GROUNDWATER MONITORING PLAN

PLANT SCHERER ASH POND 1 MONROE COUNTY, GEORGIA

FOR



NOVEMBER 2018



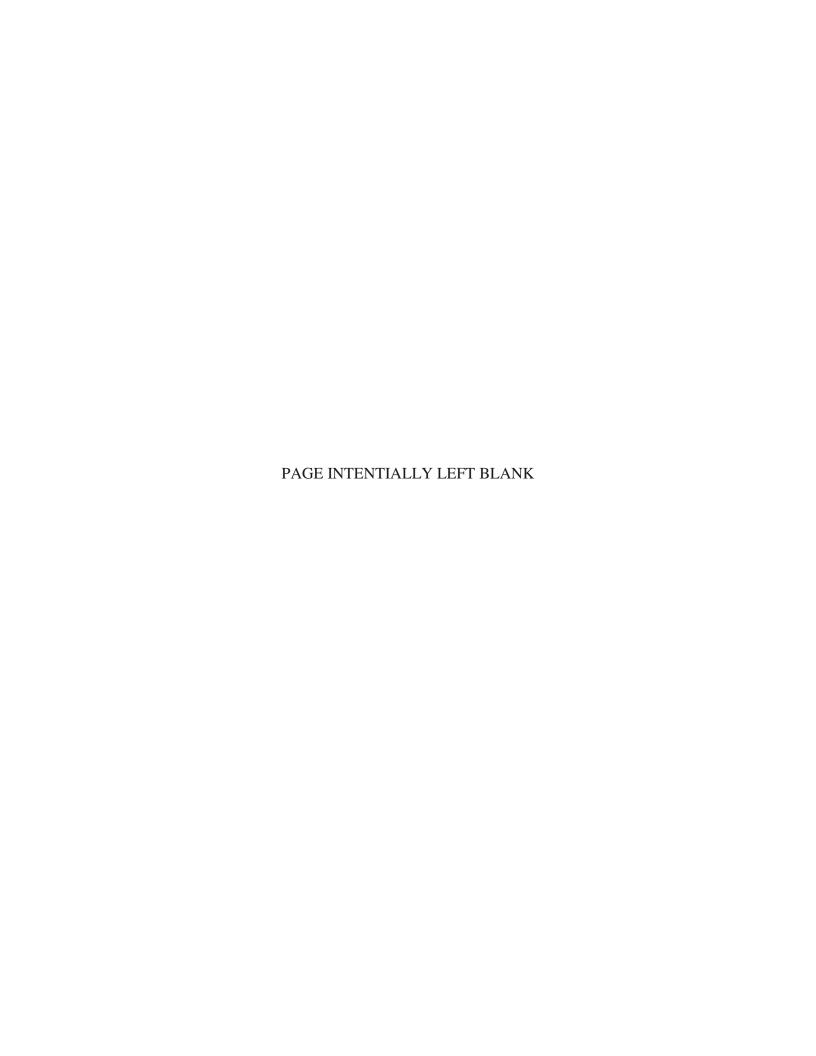


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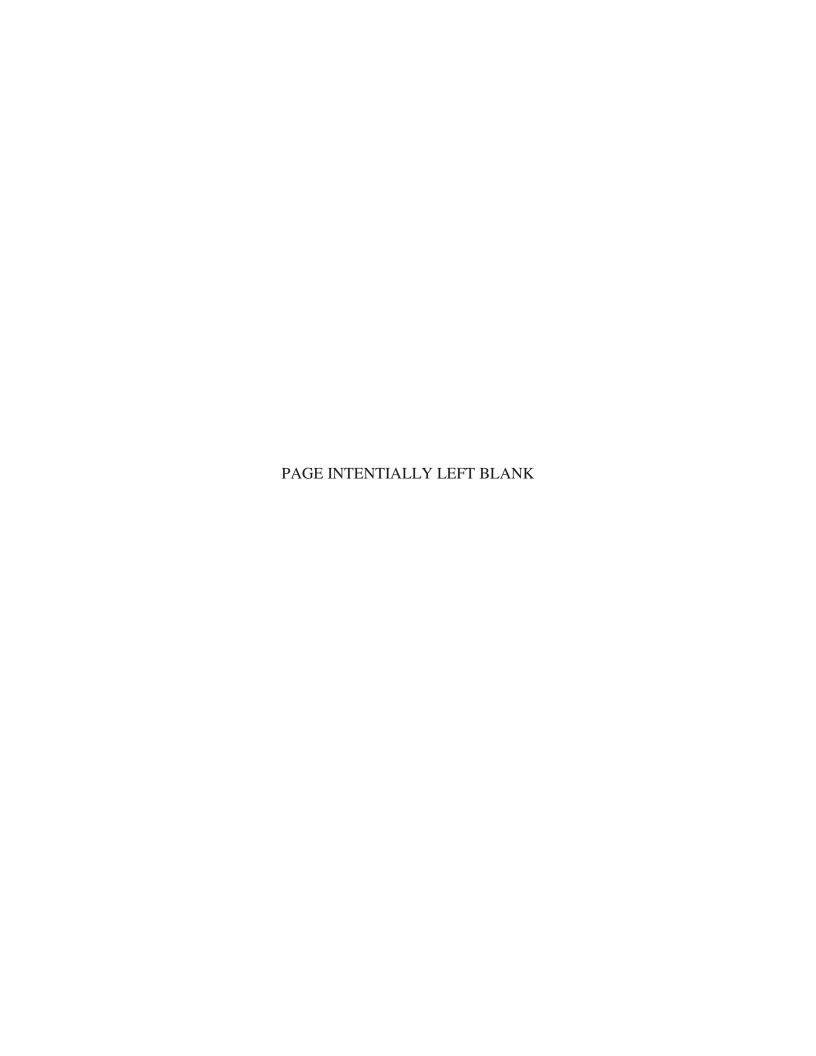
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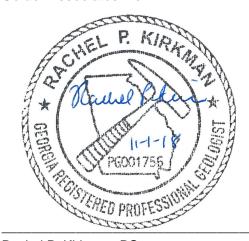


CERTIFICATION

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 Rule by a qualified groundwater scientist or engineer with Golder Associates Inc. References to the appropriate 391-3-4 Rules are incorporated throughout this document.

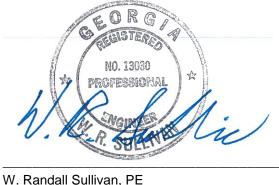
I certify that I am a qualified groundwater scientist as defined in 391-3-4-.01(57) who is a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable me 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 Georgia Environmental Protection Division (EPD) Rules of Solid Waste Management, Chapter 391-3-4-.10(6).

Golder Associates Inc.



Rachel P. Kirkman, PG Georgia Registered Professional Geologist No. 1756 11/1/2018

Date



11/1/2018

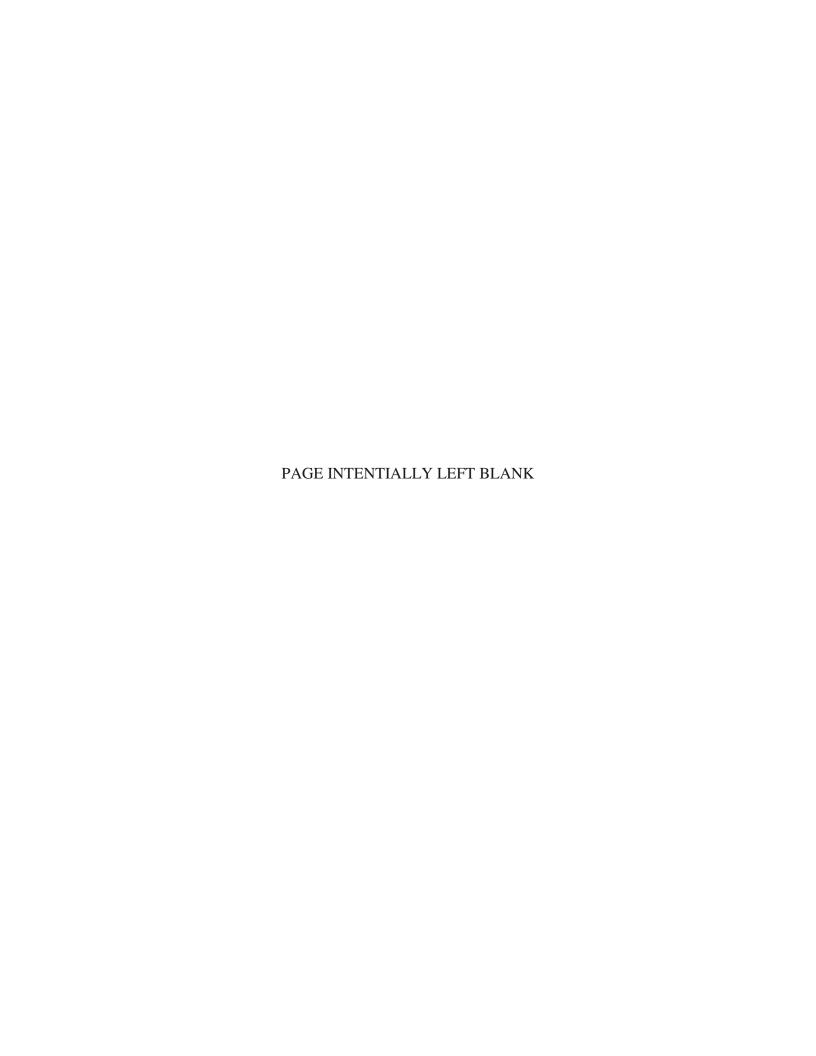
Georgia Registered Professional Engineer No. 13030

Date

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https://golderassociates.sharepoint.com/sites/24912g/project files/200 reports/groundwater monitoring plan/ap1/scherer ap1 groundwater monitoring plan_final 11.2018.docx





1.0 INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the site. This plan meets the requirements of EPD rules and uses EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Groundwater sampling locations are presented on Figure 1 in Appendix A and well construction details on Table 1 of Appendix A 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 EPD rules (391-3-4), the EPD rules will take precedence.

In accordance with the United States Environmental Protection Agency (USEPA) 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 and is included in Part B of the permit application. 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 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, *Geologic and Hydrogeologic Summary Report*, prepared by Golder Associates Inc., November 2018. Key elements of this report are summarized below.

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.



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 discharges into 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 settling (Recycle) pond and Lake Juliette. 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/s); Backup data includes 58 slug test measurements across the site with an average of 2.356 feet/day (ft/day); median 1.305 ft/day]. 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 discharges into major streams and rivers.

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 discharges into streams and rivers where the bedrock fractures intersect a surface water drainage.

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.



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.

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 EPD rules.

The current monitoring well network consists of 25 wells located around AP-1 targeted to capture groundwater flow away from AP-1 and serve as detection monitoring network in the uppermost aquifer. A map depicting monitoring well locations for monitoring AP-1 is included as Figure A1, Groundwater Detection Monitoring Well Location Map, in Appendix A, Monitoring System Details. Appendix A also includes a tabulated list of individual monitoring wells with well construction details such as location coordinates, top-of-casing elevation, well depths and screened intervals. 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 & 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. 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. 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 Science and Ecosystem Support Division Operating Procedure for Field Equipment Cleaning and Decontamination* as a guide.

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 Counsel.



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 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 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 hole and measurements taken to ensure that no bridging occurs. Upon placement of the filter pack, the well may be pumped to assure settlement of the pack. If pumping is performed, the top of filter pack depth will be measured, and additional sand added if necessary. The filter pack will extend approximately one to 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 cementitous 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.

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 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

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 10 nephelometric turbidity units (NTUs); however, formation-specific conditions may not allow this target to be accomplished. 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 by particles around the well screen. These reversals or surges can be created by using surge blocks, bailers, or pumps. The wells will be developed using a pump capable of inducing the stress necessary to achieve the development goals. 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.

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) as guides. The wells will be abandoned under the direction of a geologist or engineer registered in Georgia. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole.

4.4 Documentation

The following information documenting the construction and development of each well is provided in the boring logs for the existing monitoring system (Appendix A) and would be provided for any new wells in the future will be submitted to EPD by a qualified groundwater scientist within 30 days after completing well installations.

- Name of drilling contractor and type of drill rig
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Council
- Dates of drilling and initial well emplacement
- Drilling method and drilling fluid if used
- Well location (± 0.5 ft.)
- Borehole diameter and well casing diameter
- Well depth (± 0.1 ft.)
- Lithologic logs
- Well casing materials
- Screen materials and design
- Screen length
- Screen slot size
- Filter pack material/size and volume
- Sealant materials and volume
- Documentation of ground surface elevation (± 0.01 ft.)
- Documentation of top of casing elevation (± 0.01 fl.)
- Schematic of the well with dimensions



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 1, Groundwater Monitoring Parameters and Frequency 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. If required, assessment monitoring will be performed per Georgia Chapter 391-3-4-.10, Rules for Solid Waste Management. GPC may petition for an alternate monitoring schedule for the site pursuant to applicable rules.

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 2, Analytical Method, the groundwater samples will be analyzed using methods specified in USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), American Society for Testing and Materials (ASTM), or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).



Table 1: GROUNDWATER MONITORING PARAMETERS & FREQUENCY

MONITORII	NG PARAMETER	GROUNDWATER MONITORING						
		BACKGROUND	1 ST SEMI-ANNUAL EVENT	2 ND SEMI-ANNUAL EVENT				
FIELD	Temperature	Х	Х	Х				
PARAMETERS	pH	Х	X	Х				
	Specific Conductance	Х	X	X				
	Turbidity	Х	X	X				
	Dissolved Oxygen	Х	X	X				
APPENDIX III	Boron	Х	X	X				
APPENDIX III (DETECTION)	Calcium	Х	X	Х				
	Chloride	Х	X	Х				
	Fluoride	Х	X	X				
	pH (field)	Х	X	X				
	Sulfate	Х	X	X				
	Total Dissolved Solids	Х	X	X				
APPENDIX IV	Antimony	Х						
(ASSESSMENT)	Arsenic	Х						
	Barium	Х						
	Beryllium	Х						
	Cadmium	Х						
	Chromium	Х						
	Cobalt	Х						
	Fluoride	Х	Assessment sampling frequency	and parameter list determined in				
	Lead	Х	accordance with Georgia Chapter 391-3-4.10(6)					
	Lithium	Х						
	Mercury	Х						
	Molybdenum	Х						
	Selenium	Х						
	Thallium	Х						
	Radium 226 & 228	Х						



Table 2: ANALYTICAL METHODS

PARAMETERS	EPA METHOD NUMBER
APPENDIX III	
Boron	EPA 6010B/6020
Calcium	EPA 6010B/6020
Chloride	EPA 300.0/300.1/9250/9251/9253/9056A
Fluoride	EPA 300.0/300.1/9214/9056A
рН	150.1 field
Sulfate	EPA 9035/9036/9038300.0/300.1/9056A
Total Dissolved Solids (TDS)	EPA 160/2540C
APPENIDX IV	
Antimony	EPA 7040/7041/6010B/6020
Arsenic	EPA 7060A/7061A/6010B/6020
Barium	EPA 7080A/7081/6010B/6020
Beryllium	EPA 7090/7091/6010B/6020
Cadmium	EPA 7130/7131A/6020
Chromium	EPA 7190/7191/6010B/6020
Cobalt	EPA 7200/7201/6010B/6020
Fluoride	EPA 300.0/300.1/9214/9056/9214
Lead	EPA 7420/7421/6010B/6020
Lithium	EPA 6010/6020B
Mercury	EPA 7470
Molybdenum	EPA 6010/6020B
Selenium	EPA 7740/7741A/6010B/6020
Thallium	EPA 7840/7841/6010/6020
Radium 226 and 228 combined	EPA 903/9320/9315

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. Sampling procedures were developed using standard industry practice and USEPA Region 4 Field Branches Quality System and Technical Procedures as a guide. Low-flow sampling methodology will be utilized for sample collection. Alternative industry accepted sampling techniques may be used when appropriate with prior EPD approval.

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.

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 EPD.



7.0 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 of possession by each individual

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

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

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

8.0 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.

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.

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



9.0 REPORTING RESULTS

A semi-annual groundwater report that documents the results of sampling and analysis will be submitted to EPD. Semi-annual groundwater monitoring reports will be submitted to the EPD within 90 days of receipt of the groundwater analytical data from the laboratory. At a minimum, semi-annual reports will include:

- 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 brief overview of purging/sampling methodologies
- 3) Discussion of results
- 4) Recommendations for the future monitoring consistent with the Rules
- 5) Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgiaregistered PG or PE.
- 6) 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
- 7) Groundwater flow rate and direction calculations
- 8) Identification of any groundwater wells that were recently installed or decommissioned, along with a narrative description of why these actions were taken
- 9) 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
- 10) If applicable, semi-annual assessment monitoring results
- 11) Any alternate source demonstration completed during the previous monitoring period, if applicable
- 12) Laboratory reports
- 13) COC documentation
- 14) Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data
- 15) Documentation of non-functioning wells
- 16) Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL)
- 17) Statistical analyses
- 18) Certification by a qualified groundwater scientist.



10.0 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

According to 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:

- 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)).
- 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).

Based on site-specific conditions, statistical methods may be intra-well, inter-well, or combination of both.

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



Figure 1: STATISTICAL PLAN OVERVIEW

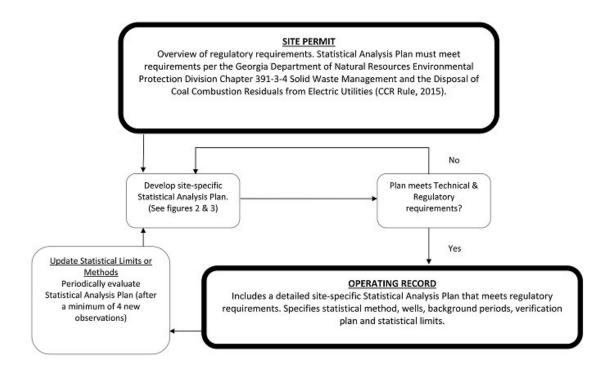




Figure 2: DECISION LOGIC FOR DETERMINING APPROPRIATE STATISTICAL METHOD

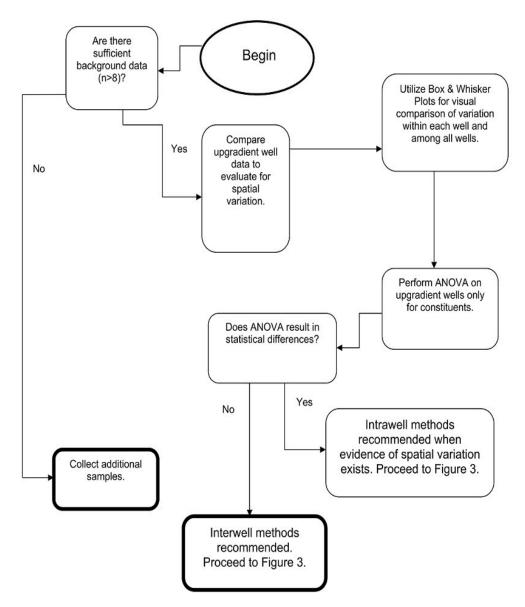
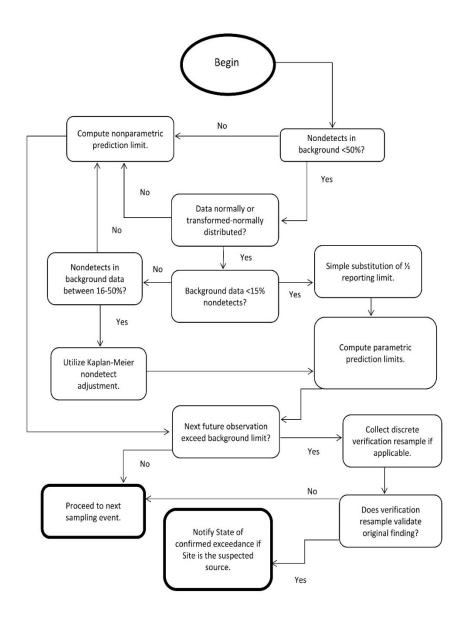


Figure 3: DECISION LOGIC FOR COMPUTING PREDICTION LIMITS





11.0 REFERENCES

American Society for Testing and Materials (ASTM)

Georgia (GA) Department of Natural Resources Environmental Protection Division, Rules of Solid Waste Management, Chapter 391-3-4-.10(6), Georgia Environmental Protection Division.

Georgia Water Well Standards Act (1985)

Golder Associates Inc., Geological and Hydrogeological Summary Report, Plant Scherer, November 2018

Manual for Groundwater Monitoring (1991)

National Environmental Laboratory Accreditation Program (NELAP)

Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division, Operating Procedure for Design and Installation of Monitoring Wells

Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division, Operating Procedure for Field Equipment Cleaning and Decontamination

Region 4 U.S. Environmental Protection Agency, Field Branches Quality System and Technical Procedures

Southern Company Services Earth Science and Environmental Engineering, Combustion By-Products Disposal Facility Site Acceptability Report, 2007.

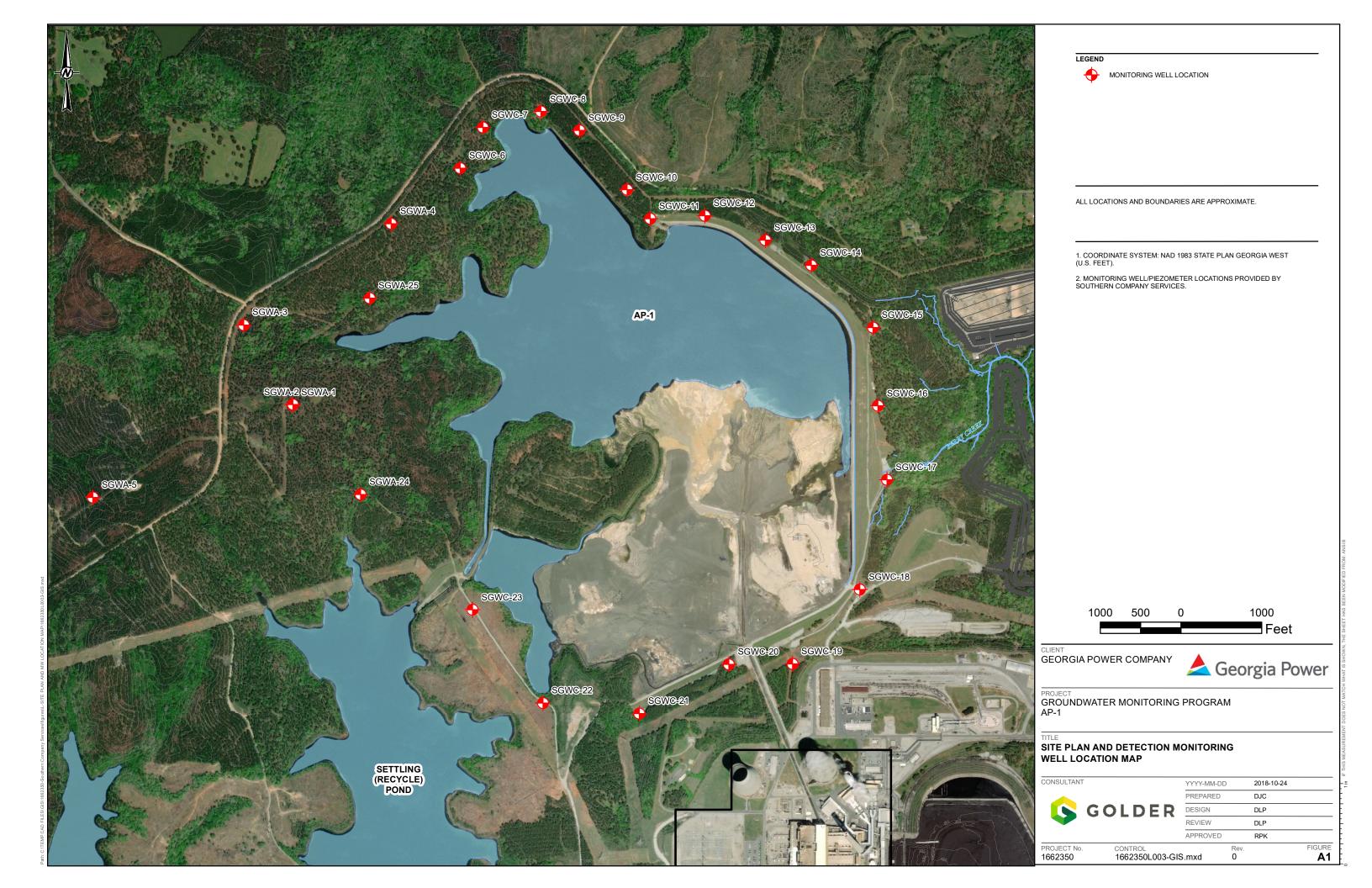
- U.S. Environmental Protection Agency, 40 CFR 257, Subpart D, 80 Fed. Reg. 21468 (April 17, 2015).
- U.S. Environmental Protection Agency, Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20),
- U.S. Environmental Protection Agency, Methods for the Chemical Analysis of Water and Wastes (MCAWW),



APPENDIX A

MONITORING SYSTEM DETAILS

- A1 SITE PLAN AND DETECTION MONITORING WELL LOCATION MAP
- A2 AP-1 POTENTIOMETRIC SURFACE ELEVATION CONTOUR MAP JUNE 2018
- A3 GROUNDWATER MONITORING WELL NETWORK DETAILS
- A4 PIEZOMETER NETWORK DETAILS
- A5 MONITORING WELL CONSTRUCTION LOGS
- A6 PIEZOMETER CONSTRUCTION LOGS



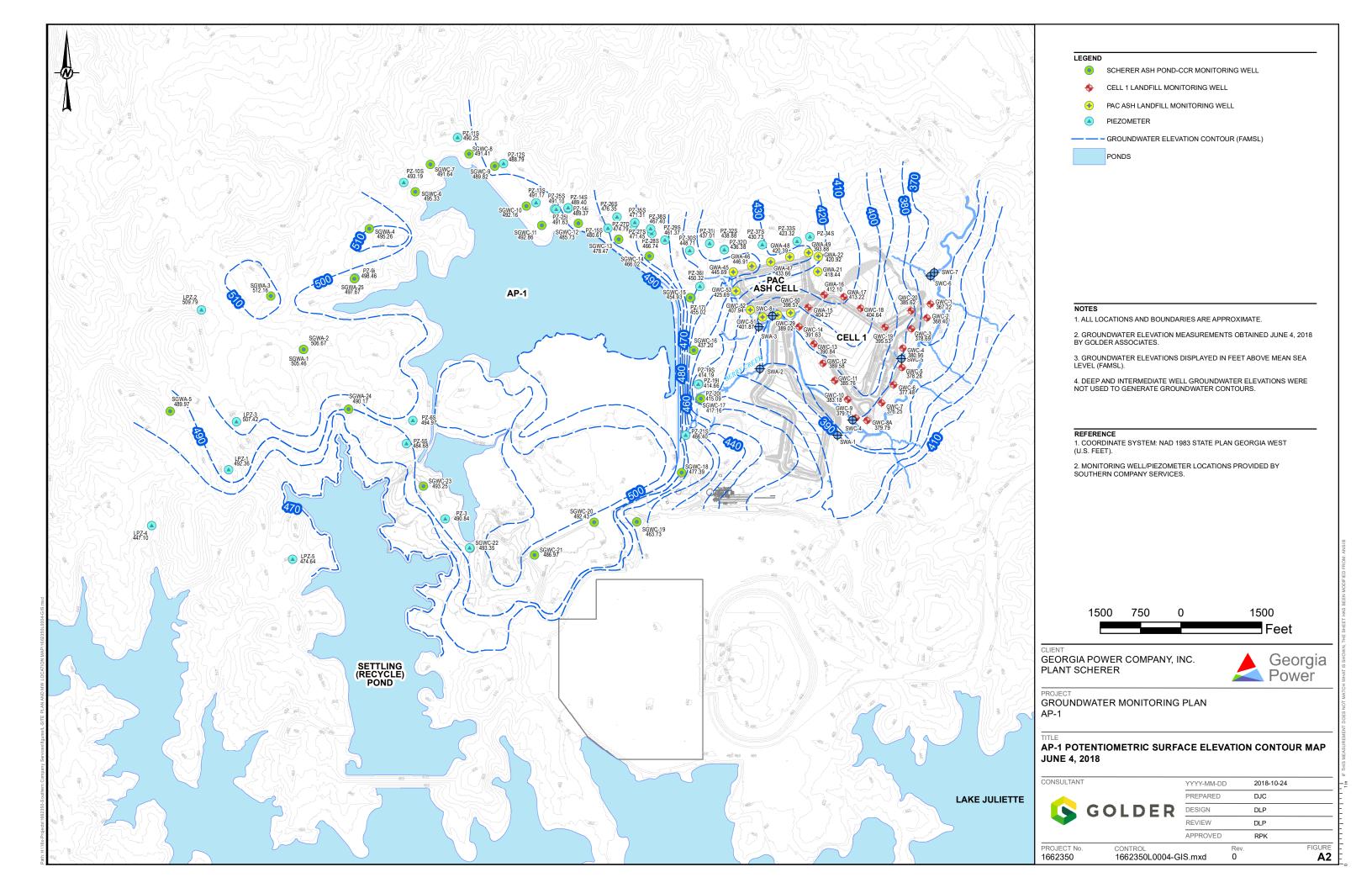


TABLE A3. **GROUNDWATER MONITORING WELL NETWORK DETAILS Georgia Power - Plant Scherer** Juliette, GA

