b> Interval: 0' - 83' Material: SDR-21 PVC Diameter: 6.25" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: N/A Material: N/A Diameter: N/A Slot Size: N/A End Cap: N/A  <b>FILTER PACK</b> Interval: N/A Type: N/A Quantity: N/A  <b>FILTER PACK SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>ANNULUS SEAL</b> Interval: 0' - 83' Type: Cement-Bentonite Quantity: 1200lbs Cement, 45lbs Bentonite, 90gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic	
285	140									138.7
		286.00 - 301.00 AMPHIBOLITE/HORNBLLENDE GNEISS, quartz and plagioclase, locally contains small pyrite, fresh, medium grained, weak to moderately foliated, poorly jointed	BR		286.00					
290	135	289.50: Fracture				31	ROTO 9.60 SONIC 10.00			
295	130									
						32	ROTO 5.00 SONIC 5.00			
300	125				123.7					
		Boring completed at 301.00 ft								
305	120									
310	115									
315	110									
320	105									

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Logan Hall

GA INSPECTOR: M. Boatman, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-67



PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 40.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/1/20  
DATE COMPLETED: 4/1/20

NORTHING: 1,125,782.26  
EASTING: 2,408,248.89  
GS ELEVATION: 423.2  
TOC ELEVATION: 425.94 ft

SHEET 1 of 1

DEPTH W.L.: 25.5'  
ELEVATION W.L.: 400.36'  
DATE W.L.: 4/14/2020  
TIME W.L.: 11:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS					
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC							
					DEPTH (ft)										
0		0.00 - 10.00 CL, SILTY CLAY, 2.5 YR 3/4 reddish brown, no structure, deeply weathered biotite gneiss, trace mica, cohesive, plastic, moist, w<PL, RESIDUUM	CL						Grout —	<b>WELL CASING</b> Interval: 0' - 29.75' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 29.75' - 39.75' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 27.75' - 39.75' Type: #1 Sand Quantity: 3.25 Bags  <b>FILTER PACK SEAL</b> Interval: 24.5' - 27.5' Type: Pel Plug Quantity: 5gal Bucket  <b>ANNULUS SEAL</b> Interval: 0' - 24.5' Type: Cement - Bentonite Quantity: 600lbs Cement, 40lbs Bentonite, 80gal Water  <b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic					
420															
5															
415									Riser —						
10		10.00 - 13.00 ML, CLAYEY SILT, 2.5YR 4/6 red, deeply weathered biotite gneiss, no structure, trace mica, cohesive, non-plastic, w<Pl, soft to firm, moist, RESIDUUM	ML		413.2	1	ROTO 7.00 SONIC 10.00								
410					10.00										
15		13.00 - 15.00 ML, CLAYEY SILT, 5 YR 5/8 yellowish red, deeply weathered biotite gneiss, no structure, some mica, cohesive, soft to firm, w<PL, moist, RESIDUUM	ML		410.2										
405					13.00				Bentonite —						
20		15.00 - 24.00 ML, CLAYEY SILT, trace relict foliation, very weathered biotite gneiss, non-cohesive, loose, moist, w<PL, most to wet 20-24' RESIDUUM			408.2										
25		24.00 - 30.00 ML, CLAYEY SILT, 10 YR 5/6 yellowish brown, weathered biotite gneiss, foliated, quartz-hornblende-plagioclase-biotite, cohesive, stiff, w<PL, moist, SAPROLITE	ML		15.00	2	ROTO 10.00 SONIC 10.00								
30					399.2				Sand —						
35		30.00 - 38.00 ML, SILT 10 YR 5/6 yellowish brown, slightly foliated, mottled, very weathered biotite gneiss, wet 30-32', moist to wet 32-38', some sand, very fine to fine sand, SAPROLITE			24.00										
385					393.2										
40		38.00 - 40.00 Transitionally weathered rock, saprolitic rock, BIOTITE GNEISS, interlayered with saprolite very weathered, slightly foliated	TWR		385.2	3	ROTO 10.00 SONIC 10.00		0.010" Slotted Screen						
					38.00										
		Boring completed at 40.00 ft			383.2										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20



# RECORD OF BOREHOLE PZ-68

SHEET 1 of 1

PROJECT: Plant Scherer  
PROJECT NUMBER: 20139484  
DRILLED DEPTH: 20.00 ft  
LOCATION: Juliette, GA

DRILL RIG: TSI CC Crawler  
DATE STARTED: 4/15/20  
DATE COMPLETED: 4/15/20

NORTHING: 1,125,116.59  
EASTING: 2,407,181.92  
GS ELEVATION: 392.1  
TOC ELEVATION: 395.55 ft

DEPTH W.L.: 14.0'  
ELEVATION W.L.: 381.40'  
DATE W.L.: 4/17/2020  
TIME W.L.: 16:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 1.00 CL, sandy SILTY CLAY, 2.5 YR 4/6 red, cohesive, plastic, soft to firm, moist to wet, w-PL, no structure, deeply weathered biotite gneiss, RESIDUUM	CL		391.1 1.00				Grout -	<b>WELL CASING</b> Interval: 0' - 10' Material: Sch 40 PVC Diameter: 2" Joint Type: Threaded
390		1.00 - 5.00 CL, SILTY CLAY, 2.5 YR 4/6 red, cohesive, plastic, firm to stiff, w-PL, no structure, deeply weathered biotite gneiss, RESIDUUM	CL							
5		5.00 - 9.50 ML, CLAYEY SILT, 7.5 YR 4/4 brown, deeply weathered biotite gneiss, mica flakes, no structure, stiff, moist, slightly plastic, w<PL, RESIDUUM	ML		387.1 5.00	1	ROTO 9.00 SONIC 10.00		Bentonite -	<b>WELL SCREEN</b> Interval: 10' - 20' Material: U-Pack Screen Diameter: 2" Slot Size: 0.010" End Cap: 3"
385									Riser -	
10		9.50 - 11.00 SP-SM, SAND and SILTY SAND, fine sand, 7.5 YR 4/4 brown, deeply weathered biotite gneiss, moist to wet, mica flakes, non-plastic, non-cohesive, loose	SP-SM		382.6 9.50					<b>FILTER PACK</b> Interval: 7.2' - 20' Type: #1 Sand Quantity: 3.5 Bags
380		11.00 - 13.00 SM, clayey SILTY SAND, very weathered biotite, gneiss with clay 10 YR 6/3 pale brown, fine to medium grained, some foliation, mottled, moist, loose, non-plastic, SAPROLITE	SM		381.1 11.00	2	ROTO 5.00 SONIC 5.00			
15		13.00 - 14.00 ML, CLAYEY SILT, some very fine sand, 10 YR 5/4 yellowish brown, very weathered biotite gneiss, some foliation, firm, w<PL, moist	ML		379.1 13.00				Sand -	<b>FILTER PACK SEAL</b> Interval: 4' - 7.2' Type: Pel Plug Quantity: 5gal Bucket
375		14.00 - 15.00 SM, SILTY SAND, with clay, some foliation, 10 YR 6/3 pale brown, weathered biotite gneiss, dry	SM		378.1 14.00					
		15.00 - 20.00 Transitionally weathered rock to unweathered BIOTITE GNEISS, slightly foliated, fine to medium grained, quartz plagioclase, biotite	TWR		377.1 15.00	3	ROTO 2.00 SONIC 5.00		0.010" Slotted - Screen	<b>ANNULUS SEAL</b> Interval: 0' - 4' Type: Cement - Bentonite Quantity: 50lbs Cement, 3lbs Bentonite, 6gal Water
20		Boring completed at 20.00 ft			372.1					
370										<b>WELL COMPLETION</b> Pad: 4' x 4' Protective Casing: Aluminum
25										
365										<b>DRILLING METHODS</b> Soil Drill: Roto Sonic Rock Drill: Roto Sonic
30										
360										
35										
355										
40										

BOREHOLE RECORD PLANT SCHERER CR6 INVESTIGATION BORING LOGS. SURVEY UPDATED.GPJ PIEDMONT.GDT 8/18/20

LOG SCALE: 1 in = 5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Chris Turner

GA INSPECTOR: S. George, PG  
CHECKED BY: Rachel P. Kirkman, PG  
DATE: 5/29/20





# RECORD OF BOREHOLE LPZ-01

SHEET 1 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 65.80 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 11/6/15  
DATE COMPLETED: 11/10/15

NORTHING: 1,117,001.58  
EASTING: 2,398,513.19  
GS ELEVATION: 550.0  
TOC ELEVATION: 553.29 ft

DEPTH W.L.: 53.78'  
ELEVATION W.L.:  
DATE W.L.: 11/11/15  
TIME W.L.: 11:30

BOREHOLE RECORD - SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS			
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC		
					DEPTH (ft)									
0	550	0.00 - 2.50 CLAYEY SILT; red/brown clay, trace to little sand, firm to stiff, dry, W<PL	MH		547.5 2.50								<b>WELL CASING</b> Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 54'-64' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 47.7'-65.8' Type: #1 sand  <b>FILTER PACK SEAL</b> Interval: 45.1'-47.7' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-45.1' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4"x4"x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary	
		2.50 - 5.00 reddish brown/beige mottled clay with trace fine sand, some mica, stiff to very stiff, dry to moist, W<PL				1	DO	4-5-7	12	<u>1.20</u> 1.50				
5	545	5.00 - 8.50 more clay noted, reddish brown clay with trace fine sand and mica				2	DO	6-12-17	29	<u>1.50</u> 1.50				
		8.50 - 13.50 not mottled				3	DO	4-10-13	23	<u>1.50</u> 1.50				
10	540					4	DO	5-10-13	23	<u>1.50</u> 1.50				
		13.50 - 14.50 reddish brown clay with trace fine sand and mica			536.5 13.50 535.5 14.50									
15	535	14.50 - 17.00 SILTY SAND; deeply weathered granitic gneiss, some quartz, partially weathered rock, white sand and silt, compact, dry, W<PL	SM		533 17.00	5	DO	2-7-5	12	<u>1.00</u> 1.50				
		17.00 - 20.00 SILT; light brown silt with trace fine sand, some mica, non-plastic, soft, dry to moist, W<PL				530 20.00	6	DO	3-3-4	7	<u>1.20</u> 1.50			
20	530	20.00 - 25.00 light beige/white silver silt, lots of mica, non-plastic, trace fine sand, soft, dry, W<PL	ML								Portland Type I/ Type – II/ Gel mix			
		25.00 - 30.00 light beige/white silt with mica and trace fine sand to deeply weathered granitic gneiss with quartz, partially weathered rock, white sand and silt, compact, dry, W<PL				525 25.00	7	DO	3-4-4	8				<u>1.10</u> 1.50
30	520	30.00 - 33.00 light to medium brown silt, trace to little sand, non-plastic, silt appears to be made of biotite gneiss interlayered with quartz veins, soft, dry to moist, W<PL				520 30.00	8	DO	4-8-7	15				<u>1.30</u> 1.50
		33.00 - 40.00 SILTY SAND; light to medium brown silt with trace fine sand, greenish weathering, non-plastic, soft, moist, W<PL				517 33.00								
35	515		SM			9	DO	3-6-8	14	<u>1.40</u> 1.50				
40	510	40.00 - 53.00 brown/white/green fine to coarse sand, non to low plasticity, dry to moist, soft, W<PL				510 40.00	10	DO	6-27-42	69		<u>1.50</u> 1.50		
45	505	Log continued on next page												

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



# RECORD OF BOREHOLE LPZ-01

SHEET 2 of 2

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 65.80 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 11/6/15  
DATE COMPLETED: 11/10/15

NORTHING: 1,117,001.58  
EASTING: 2,398,513.19  
GS ELEVATION: 550.0  
TOC ELEVATION: 553.29 ft

DEPTH W.L.: 53.8'  
ELEVATION W.L.:  
DATE W.L.: 11/11/15  
TIME W.L.: 11:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC
					DEPTH (ft)							
45	505	40.00 - 53.00 brown/white/green fine to coarse sand, non to low plasticity, dry to moist, soft, W<PL (Continued)				11	DO	12-20-17	37	1.30 1.50	<div>3/8" Bentonite — chips</div> <div>#1 sand —</div> <div>0.010" slot — screen</div>	<div><b>WELL CASING</b> Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</div> <div><b>WELL SCREEN</b> Interval: 54'-64' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</div> <div><b>FILTER PACK</b> Interval: 47.7'-65.8' Type: #1 sand</div> <div><b>FILTER PACK SEAL</b> Interval: 45.1'-47.7' Type: 3/8" Bentonite Pellets</div> <div><b>ANNULUS SEAL</b> Interval: 0'-45.1' Type: Portland Type I/Type II/Gel Mix</div> <div><b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Steel</div> <div><b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary</div>
50	500					12	DO	14-21-29	50	1.40 1.50		
55	495	53.00 - 58.00 PARTIALLY WEATHERED ROCK; biotite gneiss with quartz and hornblende	PWR		497 53.00	13	DO	50/3	50	0.20 0.30		
60	490	58.00 - 65.80 ROCK; biotite gneiss, no recovery in spoon *No auger refusal noted due to drilling conditions Core Run (58.3'-59.8'): RQD=0%; REC=67% Core Run (59.8'-64.8'): RQD=44%; REC=98% Core Run (64.8'-65.8'): RQD=82%; REC=90%	BR		492 58.00	14	CORE			1.00 1.50		
65	485					15	CORE			4.90 5.00		
		Boring completed at 65.80 ft			484.2	16	CORE			0.90 1.00		
70	480											
75	475											
80	470											
85	465											
90	460											

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



SHEET 1 of 1

DEPTH W.L.: 2.05'  
ELEVATION W.L.:  
DATE W.L.: 11/21/15  
TIME W.L.: 08:00

[illegible]

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

# RECORD OF BOREHOLE LPZ-03

SHEET 1 of 1





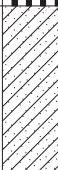


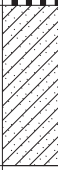
PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 35.00 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 11/17/15  
DATE COMPLETED: 11/18/15

NORTHING: 1,117,883.86  
EASTING: 2,398,657.00  
GS ELEVATION: 512.2  
TOC ELEVATION: 515.45 ft

DEPTH W.L.: 6.48  
ELEVATION W.L.: 6.48  
DATE W.L.: 1/14/16  
TIME W.L.: 11:13

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
0		0.00 - 2.50 CLAY; with some silt, orange/yellow/beige mottled clay with trace fine sand, low plasticity, very stiff to hard, dry to moist, W<PL	CH		509.7						 <p>Portland Type I/ Type II/ Gel mix</p> <p>3/8" Bentonite chips</p> <p>#1 sand</p> <p>0.010" slot screen</p>	<b>WELL CASING</b> Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 20'-35' Type: #1 sand "Heaving sands during well construction"  <b>FILTER PACK SEAL</b> Interval: 17.7'-20' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-17.7' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4"x4"x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
510		2.50 - 4.00 red brown mottled clay with trace fine sand, dry to moist, W<PL			508.2	1	DO	4-6-10	16	1.40 1.50		
5		4.00 - 13.00 Shelby Tube Collected: 4'-6" CLAYEY SILT; light green and brown mottled clay, trace fine sand, stiff to very stiff, low plasticity, moist W<PL	MH		4.00	2	DO	5-10-12	22	1.50 1.50		
505						3	DO	5-7-9	16	1.50 1.50		
10						4	DO	3-5-8	13	1.50 1.50		
500					499.2							
15		13.00 - 18.00 CLAYEY SAND; light green to beige sand, fine to coarse, trace clay and gravel, non to low plasticity, compact, soft, very moist, W<PL	SC		13.00	5	DO	2-1-2	3	1.50 1.50		
495					494.2							
20		18.00 - 20.00 CLAYEY SILT; beige to brown spotted clay, moderate to high plasticity, soft to firm, moist, W=PL 20.00 - 25.00 beige to brown spotted clay, moderate to high plasticity, soft to firm, moist, W=PL	MH		18.00	6	DO	1-2-1	3	1.50 1.50		
490					492.2							
25		25.00 - 30.30 yellow brown clay,, trace to some fine to medium sand, low to moderate plasticity, soft to very soft, wet, W>PL			487.2	7	DO	1-2-2	4	1.50 1.50		
485					481.9							
30		30.30 - 35.00 SAPROLITE; white/black/brown sand and clay, low to non-plastic, deeply weathered granitic biotite gneiss, soft, wet	SC		30.30	8	DO	1-2-2	4	0.90 1.50		
480					477.2							
35		Boring completed at 35.00 ft				9	DO	1-2-3	5	1.50 1.50		
475												
40												
470												
45												

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



# RECORD OF BOREHOLE LPZ-04

SHEET 1 of 1





PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 40.00 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 11/18/15  
DATE COMPLETED: 11/19/15

NORTHING: 1,115,962.59  
EASTING: 2,397,083.47  
GS ELEVATION: 458.1  
TOC ELEVATION: 461.24 ft

DEPTH W.L.: 15.09'  
ELEVATION W.L.:  
DATE W.L.: 11/19/15  
TIME W.L.: 14:20

BOREHOLE RECORD - SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ\_PIEDMONT.GDT 9/4/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC			
					DEPTH (ft)								
0		0.00 - 2.50 SILTY CLAY; reddish brown clay, firm to stiff, low plasticity, moist, W<PL	CL		455.6						Portland Type I/ Type – II/ Gel mix	<b>WELL CASING</b> Interval: -3'-18' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 18'-28' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 16.5'-31.9' Type: #1 sand  <b>FILTER PACK SEAL</b> Interval: 12.5'-16.5' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-12.5' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary	
455		2.50 - 6.00 reddish brown clay, firm to stiff, low plasticity, moist, W<PL			2.50	1	DO	4-5-8	13	1.50 1.50			
5													
		6.00 - 7.50 CLAY; yellowish orange clay with fine to medium sand, low plasticity, stiff, moist, W<PL	CH		452.1	2	DO	2-5-7	12	1.30 1.50			
450		7.50 - 10.00 grayish white clay with trace to some fine to medium sand, low plasticity, very stiff to hard, dry to moist, W<PL			450.6								
					7.50	3	DO	5-7-8	15	1.20 1.50			
10		10.00 - 13.00 CLAYEY SAND; yellowish orange fine to medium sand, some clay, firm to stiff, non to low plasticity, dry to moist, W<PL Shelby Tube Collected: 10'-12'	SC		448.1	4	DO	7-9-10	19	1.50 1.50			
445		13.00 - 18.00 red/brown/black/silver silt with some clay and trace coarse sand, non-plastic, mica, extremely moist, saturated but not wet, possible water around 17'			445.1								
15					13.00	5	DO	4-9-9	18	1.50 1.50			
440		18.00 - 25.00 SILTY SAND; red/brown/black/silver silt with some clay and trace coarse sand, non to low plasticity, soft, moist to wet, W>PL	SM		440.1						0.010" slot screen #1 sand –		
20					18.00	6	DO	2-2-2	4	1.50 1.50			
435													
		25.00 - 30.00 SAPROLITE; top 4 inches fine grain granitic texture, sand, trace silt, non-plastic, loose, soft, W>PL; bottom 10 inches saprolite, fine to medium grain biotite gneiss, sand, silt, fine to coarse, soft, compact, W>PL			433.1	7	DO	2-3-4	7	1.50 1.50			
430					25.00								
30		30.00 - 35.00 interlayered fine grain granitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse sand and silt			428.1	8	DO	1-4-3	7	1.20 1.50			
425			30.00										
35		35.00 - 40.00 intertayered sequence: fine grain granitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse sand and silt, moist to wet, W>PL			423.1	9	DO	3-5-11	15	1.20 1.50			
420			35.00										
40		Boring completed at 40.00 ft			418.1	10	DO	11-17-20	37	0.90 1.50			3/8" Bentonite – chips
415													
45													

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



# RECORD OF BOREHOLE LPZ-05

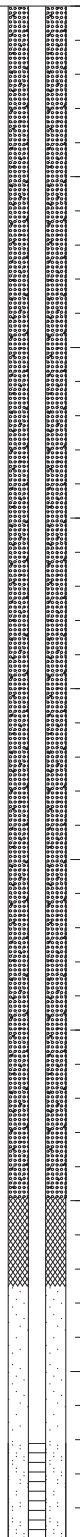
SHEET 1 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 103.40 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 10/28/15  
DATE COMPLETED: 11/5/15

NORTHING: 1,115,328.95  
EASTING: 2,399,698.53  
GS ELEVATION: 521.5  
TOC ELEVATION: 524.51 ft

DEPTH W.L.: 45.10'  
ELEVATION W.L.:  
DATE W.L.: 11/5/15  
TIME W.L.: 10:40

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
					DEPTH (ft)							
0		0.00 - 2.50 SILT; soft sandy top soil followed by red silt and clay with mica, low plasticity, dry, compact, W>PL	ML									<b>WELL CASING</b> Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 42.1'-52.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 37.5'-53.1' Type: #1 sand  <b>FILTER PACK SEAL</b> Interval: 34.9'-37.5' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-34.9' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
520		2.50 - 5.00 red silt and clay, contains mica, low plasticity, compact, dry, W>PL			519 2.50	1	DO	3-5-8	13	<u>1.30</u> 1.50		
5		5.00 - 8.00 red/brown silt, contains mica, non-plastic, 1 inch thick pegmatite lense at 6.7 feet, dry to moist			516.5 5.00	2	DO	4-8-11	19	<u>1.10</u> 1.50		
515		8.00 - 10.00 SILTY CLAY; red/brown clay with some silt, contains mica, low plasticity, loose to firm, dry to moist	CL		513.5 8.00	3	DO	5-5-5	10	<u>1.20</u> 1.50		
10		10.00 - 18.20 red/brown clay with some silt, contains mica, coarse biotite and feldspar crystals, low plasticity, loose to firm, dry to moist			511.5 10.00	4	DO	2-4-5	9	<u>0.90</u> 1.50		
510		18.20 - 23.00 SILTY SAND; tan to white sand, fine to coarse, trace silt, non-plastic, loose; orange-brown silt with trace sand, fine to medium, weathered amphibolite, firm , dry, moist; then to silty sand with biotite/quartz/feldspar pegmatite, non-plastic, soft, dry to moist			503.3 18.20	5	DO	2-3-4	7	<u>0.90</u> 1.50		
505		23.00 - 33.20 SILT; orange/brown silt with trace fine sand, weathered amphibolite, non-plastic, soft to firm, dry to moist	SM		498.5 23.00	6	DO	3-4-3	7	<u>0.90</u> 1.50		
20		33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W<PL			488.3 33.20	7	DO	5-6-6	12	<u>1.50</u> 1.50		
495		35.00 - 40.00 white sand, fine to coarse with trace silt, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, moist to wet			486.5 35.00	9	DO	19-33-20	>50	<u>1.40</u> 1.50		
485		40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining evident, compact, non-plastic, moist to wet	ML		481.5 40.00	10	DO	32-50/3	>50	<u>0.80</u> 0.80		
480		Log continued on next page			476.5							

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ | PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16





# RECORD OF BOREHOLE LPZ-05

SHEET 2 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 103.40 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 10/28/15  
DATE COMPLETED: 11/5/15

NORTHING: 1,115,328.95  
EASTING: 2,399,698.53  
GS ELEVATION: 521.5  
TOC ELEVATION: 524.51 ft

DEPTH W.L.: 45.10'  
ELEVATION W.L.:  
DATE W.L.: 11/5/15  
TIME W.L.: 10:40

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
45		45.00 - 50.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining evident, thin vein of quartz, compact, non-plastic, moist to wet			45.00	11	DO	6-7-11	18	<u>1.30</u> 1.50	<p>#1 sand</p> <p>0.010" slot screen</p> <p>3/8" Bentonite chips</p>	<b>WELL CASING</b> Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 42.1'-52.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 37.5'-53.1' Type: #1 sand  <b>FILTER PACK SEAL</b> Interval: 34.9'-37.5' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-34.9' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
47.5												
50		50.00 - 53.90 green salt and pepper texture, fine to coarse sand and silt, some mica, iron staining evident, compact, wet			471.5 50.00	12	DO	5-8-10	18	<u>1.50</u> 1.50		
470												
55		53.90 - 63.00 SAPROLITE; biotite/gneiss/quartz/feldspar saprolite, silt with some fine to coarse sand, brown and white, non-plastic, compact to dense, wet,	ML		467.6 53.90	13	DO	3-15-15	30	<u>1.50</u> 1.50		
465												
60						14	DO	7-9-15	24	<u>1.50</u> 1.50		
460												
65		63.00 - 68.00 SILTY SAND; white/black/green silty sand, fine to coarse, trace silt, non-plastic, compact, moist, W<PL <i>Auger Refusal at 68 feet</i> Core Run (67.3'-73.5'): RQD=56%; REC=78%	SM		458.5 63.00	15	DO	10-17-25	42	<u>1.50</u> 1.50		
455												
70		68.00 - 103.00 BEDROCK; deeply weathered gneiss			453.5 68.00	16	CORE			<u>4.80</u> 6.20		
450												
75												
445		76.60: Core Run (76.6'-81.2'): no recovery	BR			17	CORE			<u>0.00</u> 4.60		
80												
440		81.20: Core Run (81.2'-85.7'): no recovery				18	CORE			<u>0.00</u> 4.50		
85												
435		85.70: Core Run (85.7'-93'): no recovery				19	CORE			<u>0.00</u> 7.30		
90		Log continued on next page										

BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



# RECORD OF BOREHOLE LPZ-05

SHEET 3 of 3

PROJECT: Plant Scherer  
PROJECT NUMBER: 1542702  
DRILLED DEPTH: 103.40 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550X (98977) Track  
Mounted Rig  
DATE STARTED: 10/28/15  
DATE COMPLETED: 11/5/15

NORTHING: 1,115,328.95  
EASTING: 2,399,698.53  
GS ELEVATION: 521.5  
TOC ELEVATION: 524.51 ft

DEPTH W.L.: 45.10'  
ELEVATION W.L.:  
DATE W.L.: 11/5/15  
TIME W.L.: 10:40

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC		
90		68.00 - 103.00 BEDROCK; deeply weathered gneiss (Continued)				19	CORE			0.00 7.30		<b>WELL CASING</b> Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded  <b>WELL SCREEN</b> Interval: 42.1'-52.1' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC  <b>FILTER PACK</b> Interval: 37.5'-53.1' Type: #1 sand  <b>FILTER PACK SEAL</b> Interval: 34.9'-37.5' Type: 3/8" Bentonite Pellets  <b>ANNULUS SEAL</b> Interval: 0'-34.9' Type: Portland Type I/Type II/Gel Mix  <b>WELL COMPLETION</b> Pad: 4'x4'x4" Protective Casing: Steel  <b>DRILLING METHODS</b> Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
430		93.00: Core Run (93'-98'): RQD=0%; REC=20%				20	CORE			1.00 5.00		
95		98.00: Core Run (98'-103.4'): RQD=62%; REC=90%	BR			21	CORE			4.90 5.40		
425		Boring completed at 103.40 ft			418.5 103.00							
100												
420												
105												
415												
110												
410												
115												
405												
120												
400												
125												
395												
130												
390												
135												

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman  
CHECKED BY: Rachel P. Kirkman, P.G.  
DATE: 2/1/16



BOREHOLE RECORD SCHERER BORING LOGS (2)\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/4/20



**APPENDIX A**

## Monitoring System Details

A-4 GYPSUM CELL 1 MONITORINGWELLS  
CONSTRUCTION LOGS



# LOG OF TEST BORING

**BORING GWC-1**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 10/28/2009 **COMPLETED** 10/28/2009 **SURF. ELEV.** 371.6 **COORDINATES:** N 1120077.85 E 2411555.32

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** P. Smith **LOGGED BY** D. Brooks **CHECKED BY** R. Tinsley **ANGLE**            **BEARING**           

**BORING DEPTH** 36 ft. **GROUND WATER DEPTH: DURING** 6 ft. **COMP.**            **DELAYED**           

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Residuum, sandy SILT (MLS) and silty SAND (SM)						
10								
15								
20			352.0					
		Silty SAND (SM); mottled black and white; fine grained; gneissic saprolite		SS -1	19.5- 21.0	3-5-16 (21)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\SCHERER GYP.GPJ

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# LOG OF TEST BORING

**BORING GWC-1**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

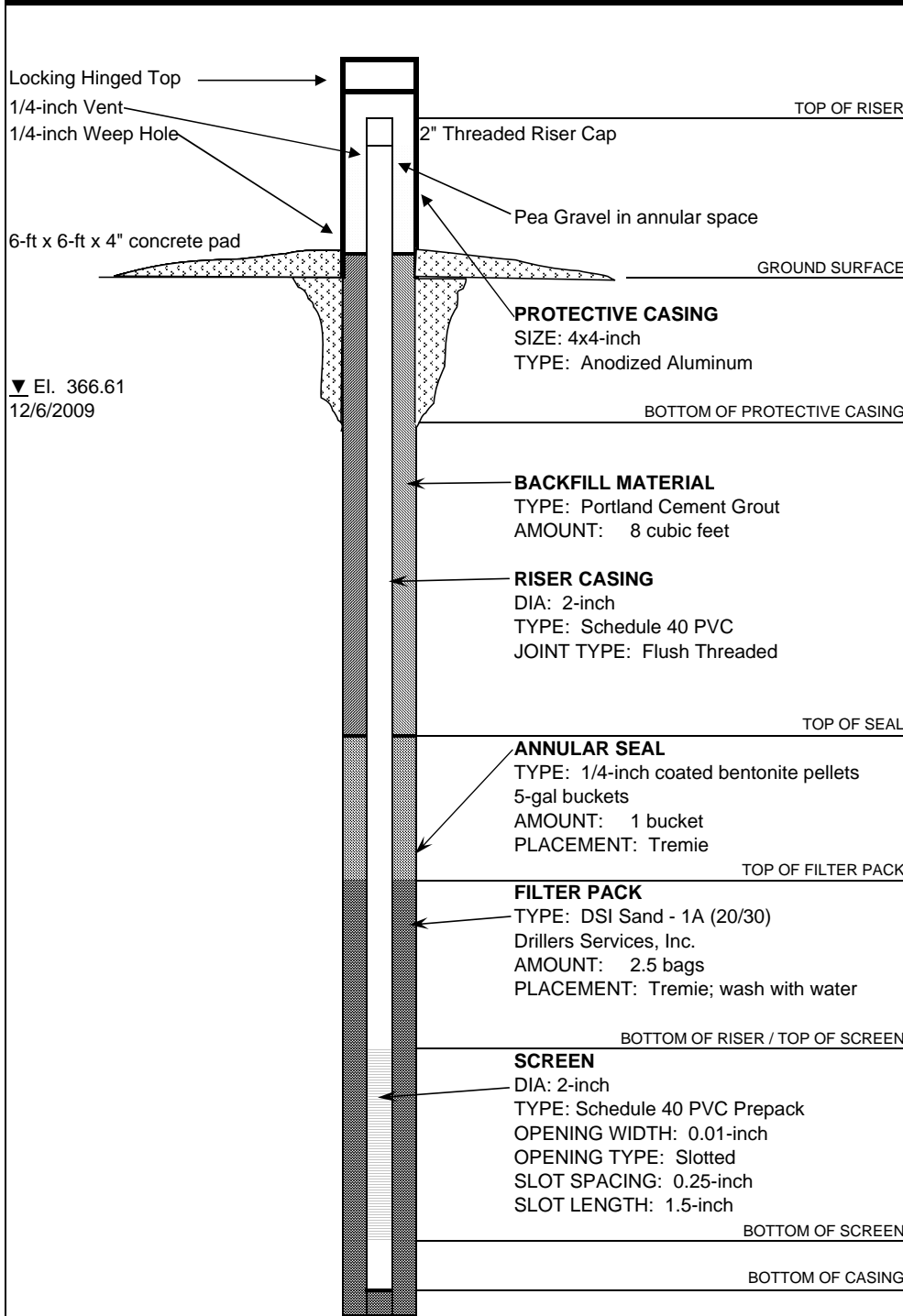
**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Silty SAND (SM); mottled black and white; fine grained; gnessic saprolite ( <i>Con't</i> )		SS -2	24.5- 26.0	11-7-9 (16)		
30		Silty SAND (SM); mottled black and white; fine to medium grained		SS -3	29.5- 31.0	21-15-11 (26)		
35				SS -4	34.5- 36.0	7-9-21 (30)		
			335.5					
		Bottom of borehole at 36.0 feet.						
40								
45								
50								