Well ID	Former Designation(s)	Hydraulic Location	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
AP-1 DETECTION	N MONITORING W	ELL NETWORK										
SGWA-1	APA-1/PZ-8S	Upgradient	Saprolite	33.07657	-83.82937	546.81	543.97	50.2	503.8	493.8	10.0	2/11/2015
SGWA-2	APA-1I/PZ-8I	Upgradient	Bedrock	33.07658	-83.82935	546.81	543.79	51.1	502.7	492.7	10.0	2/17/2015
SGWA-3	APA-2	Upgradient	Saprolite	33.07930	-83.83133	545.65	542.47	60.5	492.0	482.0	10.0	11/18/2015
SGWA-4	APA-3	Upgradient	Saprolite	33.08273	-83.82535	547.27	544.25	60.5	493.8	483.8	10.0	11/17/2015
SGWA-5	APA-4	Upgradient	Saprolite	33.07344	-83.83746	508.11	505.32	30.2	485.1	475.1	10.0	11/18/2015
SGWC-6	APC-1	Downgradient	Saprolite	33.08462	-83.82255	510.57	507.94	25.0	492.94	482.94	10.0	11/12/2015
SGWC-7	APC-2	Downgradient	Bedrock	33.08599	-83.82163	506.05	503.32	35.0	478.3	468.3	10.0	11/11/2015
SGWC-8	APC-3	Downgradient	Bedrock	33.08653	-83.81928	513.93	511.05	40.0	481.05	471.05	10.0	11/10/2015
SGWC-9	APC-4	Downgradient	Saprolite	33.08589	-83.81773	510.37	507.61	35.0	482.61	472.61	10.0	11/6/2015
SGWC-10	APC-5	Downgradient	Saprolite	33.08385	-83.81580	509.22	506.3	30.0	486.3	476.3	10.0	11/5/2015
SGWC-11	APC-6	Downgradient	Saprolite	33.08288	-83.81488	511.28	508.3	40.0	478.3	468.3	10.0	10/29/2015
SGWC-12	APC-7	Downgradient	Saprolite	33.08296	-83.81267	500.29	497.35	47.0	460.35	450.35	10.0	10/30/2015
SGWC-13	APC-8	Downgradient	Saprolite	33.08213	-83.81022	482.58	479.75	35.0	454.75	444.75	10.0	11/4/2015
SGWC-14	APC-9/PZ-16S	Downgradient	Saprolite	33.08127	-83.80836	476.48	473.30	34.8	448.5	438.5	10.0	2/24/2015
SGWC-15	APC-10/PZ-17S	Downgradient	Saprolite	33.07914	-83.80588	483.27	480.04	44.5	445.5	435.5	10.0	2/26/2015
SGWC-16	APC-11/PZ-18S	Downgradient	Saprolite	33.07647	-83.80569	460.03	456.90	38.8	428.1	418.1	10.0	3/3/2015
SGWC-17	APC-12/PZ-20S	Downgradient	Saprolite	33.07396	-83.80533	417.96	414.8	24.1	400.7	390.7	10.0	3/11/2015
SGWC-18	APC-13/PZ-22S	Downgradient	Saprolite	33.07022	-83.80644	513.18	510.3	44.1	476.2	466.2	10.0	3/17/2015
SGWC-19	APC-14/PZ-23S	Downgradient	Saprolite	33.06769	-83.80918	478.67	475.8	34.2	451.6	441.6	10.0	3/18/2015
SGWC-20	APC-15	Downgradient	Saprolite	33.06769	-83.81175	504.44	501.12	25.0	486.12	476.12	10.0	11/19/2015
SGWC-21	APC-16/PZ-1S	Downgradient	Saprolite	33.06602	-83.81538	487.54	484.8	24.5	470.3	460.3	10.0	5/6/2015
SGWC-22	APC-17/PZ-2S	Downgradient	Saprolite	33.06639	-83.81928	518.07	515.2	46.5	479.1	468.7	10.4	1/22/2015
SGWC-23	APC-18/PZ-4I	Downgradient	Bedrock	33.06957	-83.82211	523.07	520.1	49.3	480.8	470.8	10.0	2/3/2015
SGWA-24	APA-5/PZ-7S	Upgradient	Saprolite	33.07352	-83.82663	503.86	500.9	37.7	473.2	463.2	10.0	2/10/2015
SGWA-25	APA-6/PZ-9S	Upgradient	Saprolite	33.08020	-83.82623	526.39	523.4	44.6	488.8	478.8	10.0	2/18/2015

Notes:

- feet msl = feet mean sea level
 feet bgs = feet below ground surface



TABLE A4. PIEZOMETER NETWORK DETAILS Georgia Power - Plant Scherer Juliette, GA

Well ID	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
PZ-2I	Bedrock	33.06640517	83.81931975	517.61	515.1	83.9	441.2	431.2	10	1/27/2015
PZ-3S	Saprolite	33.067894	-83.820805	517.29	514.6	49.6	475.0	465.0	10	1/28/2015
PZ-5I	Saprolite	33.07174453	83.82312963	523.24	520.7	47.2	483.5	473.5	10	2/4/2015
PZ-6S	Saprolite/PWR	33.07291573	83.82273659	531.48	529.2	54.4	484.8	474.8	10	2/4/2015
PZ-9I	Bedrock	33.08021581	83.82621624	527.49	523.5	79.8	453.7	443.7	10	2/19/2015
PZ-10S	Saprolite	33.08508695	83.82323921	516.81	514.2	34.5	489.7	479.7	10	5/5/2015
PZ-11S	Saprolite	33.0873611	83.81996837	529.21	526.1	45.5	490.6	480.6	10	4/6/2015
PZ-12S	Saprolite	33.08602396	83.81719277	517.65	514.7	44.0	480.7	470.7	10	4/1/2015
PZ-13S	Saprolite	33.08401471	83.81521209	520.21	517.4	44.9	482.5	472.5	10	4/1/2015
PZ-14S	Saprolite	33.08372361	83.81327948	511.86	508.8	44.5	474.3	464.3	10	3/26/2015
PZ-15S	Saprolite	33.0827095	83.81087103	499.06	496.1	39.7	466.4	456.4	10	4/28/2015
PZ-17I	Bedrock	33.07913383	83.80583497	483.23	480.4	96.7	393.7	383.7	10	2/27/2015
PZ-19I	Bedrock	33.07473161	83.805379	417.48	414.5	71.5	353.0	343.0	10	3/4/2015
PZ-19S	Saprolite	33.07472776	83.80541209	417.67	414.7	24.6	400.1	390.1	10	3/4/2015
PZ-20I	Bedrock	33.07398602	83.80531396	417.11	414.1	79.2	344.9	334.9	10	3/10/2015
PZ-21S	Saprolite	33.07212133	83.80618598	473.42	470.5	23.0	457.5	447.5	10	3/12/2015
PZ-25I	Saprolite	33.08368	-83.814	528.09	525.7	125.0	410.7	400.7	10	5/24/2016
PZ-25S	Saprolite	33.08371	-83.8141	527.91	525.5	55.0	480.5	470.5	10	5/25/2016
PZ-26S	Saprolite	33.08328	-83.8103	491.36	488.9	45.0	453.9	443.9	10	6/1/2016
PZ-27D	Bedrock	33.0829	-83.8093	475.18	472.4	125.0	367.4	347.4	20	6/17/2016
PZ-27S	PWR	33.08291	-83.8093	475.57	473.0	45.0	438.0	428.0	10	5/26/2016
PZ-28I	Bedrock	33.08244	-83.8082	483.91	481.3	69.0	422.3	412.3	10	6/3/2016
PZ-29S	Saprolite	33.08209	-83.8074	491.02	488.4	45.0	453.4	443.4	10	5/26/2016
PZ-30I	Bedrock	33.08155	-83.8059	478.03	475.4	85.0	400.4	390.4	10	6/2/2016
PZ-31I	Bedrock	33.08191	-83.8047	466.56	463.8	75.0	398.8	388.8	10	6/2/2016
PZ-32D	Bedrock	33.08159	-83.8038	465.18	462.3	126.0	366.3	336.3	30	6/1/2016
PZ-32S	Saprolite/PWR	33.0816	-83.8038	464.82	462.3	55.0	417.3	407.3	10	6/1/2016
PZ-33I	Saprolite/Bedrock	33.08201	-83.7994	469.08	466.3	76.0	400.3	390.3	10	6/8/2016
PZ-34S	PWR	33.08224	-83.7986	443.37	440.8	45.5	405.3	395.3	10	6/4/2016
PZ-35I	Saprolite/Bedrock	33.083012	-83.809238	474.17	474.5	55.5	429.0	419.0	10	6/22/2016



TABLE A4. PIEZOMETER NETWORK DETAILS **Georgia Power - Plant Scherer** Juliette, GA

Well ID	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
PZ-36I	Bedrock	33.07973	-83.8053	481.42	478.9	95.0	393.9	383.9	10	6/5/2016
PZ-36S	Saprolite	33.07970929	-83.80537273	482.19	479.21	55.0	434.21	424.21	10	8/22/2018
PZ-37I	TWR/Bedrock	33.08183	-83.8015	482.02	479.5	71.0	418.5	408.5	10	6/2/2016
PZ-38I	Bedrock	33.082673	-83.808276	481.96	482.1	74.0	418.1	408.1	10	6/23/2016
PZ-39S	Saprolite	33.07909393	-83.80464495	474.49	471.87	76.0	405.87	395.87	10	8/21/2018
PZ-40I	Bedrock	33.07025497	-83.80633546	512.22	509.76	83.0	436.76	426.76	10	8/15/2018
PZ-41S	Saprolite	33.06981269	-83.80580804	491.35	488.44	45.0	415.44	405.44	10	8/16/2018
PZ-42I	Bedrock	33.06767345	-83.8117964	502.97	500.38	96.0	427.38	417.38	10	8/21/2018
PZ-43S	Saprolite	33.06652778	-83.81110404	504.00	501.27	50.5	428.27	418.27	10	8/17/2018
PZ-44I	Bedrock	33.08280082	-83.81487968	510.19	507.69	114.0	434.69	424.69	10	9/5/2018
LPZ-01	PWR/Bedrock	33.070446	-83.833923	553.16	549.84	64.0	495.84	485.84	10	11/10/2015
LPZ-02	Saprolite	33.078618	-83.835549	513.96	510.46	20.0	500.46	490.46	10	11/20/2015
LPZ-03	Saprolite	33.072872	-83.833445	515.11	511.48	35.0	486.48	476.48	10	11/17/2015
LPZ-04	Saprolite	33.067606	-83.838599	461.06	457.83	28.0	439.83	429.83	10	11/18/2015
LPZ-05	Saprolite	33.065842	-83.830069	524.28	520.97	52.1	478.87	468.87	10	11/3/2015

Notes:

- feet msl = feet mean sea level
 feet bgs = feet below ground surface



APPENDIX A5

Monitoring Well Construction Logs

BORING PZ-08S / SGWA-1

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SOUTHERN COMPANY

SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 2/11/2015 **COMPLETED** 2/11/2015 **SURF. ELEV.** 544.3 **COORDINATES:** N:33.076567 E:-83.829374 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core **DRILLED BY** T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 50.9 ft. GROUND WATER DEPTH: DURING 35 ft. COMP. 37.3 ft. DELAYED 37.2 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Aoderate** Silty Clay (CL) - dark red (2.5YR 3/6) residuum dry, very stiff, trace mica SPT N=22bpf(@3.5ft.) SPT N=13bpf(@8.5ft.) - mottled dark reddish brown (2.5YR 3/4) and red (10R 4/8) residuum dry, stiff, micaceous, trace residual quartz and sand Sandy Silt (ML) - mottled reddish yellow (5YR 6/8) and red (10R 4/8) saprolite moist, SPT N=8bpf(@13.5ft.) medium stiff, trace muscovite, biotite, residual quartz 15 SPT N=10bpf(@18.5ft.) - mottled red (2.5YR 4/8) and light red / moderate reddish orange (10R 6/6) saprolite moist, stiff, trace medium sand, muscovite, biotite, residual quartz, hornblende 20 SPT N=7bpf(@23.5ft.) - yellow (10YR 7/8) saprolite moist, medium stiff



LOG OF TEST BORING

BORING PZ-08S / SGWA-1 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Sandy Silt (ML) (Con't) Sandy Elastic Silt (MH) - mottled light red (2.5YR 6/8) and reddish yellow (7.5YR 6/8) saprolite SPT N=11bpf(@28.5ft.)(LL=55; PI=13; FC = 51.3%; Gravel = 0%) moist, stiff, trace muscovite, biotite, residual quartz, hornblende 30 (MC = 58.3%; UW(d) = 64.4pcf;PERM. = 5.57E-5cm/sec)Silty Sand (SM) - mottled reddish yellow (5YR 6/8) and red (10R 4/8) saprolite moist, SPT N=11bpf(@33.5ft.) medium dense, very fine to fine grained, with residual quartz, muscovite, biotite, hornblende 35 SPT N=19bpf(@38.5ft.) - strong brown (7.5YR 5/8) saprolite wet, medium dense, very fine to fine grained 40 - strong brown (7.5YR 5/8) saprolite wet, medium dense, very fine to SPT N=12bpf(@43.5ft.) fine grained 45 - gray (7.5YR 5/1) saprolite wet, medium dense, very fine to fine SPT N=14bpf(@48.5ft.) grained, micaceous, with residual quartz, feldspar, muscovite, biotite, weathered rock fragments 50 Bottom of borehole at 50.9 feet.



WELL: SGWA-1/PZ-08S

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SOUTHE	RN COMI	PANY SERVICES, IN	NC. NTAL ENGINEERING			
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DATE STAR	TED 2/11	1/2015 COMPLE	FTFD 2/11/2015 SUR	F FI FV 544 3	COORDINATES: N:33 (076567 E:-83.829374
					ollow Stem Auger; HQ Roc	
						BEARING
					37.3 ft. DELAYED	
BOREHOLE	£		WELL DATA			COMMENTS
DATA		□ Surface:	WELL DATA			
	DEPTH		minum cover with bollards;	4-foot square concrete	pad	
ELEV. Strata					ELEV. (DEPTH)	
LLLV. Strata	· 5 v.;	· · · · · · ·			(DEF III)	
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][Well: 2" (OD PVC (SCH 40)			
531.3						
			Fill: Cement-Bentonite Grou	ıt - 6 bags Typel I/II Por	tland Cement,	
		94 lbs/ea	ch			
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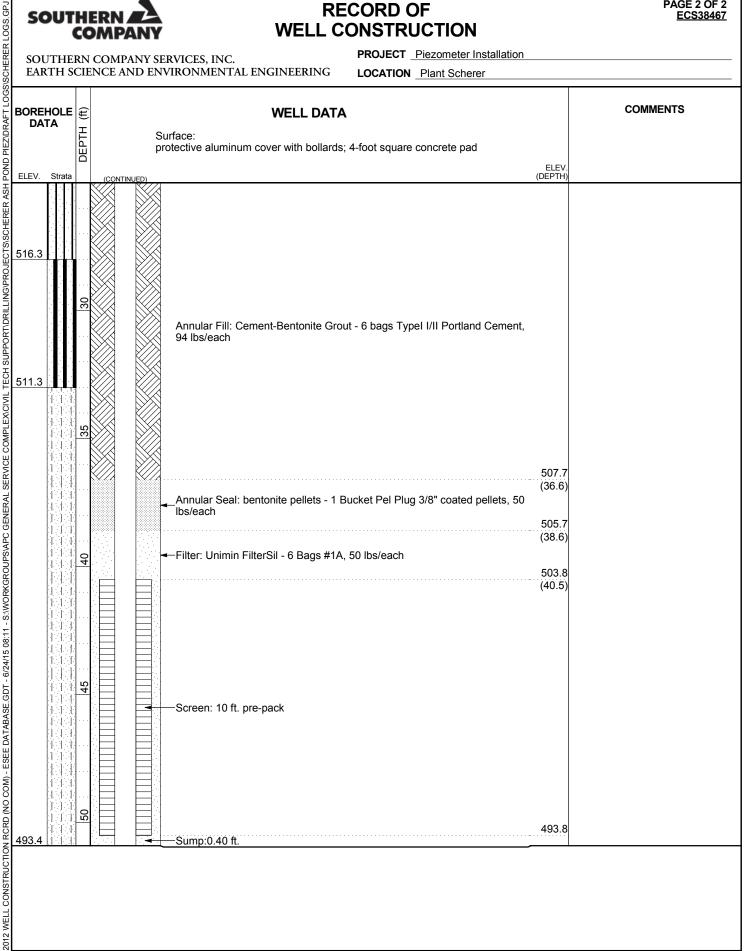


RECORD OF WELL CONSTRUCTION

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

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation



BORING PZ-08I / SGWA-2

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

LOCATION Plant Scherer

DRILLED BORING I	TOR Civil Field Services EQUIPMENT CME550 METHOD BY T. Milam LOGGED BY B. Smelser CHECKED BY L. M EPTH 95.8 ft. GROUND WATER DEPTH: DURING 38.5 ft. COMF	lillet	ANGLE BEARING
DEPTH (ft) GRAPHIC	MATERIAL DESCRIPTION	Weak Moderate Strong	COMMENTS
5	- mottled dark red (10R 3/6) and brownish yellow (10YR 6/8) residuum dry, very stiff, trace mica		SPT N=28bpf(@3.5ft.)
10	Sandy Silt (ML) - variegated dark red (10R 3/6) and dusky red (10R 3/2) residuum dry, stiff, trace clay and mica		SPT N=15bpf(@8.5ft.)
15	- mottled red (2.5YR 5/8) and brownish yellow (10YR 6/8) residuum dry, stiff		SPT N=10bpf(@13.5ft.)
20	- mottled strong brown (7.5YR 4/6) and dusky red / dark reddish brown (10R 3/4) saprolite moist, stiff, micaceous, trace muscovite and residual quartz		SPT N=10bpf(@18.5ft.)
25	- mottled strong brown (7.5YR 5/8) and dark red (10R 3/6) saprolite moist, medium stiff, micaceous, trace muscovite, biotite, residual quartz, hornblende		SPT N=7bpf(@23.5ft.)
30	yellowish brown (10YR 2/2) saprolite moist, loose, very fine to fine grained, micaceous, trace muscovite, biotite, residual quartz, hornblende		SPT N=8bpf(@28.5ft.)

BORING PZ-08I / SGWA-2

SOUTHERN

SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS/GP,

LOG OF TEST BORING

PAGE 2 OF 3 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Silty Sand (SM) (Con't) SPT N=6bpf(@33.5ft.) - mottled reddish yellow (7.5YR 6/8) and red (10R 4/8) saprolite moist, loose, very fine to fine grained 35 SPT N=13bpf(@38.5ft.) - 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 40 mica, residual quartz, feldspar, hornblende - mottled greenish gray (10Y 5/1), grayish olive green (5GY 3/2) and SPT N=18bpf(@43.5ft.) brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, 45 medium dense, very fine to fine grained, trace residual quartz, feldspar, chlorite, biotite - mottled reddish yellow (7.5YR 6/8) and very dark greenish gray (10BG SPT N=14bpf(@48.5ft.) 3/1) saprolite wet, medium dense, very fine to fine grained, trace 50 residual quartz, feldspar, chlorite, muscovite, biotite SPT N=26bpf(@53.5ft.) - 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(@58.5ft.) - 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 - mottled very dark bluish gray (5PB 3/1) and white (10R 8/1) saprolite SPT N=95bpf(@63.5ft.) wet, very dense, very fine to coarse grained, trace red staining, 65 weathered rock fragments, residual quartz, feldspar, hornblende, biotite, chlorite, muscovite SPT N=37bpf(@68.5ft.) - brown (7.5YR 4/4) saprolite wet, hard, with partially weathered rock fragments 70



LOG OF TEST BORING

BORING PZ-08I / SGWA-2 PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

			,		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate PEACTION	COMMENTS	
75	40 0 0 0 V	PARTIALLY WEATHERED ROCK - hard to very hard, highly weathered, partially weathered rock fragments			
	000 000 000 000 000 000 000 000 000 00				
80		GNEISS - white (N9) and light gray (N7) fine to coarse grain, very soft to soft, highly to completely weathered, inclined, intensly fractured, moderate-angle fractures (30 - 45d) along schistocity, abundant pyrite throughout, orangish-red oxidation along fractures			
85					
5		 - 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					
5		Bottom of borehole at 95.8 feet.			
<u> </u>					
100					
3					
<u>.</u>					
105					
<u> </u>					
110					



WELL: SGWA-2/PZ-08I

C	HERN AZ OMPAN		WELL		RUCTION			PAGE 1 O ECS38-
EARTH SCI	IENCE AND	Y SERVICES, INC. ENVIRONMENTA	L ENGINEERIN					
CONTRACTOR	R Civil Field	Services	EQUIPMENT	CME550	METHOD Hollo	ow Stem Auge	er; HQ Rock	6579 E:-83.829348 Core BEARING
								7.3 ft. after 24 hrs.
NOTES								
BOREHOLE E	-		WELL DA	ATA				COMMENTS
DEPT		Surface: protective aluminu	m cover with bolla	ards; 4-foot sq	uare concrete pa	ıd		
ELEV. Strata		o					ELEV. (DEPTH)	
580.1		Surface Seal:	ement-Bentonite		Typel I/II Portlar		586.1 (2.0)	



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.:WORKGROUPSVAPC GENERAL SERVICE COMPLEXICINI TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS.GPJ

RECORD OF WELL CONSTRUCTION

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

SOU EAR	THE TH S	RN CIE	COMPANY SERVICES, INC. NCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation LOCATION Plant Scherer	
BOREI DAT	HOLE FA	TH (ft)	WELL DATA Surface:	COMMENTS
		DEPTH	protective aluminum cover with bollards; 4-foot square concrete pad	
ELEV.			(CONTINUED) ELEV.	
520.1	*************************************	70 65 60 55 50 45 40 35	Annular Fill: Cement-Bentonite Grout - 8 bags Typel I/II Portland Cement, 94 lbs/each	

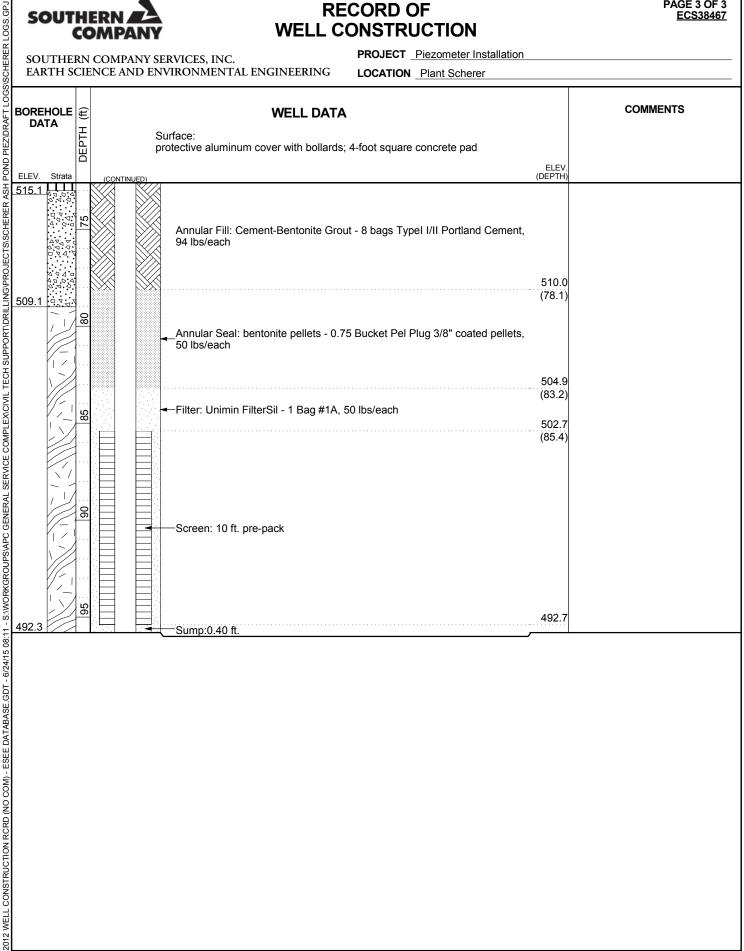


RECORD OF WELL CONSTRUCTION

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



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

RECORD OF BOREHOLE SGWA-3/APA-2

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

NORTHING: 1,120,224.56
EASTING: 1,399,295.72
GS ELEVATION: 542.47
TOC ELEVATION: 545.65 ft

SHEET 1 of 2 DEPTH W.L.: 32' ELEVATION W.L.: DATE W.L.: 11/18/15 TIME W.L.: 08:50

	z	SOIL PROFILE				S	AMPLE	ES		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	- - - - 540	0.00 - 16.00 SILTY SAND; orange to red silty sand, fat clay, moist, soft to firm (overburden)							Portland Type I/ Type — II/ Gel mix	WELL CASING Interval: -3'-40' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 40'-50'
5	- - - -	5.00: Shelby Tube Collected: 5'-6'								Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PVC
-	— 535 —		SM							Interval: 37'7"-50' Type: #1 sand/ Prepack Filter FILTER PACK SEAL
10 — -	- -									Interval: 35'6"-37'7" Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-36'6"
-	— 530 —									Type: Portland Type I/Type II/Gel Mix WELL COMPLETION Pad: 4'x4'x4"
15 -	-	16.00 - 40.00			526.47 16.00					Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic
-	- 525 -	CLAYEY SILT; no quartz, <5% black weathered minerals, deeply weathered biotite gneiss, saprolite, foliation not apparent, white, orange and brown, moist, soft to firm								Rock Drill: 4-inch Sonic
20 -	_ - -	20.00: Shelby Tube Collected: 20'-22'							Portland Type I/ Type — — — — — — II/ Gel mix	
-	520 									
25 — -	- - -									
-	515 515		МН							
30 -	- - -									
-	510								3/8" Bentonite — Pellets —	
35 -	- -	35.00: Shelby Tube Collected: 35'-37'							3/8" —	
-	_ _ 505								Bentonite – Pellets – –	
- 40 — -	- - - - -	40.00 - 45.00 foliated texture observed, saprolite			502.47 40.00					
-	- 500 -									
45 —		Log continued on next page		Ш	497.47				0.010" slot _	

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.



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

RECORD OF BOREHOLE SGWA-3/APA-2

DRILL RIG: C 100 Track Mounted Rig DATE STARTED: 11/17/15 DATE COMPLETED: 11/18/15 NORTHING: 1,120,224.56 EASTING: 1,399,295.72 GS ELEVATION: 542.47 TOC ELEVATION: 545.65 ft SHEET 2 of 2 DEPTH W.L.: 32' ELEVATION W.L.: DATE W.L.: 11/18/15 TIME W.L.: 08:50

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION 9 GRAPHIC LOG ELEV. nscs TYPE SAMPLE REC DESCRIPTION **DETAILS** DEPTH (ft) 45 screen 45.00 - 50.30 45.00 WELL CASING light brown clayey silt interbedded with white to black foliations, deeply weathered biotite gneiss, saprolite, orange-brown to light Interval: -3'-40'
Material: Schedule 40 PVC
Diameter: 6"
Joint Type: Threaded brown clay, moist to wet #1 sand -495 Interval: 40'-50' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PVC 50 492.17 Boring completed at 50.00 ft FILTER PACK Interval: 37'7"-50' Type: #1 sand/ Prepack Filter 490 FILTER PACK SEAL Interval: 35'6"-37'7" 55 Type: 3/8" Bentonite Pellets **ANNULUS SEAL** Interval: 0'-36'6' Type: Portland Type I/Type II/Gel Mix 485 WELL COMPLETION Pad: 4'x4'x4"
Protective Casing: Anodized 60 Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic 480 65 475 70 470 75 9/15/17 465 PIEDMONT.GDT SCHERER BORING LOGS.GPJ 460 455

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.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 67.00 ft LOCATION: Juliette, GA

RECORD OF BOREHOLE SGWA-4/APA-3

DRILL RIG: C 100 Track Mounted Rig DATE STARTED: 11/17/15 DATE COMPLETED: 11/17/15 NORTHING: 1,121,478.04 EASTING: 2,401,124.35 GS ELEVATION: 544.25 TOC ELEVATION: 547.27 ft SHEET 1 of 2 DEPTH W.L.: 25.71' ELEVATION W.L.: DATE W.L.: 11/13/15 TIME W.L.: 13:10

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER WELL CONSTRUCTION 9 ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DIAGRAM and NOTES DESCRIPTION **DETAILS** 핍 DEPTH (ft) 0.00 - 5.00 WELL CASING CLAY (CH); clay, reddish brown, some organic material, trace Interval: -3'-50.5' Material: Schedule 40 PVC quartz, trace mica, dry to moist, firm, overburden Diameter: 6"
Joint Type: Threaded СН WELL SCREEN Interval: 50.5'-60.5' 540 Material: Schedule 40 PVC 539.25 5 Diameter: 2' 5 00 - 10 00 5.00 Slot Size: 0.010" CLAYEY SILT; silt with some clay, reddish brown to yellow End Cap: Schedule 40 PVC saprolite, micaceous, trace quartz, trace biotite, trace weathered rock, dry, firm FILTER PACK Interval: 49'-61.5' Type: #1 sand/ Prepack Filter MH FILTER PACK SEAL Interval: 46.7'-49' 535 534.25 10 Type: 3/8" Bentonite Pellets 10.00 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' ANNULUS SEAL Interval: 0'-46.7' Type: Portland Type I/Type II/Gel Mix WELL COMPLETION Pad: 4'x4'x4' 530 Protective Casing: Anodized 529 25 15 Aluminum 15.00 - 20.00 15.00 silt, mottled brown/yellow/orange saprolite, trace quartz, trace mica, trace biotite, trace clay, soft, moist to wet Shelby Tube Collected: 17'-19' DRILLING METHODS Rock Drill: 4-inch Sonic 525 20 20 00 - 25 00 20.00 mottled orange/brown/yellow silty saprolite, larger biotite deposits, trace quartz and weathered rock, soft, moist to wet Portland Type I/ Type II/ Gel mix 520 519.25 25 25.00 silt and fine sand, trace quartz (angular ~5-10mm diameter), trace weathered rock, micaceous, mottled orange/reddish/yellow/black saprolite, dry, firm 515 514.25 30 30.00 - 35.00 mottled orange/yellow/reddish/black silty saprolite, black streaking, trace quartz, trace clays, micaceous, moist, firm 9/15/17 :GDT - 510 PIEDMONT. 509.25 35 35.00 - 40.00 mottled orange/yellow/white silty saprolite, bitoite, mica, trace quartz, trace clay, moist, firm SCHERER BORING LOGS.GPJ 505 504.25 40.00 - 67.00 SILTY SAND; brown/grey/white/orange silty saprollite, trace quartz, micaceous, fine grains, moist, firm Shelby Tube Collected: 40'-42' SM 500 Log continued on next page

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.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 67.00 ft LOCATION: Juliette, GA

RECORD OF BOREHOLE SGWA-4/APA-3

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

DATE COMPLETED: 11/17/15

SGWA-4/APA-3

NORTHING: 1,121,478.04
EASTING: 2,401,124.35
GS ELEVATION: 544.25
TOC ELEVATION: 547.27 ft

SHEET 2 of 2 DEPTH W.L.: 25.71' ELEVATION W.L.: DATE W.L.: 11/13/15 TIME W.L.: 13:10

	z	SOIL PROFILE		1			AMPLE	5		
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
15 — — — — 50 —	- - - - 495	40.00 - 67.00 SILTY SAND; brown/grey/white/orange silty saprollite, 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 50.00 - 55.00 grey/white/brown/orange silty saprolite, medium grain, mica, iron pyrite, trace quartz, trace biotite, moist, firm			494.25				3/8" Bentonite – Pellets #1 sand –	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
- 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		489.25 55.00				0.010" slot	FILTER PACK Interval: 49'-61.5' Type: #1 sand/ Prepack Fil FILTER PACK SEAL Interval: 46.7'-49' Type: 3/8" Bentonite Pellet: ANNULUS SEAL Interval: 0'-46.7' Type: Portland Type I/Type: II/Gel Mix
- 60 — - -	— 485 —	60.00 - 63.00 SANDY SILT; fine to medium sand, grey, saturated, saprolite	SM		484.25 60.00 481.25 63.00				3/8"	WELL COMPLETION Pad: 4'x4''x4" Protective Casing: Anodize Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
- 65 — -	480 - -	grey, saprolite biotite gneiss, trace thin clay lenses, grey, very firm Boring completed at 67.00 ft			477.25				3/8" Bentonite – Pellets – –	
- 70 — -	475 								- - - -	
- - 5 — -	- - - 470 -								- - - -	
	— 465 —								- - - -	
	- - - 460 -								- - -	
	_ _ 455								- - -	

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.



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

RECORD OF BOREHOLE SGWA-5/APA-4

DRILL RIG: C 100 Track Mounted Rig DATE STARTED: 11/18/15 DATE COMPLETED: 11/18/15 NORTHING: 1,118,087.17 EASTING: 2,397,426.72 GS ELEVATION: 505.32 TOC ELEVATION: 508.11 ft SHEET 1 of 1 DEPTH W.L.: 15.23' ELEVATION W.L.: DATE W.L.: 11/18/15 TIME W.L.: 16:05

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION 9 ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DESCRIPTION **DETAILS** DEPTH (ft) - 505 0.00 - 5.00 WELL CASING CLAY; red/brown overburden, changes to mottled orange/red/brown/white soils, trace biotite and mica, dry to moist Interval: -3'-20.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 20.2'-30.2' Material: Schedule 40 PVC 500.32 5 Diameter: 2' 5.00 - 8.00 500 5.00 Slot Size: 0.010" End Cap: Schedule 40 PVC mottled orange/brown/white clay, trace quartz and biotite, dry to moist, firm, saprolite FILTER PACK Interval: 18'-30.2' Type: #1 sand/ Prepack Filter 497.32 8.00 - 10.00 8.00 Portland CLAYEY SAND; dry mottled orange/white fine grained saprolite, Type I/ Type II/ Gel mix SC FILTER PACK SEAL Interval: 15.7'-18' firm and non cohesive 495.32 10 Type: 3/8" Bentonite Pellets 495 10.00 mottled red/orange/white saprolite, trace quartz and biotite, some ANNULUS SEAL large quartz pieces 493.32 Interval: 0'-15.7' Type: Portland Type I/Type II/Gel Mix 12.00 - 14.00 12.00 mottled orange/brown/red saprolite, some clay, micaceous, moist WELL COMPLETION 491.32 Pad: 4'x4'x4" 14.00 - 15.00 14.00 490.32 Protective Casing: Anodized brown/orange/grey clayey sand, silt, iron pyrite, mica, trace biotite, 15 Aluminum 490 15.00 moist 15.00 - 16.50 488.82 488.32 DRILLING METHODS grey/brown/white saprolite, fine to medium grain sand, trace quartz, 3/8" Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic trace iron pyrite and mica, moist **Bentonite** 16.50 - 17.00 band of orange/brown/grey clayey sand, weathered biotite, wet 17.00 - 22.00 SILT; grey/white/orange saprolite, trace mica, iron pyrite, medium ML grained sand, moist 20 485 483.32 22.00 - 25.00 22.00 mottled orange/black/dark brown/grey/white saprolite, trace quartz, mica and iron pyrite, foliated and weathered, quartz and deeply weathered biotite layers, wet 480.32 0.010" slot _ 25 480 25.00 screen white/grey.brown medium grained, mottledsaprolite with interbedded #1 sand quartz layers, trace rose quartz and iron pyrite, micaceous, wet 478.32 27.00 - 28.00 27.00 477.32 brown/orange/grey/white saprolite, micaceous, medium grained 28.00 sand, wet 28.00 - 30.00 brown, medium grained saprolite with orange and white layers, weathered biotite, trace clay, trace quartz, mica and iron pyrite, 475.32 30 475 Boring completed at 30.00 ft 9/15/17 :GDT PIEDMONT. 470 SCHERER BORING LOGS.GPJ 465

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.



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

RECORD OF BOREHOLE SGWC-6/APC-1
DRILL RIG: C 100 Track Mounted Rig
DATE STARTED: 11/12/15
DATE COMPLETED: 11/12/15

DATE COMPLETED: 11/12/15

SGWC-6/APC-1

NORTHING: 1,122,168.29
EASTING: 2,401,979.45
GS ELEVATION: 507.94
TOC ELEVATION: 510.57 ft

SHEET 1 of 1 DEPTH W.L.: 11.4' ELEVATION W.L.: DATE W.L.: 11/12/15 TIME W.L.: 15:30

	z	SOIL PROFILE					AMPLE	S			
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WE PIEZOMETER DIAGRAM and NO		WELL CONSTRUCTION DETAILS
0	- - 505	0.00 - 5.00 SILTY CLAY (CL)/OVERBURDEN; clay with silt and very fine sand, trace quartz, mica and angular rock peices, reddish-brown fill, black streaking, dry to moist, firm	МН						Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — Pellets		WELL CASING Interval: -3'-15' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 15'-25' Material: Schedule 40 PVC
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		502.94 5.00				Type I/ Type – II/ Gel mix	20000000000000000000000000000000000000	Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV FILTER PACK Interval: 12.9'-25'
0 -	500 	10.00 - 15.00 mottled orange/brown/reddish/yellow saprolite, trace quartz and weathered rock, micaceous, black streaking, wet, firm			497.94 10.00				3/8" Bentonite – Pellets	— — —	Type: #1 sand/ Prepack Fi FILTER PACK SEAL Interval: 10.1'-12.9' Type: 3/8" Bentonite Pellet ANNULUS SEAL Interval: 0'-10.1'
5 —	- 495 - -	15.00 - 20.00			492.94 15.00					- - - - - -	Type: Portland Type I/Typ II/Gel Mix WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodiz Aluminum
	- - 490 -	SILTY SAND/SAPROLITE; mottled orange/brown/white/yellow saprolite, trace quartz and wetahered rock, micaceous, trace clay, medium grain, moist to wet, firm Shelby Tube Collected: 15'-17'	SM						#1 sand –		DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
0 -	- - - - 485	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			487.94 20.00				0.010" slot _ screen		
5 —	- - -	Boring completed at 25.00 ft			482.94						
0 -	480 									- - -	
_	- - - 475									- - -	
- 5	- - -									- - -	
-	- 470 									- - -	
, - -	- - - 465									- - -	
5 —	-									-	

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.



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

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

RORTHING: 1,122,669.57
EASTING: 2,402,259.67
GS ELEVATION: 503.32
TOC ELEVATION: 506.05 ft

SHEET 1 of 1 DEPTH W.L.: 22' ELEVATION W.L.: DATE W.L.: 11/11/15 TIME W.L.: 11:40

	z	SOIL PROFILE					AMPLE	S		
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 -	- - - - 500	0.00 - 5.00 CLAYEY SAND (SC)/OVERBURDEN; top soil followed by partially weathered rock pieces and silty gravel, transitions to brown/reddish fill with organic material, some clay, firm	SC		498.32				Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — Pellets	WELL CASING Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 25'-35' Material: Schedule 40 PVC
5 -	- - - - 495	5.00 - 10.00 OVERBURDEN/SAND (SW); densely compacted coarse grained sand, some silt, trace clay, micaceous, loose, W <pl< td=""><td>sw</td><td></td><td>5.00</td><td></td><td></td><td></td><td></td><td>Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV FILTER PACK Interval: 23'-35' Type: #1 sand/ Prepack Fi FILTER PACK SEAL</td></pl<>	sw		5.00					Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV FILTER PACK Interval: 23'-35' Type: #1 sand/ Prepack Fi FILTER PACK SEAL
0 -	- - - - - 490	10.00 - 15.00 COARSE SAND and PARTIALLY 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		493.32 10.00				Portland Type I/ Type — — — — — — — — — — — — — — — — — — —	Interval: 21'-23' Type: 3/8" Bentonite Pellet ANNULUS SEAL Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix WELL COMPLETION
5 -	- - - - - 485	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		488.32 15.00					Pad: 4'x4'x4" Protective Casing: Anodiz Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
0 -	- 405 - - -	20.00 - 25.00 NO RECOVERY; apparent washout		.00	483.32	-			3/8"	
5 —	- 480 - - - - - - - 475	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		478.32 25.00					
0 -	- - - - - 470	30.00 - 35.00 biotite gneiss, mica, iron pyrite, some layer quartz pieces, at least 6 apparent fractures wuth lesser partial fractures along core, some weathering from water apparent			473.32 30.00				#1 sand	
5 -	470 	Boring completed at 35.00 ft			468.32				- -	
0 -	- - 465 - -								- - - -	
-	- 460								- - -	

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.



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

RECORD OF BOREHOLE SGWC-8/APC-3

DRILL RIG: C 100 Track Mounted Rig DATE STARTED: 11/9/15 DATE COMPLETED: 11/10/15 NORTHING: 1,122,866.66 EASTING: 2,402,979.66 GS ELEVATION: 511.05 TOC ELEVATION: 513.93 ft SHEET 1 of 1 DEPTH W.L.: 25' ELEVATION W.L.: DATE W.L.: 11/10/15 TIME W.L.: 13:45

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER WELL CONSTRUCTION 9 GRAPHIC LOG ELEV. nscs TYPE SAMPLE REC DIAGRAM and NOTES DESCRIPTION **DETAILS** DEPTH (ft) 0.00 - 5.00 WELL CASING SANDY SILT; brown silt with clay changing to sandy silt, Interval: -3'-30' Material: Schedule 40 PVC - 510 fine-grained, trace clay, dry, overburden Diameter: 6"
Joint Type: Threaded ML Interval: 30'-40' Material: Schedule 40 PVC 506.05 5 Diameter: 2' 5.00 - 10.00 5.00 Slot Size: 0.010" SILTY GRAVEL; silty sand, trace quartz and rock pieces, motled End Cap: Schedule 40 PVC - 505 orange/brown/yellow/grey, non-cohesive, trace clay and weathered rock fragments, densely compacted, fin grained, dry, saprolite FILTER PACK Interval: 27.5'-40'
Type: #1 sand/ Prepack Filter GM 000 FILTER PACK SEAL Interval: 25.6'-27.5' 501.05 10 Type: 3/8" Bentonite Pellets 10.00 grey gravelly sand and silt with large pieces of gneiss, biotite gneiss at 12' with several near horizontal fractures and chemical 0 500 ANNULUS SEAL Interval: 0'-25.6' weathering, changing back to micaceous, fine-medium silty sand, Type: Portland Type I/Type II/Gel Mix Portland Type I/ Type II/ Gel mix WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized 496.05 15 Aluminum 15.00 - 20.00 15.00 GRAVELLY SAND/SILT (GP); grey, gravelly fine sand/silt, weathered rock with pieces of quartz, trace pyrite and mica, (O O 495 DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic weathered soil, trace clay, fine-medium grain, brown/grey/orange, dry, saprolite GΡ $[\circ \bigcirc \circ]$ 491.05 20 20.00 - 25.00 20.00 CLAYEY SILT; mottled brown/grey/orange saprolite, densely 490 compacted, medium-coarse grain silt, trace clay, mica and black streaking, trace quartz and weathered rock, dry-moist, saprolite МН 486.05 25 25.00 - 30.00
PARTIALLY WEATHERED ROCK/SILTY SAND; with gravel, mica, 3/8" Bentonite 485 biotite quartz, iron pyrite, feldspar, some coarse grain sands, trace Pellets clay, wet **PWR** 481.05 30 gravel and coarse grained sand, large quartz pieces, mica, iron pyrite, densely compacted brown/grey/orange, moist-wet 480 9/15/17 GDT. PIEDMONT. 476.05 0.010" slot 35.00 - 40.00 screen BEDROCK (BR); biotite gneiss, gravelly coarse sand, large quartz 475 #1 sand pieces, brown/orange/grey, moist-wet SCHERER BORING LOGS.GPJ BR 471.05 Boring completed at 40.00 ft 470

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.



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

RECORD OF BOREHOLE SGWC-9/APC-4

DRILL RIG: C 100 Track Mounted Rig DATE STARTED: 11/5/15 DATE COMPLETED: 11/6/15 NORTHING: 1,122,635.28 EASTING: 2,403,455.82 GS ELEVATION: 507.61 TOC ELEVATION: 510.37 ft SHEET 1 of 1 DEPTH W.L.: 18' ELEVATION W.L.: DATE W.L.: 11/6/15 TIME W.L.: 10:00

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION 9 ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DESCRIPTION **DETAILS** DEPTH (ft) 0 0.00 - 5.00 WELL CASING OVERBURDEN; reddish brown fill, micaceous, some organic Interval: -3'-25' Material: Schedule 40 PVC material, dry-moist, firm (fill) Diameter: 6"
Joint Type: Threaded FILL 505 Interval: 25'-35' Material: Schedule 40 PVC 502.61 5 Diameter: 2' 5 00 - 10 00 5.00 Slot Size: 0.010" End Cap: Schedule 40 PVC CLAY/SAPROLITE; mottled reddish/brown/orange clay, black streaking, micaceous, dry-moist, firm FILTER PACK СН Interval: 23'-35'
Type: #1 sand/ Prepack Filter FILTER PACK SEAL Portland Interval: 21'-23 497.61 Type I/ Type II/ Gel mix 10 Type: 3/8" Bentonite Pellets 10.00 CLAYEY SILT (MH)/SAPROLITE; mottled orange/red/brown/yellow ANNULUS SEAL silt, black streaking, micaceous, fine grainined, trace clay, dry-moist, Interval: 0'-21 Type: Portland Type I/Type II/Gel Mix 495 МН WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized 492 61 15 Aluminum 15.00 - 20.00 15.00 mottled brown/orange/grey/white silt, trace clay, m icaceous, fine-medium grained, black streaking, moist, soft Shelby Tube Collected: 15'-17' DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic 490 487.61 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 3/8" Bentonite Pellets ML 485 482.61 25 25.00 mottled grey/white/brown saprolite, trace quartz and weathered rock, black banding, iron pyrite, moist, firm 480 477.61 0.010" slot 30 30.00 - 35.00 screen mottled grey/white/brown/orange saprolite, densely compacted, trace quartz and weatehred rock, medium to coarse grained, difficult #1 sand -9/15/17 to determine water content but steam generated during drilling 475 :GDT PIEDMONT. 472.61 35 Boring completed at 35.00 ft SCHERER BORING LOGS.GPJ 470 465

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.



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

RECORD OF BOREHOLE

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

DATE COMPLETED: 11/5/15

DATE COMPLETED: 11/5/15

SGWC-10/APC-5

NORTHING: 1,121,896.65
EASTING: 2,404,047.18
GS ELEVATION: 506.30
TOC ELEVATION: 509.22 ft

SHEET 1 of 1 DEPTH W.L.: 17' ELEVATION W.L.: DATE W.L.: 11/5/15 TIME W.L.: 13:15

	z	SOIL PROFILE					AMPLE	S		
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 -	- 505 -	0.00 - 5.00 CLAY/OVERBURDEN; reddish/brown sily fine grained fill, some rock fragments and organic material, trace clay, micaceous, dry-moist, firm, W <pl< td=""><td>СН</td><td></td><td>(ft)</td><td>SA</td><td></td><td></td><td></td><td>WELL CASING Interval: -3'-20' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</td></pl<>	СН		(ft)	SA				WELL CASING Interval: -3'-20' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
5 —	- - - - 500	5.00 - 10.00 mottled brown/reddish/orange micaceous fill, changing to saprolite soils with black streaking, trace quartz, moist, firm			501.3 5.00	·			Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — Pellets	WELL SCREEN Interval: 20'-30' Material: Schedule 40 PV(Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV FILTER PACK Interval: 18'-30'
0 —	- - -	10.00 - 15.00			496.3 10.00					Type: #1 sand/ Prepack F FILTER PACK SEAL Interval: 15.5'-18' Type: 3/8" Bentonite Pelle
-	495 	SILTY CLAY (CL)/SAPROLITE; mottled orange/brown/yellow/reddish saprolite, micaceous, trace quartz and angular rock fragments, firm to soft, moist	CL							ANNULUS SEAL Interval: 0'-15.5 Type: Portland Type I/Typ II/Gel Mix
5 —	- - 490 -	15.00 - 20.00 mottled orange/brown/yellow/reddish saprolite, some clay, micaceous, black streaking, treace quartz and weathered rock fragments, soft, wet, ~17'			491.3 15.00				3/8" Bentonite – Pellets	WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodiz Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
0 -	- - - - 485	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	SM		486.3 20.00					
- - 5 - -	- - - - 480	25.00 - 30.00 mottled brown/grey/orange/white saprolite, fin grained, trace clay, trace quartz and weathered rock fragments, soft, wet			481.3 25.00				0.010" slot screen #1 sand	
- - - - -	- - -	Boring completed at 30.00 ft			476.3					
	— 475 – –								- - -	
5 -	- - - 470 -								- - -	
- - - - -	- - - - 465								- - - -	
-	-								-	

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.



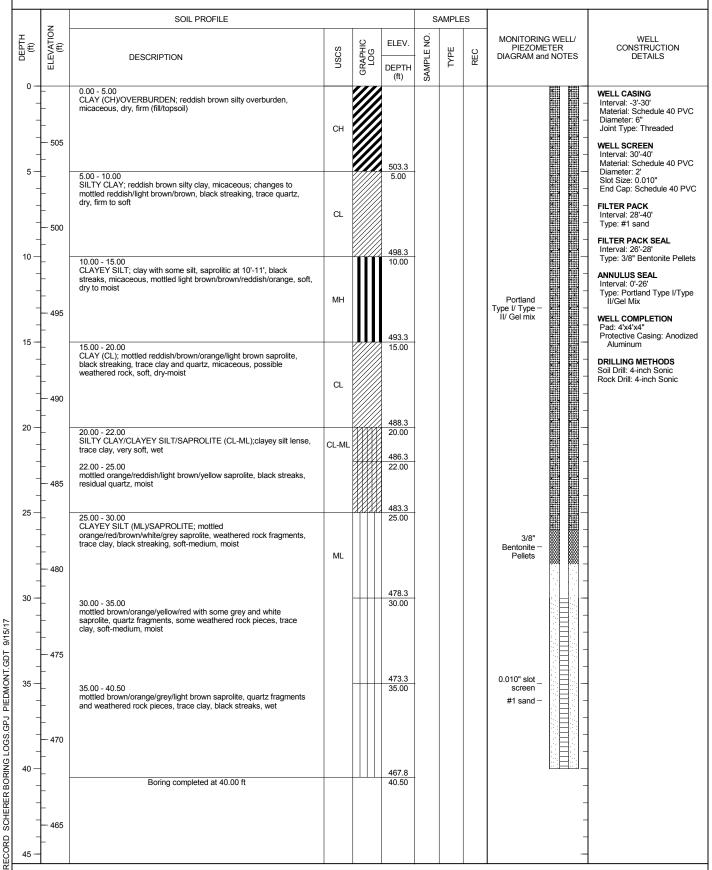
PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 40.00 ft LOCATION: Juliette, GA

RECORD OF BOREHOLE SGWC-11/APC-6

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

NORTHING: 1,121,542.39 EASTING: 2,404,332.79 GS ELEVATION: 508.30 TOC ELEVATION: 511.28 ft

SHEET 1 of 1 DEPTH W I · 29' ELEVATION W.L.: DATE W.L.: 10/29/15 TIME W.L.: 17:50



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.



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

RECORD OF BOREHOLE

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

SHEET 1 of 2 DEPTH W.L.: 29' ELEVATION W.L.: DATE W.L.: 10/30/15 TIME W.L.: 10:10

(£)	ELEVATION (ft)			0	1	0	1	ı	MONITORING WELL/	WELL
0+	ш	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	REC	PIEZOMETER DIAGRAM and NOTES	CONSTRUCTION DETAILS
+		0.00 - 2.00 OVERBURDEN/FILL (CH); reddish brown silt and fine grained sand	СН		495.35	0,				WELL CASING Interval: -3'-37' Material: Schedule 40 PVC Diameter: 6"
-	- 495	2.00 - 5.00 reddish brown silt with trace clay, micaceous, dry, firm			2.00					Joint Type: Threaded WELL SCREEN Interval: 37'-47' Material: Schedule 40 PVC
5 -	.	5.00 - 10.00 SILTY SAND/SAPROLILTE (SM); mottled reddish brown and grey saprolite, micaceous, trace quartz fragments, some clay, dry			492.35 5.00					Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV
-	- 490		SM							Interval: 35'-47' Type: #1 sand/ Prepack Fi FILTER PACK SEAL
10 - -	- 485	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	МН		487.35 10.00					Interval: 32.5'-35' Type: 3/8" Bentonite Pellet ANNULUS SEAL Interval: 0'-32.5' Type: Portland Type I/Type II/Gel Mix
15 —	.	15.00 - 18.00	IVIII	\prod	482.35 15.00					WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodize Aluminum
-	- 480	mottled brown/orange/yellow clayey silt, trace quartz and weathered rock fragments, micaceous, firm-stiff, moist			479.35				Portland Type I/ Type – II/ Gel mix	DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
0 -		18.00 - 25.00 SANDY SILT; trace biotite, trace quartz, micaceous, mottledbrown/orange/reddish/yellow, firm-stiff, fine grained, loose, black streaks, firm-stiff			18.00					
-	- 475		ML							-
25 -	- 470	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, toist to wet, soft			472.35 25.00				Portland Type I/ Type — II/ Gel mix	
0 -	- 465	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< td=""><td>SM</td><td></td><td>467.35</td><td></td><td></td><td></td><td>3/8" Bentonite — Pellets</td><td></td></pl<>	SM		467.35				3/8" Bentonite — Pellets	
5 —	·	35.00 - 40.00 mottled brown/grey/black saprolite, fine grained, micaceous, trace clay, trace quartz and weathered rock fragments, W <pl, but<="" soft="" td=""><td></td><td></td><td>462.35</td><td></td><td></td><td></td><td>3/8" Bentonite – Pellets –</td><td></td></pl,>			462.35				3/8" Bentonite – Pellets –	
-	- 460	densely compacted, wet								
0	- 455	40.00 - 45.00 mottled grey/white/black/brown saprolite, fine grained, trace quartz and weathered rock fragments, micaceous, black streaks, densely compacted, wet			457.35 40.00				#1 sand	

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.



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

RECORD OF BOREHOLE

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

SHEET 2 of 2 DEPTH W.L.: 29' ELEVATION W.L.: DATE W.L.: 10/30/15 TIME W.L.: 10:10

	_	SOIL PROFILE				S	AMPLE	S		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	SOSU	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45 — _ _	- - - 450	45.00 - 47.00 black/gey/white/brown fine grained saprolite, tightly compacted, trace biotite and mica, soft, moist-wet			45.00 450.35 47.00	-				WELL CASING Interval: -3'-37' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
50 —	- - -	Boring completed at 47.60 ft							- - -	WELL SCREEN Interval: 37'-47' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010"
-	_ — 445 _								- - -	End Cap: Schedule 40 PVC FILTER PACK Interval: 35'-47' Type: #1 sand/ Prepack Filte
55 — –	- - -								- - -	FILTER PACK SEAL Interval: 32.5'-35' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-32.5'
-	— 440 —								- - -	Type: Portland Type I/Type II/Gel Mix WELL COMPLETION Pad: 4'x4'x4"
60 —	_ _ _ 435								- - -	Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
65 —	_ _ _ _								- -	
-	- 430								- - -	
70 —									- - -	
-	— 425 —								- - -	
75 — —	_ _ _ 420								- - -	
80 —	420 - -								- - -	
-	415								- - -	
85 — –	_								- - -	
-	- 410 								- - -	
90 —		LE: 1 in = 5.5 ft			SPECT				_	

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.