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\SCHERER GYP.GPJ

## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME		
CCB Storage Facility		DRILLER: P. Smith				
LOCATION: Cell 1		RIG TYPE: CME 550		GWC-1		
LOGGER: D. Brooks		DRILLING METHODS: HSA				
DATE CONSTRUCTED: 10/28/2009						
				DEPTH FEET	ELEVATION FT, MSL	
				TOP OF RISER	-3.35	374.95
GROUND SURFACE				0.00	371.6	
BOTTOM OF PROTECTIVE CASING						
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 8 cubic feet						
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded						
TOP OF SEAL				19.50	352.10	
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie						
TOP OF FILTER PACK				22.00	349.60	
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2.5 bags PLACEMENT: Tremie; wash with water						
BOTTOM OF RISER / TOP OF SCREEN				24.69	346.91	
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch						
BOTTOM OF SCREEN				34.69	336.91	
BOTTOM OF CASING				34.85	336.75	
HOLE DIA: 9"						

▼ El. 366.61  
12/6/2009



# LOG OF TEST BORING

**BORING GWC-2**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 10/7/2009 **COMPLETED** 10/7/2009 **SURF. ELEV.** 376.9 **COORDINATES:** N 1119816.59 E 2411493.53

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** L. Millet **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 54.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Very moist, sandy SILT (MLS) and silty SAND (SM)						
10								
15								
20			357.4					
		Wet, silty SAND (SM); green and white with occasional orange mottling; gneissic saprolite		SS -1	19.5- 21.0	2-3-6 (9)		

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# LOG OF TEST BORING

**BORING GWC-2**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Wet, silty SAND (SM); green and white with occasional orange mottling; gneissic saprolite (Cont)						
		Wet, silty SAND (SM); green and white with occasional lite orange and black mottling; soft; gneissic saprolite		SS -2	24.5- 26.0	3-5-7 (12)		
30		Wet, silty SAND (SM); green and white with occasional orange mottling; soft; gneissic saprolite		SS -3	29.5- 31.0	6-5-6 (11)		
35				SS -4	34.5- 36.0	5-5-9 (14)		
40				SS -5	39.5- 41.0	4-5-8 (13)		
45				SS -6	44.5- 46.0	4-6-10 (16)		
50		Wet, silty SAND (SM); black, green and white with occasional lite orange mottling; micaceous;		SS -7	49.5- 51.0	6-7-10 (17)		

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# LOG OF TEST BORING

**BORING GWC-2**  
PAGE 3 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		gneissic saprolite Wet, silty SAND (SM); green and white with occasional orange mottling; gneissic saprolite (Con't)						
55								
			320.9	SS -8	54.5- 56.0	7-10-15 (25)		
		Bottom of borehole at 54.5 feet.						
60								
65								
70								
75								

## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME	
CCB Storage facility		DRILLER: S. Denty			
LOCATION: Cell 1		RIG TYPE: CME 550			
LOGGER: L. Millet		DRILLING METHODS: HSA		GWC-2	
DATE CONSTRUCTED: 10/8/2009					
				DEPTH FEET	ELEVATION FT, MSL
<div><div><div>Locking Hinged Top</div><div>1/4-inch Vent</div><div>1/4-inch Weep Hole</div><div>4-ft x 4-ft x 4" concrete pad</div></div><div><div>2" Threaded Riser Cap</div><div>Pea Gravel in annular space</div><div>GROUND SURFACE</div><div>PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum</div><div>BOTTOM OF PROTECTIVE CASING</div><div>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 4.5 cubic feet</div><div>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</div><div>TOP OF SEAL</div><div>ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie</div><div>TOP OF FILTER PACK</div><div>FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 3/4 bags PLACEMENT: Tremie; wash with water</div><div>BOTTOM OF RISER / TOP OF SCREEN</div><div>SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</div><div>BOTTOM OF SCREEN</div><div>BOTTOM OF CASING</div></div></div>				-3.32	380.22
				0.00	376.9
				40.98	335.92
				42.98	333.92
				44.78	332.12
				54.78	322.12
				54.88	322.02
HOLE DIA: 9"					

▼ El. 368.01  
12/5/2009

▼ El. 368.01  
12/5/2009





# LOG OF TEST BORING

**BORING GWC-3**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 10/29/2009 **COMPLETED** 10/29/2009 **SURF. ELEV.** 407.1 **COORDINATES:** N 1119613.99 E 2411202.86

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** D. Brooks **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 46 ft. **GROUND WATER DEPTH: DURING** 38 ft. **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) and SILT (ML)						
10								
15								
20		Sandy SILT (MLS), mottled orange, tan and black, micaceous		SS -1	18.5- 20.0	4-4-7 (11)		

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# LOG OF TEST BORING

**BORING GWC-3**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Sandy SILT (MLS) and SILT (ML) (Con't) Sandy SILT (MLS), mottled orange, tan and black with tan lean CLAY (CL), micaceous		SS -2	23.5- 25.0	5-5-7 (12)		
			378.7					
30		Silty SAND (SM), mottled orange, tan, white and black, fine grained, micaceous		SS -3	28.5- 30.0	8-9-14 (23)		
35		Silty SAND (SM), mottled orange and tan with trace amounts of white sand, fine grained, micaceous		SS -4	33.5- 35.0	11-12-22 (34)		
40		Silty SAND (SM), mottled orange and whit, fine to medium grained, micaceous		SS -5	38.5- 40.0	17-28-44 (72)		
45		Silty SAND (SM), mottled orange, tan, and black, fine grained, micaceous		SS -6	43.5- 43.9	24-30-50/-7" (100+)		
			361.2					Auger refusal.
		Bottom of borehole at 46.0 feet.						
50								

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# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME		
CCB Storage Facility Solid Waste Management		DRILLER: Ranger				
LOCATION: Cell 1		RIG TYPE: CME 55				
LOGGER: D. Brooks		DRILLING METHODS: HSA		GWC-3		
DATE CONSTRUCTED: 10/29/2009						
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>4-ft x 4-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>GROUND SURFACE</p> <p>PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum</p> <p>BOTTOM OF PROTECTIVE CASING</p> <p>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 14 cubic feet</p> <p>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p>TOP OF SEAL</p> <p>ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie</p> <p>TOP OF FILTER PACK</p> <p>FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6.5 bags PLACEMENT: Tremie; wash with water</p> <p>BOTTOM OF RISER / TOP OF SCREEN</p> <p>SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF CASING</p> <p>HOLE DIA: 9"</p>				DEPTH FEET	ELEVATION FT, MSL	
				TOP OF RISER	-3.34	410.44
				GROUND SURFACE	0.00	407.1
				BOTTOM OF PROTECTIVE CASING		
				TOP OF SEAL	31.90	375.20
				TOP OF FILTER PACK	34.40	372.70
				BOTTOM OF RISER / TOP OF SCREEN	36.40	370.70
				BOTTOM OF SCREEN	46.40	360.70
				BOTTOM OF CASING	46.39	360.71

▼ El. 370.68  
12/5/2009



# LOG OF TEST BORING

**BORING GWC-4**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 11/2/2009 **COMPLETED** 11/2/2009 **SURF. ELEV.** 408.4 **COORDINATES:** N 1119255.96 E 2411041.82

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE**            **BEARING**           

**BORING DEPTH** 39.5 ft. **GROUND WATER DEPTH: DURING** 27.5 ft. **COMP.**            **DELAYED**           

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) and SILT (ML)						
10								
15								
20			389.8	SS -1	18.5- 20.0	11-7-10 (17)		

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# LOG OF TEST BORING

**BORING GWC-4**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Damp, soft, SILT (ML), mottled black, tan and orange, micaceous ( <i>Cont</i> ) Very damp, soft, SILT (ML), mottled black, tan, white and orange, micaceous		SS -2	23.5- 25.0	7-8-11 (19)		
			379.8					
30		Very moist, soft, silty SAND (SM) and SILT (ML); mottled black, tan, orange and white; fine grained; very micaceous with large mica flakes		SS -3	28.5- 30.0	9-13-20 (33)		
35		Moist, soft, silty SAND (SM); mottled black, tan, orange and white; fine to medium grained; micaceous		SS -4	33.5- 33.9	50/5" (100+)		
			369.8					
			368.8	SS -5	38.5- 39.0	50 (0)		auger refusal.
40		Moist, soft, clayey SAND (SC); black with orange, tan and white mottles; fine grained; micaceous Bottom of borehole at 39.5 feet.						
45								
50								

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## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME
CCB Storage Facility		DRILLER: Ranger		
LOCATION: Cell 1		RIG TYPE: CME 550		
LOGGER: W. Clanton		DRILLING METHODS: HSA		GWC-4
DATE CONSTRUCTED:11/21/2009				
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>4-ft x 4-ft x 4" concrete pad</p> <p>GROUND SURFACE</p> <p>PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum</p> <p>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 11.5 cubic feet</p> <p>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p>ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1.25 buckets PLACEMENT: Tremie</p> <p>FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: Tremie; wash with water</p> <p>SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>HOLE DIA: 9"</p>	DEPTH FEET	ELEVATION FT, MSL		
	TOP OF RISER	-3.35	411.75	
	GROUND SURFACE	0.00	408.4	
	BOTTOM OF PROTECTIVE CASING			
	TOP OF SEAL	26.30	382.10	
	TOP OF FILTER PACK	27.95	380.45	
	BOTTOM OF RISER / TOP OF SCREEN	29.70	378.70	
	BOTTOM OF SCREEN	39.70	368.70	
	BOTTOM OF CASING	39.91	368.49	

▼ El. 381.02  
12/4/2009



# LOG OF TEST BORING

**BORING GWC-5**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 10/7/2009 **COMPLETED** 10/7/2009 **SURF. ELEV.** 393.3 **COORDINATES:** N 1118897.72 E 2411025.88

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger; HQ Rock Core

**DRILLED BY** T. Milam **LOGGED BY** LM/BG **CHECKED BY** R. Tinsley **ANGLE**        **BEARING**       

**BORING DEPTH** 34.8 ft. **GROUND WATER DEPTH: DURING**        **COMP.**        **DELAYED** 20.2 ft. after 18 hrs.

**NOTES** Elevation based on stake. Offset 5' west of stake. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		CLAY (CL); red and tan; medium stiff; damp; low plasticity						
10								
15								
20								
			372.2	SS -1	19.5- 21.0	2-3-5 (8)		
		SILT (ML); gray; medium dense; moist; micaceous						

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# LOG OF TEST BORING

**BORING GWC-5**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		SILT (ML); gray; medium dense; moist; micaceous ( <i>Cont</i> )						
			367.2	SS -2	24.5- 26.0	3-3-6 (9)		
		Silty SAND (SM); gray; fine grained; dense; very moist; micaceous						
			364.2					
30		<b>GNEISS</b> - black and white, weathered, hard augering	363.2	SS -3	29.5- 29.7	50/2" (100+)		
		<b>GNEISS</b> - black and white, fine to medium grain, hard, not weathered						Auger refusal.
				RC -1	30.0- 34.8		100 (100)	
35			358.4					
		Bottom of borehole at 34.8 feet.						
40								
45								
50								

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# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL
CCB Storage Facility		DRILLER: S. Denty		NAME
LOCATION: Cell 1		RIG TYPE: CME 550		
LOGGER: B. Gallagher		DRILLING METHODS: HAS/HQ Core		GWC-5
DATE CONSTRUCTED: 10/22/09				
				DEPTH
				FEET
				ELEVATION
				FT, MSL
Locking Hinged Top				
1/4-inch Vent				
1/4-inch Weep Hole				
4-ft x 4-ft x 4" concrete pad				
2" Threaded Riser Cap				TOP OF RISER
Pea Gravel in annular space				-3.39
GROUND SURFACE				0.00
				393.3
<b>PROTECTIVE CASING</b>				
SIZE: 4x4-inch				
TYPE: Anodized Aluminum				
BOTTOM OF PROTECTIVE CASING				
<b>BACKFILL MATERIAL</b>				
TYPE: Portland Cement Grout				
AMOUNT: 7 cubic feet				
<b>RISER CASING</b>				
DIA: 2-inch				
TYPE: Schedule 40 PVC				
JOINT TYPE: Flush Threaded				
TOP OF SEAL				14.97
				378.33
<b>ANNULAR SEAL</b>				
TYPE: 1/4-inch coated bentonite pellets				
5-gal buckets				
AMOUNT:				
PLACEMENT: Tremie				
TOP OF FILTER PACK				16.97
				376.33
<b>FILTER PACK</b>				
TYPE: DSI Sand - 1A (20/30)				
Drillers Services, Inc.				
AMOUNT:				
PLACEMENT: Tremie; wash with water				
BOTTOM OF RISER / TOP OF SCREEN				20.43
				372.87
<b>SCREEN</b>				
DIA: 2-inch				
TYPE: Schedule 40 PVC				
OPENING WIDTH: 0.01-inch				
OPENING TYPE: Slotted				
SLOT SPACING: 0.25-inch				
SLOT LENGTH: 1.5-inch				
BOTTOM OF SCREEN				30.43
				362.87
BOTTOM OF CASING				30.66
				362.64
HOLE DIA: 9"				

▼ El. 379.16  
12/3/2009



# LOG OF TEST BORING

**BORING GWC-6**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 10/8/2009 **COMPLETED** 10/8/2009 **SURF. ELEV.** 412.4 **COORDINATES:** N 1118575.69 E 2410872.56

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger; HQ Rock Core

**DRILLED BY** T. Milam **LOGGED BY** LM/BG **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 44.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Offset 5' west of stake. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		CLAY (CL)						
10			402.4					
15		SILT (ML)						
			397.4					
20		Silty SAND (SM); tan with orange and black mottling; loose; dry; abundant mica						
			392.4					
		Silty SAND (SM); tan with orange and black mottling; loose; dry; abundant mica		SS -1	19.5- 21.0	3-5-6 (11)		

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# LOG OF TEST BORING

**BORING GWC-6**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Silty SAND (SM); black and tan with occasional black mottling; very fine to fine grained; loose; dry; mica		SS -2	24.0- 25.5	5-6-10 (16)		
30		White cobble		SS -3	29.5- 29.8	50/4" (100+)		
35		<b>GNEISS</b> - white and black, medium to fine grain, soft to medium hard, slightly to highly weathered, banded  Micaceous seam at 35.9'		RC -1	34.0- 35.5		100 (0)	
40				RC -2	35.5- 40.5		100	
			370.7					
		<b>SCHIST</b> - black, soft, highly weathered Secondary quartz seam at 41.9'		RC -3	40.5- 44.5		50 (30)	Lost all water return at 42.0'..
		Nearly completely weathered mica seam at 43.8'	367.9					
45		Bottom of borehole at 44.5 feet.						
50								

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# LOG OF TEST BORING

**BORING GWC-7**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1




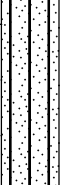
**DATE STARTED** 10/19/2009 **COMPLETED** 10/20/2009 **SURF. ELEV.** 414.4 **COORDINATES:** N 1118243.67 E 2410645.91

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** B. Gallagher **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 54.5 ft. **GROUND WATER DEPTH: DURING** 39.5 ft. **COMP.** **DELAYED**

**NOTES** Elevation based on stake. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Residuum, CLAY (CL); red; medium dense; damp; low plasticity; trace mica						
10		Residuum, SILT (ML); tan; medium dense; damp; with mica	405.3					
15								
20		Saprolite, silty SAND (SM); tan and black; medium dense; damp; with mica (remnant gneiss texture)	398.3					
				SS -1	19.5- 21.0	5-6-8 (14)		

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# LOG OF TEST BORING

**BORING GWC-7**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		<i>Saprolite</i> , silty SAND (SM); tan and black; medium dense; damp; with mica (remnant gneiss texture) (Cont)	389.8					
		<i>Saprolite</i> , poorly graded SAND with SILT (SP-SM); tan, white and black; medium dense; damp; with iron oxide stain (remnant gneiss texture)		SS -2	24.5- 26.0	6-8-16 (24)		
30		<i>Saprolite</i> , silty SAND (SM); white and tan; medium dense; moist	384.8	SS -3	29.5- 31.0	6-6-8 (14)		
35				SS -4	34.5- 36.0	3-5-6 (11)		
40		<i>Saprolite</i> , poorly graded SAND (SP); white, black, and tan; medium dense to dense; moist; trace mica	374.8	SS -5	39.5- 41.0	5-8-10 (18)		
45				SS -6	44.5- 46.0	5-11-15 (26)		
50				SS -7	49.5- 51.0	17-23-28 (51)		

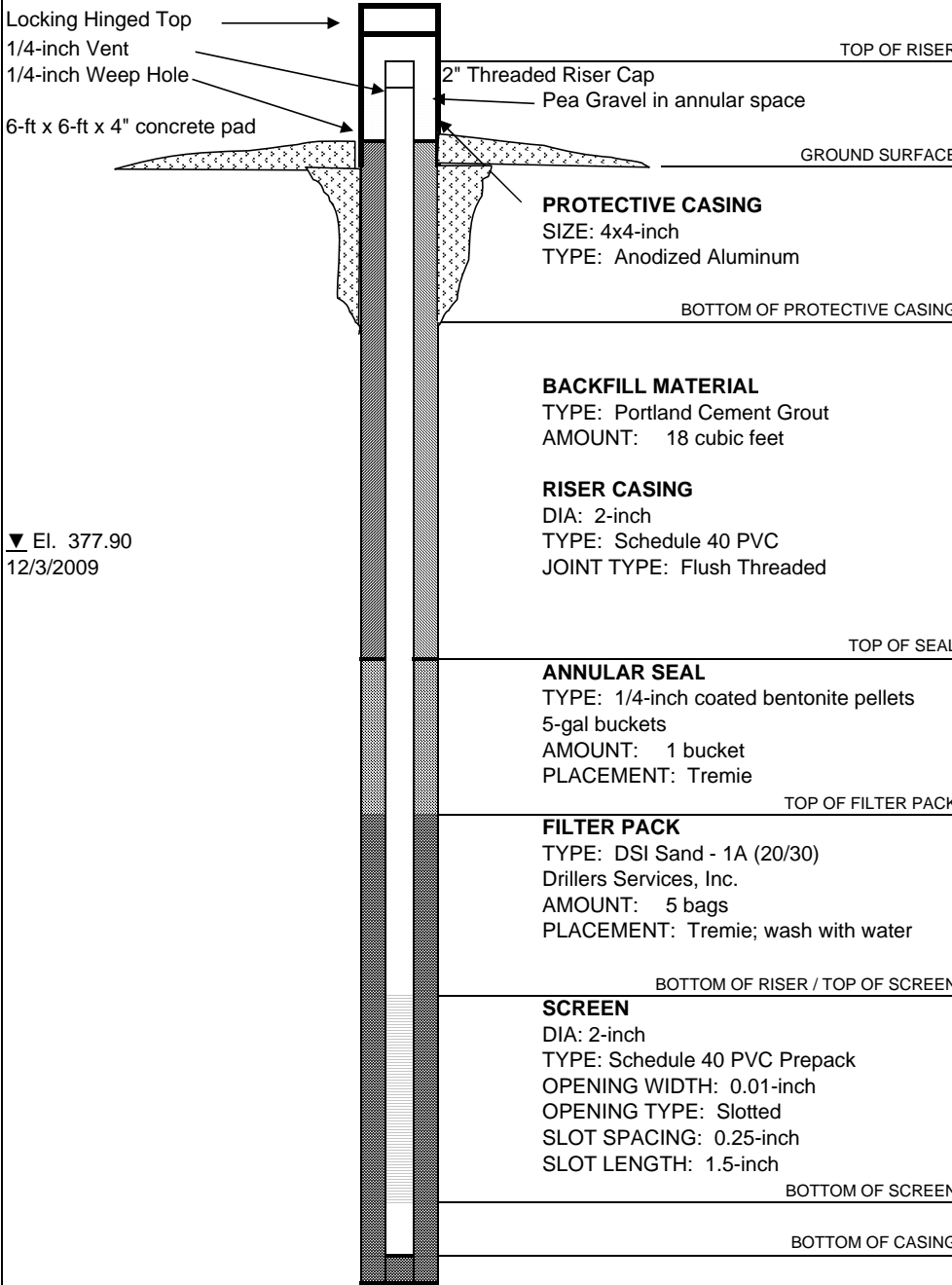
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## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME			
CCB Storage Facility		DRILLER: P. Smith					
LOCATION: Cell 1		RIG TYPE: CME 550		GWC-7			
LOGGER: Ben Gallagher	DRILLING METHODS: HSA						
DATE CONSTRUCT 10/20/2009							
				DEPTH FEET	ELEVATION FT, MSL		
				TOP OF RISER	-3.87	418.27	
				GROUND SURFACE	0.00	414.4	
				BOTTOM OF PROTECTIVE CASING			
				BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 18 cubic feet  RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
				TOP OF SEAL		39.90	374.50
				ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie			
				TOP OF FILTER PACK		41.70	372.70
				FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water			
				BOTTOM OF RISER / TOP OF SCREEN		44.57	369.83
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch							
BOTTOM OF SCREEN		54.57	359.83				
BOTTOM OF CASING		54.78	359.62				
HOLE DIA: 9"							

▼ El. 377.90  
12/3/2009



# RECORD OF BOREHOLE GWC-8A







SHEET 1 of 1

PROJECT: SCS-Plant Scherer  
PROJECT NUMBER: 1662350A-01  
DRILLED DEPTH: 45.00 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550  
DATE STARTED: 3/29/17  
DATE COMPLETED: 3/29/17

NORTHING: 1117917.32  
EASTING: 2410375.16  
GS ELEVATION: 398.6 ft  
TOC ELEVATION: 401.62 ft

DEPTH W.L.: 22.4'  
DATE W.L.: 3/30/2017  
TIME W.L.: 9:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES					MONITORING WELL/ PIEZOMETER DIAGRAM AND NOTES	WELL CONSTRUCTION DETAILS			
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE			REC		
					DEPTH (ft)									
0		0.00 - 8.50 SM, SILTY SAND, non-plastic; dark brown; non-cohesive, dry, w<PL, loose.	SM								Protective Aluminum – Casing	<b>WELL CASING</b> Interval: 0' - 44.7' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screw		
395					S1	DO	2-2-2	4	0.00 1.50	<b>WELL SCREEN</b> Interval: 34.3' - 44.3' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010 End Cap: 44.3' - 44.7"				
5														
390		8.50 - 18.50 CL, CLAY with trace organics, moderate plasticity; dark brown to red brown; cohesive, moist, w~PL very soft.	CL		389.7 8.50	S2	DO	1-2-1	3		0.16 1.50	CETCO Pure Gold Grout – (70:30)	<b>FILTER PACK</b> Interval: 27.8' - 45' Type: FilterSil	
10														<b>FILTER PACK SEAL</b> Interval: 24.7' - 27.8' Type: Pel-Plug Bentonite Pellets
385					S3	DO	1-1-3	4	0.66 1.50	<b>ANNULUS SEAL</b> Interval: 0' - 24.7' Type: CETCO Pure Gold Grout (70:30)				
15											<b>WELL COMPLETION</b> Pad: 6"x6"x6" Protective Casing: Aluminum 4" x 4" x 5" Bollards: 5' Round Steel			
380		18.50 - 19.50 ML, SILT with trace fine sand, non to low plasticity; red brown to black; cohesive, moist, w<PL, soft.	ML		379.7 18.50 378.7 19.50	S4	DO	3-4-6	10			1.50 1.50	<b>DRILLING METHODS</b> Soil Drill: 4.25 inch HSA Rock Drill: N/A	
20		19.50 - 23.50 SP, Poorly-graded SAND, fine to coarse, non plastic; white to black; non-cohesive, moist, w<pl, loose.	SP											
375		23.50 - 33.50 SM, SILTY SAND, fine to coarse, non to low plasticity; white to black to bronze, saprolite, biotite gneiss; non-cohesive, moist, w<PL, loose			SM		374.7 23.50	S5	DO	2-7-10	17	1.50 1.50		Pel-Plug – Bentonite
25												FilterSil –		
370			S6	DO			10-25-42	67	1.16 1.50					
365		33.50 - 45.00 SC, CLAYEY SAND, fine to coarse, non-plastic; gray to olive; non-cohesive, wet, w<PL, very dense.	SC		364.7 33.50	S7	DO	20-50/5	50/5	0.75 1.50	0.010" Slotte Schedule 40 – PVC			
35														
360					S8	DO	50/4	50/4	0.16 1.50					
355														
45		Boring completed at 45.00 ft			353.2									

BOREHOLE RECORD 1662350A-01.GPJ PIEDMONT.GDT 4/21/17

LOG SCALE: 1 in = 5.5 ft  
DRILLING COMPANY: Southern Company Services  
DRILLER: Sean Denty

GA INSPECTOR: Michael Boatman, P.G.  
CHECKED BY: Rachel Kirkman, PG  
DATE: 4/21/17





# LOG OF TEST BORING

**BORING GWC-9**  
PAGE 1 OF 1

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 11/4/2009 **COMPLETED** 11/4/2009 **SURF. ELEV.** 382.8 **COORDINATES:** N 1117955.40 E 2410167.75

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 16.5 ft. **GROUND WATER DEPTH: DURING** 2.5 ft. **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15			368.5					
		Damp, silty SAND (SM); dark greenish gray with white and pale brown mottles; fine grained; micaceous; gneissic saprolite		SS -1	14.5- 16.0	8-8-33 (41)		
								auger refusal.
		Bottom of borehole at 16.5 feet.						
20								

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# LOG OF TEST BORING

**BORING GWC-10**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 11/3/2009 **COMPLETED** 11/3/2009 **SURF. ELEV.** 388.9 **COORDINATES:** N 1118306.77 E 2410018.28

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 35.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20			369.8					
		Damp, silty SAND (SM); mottled green, orange, reddish brown, black, and light brownish yellow with laminations of pink SAND; fine grained; very micaceous		SS -1	19.5- 21.0	7-8-16 (24)		

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# LOG OF TEST BORING

**BORING GWC-10**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Damp, silty SAND (SM); mottled green, orange, reddish brown, black, and light brownish yellow with laminations of pink SAND; fine grained; very micaceous ( <i>Cont</i> )		SS -2	24.5- 26.0	7-12-21 (33)		
30		Damp, silty SAND (SM); mottled reddish brown, dark brown, reddish orange, white, and tan; fine grained; micaceous		SS -3	29.5- 31.0	10-13-20 (33)		
35		Damp, silty SAND (SM); mottled green, reddish yellow, reddish brown, white, yellowish brown, and dark brown with shards of pink silica; fine grained; micaceous	353.8	SS -4	34.5- 36.0	11-20-24 (44)		
		Bottom of borehole at 35.5 feet.						
40								
45								
50								

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## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME
CCB Storage Facility		DRILLER: S. Denty		
LOCATION: Cell 1		RIG TYPE: CME 550		GWC-10
LOGGER: W. Clanton		DRILLING METHODS: HSA		
DATE CONSTRUCTED: 11/3/09				
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>6-ft x 6-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>GROUND SURFACE</p> <p><b>PROTECTIVE CASING</b> SIZE: 4x4-inch TYPE: Anodized Aluminum</p> <p>▼ El. 386.36 12/6/2009</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland Cement Grout AMOUNT: 10 cubic feet</p> <p><b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p><b>ANNULAR SEAL</b> TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie</p> <p><b>FILTER PACK</b> TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: Tremie; wash with water</p> <p><b>SCREEN</b> DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>HOLE DIA: 9"</p>	DEPTH FEET	ELEVATION FT, MSL		
	TOP OF RISER	-3.97	392.87	
	GROUND SURFACE	0.00	388.9	
	BOTTOM OF PROTECTIVE CASING			
	TOP OF SEAL	17.19	371.71	
	TOP OF FILTER PACK	19.19	369.71	
BOTTOM OF RISER / TOP OF SCREEN	21.39	367.51		
BOTTOM OF SCREEN	31.39	357.51		
BOTTOM OF CASING	31.10	357.80		



# LOG OF TEST BORING

**BORING GWC-11**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 11/3/2009 **COMPLETED** 11/3/2009 **SURF. ELEV.** 398.8 **COORDINATES:** N 1118648.98 E 2409778.84

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 30 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20		Moist, silty SAND (SM); mottled white, light brown, orange, and black; fine grained; micaceous	380.6	SS -1	18.5- 20.0	6-7-10 (17)		

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# LOG OF TEST BORING

BORING GWC-11  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Scherer CCB Storage Facility

LOCATION Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Moist, silty SAND (SM); mottled white, light brown, orange, and black; fine grained; micaceous ( <i>Cont</i> ) Moist, silty SAND (SM); light brown with orange, green and black mottles; fine grained; micaceous; some gneissic saprolite		SS -2	23.5- 25.0	5-9-11 (20)		
30		Moist, silty SAND (SM); mottled white, black, and blackish green; fine grained; micaceous; gneissic saprolite	369.1	SS -3	28.5- 30.0	6-14-18 (32)		
		Bottom of borehole at 30.0 feet.						
35								
40								
45								
50								

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# LOG OF TEST BORING

**BORING GWC-12**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 11/3/2009 **COMPLETED** 11/3/2009 **SURF. ELEV.** 409.2 **COORDINATES:** N 1118977.87 E 2409554.57

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE**        **BEARING**       

**BORING DEPTH** 33.5 ft. **GROUND WATER DEPTH: DURING**        **COMP.**        **DELAYED**       

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Moist, lean CLAY (CL); mottled orange, black and light brown; micaceous						
10								
15								
20				SS -1	18.5- 20.0	17-11-3 (14)		

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# LOG OF TEST BORING

**BORING GWC-12**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Wet, clayey SAND (SC); mottled orange, white, tan and black; fine grained; micaceous	386.0	SS -2	23.5- 25.0	5-6-7 (13)		
30		Wet, clayey SAND (SC); mottled orange, white and tan with sparse black organics; fine grained; micaceous		SS -3	28.5- 30.0	7-11-15 (26)		
			376.0					
35		Bottom of borehole at 33.5 feet.		SS -4	33.5- 35.0	6-11-8 (19)		
40								
45								
50								

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# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer	DRILLING CO.: SCS, Inc.	WELL NAME
CCB Storage Facility	DRILLER: Ranger	
LOCATION: Cell 1	RIG TYPE: CME 550	GWC-12
LOGGER: W. Clanton	DRILLING METHODS: HSA	
DATE CONSTRUCTED: 11/3/09		

	DEPTH FEET	ELEVATION FT, MSL
	TOP OF RISER	-3.69 412.89
GROUND SURFACE	0.00	409.2
<b>PROTECTIVE CASING</b> SIZE: 4x4-inch TYPE: Anodized Aluminum BOTTOM OF PROTECTIVE CASING		
<b>BACKFILL MATERIAL</b> TYPE: Portland Cement Grout AMOUNT: 8.5 cubic feet <b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded TOP OF SEAL	20.12	389.08
<b>ANNULAR SEAL</b> TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie TOP OF FILTER PACK	22.22	386.98
<b>FILTER PACK</b> TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water BOTTOM OF RISER / TOP OF SCREEN	24.22	384.98
<b>SCREEN</b> DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch BOTTOM OF SCREEN	34.22	374.98
BOTTOM OF CASING	34.04	375.16
HOLE DIA: 9"		

▼ El. 392.88  
12/14/2009



# LOG OF TEST BORING

**BORING GWC-13**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 11/2/2009 **COMPLETED** 11/2/2009 **SURF. ELEV.** 416.5 **COORDINATES:** N1119338.68 E 2409390.95

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 39.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20		SILT (ML); brownish yellow with black mottles; micaceous with large flakes of mica	398.0	SS -1	18.5- 20.0	7-5-6 (11)		

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# LOG OF TEST BORING

**BORING GWC-13**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		SILT (ML); brownish yellow with black mottles; micaceous with large flakes of mica ( <i>Con't</i> ) Damp, SILT (ML) and silty SAND (SM); mottled light brown, black, orange and white; micaceous		SS -2	23.5- 25.0	4-7-11 (18)		
30		Very damp, SILT (ML) with very fine grain silty SAND (SM); mottled black and dark brown; micaceous Damp, SILT (ML) with very fine grain silty SAND (SM); mottled light brown, black, orange and white; micaceous	386.5	SS -3	29.5- 31.0	6-8-11 (19)		
35		Very damp, silty SAND (SM); mottled white, tan, orange, and black; fine grained; micaceous		SS -4	33.5- 35.0	12-16-20 (36)		
40		Very damp, silty SAND (SM); mottled white, tan, and black; fine grained; micaceous Bottom of borehole at 39.5 feet.	377.0	SS -5	38.5- 40.0	5-9-12 (21)		
45								
50								

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# LOG OF TEST BORING

**BORING GWC-14**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 11/4/2009 **COMPLETED** 11/4/2009 **SURF. ELEV.** 400.2 **COORDINATES:** N 1119655.05 E 2409111.75

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE**            **BEARING**           

**BORING DEPTH** 25 ft. **GROUND WATER DEPTH: DURING** 9.5 ft. **COMP.**            **DELAYED**           

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20		Moist, silty SAND (SM); greenish black, white, yellow, and brown; fine grained; micaceous	381.8	SS -1	18.5- 20.0	5-8-13 (21)		