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

RECORD OF BOREHOLE

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

DATE COMPLETED: 11/4/15

DATE COMPLETED: 11/4/15

SGWC-13/APC-8

NORTHING: 1,121,274.08
EASTING: 2,405,760.64
GS ELEVATION: 479.75
TOC ELEVATION: 482.58 ft

SHEET 1 of 1 DEPTH W.L.: 22' ELEVATION W.L.: DATE W.L.: 11/4/15 TIME W.L.: 13:00

	z	SOIL PROFILE				S	AMPLE	ES		
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	DEPTH	SAMPLE NO.	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
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	МН							WELL CASING Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
5 —	- 475 	5.00 - 10.00 overburden, reddish brown fill, some clay, trace mica, firm, moist, W <pl< td=""><td></td><td></td><td>474.75 5.00</td><td></td><td></td><td></td><td></td><td>WELL SCREEN Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV0</td></pl<>			474.75 5.00					WELL SCREEN Interval: 25'-35' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV0
-	- -				400 75				Portland	FILTER PACK Interval: 23'-35' Type: #1 sand/ Prepack Fi FILTER PACK SEAL Interval: 21'-23'
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< td=""><td>ML</td><td></td><td>469.75 10.00</td><td></td><td></td><td></td><td>Type I/ Type – II/ Gel mix</td><td>Type: 3/8" Bentonite Pellei ANNULUS SEAL Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix</td></pl<>	ML		469.75 10.00				Type I/ Type – II/ Gel mix	Type: 3/8" Bentonite Pellei ANNULUS SEAL Interval: 0'-21' Type: Portland Type I/Type II/Gel Mix
15 —	- - - 465 - -	15.00 - 20.00 mottled brown/orange/reddish saprolite, micaceous, trace quartz, black streaking, fine grained, moist, firm			464.75 15.00					WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodizical Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
0 -	- - - 460 - -	20.00 - 25.00 mottled red/orange/brown/yellow saprolite, micaceous, trace quartz and biotite, fine grained, some clays, soft, wet, W~PL			459.75 20.00				Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — Pellets	
5 —	- 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	МН		454.75 25.00					
0 -	- 450 - -	30.00 - 35.00 mottled brown/grey/white saprolite, trace quartz znc weathered rock fragments, micaceous, black streaking, firm-stiff			449.75 30.00				#1 sand	
5 —	- - 445 -	Boring completed at 35.00 ft			444.75					
0 -	- - - 440 -								- - - -	
5 —	- - - 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.



BORING APC-9 / PZ-16S / SGWC-14



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 2/24/2015 **COMPLETED** 2/24/2015 **SURF. ELEV.** 473.3 COORDINATES: N:33.081272 E:-83.808363 **EQUIPMENT** CME550 METHOD Hollow Stem Auger CONTRACTOR Civil Field Services **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet **BEARING** ANGLE BORING DEPTH 35.3 ft. GROUND WATER DEPTH: DURING 18.5 ft. COMP. 9.91 ft. DELAYED 9.91 ft. after 24 hrs. NOTES HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Aoderate** Silty Clay (CL) - mottled red (2.5YR 5/8) and light red / moderate reddish orange (10R SPT N=11bpf(@3.5ft.) 6/6) residuum moist, stiff SPT N=5bpf(@8.5ft.) - mottled red (2.5YR 5/8) and light red / moderate reddish orange (10R 6/6) residuum moist, medium stiff (MC = 44.4%; UW(d) = 72.8pcf; Silty Sand (SM) PERM. = 1.18E-6cm/sec) - mottled reddish yellow (5YR 7/8) and red (10R 4/8) saprolite moist, SPT N=6bpf(@13.5ft.)(LL=63; PI=16; FC = 40.2%; medium stiff, with weathered rock fragments, black streaking, trace clay Gravel = 16.3%) 15 - mottled reddish yellow (5YR 6/8) and yellow (10YR 7/6) saprolite wet, SPT N=6bpf(@18.5ft.) medium stiff, with white and black streaking, trace weathered rock fragments 20 - mottled reddish yellow (5YR 6/8) and yellow (10YR 7/6) saprolite wet, SPT N=7bpf(@23.5ft.) medium stiff, with black streaking, trace weathered rock fragments



LOG OF TEST BORING

BORING APC-9 / PZ-16S / SGWC-14 PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Moderate Silty Sand (SM) (Con't) - mottled reddish yellow (5YR 6/8), pale green (10G 6/2) and white SPT N=13bpf(@28.5ft.)(LL=45; PI=7; FC = 26.1%; (10YR 8/1) saprolite wet, stiff, gravelly, trace weathered rock fragments Gravel = 0%) (MC = 47.4%; UW(d) = 77.9pcf; PERM. = 2.49E-5cm/secSPT N=38bpf(@33.5ft.) - mottled grayish olive (10Y 4/2) and pale green (10G 6/2) saprolite wet, hard, trace weathered rock fragments, residual quartz, biotite 35 Bottom of borehole at 35.3 feet. 40 45 50

WELL: SGWC-14/PZ-16S PAGE 1 OF 2

SOUTHE EARTH S	RN CIE	NCE AND ENV	PROJECT Piezometer Installation VIRONMENTAL ENGINEERING LOCATION Plant Scherer COMPLETED 2/24/2015 SURF. ELEV. 473.3 COORDINATES: N:33	.081272 E:-83.808363
			vices EQUIPMENT CME550 METHOD Hollow Stem Auger	
BORING DE	PTH	35.3 ft.	LOGGED BY _S. Baxter CHECKED BY _L. Millet ANGLE GROUND WATER DEPTH: DURING18.5 ft COMP9.91 ft DELAYED	
BOREHOLE DATA	DEPTH (ft)		WELL DATA urface: rotective aluminum cover with bollards; 4-foot square concrete pad	COMMENTS
	믭		ELEV.	
### Strata ### ### ### ### ### ### ### #### ##	20		Well: 2" OD PVC (SCH 40) Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 5 bags Typel I/II Portland Cement, 94 lbs/each 454.0 (19.3) Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	
1919) 1919 1919			←Filter: Unimin FilterSil - 7 Bags #1A, 50 lbs/each	
1133 1334	25		448.5	



RECORD OF WELL CONSTRUCTION

WELL: SGWC-14/PZ-16S PAGE 2 OF 2 ECS38467

SOUTH	RN ANY	RECORD WELL CONSTR	OF	: SGWC-14/PZ-16 PAGE 2 OF ECS3846
SOUTHERN	COMPANY SE	KVICES, IIVC.	T Piezometer Installation N Plant Scherer	
BOREHOLE (1) HL	Sı	WELL DATA rface: otective aluminum cover with bollards; 4-foot square	are concrete pad	COMMENTS
ELEV. Strata 1	(CONTINUED)	Screen: 10 ft. pre-pack Screen: 10 ft. pre-pack Sump:0.50 ft.	ELEV. (DEPTH) (24.8) 438.5 (34.8)	

BORING APC-10 / PZ-17S / SGWC-15



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 2/25/2015 **COMPLETED** 2/26/2015 **SURF. ELEV.** 480.3 **COORDINATES:** N:33.079136 E:-83.805879 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet **BEARING** ANGLE BORING DEPTH 45.2 ft. GROUND WATER DEPTH: DURING 23.5 ft. COMP. 33.81 ft. DELAYED 31.66 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Silt (ML) - mottled red (2.5YR 4/8) and dark reddish brown (2.5YR 2.5/4) SPT N=18bpf(@3.5ft.) residuum moist, very stiff, trace clay SPT N=10bpf(@8.5ft.) - mottled red (2.5YR 4/8) and yellow (10YR 7/8) saprolite moist, stiff, trace coarse sand 10 - mottled red (2.5YR 4/8) and yellow (10YR 7/8) saprolite moist, SPT N=5bpf(@13.5ft.) medium stiff, with black streaking, trace residual quartz and mica 15 - mottled reddish brown (2.5YR 4/3) and dusky red / dark reddish brown SPT N=6bpf(@18.5ft.) (10R 3/4) saprolite moist, medium stiff, with black streaking, trace weathered rock fragments, biotite, muscovite, residual quartz 20 mottled reddish brown (2.5YR 4/3) and dusky red / dark reddish brown SPT N=3bpf(@23.5ft.) (10R 3/4) saprolite wet, soft, with black spots, trace weathered rock fragments



BORING APC-10 / PZ-17S / SGWC-15

PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

LOG OF TEST BORING

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Moderate Silt (ML) (Con't) - mottled light red (2.5YR 6/8) and light red / moderate reddish orange SPT N=9bpf(@28.5ft.) (10R 6/6) saprolite wet, stiff, with black streaking, trace weathered rock fragments 30 Sandy Elastic Silt (MH) - mottled reddish brown (2.5YR 4/3) and light red / moderate reddish SPT N=5bpf(@33.5ft.)(LL=55; PI=23; FC = 54.7%; orange (10R 6/6) saprolite wet, medium stiff, with black streaking, trace Gravel = 0%) weathered rock fragments 35 (MC = 51.6%; UW(d) = 70.3pcf;PERM. = 4.10E-4cm/sec) Silt (ML) - mottled reddish brown (2.5YR 4/3) and light red / moderate reddish orange (10R 6/6) saprolite wet, medium stiff, trace weathered rock SPT N=8bpf(@38.5ft.) fragments, residial quartz, biotite, muscovite 40 - mottled reddish brown (2.5YR 4/3) and light red / moderate reddish SPT N=12bpf(@43.5ft.) orange (10R 6/6) saprolite wet, stiff, with black streaking, trace weathered rock fragments, biotite, muscovite, residual quartz 45 Bottom of borehole at 45.2 feet. 50



WELL: SGWC-15/PZ-17S PAGE 1 OF 2

SOUT	HERN COMF				RECOR L CONS	D OF TRUCTION	N		PAGE 1 OF ECS3846
SOUTHE	RN COM	PANY SE	RVICES, INC.	L ENGINEERIN		Piezometer TION Plant Sche			
CONTRACT DRILLED BY BORING DE	OR <u>Civil</u> Y <u>T. Mila</u> PTH 45.	Field Servent m 2 ft.	vicesLOGGED BY _ GROUND WA	S. Baxter	IT <u>CME550</u> CHECKE RING _23.5 ft.	_ METHOD _Hollo	ow Stem Auger ANG	LE	E:-83.805879 BEARING after 24 hrs.
BOREHOLE DATA	DEPTH (ft)		urface: otective aluminu	WELL D		quare concrete pa		ilev.	COMMENTS
	5		Well: 2" OD P	PVC (SCH 40)		s Typel I/II Portlar		78.3 (2.0)	



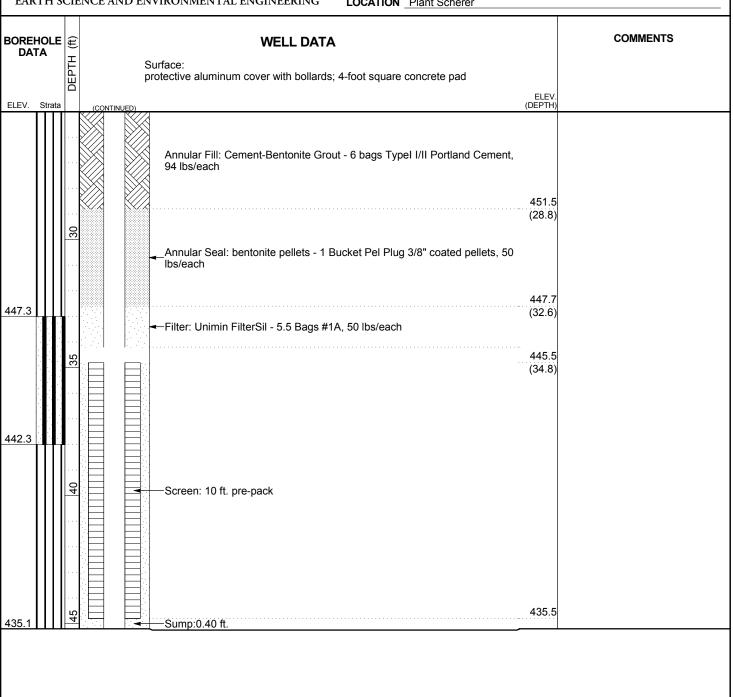
2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.\WORKGROUPS\APC GENERAL SERVICE COMPLEXICINL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZ\DRAFT LOGS\SCHERER LOGS\GPU

RECORD OF WELL CONSTRUCTION

WELL: SGWC-15/PZ-17S
PAGE 2 OF 2
ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer



BORING APC-11 / PZ-18S / SGWC-16



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ DATE STARTED 3/3/2015 **COMPLETED** 3/3/2015 **SURF. ELEV.** 456.9 **COORDINATES:** N:33.076470 E:-83.805688 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 40.2 ft. GROUND WATER DEPTH: DURING 18.5 ft. COMP. 29.95 ft. DELAYED 29.33 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Aoderate** Silty Clay (CL) - Hand auger 5' for utilities clearance SPT N=16bpf(@8.5ft.) - mottled red (2.5YR 4/8) and light red / moderate reddish orange (10R 6/6) residuum dry, very stiff, trace roots Sandy Silt (ML) - mottled red (2.5YR 4/8) and white (10R 8/1) saprolite dry, stiff, with SPT N=11bpf(@13.5ft.) black streaking, trace residual quartz - mottled reddish yellow (5YR 6/8) and light red / moderate reddish SPT N=4bpf(@18.5ft.) orange (10R 6/6) saprolite wet, soft, trace weathered rock fragments 20 - mottled reddish yellow (5YR 6/8) and light red / moderate reddish SPT N=5bpf(@23.5ft.) orange (10R 6/6) saprolite wet, medium stiff, with black streaking, trace residual quartz and biotite



LOG OF TEST BORING

BORING APC-11 / PZ-18S / SGWC-16 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Sandy Silt (ML) (Con't) - mottled reddish yellow (5YR 6/8) and light red / moderate reddish SPT N=3bpf(@28.5ft.) orange (10R 6/6) saprolite wet, soft, trace weathered rock fragments 30 SPT N=4bpf(@33.5ft.) - 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 35 - mottled reddish yellow (5YR 6/8) and light red / moderate reddish orange (10R 6/6) saprolite wet, soft, with black and white streaking, trace SPT N=4bpf(@38.5ft.) biotite and residual quartz 40 Bottom of borehole at 40.2 feet. 45 50



RECORD OF

WELL: SGWC-16/PZ-18S

SOUT	HERN COMP		PAGE 1 OF ECS3846
SOUTHE	RN COM	PANY SERVICES, INC. PROJECT Piezometer Installation	
EARTH S	CIENCE A	AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
DATE STAR	TED _3/3/	2015 COMPLETED 3/3/2015 SURF. ELEV. 456.9 COORDINATES: N:33.	076470 E:-83.805688
CONTRACT	OR Civil	Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger	
		m LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE	
		2 ft. GROUND WATER DEPTH: DURING 18.5 ft. COMP. 29.95 ft. DELAYED	29.33 ft. after 24 hrs.
NOTES			
BOREHOLE		WELL DATA	COMMENTS
DATA	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
FLFV Strata		ELEV. (DEPTH)	
ELEV. Strata	.₽	· \$\sigma\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot	
		Surface Seal: concrete	
		· 5 · · · · · · · · · · · · · · · · · ·	
	الماليا		
		Well: 2" OD PVC (SCH 40)	
143.9 /// 		Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement, 94 lbs/each	
	5		
	N		
		432.9 Appular Cool, bontonita pollata, 1 Busket Del Blug 2/8" sected pollata, 50 (24.0)	
	2	Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 (24.0)	

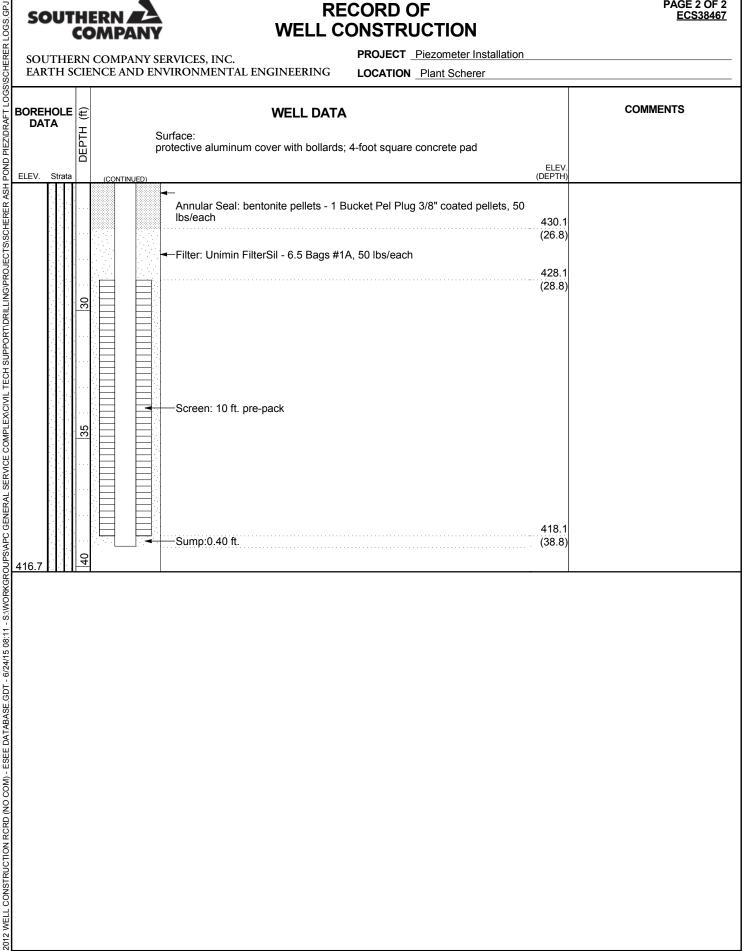


RECORD OF WELL CONSTRUCTION

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





BORING APC-12 / PZ-20S / SGWC-17

SPT N=18bpf(@23.5ft.)

LOG OF TEST BORING

PAGE 1 OF 1 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 3/11/2015 COMPLETED 3/11/2015 SURF. ELEV. 414.8 COORDINATES: N:33.073961 E:-83.805332 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 , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Aoderate** Fat Clay (CL) - Hand auger 5' for utilities clearance SPT N=50bpf(@8.5ft.) - mottled strong brown (7.5YR 4/6) and red (10R 4/8) residuum wet, hard, with sand, trace roots and weathered rock fragments - mottled gray (7.5YR 5/1) saprolite wet, loose, very fine to fine grained, with white speckling and black streaking, trace weathered rock SPT N=6bpf(@13.5ft.) 15 fragments SPT N=13bpf(@18.5ft.) - 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 20

25

SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

Bottom of borehole at 24.5 feet.

- 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



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS/SCHERER LOGS/SCHERER PIEZURAFT PIEZURAFT LOGS/SCHERER PIEZURAFT LOGS/SCHERER PIEZURAFT PIEZURAFT

RECORD OF WELL CONSTRUCTION

WELL: SGWC-17/PZ-20S PAGE 1 OF 1

SOUTHERN COMPANY SERVICES, INC.

Sump: 0.40 ft

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer **DATE STARTED** 3/11/2015 **COMPLETED** 3/11/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:33.073961 E:-83.805332 **EQUIPMENT** CME550 METHOD Hollow Stem Auger CONTRACTOR Civil Field Services 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 **BOREHOLE COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad Strata Surface Seal: concrete 412.8 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 3 bags Typel I/II Portland Cement, 94 lbs/each 405.2 (9.6)Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each 402.7 (12.1)Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each 400.7 (14.1)-Screen: 10 ft. pre-pack 20

BORING APC-13 / PZ-22S / SGWC-18



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ DATE STARTED 3/16/2015 COMPLETED 3/17/2015 SURF. ELEV. 510.3 COORDINATES: N:33.070220 E:-83.806444 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 , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Lean Clay (CL) - Hand auger 5' for utilities clearance SPT N=9bpf(@8.5ft.) - mottled brown (7.5YR 5/2) and yellow (10YR 7/6) fill moist, stiff, micaceous - mottled brown (7.5YR 5/2) and yellow (10YR 7/6) fill moist, medium SPT N=5bpf(@13.5ft.) stiff, micaceous 15 Silt (ML) - mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite SPT N=7bpf(@18.5ft.) moist, medium stiff, with black spots, trace weathered rock fragments 20 - mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite SPT N=5bpf(@23.5ft.) moist, medium stiff, with black spots, trace weathered rock fragments, residual quartz, biotite, muscovite



LOG OF TEST BORING

BORING APC-13 / PZ-22S / SGWC-18 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Silt (ML) (Con't) - mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, SPT N=5bpf(@28.5ft.) black/yellow streaking and spots, trace residual quartz, feldspar, biotite, 30 muscovite - mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, SPT N=7bpf(@33.5ft.) black/yellow streaking and spots, trace residual quartz, feldspar, biotite, muscovite 35 - mottled reddish yellow (7.5YR 7/8) and pink (10R 8/3) saprolite wet, SPT N=9bpf(@38.5ft.) stiff, with black streaking, trace residual quartz, feldspar, biotite, muscovite 40 - mottled reddish yellow (7.5YR 7/8) and white (10R 8/1) saprolite wet, SPT N=10bpf(@43.5ft.) stiff, with black streaking, trace residual quartz, feldspar, hornblende, biotite, muscovite 45 Bottom of borehole at 44.5 feet. 50



WELL: SGWC-18/PZ-22S

SOUT	HERI COM	PANY	R WELL	RECORD OF CONSTRUCTION	VVLLL	PAGE 1 OF ECS384
SOUTHE	RN CON	MPANY SERVICES	INC	PROJECT Piezometer Installa		
CONTRACT DRILLED BY BORING DE	OR <u>Civi</u> 7 <u>T. Mili</u> PTH <u>44</u>	I Field Services am LOGGE .5 ft. GROUN	EQUIPMENT D BY S. Baxter	CME550 METHOD Hollow Ster CHECKED BY L. Millet NG 28.5 ft. COMP. 31.4 ft.	m Auger ANGLE	BEARING
BOREHOLE DATA	DEPTH (ft)	Surface:	WELL DA	TA rds; 4-foot square concrete pad		COMMENTS
H92.3	10 5 5 5 5 5 5 5 5 5		OD PVC (SCH 40) Fill: Cement-Bentonite G	Grout - 5 bags Typel I/II Portland Cem	(2.0)	

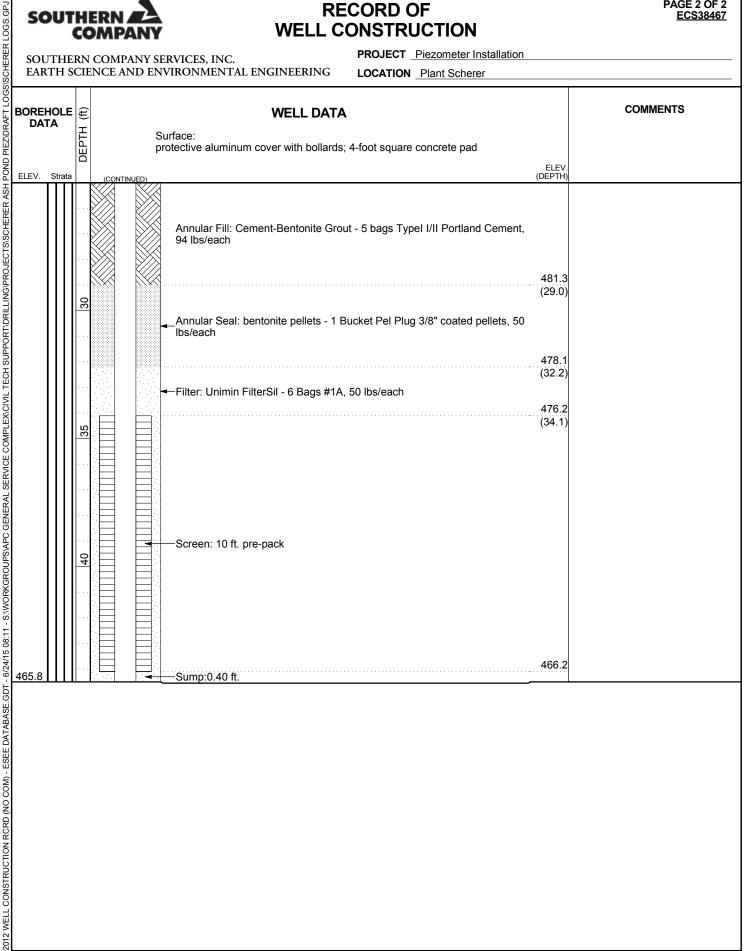


RECORD OF WELL CONSTRUCTION

WELL: SGWC-18/PZ-22S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer



BORING APC-14 / PZ-23S / SGWC-19



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 3/18/2015 **COMPLETED** 3/18/2015 **SURF. ELEV.** 475.8 **COORDINATES:** N:33.067693 E:-83.809179 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 **METHOD** Hollow Stem Auger **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet **BEARING** ANGLE BORING DEPTH 34.6 ft. GROUND WATER DEPTH: DURING 13.5 ft. COMP. 15.1 ft. DELAYED 12.1 ft. after 24 hrs. , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Lean Clay (CL) - Hand auger 5' for utilities clearance SPT N=8bpf(@8.5ft.) - mottled red (2.5YR 5/8) fill moist, medium stiff, trace mica Silt (ML) - mottled reddish gray (2.5YR 5/1) and light red / moderate reddish SPT N=5bpf(@13.5ft.) orange (10R 6/6) saprolite wet, medium stiff, black spots, with trace residual quartz 15 - mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, trace SPT N=6bpf(@18.5ft.) mica 20 Silty Sand (SM) - mottled white (7.5YR 8/1) and light red / moderate reddish orange SPT N=10bpf(@23.5ft.) (10R 6/6) saprolite wet, medium dense, very fine to fine grained, trace residual quartz, muscovite, biotite



LOG OF TEST BORING

BORING APC-14 / PZ-23S / SGWC-19 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Moderate Silty Sand (SM) (Con't) SPT N=20bpf(@28.5ft.) - 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 SPT N=39bpf(@33.5ft.) grained, black streaking, trace muscovite, biotite, residual quartz 35 Bottom of borehole at 34.6 feet. 40 45 50

SOUTHERN

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ

RECORD OF

WELL: SGWC-19/PZ-23S PAGE 1 OF 2

WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/18/2015 **COMPLETED** 3/18/2015 **SURF. ELEV.** 475.8 **COORDINATES:** N:33.067693 E:-83.809179 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 **METHOD** Hollow Stem Auger DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet **BEARING** ANGLE BORING DEPTH 34.6 ft. GROUND WATER DEPTH: DURING 13.5 ft. COMP. 15.1 ft. DELAYED 12.1 ft. after 24 hrs. **NOTES BOREHOLE COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 473.8 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 6 bags Typel I/II Portland Cement, 94 lbs/each 462.8 457.4 (18.4)Annular Seal: bentonite pellets- 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each 20 455.6 (20.2)←Filter: Unimin FilterSil - 3.5 Bags #1A, 50 lbs/each 452.8 451.6 (24.2)Screen: 10 ft. pre-pack



RECORD OF WELL CONSTRUCTION

WELL: SGWC-19/PZ-23S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.\WORKGROUPS\APC GENERAL SERVICE COMPLEXICINL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZ\DRAFT LOGS\SCHERER LOGS\GPU BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH protective aluminum cover with bollards; 4-foot square concrete pad ELEV. (DEPTH) ELEV. Strata Screen: 10 ft. pre-pack 3 | | | 441.6 Sump:0.40 ft

RECORD OF BOREHOLE SGWC-20/APC-15 DRILL RIG: C 100 Track Mounted Rig

PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 25.00 ft DATE STARTED: 11/19/15 DATE COMPLETED: 11/19/15 LOCATION: Juliette, GA

NORTHING: 1,116,020.77 EASTING: 2,405,307.58 GS ELEVATION: 501.12 TOC ELEVATION: 504.44 ft

SHEET 1 of 1 DEPTH W.L.: 8.20' ELEVATION W.L.: DATE W.L.: 11/20/15 TIME W.L.: 11:35

SOIL PROFILE SAMPLES ELEVATION (ft) DEPTH (ft) MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES WELL CONSTRUCTION 9 ELEV. GRAPHIC LOG nscs TYPE SAMPLE REC DESCRIPTION **DETAILS** DEPTH (ft) 0.00 - 5.00 WELL CASING CLAY (CH)/FILL; clayey silty overburden, red/brown, moist (vaccum cleared by Southern Company Services to 10 feet prior to drilling Interval: -3'-15' Material: Schedule 40 PVC 500 Diameter: 6"
Joint Type: Threaded WELL SCREEN Interval: 15'-25' Portland Material: Schedule 40 PVC 496.12 5 Type I/ Type II/ Gel mix Diameter: 2' 5.00 - 10.00 5.00 Slot Size: 0.010" End Cap: Schedule 40 PVC clayey silt, red/brown, moist 495 FILTER PACK Interval: 12.7'-25'
Type: #1 sand/ Prepack Filter FILTER PACK SEAL Interval: 10.6'-12.7' 491.12 10 Type: 3/8" Bentonite Pellets 10.00 CLAYEY SILT (ML)/SAPROLITE; clayey silts, fat clay, trace biotite 3/8" ANNULUS SEAL 490 streaking and mica, red/orange/brown, moist ML Bentonite Interval: 0'-10.6' Pellets Type: Portland Type I/Type II/Gel Mix 488.12 13.00 - 15.00 13.00 WELL COMPLETION FAT CLAY (CH)/SAPROLITE; silt and fine sand with trace quartz, СН Pad: 4'x4'x4" micaceous, trace biotite, red/brown, wet Protective Casing: Anodized 486 12 15 Aluminum 15.00 - 20.00 15.00 SILT/SAPROLITE; clayey silty, mottled saprolite, trace biotite, red/orange/brown, very soft, wet Shelby Tube Collected: 15'-17' 485 DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic МН #1 sand -481.12 0.010" slot 20 20.00 - 25.00 20.00 screen mottled saprolite, weathered biotite, micaceous, trace quartz, 480 foliation (clayey silt with interbedded fine sand), orange/red/brown, 476.12 25 Boring completed at 25.00 ft 475 30 470 9/15/17 PIEDMONT.GDT 35 465 SCHERER BORING LOGS.GPJ 460

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





BORING APC-16 / PZ-01S / SGWC-21

PAGE 1 OF 1 ECS38467

LOG OF TEST BORING

LOCATION Plant Scherer

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

RI	NG DE	Y _T. MilamLOGGED BY _S. Baxter CHECKED BY _L. PTH _24.9 ft GROUND WATER DEPTH: DURING _14.4 ft COM		
(#)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate REACTION Strong	COMMENTS
5		Lean Clay (CL) - Hand auger 5' for utilities clearance		
10		- mottled red (10R 5/8) and pink / moderate orange pink (5YR 8/4) saprolite moist, soft, micaceous		SPT N=4bpf(@8.5ft.)
15		- light gray (10R 7/1) saprolite moist, stiff, micaceous, trace silt $\underline{\nabla}$		SPT N=14bpf(@13.5ft.)
20	-	Silt (ML) - light gray (10R 7/1) saprolite very moist, medium stiff, micaceous, trace clay	e	SPT N=8bpf(@18.5ft.)
25		Silty Sand (SM) - mottled light gray (10R 7/1) and pinkish white / grayish orange pink (10R 8/2) saprolite moist, medium dense, fine to coarse grained, trace weathered rock		SPT N=19bpf(@23.5ft.)



RECORD OF

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

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 5/6/2015 **COMPLETED** 5/6/2015 **SURF. ELEV.** 484.8 **COORDINATES:** N:33.066024 E:-83.815384 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 24.9 ft. GROUND WATER DEPTH: DURING 14.4 ft. COMP. 0 ft. DELAYED 2.7 ft. after 24 hrs. **NOTES BOREHOLE COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata · B ^ Surface Seal: concrete 482.8 (2.0)Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each 472.7 (12.1)-Filter: Unimin FilterSil - 5.5 Bags #1A, 50 lbs/each 470.3 (14.5)466.8 -Screen: 10 ft. pre-pack 461.8 <u>459</u>.9 Sump:0.40 ft

BORING APC-17 / PZ-02S / SGWC-22



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ DATE STARTED 1/21/2015 COMPLETED 1/22/2015 SURF. ELEV. 515.6 COORDINATES: N:33.066392 E:-83.819283 CONTRACTOR Civil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet BEARING ANGLE BORING DEPTH 50.1 ft. GROUND WATER DEPTH: DURING 25.5 ft. COMP. 25.5 ft. DELAYED 24.51 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Aoderate** Lean Clay (CL) - mottled dusky red (5R 3/4), light red / moderate reddish orange (10R SPT N=21bpf(@3.5ft.) 6/6) and pinkish white / grayish orange pink (10R 8/2) fill moist, very stiff Silt (ML) SPT N=20bpf(@8.5ft.) - 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 - mottled dusky red (5R 3/4), very pale brown / very pale orange (10YR SPT N=9bpf(@13.5ft.) 8/2) and very pale brown / very pale orange (10YR 8/2) saprolite moist, stiff, with black spots 15 - mottled brown (10YR 4/3), light brown (7.5YR 6/4) and white (2.5YR SPT N=8bpf(@18.5ft.) 8/1) saprolite moist, medium stiff 20 Silty Sand (SM) - mottled brown (10YR 4/3), very pale brown / very pale orange (10YR SPT N=6bpf(@23.5ft.) 8/2) and pale red / moderate orange pink (10R 7/4) saprolite wet, loose, very fine to fine grained, with black spots



LOG OF TEST BORING

PAGE 2 OF 2 ECS38467

BORING APC-17 / PZ-02S / SGWC-22

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS, GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** ▼ Silty Sand (SM) (Con't) - mottled brown (10YR 4/3), very pale brown / very pale orange (10YR SPT N=12bpf(@28.5ft.) 8/2) and pale red / moderate orange pink (10R 7/4) saprolite wet, medium dense, very fine to fine grained, with black spots - mottled very pale brown / very pale orange (10YR 8/2), very pale brown SPT N=20bpf(@33.5ft.) / very pale orange (10YR 8/2) and light brownish gray / pale yellowish brown (10YR 6/2) saprolite wet, medium dense, very fine to fine 35 grained, with black spots SPT N=42bpf(@38.5ft.) - 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 40 - mottled brown (10YR 4/3), very pale brown / very pale orange (10YR SPT N=27bpf(@43.5ft.) 8/2) and white (10R 8/1) saprolite wet, medium dense, very fine to fine grained, micaceous, with black spots 45 - mottled brown (10YR 4/3), very pale brown / very pale orange (10YR SPT N=43bpf(@48.5ft.) 8/2) and white (10R 8/1) saprolite wet, dense, very fine to fine grained, micaceous, with black spots 50 Bottom of borehole at 50.1 feet.



RECORD OF

WELL: SGWC 22/PZ-02S

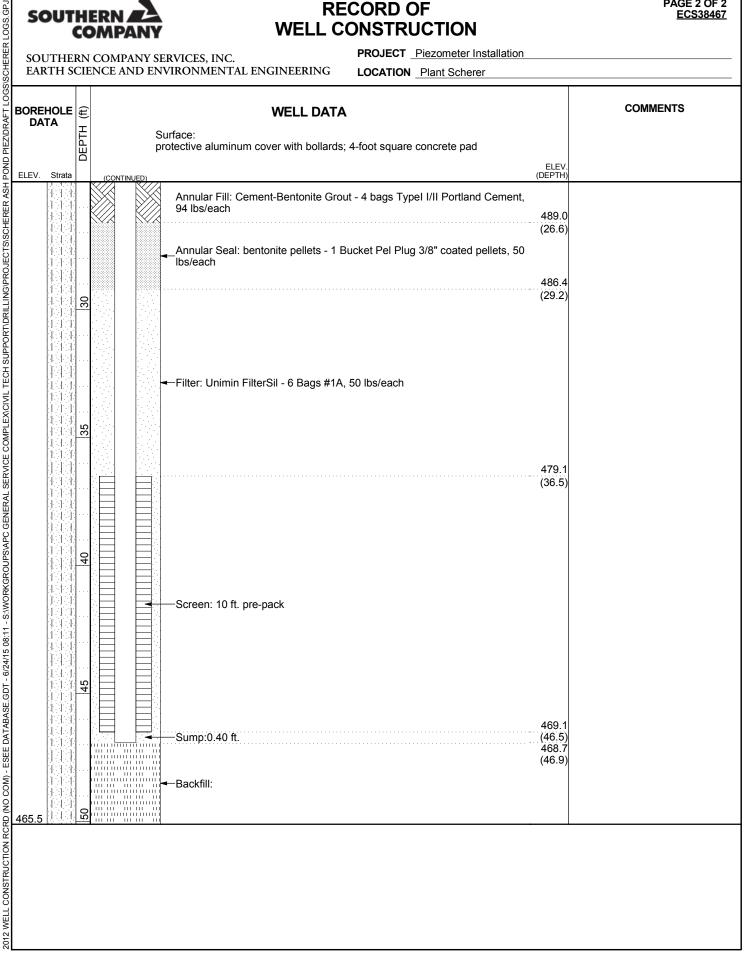
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											BEARING
BORING	DEF	PTH	50.1	ft.		TER DEPTH: DU	RING 25.5 ft.	COMP			_24.51 ft. after 24 hrs.
BOREHO DATA						WELL D	ATA				COMMENTS
ELEV. S		DEPTH			urface: otective aluminur	m cover with bol	lards; 4-foot so	quare concre	ete pad	ELEV. (DEPTH)	
LLEV. G	ridia	- 7	3	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\						(DEI III)	
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507.6											
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	Ш				Annular Fill: Ce	ement-Bentonite	Grout - 4 bag	s Typel I/II F	Portland Cem	ent,	
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RECORD OF WELL CONSTRUCTION

WELL: SGWC22/PZ-02S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation



BORING APC-18 / PZ-04I / SGWC-23



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 1/29/2015 **COMPLETED** 2/3/2015 **SURF. ELEV.** 520.1 **COORDINATES:** N:33.069571 E:-83.822112 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 49.7 ft. GROUND WATER DEPTH: DURING 34.9 ft. COMP. 33.1 ft. DELAYED 33.9 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Aoderate** Sandy Silt (ML) - mottled red / moderate reddish brown (10R 4/6) and light red / SPT N=24bpf(@3.5ft.) moderate reddish orange (10R 6/6) residuum moist, very stiff, micaceous Silty Sand (SM) SPT N=20bpf(@8.5ft.) - mottled white (10YR 8/1) saprolite dry, medium dense, very fine to fine grained, with trace coarse subangular grains 10 - mottled white (10YR 8/1) and red / moderate reddish brown (10R 4/6) SPT N=14bpf(@13.5ft.) saprolite dry, medium dense, very fine to fine grained, with trace coarse subangular grains Sandy Silt (ML) - mottled greenish gray (10BG 5/1) saprolite moist, very stiff, white SPT N=17bpf(@18.5ft.) banding, with trace weathered rock fragments 20 - mottled greenish gray (10BG 5/1) and light red / moderate reddish SPT N=20bpf(@23.5ft.) orange (10R 6/6) saprolite moist, very stiff, with white streaking, trace weathered rock fragments



GRAPHIC LOG

DEPTH (ft)

30

SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS/GP,

BORING APC-18 / PZ-04I / SGWC-23

PAGE 2 OF 2 ECS38467

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

Sandy Silt (ML) (Con't)

Silty Sand (SM)

fragments and mica

PARTIALLY WEATHERED ROCK

soft, highly weathered **GRANITIC GNEISS**

feldspar, mica

PROJECT Piezometer Installation **LOCATION** Plant Scherer HCL REACTION ELEVATION MATERIAL DESCRIPTION **COMMENTS** - mottled greenish gray (10BG 5/1) and light red / moderate reddish SPT N=17bpf(@28.5ft.)(PL=NP; FC = 32.5%; orange (10R 6/6) saprolite moist, medium dense, very fine to fine Gravel = 0%) grained, with white streaking and black spots, trace weathered rock (MC = 23%; UW(d) = 96pcf; PERM. = 1.65E-4cm/sec) - mottled greenish gray (10BG 5/1) and light red / moderate reddish SPT N=36bpf(@33.5ft.) orange (10R 6/6) saprolite moist, dense, very fine to fine grained, black streaking, with weathered rock fragments, trace mica - variegated with greenish gray (10BG 5/1) fine to coarse grain, very - 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, - 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 - 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 Bottom of borehole at 49.7 feet.

WELL: SGWC-23/PZ-04I PAGE 1 OF 2 **RECORD OF** 2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ **SOUTHERN** WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 1/29/2015 **COMPLETED** 2/3/2015 **SURF. ELEV.** 520.1 **COORDINATES:** N:33.069571 E:-83.822112 **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core CONTRACTOR Civil Field Services **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 49.7 ft. GROUND WATER DEPTH: DURING 34.9 ft. COMP. 33.1 ft. DELAYED 33.9 ft. after 24 hrs. **NOTES** BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 518.1 (2.0)

Well: 2" OD PVC (SCH 40)

512.1

502.1

Annular Fill: Cement-Bentonite Grout - 5 bags Typel I/II Portland Cement, 94 lbs/each

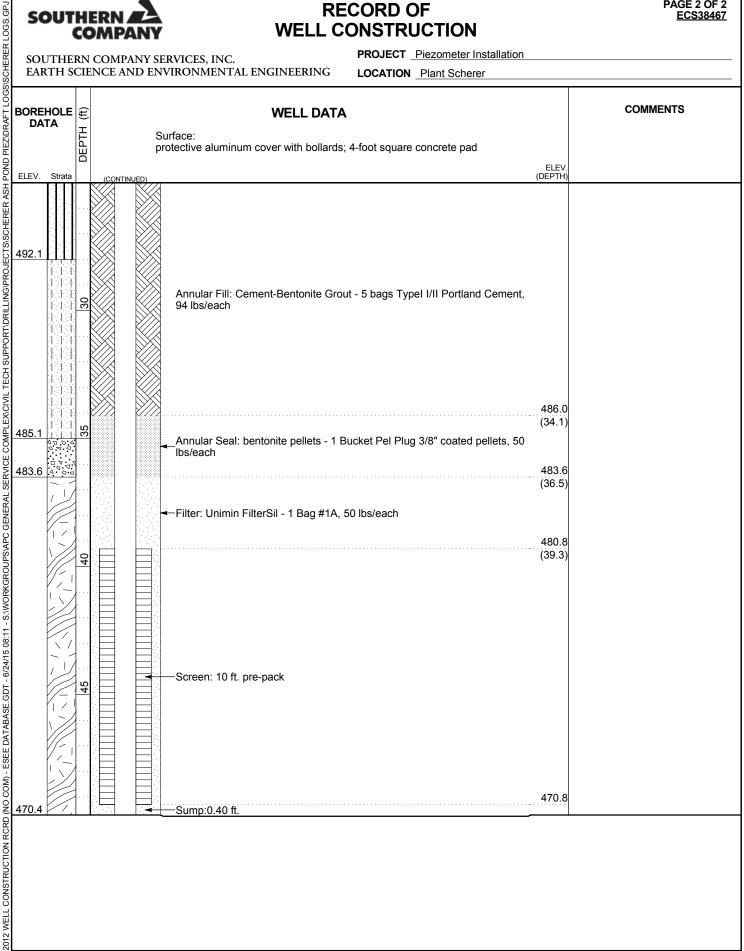


RECORD OF WELL CONSTRUCTION

WELL: SGWC-23/PZ-04I PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation



BORING APA-5 / PZ-07S / SGWA-24



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 2/10/2015 **COMPLETED** 2/10/2015 **SURF. ELEV.** 500.9 COORDINATES: N:33.073517 E:-83.826631 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger **DRILLED BY** T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 40 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 12.1 ft. DELAYED 12.25 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Silt (ML) SPT N=24bpf(@3.5ft.) - mottled strong brown (7.5YR 5/6) and light gray (10YR 7/1) residuum dry, very stiff 5 SPT N=17bpf(@8.5ft.) - mottled yellowish red (5YR 5/8) and light gray (10YR 7/2) saprolite moist, very stiff, with relict quartz, biotite 10 - mottled brown (10YR 5/3) saprolite moist, hard, trace sand, relict SPT N=32bpf(@13.5ft.) quartz, biotite 15 - mottled dark yellowish brown (10YR 4/4) saprolite moist, very stiff, SPT N=21bpf(@18.5ft.) trace coarse silt and sand grains, biotite layering visible 20 Silty Sand (SM) - brown (7.5YR 5/4) saprolite moist, medium dense, very fine to fine SPT N=24bpf(@23.5ft.)(LL=32; PI=8; FC = 24.6%; Gravel = 1%) grained, with biotite and relict quartz, trace weathered rock fragments



LOG OF TEST BORING

BORING APA-5 / PZ-07S / SGWA-24 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXIONL TECH SUPPORTUDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS, GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Moderate Silty Sand (SM) (Con't) (MC = 13.1%; UW(d) = 119.8pcf;PERM. = 2.49E-5cm/sec) - mottled yellowish brown (10YR 5/8) and very dark brown / dusky SPT N=18bpf(@28.5ft.) yellowish brown (10YR 2/2) saprolite moist, medium dense, very fine to fine grained, trace biotite layering and zones of platy greenish chlorite 30 - mottled reddish brown (2.5YR 5/3) and olive brown (2.5Y 4/4) saprolite SPT N=36bpf(@33.5ft.) wet, dense, very fine to fine grained, trace quartz, coarse silt, sand, biotite 35 SPT N=50bpf(@38.5ft.) - 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 40 Bottom of borehole at 40.0 feet. 45 50

RECORD OF

WELL: SGWA-24/PZ-07S
PAGE 1 OF 2

	HERN COMF		PAGE 1 OF 2 <u>ECS38467</u>
		PANY SERVICES, INC. PROJECT Piezometer Installation	
EARTH S	CIENCE	AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
		0/2015 COMPLETED 2/10/2015 SURF. ELEV. 500.9 COORDINATES: N:33.0 Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger	073517 E:-83.826631
		m LOGGED BY B. Smelser CHECKED BY L. Millet ANGLE	READING
		ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 12.1 ft. DELAYED	
		<u></u>	12.20 K. ditor 2 Tillo.
BOREHOLE DATA		WELL DATA	COMMENTS
2,	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV.	
ELEV. Strata	91.0778.20	(DEPTH)	
	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Surface Seal: concrete 498.9 (2.0)	
	10	Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement,	
477.0	20 15	94 lbs/each	
477.9		477.8 (23.1)	
	25	Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each	



WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S./WORKGROUPSAPC GENERAL SERVICE COMPLEXIC/IL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ

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

ELEV. Strata (CONTINUED)	BOF	REHOLE DATA	DEPTH (ft)	WELL DATA Surface: protective aluminum cover with bollards; 4-foot square concrete pad	COMMENTS
475.8 (25.1)	É ELE	V. Strata	a	(CONTINUED) ELEV. (DEPTH)	
0E	ויטל חבודה אליי		1 1	475.8 (25.1) Filter: Unimin FilterSil - 7 Bags #1A, 50 lbs/each	
\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	JENERAL SERVICE COMPLEXICIVIL I ECH SUPPOR I URILLING/PROJEC I SISCHERE		作业工作工作工作工作工作工作工作工作工作工作工作工作工作工作工作工作工作工作工	Screen: 10 ft. pre-pack 463.2 Sump:0.40 ft.	

BORING APA-6 / PZ-09S / SGWA-25



LOG OF TEST BORING

PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 2/17/2015 **COMPLETED** 2/18/2015 **SURF. ELEV.** 523.4 COORDINATES: N:33.080196 E:-83.826235 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 **METHOD** Hollow Stem Auger **DRILLED BY** T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet **BEARING** ANGLE BORING DEPTH 45 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 25.9 ft. DELAYED 25.5 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Sandy Silt (ML) - mottled red (2.5YR 4/6) and bluish gray (10B 6/1) residuum moist, SPT N=10bpf(@3.5ft.) stiff, micaceous, trace clay and muscovite SPT N=6bpf(@8.5ft.) - red (2.5YR 5/8) residuum dry, medium stiff, micaceous, trace clay 10 - mottled yellowish red / light brown (5YR 5/6) and light reddish brown / SPT N=6bpf(@13.5ft.) light brown (5YR 6/4) residuum dry, medium stiff, trace mica 15 - mottled yellow (10YR 7/8) and yellow (10YR 7/8) saprolite moist, stiff, SPT N=9bpf(@18.5ft.) micaceous, with muscovite, biotite, hornblende 20 - mottled strong brown (7.5YR 4/6) and yellow (10YR 7/8) saprolite SPT N=9bpf(@23.5ft.) moist, stiff, micaceous, with muscovite, residual quartz, felspar



LOG OF TEST BORING

BORING APA-6 / PZ-09S / SGWA-25 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

CC COSTINUAL CONTRIBUTION ELEVATION BY Sandy Sitt (MI) (Cont) CC COSTINUAL CONTRIBUTION CC C C C C C C C C C C C C C C C C C	OMMENTS
Sandy Silt (ML) (Cont)	
Sandy Silt (ML) (Con't)	
MATERIAL DESCRIPTION	.)
- mottled dark yellowish brown (10YR 3/6) and yellow (10YR 7/8) saprolite wet, stiff, micaceous, trace muscovite, biotite, chlorite, hornblende, feldspar, residual quartz	.)
(MC = 53.6%; UW(d) = PERM. = 8.55E-5cm/se	
- 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	.)
- 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	.)
Bottom of borehole at 45.0 feet.	
50	
55	



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.;WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS.GPJ

WELL: SGWA25/PZ-09S PAGE 1 OF 2

SOUTHERN	WELL CONSTRUCTION	ECS38467
SOUTHERN COMPANY SEI EARTH SCIENCE AND ENV	TOOL ON THE PLOT FERRIC	
DATE STARTED 2/17/2015	COMPLETED	3.080196 E:-83.826235
	_	
	LOGGED BY _B. SmelserCHECKED BY _L. MilletANGLE	
	GROUND WATER DEPTH: DURING 33.5 ft. COMP. 25.9 ft. DELAYED	25.5 π. aπer 24 nrs.
NOTES		
PODETIOLE C	MELL DATA	COMMENTS
BOREHOLE E	WELL DATA	COMMENTO
	ırface: otective aluminum cover with bollards; 4-foot square concrete pad	
ELEV. Strata	ELEV. (DEPTH)	
· · · · · · · · · · · · · · · ·	(OET 111)	
	-Surface Seal: concrete	
	521.4 (2.0)	
	Well: 2" OD PVC (SCH 40)	
	,	
	Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement,	
	94 lbs/each	
1 1 2		



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.\WORKGROUPS\APC GENERAL SERVICE COMPLEXICINL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZ\DRAFT LOGS\SCHERER LOGS\CHERER LOGS\CHERCR LOGS\CHERER LOGS

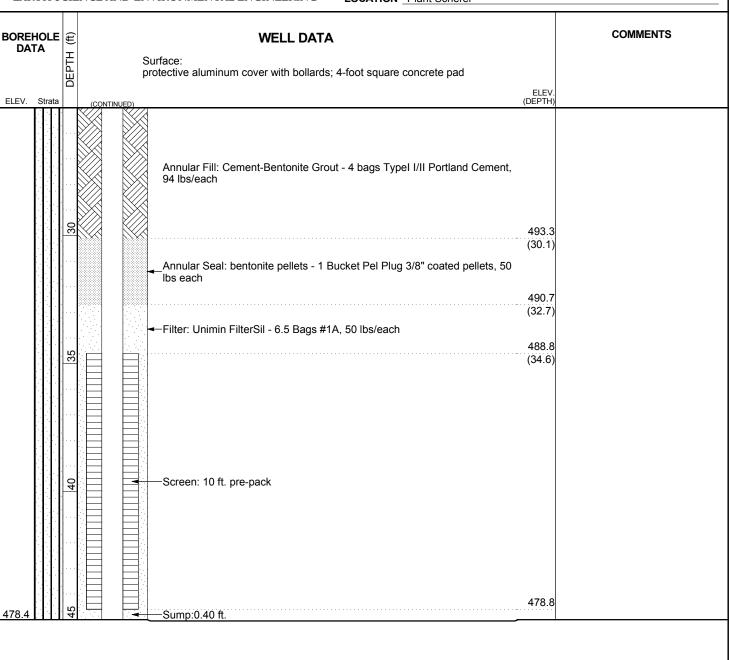
RECORD OF WELL CONSTRUCTION

WELL: SGWA25/PZ-09S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer



APPENDIX A6

Piezometer Construction Logs



LOG OF TEST BORING

BORING PZ-02I PAGE 1 OF 3 ECS38467

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

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE	STAR	RTED 1/22/2015 COMPLETED 1/27/2015 SURF. ELEV. 515.1	C	COORDINATES: N:33.066405 E:-83.819320
í l		OR Civil Field Services EQUIPMENT CME550 METHOD		
DRILL	ED B	Y _T. Milam LOGGED BY _S. Baxter CHECKED BY _L. M	/lillet	ANGLE BEARING
BORII	NG DE	PTH 84.3 ft. GROUND WATER DEPTH: DURING 23.51 ft. COMP	P. 25.	.61 ft. DELAYED 25.41 ft. after 24 hrs.
NOTE	s			
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate REACTION Strong	COMMENTS
5		- 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		Sandy Silt (ML) - 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		✓ Silty Sand (SM) - 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.)





GRAPHIC LOG

DEPTH (ft)

35

40

45

50

55

60

65

SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS/GP,

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

trace mica and weathered rock fragments

trace mica and weathered rock fragments

quartz fragments, trace weathered rock fragments

Silty Sand (SM) (Con't)

fragments

weathered rock fragments

weathered rock fragments

- Attempted to start coring, no recovery

MATERIAL DESCRIPTION

PROJECT Piezometer Installation **LOCATION** Plant Scherer HCL REACTION ELEVATION **COMMENTS** SPT N=13bpf(@33.5ft.) - 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, SPT N=20bpf(@38.5ft.)(PL=NP; FC = 40.2%; - mottled light gray (10R 7/1), white (10R 8/1) and white (10YR 8/1) Gravel = 0%) saprolite wet, medium dense, very fine to fine grained, with black spots, (MC = 23.2%; UW(d) = 100.2pcf;PERM. = 6.71E-5cm/sec) - mottled white (10YR 8/1), pinkish white / grayish orange pink (10R 8/2) SPT N=70bpf(@43.5ft.) and yellow / pale yellowish orange (10YR 8/6) saprolite wet, very dense, very fine to fine grained, with black spots, trace weathered rock SPT N=86bpf(@48.5ft.) - 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 SPT N=77bpf(@53.5ft.) - 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 SPT N=50bpf(@58.5ft.) - 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



LOG OF TEST BORING

BORING PZ-02I PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING
LOCATION Plant Scherer

П						
200000000000000000000000000000000000000		GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak	Moderate REACTION Strong	COMMENTS
	70		Partially Weathered Rock (PWR) (Con't) - mottled gray (10YR 5/1) and white (10R 8/1) saprolite wet, very dense, very fine to coarse grained, banded white with black spots BIOTITE GNEISS			SPT N=50bpf(@68.5ft.)
			- 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'			
	75		- 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)			
O CONTRACTOR OF THE CONTRACTOR						
	80		 - 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) 			
:	85		Bottom of borehole at 84.3 feet.			
1						
]						
<u>ا</u> اً.						
	90					
3						
2	95					
100						
3						
į						
	100					
1	105					
1	105					



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WELL: PZ-02I PAGE 1 OF 3 ECS38467

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNI TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 1/22/2015 **COMPLETED** 1/27/2015 **SURF. ELEV.** 515.1 **COORDINATES:** N:33.066405 E:-83.819320 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** 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 E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 513.1 (2.0)Annular Fill: Cement-Bentonite Grout - 9 bags Typel I/II Portland Cement, Well: 2" OD PVC (SCH 40) 497.1 492.1



RECORD OF WELL CONSTRUCTION

WELL: PZ-02I PAGE 2 OF 3 ECS38467

SOUT	HE		CORD OF ONSTRUCTION	PAGE 2 OF 3 <u>ECS38467</u>
SOUTHE	RN C	OMPANY SERVICES, INC.	PROJECT Piezometer Installation	
EARTH SO	CIEN	CE AND ENVIRONMENTAL ENGINEERING	LOCATION Plant Scherer	
BOREHOLE DATA	(ff)	WELL DATA		COMMENTS
	DEPTH	Surface: protective aluminum cover with bollards;	4-foot square concrete pad	
ELEV. Strata		(CONTINUED)		ELEV. (DEPTH)
447.1	65 60 55 50 45 40 35	Annular Fill: Cement-Bentonite Ground Hibs/each Annular Seal: bentonite pellets - 0.5 -50 lbs/each	at - 9 bags Typel I/II Portland Cement, Bucket Pel Plug 3/8" coated pellets,	450.6 (64.5)

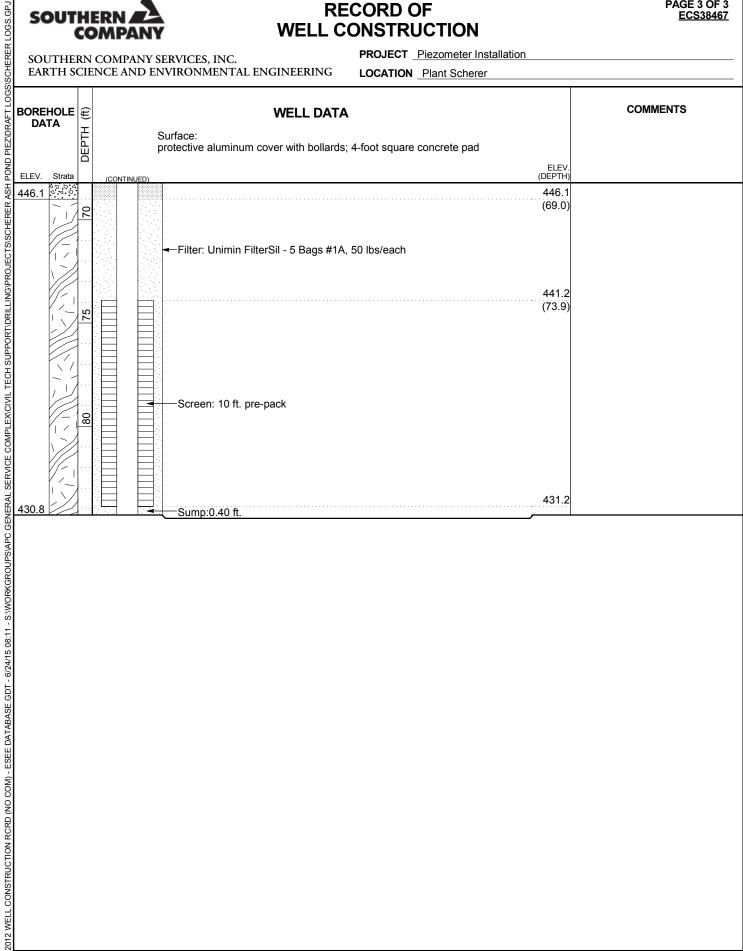


RECORD OF WELL CONSTRUCTION

WELL: PZ-02I PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-03S PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 1/28/2015 COMPLETED 1/29/2015 SURF. ELEV. 514.6 COORDINATES: N:33.067894 E:-83.820805 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 50 ft. GROUND WATER DEPTH: DURING 48.5 ft. COMP. 28.31 ft. DELAYED 30.11 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Sandy Silt (ML) - mottled red / moderate reddish brown (10R 4/6) and light yellowish SPT N=15bpf(@3.5ft.) brown (2.5Y 6/4) fill moist, stiff, clayey, trace mica SPT N=18bpf(@8.5ft.) - mottled red / moderate reddish brown (10R 4/6) saprolite moist, very stiff, with black spots, trace mica 10 - mottled white (10YR 8/1) and light yellowish brown (2.5Y 6/4) SPT N=9bpf(@13.5ft.) saprolite moist, stiff, trace mica, weathered rock, residual quartz 15 SPT N=8bpf(@18.5ft.) - 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 20

SPT N=5bpf(@23.5ft.)

fragments

- mottled brown (10YR 5/3), black (10YR 2/1) and white (10YR 8/1)

saprolite moist, medium stiff, trace quartz and partially weathered rock



LOG OF TEST BORING

BORING PZ-03S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Sandy Silt (ML) (Con't) mottled very pale brown / very pale orange (10YR 8/2) saprolite moist, SPT N=11bpf(@28.5ft.) stiff, white streaking, trace residual quartz and partially weathered rock fragments 30 - mottled very pale brown / very pale orange (10YR 8/2) and yellow SPT N=9bpf(@33.5ft.) (10YR 7/8) saprolite moist, stiff, white streaking, with partially weathered rock fragments 35 - mottled very pale brown / very pale orange (10YR 8/2) saprolite moist, very stiff, white and orange streaking with black spots, with partially SPT N=19bpf(@38.5ft.) weathered rock fragments 40 - mottled light brownish gray / pale yellowish brown (10YR 6/2) and SPT N=34bpf(@43.5ft.) yellowish brown (10YR 5/8) saprolite moist, hard, white and orange streaking, with partially weathered rock fragments 45 SPT N=50bpf(@48.5ft.) - mottled gray (10YR 5/1) saprolite wet, very hard, white streaking, with partially weathered rock fragments 50 Bottom of borehole at 50.0 feet.