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## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME
CCB Storage Facility		DRILLER: Ranger		
LOCATION: Cell 1		RIG TYPE: CME 550		GWC-14
LOGGER: W. Clanton		DRILLING METHODS: HSA		
DATE CONSTRUCTED: 11/4/09				
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>6-ft x 6-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum</p> <p>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 4.05 cubic feet</p> <p>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p>ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie</p> <p>FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water</p> <p>SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>HOLE DIA: 9"</p>	DEPTH FEET	ELEVATION FT, MSL		
	TOP OF RISER	-3.40	403.6	
	GROUND SURFACE	0.00	400.2	
	BOTTOM OF PROTECTIVE CASING			
	TOP OF SEAL	10.07	390.13	
	TOP OF FILTER PACK	12.17	388.03	
	BOTTOM OF RISER / TOP OF SCREEN	14.07	386.13	
	BOTTOM OF SCREEN	24.07	376.13	
	BOTTOM OF CASING	24.13	376.07	

▼ El. 392.47  
1/6/2010



# LOG OF TEST BORING

**BORING GWA-15**  
PAGE 1 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 11/4/2009 **COMPLETED** 11/4/2009 **SURF. ELEV.** 411.7 **COORDINATES:** N 1120009.40 E 2409282.43

**CONTRACTOR** Ranger **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** Ranger **LOGGED BY** W. Clanton **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 25 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20		Moist, SILT (ML) with silty SAND (SM); yellowish orange with black mottles; fine grained; micaceous		SS -1	18.5- 20.0	10-10-15 (25)		
			389.8					
		Moist, silty SAND (SM); mottled light brown, orange, and black; fine grained; micaceous						

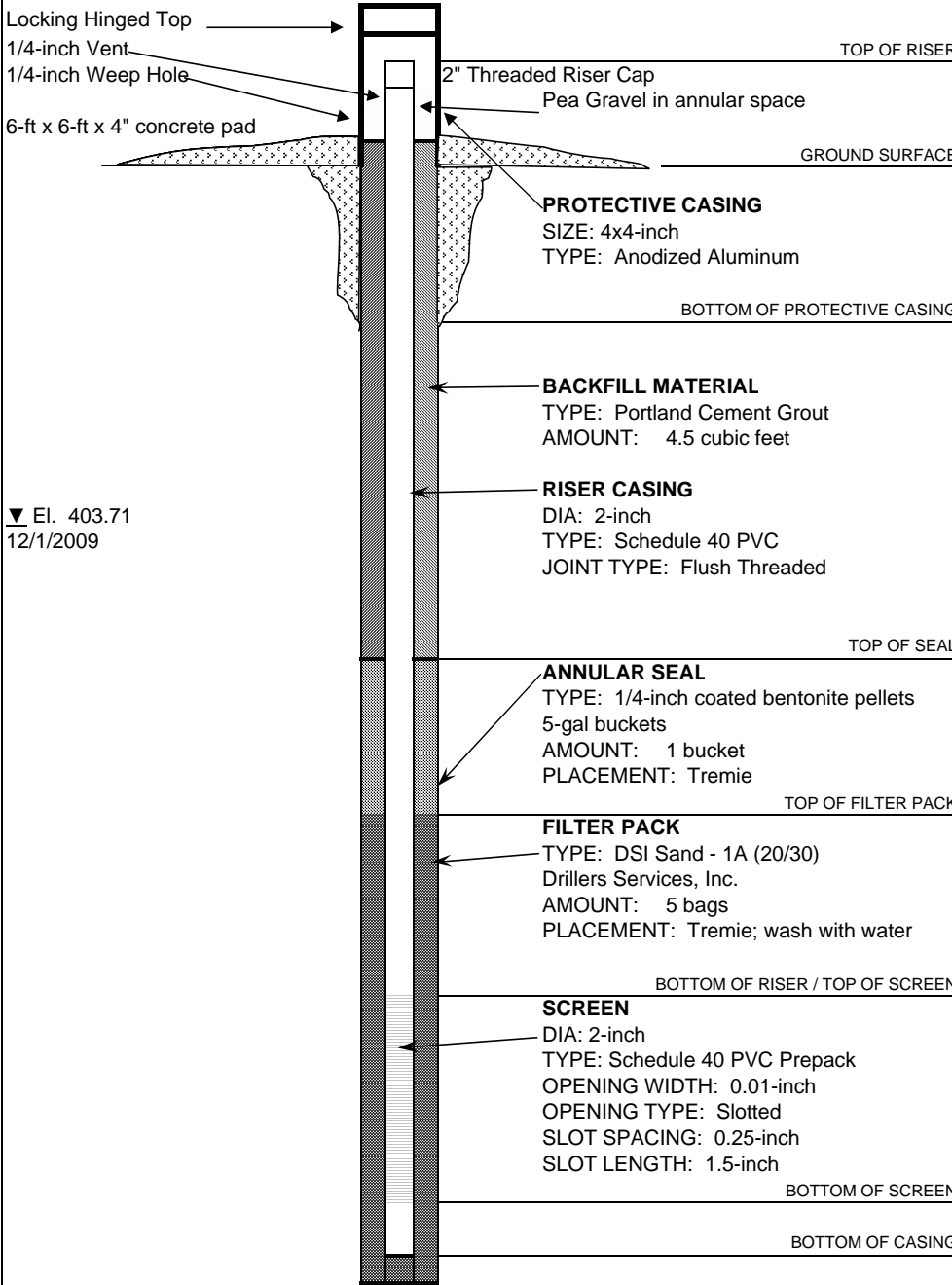
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## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME			
CCB Storage Facility		DRILLER: Ranger					
LOCATION: Cell 1		RIG TYPE: CME 550		GWA-15			
LOGGER: W. Clanton		DRILLING METHODS: HSA					
DATE CONSTRUCT 11/4/2009							
				DEPTH FEET	ELEVATION FT, MSL		
				TOP OF RISER	-3.31	415.01	
				GROUND SURFACE	0.00	411.7	
				BOTTOM OF PROTECTIVE CASING			
				BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 4.5 cubic feet			
				RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded			
				TOP OF SEAL		11.69	400.01
				ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie			
				TOP OF FILTER PACK		13.94	397.76
				FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water			
				BOTTOM OF RISER / TOP OF SCREEN		16.19	395.51
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch							
BOTTOM OF SCREEN		26.19	385.51				
BOTTOM OF CASING		26.18	385.52				
HOLE DIA: 9"							

▼ El. 403.71  
12/1/2009



# LOG OF TEST BORING

**BORING GWA-16**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

**DATE STARTED** 10/13/2009 **COMPLETED** 10/13/2009 **SURF. ELEV.** 440.9 **COORDINATES:** N 1120248.68 E 2409579.75

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** P. Smith **LOGGED BY** D. Brooks **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 55 ft. **GROUND WATER DEPTH: DURING** 35 ft. **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20			421.2					
		Silty SAND (SM); mottled orange and black; fine grained; micaceous		SS -1	19.5- 21.0	3-3-4 (7)		

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# LOG OF TEST BORING

**BORING GWA-16**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Silty SAND (SM); mottled orange and black; fine grained; micaceous ( <i>Con't</i> )		SS -2	24.5- 26.0	3-3-6 (9)		
30		Silty SAND (SM) with trace amounts of light brown CLAY (CL); mottled orange, light yellowish brown and black; fine grained; micaceous		SS -3	29.5- 31.0	2-3-4 (7)		
35		▽ Clayey silty SAND (SC-SM); mottled light brown, black and white; fine grained; micaceous; pyrite present; gneissic saprolite	406.2	SS -4	34.5- 36.0	3-3-4 (7)		
40		SAND (SP); mottled black, white and orange; saprolite	401.2	SS -5	39.5- 41.0	6-9-11 (20)		
45				SS -6	44.5- 46.0	12-15-19 (34)		
50		SAND (SP); mottled black, white and orange; saprolite; harder than above		SS -7	49.5- 51.0	23-36-43 (79)		

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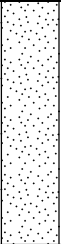
# LOG OF TEST BORING

**BORING GWA-16**  
PAGE 3 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

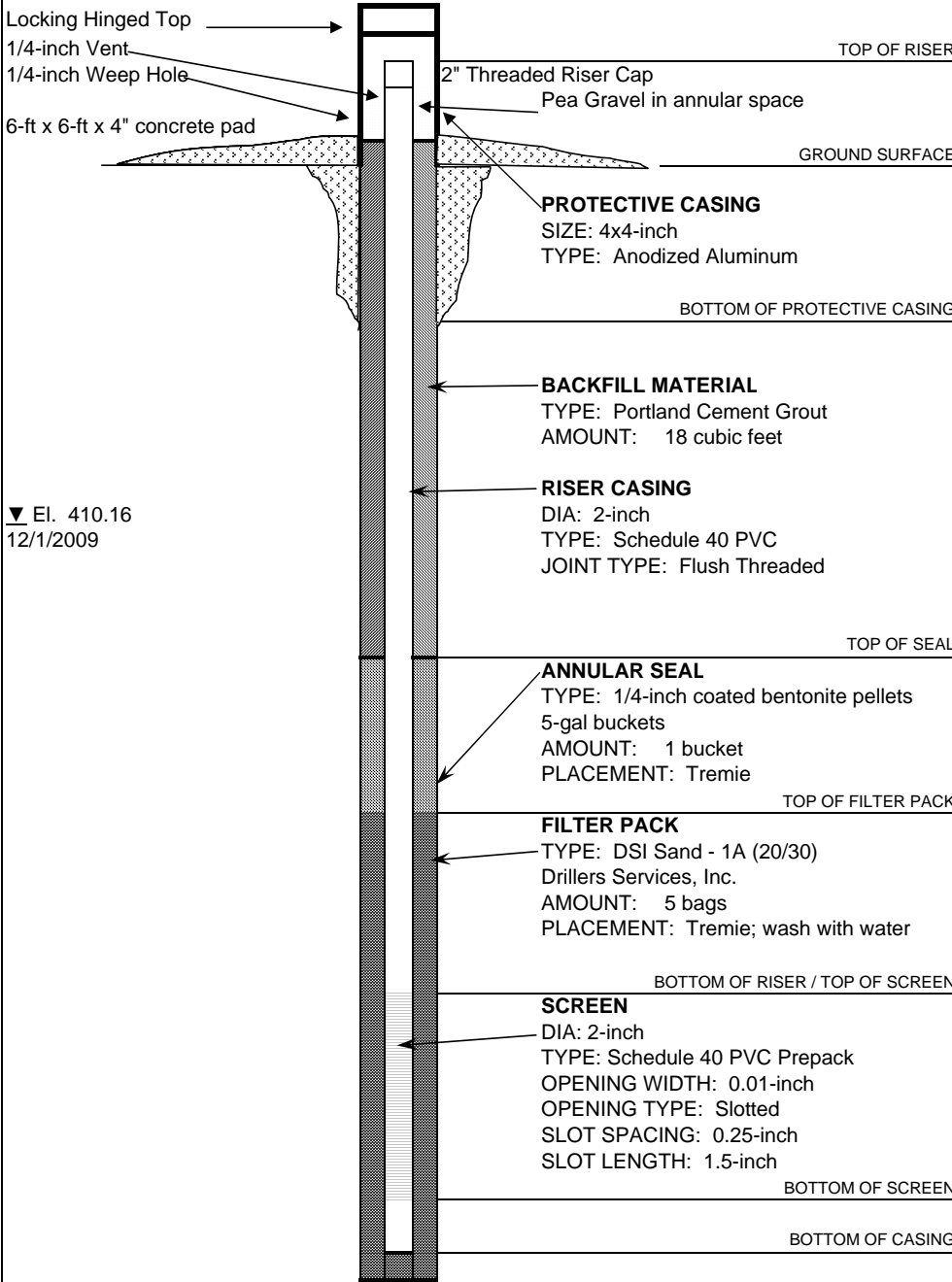
**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
55		SAND (SP); mottled black, white and orange; saprolite (Con't)	385.7	SS -8	54.5- 54.8	50/4" (100+)		auger refusal.
Bottom of borehole at 55.0 feet.								
60								
65								
70								
75								



## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: SCS, Inc.		WELL NAME
CCB Storage Facility		DRILLER: Phillip Smith		
LOCATION: Cell 1		RIG TYPE: CME 550		GWA-16
LOGGER: D. Brooks		DRILLING METHODS: HSA		
DATE CONSTRUCTED: 10/13/09				
 <p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>6-ft x 6-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum</p> <p>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 18 cubic feet</p> <p>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p>ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie</p> <p>FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags PLACEMENT: Tremie; wash with water</p> <p>SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>HOLE DIA: 9"</p>	DEPTH FEET	ELEVATION FT, MSL		
	TOP OF RISER	-3.34	444.24	
	GROUND SURFACE	0.00	440.9	
	BOTTOM OF PROTECTIVE CASING			
	TOP OF SEAL	39.70	401.20	
	TOP OF FILTER PACK	42.20	398.70	
	BOTTOM OF RISER / TOP OF SCREEN	44.20	396.70	
	BOTTOM OF SCREEN	54.20	386.70	
	BOTTOM OF CASING	54.48	386.42	

▼ El. 410.16  
12/1/2009

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# LOG OF TEST BORING

**BORING GWA-17**  
PAGE 2 OF 2

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		SILT (ML), yellowish red, micaceous, trace of fine sand (Con't)						
25		White to light olive brown, medium dense, SILTY SAND (SM), with relict structure and reddish black stringers	418.2	SS -2	24.5- 26.0	7-11-10 (21)		
30		Very dense, moist		SS -3	29.5- 31.0	17-28-34 (62)		
35		SAPROLITE		SS -4	34.5- 34.8	50/4" (100+)		
40		Saturated		SS -5	39.5- 39.8	50/4" (100+)		
		Auger refusal at 43.3 feet.	399.4					
45		Bottom of borehole at 43.3 feet.						
50								

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# LOG OF TEST BORING

**BORING GWC-18**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 9/29/2009 **COMPLETED** 9/29/2009 **SURF. ELEV.** 436.3 **COORDINATES:** N 1119998.73 E 2410261.85

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550X **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** J. Jordan **CHECKED BY** R. Tinsley **ANGLE** **BEARING**

**BORING DEPTH** 59.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**

**NOTES** Well installed. Refer to well data sheet.

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DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
0		LEAN CLAY (CL), silty, red, trace fine sand						Auger cuttings used for classifications from 0 -19.5 feet.
5		Grading silty, moist, yellowish red						
10		Strong brown						
15								
20								
			408.8					
		Firm, strong brown SILT (ML), with yellowish red layers, moist		SS -1	19.5- 21.0	2-3-2 (5)		

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# LOG OF TEST BORING

**BORING GWC-18**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Firm, strong brown SILT (ML), with yellowish red layers, moist (Con't)						
25		Medium dense, reddish yellow SILTY SAND (SM), with weathered rock	403.8	SS -2	24.5- 26.0	3-5-8 (13)		
30		Dark olive, white, and orange speckled SAPROLITE		SS -3	29.5- 31.0	4-5-8 (13)		"Salt and pepper" appearance.
35		Dark olive and white		SS -4	34.5- 36.0	5-6-5 (11)		
40				SS -5	39.5- 41.0	7-8-10 (18)		
45		Alternating zones of olive, black, and white and zones of micaceous, strong brown SANDY SILT (ML) SAPROLITE, very moist	383.8	SS -6	44.5- 46.0	3-5-9 (14)		
50		Gold, yellowish red, and dark olive, thinly layered		SS -7	49.5- 51.0	6-16-9 (25)		Free water in rods.

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# LOG OF TEST BORING

**BORING GWC-19**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 10/2/2009 **COMPLETED** 10/2/2009 **SURF. ELEV.** 426.3 **COORDINATES:** N 1119645.70 E 2410713.20

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** L. Millet **CHECKED BY** R. Tinsley **ANGLE**            **BEARING**           

**BORING DEPTH** 70 ft. **GROUND WATER DEPTH: DURING**            **COMP.**            **DELAYED**           

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) to silty SAND (SM)						
10								
15								
20			406.6					
		Dry, silty SAND (SM); red with occassional white lenses and black mottles; very fine to fine grained; micaceous; friable		SS -1	19.5- 21.0	2-3-2 (5)		

(Continued Next Page)



# LOG OF TEST BORING

**BORING GWC-19**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Dry, silty SAND (SM); red with occasional white lenses and black mottles; very fine to fine grained; micaceous; friable ( <i>Cont</i> )		SS -2	24.5- 26.0	3-2-3 (5)		
30				SS -3	29.5- 31.0	4-4-6 (10)		
35			391.6	SS -4	34.5- 36.0	4-5-7 (12)		
40		Dry, clayey SAND (SC); green, black and white with occasional dark orange mottling; very fine to fine grained; micaceous; soft; gneissic saprolite		SS -5	39.5- 41.0	4-6-8 (14)		
45				SS -6	44.5- 46.0	8-8-16 (24)		
50		Dry, clayey SAND (SC); white and dark tan; very fine to medium grained; micaceous; soft;		SS -7	49.5- 51.0	18-25-25 (50)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\SCHERER GYP.GPJ

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# LOG OF TEST BORING

**BORING GWC-19**  
PAGE 3 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		gneissic saprolite Dry, clayey SAND (SC); mottled green, black and light orangish brown; very fine to fine grained; micaceous; soft; gneissic saprolite ( <i>Cont</i> )						
55		Dry, clayey SAND (SC); white and black with dark orange mottling; very fine to medium grained; micaceous		SS -8	54.5- 56.0	21-35-49 (84)		
60				SS -9	59.5- 59.8	50/4" (100+)		
65		Moist, sandy CLAY (CS); black and grey; sparse mica; soft	361.6	SS -10	64.5- 64.6	50/1" (100+)		
70		Clayey SAND (SC); light brown and black with orange mottling; very fine to medium grained; micaceous Bottom of borehole at 70.0 feet.	356.6 356.1	SS -11	69.5- 69.7	50/2" (100+)		
75								

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\SCHERER GYP.GPJ





# LOG OF TEST BORING

**BORING GWC-20**  
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility  
**LOCATION** Cell 1

**DATE STARTED** 10/6/2009 **COMPLETED** 10/6/2009 **SURF. ELEV.** 423.0 **COORDINATES:** N 1119950.51 E 2411195.38

**CONTRACTOR** SCS Field Services **EQUIPMENT** CME-550 **METHOD** Hollow Stem Auger

**DRILLED BY** S. Denty **LOGGED BY** L. Millet **CHECKED BY** R. Tinsley **ANGLE**            **BEARING**           

**BORING DEPTH** 69.6 ft. **GROUND WATER DEPTH: DURING**            **COMP.**            **DELAYED**           

**NOTES** Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		Sandy SILT (MLS) and silty SAND (SM)						
10								
15								
20		Dry, sandy SILT (MLS); orange with light brown and black mottles; friable		SS -1	19.5- 21.0	4-5-6 (11)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINIT SOFTWARE\SCHERER GYP.GPJ

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# LOG OF TEST BORING

**BORING GWC-20**  
PAGE 2 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
25		Sandy SILT (MLS) and silty SAND (SM) (Cont)						
		Dry, sandy SILT (MLS); orange and light brown with black organics; friable; micaceous		SS -2	24.5- 26.0	4-4-6 (10)		
			393.3					
30		Dry, silty SAND (SM); light orange and tan with occasional black mottles; friable; micaceous		SS -3	29.5- 31.0	4-5-7 (12)		
			388.3					
35		Dry, clayey SAND (SC); black, green and light tan with occasional light orange mottling; very fine to fine grained; micaceous		SS -4	34.5- 36.0	6-5-6 (11)		
40		Moist, clayey SAND (SC); black and white with black and orange mottling; very fine to fine grained; micaceous; gneissic saprolite		SS -5	39.5- 41.0	6-7-9 (16)		
45		Moist, clayey SAND (SC); black and white with black and orange mottling; very fine to fine grained; micaceous; soft		SS -6	44.5- 46.0	8-10-16 (26)		
			373.3					
50				SS -7	49.5- 51.0	11-19-24 (43)		

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\SCHERER GYP.GPJ

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# LOG OF TEST BORING

**BORING GWC-20**  
PAGE 3 OF 3

SOUTHERN COMPANY SERVICES, INC.  
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Scherer CCB Storage Facility

**LOCATION** Cell 1

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Moist, silty SAND (SM); brown and white striated with orange mottling; very fine to fine grained; micaceous ( <i>Cont</i> )						
55		Wet, silty SAND (SM); black and white with dark brown mottling; very fine to fine grained; micaceous; gneissic saprolite		SS -8	54.5- 56.0	19-18-20 (38)		
60		Wet, sandy SILT (MLS); black with light and dark orange mottling; micaceous	363.3	SS -9	59.5- 61.0	34-45-48 (93)		
65		Wet, sandy SILT (MLS); black and white with occasional orange mottling; micaceous; garnets; gneissic saprolite		SS -10	64.5- 66.0	15-20-19 (39)		
70		SLATE; gray	353.3	SS -11	69.5- 69.7	50/2" (100+)		
		Bottom of borehole at 69.6 feet.	353.0					
75								

GEOTECH ENGINEERING LOGS - ESEE DATABASE GDT - 4/27/10 11:56 - T:\ESEE MAJOR PROJECTS\GINT SOFTWARE\ISCHERER GYP.GPJ





**APPENDIX A**

# Monitoring System Details

## A-5 PAC ASH CELL MONITORING WELLS CONSTRUCTION LOGS



**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. GWA-21

Sheet 1 of 1

SITE		Georgia Power Company Plant Scherer		HOLE DEPTH	17	SURF.ELEV.	419.70		
LOCATION		PAC/Ash Cell		COORDINATES	N 1120675.73	E	2409462.7		
ANGLE	0	BEARING	0	CONTRACTOR	Boart Longyear		DRILL NO.	BL100C	
DRILLING METHOD		Sonic		NO. SAMPLES	Continuous		NO. U.D. SAMPLES	0	
WATER TABLE DEPTH		ELEV.		TIME AFTER COMP.		DATE TAKEN			
TYPE GROUT		QUANTITY		MIX		DRILLING START DATE		6/29/2010	
DRILLER		S. Gautney		RECORDER	D. Brooks		APPROVED	DRILLING COMP. DATE	6/29/2010

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	419.70	Sandy CLAY							
1	418.70								
2	417.70								
3	416.70								
4	415.70								
5	414.70	Clayey SAND							
6	413.70								
7	412.70								
8	411.70								
9	410.70								
10	409.70	Weathered rock							
11	408.70								
12	407.70								
13	406.70								
14	405.70								
15	404.70								
16	403.70								
17	402.70								
18	401.70	17' - Bottom of boring							
19	400.70								
20	399.70								
21	398.70								
22	397.70								
23	396.70								
24	395.70								





# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWA-22

Sheet 1 of 2

SITE <u>Georgia Power Company Plant Scherer</u>				HOLE DEPTH <u>40</u>	SURF.ELEV. <u>442.00</u>
LOCATION <u>PAC/Ash Cell</u>		COORDINATES <u>N</u> <u>1120962.12</u> <u>E</u> <u>2409473.22</u>			
ANGLE <u>0</u>	BEARING <u>0</u>	CONTRACTOR <u>Boart Longyear</u>	DRILL NO. <u>BL100C</u>		
DRILLING METHOD <u>Sonic</u>		NO. SAMPLES <u>Continuous</u>	NO. U.D. SAMPLES <u>0</u>		
WATER TABLE DEPTH _____		ELEV. _____	TIME AFTER COMP. _____	DATE TAKEN _____	
TYPE GROUT _____		QUANTITY _____	MIX _____	DRILLING START DATE <u>6/29/2010</u>	
DRILLER <u>S. Gautney</u>		RECORDER <u>D. Brooks</u>	APPROVED _____	DRILLING COMP. DATE <u>6/30/2010</u>	

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	442.00	Reddish orange sandy SILT, dry, micaceous							
1	441.00								
2	440.00								
3	439.00								
4	438.00								
5	437.00								
6	436.00								
7	435.00								
8	434.00								
9	433.00								
10	432.00	-Same as above							
11	431.00								
12	430.00	Orange, tan, and white clayey SILT, dry, micaceous							
13	429.00								
14	428.00								
15	427.00								
16	426.00								
17	425.00								
18	424.00								
19	423.00								
20	422.00	-Same as above							
21	421.00								
22	420.00								
23	419.00								
24	418.00								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWA-22

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		40		SURF.ELEV.		442	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
				From To	Blows	N					
25	417.00	SAPROLITIC GNEISS, moist									
26	416.00										
27	415.00										
28	414.00										
29	413.00										
30	412.00										
31	411.00										
32	410.00										
33	409.00									Intact GNEISS, fractured with iron staining	
34	408.00										
35	407.00										
36	406.00										
37	405.00										
38	404.00										
39	403.00										
40	402.00										
41	401.00	40' - Bottom of boring									
42	400.00										
43	399.00										
44	398.00										
45	397.00										
46	396.00										
47	395.00										
48	394.00										
49	393.00										
50	392.00										
51	391.00										
52	390.00										
53	389.00										
54	388.00										
55	387.00										



**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. GWC-29

Sheet 1 of 1

SITE <b>Georgia Power Company Plant Scherer</b>		HOLE DEPTH <b>25</b>	SURF.ELEV. <b>396.90</b>
LOCATION <b>PAC/Ash Cell</b>		COORDINATES <b>N 1119875.58</b>	<b>E 2408717.95</b>
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>
DRILLING METHOD <b>Sonic</b>		NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>
WATER TABLE DEPTH _____ ELEV. _____		TIME AFTER COMP. _____	DATE TAKEN _____
TYPE GROUT _____ QUANTITY _____		MIX _____	DRILLING START DATE <b>6/28/2010</b>
DRILLER <b>S. Gautney</b>		RECORDER <b>D. Brooks</b>	APPROVED _____
		DRILLING COMP. DATE <b>6/28/2010</b>	

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From	To	Blows			
0	396.90	Orangish-red clayey SILT, dry, micaceous							
1	395.90								
2	394.90								
3	393.90								
4	392.90								
5	391.90								
6	390.90								
7	389.90								
8	388.90								
9	387.90								
10	386.90	-Same as above, tan and orange							
11	385.90								
12	384.90								
13	383.90								
14	382.90								
15	381.90								
16	380.90								
17	379.90								
18	378.90	Gray and white SAPROLITE, gneissic, wet, micaceous							
19	377.90								
20	376.90								
21	375.90								
22	374.90								
23	373.90								
24	372.90								
25	371.90	25' - Bottom of boring							







# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWA-45  
Sheet 1 of 2

SITE <u>Georgia Power Company Plant Scherer</u>		HOLE DEPTH <u>33</u>	SURF.ELEV. <u>448.30</u>
LOCATION <u>PAC/Ash Cell</u>	COORDINATES <u>N</u> <u>1120669.03</u> <u>E</u> <u>2407889.56</u>		
ANGLE <u>0</u>	BEARING <u>0</u>	CONTRACTOR <u>Boart Longyear</u>	DRILL NO. <u>BL100C</u>
DRILLING METHOD <u>Sonic</u>	NO. SAMPLES <u>Continuous</u>	NO. U.D. SAMPLES <u>0</u>	
WATER TABLE DEPTH _____ ELEV. _____		TIME AFTER COMP. _____	DATE TAKEN _____
TYPE GROUT _____ QUANTITY _____ MIX _____		DRILLING START DATE <u>6/23/2010</u>	
DRILLER <u>S. Gautney</u>	RECORDER <u>L. Millet</u>	APPROVED _____	DRILLING COMP. DATE <u>6/23/2010</u>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	448.30	Dark red silty CLAY, dry, hard, occasional black mottling, mica							
1	447.30								
2	446.30								
3	445.30								
4	444.30								
5	443.30								
6	442.30								
7	441.30								
8	440.30								
9	439.30								
10	438.30	Red, orange, and tan clayey SILT, black and white mottling, mica							
11	437.30								
12	436.30								
13	435.30								
14	434.30								
15	433.30								
16	432.30								
17	431.30								
18	430.30								
19	429.30								
20	428.30	Brown, tan, green, and orange silty SAND, saturated, with white mottling, high mica content							
21	427.30								
22	426.30								
23	425.30								
24	424.30								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWA-45

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		33		SURF.ELEV.		448.3	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
				From To	Blows	N					
25	423.30	Green and white SAND, wet, orange mottling, mica									
26	422.30										
27	421.30										
28	420.30										
29	419.30										
30	418.30										
31	417.30										
32	416.30										
33	415.30	33' - Bottom of boring									
34	414.30										
35	413.30										
36	412.30										
37	411.30										
38	410.30										
39	409.30										
40	408.30										
41	407.30										
42	406.30										
43	405.30										
44	404.30										
45	403.30										
46	402.30										
47	401.30										
48	400.30										
49	399.30										
50	398.30										
51	397.30										
52	396.30										
53	395.30										
54	394.30										
55	393.30										

## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: Boart Longyear		WELL
		DRILLER: S. Gautney		NAME
LOCATION: PAC/Ash Cell		RIG TYPE: BL100C		
LOGGER: L. Millet		DRILLING METHODS: Sonic		GWA-45
DATE CONSTRUCTED: 6/23/2010				



# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWA-46

Sheet 1 of 2

SITE <b>Georgia Power Company Plant Scherer</b>		HOLE DEPTH <b>43.5</b>	SURF.ELEV. <b>458.30</b>
LOCATION <b>PAC/Ash Cell</b>	COORDINATES <b>N 1120783.23</b>	<b>E 2408235.69</b>	
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>
DRILLING METHOD <b>Sonic</b>	NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>	
WATER TABLE DEPTH _____ ELEV. _____		TIME AFTER COMP. _____ DATE TAKEN _____	
TYPE GROUT _____ QUANTITY _____ MIX _____		DRILLING START DATE <b>6/23/2010</b>	
DRILLER <b>S. Gautney</b>	RECORDER <b>L. Millet</b>	APPROVED _____	DRILLING COMP. DATE <b>6/23/2010</b>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	458.30	Red silty CLAY, dry, hard, with occasional black mottling, mica							
1	457.30								
2	456.30								
3	455.30								
4	454.30								
5	453.30								
6	452.30								
7	451.30								
8	450.30								
9	449.30								
10	448.30	Orange clayey SILT, wet, with mica							
11	447.30								
12	446.30	Orange and pink silty CLAY, dry, with black and white mottling, trace mica							
13	445.30								
14	444.30								
15	443.30								
16	442.30								
17	441.30								
18	440.30								
19	439.30								
20	438.30	Tan sandy CLAY, wet, with black mottling, trace mica							
21	437.30								
22	436.30								
23	435.30								
24	434.30								

**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. GWA-46

Sheet 2 of 2

SITE **Georgia Power Company Plant Scherer** TOTAL DEPTH **43.5** SURF.ELEV. **458.3**

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD																												
				From To	Blows	N																															
25	433.30	Tan silty CLAY, wet, with heavy black mottling, trace mica																																			
26	432.30																																				
27	431.30																																				
28	430.30																																				
29	429.30																																				
30	428.30	Brown and orange silty SAND, wet, with black and white mottling																																			
31	427.30																																				
32	426.30																																				
33	425.30																																				
34	424.30																																				
35	423.30	Green and white SAND, wet, medium to coarse grained, with mica																																			
36	422.30																																				
37	421.30																																				
38	420.30																																				
39	419.30																																				
40	418.30	Green and brown sandy SILT, wet, with mica, clay																																			
41	417.30																																				
42	416.30																																				
43	415.30																																				
44	414.30																														43.5' - Bottom of boring						
45	413.30																																				
46	412.30																																				
47	411.30																																				
48	410.30																																				
49	409.30																																				
50	408.30																																				
51	407.30																																				
52	406.30																																				
53	405.30																																				
54	404.30																																				
55	403.30																																				

## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: Boart Longyear		WELL	
		DRILLER: S. Gautney		NAME	
LOCATION: PAC/Ash Cell		RIG TYPE: BL100C			
LOGGER: L. Millet		DRILLING METHODS: Sonic		GWA-46	
DATE CONSTRUCTED: 6/23/2010					
				DEPTH	ELEVATION
				FEET	FT, MSL
<div><div><div>Locking Hinged Top</div><div>1/4-inch Vent</div><div>1/4-inch Weep Hole</div><div>4-ft x 4-ft x 4" concrete pad</div></div><div><div>2" Threaded Riser Cap</div><div>Pea Gravel in annular space</div><div>GROUND SURFACE</div><div>PROTECTIVE CASING</div><div>SIZE: 4-inch round</div><div>TYPE: Anodized Aluminum</div><div>BOTTOM OF PROTECTIVE CASING</div><div>BACKFILL MATERIAL</div><div>TYPE: Portland Cement Grout</div><div>AMOUNT: 36 gal</div><div>RISER CASING</div><div>DIA: 2-inch</div><div>TYPE: Schedule 40 PVC</div><div>JOINT TYPE: Flush Threaded</div><div>TOP OF SEAL</div><div>ANNULAR SEAL</div><div>TYPE: 3/8-inch bentonite pellets</div><div>Enviroplug 50# bags</div><div>AMOUNT: 0.5 bag</div><div>PLACEMENT: Tremie</div><div>TOP OF FILTER PACK</div><div>FILTER PACK</div><div>TYPE: DSI Sand - #2</div><div>Drillers Services, Inc. 0.5 cubic foot bags</div><div>AMOUNT: 4 bags</div><div>PLACEMENT: Tremie; wash with water</div><div>BOTTOM OF RISER / TOP OF SCREEN</div><div>SCREEN</div><div>DIA: 2-inch</div><div>TYPE: ASTM-NSF Schedule 40 PVC Prepack</div><div>OPENING WIDTH: 0.01-inch</div><div>OPENING TYPE: Slotted</div><div>SLOT SPACING: 0.25-inch</div><div>SLOT LENGTH: 1.5-inch</div><div>BOTTOM OF SCREEN</div><div>BOTTOM OF CASING</div></div><div>HOLE DIA: 6"</div></div>				-2.83	461.13
				0.00	458.3
				29.94	428.36
				31.94	426.36
				33.94	424.36
				43.94	414.36
				44.17	414.13



# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWA-47

Sheet 1 of 2

SITE <u>Georgia Power Company Plant Scherer</u>		HOLE DEPTH <u>55</u>	SURF.ELEV. <u>462.9</u>
LOCATION <u>PAC/Ash Cell</u>	COORDINATES <u>N</u> <u>1120862.63</u> <u>E</u> <u>2408585.01</u>		
ANGLE <u>0</u>	BEARING <u>0</u>	CONTRACTOR <u>Boart Longyear</u>	DRILL NO. <u>BL100C</u>
DRILLING METHOD <u>Sonic</u>	NO. SAMPLES <u>Continuous</u>	NO. U.D. SAMPLES <u>0</u>	
WATER TABLE DEPTH _____ ELEV. _____		TIME AFTER COMP. _____ DATE TAKEN _____	
TYPE GROUT _____ QUANTITY _____ MIX _____		DRILLING START DATE <u>6/22/2010</u>	
DRILLER <u>S. Gautney</u>	RECORDER <u>L. Millet</u>	APPROVED _____	DRILLING COMP. DATE <u>6/22/2010</u>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	462.90	Dark red silty CLAY, dry, hard, trace mica							
1	461.90								
2	460.90								
3	459.90								
4	458.90								
5	457.90								
6	456.90								
7	455.90								
8	454.90								
9	453.90								
10	452.90	Orange, tan, and pink sandy SILT, dry, with clay, mica							
11	451.90								
12	450.90								
13	449.90	Orange and white sandy CLAY, dry, with mica, pink and black mottling							
14	448.90								
15	447.90								
16	446.90	Orange and white sandy CLAY, dry, trace mica, dark brown and pink mottling							
17	445.90								
18	444.90								
19	443.90								
20	442.90								
21	441.90								
22	440.90								
23	439.90								
24	438.90								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWA-47

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer			TOTAL DEPTH		55	SURF.ELEV.		462.9
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD	
				From To	Blows	N				
25	437.90	-As above with black mottling, high mica content								
26	436.90									
27	435.90									
28	434.90									
29	433.90									
30	432.90	Tan sandy SILT, wet, loose, with clay								
31	431.90									
32	430.90									
33	429.90	Green and white SAPROLITIC GNEISS, with black and orange mottling, mica								
34	428.90									
35	427.90									
36	426.90									
37	425.90									
38	424.90									
39	423.90									
40	422.90	Gray and white SAPROLITIC GNEISS, wet, with occasional orange mottling, mica								
41	421.90									
42	420.90									
43	419.90									
44	418.90									
45	417.90									
46	416.90									
47	415.90									
48	414.90									
49	413.90									
50	412.90	Weathered black and white GNEISS, dry								
51	411.90									
52	410.90									
53	409.90									
54	408.90									
55	407.90									
		55' - Bottom of boring								



# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: Boart Longyear		WELL	
		DRILLER: S. Gautney		NAME	
LOCATION: PAC/Ash Cell		RIG TYPE: BL100C			
LOGGER: L. Millet		DRILLING METHODS: Sonic		GWA-47	
DATE CONSTRUCTED: 6/22/10					
				DEPTH	ELEVATION
				FEET	FT, MSL
<div>Locking Hinged Top</div> <div>1/4-inch Vent</div> <div>1/4-inch Weep Hole</div> <div>4-ft x 4-ft x 4" concrete pad</div> <div>▼ El. 430.95 7/13/2010</div>				TOP OF RISER	-2.87 465.77
<div>2" Threaded Riser Cap</div> <div>Pea Gravel in annular space</div> <div>GROUND SURFACE</div> <div>PROTECTIVE CASING SIZE: 4-inch round TYPE: Anodized Aluminum</div> <div>BOTTOM OF PROTECTIVE CASING</div>				0.00	462.9
<div>BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 60 gal</div> <div>RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</div> <div>TOP OF SEAL</div>				37.16	425.74
<div>ANNULAR SEAL TYPE: 3/8-inch bentonite pellets Enviroplug 50# bags AMOUNT: 0.5 bag PLACEMENT: Tremie</div> <div>TOP OF FILTER PACK</div>				39.16	423.74
<div>FILTER PACK TYPE: DSI Sand - #2 Drillers Services, Inc. 0.5 cubic foot bags AMOUNT: 4 bags PLACEMENT: Tremie; wash with water</div> <div>BOTTOM OF RISER / TOP OF SCREEN</div>				41.16	421.74
<div>SCREEN DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</div> <div>BOTTOM OF SCREEN</div>				51.16	411.74
<div>BOTTOM OF CASING</div>				51.33	411.57
HOLE DIA: 6"					



# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWA-48

Sheet 1 of 3

SITE <b>Georgia Power Company Plant Scherer</b>				HOLE DEPTH <b>72</b>	SURF.ELEV. <b>458.8</b>
LOCATION <b>PAC/Ash Cell</b>		COORDINATES <b>N 1120953.42</b>	E <b>2408939.48</b>		
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>		
DRILLING METHOD <b>Sonic</b>		NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>		
WATER TABLE DEPTH		ELEV.	TIME AFTER COMP.		DATE TAKEN
TYPE GROUT		QUANTITY	MIX	DRILLING START DATE <b>6/21/2010</b>	
DRILLER <b>S. Gautney</b>	RECORDER <b>L. Millet</b>	APPROVED	DRILLING COMP. DATE <b>6/22/2010</b>		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	458.80	Dark red silty CLAY, dry, hard, trace mica							
1	457.80								
2	456.80								
3	455.80								
4	454.80								
5	453.80	Black and white GNEISS							
6	452.80								
7	451.80	Dark orange and red silty CLAY, dry, hard, black mottling trace mica							
8	450.80								
9	449.80								
10	448.80								
11	447.80	Orange and black silty CLAY, dry, trace mica							
12	446.80								
13	445.80								
14	444.80								
15	443.80								
16	442.80								
17	441.80								
18	440.80	Gneiss boulder, about 6"							
19	439.80	Orange sandy CLAY, dry, loose, trace mica							
20	438.80								
21	437.80								
22	436.80								
23	435.80								
24	434.80								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWA-48

Sheet 2 of 3

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		72		SURF.ELEV.		458.8	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
				From To	Blows	N					
25	433.80	Orange sandy SILT, dry, loose with black, pink and white mottling, trace mica									
26	432.80										
27	431.80										
28	430.80										
29	429.80										
30	428.80										
31	427.80	Orange silty CLAY, moist, trace mica with black and tan mottling									
32	426.80										
33	425.80										
34	424.80										
35	423.80									Green, black and white saprolitic GNEISS	
36	422.80										
37	421.80										
38	420.80										
39	419.80										
40	418.80										
41	417.80	Light green and white relict GNEISS, high clay content, m									
42	416.80										
43	415.80										
44	414.80									-relict GNEISS	
45	413.80										
46	412.80										
47	411.80										
48	410.80	Dark green and white weathered GNEISS with orange mottling, dry									
49	409.80										
50	408.80									Black, white and green weathered GNEISS, dry	
51	407.80										
52	406.80										
53	405.80										
54	404.80										
55	403.80										
56	402.73										



DRILLING LOG  
GEOLOGICAL SERVICES

Hole No. GWA-48  
Sheet 3 of 3

SITE Georgia Power Company Plant Scherer TOTAL DEPTH 72 SURF.ELEV. 458.8

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
57	401.80	Dark gray green clayey SILT, dry, hard, with mica, trace sand							
58	400.80								
59	399.80								
69	389.80								
61	397.80								
62	396.80	Dark green gray clayey SAND, wet, very fine to fine-grained							
63	395.80								
64	394.80								
65	393.80								
66	392.80								
67	391.80	Intact black and white GNEISS							
68	390.80								
69	389.80								
70	388.80								
71	387.80								
72	386.80	72' - Bottom of boring							

# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: Boart Longyear		WELL	
		DRILLER: S. Gautney		NAME	
LOCATION: PAC/Ash Cell		RIG TYPE: BL100C			
LOGGER: L. Millet		DRILLING METHODS: Sonic		GWA-48	
DATE CONSTRUCTED: 6/22/2010					
				DEPTH	ELEVATION
				FEET	FT, MSL
<div><div><div>Locking Hinged Top</div><div>1/4-inch Vent</div><div>1/4-inch Weep Hole</div><div>4-ft x 4-ft x 4" concrete pad</div></div><div><div>2" Threaded Riser Cap</div><div>Pea Gravel in annular space</div><div>GROUND SURFACE</div><div>PROTECTIVE CASING</div><div>SIZE: 4-inch round</div><div>TYPE: Anodized Aluminum</div><div>BOTTOM OF PROTECTIVE CASING</div><div>BACKFILL MATERIAL</div><div>TYPE: Portland Cement Grout</div><div>AMOUNT: 64 gal</div><div>RISER CASING</div><div>DIA: 2-inch</div><div>TYPE: Schedule 40 PVC</div><div>JOINT TYPE: Flush Threaded</div><div>TOP OF SEAL</div><div>ANNULAR SEAL</div><div>TYPE: 3/8-inch bentonite pellets</div><div>Enviroplug 50# bags</div><div>AMOUNT: 0.5 bag</div><div>PLACEMENT: Tremie</div><div>TOP OF FILTER PACK</div><div>FILTER PACK</div><div>TYPE: DSI Sand - #2</div><div>Drillers Services, Inc. 0.5 cubic foot bags</div><div>AMOUNT: 4 bags</div><div>PLACEMENT: Tremie; wash with water</div><div>BOTTOM OF RISER / TOP OF SCREEN</div><div>SCREEN</div><div>DIA: 2-inch</div><div>TYPE: ASTM-NSF Schedule 40 PVC Prepack</div><div>OPENING WIDTH: 0.01-inch</div><div>OPENING TYPE: Slotted</div><div>SLOT SPACING: 0.25-inch</div><div>SLOT LENGTH: 1.5-inch</div><div>BOTTOM OF SCREEN</div><div>BOTTOM OF CASING</div></div></div> <div>HOLE DIA: 6"</div>				-2.93	461.73
				0.00	458.8
				47.11	411.69
				49.11	409.69
				51.11	407.69
				61.11	397.69
				61.22	397.58

▼ El. 427.94  
7/16/2010

**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. GWA-49

Sheet 1 of 2

SITE <b>Georgia Power Company Plant Scherer</b>				HOLE DEPTH <b>37</b>	SURF.ELEV. <b>429.9</b>
LOCATION <b>PAC/Ash Cell</b>		COORDINATES <b>N 1121030.08</b>	E <b>2409288.38</b>		
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>		
DRILLING METHOD <b>Sonic</b>		NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>		
WATER TABLE DEPTH		ELEV.	TIME AFTER COMP.		DATE TAKEN
TYPE GROUT		QUANTITY	MIX	DRILLING START DATE <b>6/21/2010</b>	
DRILLER <b>S. Gautney</b>	RECORDER <b>L. Millet</b>	APPROVED	DRILLING COMP. DATE <b>6/21/2010</b>		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	429.90	Orange and reddish orange silty CLAY, with mica, black organics							
1	428.90								
2	427.90								
3	426.90								
4	425.90								
5	424.90								
6	423.90	-As above with black mottling and increasing mica							
7	422.90								
8	421.90								
9	420.90	-As above with light green mottling and increasing mica							
10	419.90	Tan and black silty CLAY, high mica content, with dark orange mottling							
11	418.90								
12	417.90								
13	416.90								
14	415.90	-Pink, orange and white as above							
15	414.90								
16	413.90								
17	412.90	-As above with black mottling, moist							
18	411.90								
19	410.90	Orange and white sandy CLAY, moist, with pink and black mottling							
20	409.90								
21	408.90	Dark orange and white sandy CLAY, moist, with mica, black mottling							
22	407.90								
23	406.90								
24	405.90								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWA-49

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		37		SURF.ELEV.		429.9	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
				From To	Blows	N					
25	404.90	Dark green, black, and white SAPROLITIC GNEISS, with orange mottling, some mice									
26	403.90										
27	402.90										
28	401.90										
29	400.90										
30	399.90										
31	398.90	Dark green, black, and white clayey SAND, saturated, loose, medium to coarse grained									
32	397.90										
33	396.90	Dark green, black, and white SAPROLITIC GNEISS, dry									
34	395.90										
35	394.90										
36	393.90										
37	392.90										
38	391.90	37' - Bottom of boring									
39	390.90										
40	389.90										
41	388.90										
42	387.90										
43	386.90										
44	385.90										
45	384.90										
46	383.90										
47	382.90										
48	381.90										
49	380.90										
50	379.90										
51	378.90										
52	377.90										
53	376.90										
54	375.90										
55	374.90										

## WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer		DRILLING CO.: Boart Longyear		WELL
		DRILLER: S. Gautney		NAME
LOCATION: PAC/Ash Cell		RIG TYPE: BL100C		
LOGGER: L. Millet		DRILLING METHODS: Sonic		GWA-49
DATE CONSTRUCTED: 6/21/2010				
			DEPTH	ELEVATION
			FEET	FT, MSL
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>4-ft x 4-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>GROUND SURFACE</p> <p><b>PROTECTIVE CASING</b> SIZE: 4-inch round TYPE: Anodized Aluminum</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland Cement Grout AMOUNT: 10 gal</p> <p><b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p><b>ANNULAR SEAL</b> TYPE: 3/8-inch bentonite pellets Enviroplug 50# bags AMOUNT: 0.75 bag PLACEMENT: Tremie</p> <p><b>FILTER PACK</b> TYPE: DSI Sand - #2 Drillers Services, Inc. 0.5 cubic foot bags AMOUNT: 3.5 bags PLACEMENT: Tremie; wash with water</p> <p><b>SCREEN</b> DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>HOLE DIA: 6"</p>	TOP OF RISER		-2.98	432.88
	GROUND SURFACE		0.00	429.9
	BOTTOM OF PROTECTIVE CASING			
	TOP OF SEAL		24.05	405.85
	TOP OF FILTER PACK		26.05	403.85
	BOTTOM OF RISER / TOP OF SCREEN		28.05	401.85
	BOTTOM OF SCREEN		38.05	391.85
	BOTTOM OF CASING		38.02	391.88

▼ El. 423.00  
7/13/2010

▼ El. 423.00  
7/13/2010

HOLE DIA: 6"





# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWC-50

Sheet 1 of 2

SITE <u>Georgia Power Company Plant Scherer</u>				HOLE DEPTH <u>35</u>	SURF.ELEV. <u>404.3</u>
LOCATION <u>PAC/Ash Cell</u>		COORDINATES <u>N</u> <u>1119917.51</u> <u>E</u> <u>2408956.1</u>			
ANGLE <u>0</u>	BEARING <u>0</u>	CONTRACTOR <u>Boart Longyear</u>	DRILL NO. <u>BL100C</u>		
DRILLING METHOD <u>Sonic</u>		NO. SAMPLES <u>Continuous</u>	NO. U.D. SAMPLES <u>0</u>		
WATER TABLE DEPTH _____		ELEV. _____	TIME AFTER COMP. _____		DATE TAKEN _____
TYPE GROUT _____		QUANTITY _____	MIX _____	DRILLING START DATE <u>6/28/2010</u>	
DRILLER <u>S. Gautney</u>		RECORDER <u>D. Brooks</u>	APPROVED _____	DRILLING COMP. DATE <u>6/28/2010</u>	

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	404.30	Red sandy CLAY, dry, micaceous							
1	403.30								
2	402.30								
3	401.30								
4	400.30								
5	399.30								
6	398.30								
7	397.30								
8	396.30								
9	395.30								
10	394.30	Pink, tan, and orange sandy SILT, with clay, dry, micaceous							
11	393.30								
12	392.30								
13	391.30								
14	390.30								
15	389.30								
16	388.30								
17	387.30	White, orange, and tan sandy SILT, dry, micaceous							
18	386.30								
19	385.30								
20	384.30								
21	383.30								
22	382.30								
23	381.30								
24	380.30								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWC-50

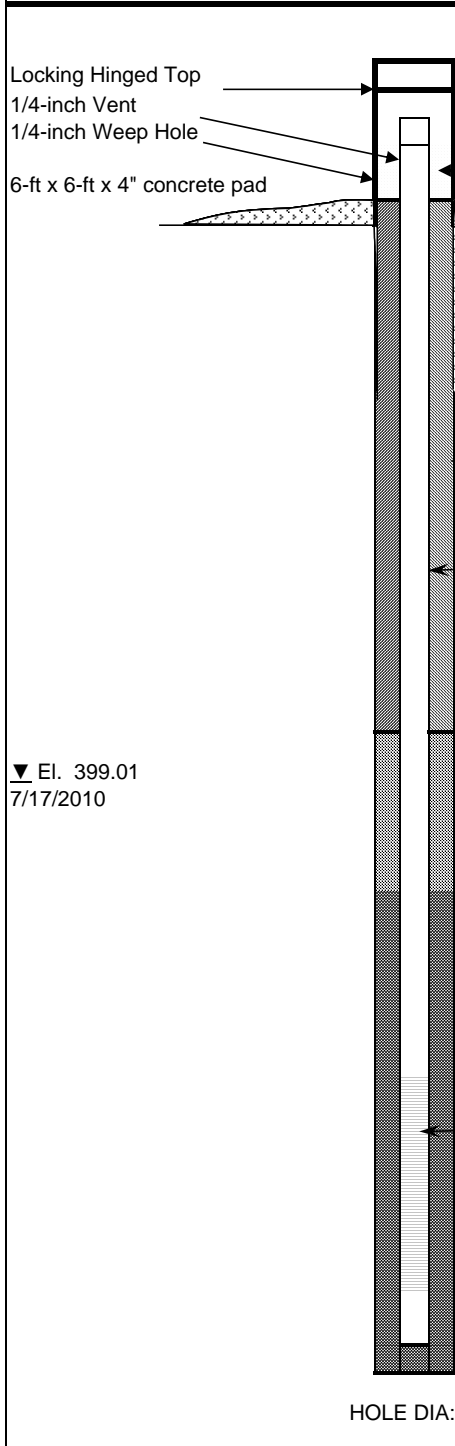
Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		35		SURF.ELEV.		404.3						
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD							
				From To	Blows	N										
25	379.30	Gray and white gneissic SAPROLITE, wet, micaceous      Hard saprolite														
26	378.30															
27	377.30															
28	376.30															
29	375.30															
30	374.30															
31	373.30															
32	372.30															
33	371.30															
34	370.30															
35	369.30	35' - Bottom of boring														
36	368.30															
37	367.30															
38	366.30															
39	365.30															
40	364.30															
41	363.30															
42	362.30															
43	361.30															
44	360.30															
45	359.30															
46	358.30															
47	357.30															
48	356.30															
49	355.30															
50	354.30															
51	353.30															
52	352.30															
53	351.30															
54	350.30															
55	349.30															

# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer	DRILLING CO.: Boart Longyear	WELL NAME
	DRILLER: S. Gautney	
LOCATION: PAC/Ash Cell	RIG TYPE: BL100C	
LOGGER: D. Brooks	DRILLING METHODS: Sonic	GWC-50
DATE CONSTRUCTED: 6/28/2010		

	DEPTH FEET	ELEVATION FT, MSL
	<p>TOP OF RISER</p> <p>-2.86</p> <p>0.00</p> <p>19.71</p> <p>21.71</p> <p>23.46</p> <p>33.46</p> <p>33.64</p>	<p>407.16</p> <p>404.3</p> <p>384.59</p> <p>382.59</p> <p>380.84</p> <p>370.84</p> <p>370.66</p>



# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWC-51

Sheet 1 of 2

SITE <b>Georgia Power Company Plant Scherer</b>				HOLE DEPTH <b>26.5</b>	SURF.ELEV. <b>407.3</b>
LOCATION <b>PAC/Ash Cell</b>		COORDINATES <b>N 1119835.51</b>	E <b>2408436.95</b>		
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Ranger</b>	DRILL NO. <b>CME550</b>		
DRILLING METHOD <b>HSA</b>		NO. SAMPLES <b>5</b>	NO. U.D. SAMPLES <b>0</b>		
WATER TABLE DEPTH _____		ELEV. _____	TIME AFTER COMP. _____		DATE TAKEN _____
TYPE GROUT _____		QUANTITY _____	MIX _____	DRILLING START DATE <b>7/26/2010</b>	
DRILLER <b>J. Crowe</b>		RECORDER <b>L. Garland</b>	APPROVED _____	DRILLING COMP. DATE <b>7/27/2010</b>	

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	407.30	reddish brown slightly sandy SILT micaceous							
1	406.30								
2	405.30								
3	404.30								
4	403.30	yellow brown slightly sandy SILT micaceous	1	3.5-5	4-5-6	11			
5	402.30								
6	401.30								
7	400.30								
8	399.30								
9	398.30	gary and orangish brown sandy SILT with some coarse to fine quartz	2	8.5-10	5-13-14	27			
10	397.30								
11	396.30								
12	395.30								
13	394.30								
14	393.30	saprolite medium to fine grained sandy SILT	3	13.5-15	4-6-7	13			
15	392.30								
16	391.30								
17	390.30								
18	389.30								
19	388.30	Saprolite slightly clayey SILT	4	18.5-20	6-10-16	26			
20	387.30								
21	386.30								
22	385.30								
23	384.30								
24	383.30								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWC-51

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer				TOTAL DEPTH	26.5	SURF.ELEV.	407.3
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
25	382.30	yellow and gray medium to fine grained sandy SILT	5	23.5-25	5-25-50	75			
26	381.30								
27	380.30	27' - Bottom of boring							
28	379.30								
29	378.30								
30	377.30								
31	376.30								
32	375.30								
33	374.30								
34	373.30								
35	372.30								
36	371.30								
37	370.30								
38	369.30								
39	368.30								
40	367.30								
41	366.30								
42	365.30								
43	364.30								
44	363.30								
45	362.30								
46	361.30								
47	360.30								
48	359.30								
49	358.30								
50	357.30								
51	356.30								
52	355.30								
53	354.30								
54	353.30								
55	352.30								

# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer	DRILLING CO.: Ranger	WELL NAME
	DRILLER: J. Crowe	
LOCATION: PAC/Ash Cell	RIG TYPE CME 550	
LOGGER: L. Garland	DRILLING METHODS: Sonic	GWC-51
DATE CONSTRUCTED: 7/27/2010		

	DEPTH FEET	ELEVATION FT, MSL
<p>Locking Hinged Top</p> <p>1/4-inch Vent</p> <p>1/4-inch Weep Hole</p> <p>6-ft x 6-ft x 4" concrete pad</p> <p>2" Threaded Riser Cap</p> <p>Pea Gravel in annular space</p> <p>GROUND SURFACE</p> <p><b>PROTECTIVE CASING</b> SIZE: 4-inch round TYPE: Anodized Aluminum</p> <p>BOTTOM OF PROTECTIVE CASING</p> <p>▼ El. 400.99 7/29/2010</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland Cement Grout AMOUNT: 16 gal</p> <p><b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p> <p>TOP OF SEAL</p> <p><b>ANNULAR SEAL</b> TYPE: 3/8-inch bentonite pellets Enviroplug 50# bags AMOUNT: 0.5 bag PLACEMENT: Tremie</p> <p>TOP OF FILTER PACK</p> <p><b>FILTER PACK</b> TYPE: DSI Sand - #2 Drillers Services, Inc. 0.5 cubic foot bags AMOUNT: 4 bags PLACEMENT: Tremie; wash with water</p> <p>BOTTOM OF RISER / TOP OF SCREEN</p> <p><b>SCREEN</b> DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p> <p>BOTTOM OF SCREEN</p> <p>BOTTOM OF CASING</p> <p>HOLE DIA: 6"</p>	<p>TOP OF RISER</p> <p>-2.85</p> <p>0.00</p> <p>9.94</p> <p>11.94</p> <p>13.49</p> <p>23.49</p> <p>23.95</p>	<p>410.15</p> <p>407.3</p> <p>397.36</p> <p>395.36</p> <p>393.81</p> <p>383.81</p> <p>383.35</p>



# **DRILLING LOG** **GEOLOGICAL SERVICES**

Hole No. GWC-52

Sheet 1 of 2

SITE <b>Georgia Power Company Plant Scherer</b>		HOLE DEPTH <b>30</b>	SURF.ELEV. <b>414.4</b>
LOCATION <b>PAC/Ash Cell</b>	COORDINATES <b>N 1119972.34</b>	<b>E 2408203.99</b>	
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>
DRILLING METHOD <b>Sonic</b>	NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>	
WATER TABLE DEPTH _____ ELEV. _____		TIME AFTER COMP. _____ DATE TAKEN _____	
TYPE GROUT _____ QUANTITY _____ MIX _____		DRILLING START DATE <b>6/24/2010</b>	
DRILLER <b>S. Gautney</b>	RECORDER <b>L. Millet</b>	APPROVED _____	DRILLING COMP. DATE <b>6/24/2010</b>

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	414.40	Orange clayey SILT, wet, sticky, with mica							
1	413.40								
2	412.40								
3	411.40								
4	410.40								
5	409.40								
6	408.40								
7	407.40	Orange and brown clayey SILT, wet, with green mottling, mica							
8	406.40								
9	405.40								
10	404.40	Tan and white clayey SILT, wet, mica							
11	403.40								
12	402.40								
13	401.40								
14	400.40								
15	399.40	-Dark brown, black, orange, and green as above							
16	398.40	Tan sandy SILT, wet, white and black mottling, mica							
17	397.40								
18	396.40								
19	395.40								
20	394.40	Brown silty SAND, saturated, very fine to fine grained, occasional black mottling, mica							
21	393.40								
22	392.40								
23	391.40								
24	390.40								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWC-52

Sheet 2 of 2

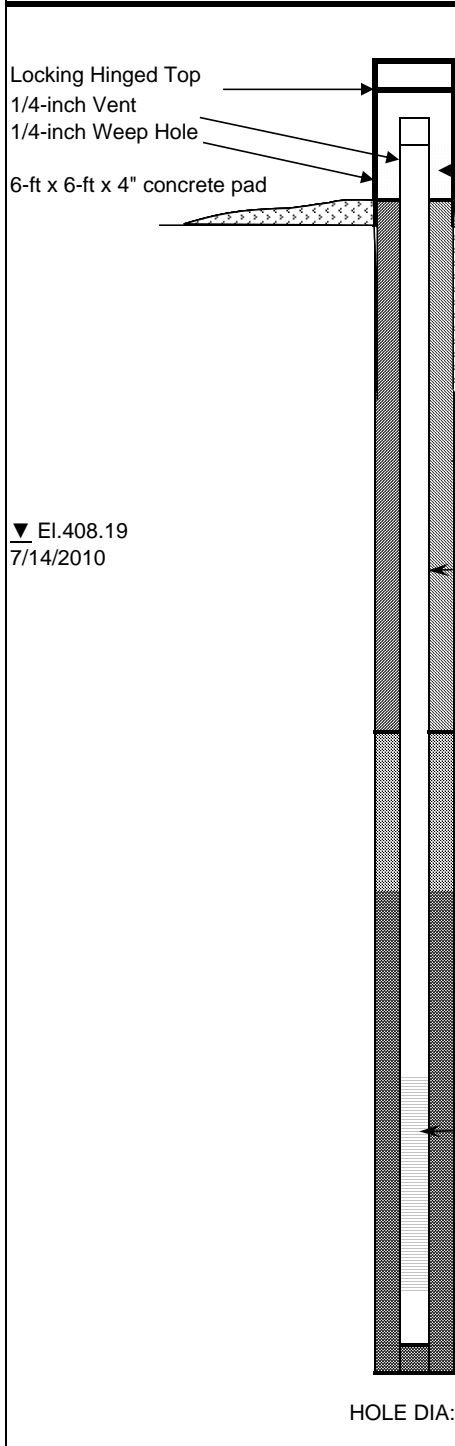
SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		30		SURF.ELEV.		414.4	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
				From To	Blows	N					
25	389.40	Green and white SAPROLITIC GNEISS, wet, with mica									
26	388.40										
27	387.40										
28	386.40										
29	385.40										
30	384.40										
31	383.40	30' - Bottom of boring									
32	382.40										
33	381.40										
34	380.40										
35	379.40										
36	378.40										
37	377.40										
38	376.40										
39	375.40										
40	374.40										
41	373.40										
42	372.40										
43	371.40										
44	370.40										
45	369.40										
46	368.40										
47	367.40										
48	366.40										
49	365.40										
50	364.40										
51	363.40										
52	362.40										
53	361.40										
54	360.40										
55	359.40										



# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer	DRILLING CO.: Boart Longyear	WELL NAME
	DRILLER: S. Gautney	
LOCATION: PAC/Ash Cell	RIG TYPE: BL100C	
LOGGER: L. Millet	DRILLING METHODS: Sonic	GWC-52
DATE CONSTRUCTED: 6/24/2010		

	DEPTH FEET	ELEVATION FT, MSL
	TOP OF RISER -2.73  GROUND SURFACE 0.00  BOTTOM OF PROTECTIVE CASING  TOP OF SEAL 15.85  TOP OF FILTER PACK 17.85  BOTTOM OF RISER / TOP OF SCREEN 19.85  BOTTOM OF SCREEN 29.85  BOTTOM OF CASING 30.17	417.13  414.4          398.55  396.55  394.55  384.55  384.23
HOLE DIA: 6"		

**DRILLING LOG**  
**GEOLOGICAL SERVICES**

Hole No. GWC-53

Sheet 1 of 2

SITE <b>Georgia Power Company Plant Scherer</b>				HOLE DEPTH <b>28</b>	SURF.ELEV. <b>432.9</b>
LOCATION <b>PAC/Ash Cell</b>		COORDINATES <b>N 1120319.65</b>	E <b>2407943.05</b>		
ANGLE <b>0</b>	BEARING <b>0</b>	CONTRACTOR <b>Boart Longyear</b>	DRILL NO. <b>BL100C</b>		
DRILLING METHOD <b>Sonic</b>		NO. SAMPLES <b>Continuous</b>	NO. U.D. SAMPLES <b>0</b>		
WATER TABLE DEPTH		ELEV.	TIME AFTER COMP.		DATE TAKEN
TYPE GROUT		QUANTITY	MIX	DRILLING START DATE <b>6/23/2010</b>	
DRILLER <b>S. Gautney</b>		RECORDER <b>L. Millet</b>	APPROVED	DRILLING COMP. DATE <b>6/23/2010</b>	

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	432.90	Dark red silty CLAY, dry, hard, with mica							
1	431.90								
2	430.90								
3	429.90								
4	428.90								
5	427.90	Orange and tan silty CLAY, dry, hard, trace mica							
6	426.90								
7	425.90								
8	424.90								
9	423.90								
10	422.90	Tan, orange, and light green silty CLAY, dry, plastic, trace mica, occasional sandy zones							
11	421.90								
12	420.90								
13	419.90								
14	418.90								
15	417.90								
16	416.90								
17	415.90	Tan and brown silty CLAY, wet, with mica and dark brown mottling							
18	414.90								
19	413.90								
20	412.90	Green and tan clayey SAND, saturated, very fine to fine grained, with mica							
21	411.90								
22	410.90	Tan sandy CLAY, wet, white mottling, with mica							
23	409.90								
24	408.90								