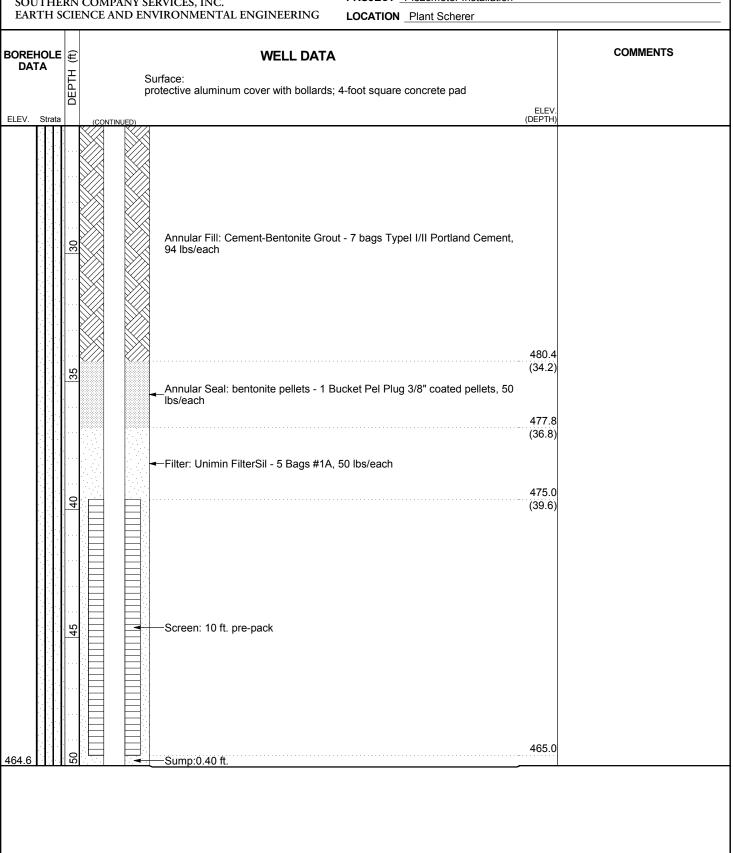
2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

RECORD OF WELL CONSTRUCTION

WELL: PZ-03S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation





RECORD OF

WELL: PZ-03S PAGE 1 OF 2 ECS38467

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 1/28/2015 **COMPLETED** 1/29/2015 **SURF. ELEV.** 514.6 **COORDINATES:** N:33.067894 E:-83.820805 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 50 ft. GROUND WATER DEPTH: DURING 48.5 ft. COMP. 28.31 ft. DELAYED 30.11 ft. after 24 hrs. NOTES BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 512.6 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 7 bags Typel I/II Portland Cement, 94 lbs/each



SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-05I PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 2/3/2015 **COMPLETED** 2/4/2015 **SURF. ELEV.** 520.7 **COORDINATES:** N:33.071745 E:-83.823130 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core **DRILLED BY** T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet **BEARING** BORING DEPTH 47.2 ft. GROUND WATER DEPTH: DURING 35.1 ft. COMP. 41.5 ft. DELAYED 36.8 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Silt (ML) - mottled red (10R 4/8) and light red / moderate reddish orange (10R SPT N=9bpf(@3.5ft.) 6/6) fill moist, stiff, trace mica, clay, and rock fragments SPT N=11bpf(@8.5ft.) - mottled white (10YR 8/1) and yellowish brown (10YR 5/8) saprolite moist, stiff, trace sand and rock fragments 10 - mottled white (10YR 8/1) and yellowish brown (10YR 5/6) saprolite SPT N=10bpf(@13.5ft.) moist, stiff, trace sand and rock fragments 15 SPT N=9bpf(@18.5ft.) - mottled gray (10YR 6/1) and white (10R 8/1) saprolite moist, stiff, with black streaking, micaceous, trace sand and rock fragments 20 - mottled white (10YR 8/1) and very dark grayish brown (10YR 3/2) SPT N=25bpf(@23.5ft.) saprolite moist, very stiff, with black streaking, trace mica, sand, and

rock fragments



BORING PZ-05I PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS, GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Silt (ML) (Con't) - mottled very pale brown / very pale orange (10YR 8/2) and dark gray (10YR 4/1) saprolite moist, stiff, with black streaking, micaceous, trace SPT N=12bpf(@28.5ft.) rock fragments 30 - mottled white (10YR 8/1) saprolite moist, very hard, with black SPT N=86bpf(@33.5ft.) streaking, micaceous, trace sand, weathered rock fragments, and residual quartz 35 PARTIALLY WEATHERED ROCK - light gray (N7) fine to coarse grain, soft, highly weathered **GNEISS** - variegated with medium gray (N5) medium to coarse grain, hard to very hard, not weathered, inclined, blastoporphyritic, banded, 1 low angle fracture (10 - 20d), with amphibole, quartz, biotite - variegated with medium gray (N5) medium to coarse grain, hard to very hard, not weathered, inclined, blastoporphyritic, banded, 1 lowangle fracture (10 - 30d), 6 moderate-angle fractures (30 - 45d), with Lost circulation amphibole, quartz, biotite - 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



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ

RECORD OF

WELL: PZ-05I PAGE 1 OF 2 ECS38467

WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 2/3/2015 **COMPLETED** 2/4/2015 **SURF. ELEV.** 520.7 **COORDINATES:** N:33.071745 E:-83.823130 **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core CONTRACTOR Civil Field Services DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** 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 E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 518.7 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 5 bags Typel I/II Portland Cement, 94 lbs/each

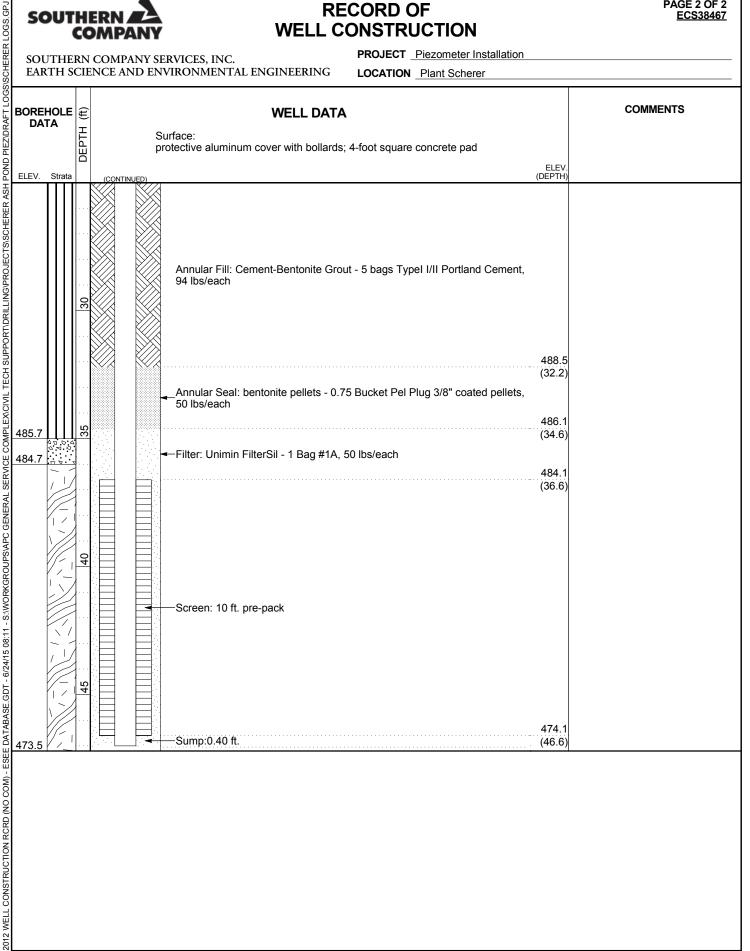


RECORD OF WELL CONSTRUCTION

WELL: PZ-05I PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer





BORING PZ-06S PAGE 1 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING
LOCATION Plant Scherer

DRILLI BORII NOTE	LED BY	OR <u>Civil Field Services</u> <u>EQUIPMENT CME550</u> <u>METHOD</u> Y _T. Milam <u>LOGGED BY S. Baxter</u> <u>CHECKED BY L. N.</u> PTH _54.8 ft. <u>GROUND WATER DEPTH: DURING _43.15 ft.</u> <u>COMI</u>	/lillet	ANGLE BEARING
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate REACTION Strong	COMMENTS
5		Sandy Silt (ML) - strong brown (7.5YR 5/8) residuum moist, stiff		SPT N=11bpf(@3.5ft.)
DATE CONT PART SERVICE CONT PA		- yellow (10YR 7/8) residuum moist, stiff		SPT N=14bpf(@8.5ft.)
15		- yellow (10YR 7/8) saprolite moist, very stiff, trace weathered rock fragments		SPT N=16bpf(@13.5ft.)
		- dark yellowish brown (10YR 4/4) saprolite moist, stiff, trace weathered rock fragments		SPT N=15bpf(@18.5ft.)
20 25 25 30		Silty Sand (SM) - mottled dark grayish brown / dark yellowish brown (10YR 4/2) saprolite moist, medium dense, very fine to fine grained, trace residual quartz, biotite, weathered schist		SPT N=24bpf(@23.5ft.)(LL=41; PI=10; FC = 31.6%; Gravel = 0%) (MC = 28%; UW(d) = 94.1pcf;
30		- mottled dark grayish brown / dark yellowish brown (10YR 4/2) saprolite moist, very dense, very fine to fine grained, trace residual quartz, biotite, weathered schist		PERM. = 1.29E-4cm/sec) SPT N=55bpf(@28.5ft.)



BORING PZ-06S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation

		THE COMPANY SERVICES, INC.	Piezometer Installation			
1	(III S	CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plan			rer	
OGS/SCHERER LOGS.GF DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak	Moderate REACTION Strong	COMMENTS	
2		Silty Sand (SM) (Con't)		: :		
ER ASH POND PIEZ/DRAF		- light greenish gray (10BG 7/1) saprolite moist, very dense, very fine to fine grained, trace biotite, residual quartz, weathered schist			SPT N=50bpf(@33.5ft.)	
		 mottled light greenish gray (10BG 7/1) saprolite moist, very dense, very fine to fine grained, trace moderately weathered schist, biotite, residual quartz 	*		SPT N=50bpf(@38.5ft.)	
1/L TECH SUPPORT\DRILL		 dark gray (N3) saprolite moist, very dense, fine to coarse grained, trace biotite, residual quartz, iron oxide staining 	!		SPT N=50bpf(@43.5ft.)	
SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEX/CVII. TECH SUPPORT/DRILLING/PROJECT/S/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS.GFJ 0.00		Well-graded Sand with Silt (SW-SM) - dark gray (N3) saprolite wet, very dense, very fine to very coarse grained, trace residual quartz, iron oxide staining throughout sample			SPT N=50bpf(@48.5ft.)	
MUPSVAPC GENERA		- dark gray (N3) saprolite wet, very dense, very fine to very coarse grained, trace biotite, residual quartz, iron oxide staining throughout sample			SPT N=50bpf(@53.5ft.)	
) 	-	Bottom of borehole at 54.8 feet.				
5 07:58 - S:WORK						
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WELL: PZ-06S PAGE 1 OF 2 ECS38467

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 2/4/2015 **COMPLETED** 2/4/2015 **SURF. ELEV.** 529.2 **COORDINATES:** N:33.072916 E:-83.822737 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 54.8 ft. GROUND WATER DEPTH: DURING 43.15 ft. COMP. 43.15 ft. DELAYED 42.11 ft. after 24 hrs. NOTES BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 527.2 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 7 bags Typel I/II Portland Cement, 94 lbs/each 506.2

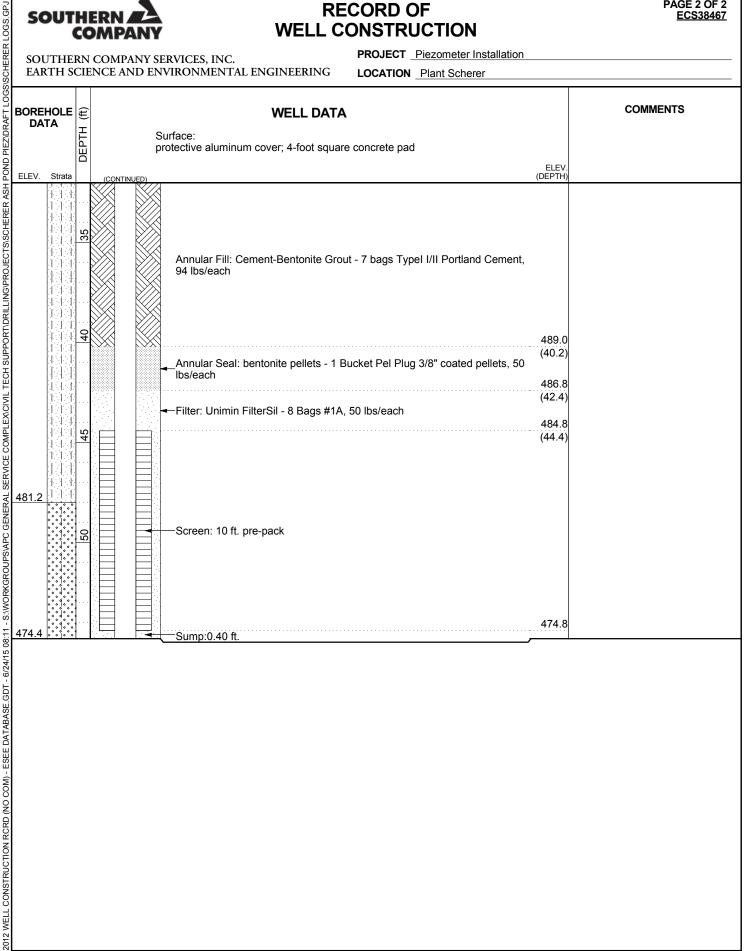


RECORD OF WELL CONSTRUCTION

WELL: PZ-06S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer





BORING PZ-09I PAGE 1 OF 3 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 2/18/2015 **COMPLETED** 2/19/2015 **SURF. ELEV.** 523.5 COORDINATES: N:33.080216 E:-83.826216 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core **DRILLED BY** T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 80.2 ft. GROUND WATER DEPTH: DURING 28.5 ft. COMP. 24.6 ft. **DELAYED** 24.41 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** 1oderate Sandy Silt (ML) - red (10R 4/8) residuum moist, stiff, micaceous, trace clay SPT N=10bpf(@3.5ft.) 5 SPT N=7bpf(@8.5ft.) - yellowish red (5YR 5/8) residuum dry, medium stiff, micaceous, zone of white/light gray rock fragments 10 - mottled red (2.5YR 5/8) and reddish yellow (5YR 6/8) saprolite moist, SPT N=7bpf(@13.5ft.) medium stiff 15 - mottled reddish yellow (7.5YR 6/8) and red (2.5YR 5/8) saprolite SPT N=9bpf(@18.5ft.) moist, stiff, micaceous, with muscovite 20 - mottled reddish yellow (7.5YR 7/8) and red (2.5YR 5/8) saprolite SPT N=18bpf(@23.5ft.) moist, very stiff, micaceous, trace muscovite and biotite



SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate Strong	COMMENTS
30		Sandy Silt (ML) (Cont) - 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		Silty Sand (SM) - 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 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 - 6/24/15 07:58 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEXIDRAFT LOGS/SCHERER LOGS, GR.

LOG OF TEST BORING

BORING PZ-09I PAGE 3 OF 3 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Silty Sand (SM) (Con't) - very dark greenish gray (10BG 3/1) saprolite wet, very dense, very fine SPT N=50bpf(@58.5ft.) to fine grained, trace partially weathered rock fragments, residual quartz, feldspar, biotite, muscovite, hornblende, chlorite 60 Partially Weathered Rock (PWR) **AMPHIBOLITE** - black (N1) fine to coarse grain, very soft to soft, highly weathered, 65 horizontal, completely fractured at all angles, low-angle fractures (weathering cracks), no visible healing, with quartz, feldspar, muscovite, biotite, hornblende, pyrite, interbedded Biotitie 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 - black (N1) and white (N9) fine to coarse grain, medium hard, roderately 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 - 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.



WELL: PZ-09I PAGE 1 OF 3 ECS38467

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE. GDT - 6/24/15 08:11 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 2/18/2015 **COMPLETED** 2/19/2015 **SURF. ELEV.** 523.5 **COORDINATES:** N:33.080216 E:-83.826216 **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core CONTRACTOR Civil Field Services DRILLED BY T. Milam LOGGED BY B. Smelser CHECKED BY L. Millet ANGLE **BEARING** 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 E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 521.5 (2.0)Annular Fill: Cement-Bentonite Grout - 8 bags Typel I/II Portland Cement, 94 lbs/each Well: 2" OD PVC (SCH 40)



RECORD OF WELL CONSTRUCTION

WELL: PZ-09I PAGE 2 OF 3 ECS38467

SOUT	HERI	PANY		CORD OF ONSTRUCTION	PAGE 2 OF 3 ECS38467
SOUTHE	RN CON	IPANY SERVICES, INC	•	PROJECT Piezometer Installation	1
EARTH S	CIENCE	AND ENVIRONMENT	TAL ENGINEERING	LOCATION Plant Scherer	
BOREHOLE DATA	(#)		WELL DATA	\	COMMENTS
	DEPTH	Surface: protective alumi	num cover with bollards	; 4-foot square concrete pad	
ELEV. Strata		NTINUED)			ELEV. (DEPTH)
	55 50 150 145 140 150 135 130 150 150 150 150 150 150 150 150 150 15	Annular Fill: 94 lbs/each	Cement-Bentonite Gro	ut - 8 bags Typel I/II Portland Cemen	

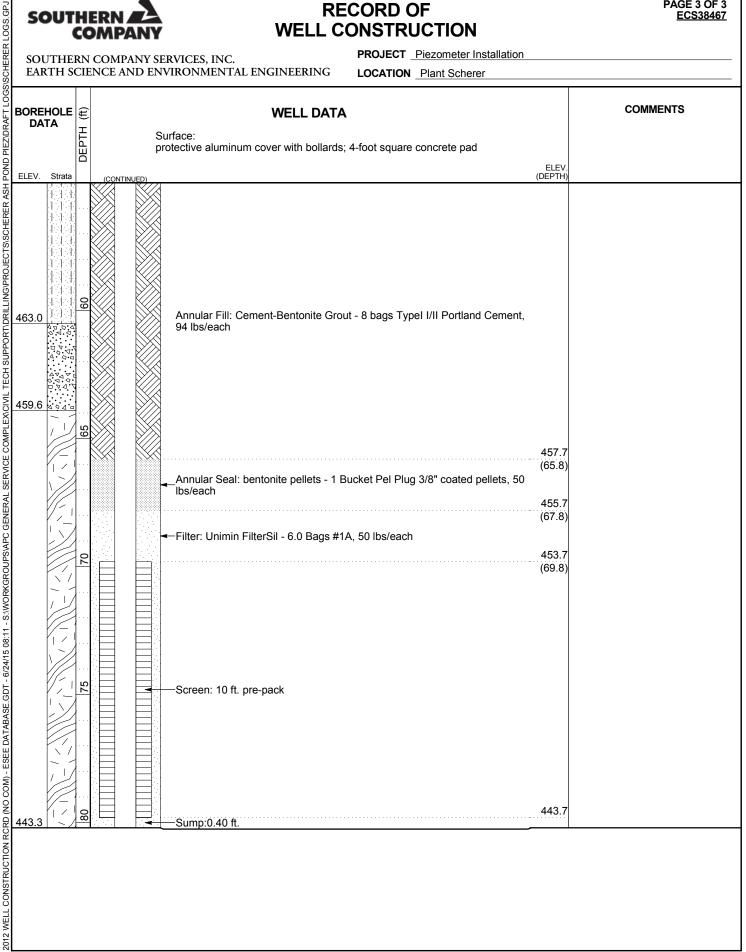


RECORD OF WELL CONSTRUCTION

WELL: PZ-09I PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation





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 PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-10S PAGE 1 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

LOCATION Plant Scherer

	CTOR Civil Field Services EQUIPMENT CME550 BY T. Milam LOGGED BY S. Baxter CHECKI	_		
	EPTH 34.9 ft. GROUND WATER DEPTH: DURING 23.5 ft.			
ES				
			Z	
GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate Strong	COMMENTS
	Sandy Silt (ML) - Hand auger 5' for utilities clearance		> 2 0	
	- Traine dager 9 for dumines dicarance			
-				
	 mottled light reddish brown / light brown (5YR 6/4) residuum stiff, with white speckling, trace medium sand and weathered 	moist, rock		SPT N=15bpf(@8.5ft.)
	fragments			
	- mottled light reddish brown / light brown (5YR 6/4) saprolite v	ery moist,		SPT N=10bpf(@13.5ft.)
	Ā			
	- pinkish gray / grayish orange pink (5YR 7/2) saprolite wet, st	iff,		SPT N=13bpf(@18.5ft.)
	micaceous, trace weathered rock fragments			



BORING PZ-10S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.
FARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Moderate Sandy Silt (ML) (Con't) - mottled pinkish gray / grayish orange pink (5YR 7/2) and gray (10YR 5/1) saprolite wet, stiff, micaceous, trace weathered rock fragments SPT N=10bpf(@23.5ft.) 25 SPT N=33bpf(@28.5ft.) - mottled white / pinkish gray (5YR 8/1) and white (10R 8/1) saprolite wet, hard, micaceous, trace weathered rock fragments 30 - mottled white / pinkish gray (5YR 8/1) and pinkish gray / grayish SPT N=63bpf(@33.5ft.) orange pink (5YR 7/2) saprolite wet, very hard, trace mica Bottom of borehole at 34.9 feet. 40



WELL: PZ-10S PAGE 1 OF 2

SOUT	HERN	RECORD OF WELL CONSTRUCTION	PAGE 1 OF 2 ECS38467
		PANY SERVICES, INC. PROJECT <u>Piezometer Installation</u>	
EARTH S	CIENCE A	AND DERVICES, INC.	
CONTRACT	OR <u>Civil</u>	ZO15 COMPLETED 5/5/2015 SURF. ELEV. 514.2 COORDINATES: Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger m LOGGED BY S. Baxter CHECKED BY L. Millet ANG	GLE BEARING
		9 ft. GROUND WATER DEPTH: DURING 23.5 ft. COMP. 19.3 ft. DEL	AYED _17.1 ft. after 24 hrs.
BOREHOLE DATA		WELL DATA	COMMENTS
ELEV Otroto	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	ELEV.
ELEV. Strata	. ₽ ^ .	(Di	EPTH)
	7 .0	Surface Seal: concrete	
		[: i · ·] 5	512.2
			(2.0)
		Well: 2" OD PVC (SCH 40)	
	2		
		Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement,	
		94 lbs/each	
	8	4	194.4



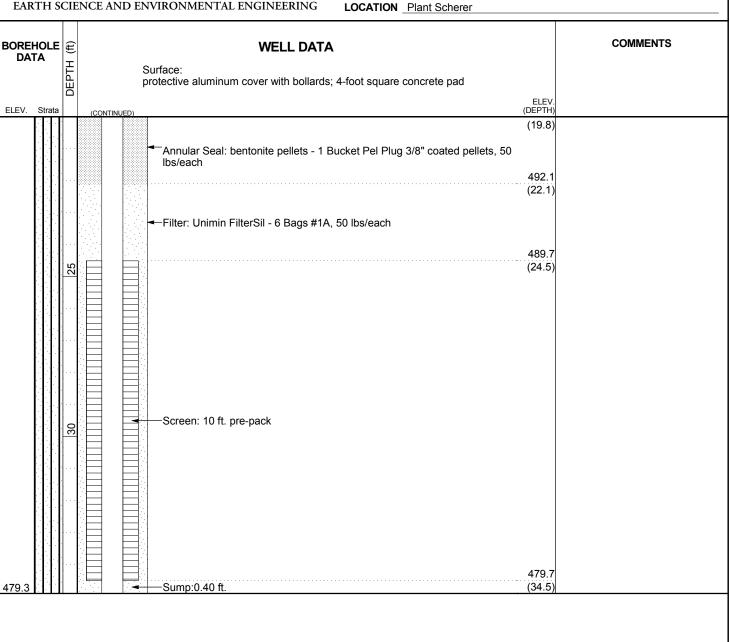
2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S./WORKGROUPS/APC GENERAL SERVICE COMPLEXICNIL TECH SUPPORT/DRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

RECORD OF WELL CONSTRUCTION

WELL: PZ-10S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-11S PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 4/1/2015 **COMPLETED** 4/6/2015 **SURF. ELEV.** 526.1 **COORDINATES:** N:33.087361 E:-83.819968 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 45.9 ft. GROUND WATER DEPTH: DURING 37.3 ft. COMP. 34.3 ft. DELAYED 33.2 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Joderate** Sandy Silt (ML) - Hand auger 5' for utilities clearance SPT N=9bpf(@8.5ft.) - mottled red (10R 5/6) and light yellowish brown (10YR 6/4) saprolite moist, stiff, trace black spots 10 - mottled red (10R 5/6) saprolite moist, stiff, micaceous, trace orange SPT N=9bpf(@13.5ft.) streaks with black spots 15 - pinkish white / grayish orange pink (10R 8/2) and very pale brown / SPT N=13bpf(@18.5ft.) very pale orange (10YR 8/2) saprolite moist, stiff, trace mica 20 - mottled red (10R 5/6) and brown (10YR 5/3) saprolite moist, stiff, SPT N=13bpf(@23.5ft.) micaceous, trace weathered rock fragments



BORING PZ-11S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer						
DEPTH (ft)	GRAPHIC		Weak Moderate Strong	COMMENTS		
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.)		
50		Bottom of borehole at 45.9 feet.				
50						
55						



WELL: PZ-11S PAGE 1 OF 2

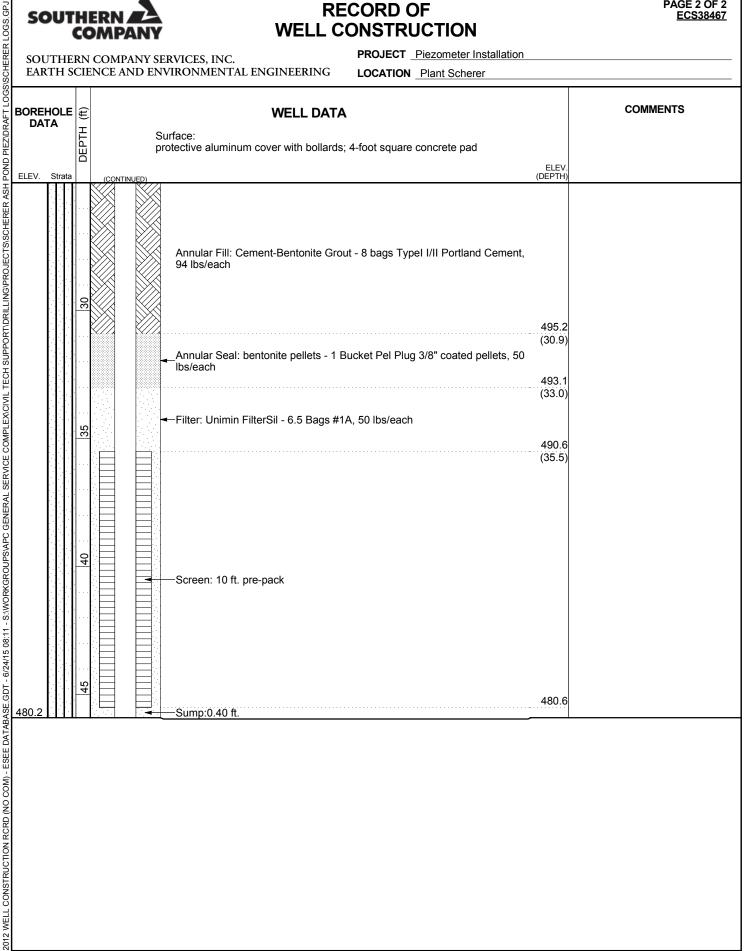
SOUT	HERN COMP	RECORD OF WELL CONSTRUCTION	PAGE 1 OF ECS384
		PANY SERVICES, INC. PROJECT Piezometer Installation	
EARTH S	CIENCE A	ND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
		2015 COMPLETED 4/6/2015 SURF. ELEV. 526.1 COORDINATES: N:33.0	87361 E:-83.819968
		Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger	
		LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE	
		ft. GROUND WATER DEPTH: DURING 37.3 ft. COMP. 34.3 ft. DELAYED 3	33.2 ft. after 24 hrs.
NOTES			
POREHOLE		NA/ELL DATA	COMMENTS
BOREHOLE DATA		WELL DATA	JOHN LIVIO
	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
		ELEV.	
ELEV. Strata	·5 ^ .	(DEPTH)	_
		Surface Seal: concrete	
	.5.5	524.1	
		(2.0)	
	الماليا		
	_	Well: 2" OD PVC (SCH 40)	
		Annular Fill: Cement-Bentonite Grout - 8 bags Typel I/II Portland Cement,	
		94 lbs/each	
	2		
	<u>~</u>		
	1200		



RECORD OF WELL CONSTRUCTION

WELL: PZ-11S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-12S PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/31/2015 **COMPLETED** 4/1/2015 **SURF. ELEV.** 514.7 **COORDINATES:** N:33.086024 E:-83.817193 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 44.4 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 26.2 ft. DELAYED 25.1 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Joderate** Silt (ML) - Hand auger 5' for utilities clearance SPT N=12bpf(@8.5ft.) - mottled red (10R 4/8) and brown (7.5YR 5/2) saprolite moist, stiff, micaceous 10 - mottled red (10R 4/8) and brown (7.5YR 5/2) saprolite moist, stiff, SPT N=9bpf(@13.5ft.) micaceous, with black streaking, trace weathered rock fragments 15 - mottled light gray (10R 7/1) and pale brown (10YR 6/3) saprolite moist, SPT N=15bpf(@18.5ft.) stiff, micaceous 20 - mottled light gray (10R 7/1) and pale brown (10YR 6/3) saprolite moist, SPT N=8bpf(@23.5ft.) medium stiff, micaceous, trace weathered rock fragments



BORING PZ-12S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scriete						
HL430 35 55	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Moderate REACTION Strong	COMMENTS		
		Silt (ML) (Con't) ▼				
30		Silty Sand (SM) - 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(@28.5	ft.)		
		- mottled red (10R 4/8) and red / moderate reddish brown (10R 4/6)	SPT N=22bpf(@33.5	ft.)		
35		saprolite wet, medium dense, very fine to coarse grained, trace iron oxides, feldspar, residual quartz, muscovite				
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(@38.5	ft.)		
45			SPT N=50bpf(@43.5	ft.)		
		Bottom of borenole at 44.4 leet.				
50						
55						



WELL: PZ-12S PAGE 1 OF 2

SOUT		RECORD OF WELL CONSTRUCTION	PAGE 1 O ECS384
		IPANY SERVICES, INC. PROJECT Piezometer Installation	
EARTH S	CIENCE .	AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
DATE STAF	RTED _3/3	81/2015 COMPLETED 4/1/2015 SURF. ELEV. 514.7 COORDINATES: N:33	3.086024 E:-83.817193
		Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger	
		am LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE	
		4 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 26.2 ft. DELAYED	25.1 ft. after 24 hrs.
IOTES			
00511015		MELL DATA	COMMENTS
OREHOLE DATA		WELL DATA	COMMENTS
	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
		ELEV	
ELEV. Strata	· \	(DEPTH)	
		Surface Seal: concrete	
	·\$\.	512.7	
		(2.0)	
	2		
		Well: 2" OD PVC (SCH 40)	
	0		
		Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement,	
		94 lbs/each	
	5		
	[[]		



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.\WORKGROUPS\APC GENERAL SERVICE COMPLEXICINL TECH SUPPORT\DRILLING\PROJECTS\SCHERER ASH POND PIEZ\DRAFT LOGS\SCHERER LOGS\GPU

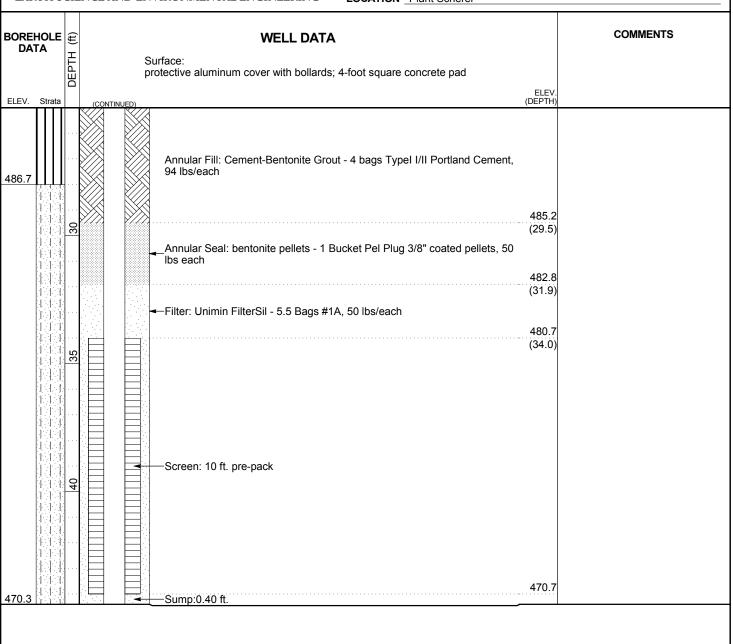
RECORD OF WELL CONSTRUCTION

WELL: PZ-12S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-13S PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/31/2015 **COMPLETED** 4/1/2015 **SURF. ELEV.** 517.4 **COORDINATES:** N:33.084015 E:-83.815212 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 45.3 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 28.6 ft. DELAYED 26.5 ft. after 24 hrs. , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Joderate** Sandy Silt (ML) - Hand auger 5' for utilities clearance SPT N=9bpf(@8.5ft.) - mottled red (10R 4/8) and light red / moderate reddish orange (10R 6/6) fill moist, stiff, trace clay 10 - mottled red (10R 5/6) and yellow (10YR 7/6) saprolite moist, stiff, with SPT N=10bpf(@13.5ft.) black streaking, trace muscovite 15 SPT N=6bpf(@18.5ft.) - mottled red (10R 5/6) and yellow (10YR 7/6) saprolite moist, medium stiff, with black streaking, trace residual quartz and muscovite 20 - mottled reddish yellow (5YR 7/8) and light red / moderate reddish SPT N=10bpf(@23.5ft.) orange (10R 6/6) saprolite moist, stiff, trace black streaking and residual



BORING PZ-13S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S.:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Moderate Sandy Silt (ML) (Con't) - mottled reddish yellow (5YR 7/8) and light red / moderate reddish orange (10R 6/6) saprolite moist, stiff, trace black streaking, residual SPT N=11bpf(@28.5ft.) quartz, weathered rock fragments 30 - mottled reddish yellow (7.5YR 7/8) and light red / moderate reddish SPT N=7bpf(@33.5ft.) orange (10R 6/6) saprolite wet, medium stiff, with black streaking, trace weathered rock fragments 35 - mottled reddish yellow (7.5YR 7/8) and yellow (10YR 7/6) saprolite wet, stiff, with trace black spots and residual quartz SPT N=11bpf(@38.5ft.) 40 - mottled reddish yellow (7.5YR 7/8) and yellow (10YR 7/6) saprolite SPT N=11bpf(@43.5ft.) wet, stiff, trace sand and weathered rock fragments 45 Bottom of borehole at 45.3 feet. 50



WELL: PZ-13S PAGE 1 OF 2

SO			RECORD OF WELL CONSTRUCTION	PAGE 1 OF ECS384
SOUT			MPANY SERVICES, INC. PROJECT Piezometer Installation	
EART	ΓH S	CIENC		
			0/31/2015 COMPLETED 4/1/2015 SURF. ELEV. 517.4 COORDINATES: N:33	3.084015 E:-83.815212
			vil Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger	
			Idam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE	
			5.3 ft. GROUND WATER DEPTH: DURING 33.5 ft. COMP. 28.6 ft. DELAYED	_26.5 π. aπer 24 nrs.
BOREH	OLE	(ft)	WELL DATA	COMMENTS
DATA	А	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
ELEV.	Strata	0.50	ELEV. (DEPTH)	
		.₽,	Surface Seal: concrete	
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			(2.0)	
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ļ.:			Well: 2" OD PVC (SCH 40)	
	111		Well. 2 OD F VO (SOIT 40)	
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l.	111			
			Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement,	
		 	94 lbs/each	
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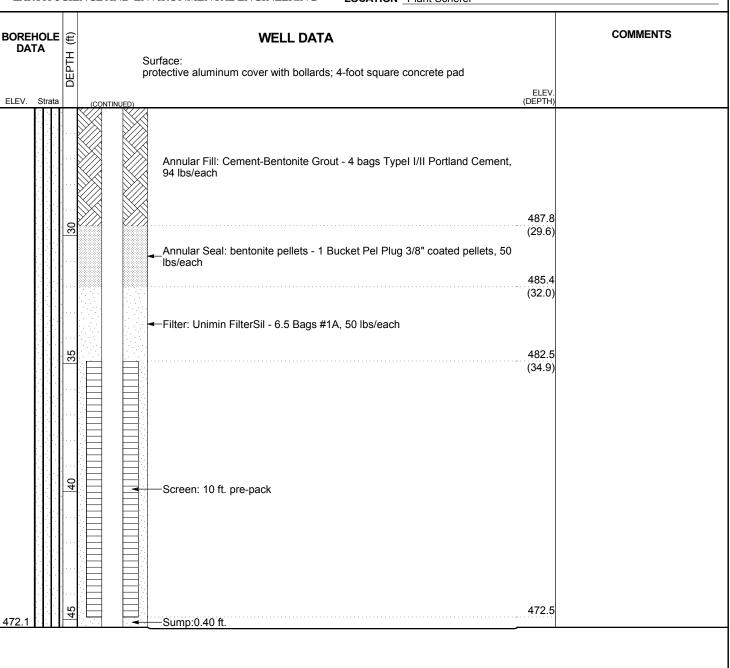
RECORD OF WELL CONSTRUCTION

WELL: PZ-13S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

LOG OF TEST BORING

BORING PZ-14S PAGE 1 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/25/2015 **COMPLETED** 3/26/2015 **SURF. ELEV.** 508.8 COORDINATES: N:33.083724 E:-83.813279 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 44.9 ft. GROUND WATER DEPTH: DURING 28.5 ft. COMP. 28.8 ft. DELAYED 18.8 ft. after 24 hrs. **NOTES** , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Joderate** Silt (ML) - Hand auger 5' for utilities clearance - mottled reddish yellow (5YR 6/8) and $\,$ yellow (10YR 7/6) saprolite moist, very stiff, trace weathered rock fragments SPT N=21bpf(@8.5ft.) 10 - mottled reddish yellow (5YR 7/8) and yellow (10YR 7/8) saprolite SPT N=8bpf(@13.5ft.) moist, medium stiff, slight pink hue, trace weathered rock fragments 15 SPT N=7bpf(@18.5ft.) - mottled reddish yellow (5YR 7/8) and yellow (10YR 7/8) saprolite moist, medium stiff, micaceous, trace biotite and residual quartz 20 Silty Sand (SM) - mottled pink / moderate orange pink (5YR 8/4) and brownish yellow / SPT N=7bpf(@23.5ft.) dark yellowish orange (10YR 6/6) saprolite moist, loose, very fine to fine grained, black and white streaking, micaceous



BORING PZ-14S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.
FARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS, GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Silty Sand (SM) (Con't) - mottled pink / moderate orange pink (5YR 8/4) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, medium dense, very fine SPT N=11bpf(@28.5ft.) to fined grained, black and white streaking, trace weathered rock fragments - mottled reddish yellow (5YR 6/8) and brownish yellow / dark yellowish SPT N=37bpf(@33.5ft.) orange (10YR 6/6) saprolite wet, dense, very fine to fine grained, trace angular weathered rock fragments 35 - mottled reddish yellow (5YR 6/8), brownish yellow / dark yellowish orange (10YR 6/6) and gray (10YR 5/1) saprolite wet, dense, very fine SPT N=38bpf(@38.5ft.) to fine grained, has yellow concretions at 40', trace weathered rock 40 fragments - mottled reddish yellow (5YR 6/8), brownish yellow / dark yellowish SPT N=33bpf(@43.5ft.) 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 Bottom of borehole at 44.9 feet. 50



WELL: PZ-14S PAGE 1 OF 2

SOUT	HERN COMP	RECORD OF WELL CONSTRUCTION	PAGE 1 OI ECS384
SOUTHE	RN COMP	PANY SERVICES, INC. PROJECT <u>Piezometer Installation</u>	
EARTH S	CIENCE A	AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
		5/2015	83724 E:-83.813279
		Field Services	DEADING
		n LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE oft. GROUND WATER DEPTH: DURING 28.5 ft. COMP. 28.8 ft. DELAYED 1	
		GROOND WATER DEFINE DORING 20.5 IL. COMP. 20.0 IL. DELATED 1	0.0 It. aiter 24 III3.
OREHOLE DATA		WELL DATA	COMMENTS
DAIA	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
ELEV. Strata	-	ELEV. (DEPTH)	
	.₽√.	· V ^ :	
	1.1	Surface Seal: concrete	
		506.8 (2.0)	
	2		
		Well: 2" OD PVC (SCH 40)	
	2 ₩	10 2 02 1 0 (00 10)	
		Annular Fill: Cement-Bentonite Grout - 5 bags Typel I/II Portland Cement,	
		94 lbs/each	
	5		
	S		
85.8			
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[[전]]	22		

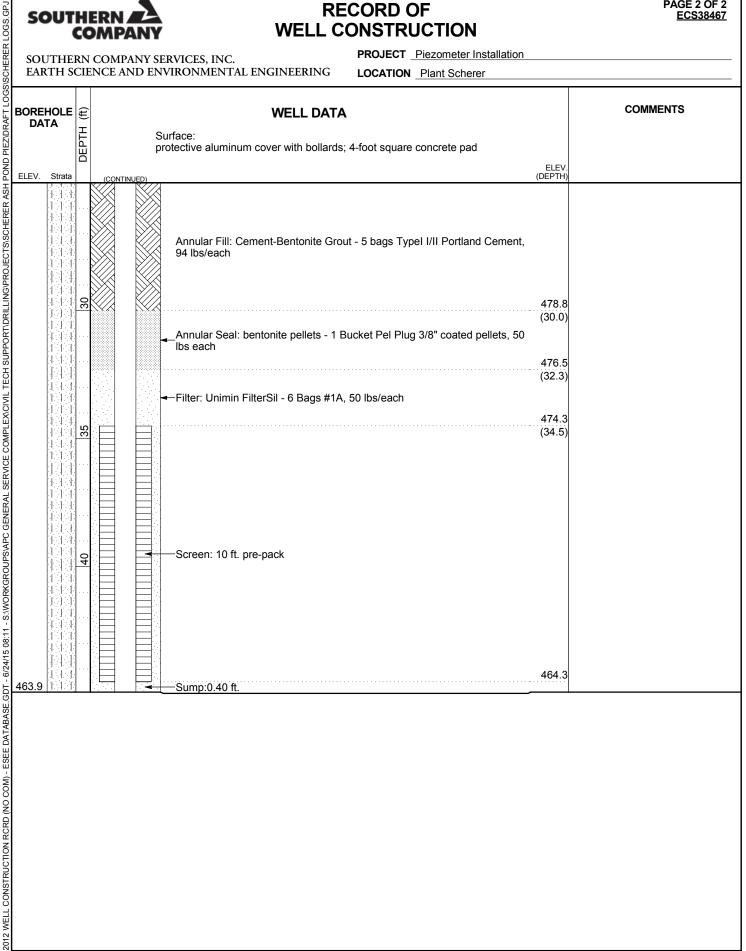


RECORD OF WELL CONSTRUCTION

WELL: PZ-14S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation





BORING PZ-15S PAGE 1 OF 2 FCS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ **DATE STARTED** 4/28/2015 **COMPLETED** 4/28/2015 **SURF. ELEV.** 496.1 COORDINATES: N:33.082710 E:-83.810871 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 40.1 ft. GROUND WATER DEPTH: DURING 23.5 ft. COMP. 19.6 ft. DELAYED 19.6 ft. after 24 hrs. , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS **Joderate** Sandy Silt (ML) - Hand auger 5' for utilities clearance SPT N=12bpf(@8.5ft.) - mottled red (10R 5/8) fill moist, stiff, trace clay 10 - mottled dark reddish gray (10R 4/1) saprolite moist, soft, trace SPT N=4bpf(@13.5ft.) weathered rock fragments, mica 15 - mottled reddish yellow (7.5YR 7/6) saprolite wet, medium stiff, trace SPT N=6bpf(@18.5ft.) **y** mica 20 - mottled reddish yellow (7.5YR 7/8) saprolite wet, medium stiff, trace SPT N=6bpf(@23.5ft.) mica



BORING PZ-15S PAGE 2 OF 2 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer SIMPLE GEOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS. GPJ HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Moderate Sandy Silt (ML) (Con't) SPT N=7bpf(@28.5ft.) - mottled reddish yellow (7.5YR 6/8) saprolite wet, medium stiff, micaceous, with black streaking 30 - mottled reddish yellow (7.5YR 6/8) saprolite wet, stiff, micaceous, with SPT N=10bpf(@33.5ft.) black streaking 35 SPT N=14bpf(@38.5ft.) - mottled gray (7.5YR 6/1) saprolite wet, stiff, trace mica 40 Bottom of borehole at 40.1 feet. 45 50



WELL: PZ-15S PAGE 1 OF 2

ATE STARTED ONTRACTOR RILLED BY T	4/28/2015 COMPLETED _ Civil Field Services Milam LOGGED BY _S	ENGINEERING LOCATION Plant Schere 4/28/2015 SURF. ELEV. 496.1 CO EQUIPMENT CME550 METHOD Hollow Baxter CHECKED BY L. Millet CR DEPTH: DURING 23.5 ft. COMP. 19.6 ft	ORDINATES: N:33.082710 Stem Auger ANGLE	E:-83.810871 BEARING
	□ Surface:	WELL DATA cover with bollards; 4-foot square concrete pad	ELEV. (DEPTH)	COMMENTS
20 15 10 5 5 5 5 5 5 5 5 5	Well: 2" OD PVC		(2.0)	

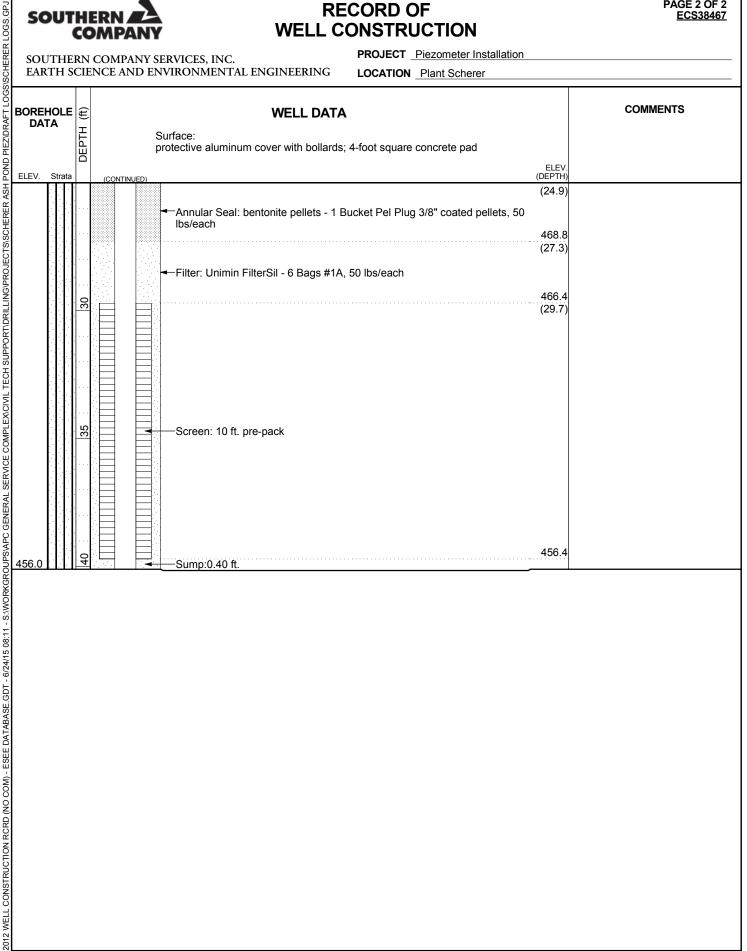


RECORD OF WELL CONSTRUCTION

WELL: PZ-15S PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation

LOCATION Plant Scherer





BORING PZ-17I PAGE 1 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING
LOCATION Plant Scherer

GRAPHIC LOG	MATERIAL DESCRIPTION Sandy Silt (ML) - mottled yellowish red (5YR 5/8) and yellow (10YR 7/8) residuum	ELEVATION Weak HCL	Strong REACTION	COMMENTS
5				
5	mottled vellowich red. (EVD E/0) and vellow (40VD 7/0) and vellow			
	- 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, mediun stiff, trace residual quartz	n	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.)
	$\frac{\sum}{}$ - mottled yellowish red (5YR 5/8) and red (10R 4/8) saprolite wet, s $_{\underline{\pmb{y}}}$ with black banding, trace residual quartz	oft,	SPT	「N=4bpf(@23.5ft.)



BORING PZ-17I PAGE 2 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

Sandy Sitt (ML) (Cont)	ביי	DEPTH (ft)	CRAPHIC	507	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak	Moderate REACTION	COMMENTS
- mottled strong brown (7.5YR 6/8) and promish yellow / dark yellowish orange (10YR 6/8) sparplite wet, medium stff, with black and white banding, trace residual quartz, muscovite, biotite Sitt (ML)					Sandy Silt (ML) (Con't)			
- mottled strong brown (7.5YR 6/8) and promish yellow / dark yellowish orange (10YR 6/8) sparplite wet, medium stff, with black and white banding, trace residual quartz, muscovite, biotite Sitt (ML)								
- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, with black spots, trace weathered rock fragments - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, feldspar, biotite. - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, feldspar, biotite. SPT N=84bpf(@63.5ft.)		35			 mottled strong brown (7.5YR 5/8) and brownish yellow / dark yellowish orange (10YR 6/6) saprolite wet, medium stiff, with black and white 			SPT N=5bpf(@33.5ft.)
- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, with black spots, trace weathered rock fragments - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, feldspar, biotite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biotite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biotite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biotite SPT N=84bpft@63.5ft.)								
wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite - 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		40			- mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite			SPT N=9bpf(@38.5ft.)
wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite - 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								
wet, stiff, trace weathered rock fragments, residual quartz, biotite, muscovite, amphibole - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite - 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	5							
wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biolite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biolite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biolite SPT N=20bpf(@53.5ft.) SPT N=27bpf(@58.5ft.)		45			wet, stiff, trace weathered rock fragments, residual quartz, biotite,			SPT N=12bpf(@43.5ft.)
wet, very stiff, trace weathered rock fragments, amphibole, residual quartz, muscovite - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/8) saprolite wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biolite, muscovite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biolite - mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biolite SPT N=20bpf(@53.5ft.) SPT N=27bpf(@58.5ft.)								
wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - 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=27bpf(@58.5ft.) SPT N=84bpf(@63.5ft.) Switched to casing, advancing into upper weathered		50			wet, very stiff, trace weathered rock fragments, amphibole, residual			SPT N=27bpf(@48.5ft.)
wet, very stiff, trace weathered rock fragments, residual quartz, muscovite, amphibole - mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - 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=27bpf(@58.5ft.) SPT N=84bpf(@63.5ft.) Switched to casing, advancing into upper weathered								
- mottled gray (10YR 6/1) and white (10YR 8/1) saprolite wet, very stiff, trace residual quartz, feldspar, biotite, muscovite - 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=27bpf(@58.5ft.) SPT N=84bpf(@63.5ft.) SPT N=84bpf(@63.5ft.) Switched to casing, advancing into upper weathered								SPT N=20bpf(@53.5ft.)
trace residual quartz, feldspar, biotite, muscovité - 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 weatheree	8	55			muscovite, amphibole			
trace residual quartz, feldspar, biotite, muscovité - 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 weatheree	100							
hard, trace weathered rock fragments, residual quartz, feldspar, biotite Switched to casing, advancing into upper weathere		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.)
hard, trace weathered rock fragments, residual quartz, feldspar, biotite Switched to casing, advancing into upper weathere	-00-							
rock (Biotite Gneiss/Amphibolite)		65			- mottled light gray (10YR 7/1) and white (10YR 8/1) saprolite wet, very hard, trace weathered rock fragments, residual quartz, feldspar, biotite			Switched to casing, advancing into upper weathered



BORING PZ-17I PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

LOCATION Plant Scherer

SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORT/DRILLING/PROJECTS/SCHERER ASH POND PIEX/DRAFT LOGS/SCHERER LOGS, GR HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION COMMENTS Silt (ML) (Con't) Silty Sand (SM) SPT N=63bpf(@68.5ft.) - mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole 70 SPT N=50bpf(@73.5ft.) - mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole Top of rock at 74.1 ft bgs, advanced casing to 81.1 ft 75 bgs and began coring. Partially Weathered Rock (PWR) - mottled dark greenish gray (10GY 4/1) saprolite wet, very hard, fine to coarse grained, with residual quartz, biotite, feldspar, amphibole 80 **AMPHIBOLITE** - dark gray (N3) fine to medium grain, soft, slightly to moderately weathered, 12 moderate-angle fractures (30 - 45d), becomes interbedded with Biotite Gneiss 85 **BIOTITE GNEISS** 90 - 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 schistocity (35 - 65d), 0.1 to 10 mm thick quartz/feldsparfilled 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