**DRILLING LOG  
GEOLOGICAL SERVICES**

Hole No. GWC-53

Sheet 2 of 2

SITE		Georgia Power Company Plant Scherer		TOTAL DEPTH		28		SURF.ELEV.		432.9					
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD						
				From To	Blows	N									
25	407.90	Green silty CLAY, wet, tan and white mottling, with mica													
26	406.90														
27	405.90														
28	404.90														
29	403.90	28' - Bottom of boring													
30	402.90														
31	401.90														
32	400.90														
33	399.90														
34	398.90														
35	397.90														
36	396.90														
37	395.90														
38	394.90														
39	393.90														
40	392.90														
41	391.90														
42	390.90														
43	389.90														
44	388.90														
45	387.90														
46	386.90														
47	385.90														
48	384.90														
49	383.90														
50	382.90														
51	381.90														
52	380.90														
53	379.90														
54	378.90														
55	377.90														

# WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Scherer	DRILLING CO.: Boart Longyear	WELL NAME
	DRILLER: S. Gautney	
LOCATION: PAC/Ash Cell	RIG TYPE: BL100C	
LOGGER: L. Millet	DRILLING METHODS: Sonic	GWC-53
DATE CONSTRUCTED: 6/23/2010		

	DEPTH FEET	ELEVATION FT, MSL
	TOP OF RISER	-2.93
	GROUND SURFACE	0.00
<p><b>PROTECTIVE CASING</b> SIZE: 4-inch round TYPE: Anodized Aluminum</p> <p><b>BACKFILL MATERIAL</b> TYPE: Portland Cement Grout AMOUNT: 16 gal</p> <p><b>RISER CASING</b> DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded</p>	BOTTOM OF PROTECTIVE CASING	
	TOP OF SEAL	16.06
<p><b>ANNULAR SEAL</b> TYPE: 3/8-inch bentonite pellets Enviroplug 50# bags AMOUNT: 0.5 bag PLACEMENT: Tremie</p>	TOP OF FILTER PACK	18.06
<p><b>FILTER PACK</b> TYPE: DSI Sand - #2 Drillers Services, Inc. 0.5 cubic foot bags AMOUNT: 4 bags PLACEMENT: Tremie; wash with water</p>	BOTTOM OF RISER / TOP OF SCREEN	20.06
<p><b>SCREEN</b> DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch</p>	BOTTOM OF SCREEN	30.06
	BOTTOM OF CASING	30.07
HOLE DIA: 6"		

▼ El. 426.15  
7/14/2010

**APPENDIX A**

# Monitoring System Details

## A-6 CELL 3 MONITORING WELLS CONSTRUCTION LOGS

# RECORD OF BOREHOLE GWC-30

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 19.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/24/20  
DATE COMPLETED: 1/24/20

NORTHING: 1,119,366.69  
EASTING: 2,408,976.35  
GS ELEVATION: 392.0  
TOC ELEVATION: 394.49 ft

DEPTH W.L.: 4.81'  
ELEVATION W.L.: 389.3'  
DATE W.L.: 1/28/2020  
TIME W.L.: 910

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 3.00 SILT, some sand and clay, fine sand, cohesive, brown, soft, w-PL	ML						Riser —  Cement — 3/8" Bentonite Pellets	<b>WELL CASING</b> Interval: 0' - 8' Material: Schedul 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 8' - 18' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 6' - 8' Type: #1 Sand Quantity: 2.5 bags  <b>FILTER PACK SEAL</b> Interval: 3' - 6' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
3.90		medium to fine sand, non-cohesive, brown grey, loose, wet at 2'-3'			389 3.00					
5		3.00 - 10.00 SAND, some silt, coarse sand, non-cohesive, grey with tan and black mottling, loose, wet	SP							
5.385										
10		10.00 - 19.00 Bedrock, gneiss, well foliated, with fractures at 12' and 15', quartz and mica, grey, slightly weathered	BR		382 10.00				#1 Sand —  0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
10.380										
15						1	ROTO	10.00		
15.375							SONIC	10.00		
20		Boring completed at 19.00 ft			373					
20.370										
25										
25.365										
30										
30.360										
35										
35.355										
40										
40.350										
45										
45.345										
50										

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



# RECORD OF BOREHOLE GWC-31

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 19.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/23/20  
DATE COMPLETED: 1/23/20

NORTHING: 1,118,970.00  
EASTING: 2,409,062.02  
GS ELEVATION: 390.0  
TOC ELEVATION: 392.78 ft

DEPTH W.L.: 2.75'  
ELEVATION W.L.: 389.76'  
DATE W.L.: 1/28/2020  
TIME W.L.: 910

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	390	0.00 - 2.00 SILT, some clay, sand and organics, cohesive, brown, w-PL, soft	ML		388				<p>Cement —</p> <p>Riser —</p> <p>3/8" Bentonite Pellets</p> <p>#1 Sand —</p> <p>0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen</p>	<p><b>WELL CASING</b> Interval: 0' - 9.3' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded</p> <p><b>WELL SCREEN</b> Interval: 9.3' - 19.3' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"</p> <p><b>FILTER PACK</b> Interval: 6.95' - 19.3' Type: #1 Sand Quantity: 3 bags</p> <p><b>FILTER PACK SEAL</b> Interval: 3.60' - 6.95' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket</p> <p><b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A</p> <p><b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum</p> <p><b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A</p>
		2.00 - 4.00 Clayey SILT, some sand, cohesive, grey mottled brown, low plasticity, w-PL, soft			2.00					
		4.00 - 7.00 Clayey SILT, some sand, cohesive, tan brown, low plasticity, w>PL, soft			386					
5	385				4.00					
		7.00 - 9.00 Silty SAND, some clay, non-cohesive, medium coarse sand, grey mottled brown, some 1" diameter gravel, wet, compact	SM		383					
					7.00					
		9.00 - 12.00 SAND, some silt, fine sand, non-cohesive, grey with brown and white mottling, loose, moist	SP		381					
					9.00					
10	380				378					
		12.00 - 14.00 SAND, some silt clay and transitionally weathered rock, fine sand, highly weathered, cohesive, grey with brown and white mottling, firm, w-PL	TWR		12.00					
					376					
15	375	14.00 - 19.00 SAND and Transitionally Weathered Rock, some silt, non-cohesive, grey and white/brown, fine sand, highly weathered, loose, moist	TWR		14.00					
					371					
		Boring completed at 19.00 ft								
20	370									
25	365									
30	360									
35	355									
40	350									
45	345									
50	340									

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWC-32












SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 39.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/21/20  
DATE COMPLETED: 1/21/20

NORTHING: 1,118,749.53  
EASTING: 2,409,084.83  
GS ELEVATION: 406.9  
TOC ELEVATION: 410.03 ft

DEPTH W.L.: 22.21'  
ELEVATION W.L.: 387.28'  
DATE W.L.: 1/28/2020  
TIME W.L.: 905

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0		0.00 - 3.50 Silty CLAY, some micaceous silt, cohesive, orange, medium to low plasticity, firm, w<PL, FILL	CL-ML		403.4			Cement —	<b>WELL CASING</b> Interval: 0' - 25' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded
405		3.50 - 6.00 SILT, some sand, cohesive, fine sand, tan, w<PL, soft, FILL	ML		3.50			Riser —	<b>WELL SCREEN</b> Interval: 25' - 35' Material: Schedule 40 PVC Double Wall U-Pack Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
5		6.00 - 9.00 SILT, some sand, clay and micaceous silt, cohesive to non-cohesive, tan brown, loose, dry, FILL			400.9				
400		9.00 - 14.00 Clayey SILT, some micaceous silt, cohesive, orange, mottled white, medium plasticity, firm, w<PL to w-PL			397.9			AquaGuard Bentonite — Grout	<b>FILTER PACK</b> Interval: 23' - 35' Type: #1 Sand Quantity: 3 bags
10		14.00 - 17.00 SILT, some sand and clay, cohesive, tan, medium plasticity, firm to soft, w-PL			392.9	1	ROTO 10.00 SONIC 10.00		
395		17.00 - 19.00 SILT, some clay and sand, tan, mottled white, low plasticity, firm, w<PL			389.9				<b>FILTER PACK SEAL</b> Interval: 19.6' - 23' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket
15		19.00 - 26.00 Silty SAND, some clay and transitionally weathered rock, fine sand, highly weathered, tan mottled white, compact, moist, SAPROLITE	SM		387.9			3/8" Bentonite — Pellets	<b>ANNULUS SEAL</b> Interval: 3' - 19.6' Type: Aquaguard Bentonite Grout Quantity: 2 bags 30 gallons water
20		26.00 - 29.00 SAND, some silt and transitionally weathered rock, fine sand, highly weathered, non-cohesive, tan and white mottled pink, dense, moist, SAPROLITE	TWR		380.9	2	ROTO 10.00 SONIC 10.00	#1 Sand —	<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
25		29.00 - 39.00 SAND and TWR, some gneiss with feldspar, coarse sand, highly weathered, foliated, white mottled tan, very dense, moist, SAPROLITE			377.9				<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
380					29.00			0.010" Slotted Schedule 40 — PVC Double Wall U-Pack	
30					367.9	3	ROTO 10.00 SONIC 10.00		
375		Boring completed at 39.00 ft							
370									
365									
40									
360									
45									
50									

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20





# RECORD OF BOREHOLE GWC-33A




SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 24.00 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550  
DATE STARTED: 5/26/20  
DATE COMPLETED: 5/27/20

NORTHING: 1,118,458.68  
EASTING: 2,409,359.58  
GS ELEVATION: 390.9  
TOC ELEVATION: 393.96 ft

DEPTH W.L.:9.9  
ELEVATION W.L.: 381  
DATE W.L.:5/27/2020  
TIME W.L.:0745

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE REC		
0	390	0.00 - 2.25 sandy SILTY CLAY, medium plasticity, medium sand, brown, trace organics, homogenous, cohesive, w-pl, stiff	CL		388.65	1	SPT	2-2-3-2	5 <u>0.92</u> 2.00	Cement --	<b>WELL CASING</b> Interval: 0' - 14' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 14' - 24' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 4"  <b>FILTER PACK</b> Interval: 11.5' - 24' Type: #1 Sand Quantity: 7.5  <b>FILTER PACK SEAL</b> Interval: 7.5' - 11.5' Type: 3/8" Bentonite Pellets Quantity: 2-5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 7.5' Type: Portland Cement/Bentonite Powder/Water Quantity: 1.5 bag (46.2 lb) Portland/1.5 bag (50 lb) Bentonite/17.5 gallons Water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow Stem Auger Rock Drill: N/A
		2.25 - 7.50 CLAY, high plasticity, light grey, spotted orange, some fine sand, cohesive, w-pl, stiff	CH		2.25	2	SPT	2-2-4-5	6 <u>1.92</u> 2.00	Riser --	
						3	SPT	5-8-8-10	16 <u>1.92</u> 2.00		
						4	SPT	3-3-4-6	7 <u>1.92</u> 2.00	3/8" Bentonite -- Pellets	
		7.50 - 8.90 CLAYEY SAND, medium sand, high plasticity, orange, iron-stained, non-cohesive, moist, loose	SC		7.50	5	SPT	3-5-4-6	9 <u>1.75</u> 2.00		
		8.90 - 14.00 SILTY SAND, fine to medium sand, no plasticity, laminated white & tan, micaceous, saprolitic, non-cohesive, moist, loose	SM		8.90	6	SPT	4-4-6-8	10 <u>1.67</u> 2.00	#1 Sand --	
						7	SPT	4-6-8-12	14 <u>1.50</u> 2.00		
		14.00 - 18.00 SILTY SAND, fine to medium sand, no plasticity, laminated white & tan, micaceous, saprolitic, 0.5 foot green hornblende vein, non-cohesive, moist, loose	SM		14.00	8	SPT	6-10-12-18	22 <u>1.58</u> 2.00		
						9	SPT	6-10-16-13	26 <u>1.75</u> 2.00	0.010" Slotted Schedule 40 PVC Screen	
		18.00 - 24.00 SILTY SAND, fine to medium sand, no plasticity, laminated white & tan, micaceous, saprolitic, hornblende interlayers at 18.6 (1-inch thick), 20.1 (0.25-inch thick) and 22.3-22.5, and pegmatitic interlayer 22.5-23.3 ft, non-cohesive, moist, dense	SM		18.00	10	SPT	9-12-22-29	34 <u>1.50</u> 2.00		
						11	SPT	6-9-19-24	38 <u>1.75</u> 2.00		
						12	SPT	7-14-19	33 <u>1.33</u> 1.50		
		Boring completed at 24.00 ft			366.9						
25	365										
30	360										
35	355										
40	350										
45	345										
50											

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: SCS Drilling Services  
DRILLER: Jim Castelberry

GA INSPECTOR: Heather Brissey  
CHECKED BY: Timothy Richards, PG  
DATE: 6/4/20



# RECORD OF BOREHOLE GWC-34



PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 19.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/13/20  
DATE COMPLETED: 1/13/20

NORTHING: 1,118,248.26  
EASTING: 2,409,680.41  
GS ELEVATION: 386.2  
TOC ELEVATION: 389.29 ft

SHEET 1 of 1

DEPTH W.L.: 6.7'  
ELEVATION W.L.: 382.49'  
DATE W.L.: 1/28/2020  
TIME W.L.: 855

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0	385	0.00 - 3.00 Silty CLAY, some organics, cohesive, brown red, high plasticity, firm, w-PL	CL-ML		383.2			Cement —  Riser —  3/8" PEL-PLUG — Bentonite Pellets	<b>WELL CASING</b> Interval: 0' - 9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 9' - 19' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" Slotted End Cap: 3"  <b>FILTER PACK</b> Interval: 9' - 19' Type: GP #1 Sand Quantity: 2.5 bags  <b>FILTER PACK SEAL</b> Interval: 3' - 7' Type: 3/8" Bentonite Pellets Pel-Plug Quantity: 5 gallon bucket  <b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
5	380	3.00 - 5.00 Silty CLAY, cohesive, brown, med plasticity, soft, w>PL			381.2				
		5.00 - 11.00 CLAY with silt, some fine sand, layer of SAPROLITE at ~ 8, grey, med plasticity, soft to firm, w>PL			5.00				
10	375	11.00 - 16.00 SAND with clay and silt, some transitionally weathered rock with large gravel, non-cohesive, fine sand, grey, compact, moist	TWR		375.2			0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen  #1 Sand —	
15	370	16.00 - 19.30 SAND with silt and transitionally weathered rock, non-cohesive, fine sands, highly weathered, grey and white, loose, moist			370.2				
		Boring completed at 19.00 ft			366.9				
20	365				19.30				
25	360								
30	355								
35	350								
40	345								
45	340								
50									

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWC-35

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 25.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/12/20  
DATE COMPLETED: 1/12/20

NORTHING: 1,117,860.46  
EASTING: 2,409,906.21  
GS ELEVATION: 385.1  
TOC ELEVATION: 387.90 ft

DEPTH W.L.: 4.5'  
ELEVATION W.L.: 383.30'  
DATE W.L.: 1/28/2020  
TIME W.L.: 850

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0	385	0.00 - 5.00 Clayey SILT, some organics, cohesive, brown, high plasticity, stiff to very stiff, w-PL to w<PL	ML					Cement —	<b>WELL CASING</b> Interval: 0' - 10' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 10' - 20' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 8' - 20' Type: #1 Sand Quantity: 3.5 bags  <b>FILTER PACK SEAL</b> Interval: 4' - 8' Type: 3/8" Bentonite Pellets Quantity: 1/2 50 lb bag  <b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
5	380	5.00 - 7.00 CLAY with silt, cohesive, tan, high plasticity, stiff, w-PL	CL-ML		380.1 5.00			Riser —	
		7.00 - 8.00 Sandy SILT, some clay, fine to coarse sand, non-cohesive, grey, compact, wet	MLS		378.1 7.00 377.1			3/8" Bentonite — Pellets	
		8.00 - 9.00 SAND, some silt, fine sands, non-cohesive, grey, loose, wet	SM		8.00 376.1				
10	375	9.00 - 12.00 SAND, some silt, fine sands, non-cohesive, grey, loose, moist			9.00				
		12.00 - 15.00 SAND, some silty clay and transitionally weathered rock, non-cohesive, fine sand, highly weathered, grey and white, loose to compact, moist			373.1 12.00				
15	370	15.00 - 17.00 SAND and SILT, some transitionally weathered rock, non-cohesive, fine sand, highly weathered, grey and white with grey mottling, loose to compact, dry			370.1 15.00	1	ROTO 10.00 SONIC 10.00	0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
		17.00 - 22.00 SAND, some silt and transitionally weathered rock, non-cohesive, fine sand, grey with white and black mottling, compact, dry			368.1 17.00				
20	365	22.00 - 25.00 Transitionally weathered rock, Gneiss, weathered, grey, cobbled gneiss, dry	TWR		363.1 22.00	2	ROTO 6.00 SONIC 6.00	#1 Sand —	
25	360	Boring completed at 25.00 ft			360.1				

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



# RECORD OF BOREHOLE GWC-36

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 45.40 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/10/20  
DATE COMPLETED: 1/10/20

NORTHING: 1,117,561.29  
EASTING: 2,409,681.44  
GS ELEVATION: 422.0  
TOC ELEVATION: 425.12 ft

DEPTH W.L.: 33.0'  
ELEVATION W.L.: 391.94'  
DATE W.L.: 1/28/2020  
TIME W.L.: 845

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	420	0.00 - 6.00 CLAY, some micaceous silt and organics, cohesive, red, high to medium plasticity, stiff, w<PL	CH						Cement —	<b>WELL CASING</b> Interval: 0' - 35.4' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 35.4' - 45.4' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 32.6' - 45.7' Type: #1 Sand Quantity: 3.5 bags  <b>FILTER PACK SEAL</b> Interval: 29' - 32.6' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 3' - 29' Type: AquaGuard Bentonite Grout Quantity: 2 bags 30 gallons of water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
5	415	6.00 - 8.00 Silty CLAY, some micaceous silt, cohesive, red, high plasticity, very stiff, w<PL	CL-ML		416 6.00 414				Riser —	
10	410	8.00 - 9.00 Clayey SILT, some micaceous silt, red, cohesive, medium to low plasticity, firm w<PL 9.00 - 11.00 Clayey SILT, cohesive, orange red mottled with black, low plasticity, soft, w<PL 11.00 - 16.00 SILT, some clay, cohesive, orange, low plasticity, soft, w<PL	ML		8.00 413 9.00 411 11.00	1	ROTO SONIC	10.00 10.00	AquaGuard Bentonite — Grout	
15	405	16.00 - 19.00 SILT, some sand and micaceous silt, fine sand, trace clay, cohesive to non-cohesive, very soft/loose dry			406 16.00					
20	400	19.00 - 21.00 Silty SAND, some clay at approximately 21', fine sand, non-cohesive, tan to brown, loose to compact, dry 21.00 - 24.00 Silty SAND, tan, some transitionally weathered rock, fine sand, non-cohesive, loose, moist	SM		403 19.00 401 21.00					
25	395	24.00 - 29.00 SAND, some silt and transitionally weathered rock, fine sand, poorly sorted, non-cohesive, tan, mottled white and brown, loose, moist	SP		398 24.00	2	ROTO SONIC	10.00 10.00		
30	390	29.00 - 39.00 SAND, some silt, fine sand, grey mottled with brown, non-cohesive, loose to compact, moist to wet			393 29.00	3	ROTO SONIC	10.00 10.00	3/8 Bentonite Pellets	
35	385								#1 Sand —	
40	380	39.00 - 45.00 SAND, some transitionally weathered rock, fine sand, grey mottled tan and white, non-cohesive, loose to compact, moist to wet, SAPROLITE	TWR		383 39.00	4	ROTO SONIC	6.00 6.00	0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
45	375	Boring completed at 45.40 ft			377 45.00					

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



# RECORD OF BOREHOLE GWC-37

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 49.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/8/20  
DATE COMPLETED: 1/8/20

NORTHING: 1,117,239.70  
EASTING: 2,409,636.56  
GS ELEVATION: 427.2  
TOC ELEVATION: 429.80 ft

SHEET 1 of 1

DEPTH W.L.:24.45  
ELEVATION W.L.: 405.07'  
DATE W.L.:1/28/2020  
TIME W.L.:840

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CLAY, some silt, trace organics and micaceous silt, cohesive, red brown, high plasticity, very stiff, w<PL	CH						Cement —	<b>WELL CASING</b> Interval: 0' - 32' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded
425										
5		5.00 - 6.00 Silty CLAY, some micaceous silt, cohesive, orange, medium plasticity, very stiff to stiff, w<PL	CL-ML		422.2 5.00 421.2 6.00				Riser —	<b>WELL SCREEN</b> Interval: 32' - 42' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
420		6.00 - 9.00 Clayey SILT, some micaceous silt and sand, cohesive, medium plasticity, orange, firm, w<PL	ML							
10		9.00 - 11.00 Clayey SILT, cohesive, red orange, low to medium plasticity, soft, w<PL			418.2 9.00				AquaGuard Bentonite — Grout	<b>FILTER PACK</b> Interval: 29.7 - 42' Type: #1 Sand Quantity: 5 bags
415		11.00 - 13.00 SILT with clay, some sand, fine sand, cohesive, orange, soft to very soft, w<PL			416.2 11.00					
		13.00 - 16.00 Clayey SILT, trace micaceous silt, cohesive, orange, soft to firm, w<PL			414.2 13.00					
15					411.2 16.00					
410		16.00 - 19.00 Clayey SILT, some sand, fine sand, cohesive, tan with brown grey mottling, soft to very soft, moist/w-PL			408.2 19.00					
20		19.00 - 24.00 Sandy SILT, some clay, fine sand, non-cohesive, grey, compact to dense, moist	MLS							
405					403.2 24.00				3/8" Bentonite — Pellets	<b>ANNULUS SEAL</b> Interval: 3' - 27' Type: AquaGuard Bentonite Grout Quantity: 2 bags, 30 gallons water
25		24.00 - 29.00 Silty SAND, some clay, fine sand, non-cohesive, grey, mottled black and tan, compact, moist	SM							
400		29.00 - 34.00 Silty SAND, some micaceous silt and clay, fine sand, non-cohesive, grey mottled white, compact to dense, moist			398.2 29.00				#1 Sand —	<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
30					393.2 34.00					
35		34.00 - 39.00 SAND with some silt, trace micaceous silt, fine sand, non-cohesive, tan grey, loose to compact, moist	SP						0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
390					388.2 39.00					
40		39.00 - 42.00 SAND, some silt, fine sand, grey mottled with brown, non-cohesive, compact, moist to wet			385.2 42.00					
385		42.00 - 44.00 SAND some silt, fine sand, dark grey, mottled tan brown, compact to dense, moist			383.2 44.00					
45		44.00 - 49.00 SAND, some silt, fine sand, grey with white mottling, poorly sorted, compact to loose, moist								
380					378.2					
50		Boring completed at 49.00 ft								

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD: SCHERER CELL 3 BORING LOGS\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWC-38











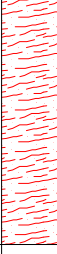

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 49.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/7/20  
DATE COMPLETED: 1/7/20

NORTHING: 1,116,786.45  
EASTING: 2,409,533.11  
GS ELEVATION: 416.0  
TOC ELEVATION: 418.68 ft

DEPTH W.L.: 12.11'  
ELEVATION W.L.: 406.33'  
DATE W.L.: 1/28/2020  
TIME W.L.: 835

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	415	0.00 - 5.00 CLAY, some silt, orange brown, cohesive, medium to high plasticity, stiff, w<PL	CH		411				Cement —	<b>WELL CASING</b> Interval: 0' - 29' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded
5	410	5.00 - 8.00 Clayey SILT, some micaceous silt, orange brown, cohesive, low plasticity, firm, w-PL	ML		5.00				Riser —	<b>WELL SCREEN</b> Interval: 29' - 39' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
		8.00 - 9.00 Silty SAND, fine sand, some clay, brown tan, cohesive, w<PL	SM		8.00					
10	405	9.00 - 15.00 Silty CLAY, some micaceous silt, tan, cohesive, medium plasticity, firm to stiff, w-PL	CL-ML		407					<b>FILTER PACK</b> Interval: 27' - 49' Type: #1 Sand Quantity: 3 bags
15	400	15.00 - 19.00 Sandy SILT, little clay, fine sand, cohesion variable mostly non-cohesive, low plasticity, grey, loose, moist to dry	MLS		401	1	ROTO	10.00	AquaGuard Bentonite — Grout	<b>FILTER PACK SEAL</b> Interval: 24' - 27' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket
20	395	19.00 - 22.00 Sandy Clayey SILT, biotite/mica gneiss, SAPROLITE, fine sand, grey with brown mottling, compact to dense, dry			397					<b>ANNULUS SEAL</b> Interval: 3' - 24' Type: AquaGuard Bentonite Grout Quantity: 2 bags 30 gallons water
25	390	22.00 - 24.00 Silty SAND, fine to coarse, gravelly, poorly sorted, grey and grey brown, loose, dry	SM		394	2	ROTO	10.00		<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
		24.00 - 29.00 Silty SAND, fine sand, some gravel, poorly sorted, sand, non-cohesive, grey mottled white and black, dense to very dense, dry, SAPROLITE			392				3/8" Bentonite — Pellets	<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
30	385	29.00 - 39.00 Gravelly Silty SAND, biotite gneiss to transitionally weathered rock, fine to coarse sand, highly weathered, up to 2" damter cobble, moderate to poorly foliated, grey, dry, SAPROLITE	TWR		387	3	ROTO	10.00	#1 Sand —	
35	380				377				0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
40	375	39.00 - 49.00 Bedrock, biotite gneiss, moderate to well foliated, and fractured, dark grey and black some white banding	BR		39.00	4	ROTO	3.00		
45	370				367					
50		Boring completed at 49.00 ft								

BOREHOLE RECORD: SCHERER CELL 3 BORING LOGS\_SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20





# RECORD OF BOREHOLE GWA-39

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 59.30 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 12/20/19  
DATE COMPLETED: 12/20/19

NORTHING: 1,116,967.57  
EASTING: 2,408,671.68  
GS ELEVATION: 454.2  
TOC ELEVATION: 457.62 ft

SHEET 1 of 2

DEPTH W.L.: 19.21'  
ELEVATION W.L.: 438.38'  
DATE W.L.: 1/28/2020  
TIME W.L.: 825

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC			
					DEPTH (ft)						
0		0.00 - 6.00 CLAY and GRAVEL, some sand and silt, biotite gneiss gravel up to 1" diameter, red and red-brown, some dark orange brown, w<PL, very stiff, medium to high plasticity	GC					Cement —		<b>WELL CASING</b> Interval: 0' - 49' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded	
450											
5		6.00 - 9.00 SAND, non-cohesive, fine sand, some silt, tan and light orange brown, some white, dry	SP		448.2 6.00			Riser —		<b>WELL SCREEN</b> Interval: 49' - 59' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"	
445											
10		9.00 - 11.50 Sandy CLAY, some micaceous silt, fat clay, brown, mottled dark red-brown and dark red, sand increases with depth, high plasticity, w>PL	CLS		445.2 9.00					<b>FILTER PACK</b> Interval: 47' - 59.3' Type: #1 Sand Quantity: 3.5 bags	
440											
15		11.50 - 19.00 Sandy SILT, some clay, fine sand, micaceous, mostly non-cohesive, tan-brown and light brown with some orange and mottled some white and black with some areas of finer cohesive (w<PL, low to no plasticity) material throughout, loose, dry	MLS		442.7 11.50	1	ROTO SONIC	10.00 10.00	AquaGuard Bentonite — Grout		<b>FILTER PACK SEAL</b> Interval: 44' - 47' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket
435											
20		19.00 - 29.00 Sandy Clayey SILT, biotite/mica gneiss Saprolite, cohesive, fine sand, more clay less sand 24'-29', moderately foliated, brown and grey-brown mottled mostly white and tan brown, some black and orange brown, firm to stiff, w<PL	ML		435.2 19.00	2	ROTO SONIC	10.00 10.00			<b>ANNULUS SEAL</b> Interval: 3' - 44' Type: AquaGuard Bentonite Grout Quantity: 4 bags, 60 gallons water
430											
25											<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
425											
30		29.00 - 39.00 Silty SAND, non-cohesive, fine to coarse, poorly sorted sand, some clay, moderate to well foliated mica/biotite, quartz, feldspar, gneissic SAPROLITE, grey mottled white and black, some orange-brown, dense to very dense, dry to moist	SM		425.2 29.00	3	ROTO SONIC	10.00 10.00			<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
420											
35											
415											
40		39.00 - 44.00 SAND, some silt, trace clay and gravel, dark grey, some black, some white, biotite gneiss SAPROLITE, poorly foliated, fine to coarse poorly sorted sand, compact, dry	SP		415.2 39.00	4	ROTO SONIC	10.00 10.00	3/8" Bentonite — Pellets		
410											
45		44.00 - 46.00 Gravelly SAND, biotite gneiss transitionally weathered rock, fine to coarse sand, poorly sorted, biotite gneiss gravel up to 2" diameter, moderate to poorly foliated, grey brown, grey and dark grey, some white and black, dense, dry	TWR		410.2 44.00						
		46.00 - 49.00 Bedrock, biotite gneiss, moderate to well foliated, highly weathered and fractured, dark grey and black with some white, som orange-brown staining along fractures	BR		408.2 46.00						
405											
50			BR		405.2 49.00	5	ROTO				
Log continued on next page											

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: William Ballow  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWA-39

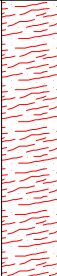
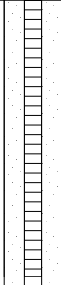
SHEET 2 of 2

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 59.30 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 12/20/19  
DATE COMPLETED: 12/20/19

NORTHING: 1,116,967.57  
EASTING: 2,408,671.68  
GS ELEVATION: 454.2  
TOC ELEVATION: 457.62 ft

DEPTH W.L.: 19.21'  
ELEVATION W.L.: 438.38'  
DATE W.L.: 1/28/2020  
TIME W.L.: 825

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		49.00 - 59.00 Bedrock, gneiss and partially weathered rock, moderately foliated, black with bands of white and some pink, highly weathered and fractured, orange-brown staining around fractures ( <i>Continued</i> )	BR				SONIC		<div>#1 Sand --</div> <div>0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen</div> 	<b>WELL CASING</b> Interval: 0' - 49' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 49' - 59' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 47' - 59.3' Type: #1 Sand Quantity: 3.5 bags  <b>FILTER PACK SEAL</b> Interval: 44' - 47' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 3' - 44' Type: AquaGuard Bentonite Grout Quantity: 4 bags, 60 gallons water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
400						5	ROTO 10.00 SONIC 10.00			
55					395.2					
395		Boring completed at 59.30 ft			59.00					
60										
390										
65										
385										
70										
380										
75										
375										
80										
370										
85										
365										
90										
360										
95										
355										
100										

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: William Ballow  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20





# RECORD OF BOREHOLE GWA-40

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 44.80 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 12/18/19  
DATE COMPLETED: 12/18/19

NORTHING: 1,117,365.24  
EASTING: 2,408,730.04  
GS ELEVATION: 461.2  
TOC ELEVATION: 463.84 ft

SHEET 1 of 1

DEPTH W.L.: 31.49'  
ELEVATION W.L.: 432.13'  
DATE W.L.: 1/28/2020  
TIME W.L.: 820

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	460	0.00 - 0.50 CLAY, some sand, orange-brown, some red, cohesive, w>PL, soft to very soft, high plasticity	CL		0.50				Cement —	<b>WELL CASING</b> Interval: 0' - 34' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 34' - 44' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
5	455	0.50 - 9.00 Sandy SILT and GRAVEL, gravel up to 1" diameter, orange, orange-brown and white, non-cohesive, dry, fine to coarse sands, poorly sorted	MLS							
10	450	9.00 - 10.00 CLAY, some silt, trace gravel, med to high plasticity, brown and orange, brown, some tan, firm to stiff, w-PL	CL		452.2 9.00 451.2 10.00				Riser —	<b>FILTER PACK</b> Interval: 32' - 44.8' Type: #2 Sand Quantity: 3.75 bags  <b>FILTER PACK SEAL</b> Interval: 29' - 32' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: 3' - 29' Type: AquaGuard Bentonite Grout Quantity: 2 bags, 50 gallons water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
15	445	10.00 - 17.00 Clayey SILT, some fine sand, trace coarse sand and gravel, cohesive, red, orange-brown, orange, tan and some white, trace black staining, firm, w<PL	ML			1	ROTO	10.00		
20	440	17.00 - 19.00 Sandy SILT, well foliated Saprolite, trace gravel, non-cohesive, fine to coarse sand, poorly sorted, red, white, orange-brown with black staining, dry	MLS		444.2 17.00 442.2 19.00				AquaGuard Bentonite — Grout	
25	435	19.00 - 24.00 Silty CLAY, cohesive, tan mottled white, orange-tan, some black, firm, low plasticity, w<PL	CL-ML			2	ROTO	10.00		
30	430	24.00 - 26.00 SAND, some clay, some gravel, mostly coarse angular quartz sand, red and white with some orange-brown clay, moist	SC		437.2 24.00 435.2 26.00				3/8" Bentonite — Pellets	
35	425	26.00 - 29.00 Silty CLAY, cohesive, tan mottled white, orange-tan, some black, firm, low plasticity, w<PL	CL-ML			3	ROTO	10.00		
40	420	29.00 - 34.00 Sandy Silty CLAY, trace gravel, cohesive, low plasticity, higher plasticity from approximately 30'-32', w<PL, (w>PL approximately 30'-32'), orange-brown, orange, some dark brown, some white, increased sand and silt approximately 32'-34'.	CL		427.2 29.00 424.2 37.00				0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
45	415	34.00 - 37.00 Sandy SILT, some clay, cohesive, light grey and white, moderately foliated biotite and gneiss Saprolite, fine sand, some coarse, moist to wet, soft, w-PL, low to no plasticity	MLS			4	ROTO	10.00		
50		37.00 - 44.80 Sandy CLAY to Clayey SAND, cohesive, orange-brown and brown mottled white, orange and black, sand content increases approximately 40'-44', fine to coarse sand, poorly sorted, trace gravel, med to high plasticity, w>PL approximately 37'-40', very soft to firm	SC-SM						#2 Sand —	
		Boring completed at 44.80 ft			416.4					

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: William Ballow  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



# RECORD OF BOREHOLE GWA-41

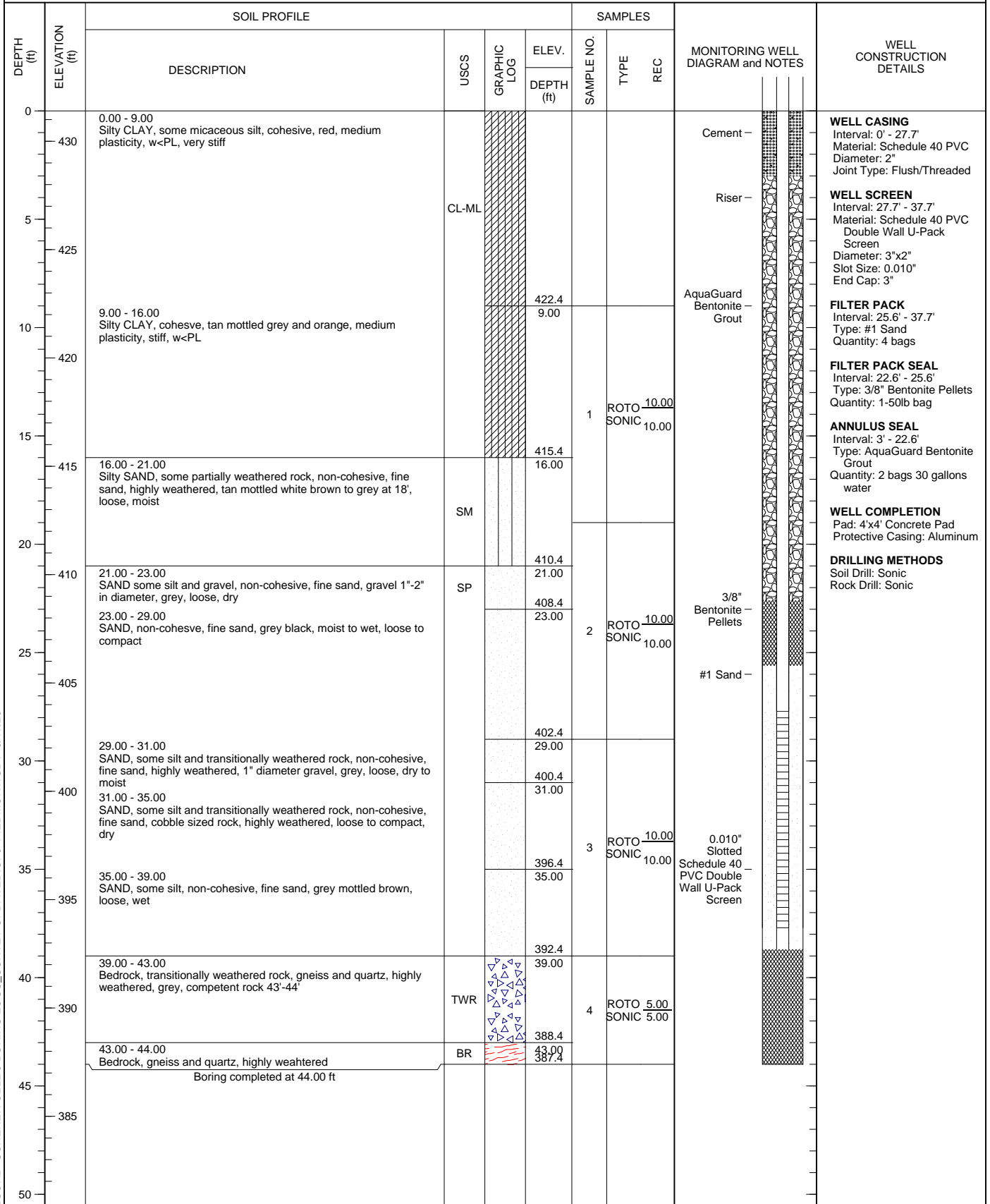
PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 44.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/26/20  
DATE COMPLETED: 1/26/20

NORTHING: 1,118,096.97  
EASTING: 2,408,412.15  
GS ELEVATION: 431.4  
TOC ELEVATION: 434.12 ft

SHEET 1 of 1

DEPTH W.L.: 10.20'  
ELEVATION W.L.: 423.65'  
DATE W.L.: 1/28/2020  
TIME W.L.: 1025



LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWA-42

SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 19.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/27/20  
DATE COMPLETED: 1/27/20

NORTHING: 1,118,500.68  
EASTING: 2,408,233.53  
GS ELEVATION: 402.2  
TOC ELEVATION: 405.19 ft

DEPTH W.L.: 3.60'  
ELEVATION W.L.: 401.49'  
DATE W.L.: 1/28/2020  
TIME W.L.: 1020

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0		0.00 - 2.00 Clayey SILT, some organics, cohesive, orange, med plasticity, firm, w-PL	ML		400.2			Cement —	<b>WELL CASING</b> Interval: 0' - 8.8' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded
400		2.00 - 5.00 Clayey SILT, cohesive, grey tan, mottled orange, high plasticity, stiff, w>PL			2.00			3/8" Bentonite — Pellets	
5		5.00 - 6.00 Silty CLAY, cohesive, orange, low plasticity, w>PL, soft	CL-ML		397.2			Riser —	<b>WELL SCREEN</b> Interval: 8.8' - 18.8' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
395		6.00 - 8.00 Clayey SILT, some sand, fine sand, non-cohesive, tan, wet, loose	ML		396.2				
		8.00 - 9.00 Silty SAND, medium to fine sand, some clay, non-cohesive, grey, wet, loose	SM		394.2				<b>FILTER PACK</b> Interval: 6.1' - 18.8' Type: #1 Sand Quantity: 4 bags
10		9.00 - 11.00 Silty SAND, medium to fine sand, some clay, non-cohesive, grey, wet, compact to dense			393.2			#1 Sand —	
390		11.00 - 14.00 SAND and transitionally weathered rock, fine sand, highly weathered, some gravel up to 2" in diameter, orange grey with white and black mottling, loose, moist to dry	TWR		391.2				<b>FILTER PACK SEAL</b> Interval: 2 - 6.1' Type: 3/8" Bentonite Pellets Quantity: 1 - 50 lb bag
					11.00				
15		No recovery past 14'; Likely dense TWR that required a lot of water to cut though but breaks it up too much to recover in barrel.			388.2	1	ROTO 5.00 SONIC 10.00	0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	<b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A
385					14.00				<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
20		Boring completed at 19.00 ft							<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
380									
25									
375									
30									
370									
35									
365									
40									
360									
45									
355									
50									

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



# RECORD OF BOREHOLE GWA-43






SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 19.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 1/26/20  
DATE COMPLETED: 1/26/20

NORTHING: 1,118,861.38  
EASTING: 2,408,484.42  
GS ELEVATION: 398.1  
TOC ELEVATION: 400.94 ft

DEPTH W.L.: 2.80'  
ELEVATION W.L.: 397.89'  
DATE W.L.: 1/28/2020  
TIME W.L.: 1015

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES		MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE REC		
0		0.00 - 5.00 Silty CLAY, some organics, cohesive, brown, medium plasticity, w-PL, firm	CL-ML					Cement —	<b>WELL CASING</b> Interval: 0' - 9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 9' - 19' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 6.9' - 19' Type: #1 Sand Quantity: 4 bags  <b>FILTER PACK SEAL</b> Interval: 2.75' - 6.9' Type: 3/8" Bentonite Pellets Quantity: 1-5 gallon bucket  <b>ANNULUS SEAL</b> Interval: N/A Type: N/A Quantity: N/A  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: N/A
395					393.1			Riser —	
5		5.00 - 7.00 Silty CLAY, some organics, cohesive, grey, high plasticity, w>PL, firm			5.00			3/8" Bentonite — Pellets	
390		7.00 - 11.00 Silty SAND, some clay, non-cohesive, medium to fine sand, grey, dense wet	SM		7.00			#1 Sand —	
10					387.1				
385		11.00 - 16.00 SAND, some silt, non-cohesive, some transitionally weathered rock, fine sand, grey, mottled white and red to grey and white, moist, compact to dense, SAPROLITE	TWR		11.00				
15					382.1				
380		16.00 - 19.00 SAND, some silt, non-cohesive, coarse sand, brown and grey, loose, moist	SP		16.00			0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	
20		Boring completed at 19.00 ft			379.1				
375									
25									
370									
30									
365									
35									
360									
40									
355									
45									
350									
50									

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: Darren Cox  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWA-44A


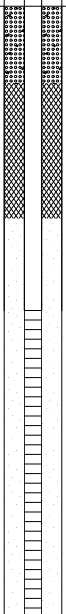




SHEET 1 of 1

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 20.80 ft  
LOCATION: Juliette, GA

DRILL RIG: CME 550  
DATE STARTED: 5/20/20  
DATE COMPLETED: 5/21/20

NORTHING: 1,119,296.99  
EASTING: 2,408,569.76  
GS ELEVATION: 396.5  
TOC ELEVATION: 399.62 ft

DEPTH W.L.: 4.1'  
ELEVATION W.L.: 392.4  
DATE W.L.: 5/21/2020  
TIME W.L.: 0800

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES				MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE REC		
0	395	0.00 - 3.50 CLAY, high plasticity, red-brown, cohesive, w>pl, very stiff, residuum	CH			1	SPT	3-3-3	6 <u>0.66</u> 1.50		<b>WELL CASING</b> Interval: 0' - 9.5' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 9.9' - 19.9' Material: Schedule 40 PVC Diameter: 3"x2" Slot Size: 0.010" End Cap: 4"  <b>FILTER PACK</b> Interval: 6.9' - 19.9' Type: #1 Sand Quantity: 6 bags  <b>FILTER PACK SEAL</b> Interval: 2.5' - 6.9' Type: 3/8" Bentonite Pellets Quantity: 2-5 gal bucket  <b>ANNULUS SEAL</b> Interval: 0' - 2.5' Type: Portland Cement/Bentonite Powder/Water Quantity: 0.25 bag (46.2 lb) Portland/ 0.25 bag (50 lb) Bentonite/7.5 gallons Water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Hollow Stem Auger Rock Drill: N/A
					393	2	SPT	5-5-6	11 <u>0.66</u> 1.50		
		3.50 - 7.50 Sandy CLAY, fine sand, mottled grey-brown, high plasticity, cohesive, w>pl, very stiff, residuum	CL		3.50	3	SPT	WH-5-4	9 <u>1.50</u> 1.50		
					389	4	SPT	3-4-6	10 <u>1.50</u> 1.50		
					389	5	SPT	5-6-6	12 <u>1.50</u> 1.50		
		7.50 - 9.00 Sandy CLAY, fine sand, mottled grey-brown, increasing sand with depth, high plasticity, cohesive, w>pl, very stiff, residuum	ML		7.50	6	SPT	5-6-7	13 <u>1.50</u> 1.50		
					387.5	7	SPT	5-6-50/4	56/10 <u>1.30</u> 1.50		
		9.00 - 10.50 Clayey SAND, grey-white, fine grained sand, high plasticity fines, trace coarse gravel, non-cohesive, moist, very dense	SC		9.00	8	SPT	50/4	50/4 <u>0.33</u> 1.50		
					386	9	SPT	50/1	50/1 <u>0.08</u> 1.50		
		10.50 - 20.80 SAND, fine to medium, grey-white, non-cohesive, moist to wet, oxidation from 14.5-16 feet, very dense	SP		10.50	10	SPT	50/3	50/3 <u>0.83</u> 1.50		
					375.7	13	SPT	31-50/4	81/10 <u>0.25</u> 1.50		
		Boring completed at 20.80 ft									

BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: SCS Drilling Services  
DRILLER: Jim Castelberry

GA INSPECTOR: Heather Brissey  
CHECKED BY: Timothy Richards, PG  
DATE: 6/4/20



# RECORD OF BOREHOLE GWA-54











SHEET 1 of 2

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 59.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 12/21/19  
DATE COMPLETED: 12/21/19

NORTHING: 1,117,751.40  
EASTING: 2,408,588.52  
GS ELEVATION: 448.6  
TOC ELEVATION: 451.49 ft

DEPTH W.L.:25.65'  
ELEVATION W.L.: 425.76'  
DATE W.L.:1/28/2020  
TIME W.L.:815

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 5.00 CLAY, some micaceous silt, brownish orange, fat clay, cohesive, med to high plasticity, stiff to very stiff, w>PL	CH						Cement —	<b>WELL CASING</b> Interval: 0' - 38.75' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded
445					443.6					
5		5.00 - 7.00 Clayey SILT, micaceous silt with clay, some fine sand, dark orange-brown, cohesive, low plasticity, firm, w>PL	ML		5.00				Riser —	<b>WELL SCREEN</b> Interval: 38.75' - 48.75' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"
440		7.00 - 9.00 Silty SAND, fine sand with silt, some medium sand, trace clay, dark orange brown and tan, non-cohesive, dry	SM		441.6					
10		9.00 - 10.00 CLAY, some silt, red-brown some dark red-brown, fat clay, cohesive, high plasticity, soft w>PL	CH		9.00 438.6				AquaGuard Bentonite — Grout	<b>FILTER PACK</b> Interval: 36.10' - 59' Type: #1 Sand Quantity: 5 bags
435		10.00 - 19.00 Sandy SILT, silt with some clay and fine sand, some medium sand, moderate foliation 10'-11' and 17'-18', light grey brown, mottled tan and white, some black, micaceous silt, dark grey and grey & white, 17'-18' mottled tan, orange, white, 10'-11' moist, loose, dry	MLS		429.6	1	ROTO	10.00		
15					426.6				3/8" Bentonite — Pellets	<b>FILTER PACK SEAL</b> Interval: 33' - 36.10' Type: AquaGuard Bentonite Grout Quantity: 3 bags, 35 gallons water
430		19.00 - 22.00 Silty SAND, micaceous silt, fine to coarse feldspar & quartz sand, poorly sorted, grey and grey-brown mottled tan, white, dark grey, trace gravel, moderately foliated, gneissic SAPROLITE, dry, loose to compact, non-cohesive	SM		19.00					
20		22.00 - 29.00 Clayey SILT and fine sand, some medium sand, moderately foliated biotite gneiss SAPROLITE, brown and grey mottled white, tan, black some dark brown staining, mostly cohesive, low to no plasticity, w<PL, sands moist to dry	ML		22.00	2	ROTO	10.00	3/8" Bentonite — Pellets	<b>ANNULUS SEAL</b> Interval: 3' - 33' Type: AquaGuard Bentonite Grout Quantity: 3 bags, 35 gallons water
425					419.6					
30		29.00 - 32.00 SAND gravelly SAND, fine to medium, some coarse, with gneiss gravel, some cobble sized pieces, transitionally weathered rock, grey, dry	TWR		29.00				3/8" Bentonite — Pellets	<b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum
415		32.00 - 39.00 GNEISS, biotite, feldspar, quartz, moderately well foliated, heavy to slightly weathered, separated by partially weathered rock above, PWR still dry, 38-39 wet and fractured with some staining, black white, tan, with some orange and brown			416.6	3	ROTO	10.00		
35					409.6				0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen	<b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
410		39.00 - 59.00 Bedrock, GNEISS, biotite, mica, feldspar, quartz, well foliated, black to white with some tan, fractured with some orange staining along fractures, slightly weathered	BR		39.00	4	ROTO	10.00		
40						5	ROTO			
405										
45										
400										
50										

Log continued on next page

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: William Ballow  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

# RECORD OF BOREHOLE GWA-54

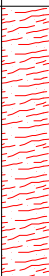

SHEET 2 of 2

PROJECT: Plant Scherer Cell 3  
PROJECT NUMBER: 19127819  
DRILLED DEPTH: 59.00 ft  
LOCATION: Juliette, GA

DRILL RIG: Terrasonic 150C  
DATE STARTED: 12/21/19  
DATE COMPLETED: 12/21/19

NORTHING: 1,117,751.40  
EASTING: 2,408,588.52  
GS ELEVATION: 448.6  
TOC ELEVATION: 451.49 ft

DEPTH W.L.: 25.65'  
ELEVATION W.L.: 425.76'  
DATE W.L.: 1/28/2020  
TIME W.L.: 815

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
50		39.00 - 59.00 Bedrock, GNEISS, biotite, mica, feldspar, quartz, well foliated, black to white with some tan, fractured with some orange staining along fractures, slightly weathered ( <i>Continued</i> )	BR				SONIC			<b>WELL CASING</b> Interval: 0' - 38.75' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Threaded  <b>WELL SCREEN</b> Interval: 38.75' - 48.75' Material: Schedule 40 PVC Double Wall U-Pack Screen Diameter: 3"x2" Slot Size: 0.010" End Cap: 3"  <b>FILTER PACK</b> Interval: 36.10' - 59' Type: #1 Sand Quantity: 5 bags  <b>FILTER PACK SEAL</b> Interval: 33' - 36.10' Type: 3/8" Bentonite Pellets Quantity: 1-5 gal bucket  <b>ANNULUS SEAL</b> Interval: 3' - 33' Type: AquaGuard Bentonite Grout Quantity: 3 bags, 35 gallons water  <b>WELL COMPLETION</b> Pad: 4'x4' Concrete Pad Protective Casing: Aluminum  <b>DRILLING METHODS</b> Soil Drill: Sonic Rock Drill: Sonic
395						5	ROTO 10.00 SONIC 10.00			
55										
390		Boring completed at 59.00 ft			389.6					
60										
385										
65										
380										
70										
375										
75										
370										
80										
365										
85										
360										
90										
355										
95										
350										
100										

LOG SCALE: 1 in = 6.5 ft  
DRILLING COMPANY: Cascade Drilling  
DRILLER: Ike Young

GA INSPECTOR: William Ballow  
CHECKED BY: Timothy Richards, PG  
DATE: 3/6/20



BOREHOLE RECORD SCHERER CELL 3 BORING LOGS SURVEY UPDATED.GPJ PIEDMONT.GDT 9/17/20

**APPENDIX A**

# Monitoring System Details

## A-7 DRILLER BONDS





Western Surety Company hereby continues in force Bond No. 68616636 briefly described as WATER WELL CONTRACTOR  
,  
for RANGER CONSULTING, INC.  
, as Principal,  
in the sum of \$ TWENTY THOUSAND AND NO/100 Dollars, for the term beginning  
July 01, 2009, and ending June 30, 2010, subject to all  
the covenants and conditions of the original bond referred to above.

This continuation is issued upon the express condition that the liability of Western Surety Company under said Bond and this and all continuations thereof shall not be cumulative and shall in no event exceed the total sum above written.

Dated this 21 day of April, 2009.

WESTERN SURETY COMPANY

By Paul T. Bruflat  
Paul T. Bruflat, Senior Vice President





# Western Surety Company

## CONTINUATION CERTIFICATE

Western Surety Company hereby continues in force Bond No. 68616636 briefly described as WATER WELL CONTRACTOR  
\_\_\_\_\_  
for RANGER CONSULTING, INC.  
\_\_\_\_\_, as Principal,  
in the sum of \$ TWENTY THOUSAND AND NO/100 Dollars, for the term beginning July 01, 2010, and ending June 30, 2011, subject to all the covenants and conditions of the original bond referred to above.

This continuation is issued upon the express condition that the liability of Western Surety Company under said Bond and this and all continuations thereof shall not be cumulative and shall in no event exceed the total sum above written.

Dated this 21 day of April, 2010.



WESTERN SURETY COMPANY

By Paul T. Bruflat  
Paul T. Bruflat, Senior Vice President

THIS "Continuation Certificate" MUST BE FILED WITH THE ABOVE BOND.

# Western Surety Company

## POWER OF ATTORNEY

### KNOW ALL MEN BY THESE PRESENTS:

That WESTERN SURETY COMPANY, a corporation organized and existing under the laws of the State of South Dakota, and authorized and licensed to do business in the States of Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the United States of America, does hereby make, constitute and appoint

Paul T. Bruflat of Sioux Falls  
State of South Dakota, its regularly elected Senior Vice President,  
as Attorney-in-Fact, with full power and authority hereby conferred upon him to sign, execute, acknowledge and deliver for and on its behalf as Surety and as its act and deed, the following bond:

One WATER WELL CONTRACTOR

bond with bond number 68616636

for RANGER CONSULTING, INC.

as Principal in the penalty amount not to exceed: \$20,000.00

Western Surety Company further certifies that the following is a true and exact copy of Section 7 of the by-laws of Western Surety Company duly adopted and now in force, to-wit:

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys-in-Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

In Witness Whereof, the said WESTERN SURETY COMPANY has caused these presents to be executed by its Senior Vice President Paul T. Bruflat with the corporate seal affixed this 21 day of April, 2010.

ATTEST

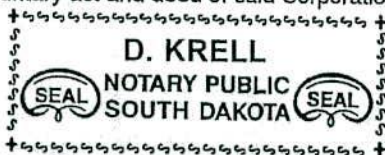
L. Nelson  
L. Nelson, Assistant Secretary

WESTERN SURETY COMPANY  
By Paul T. Bruflat  
Paul T. Bruflat, Senior Vice President

STATE OF SOUTH DAKOTA }  
COUNTY OF MINNEHAHA } ss

On this 21 day of April, 2010, before me, a Notary Public, personally appeared  
Paul T. Bruflat and L. Nelson

who, being by me duly sworn, acknowledged that they signed the above Power of Attorney as Senior Vice President and Assistant Secretary, respectively, of the said WESTERN SURETY COMPANY, and acknowledged said instrument to be the voluntary act and deed of said Corporation.



My Commission Expires November 30, 2012

D. Krell  
Notary Public





**COPY**

Bond Number K08315607

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Michael C. Rice/Cascade Drilling, L.P.

Know All Men By These Present

That we Michael C. Rice/Cascade Drilling, L.P. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Westchester Fire Insurance Company as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective 9/20/13 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Whereof the Principal and Surety have caused these present to be duly signed and sealed, this 20th day of, September 20 13.

Michael C. Rice/Cascade Drilling, L.P.

PRINCIPAL, BY \_\_\_\_\_ (L.S.) TITLE: \_\_\_\_\_  
Westchester Fire Insurance Company

SURETY BY: Roxana Palacios  
Roxana Palacios, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL:

Revised December 2012



# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)  
11/02/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Aon Risk Services Southwest, Inc. Houston TX Office 5555 San Felipe Suite 1500 Houston TX 77056 USA	<b>CONTACT NAME:</b>	
	<b>PHONE (A/C. No. Ext):</b> (866) 283-7122	<b>FAX (A/C. No.):</b> (800) 363-0105
<b>INSURED</b> Cascade Drilling, L.P. PO Box 1184 17270 Woodinville-Redmond Road Building "A", #777 Woodinville WA 98072 USA	<b>E-MAIL ADDRESS:</b>	
	<b>INSURER(S) AFFORDING COVERAGE</b>	
	<b>NAIC #</b>	
	<b>INSURER A:</b> Zurich American Ins Co	
	<b>INSURER B:</b> Aspen Specialty Insurance Company	
	<b>INSURER C:</b>	
	<b>INSURER D:</b>	
<b>INSURER E:</b>		
<b>INSURER F:</b>		

## COVERAGES

## REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:			ERAFXLW15	11/01/2015	11/01/2016	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$300,000 MED EXP (Any one person) \$25,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000 Professional Liability \$1,000,000
A	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			BAP 0137342-01	11/01/2015	11/01/2016	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
B	<input type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION			EXAFXLY15	11/01/2015	11/01/2016	EACH OCCURRENCE \$10,000,000 AGGREGATE \$10,000,000
A	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	WC013734402 Workers Comp AOS WC013734502 Workers Comp AR,MA,NE, NY	11/01/2015 11/01/2015	11/01/2016 12/01/2015	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000
B	Contractor Pol1			ERAFXLW15	11/01/2015	11/01/2016	Aggregate \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Certificate Holder is included as Additional Insured in accordance with the policy provisions of the Auto, General and Excess Liability policy. A waiver of Subrogation is granted in favor of Certificate Holder in accordance with the policy provisions of the AL GL WC policy. Insurance evidenced herein is Primary to other insurance available to an Additional Insured, but only in accordance with the policy's provisions.

## CERTIFICATE HOLDER

## CANCELLATION

Southern Company Services Attn: Keith Morgan 42 Inverness Center Parkway BIN B426 Birmingham AL 35242 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE  <i>Aon Risk Services Southwest, Inc.</i>

**POLICY NUMBER: ERAFXLW15**

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**

**ADDITIONAL INSURED –  
PRIMARY AND NON-CONTRIBUTORY**

It is hereby agreed that the Policy is amended as follows solely as respects Coverage Section 1. , Coverage 1A (Bodily Injury and Property Damage) and Coverage 1B (Personal and Advertising Injury):

**SCHEDULE**

**Name of Person or Organization:**

Where required by written contract.

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

The persons or organizations shown in the Schedule above are insureds under § III. WHO IS AN INSURED, paragraph F. of this Policy subject to all the terms and conditions of that paragraph.

With respect to the persons or organizations shown in the Schedule above, this Policy shall be primary and non-contributory with any other valid and collectible insurance available to such persons or organizations.

All other terms and conditions of this Policy remain unchanged.

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY**

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)
Blanket as required by written contract.

It is hereby agreed that "any person or organization" referred to in the waiver of rights of recovery contained in the last sentence of Section VI. **CONDITIONS**, paragraph O., **Subrogation**, includes the person or organization listed in the above Schedule.

All other terms and conditions of this Policy remain unchanged.



**CLIENT'S COPY**

**SURETY BOND CONTINUATION CERTIFICATE**

TO: State of Georgia  
Division of Environmental Protection  
2 Martin Luther King Jr. Drive SE  
Suite 1252  
Atlanta, GA 30334

To be attached to and form a part of: Performance Bond for Well Contractors and Drillers

Principal on the Bond: Michael C. Rice/Cascade Drilling, L.P.

Surety Bond Number: K08315607

Bond Amount: Twenty Thousand and 00/100 Dollars ( \$20,000.00)

In consideration of the agreed premium charged for this bond, it is understood and agreed that the following change shall be made to this obligation:

**[ x ] CONTINUATION CERTIFICATE**

This certificate extends the life of the bond to June 30, 2017. It is executed upon the express condition that the surety's liability under said bond, together with this and all previous continuation certificates, shall not be cumulative and shall in no event exceed the amount specifically set forth in said bond or any existing certificate changing the amount of said bond.

Signed, sealed and dated this 26th day of May , 2015 .

Westchester Fire Insurance Company

By: Katie Snider

Katie Snider, Attorney-in-Fact

Surety of Record: Westchester Fire Insurance Company  
436 Walnut Street  
Philadelphia, PA 19106  
Phone: (415) 547-4513

Agent of Record: Kibble & Prentice, a USI Company  
601 Union Street, Suite 1000  
Seattle, WA 98101  
Phone: (206) 441-6300



# Power of Attorney

## WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

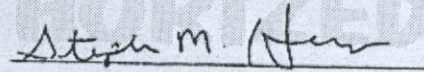
FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Heather Allen, Holly E Ulfers, Katie Snider, Nancy N Hill, Roxana Palacios, Steven W Palmer, all of the City of SEATTLE, Washington, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Fifteen million dollars & zero cents (\$15,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 22 day of December 2014.

WESTCHESTER FIRE INSURANCE COMPANY



  
Stephen M. Haney, Vice President

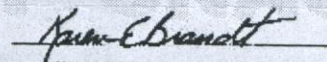
COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA ss.

On this 22 day of December, AD. 2014 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.



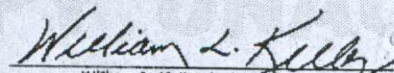
COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
KAREN E. BRANDT, Notary Public  
City of Philadelphia, Phila. County  
My Commission Expires Sept. 26, 2018

  
Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 26<sup>th</sup> day of May, 2015.



  
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 22, 2016.





SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of

Bond: Performance Bond for Water Well Contractors

dated

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

executed by Michael C. Rice/Cascade Drilling, L.P.  
(PRINCIPAL)

. as Principal,

and by Atlantic Specialty Insurance Company

. as Surety,

in favor of State of Georgia  
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:  
Michael Coleman

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider

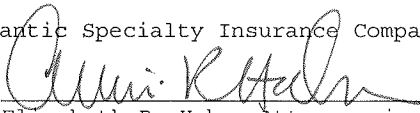
is effective December 21, 2017  
(MONTH-DAY-YEAR)

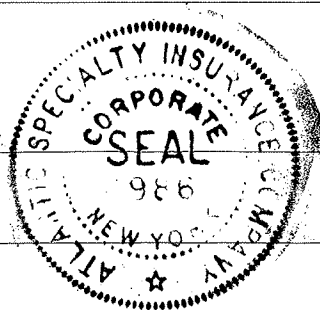
Signed and Sealed December 21, 2017  
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.  
(PRINCIPAL)

By: \_\_\_\_\_  
(PRINCIPAL)

Atlantic Specialty Insurance Company

By:   
Elizabeth R. Hahn, Attorney-in-Fact





## 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, Jill A. Wallace, 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**, 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 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 eighth day of December, 2014.

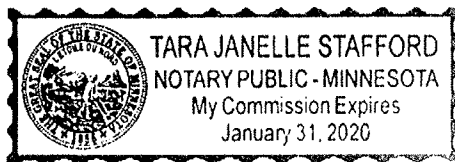


STATE OF MINNESOTA  
HENNEPIN COUNTY

By

Paul J. Brehm, Senior Vice President

On this eighth day of December, 2014, 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.

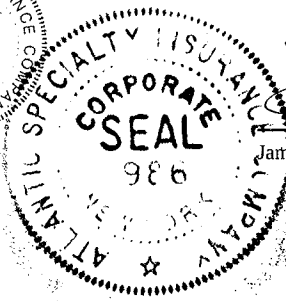


Notary Public

I, the undersigned, Assistant 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 21 day of December, 2017

This Power of Attorney expires  
October 1, 2019



James G. Jordan, Assistant Secretary

SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of

Bond: Performance Bond for Water Well Contractors

dated

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

executed by Michael C. Rice/Cascade Drilling, L.P.  
(PRINCIPAL)

. as Principal,

and by Atlantic Specialty Insurance Company

. as Surety,

in favor of State of Georgia  
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:  
Michael Coleman

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider

is effective December 21, 2017  
(MONTH-DAY-YEAR)

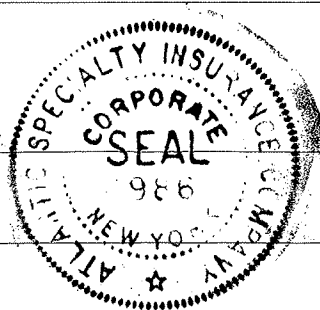
Signed and Sealed December 21, 2017  
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.  
(PRINCIPAL)

By: \_\_\_\_\_  
(PRINCIPAL)

Atlantic Specialty Insurance Company

By: Elizabeth R. Hahn  
Elizabeth R. Hahn, Attorney-in-Fact





## 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, Jill A. Wallace, 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**, 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 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 eighth day of December, 2014.

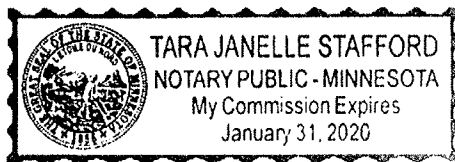


STATE OF MINNESOTA  
HENNEPIN COUNTY

By

Paul J. Brehm, Senior Vice President

On this eighth day of December, 2014, 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.

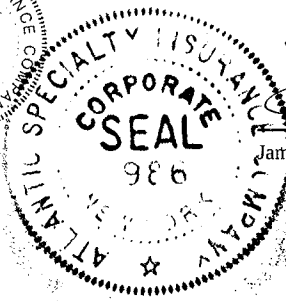


Notary Public

I, the undersigned, Assistant 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 21 day of December, 2017

This Power of Attorney expires  
October 1, 2019



James G. Jordan, Assistant Secretary

**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

## 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.

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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.

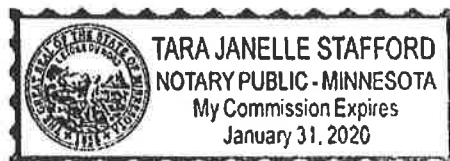
STATE OF MINNESOTA  
HENNEPIN COUNTY



By

Paul J. Brehm, Senior Vice President

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.



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

This Power of Attorney expires  
October 1, 2019



Christopher V. Jerry, Secretary



## 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:

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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.

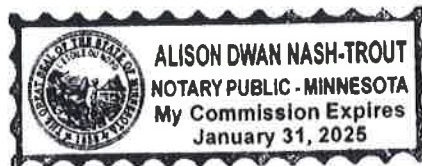
STATE OF MINNESOTA  
HENNEPIN COUNTY



By

Paul J. Brehm, Senior Vice President

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.

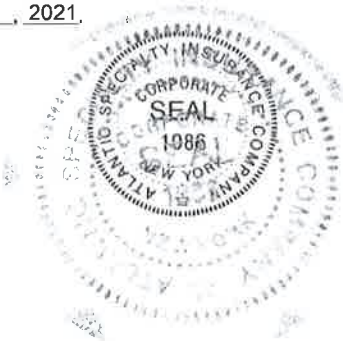


Notary Public

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.

This Power of Attorney expires  
January 31, 2025



Kara Barrow, 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   
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

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, 2021  
(MONTH-DAY-YEAR)

and ending on June 30, 2022  
(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 05/06/2021  
(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, Inc.  
Agent

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

(205) 252-9871  
Telephone Number of Agent



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**


## POWER OF ATTORNEY

**KNOWN ALL PERSONS BY THESE PRESENTS:** That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

**IN WITNESS WHEREOF**, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By:   
David M. Carey, Assistant Secretary



State of PENNSYLVANIA ss  
County of MONTGOMERY

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**IN WITNESS WHEREOF**, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By:   
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.



By:   
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.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, 2022  
(MONTH-DAY-YEAR)

and ending on June 30, 2023  
(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 05/06/2021  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

By

Jeffrey M. Wilson, Attorney-in-Fact

McGriff Insurance Services, Inc.

Agent

2211 7th Avenue South, Birmingham, AL 35233

Address of Agent

(205) 252-9871

Telephone Number of Agent





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**

## POWER OF ATTORNEY

**KNOWN ALL PERSONS BY THESE PRESENTS:** That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

**IN WITNESS WHEREOF**, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary



State of PENNSYLVANIA  
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**IN WITNESS WHEREOF**, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

CONTINUATION  
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. 800033976

dated effective September 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 June 30, 2023  
(MONTH-DAY-YEAR)

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

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

Description of bond Performance Bond for Water Well Contractors

Premium:

**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 13, 2023  
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By   
ATTORNEY-IN-FACT Carlos A. Albelo



## 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: **Megan Sivley, Melissa Haddick, Sandra Parker, Orlando Aguirre, Stacy Killebrew, Carlos A. Albelo**, 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 first day of January, 2023.

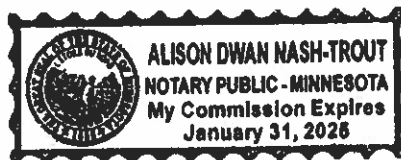


By

Sarah A. Kolar, General Counsel

STATE OF MINNESOTA  
HENNEPIN COUNTY

On this first day of January, 2023, before me personally came Sarah A. Kolar, General Counsel of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and she acknowledged the execution of the same, and being by me duly sworn, that she 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.



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 13th day of April, 2023.



This Power of Attorney expires  
January 31, 2025

Kara Barrow, Secretary



June 26, 2008

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

**RE: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104**

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2009.

Please let us know if you need additional information.

Best Regards,

A handwritten signature in black ink that reads "Annie Jackson". The signature is written in a cursive, flowing style.

Annie Jackson  
Southern Company Services, Inc.  
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS



COPY

Safeco

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective June 30, 2005  
(MONTH-DAY-YEAR)on behalf of Southern Company Services, Inc.  
(PRINCIPAL)and in favor of State of Georgia - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2008  
(MONTH-DAY-YEAR)and ending on June 30, 2009  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

Description of bond License Bond - Water Well Contractors &amp; 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 April 25, 2008  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By

Barbara S. MacArthur, Attorney-In-Fact

COPY



POWER  
OF ATTORNEY

Safeco Insurance Company of America  
General Insurance Company of America  
Safeco Plaza  
Seattle, WA 98185

KNOW ALL BY THESE PRESENTS:

No. 6724

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

\*\*\*\*\*SANDRA S. CARTER; GARY D. EKLUND; JUDITH S. FLEMING; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS;  
EDWARD L. MITCHELL; NANCY G. NIX; CHAUN M. WILSON; Atlanta, Georgia\*\*\*\*\*

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 28th day of February, 2008

STEPHANIE DALEY-WATSON, SECRETARY

TIM MIKOLAJEWSKI, SENIOR VICE-PRESIDENT, SURETY

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA**:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Stephanie Daley-Watson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 25th day of April, 2008



STEPHANIE DALEY-WATSON, SECRETARY

Safeco® and the Safeco logo are registered trademarks of Safeco Corporation.

Southern Company Services, Inc.  
30 Ivan Allen Jr. Boulevard NW  
Atlanta, Georgia 30308



May 27, 2009

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

**RE: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104**

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2010.

Please let us know if you need additional information.

Best Regards,

A handwritten signature in cursive script that reads "Annie Jackson".

Annie Jackson  
Southern Company Services, Inc.  
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS

**SAFECO Insurance Company of America**

, Surety upon

a certain Bond No. **4993104**dated effective **June 30, 2005**  
(MONTH-DAY-YEAR)on behalf of **Southern Company Services, Inc.**  
(PRINCIPAL)and in favor of **State of Georgia - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2009**  
(MONTH-DAY-YEAR)and ending on **June 30, 2010**  
(MONTH-DAY-YEAR)Amount of bond **\$10,000.00**Description of bond **License 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 **April 24, 2009**  
(MONTH-DAY-YEAR)**SAFECO Insurance Company of America**

By

  
**Barbara S. MacArthur, Attorney-In-Fact**

POWER  
OF ATTORNEY

Safeco Insurance Company of America  
General Insurance Company of America  
1001 4th Avenue  
Suite 1700  
Seattle, WA 98154

KNOW ALL BY THESE PRESENTS:

No. 6724

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

\*\*\*\*\*SANDRA S. CARTER; GARY D. EKLUND; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS;  
EDWARD L. MITCHELL; NANCY G. NIX; CHAUN M. WILSON; Atlanta, Georgia\*\*\*\*\*

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 21st day of March, 2009

Dexter R. Legg, Secretary

Timothy A. Mikolajewski, Vice President

## CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA**:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business. ... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Dexter R. Legg, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 24th day of April, 2009



Dexter R. Legg, Secretary



CONTINUATION  
CERTIFICATE

**COPY**

**SAFECO Insurance Company of America**

, Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**  
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2010**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2011**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

Description of bond **License 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 **April 15, 2010**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

By *Barbara S. MacArthur*  
**Barbara S. MacArthur, Attorney-In-Fact**

POWER  
OF ATTORNEY

No. 6724

## KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

\*\*\*\*\*GARY D. EKLUND; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS; CHAUN M. WILSON;  
MICHAEL F. YADACH; Atlanta, Georgia\*\*\*\*\*

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 2nd day of February 2010

Dexter R. Legg, Secretary

Timothy A. Mikolajewski, Vice President

## CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA**:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**  
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Dexter R. Legg, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this

15th

day of

April

2010



Dexter R. Legg, Secretary

Southern Company Services, Inc.  
30 Ivan Allen Jr. Boulevard NW  
Atlanta, Georgia 30308



May 2, 2011

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2012.

Please let us know if you need additional information.

Sincerely,

A handwritten signature in cursive script that reads "Clementine Broaders".

Clementine Broaders  
Southern Company Services, Inc.  
Risk Management Department

/cb

Enclosure

cc: Stacy Sprayberry, SCS





CONTINUATION  
CERTIFICATE

**COPY**

**SAFECO Insurance Company of America**

, Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**  
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2011**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2012**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

Description of bond **License 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 **April 21, 2011**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

By   
**Barbara S. MacArthur, Attorney-In-Fact**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

**SAFECO INSURANCE COMPANY OF AMERICA  
SEATTLE, WASHINGTON  
POWER OF ATTORNEY**

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint **VIRGINIA B. MCMANUS, GARY D. EKLUND, BARBARA S. MACARTHUR, CHAUN M. WILSON, MICHAEL F. YADACH, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA**.....

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **ONE HUNDRED MILLION AND 00/100\*\*\*\* \*\*\*\*\* DOLLARS (\$ 100,000,000.00\*\*\*\*\* \*\*\*\*\*)** each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

**ARTICLE IV - Execution of Contracts: Section 12. Surety Bonds and Undertakings.**

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, Garnet W. Elliott, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 14th day of October, 2010.

**SAFECO INSURANCE COMPANY OF AMERICA**

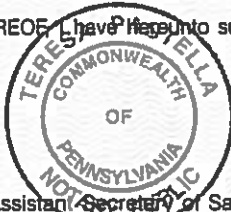
By Garnet W. Elliott  
Garnet W. Elliott, Assistant Secretary



COMMONWEALTH OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 14th day of October, 2010, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires Mar. 28, 2013  
Member, Pennsylvania Association of Notaries

By Teresa Pastella  
Teresa Pastella, Notary Public

**CERTIFICATE**

I, the undersigned, Assistant Secretary of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 21st day of April, 2011.



By David M. Carey  
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-810-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Southern Company Services, Inc.  
30 Ivan Allen Jr. Boulevard, NW  
Atlanta, Georgia 30301



April 20, 2012

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104

Dear Mr. McCook:

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2013.

Please let me know if you need additional assistance.

Sincerely,

  
Clementine Broaders  
Risk Management Associate  
[cbbroade@southernco.com](mailto:cbbroade@southernco.com)  
404-506-0701

/cb

Enclosure

cc: Stacy Sprayberry, SCS

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 - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2012**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2013**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

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 **April 11, 2012**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

By

  
D-Ann Kleidosty, Attorney-In-Fact



This Power of Attorney limits the authority of those named herein, and they have no authority over the Company except in the manner and to the extent herein stated.

SAFECO INSURANCE COMPANY OF AMERICA  
SEATTLE, WASHINGTON  
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint GARY D. EKLUND, CHAUN M. WILSON, MICHAEL F. YADACH, NORMANDY SUTTON, WILLIAM G. MOODY, D-ANN KLEIDOSTY, TRACEY D. WATSON, SYLVIA M. OGLE, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA.....

....., each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding TWO HUNDRED FIFTY MILLION AND 00/100..... DOLLARS (\$ 250,000,000.00.....) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE IV - Officers: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, David M. Carey, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 24th day of February 2012.



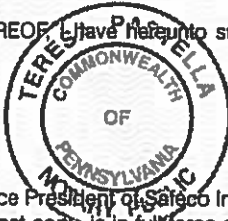
SAFECO INSURANCE COMPANY OF AMERICA

By David M. Carey  
David M. Carey, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 24th day of February, 2012, before me, a Notary Public, personally came David M. Carey, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires Mar. 28, 2013  
Member, Pennsylvania Association of Notaries

By Teresa Pastella  
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Vice President of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Officer specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 11th day of April 2012



Gregory W. Davenport  
Gregory W. Davenport, Vice President

To confirm the validity of this Power of Attorney call  
1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.



May 8, 2013

Mr. Tony McCook  
Georgia Geologic Survey  
19 Martin Luther King Jr. Dr. SW  
Room 400  
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers  
Safeco Bond #4993104

Dear Mr. McCook:

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2014.

Please let me know if you need additional assistance.

Sincerely,

*Clementine Broaders*  
Clementine Broaders  
Risk Management Associate  
[cbbroade@southernco.com](mailto:cbbroade@southernco.com)  
404-506-0701

/cb

Enclosure

cc: Sarah Roberts

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 - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2013  
(MONTH-DAY-YEAR)

and ending on June 30, 2014  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

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 May 03, 2013  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By D-Ann Kleidosty  
D-Ann Kleidosty, Attorney-In-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 5634691

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 31st day of October, 2012.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 31st day of October, 2012, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.



By: KD Riley  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV – OFFICERS – Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation –** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization –** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 31st day of May, 2013.



By: David M. Carey  
David M. Carey, Assistant Secretary

To confirm the validity of this Power of Attorney call  
1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



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 - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2014**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2015**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

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 **April 09, 2014**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

By   
**D-Ann Kleidosty, Attorney-In-Fact**

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6125754

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of May, 2013.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 15th day of May, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.



By: KD Riley  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS - Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation -** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization -** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of April, 2014.



By: David M. Carey  
David M. Carey, Assistant Secretary

To confirm the validity of this Power of Attorney call  
1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

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 - Dept. of Natural Resources**  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2014**  
(MONTH-DAY-YEAR)

and ending on **June 30, 2015**  
(MONTH-DAY-YEAR)

Amount of bond **\$10,000.00**

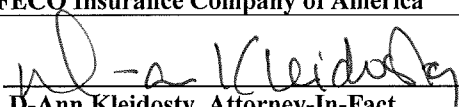
Description of bond **Water Well Contractors & Drillers**

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 **April 09, 2014**  
(MONTH-DAY-YEAR)

**SAFECO Insurance Company of America**

By   
**D-Ann Kleidosty, Attorney-In-Fact**

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 6125754

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of May, 2013.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 15th day of May, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.



By: KD Riley  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS** - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of April, 2014.



By: David M. Carey  
David M. Carey, Assistant Secretary

To confirm the validity of this Power of Attorney call  
1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Not valid for mortgage, note, loan, letter of credit,  
currency rate, interest rate or residual value guarantees.

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 - Dept. of Natural Resources  
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30, 2016  
(MONTH-DAY-YEAR)

and ending on June 30, 2017  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

Description of bond Water Well Contractors & Drillers

**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 07, 2016  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By 

D-Ann Kleidosty, Attorney-in-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7310252

First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of April, 2016.



First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 1st day of April, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Plymouth Twp., Montgomery County  
My Commission Expires March 28, 2017  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS** - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Gregory W. Davenport, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 7th day of April, 2016.



By: Gregory W. Davenport  
Gregory W. Davenport, Assistant Secretary

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, 2017  
(MONTH-DAY-YEAR)

and ending on June 30, 2018  
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

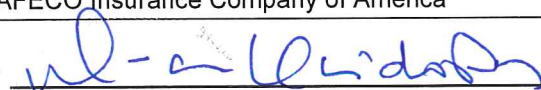
Description of bond Water Well Contractors & Drillers

**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 04, 2017  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By



D-Ann Kleidosty, Attorney-in-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7710213

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, **Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle**

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 4th day of April, 2017.



American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 4th day of April, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Upper Merion Twp., Montgomery County  
My Commission Expires March 28, 2021  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS - Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation -** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization -** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 4th day of May, 2017.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary



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, 2018  
(MONTH-DAY-YEAR)

and ending on June 30, 2019  
(MONTH-DAY-YEAR)

Amount of bond \$15,000.00

Description of bond Water Well Contractors & Drillers

**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 31, 2018  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By

  
Karina Plis, Attorney-in-Fact



**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7907463

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, D-Ann Kleidosty; Gary D. Eklund; Sylvia M. Ogle; Karina Plis; Sharon J. Potts

all of the city of Allanta state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 5th day of October, 2017.



American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 5th day of October, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Upper Merion Twp., Montgomery County  
My Commission Expires March 28, 2021  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

**ARTICLE IV - OFFICERS - Section 12. Power of Attorney.** Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation -** The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization -** By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 31<sup>st</sup> day of May, 2018.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

CONTINUATION  
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

dated effective 6/30/1987  
(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, 2019  
(MONTH-DAY-YEAR)

and ending on June 30, 2020  
(MONTH-DAY-YEAR)

Amount of bond \$15,000.00

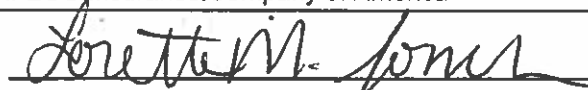
Description of bond Water Well Contractors & Drillers

**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 June 05, 2019  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By



Loretta M. Jones, Attorney-in-fact





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No. **8200528-969358**

## POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Julie Karnes, Andrea Allman, Rachel A. Chaveriat, Jessica Frederick, Rebecca J. Hobbs, Loretta M. Jones, Sandra King, Thelma M. Lett, Michelle Lute-Heatherly, Sandy McElhane, Vicki Nobinger, Bonnie Rice, Mariah Smith, Mary Y. Volmar, Carolyn E. Wheeler, Joy M. Williams

all of the city of Knoxville state of TN each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of February, 2019.



American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss  
County of MONTGOMERY

On this 15th day of February, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Upper Merion Twp., Montgomery County  
My Commission Expires March 28, 2021  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of June, 2019.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

**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

## 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.

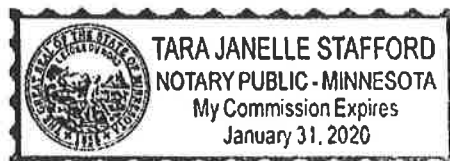
STATE OF MINNESOTA  
HENNEPIN COUNTY



By

Paul J. Brehm, Senior Vice President

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.



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

This Power of Attorney expires  
October 1, 2019



Christopher V. Jerry, Secretary

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, 2021  
(MONTH-DAY-YEAR)

and ending on June 30, 2022  
(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 05/06/2021  
(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, Inc.  
Agent

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

(205) 252-9871  
Telephone Number of Agent



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**

## POWER OF ATTORNEY

**KNOWN ALL PERSONS BY THESE PRESENTS:** That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

**IN WITNESS WHEREOF**, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary



State of PENNSYLVANIA  
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**IN WITNESS WHEREOF**, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.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, 2022  
(MONTH-DAY-YEAR)

and ending on June 30, 2023  
(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 05/06/2021  
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

By

Jeffrey M. Wilson, Attorney-in-Fact

McGriff Insurance Services, Inc.

Agent

2211 7th Avenue South, Birmingham, AL 35233

Address of Agent

(205) 252-9871

Telephone Number of Agent



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**

## POWER OF ATTORNEY

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all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

**IN WITNESS WHEREOF**, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary



State of PENNSYLVANIA  
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**IN WITNESS WHEREOF**, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

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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, 2021  
(MONTH-DAY-YEAR)

and ending on June 30, 2022  
(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 05/06/2021  
(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, Inc.  
Agent

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

(205) 252-9871  
Telephone Number of Agent





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**

## POWER OF ATTORNEY

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all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

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American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By: David M. Carey  
David M. Carey, Assistant Secretary



State of PENNSYLVANIA  
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**IN WITNESS WHEREOF**, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

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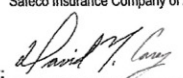
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Safeco Insurance Company of America

By:   
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County of MONTGOMERY ss

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I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

**IN TESTIMONY WHEREOF**, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.



By:   
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.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, 2023  
(MONTH-DAY-YEAR)

and ending on June 30, 2024  
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractors & Drillers

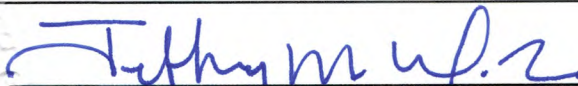
Premium: \$100.00

**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 05/22/2023  
(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





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

Certificate No: **8205019-016032**

## POWER OF ATTORNEY

**KNOWN ALL PERSONS BY THESE PRESENTS:** That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.



American States Insurance Company  
First National Insurance Company of America  
General Insurance Company of America  
Safeco Insurance Company of America

By:

*David M. Carey*

David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss  
County of MONTGOMERY

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal  
Teresa Pastella, Notary Public  
Montgomery County  
My commission expires March 28, 2025  
Commission number 1126044  
Member, Pennsylvania Association of Notaries

By:

*Teresa Pastella*

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

### ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**Certificate of Designation** - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 22nd day of May, 2023.



By:

*Renee C. Llewellyn*

Renee C. Llewellyn, Assistant Secretary





SURETY DIVISION  
2211 7TH AVENUE SOUTH, BIRMINGHAM, AL 35233

**MEAGAN CARTER**

## LETTER OF TRANSMITTAL

To: Clementine Broaders  
Southern Power Company

Date: 5/22/2023

We are sending you:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Duplicate Original        | <input type="checkbox"/> Consent of Surety    | <input type="checkbox"/> Certificate of Insurance |
| <input checked="" type="checkbox"/> <u>CC</u> / VC | <input type="checkbox"/> Change Order         | <input type="checkbox"/> Motor Fuel Bonds         |
| <input type="checkbox"/> Invoice                   | <input type="checkbox"/> Financial/ Indemnity | <input type="checkbox"/> Bond                     |

No. of Copies: Description:

(1) CC

Bond No. 4993104

**\*\*Please review and notify if you should have any questions, or if changes or amendments are needed. \*\***

These are transmitted as checked below:

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Info and/or necessary action in remarks | <input type="checkbox"/> For your file            | <input checked="" type="checkbox"/> As requested             |
| <input checked="" type="checkbox"/> For your use                 | <input type="checkbox"/> Returned for corrections | <input type="checkbox"/> Please sign as indicated and return |

REMARKS: UPS

If enclosures are not as noted, kindly notify at once.

Signed: **Meagan Carter**, Senior Client Service Specialist – Surety

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





**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.**

Bond Number KO8418809

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Michael C. Rice dba Boart Longyear Company

Know All Men By These Present.

That we Michael C. Rice dba Boart Longyear Company and any and all Employees, Officers and Partners, as Principal, and Westchester Fire Insurance Company as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Obligee, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985.P 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the obligee and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective July 1, 2010 and unless sooner terminated, this bond shall terminate June 30, 2011. In Witness Whereof the Principal and Surety have caused these present to be duly signed and sealed, this 6th day of July 2010.  
Michael C. Rice dba Boart Longyear Company

PRINCIPAL, BY [Signature] (L.S.)

TITLE: Franchise Manager  
Westchester Fire Insurance Company

SURETY BY: [Signature]

Cynthia L. Choren, Attorney-In-Fact Non-Resident License No. 747470

GEORGIA REGISTERED AGENT N/A SEAL:

ACKNOWLEDGMENT BY SURETY

STATE  
OF

Missouri

County  
of

St. Charles

} ss.

On this 6th day of July, 2010, before me personally  
appeared Cynthia L. Choren, known to me to be the Attorney-in-Fact of  
Westchester Fire Insurance Company

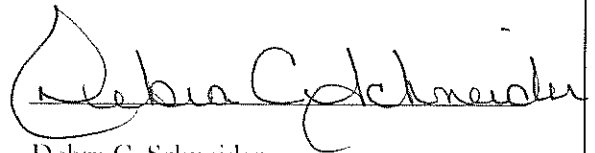
\_\_\_\_\_, the corporation  
that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid  
County, the day and year in this certificate first above written.

My Commission Expires: November 5, 2011

(Seal)

DEBRA C. SCHNEIDER  
Notary Public/Notary Seal  
State of Missouri  
St. Charles County  
COMMISSION #07419088  
My Commission Expires: 11/05/2011



Debra C. Schneider  
Notary Public in the State of Missouri  
County of St. Charles

# Power of Attorney

## WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the State of New York, having its principal office in the City of Atlanta, Georgia pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

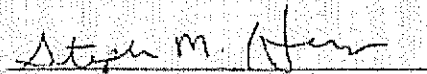
FURTHER RESOLVED, that the Resolution of the Board of Directors of the Company adopted at the meeting held on November 8, 1999 relating to the authorization of certain persons to execute, for and on behalf of the Company, Written Commitments and appointments and delegations, is hereby rescinded.

Does hereby nominate, constitute and appoint Cynthia L Choren, Debra C Schneider, Heidi A Notheisen, JoAnn R Frank, Karen L Roider, Pamela A Beelman, Sandra L Ham, all of the City of SAINT LOUIS, Missouri, each individually if there be more than one named; its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Twenty million dollars & zero cents (\$20,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 1 day of December 2009.

WESTCHESTER FIRE INSURANCE COMPANY

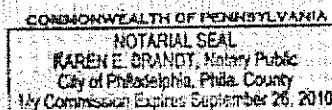


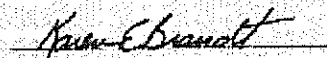
  
Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA ss.

On this 1 day of December, AD. 2009 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.




  
Karen E. Brandt  
Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 6th day of July, 2010.



  
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER December 01, 2011.



GENERAL PURPOSE RIDER

To be attached to and form part of Bond Number 09157828 effective June 30, 2015 issued by the Fidelity and Deposit Company of Maryland in the amount of Twenty Thousand and No/100 (\$20,000.00), on behalf of Craig Penton dba Terracon Consultants, Inc. as Principal, and in favor of Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia as Obligee:

NOW Therefore, it is agreed that:

The expiration date of the bond is hereby amended to:

**June 30, 2017**

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

This rider is to be effective the 30th day of June , 2015 .

Signed, sealed and dated this 4th day of November , 2015 .

Craig Penton dba Terracon Consultants, Inc.  
Principal

\_\_\_\_\_

Fidelity and Deposit Company of Maryland  
Surety

\_\_\_\_\_

Christy M. Braile, Attorney-in-Fact

6/4/14 sent to  
Craig Penton  
(Stacy Adams)

FOR YOUR RECORDS

Bond Number 09157828

**Performance Bond For Water Well Contractors And Drillers**

Name of Water Well Contractor or Driller Craig Penton dba Terracon Consultants, Inc.

Know All Men By These Present

That we Craig Penton dba Terracon Consultants, Inc. AND ANY AND ALL EMPLOYEES, OFFICERS AND PARTNERS, as Principal, and Fidelity and Deposit Company of Maryland as Surety, are held and firmly bound unto the Director of the Environmental Protection Division (Director), Department of Natural Resources, State of Georgia and his or her Successor or Successors in office, as Oblige, in the full sum of **TWENTY THOUSAND AND NO/00 DOLLARS (\$20,000.00)** for the payment of which will and truly to be made, we bind ourselves, our heir, administrators, successors and assigns, jointly and severally, by the present.

WHEREAS, the WATER WELL STANDARDS ACT OF 1985 (Ga. Laws 1985, p. 1192) (the "ACT") requires that water well contractors and drillers file performance bonds with the director to ensure compliance with the ACT; and WHEREAS the above bound PRINCIPAL is subject to the terms and provisions of said ACT. NOW, THEREFORE, the conditions of this obligation are such that if the above bound PRINCIPAL shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the ACT as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from date of issuance and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon sixty (60) days written notice to Principal and Oblige; provided that the rights of the oblige and beneficiaries under this bond which arose prior to such termination shall continue.

The bond is effective June 4, 2014 and unless sooner terminated, this bond shall terminate June 30, 2015. In Witness Whereof the Principal and Surety have caused these present to be duly signed and sealed, this 4th day of, June 20 14.

PRINCIPAL, BY \_\_\_\_\_ (L.S.) TITLE: \_\_\_\_\_

SURETY BY: Christy M. McCart, Attorney-in-Fact

GEORGIA REGISTERED AGENT N/A SEAL: \_\_\_\_\_

Revised December 2012





Western Surety Company hereby continues in force Bond No. 68616636 briefly  
described as WATER WELL CONTRACTOR  
,  
for RANGER CONSULTING, INC.  
, as Principal,  
in the sum of \$ TWENTY THOUSAND AND NO/100 Dollars, for the term beginning  
July 01, 2009, and ending June 30, 2010, subject to all  
the covenants and conditions of the original bond referred to above.

This continuation is issued upon the express condition that the liability of Western Surety Company under said Bond and this and all continuations thereof shall not be cumulative and shall in no event exceed the total sum above written.

Dated this 21 day of April, 2009.

WESTERN SURETY COMPANY

By Paul T. Bruflat  
Paul T. Bruflat, Senior Vice President



**APPENDIX A**

# Monitoring System Details

## A-8 CERTIFIED WELL SURVEY REPORT

# Plant Scherer

## 1st data set: North Property Wells

Page 1 of 1 Issued 6/29/20

NETWORK WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	ELEVATION TOP OF PVC CASING	GROUND ELEVATION	COMMENTS
PZ-45D	33.09322971 °	-83.82816330 °	1125296.00	2400249.51	509.94	1125296.24	2400250.55	512.33	509.7	
PZ-46D	33.08832034 °	-83.82598568 °	1123511.13	2400923.42	447.37	1123512.22	2400923.25	450.28	447.1	
PZ-47D	33.09684023 °	-83.81470823 °	1126623.84	2404365.89	406.91	1126623.42	2404366.80	410.01	406.8	
PZ-48S	33.09240559 °	-83.81011172 °	1125015.59	2405780.34	441.45	1125014.71	2405779.92	444.33	441.3	
PZ-49D	33.08800314 °	-83.79434166 °	1123430.38	2410614.46	365.13	1123429.73	2410615.29	367.41	364.9	
PZ-49S	33.08801621 °	-83.79437196 °	1123434.99	2410605.11	365.29	1123434.46	2410605.99	367.89	365.2	
PZ-51D	33.07658668 °	-83.82919170 °	1119239.94	2399954.09	543.47	1119239.99	2399955.07	546.04	543.2	
PZ-52	33.08640137 °	-83.81717935 °	1122822.91	2403621.89	519.68	1122822.91	2403622.69	521.84	519.4	
PZ-53	33.08394269 °	-83.81330140 °	1121931.72	2404814.17	513.81	1121932.34	2404813.43	516.64	513.6	
PZ-54	33.08276482 °	-83.80761959 °	1121509.00	2406555.91	490.27	1121509.71	2406555.15	492.96	490.2	
PZ-55	33.08389990 °	-83.79920035 °	1121930.63	2409132.43	444.25	1121931.60	2409132.43	447.21	444.2	
PZ-56	33.08827939 °	-83.79943044 °	1123523.72	2409037.56	431.10	1123524.68	2409037.21	433.68	430.8	
PZ-57	33.08796818 °	-83.80496443 °	1123404.88	2407362.68	436.55	1123405.64	2407361.88	439.51	436.4	
PZ-58	33.08769650 °	-83.81200107 °	1123298.42	2405206.74	489.35	1123299.43	2405207.09	492.21	489.3	
PZ-59D	33.09297923 °	-83.80394129 °	1125230.79	2407669.66	383.16	1125229.89	2407668.93	385.86	382.9	
PZ-59S	33.09293469 °	-83.80397571 °	1125214.48	2407659.05	383.13	1125213.65	2407658.45	385.93	382.8	
PZ-60D	33.09072228 °	-83.80207655 °	1124410.58	2408242.14	386.53	1124410.72	2408242.87	389.34	386.4	
PZ-60S	33.09069400 °	-83.80207431 °	1124400.33	2408242.82	386.66	1124400.44	2408243.59	389.88	386.4	
PZ-61	33.08557017 °	-83.80115566 °	1122536.81	2408532.14	436.84	1122537.21	2408531.43	439.27	436.8	
PZ-62	33.08513385 °	-83.80885081 °	1122370.22	2406176.10	498.45	1122370.34	2406175.11	501.32	498.3	
PZ-63	33.08950995 °	-83.81573718 °	1123956.15	2404059.66	499.12	1123955.38	2404060.61	501.54	498.9	
PZ-64	33.08885322 °	-83.80808779 °	1123723.25	2406405.08	476.09	1123724.36	2406404.18	479.52	476.0	
PZ-65	33.08392854 °	-83.80376913 °	1121936.26	2407732.50	429.77	1121937.16	2407733.04	432.42	429.6	
PZ-66D	33.09135724 °	-83.79950884 °	1124644.65	2409027.58	424.64	1124644.48	2409028.45	427.60	424.4	
PZ-66	33.09141030 °	-83.79922285 °	1124664.50	2409114.81	418.68	1124664.10	2409115.98	421.24	418.4	
PZ-67D	33.09444381 °	-83.80200723 °	1125764.90	2408260.40	424.86	1125764.81	2408259.40	428.48	424.7	
PZ-67	33.09449189 °	-83.80204133 °	1125782.52	2408250.00	423.37	1125782.26	2408248.89	425.94	423.2	
PZ-68	33.09267242 °	-83.80553278 °	1125117.30	2407182.87	392.34	1125116.59	2407181.92	395.55	392.1	



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Issued 6/29/20.

Reissued 8/10/20  
to list Network  
Well ID

# Plant Scherer

## 2nd data set: AP1 wells/piezometers

Page 1 of 2 Issued 7/17/20

NETWORK WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	TOP OF PVC CASING ELEV.	GROUND ELEVATION	COMMENTS
PZ-10S	33.08508549 °	-83.82323706 °	1122338.53	2401768.08	514.78	1122338.03	2401768.92	517.53	514.4	
PZ-11S	33.08736100 °	-83.81996800 °	1123170.19	2402767.80	526.19	1123169.22	2402767.44	529.31	526.0	
PZ-12S	33.08602210 °	-83.81719466 °	1122685.28	2403619.28	514.64	1122684.90	2403618.46	517.69	514.5	
PZ-13S	33.08401596 °	-83.81521422 °	1121956.37	2404228.09	517.68	1121957.03	2404227.47	520.51	517.5	
PZ-14i	33.08376126 °	-83.81327276 °	1121865.36	2404821.96	510.03	1121866.36	2404822.43	512.89	509.7	
PZ-14S	33.08372400 °	-83.81327900 °	1121851.80	2404820.15	509.03	1121852.80	2404820.56	512.13	508.7	
PZ-15S	33.08271165 °	-83.81087348 °	1121485.86	2405558.82	497.59	1121486.96	2405558.59	500.60	497.4	
PZ-17i	33.07913315 °	-83.80583149 °	1120190.44	2407106.31	480.20	1120190.27	2407107.37	483.03	479.9	
PZ-19i	33.07472925 °	-83.80537876 °	1118589.46	2407251.40	414.74	1118588.47	2407251.56	417.76	414.5	
PZ-19S	33.07472596 °	-83.80541146 °	1118588.13	2407241.65	414.79	1118587.24	2407241.54	417.80	414.5	
PZ-20i	33.07398605 °	-83.80531062 °	1118318.72	2407272.52	414.46	1118318.15	2407273.36	417.41	414.3	
PZ-21S	33.07212246 °	-83.80618934 °	1117639.29	2407007.47	470.85	1117639.19	2407006.52	473.74	470.6	
PZ-25i	33.08368507 °	-83.81408728 °	1121836.89	2404573.11	526.02	1121837.80	2404573.04	528.39	525.8	
PZ-25S	33.08371344 °	-83.81410520 °	1121847.35	2404567.67	525.78	1121848.11	2404567.52	528.24	525.5	
PZ-26S	33.08328634 °	-83.81030096 °	1121695.69	2405732.96	489.17	1121696.65	2405733.23	491.65	489.1	
PZ-27D	33.08290514 °	-83.80935590 °	1121558.20	2406023.06	472.66	1121558.94	2406023.17	475.43	472.4	
PZ-27S	33.08292266 °	-83.80933923 °	1121564.39	2406028.18	473.18	1121565.33	2406028.25	475.80	473.1	
PZ-28i	33.08244868 °	-83.80821251 °	1121393.51	2406374.88	481.59	1121394.06	2406373.94	484.18	481.4	
PZ-29S	33.08210318 °	-83.80741616 °	1121268.18	2406617.83	488.70	1121269.19	2406618.29	491.31	488.5	
PZ-2i	33.06640333 °	-83.81932122 °	1115545.82	2402991.10	515.06	1115544.85	2402990.76	517.56	514.8	
PZ30i	33.08156107 °	-83.80591422 °	1121072.64	2407079.10	475.71	1121073.53	2407078.99	478.31	475.6	
PZ-31i	33.08191626 °	-83.80471544 °	1121202.96	2407445.90	464.16	1121204.03	2407445.73	466.89	464.0	
PZ-32D	33.08159927 °	-83.80382334 °	1121089.46	2407718.47	462.56	1121089.64	2407719.37	465.42	462.4	
PZ-32S	33.08159833 °	-83.80389169 °	1121088.90	2407697.44	462.52	1121089.22	2407698.44	465.06	462.3	
PZ-33i	33.08201411 °	-83.79943146 °	1121245.41	2409063.30	466.55	1121245.25	2409064.05	469.38	466.4	
PZ34S	33.08224927 °	-83.79869810 °	1121330.71	2409288.05	441.08	1121331.59	2409288.37	443.67	440.8	
PZ-35i	33.08301374 °	-83.80924066 °	1121598.17	2406059.15	474.72	1121598.57	2406058.33	474.40	474.6	Flush mount
PZ-36i	33.07973840 °	-83.80534295 °	1120410.91	2407285.90	478.96	1120410.99	2407256.25	481.52	478.9	
PZ-36S	33.07971111 °	-83.80536989 °	1120390.25	2407210.09	479.50	1120401.04	2407248.04	482.35	479.4	
PZ-37i	33.08183679 °	-83.80153755 °	1121177.58	2408419.44	479.68	1121178.48	2408419.19	482.18	479.5	
PZ-38i	33.08267369 °	-83.80828005 °	1121475.60	2406353.86	482.38	1121475.86	2406352.98	482.24	482.2	Flush mount
PZ-39S	33.07909718 °	-83.80464616 °	1120177.69	2407469.94	471.99	1120178.43	2407470.49	474.58	471.8	
PZ-3S	33.06789221 °	-83.82080703 °	1116085.44	2402534.69	514.57	1116085.04	2402533.80	517.29	514.4	
PZ-40i	33.07025744 °	-83.80643134 °	1116959.65	2406934.18	510.19	1116960.39	2406934.72	512.55	510.1	



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Issued 7/17/20.

Reissued 8/10/20 to list Network Well ID

# Plant Scherer

## 2nd data set: AP1 wells/piezometers

Page 2 of 2

Issued 7/17/20

NETWORK WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	TOP OF PVC CASING ELEV.	GROUND ELEVATION	COMMENTS
PZ-41S	33.06981255 °	-83.80581206 °	1116798.94	2407126.11	488.66	1116799.18	2407124.98	491.50	488.6	
PZ-42i	33.06767107 °	-83.81179732 °	1116014.70	2405294.31	500.65	1116013.79	2405294.12	503.18	500.5	
PZ-43S	33.06652661 °	-83.81110650 °	1115598.33	2405508.23	501.34	1115598.12	2405507.16	504.03	501.2	
PZ-44i	33.08280119 °	-83.81488357 °	1121515.14	2404331.45	507.91	1121515.40	2404330.23	510.36	507.9	
PZ-5S	33.07174413 °	-83.82313290 °	1117483.92	2401817.76	520.73	1117484.15	2401816.71	523.26	520.6	
PZ-6S	33.07291903 °	-83.82273710 °	1117910.82	2401936.63	529.22	1117912.01	2401936.55	531.54	529.0	
PZ-9i	33.08021416 °	-83.82621441 °	1120562.95	2400862.02	523.61	1120562.72	2400862.76	526.57	523.3	
SGWA-1	33.07656824 °	-83.82937216 °	1119232.67	2399899.20	544.27	1119233.10	2399899.81	546.83	544.1	
SGWA-2	33.07658071 °	-83.82934477 °	1119237.34	2399907.22	544.20	1119237.67	2399908.19	546.94	544.0	
SGWA-24	33.07350677 °	-83.82662952 °	1118123.12	2400743.74	489.47	1118121.96	2400743.52	492.38	489.3	
SGWA-25	33.08019376 °	-83.82623303 °	1120556.28	2400856.87	523.45	1120555.28	2400857.08	526.49	523.2	
SGWA-3	33.07929746 °	-83.83133096 °	1120224.89	2399295.73	543.03	1120224.15	2399296.64	545.83	542.9	
SGWA-4	33.08272488 °	-83.82534974 °	1121478.07	2401124.27	544.96	1121477.05	2401124.64	547.66	544.8	
SGWA-5	33.07344366 °	-83.83745909 °	1118087.26	2397426.71	505.93	1118088.42	2397426.26	508.48	505.7	
SGWC-10	33.08384947 °	-83.81580437 °	1121896.53	2404047.19	506.80	1121895.85	2404046.92	509.41	506.6	
SGWC-11	33.08287457 °	-83.81487709 °	1121542.20	2404332.76	508.77	1121542.11	2404332.12	511.47	508.6	
SGWC-12	33.08296352 °	-83.81266381 °	1121576.11	2405009.73	497.80	1121576.75	2405009.92	500.53	497.7	
SGWC-13	33.08212677 °	-83.81021432 °	1121274.24	2405760.67	480.17	1121274.85	2405761.20	482.71	479.9	
SGWC-14	33.08127293 °	-83.80836108 °	1120965.54	2406329.11	473.52	1120966.13	2406329.89	476.72	473.3	
SGWC-15	33.07913585 °	-83.80587541 °	1120191.24	2407092.94	479.76	1120191.20	2407093.92	482.75	479.7	
SGWC-16	33.07646981 °	-83.80568398 °	1119221.32	2407154.80	457.18	1119221.42	2407155.89	460.31	457.0	
SGWC-17	33.07396034 °	-83.80533006 °	1118309.31	2407266.47	415.13	1118308.77	2407267.44	418.00	414.9	
SGWC-18	33.07022272 °	-83.80644257 °	1116946.85	2406930.82	510.41	1116947.75	2406931.32	513.29	510.3	
SGWC-19	33.06769326 °	-83.80917619 °	1116023.96	2406096.87	476.13	1116024.59	2406097.05	478.94	475.8	
SGWC-20	33.06769000 °	-83.81175300 °	1116021.41	2405308.01	501.69	1116020.73	2405307.67	504.60	501.5	
SGWC-21	33.06602134 °	-83.81538416 °	1115410.87	2404197.33	484.92	1115409.88	2404197.33	487.67	484.7	
SGWC-22	33.06639012 °	-83.81928520 °	1115540.82	2403002.51	515.51	1115540.08	2403001.81	518.02	515.4	
SGWC-23	33.06956902 °	-83.82211514 °	1116694.67	2402131.78	520.17	1116693.80	2402131.07	523.10	520.0	
SGWC-6	33.08461401 °	-83.82254980 °	1122168.22	2401979.68	507.87	1122167.18	2401979.98	510.49	507.7	
SGWC-7	33.08598968 °	-83.82163099 °	1122669.73	2402259.63	503.65	1122668.61	2402259.75	506.40	503.5	
SGWC-8	33.08652561 °	-83.81927889 °	1122866.63	2402979.75	511.68	1122865.98	2402979.50	514.28	511.5	
SGWC-9	33.08588545 °	-83.81772829 °	1122634.98	2403455.80	507.88	1122634.64	2403455.19	510.62	507.6	



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Issued 7/17/20.

Reissued 8/10/20 to list Network Well ID

# Plant Scherer

## 3rd data set: LF Wells

Page 1 of 2 Issued 7/29/20

NETWORK WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	TOP OF PVC CASING ELEV.	GROUND ELEVATION	COMMENTS
GWC-1	33.07878129	-83.79131155	No nail	No nail	371.77*	1120077.85	2411555.32	374.95	371.6	*Pad elev (no nail)
GWC-2	33.07806384	-83.79151634	No nail	No nail	377.02*	1119816.59	2411493.53	380.22	376.9	*Pad elev (no nail)
GWC-3	33.07750983	-83.79246763	No nail	No nail	407.36*	1119613.99	2411202.86	410.44	407.1	*Pad elev (no nail)
GWC-4	33.07652737	-83.79299751	No nail	No nail	408.50*	1119255.96	2411041.82	411.75	408.4	*Pad elev (no nail)
GWC-5	33.07554291	-83.79305371	1118898.01	2411024.23	393.37	1118897.72	2411025.88	396.69	393.3	
GWC-6	33.07465931	-83.79355797	1118575.49	2410871.44	412.48	1118575.69	2410872.56	415.80	412.4	
GWC-7	33.07374897	-83.79430173	1118244.68	2410644.68	414.51	1118243.67	2410645.91	418.27	414.4	
GWC-8A	33.07285463	-83.79518936	1117918.66	2410375.13	398.65	1117917.32	2410375.16	401.62	398.6	
GWC-9	33.07296130	-83.79586603	1117955.66	2410165.91	383.21	1117955.40	2410167.75	386.18	382.8	
GWC-10	33.07392850	-83.79634992	1118307.27	2410019.38	389.49	1118306.77	2410018.28	392.87	388.9	
GWC-11	33.07487138	-83.79712763	1118649.69	2409779.78	399.21	1118648.98	2409778.84	402.33	398.8	
GWC-12	33.07577749	-83.79785602	1118978.18	2409555.72	409.66	1118977.87	2409554.57	412.89	409.2	
GWC-13	33.07677077	-83.79838604	1119339.29	2409391.96	416.71	1119338.68	2409390.95	419.77	416.5	
GWC-14	33.07764300	-83.79929390	1119655.22	2409112.94	400.41	1119655.05	2409111.75	403.60	400.2	
GWA-15	33.07861529	-83.79873262	1120008.91	2409283.54	412.00	1120009.40	2409282.43	415.01	411.7	
GWA-16	33.07927008	-83.79775923	1120247.82	2409580.61	441.01	1120248.68	2409579.75	444.24	440.9	
GWA-17	33.07916177	-83.79656159	1120209.73	2409945.86	442.92	1120210.57	2409946.73	445.84	442.8	
GWC-18	33.07857646	-83.79553524	1119997.61	2410261.31	436.40	1119998.73	2410261.85	439.66	436.3	
GWC-19	33.07760179	-83.79406581	1119646.10	2410712.10	426.34	1119645.70	2410713.20	430.20	426.3	
GWC-20	33.07843484	-83.79248811	1119951.51	2411194.45	423.03	1119950.51	2411195.38	426.30	423.0	
GWA-21	33.08044495	-83.79813647	No nail	No nail	419.81*	1120675.73	2409462.70	422.58	419.7	*Pad elev (no nail)
GWA-22	33.08123199	-83.79809884	1120961.49	2409475.41	442.01	1120962.12	2409473.22	444.50	442.0	
GWC-29	33.07825289	-83.80057699	1119878.12	2408718.22	396.98	1119875.58	2408717.95	399.64	396.9	
GWC-30	33.07685172	-83.79973920	1119366.69	2408975.21	392.19	1119366.69	2408976.35	394.49	392.0	
GWC-31	33.07576062	-83.79946406	1118969.72	2409060.85	390.13	1118970.00	2409062.02	392.78	390.0	
GWC-32	33.07515444	-83.79939211	1118749.23	2409083.89	407.25	1118749.53	2409084.83	410.03	406.9	
GWC-33A	33.07435239	-83.79849852	1118457.51	2409359.70	391.32	1118458.68	2409359.58	393.96	390.9	
GWC-34	33.07377095	-83.79745357	1118247.67	2409679.54	386.48	1118248.26	2409680.41	389.29	386.2	
GWC-35	33.07270288	-83.79672091	1117860.31	2409905.20	385.35	1117860.46	2409906.21	387.90	385.1	
GWC-36	33.07188280	-83.79745810	1117561.62	2409680.48	422.52	1117561.29	2409681.44	425.12	422.0	
GWC-37	33.07099933	-83.79760828	1117239.61	2409635.60	427.38	1117239.70	2409636.56	429.80	427.2	
GWC-38	33.06975458	-83.79795117	1116787.37	2409532.78	416.23	1116786.45	2409533.11	418.68	416.0	
GWA-39	33.07026066	-83.80076113	1116968.30	2408672.39	454.59	1116967.57	2408671.68	457.62	454.2	



I certify that top of casing and PK nail elevations reflect a relative vertical accuracy of 0.01 feet referencing NAVD88 and were collected using a Topcon DL-502 digital level with closures meeting First Order, Class I level classification. Horizontal positions of casings and PK nails reflect accuracies of 0.50 feet or better and were collected using a JAVAD Triumph-LS dual-frequency RTK global positioning system receiver with eGPS VRS corrections referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet.  
Issued 7/29/20.

Reissued 8/10/20 to  
list Network Well ID

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## 3rd data set: LF Wells

Page 2 of 2 Issued 7/29/20

NETWORK WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	TOP OF PVC CASING ELEV.	GROUND ELEVATION	COMMENTS
GWA-40	33.07135310	-83.80056612	1117365.04	2408731.04	461.25	1117365.24	2408730.04	463.84	461.2	
GWA-41	33.07336732	-83.80159552	1118096.35	2408413.11	431.70	1118096.97	2408412.15	434.12	431.4	
GWA-42	33.07447862	-83.80217405	1118501.16	2408234.42	402.57	1118500.68	2408233.53	405.19	402.2	
GWA-43	33.07546760	-83.80135092	1118860.39	2408484.93	398.42	1118861.38	2408484.42	400.94	398.1	
GWA-44A	33.07666407	-83.80106739	1119296.97	2408571.05	396.83	1119296.99	2408569.76	399.62	396.5	
GWA-45	33.08044161	-83.80327246	1120668.04	2407891.77	448.33	1120669.03	2407889.56	451.08	448.3	
GWA-46	33.08075220	-83.80214114	1120781.16	2408236.36	458.37	1120783.23	2408235.69	461.13	458.3	
GWA-47	33.08096707	-83.80099979	No nail	No nail	463.03*	1120862.63	2408585.01	465.77	462.9	*Pad elev (no nail)
GWA-48	33.08121322	-83.79984149	1120951.13	2408939.16	459.00	1120953.42	2408939.48	461.73	458.8	
GWA-49	33.08142057	-83.79870153	1121028.02	2409287.04	430.16	1121030.08	2409288.38	432.88	429.9	
GWC-50	33.07836585	-83.79979905	1119919.79	2408955.82	404.44	1119917.51	2408956.10	407.16	404.3	
GWC-51	33.07814547	-83.80149483	1119837.81	2408436.16	407.37	1119835.51	2408436.95	410.15	407.3	
GWC-52	33.07852375	-83.80225381	1119973.72	2408206.05	414.43	1119972.34	2408203.99	417.13	414.4	
GWC-53	33.07948082	-83.80310179	1120319.90	2407945.42	433.10	1120319.65	2407943.05	435.83	432.9	
GWA-54	33.07241582	-83.80102370	1117750.36	2408588.80	448.78	1117751.40	2408588.52	451.49	448.6	
LPZ-1	33.07044703	-83.83392205	1117001.26	2398512.52	550.47	1117001.58	2398513.19	553.29	550.0	Not included in list
LPZ-2	33.07861662	-83.83555064	1119973.02	2398005.15	511.42	1119972.34	2398004.93	514.52	511.1	
LPZ-3	33.07287074	-83.83344344	1117884.36	2398656.49	512.55	1117883.86	2398657.00	515.45	512.2	
LPZ-4	33.06760372	-83.83859982	1115963.25	2397083.50	458.31	1115962.59	2397083.47	461.24	458.1	
LPZ-5	33.06583940	-83.83007014	1115329.50	2399698.90	521.81	1115328.95	2399698.53	524.51	521.5	



I certify that top of casing and PK nail elevations reflect a relative vertical accuracy of 0.01 feet referencing NAVD88 and were collected using a Topcon DL-502 digital level with closures meeting First Order, Class I level classification. Horizontal positions of casings and PK nails reflect accuracies of 0.50 feet or better and were collected using a JAVAD Triumph-LS dual-frequency RTK global positioning system receiver with eGPS VRS corrections referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet.  
Issued 7/29/20.

Reissued 8/13/20 to list Network Well ID and rename 2 wells

OBSERVED WELL ID	GAUGE LATITUDE	GAUGE LONGITUDE	GAUGE NORTHING	GAUGE EASTING	TOP OF GAUGE POST ELEVATION	COMMENTS
SG-1	33.08806386°	-83.79514726°	1123450.95	2410368.48	364.87	
SG-2	33.08998844°	-83.80211031°	1124143.69	2408233.46	373.05	
SG-3	33.09298876°	-83.80448056°	1125232.79	2407503.77	383.01	



I certify that the top of stream gauge post elevations reflect a relative vertical accuracy of 0.01 feet referencing NAVD88. Horizontal positions of stream gauges reflect accuracies of 0.50 feet or better. Coordinates reference Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet.  
Issued 7/31/20.



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# Additional wells February 2022

Page 1 of 1 Issued 2/21/22

WELL ID	PVC CASING LATITUDE	PVC CASING LONGITUDE	CONTROL NAIL NORTHING	CONTROL NAIL EASTING	CONTROL NAIL ELEVATION	PVC CASING NORTHING	PVC CASING EASTING	TOP OF PVC CASING ELEV.	GROUND ELEVATION	COMMENTS
		°	°							
GWC-3	33.07750970	° -83.79246913	° 1119615.01	2411201.98	409.97	1119613.94	2411202.40	412.66	409.6	
PZ-69I	33.08387832	° -83.81578978	° 1121905.29	2404050.47	506.44	1121906.36	2404051.35	508.85	506.0	

STREAM GAUGE ID	GAUGE LATITUDE	GAUGE LONGITUDE	GAUGE NORTHING	GAUGE EASTING	TOP OF GAUGE ELEVATION				COMMENTS
SG-1	33.08809120	° -83.79524528	° 1123460.79	2410338.42	362.77				
SG-2	--	° --	° --	--	--				Gauge found uninstalled on stream bank
SG-3	33.09300955	° -83.80451088	° 1125240.32	2407494.46	382.48				

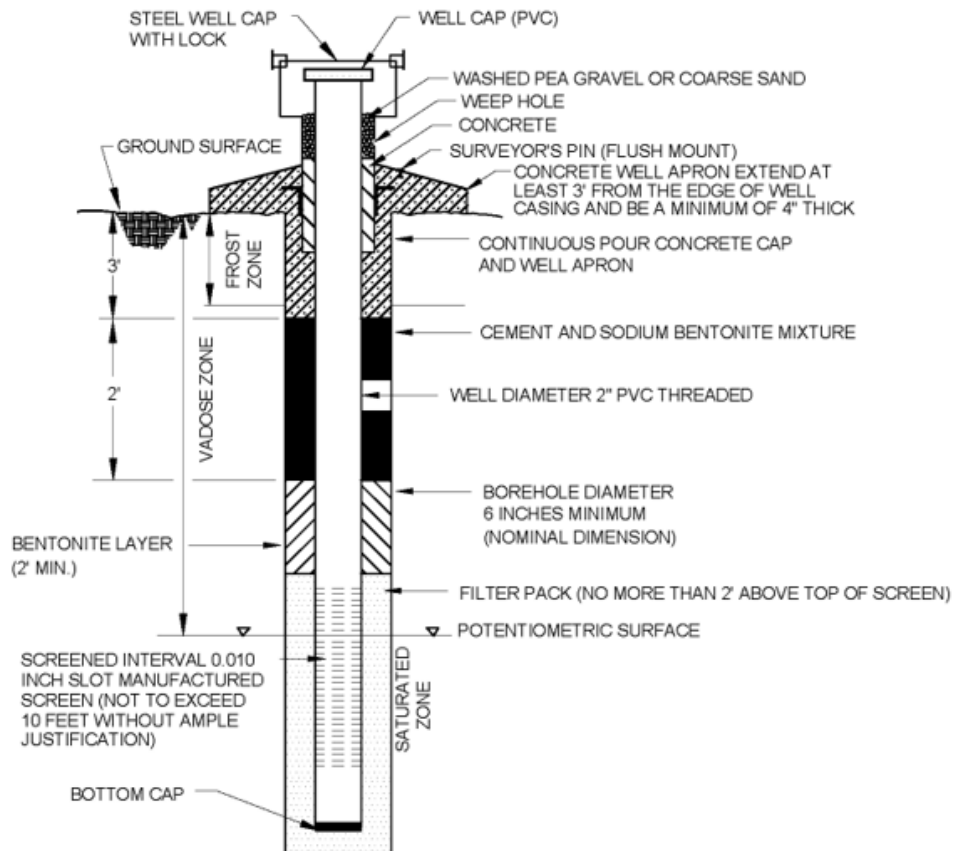


I certify that top of casing and PK nail elevations reflect a relative vertical accuracy of 0.01 feet referencing NAVD88 and were collected using a Topcon DL-502 digital level with closures meeting First Order, Class I level classification. Horizontal positions of casings and PK nails reflect accuracies of 0.50 feet or better and were collected using a JAVAD Triumph-LS+ dual-frequency RTK global positioning system receiver with eGPS VRS corrections referencing the Georgia State Plane, west zone, NAD83(2011) coordinate system in US survey feet.  
Issued 2/21/22.

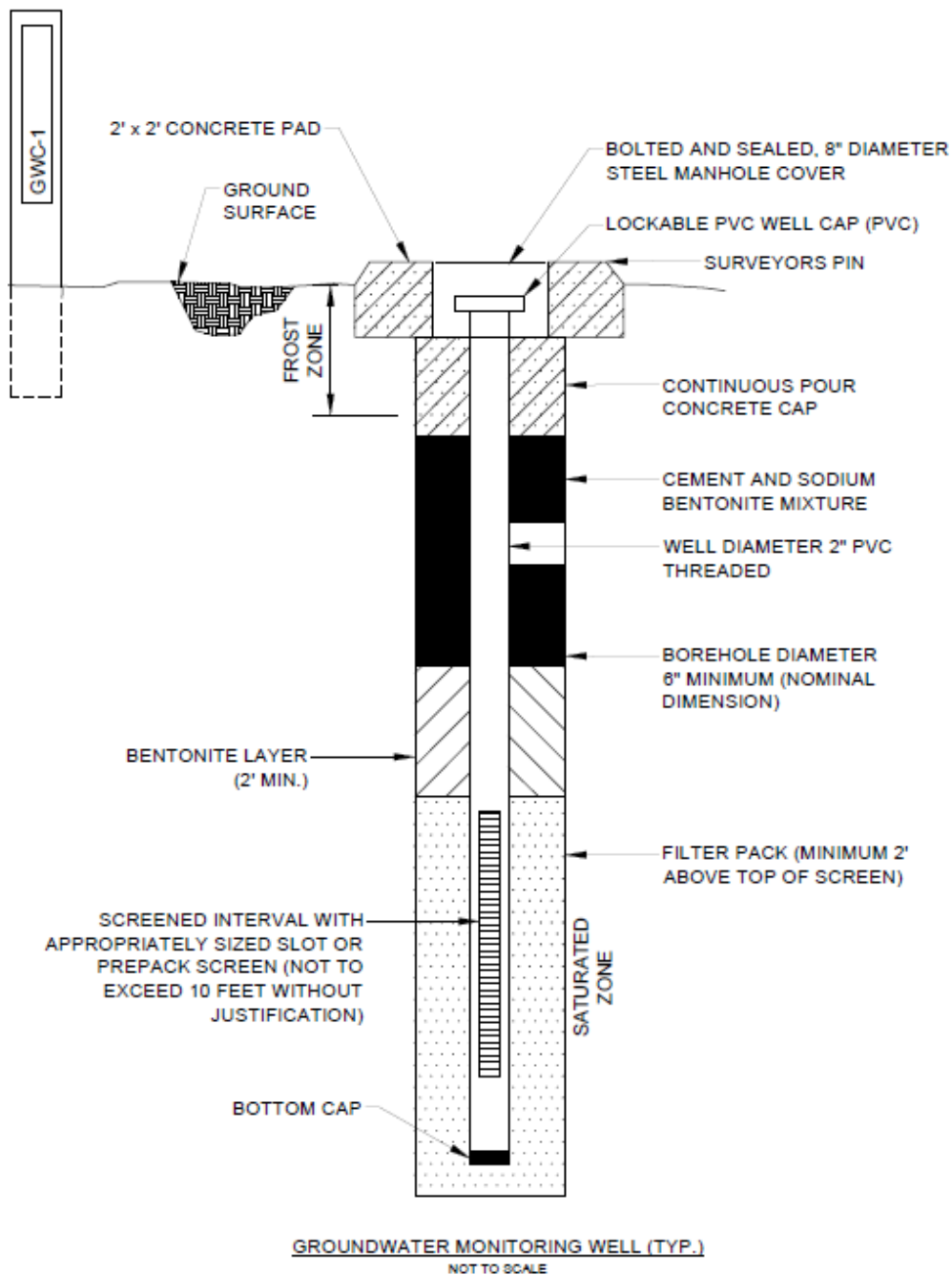
**APPENDIX B**

# Groundwater Monitoring Well Detail

## B. GROUNDWATER MONITORING WELL DETAIL



**GROUNDWATER MONITORING WELL (TYP.)**

**B. GROUNDWATER MONITORING WELL DETAIL – FLUSH MOUNT WELL**

**APPENDIX C**

# Groundwater Sampling Procedures

## C. GROUNDWATER SAMPLING PROCEDURES

Groundwater sampling will be conducted using 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. To accomplish this objective, low-flow purging from the screened interval is recommended until target parameters listed below are stabilized and then, representative groundwater flow from the geologic formation is collected. 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. Field logbooks and forms shall be kept for each sampling event, and should include, but not be limited to, the following: well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.

Sampling personnel 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 Georgia Power 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. 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. The water level monitoring device will consist of a probe and measuring tape capable of measuring water levels with accuracy to 0.01 feet.
- 3) Install Pump: If a dedicated pump is not present, slowly lower the submersible pump into the well to the midpoint of the well screen or a depth otherwise approved by the hydrogeologist or project scientist. In case of peristaltic pump, the tubing will be likewise lowered slowly to the target depth. The pump intake or tubing for peristaltic pump 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. Non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Laboratory Services and Applied Science Division *Operating Procedure for Field Equipment Cleaning and Decontamination (US EPA 2018)* 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. A brief overview of the purging and sampling methodologies, including the type of sampling equipment used will be provided in routine monitoring reports.
- 6) Monitor Indicator Parameters: Monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, oxidation reduction potential (ORP), and DO) approximately every three to 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:
  - $\pm 0.1$  S.U. for pH

- $\pm 5\%$  for specific conductance (conductivity)
  - $\pm 10\%$  or 0.2 milligrams per liter (mg/L) for DO where DO > 0.5 mg/L. If DO < 0.5 mg/L no stabilization criteria apply
  - $\leq 5$  nephelometric turbidity units (NTUs) for turbidity
  - 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 US EPA Region 4 Laboratory Services and Applied Science Division (LSASD) guidance document, *Operating Procedure: Groundwater Sampling* (US EPA, LSASDPROC-301-R6 and updates 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. Sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container. Sample collection should be performed according to the most current version of US EPA Region 4 LSASD, *Operating Procedure: Groundwater Sampling* (US EPA LSASDPROC-301-R6).
- 8) Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results, a second sample 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. A new filter must be used for each well and each sampling event.
- 9) 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 non-dedicated equipment. Upon completion of field activity the well will be closed and locked.
- 13) Non-dedicated equipment will be decontaminated between wells in general accordance with US EPA LSASDPROC-205-R4 (US EPA, 2020).

- 14) 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 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 NTUs however, samples may be collected where turbidity is less than 10 NTUs and the stabilization criteria described above are met.

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

- If turbidity remains above 5 NTUs but is less than 10 NTUs, and other parameters are stabilized, the well can be sampled.
- Where turbidity remains above 10 NTUs, an unfiltered sample will be collected followed by a second 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.

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 groundwater monitoring reports. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and any recalibration steps will be documented on field 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 as part of each groundwater report's quality control documentation.



**APPENDIX D**

# Surface Water Sampling Procedures

## D. SURFACE WATER SAMPLING PROCEDURES

Two surface water samples (shown on Figure 3) will be analyzed semi-annually. Surface water samples will be collected in accordance with the general procedures outlined below if flowing water is observed at each sampling location. Surface water sampling techniques shall be in general accordance with Region 4 U.S. Environmental Protection Agency, Laboratory Services & Applied Science Division Operating Procedure: *Surface Water Sampling*, (LSASDPROC-201-R6), April 22, 2023. These procedures were developed using field sampling guidelines described in the *USEPA Region 4 Field Branches Quality System and Technical Procedures* (<https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches>). Surface water samples will be analyzed for the parameters contained in Table 5: Surface Water Monitoring Parameters and Frequency.

If a dipper or other transfer vessel other than the sample container is used, it must be composed of a non-porous inert material such as glass, PVC, polyethylene, or stainless steel. The following procedures will be used to collect surface water samples:

- a) Hold the bottle near the base with one hand, and with the other, remove the cap.
- b) Rinse the sample container with the water to be sampled prior to filling the container, unless the sample containers are pre-preserved. Pre-preserved sample containers should not be rinsed prior to sampling.
- c) Hold the container underneath the water surface and allow the container to be filled with water. Remove the container from underneath the surface and place the cap back on the container.
- d) Label the sample container to, at a minimum, include: Sample Number, Name of Collector, Date and Time of Collection, and Place/Point of Collection.
- e) Place the samples in a cooler containing water-ice, if required, for courier or hand delivery to the laboratory within the sample hold times.
- f) Follow COC and temperature protocols.

The minimum sampling frequency for surface water will be semi-annual, provided water is present and flowing in the surface water feature.



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