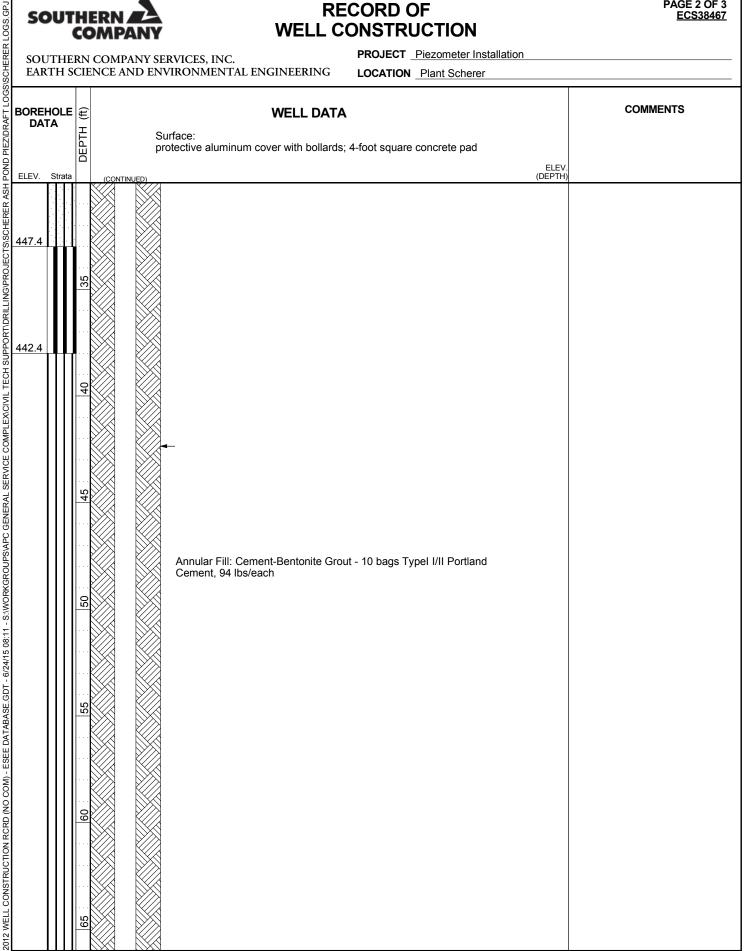
WELL: PZ-17I PAGE 1 OF 3

SOUT	HERN COMF	RECORD OF WELL CONSTRUCTION	PAGE 1 OF ECS3846
SOUTHE	RN COM	PANY SERVICES, INC. PROJECT Piezometer Installation	
EARTH S	CIENCE A	AND ENVIRONMENTAL ENGINEERING LOCATION Plant Scherer	
		6/2015 COMPLETED 2/27/2015 SURF. ELEV. 480.4 COORDINATES: N:33.0791 Field Services EQUIPMENT CME550 METHOD Hollow Stem Auger; HQ Rock Co	
		m LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE	
		3 ft. GROUND WATER DEPTH: DURING 23.5 ft. COMP. 28.51 ft. DELAYED 24.79	
			u
BOREHOLE DATA		WELL DATA	COMMENTS
271.71	DEPTH	Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
ELEV. Strata	0.000000	ELEV. (DEPTH)	
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ু ডু ু — Surface Seal: concrete	
	57//	478.4	
		(2.0)	
	2		
	12		
		Annular Fill: Cement-Bentonite Grout - 10 bags Typel I/II Portland	
		Cement, 94 lbs/each	
	2		
		Well: 2" OD PVC (SCH 40)	
	ŠŽŽŽŽ		
	8		



RECORD OF WELL CONSTRUCTION

WELL: PZ-17I PAGE 2 OF 3 ECS38467

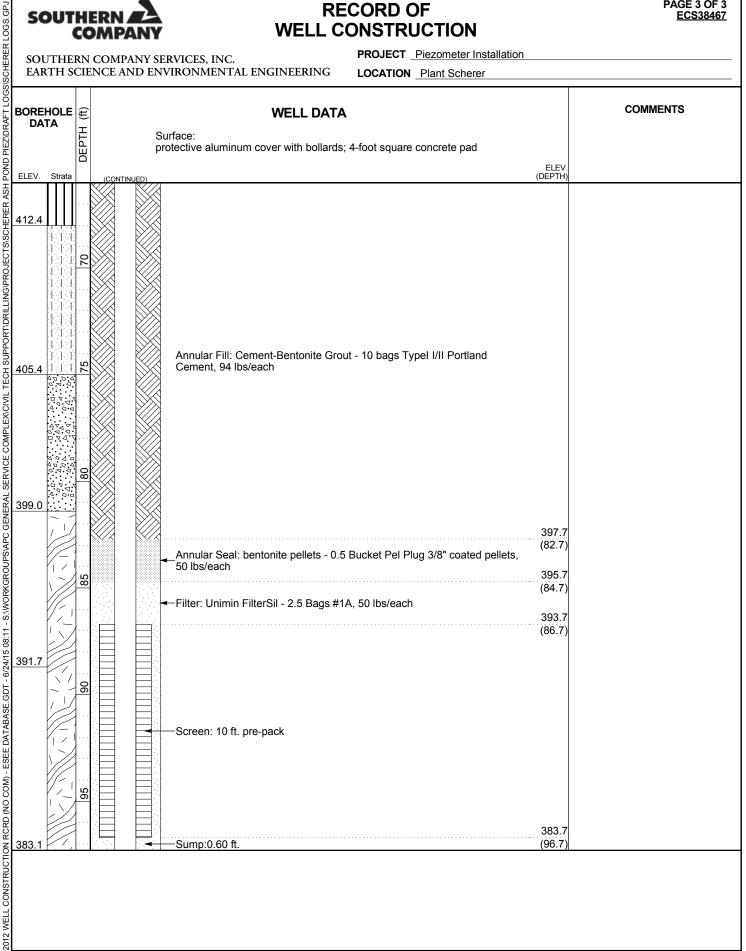




RECORD OF WELL CONSTRUCTION

WELL: PZ-17I PAGE 3 OF 3 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING PROJECT Piezometer Installation





BORING PZ-19I PAGE 1 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

	NG DE	Y _T. MilamLOGGED BY _S. Baxter CHECKED BY _L. M PTH _71.9 ft GROUND WATER DEPTH: DURING _1.5 ft COM		
DEPTH (#)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate Strong	COMMENTS
5		Lean Clay (CL) - Hand auger 5' for utilities clearance		
10		- 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		Silty Sand (SM) - 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 = 36.79 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, feldpar, biotite, oxides		SPT N=15bpf(@28.5ft.)



GRAPHIC LOG

DEPTH (ft)

35

40

45

50

60

70

biotite

staining

Partially Weathered Rock (PWR)

grained, weathered Amphibolite

feldspar, biotite, amphibole

- No recovery 60.9' - 71.9' bgs

Bottom of borehole at 71.9 feet.

BIOTITE GNEISS

SIMPLE GEOLOGY LOG - ESEE DATABASE, GDT - 6/24/15 07:58 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS/GP,

LOG OF TEST BORING

BORING PZ-19I PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

Silty Sand (SM) (Con't)

PROJECT Piezometer Installation **LOCATION** Plant Scherer HCL REACTION ELEVATION MATERIAL DESCRIPTION COMMENTS SPT N=59bpf(@33.5ft.) - 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=56bpf(@38.5ft.) - 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 - mottled dark gray (N3) saprolite wet, dense, very fine to fine grained, SPT N=40bpf(@43.5ft.) with white streaking, trace iron oxide staining, residual quartz, feldspar, SPT N=87bpf(@48.5ft.) - mottled dark gray (N3) saprolite wet, very dense, very fine to fine grained, with white speckling, trace biotite, residual quartz, iron oxide SPT N=50bpf(@53.5ft.) - mottled dark gray (N3) saprolite wet, very dense, very fine to coarse - mottled with dark gray (N3) medium to fine grain, soft to medium hard, slightly to moderately weathered, inclined, banded, 4 moderate-angle Lack of recovery likely due to weakness of fractures (30 - 45d), medium to thin foliation, slight to moderate formation. Coré water returns contain medium mechanical fracturing along schistocity (36 - 65d), oxidation, quartz, grained amphibolite and quartz which has been observed at other locations where Amphibolite - 10 moderate-angle fractures (30 - 45d), becomes thin to laminated Gneiss has been collected. banding, interbedded with dark gray to black Amphibolite Gneiss



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE GDT - 6/24/15 08:11 - S.:WORKGROUPSAPC GENERAL SERVICE COMPLEXICINI TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS, GPJ

RECORD OF

WELL: PZ-19I PAGE 1 OF 2 ECS38467

WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/3/2015 **COMPLETED** 3/4/2015 **SURF. ELEV.** 414.5 **COORDINATES:** N:33.074732 E:-83.805379 **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core CONTRACTOR Civil Field Services DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 71.9 ft. GROUND WATER DEPTH: DURING 1.5 ft. COMP. 0 ft. DELAYED 0.5 ft. after 24 hrs. **NOTES** BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 412.5 (2.0)401.5 Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 7.5 bags Typel I/II Portland Cement, 94 lbs/each

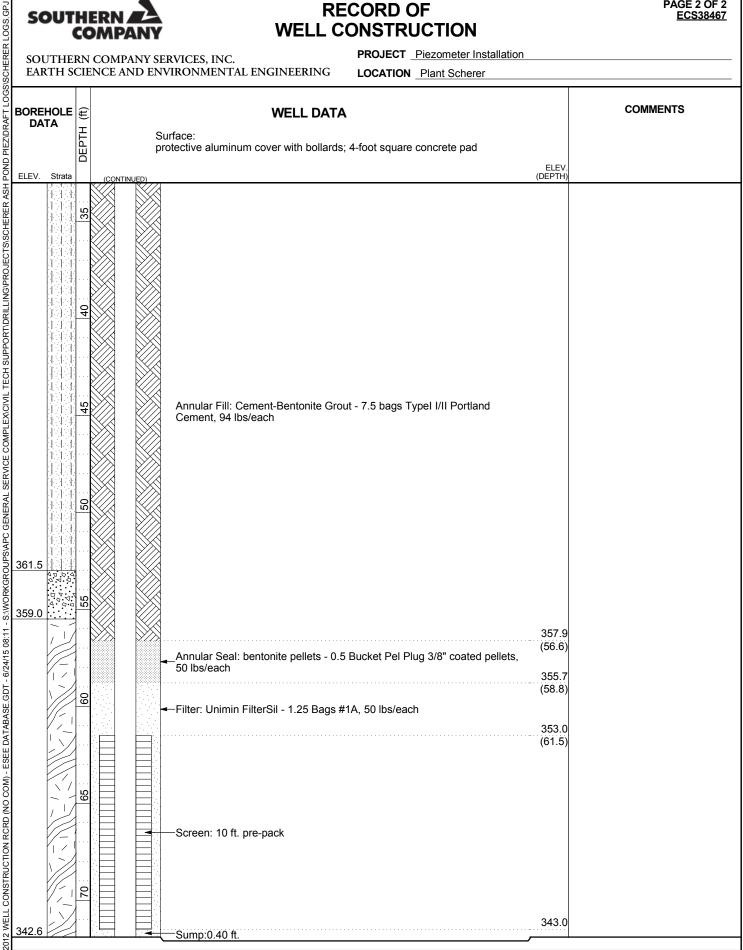


RECORD OF WELL CONSTRUCTION

WELL: PZ-19I PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation





BORING PZ-19S PAGE 1 OF 1 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING
LOCATION Plant Scherer

	G DE		GED BY S. Baxter CHECKED BY L. Millet ANGLE BEARING OUND WATER DEPTH: DURING 0.5 ft. COMP. 1.5 ft. DELAYED 0.5 ft. after 24 hrs.						
(#)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate Strong	COMMENTS					
5		▼ Silty Sand (ML) - Hand auger 5' for utilities clearance ▼							
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.)					
		- 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 Bottom of borehole at 25.0 feet.		SPT N=12bpf(@23.5ft.)					



RECORD OF

WELL: PZ-19S PAGE 1 OF 1

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.:WORKGROUPS!APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING!PROJECTSISCHERER ASH POND PIEZURAFT LOGSISCHERER LOGS.GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 3/4/2015 **COMPLETED** 3/4/2015 **SURF. ELEV.** 414.7 **COORDINATES:** N:33.074728 E:-83.805412 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 25 ft. GROUND WATER DEPTH: DURING 0.5 ft. COMP. 1.5 ft. DELAYED 0.5 ft. after 24 hrs. NOTES **BOREHOLE COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata · B ^ -Surface Seal: concrete 412.7 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 1.5 bags Typel I/II Portland Cement, 94 lbs/each 407.1 (7.6)9 Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each 401.9 (12.8)Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each 400.1 (14.6)-Screen: 10 ft. pre-pack 20 389.7 Sump:0.40 ft.



BORING PZ-20I PAGE 1 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Piezometer Installation

LOCATION Plant Scherer

DATE	STAR	TED <u>3/10/2015</u> COMPLETED <u>3/10/2015</u> SURF. ELEV. <u>414.1</u>		COORDINATES: N:33.073986 E:-83.805314
1		OR Civil Field Services EQUIPMENT CME550 METHOD		
1		T. Milam LOGGED BY S. Baxter CHECKED BY L. M		
BORI	NG DE	PTH 79.6 ft. GROUND WATER DEPTH: DURING 5 ft. COM	P. <u>3</u> .	2 ft. DELAYED 3.2 ft. after 24 hrs.
NOTE	:S			
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Weak Moderate REACTION	COMMENTS
		Sandy Fat Clay (CH)	> 2 (
5		- Hand auger 5' for utilities clearance - Hand auger 5' for utilities clearance - 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		Silty Sand (SM) - 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.)



SOUTHERN

TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZIDRAFT LOGS/SCHERER LOGS.GP.

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SIMPLE GEOLOGY LOG - ESEE DATABASE GDT - 6/24/15 07:59 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL

LOG OF TEST BORING

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS** Silty Sand (SM) (Con't) SPT N=52bpf(@38.5ft.) - 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=40bpf(@43.5ft.) - mottled gray (7.5YR 6/1) saprolite wet, dense, very fine to fine grained, with black and white banding, with trace mica, residual quartz, - mottled very dark gray (7.5YR 3/1) saprolite wet, very dense, very fine SPT N=50bpf(@48.5ft.) to fine grained, with white speckling, trace oxide staining, mica, residual quartz, amphibole - mottled very dark gray (7.5YR 3/1) saprolite wet, very dense, very fine SPT N=50bpf(@53.5ft.) to fine grained, with white banding, trace oxide staining, mica, residual quartz, amphibole SPT N=50bpf(@58.5ft.) - 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 Partially Weathered Rock (PWR) - very fine to medium grained, with white and black banding, trace oxide staining, mica, residual quartz, feldspar, amphibole **AMPHIBOLITE GNEISS** - 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 schistocity (30-50d) - 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 - 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

Bottom of borehole at 79.6 feet.



RECORD OF

WELL: PZ-20I PAGE 1 OF 2

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE GDT - 6/24/15 08:11 - S.:WORKGROUPSAPC GENERAL SERVICE COMPLEXICINI TECH SUPPORTIDRILLING/PROJECTS/SCHERER ASH POND PIEZURAFT LOGS/SCHERER LOGS, GPJ WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/10/2015 **COMPLETED** 3/10/2015 **SURF. ELEV.** 414.1 **COORDINATES:** N:33.073986 E:-83.805314 CONTRACTOR Civil Field Services **EQUIPMENT** CME550 METHOD Hollow Stem Auger; HQ Rock Core DRILLED BY T. Milam LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE **BEARING** BORING DEPTH 79.6 ft. GROUND WATER DEPTH: DURING 5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs. NOTES BOREHOLE E **COMMENTS WELL DATA DATA** DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad Strata -Surface Seal: concrete 412.1 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 9 bags Typel I/II Portland Cement, 94 lbs/each

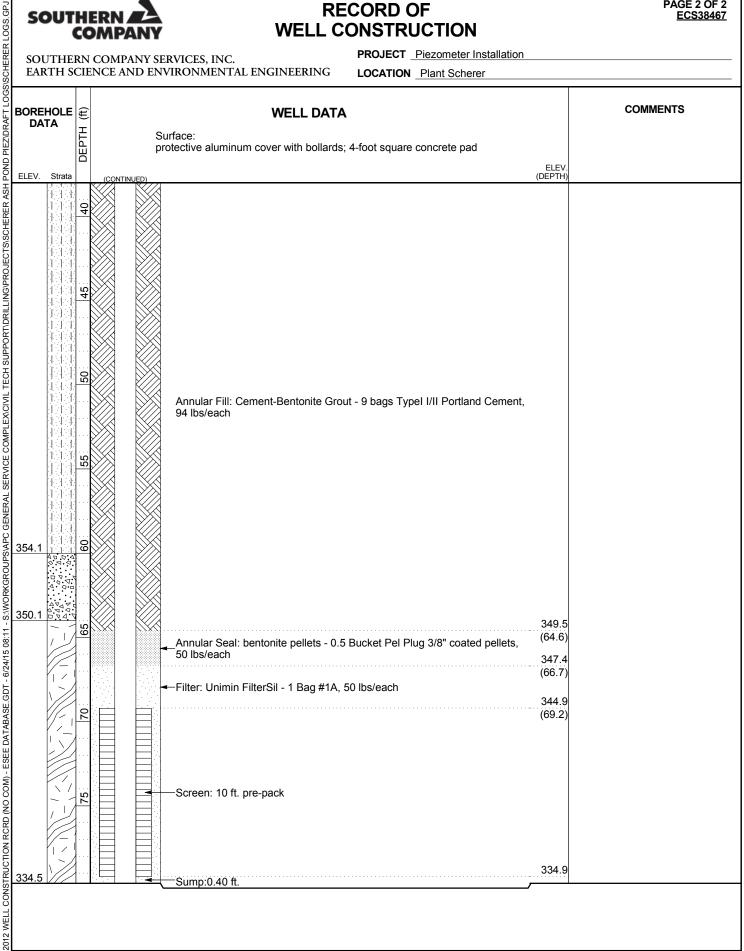


RECORD OF WELL CONSTRUCTION

WELL: PZ-201 PAGE 2 OF 2 ECS38467

SOUTHERN COMPANY SERVICES, INC.

PROJECT Piezometer Installation





SOLOGY LOG - ESEE DATABASE. GDT - 6/24/15 07:59 - S:WORKGROUPSAPC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTUBILLING/PROJECTS/SCHERER ASH POND PIEZ/DRAFT LOGS/SCHERER LOGS, GPJ

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LOG OF TEST BORING

BORING PZ-21S PAGE 1 OF 1 ECS38467

PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 3/11/2015 COMPLETED 3/12/2015 SURF. ELEV. 470.5 COORDINATES: N:33.072121 E:-83.806186 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 25 ft. GROUND WATER DEPTH: DURING 1.5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs. NOTES , HCL REACTION ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION **COMMENTS Joderate** Sandy Silt (ML) Hand auger 5' for utilities clearance 5 SPT N=4bpf(@8.5ft.) - mottled reddish yellow (7.5YR 6/8) and light red / moderate reddish orange (10R 6/6) residuum wet, soft, trace mica 10 - mottled reddish yellow (7.5YR 6/8) and yellow (10YR 7/6) saprolite SPT N=5bpf(@13.5ft.) wet, medium stiff, with black streaking 15 - mottled light gray (7.5YR 7/1) saprolite wet, very stiff, with white and SPT N=17bpf(@18.5ft.) black spots, trace residual quartz, feldspar, biotite, muscovite, 20 weathered rock fragments

SPT N=22bpf(@23.5ft.)

(10R 6/6) saprolite wet, very stiff, micaceous, with black banding, trace Bottom of borehole at 25.0 feet.

- mottled white (7.5YR 8/1) and light red / moderate reddish orange

weathered rock fragments



2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 6/24/15 08:11 - S.:WORKGROUPS!APC GENERAL SERVICE COMPLEXIONIL TECH SUPPORTIDRILLING!PROJECTSISCHERER ASH POND PIEZURAFT LOGSISCHERER LOGS.GPJ

RECORD OF

WELL: PZ-21S PAGE 1 OF 1

WELL CONSTRUCTION PROJECT Piezometer Installation SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 3/11/2015 **COMPLETED** 3/12/2015 **SURF. ELEV.** 470.5 **COORDINATES:** N:33.072121 E:-83.806186 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 25 ft. GROUND WATER DEPTH: DURING 1.5 ft. COMP. 3.2 ft. DELAYED 3.2 ft. after 24 hrs. NOTES BOREHOLE E **COMMENTS WELL DATA** DATA DEPTH Surface: protective aluminum cover with bollards; 4-foot square concrete pad ELEV. Strata -Surface Seal: concrete 468.5 (2.0)Well: 2" OD PVC (SCH 40) Annular Fill: Cement-Bentonite Grout - 4 bags Typel I/II Portland Cement, 94 lbs/each 461.5 (9.0)Annular Seal: bentonite pellets - 1 Bucket Pel Plug 3/8" coated pellets, 50 lbs/each 458.5 (12.0)Filter: Unimin FilterSil - 6 Bags #1A, 50 lbs/each 457.5 (13.0)-Screen: 10 ft. pre-pack 447.5 Sump:0.40 ft. (23.0)445.5



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34	JU		LOG OF TEST BO	KII	NG	•			<u> </u>
			in Company Services, Inc.				ogica	l Inve	estigation (2016)
EAI	RTH	SC	EIENCE AND ENVIRONMENTAL ENGINEERING LOCATION P	ant S	cher	er			
ATE	ST	ARI	TED 5/22/2016 COMPLETED 5/24/2016 SURF. ELEV. 525.7		C	OORDIN	IATE	S: N	1:33.083680 F:-83.814000
			DR_Cascade					<u> </u>	
RIL	LED	вү	M. Pope LOGGED BY W. Shaughnessy CHECKED BY E	3. Sm	else	r	_ AN	GLE	BEARING
			PTH 126 ft. GROUND WATER DEPTHDURING CO	MP.	32.5	5 ft.	_ DE	LAYE	ED 30.6 ft. after 24 hrs.
IOTE	ES _								
					N	α (n			WELL DATA
=	일	_	Z O	루	REACTION	GROUNDWATER OBSERVATIONS			WELL DATA
Œ E	GRAPHIC	3	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	-	REA	VDW VAT		omple	etion: ive aluminum cover with bolla
7	9			*	Moderate Strong	SER			square concrete pad
	:•:42		Well-graded Sand with Clay (SW-SC)	Me.	Str	G. O.		·5,	
			- mottled red (2.5YR 4/6) dry, fine to medium-grained, with magnetite and illmenite						Surface Seal: concrete
			and millionic						
5									
			- yellowish red (5YR 4/6) dry, with silt						
0									
			- reddish yellow (7.5YR 6/8) with black and white mottling, weathered						
5			feldspar						
			- 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						
20									
			- strong brown (7.5YR 5/8), black (7.5YR 2.5/1) and very pale brown /						
25			grayish orange (10YR 7/4) with mica						Annular Fill:
			Sandy Silt (ML) - mottled dark reddish brown (2.5YR 3/4) and dark reddish gray (2.5Y	R					Cement-Bentonite Grout (bags PC, 1 - 55# bag gel,
			3/1) moist, with sandy clay (CL) bedding						gal. water)
30		Z	<u>¥</u>						
		1	- mottled strong brown (7.5YR 5/8) and black (7.5YR 2.5/1)						
35			- dark red (2.5YR 3/6), red (2.5YR 4/6) and reddish gray (2.5YR 5/1)						
,,,	Ш	\bot	wet, flow-banded fabric						
			Elastic Silt (MH) - mottled weak red (10R 5/3) and reddish black (10R 2.5/1) wet,						
0			medium, with sandy clay (CH) bedding						
			- mottled strong brown (7.5YR 5/8), light brownish gray (2.5Y 6/2) and						
			black (2.5Y 2.5/1)						
15									
_T J									
			- 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						
			, , , , ,	1 .	- 1		K//	K//	



BORING PZ-25 I PAGE 2 OF 3 ECS38467 Il Investigation (2016) WELL DATA Completion: Otective aluminum cover with bollards; foot square concrete pad
WELL DATA Ompletion: otective aluminum cover with bollards; foot square concrete pad
WELL DATA completion: otective aluminum cover with bollards; foot square concrete pad
ompletion: otective aluminum cover with bollards; foot square concrete pad
-
1 \ \ \ \ 1
Annular Fill: Cement-Bentonite Grout (8 - 94# bags PC, 1 - 55# bag gel, 210 gal. water)
Annular Seal:



S	DUTI	HERN LOG O	F TEST BO	RINC	3	BORING PZ-25 PAGE 3 OF ECS3846
		RN COMPANY SERVICES, INC.	PROJECT Addi	tional H	ydrogeol	ogical Investigation (2016)
EAI	RTH SC	CIENCE AND ENVIRONMENTAL ENGINEERING	LOCATION Plan		rer	
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate REACTION Strong	GROUNDWATER OBSERVATIONS	WELL DATA Completion: protective aluminum cover with bollards; 4-foot square concrete pad
115		Well-graded Sand with Clay (SW-SC)(Con't) - grayish brown (2.5Y 5/2) - dark yellowish brown (10YR 3/6)		W M	<u> </u>	Filter: -20/40 silica filter sand (6 - 0.5 cubic ft. bags) Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack
125		- very dark gray (2.5Y 3/1) Bottom of borehole at 126.0 fee	st.			Sump:0.2000000000000000 ft.
		2010111 01 201011010 01 12010 100	···			
130						
135						
140						
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155						
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170						



64			HEDN A	-	_			BORING PZ-25 PAGE 1 OF ECS3840
50	JU		HERN ZA LOG OF TEST BOI	RING	Ė			<u>EC5384(</u>
sou	UTI	ΗEI	RN COMPANY SERVICES, INC. PROJECT Addi	tional F	lydrogeol	ogical I	nvestiga	ation (2016)
EAF	RTF	I SO	CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plan	nt Sche	rer			
	- ст		TED SIGNIONS CONDUCTED SIGNIONS CURE FLEV SOLE	,	200001	IATEC:	N.OO	000740 F. 00 044400
			TED _5/24/2016 COMPLETED _5/25/2016 SURF. ELEV525.5 OR _Cascade EQUIPMENT _Tracked _ METHOL				N:33.0	083710 E:-83.814100
			Y M. Pope LOGGED BY W. Shaughnessy CHECKED BY B.				LE	BEARING
ORI	NG	DE	PTH 56 ft. GROUND WATER DEPTHDURING CON	IP		DEL	AYED_	32.6 ft. after 48 hrs.
IOTE	S_							
				Z	~ ~			WELL BATA
г	೨		<u>N</u>	HCL REACTION	GROUNDWATER OBSERVATIONS		W	VELL DATA
(#) E (#)	GRAPHIC	9	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	REA	IDW, VAT		npletion	
ב	GR.		LE E	Weak Moderate Strong	OUN			aluminum cover with bollards ire concrete pad
	*.*4	/°/	Well-graded Sand with Clay (SW-SC)	Wea	GR OB	-		
			- mottled red (2.5YR 4/6) dry, fine to medium-grained, with magnetite			4	4 · H	Surface Seal: concrete
			and illmenite					
5								
			- yellowish red (5YR 4/6) dry, with silt					
0								
			- reddish yellow (7.5YR 6/8) with black and white mottling, weathered					
5	 		feldspar					
			- 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					
0								Namedan Fills
							 c	Annular Fill: Cement-Bentonite Grout (2 - :
			- strong brown (7.5YR 5/8), black (7.5YR 2.5/1) and very pale brown /					pags PC, 1/4 - 55# bag gel, 5 gal. water)
25			grayish orange (10YR 7/4) with mica					
	ΪÌ		Sandy Silt (ML)	1				
			 mottled dark reddish brown (2.5YR 3/4) and dark reddish gray (2.5YR 3/1) moist, with sandy clay (CL) bedding 					
0								
			▼ - mottled strong brown (7.5YR 5/8) and black (7.5YR 2.5/1)					
5			 - dark red (2.5YR 3/6), red (2.5YR 4/6) and reddish gray (2.5YR 5/1) wet, flow-banded fabric 					
		П	Elastic Silt (MH) mottled week red. (10P 5/3) and reddich black (10P 3 5/1) wet					
			 mottled weak red (10R 5/3) and reddish black (10R 2.5/1) wet, medium, with sandy clay (CH) bedding 					
)			- mottled strong brown (7.5YR 5/8), light brownish gray (2.5Y 6/2) and					
			black (2.5Y 2.5/1)					Annular Seal: pentonite pellets (1/2 - 5 gal.
							b	puckect 3/8" pellets) Filter:
15							□ 2	20/40 silica filter sand (5 - 0.5 cubic ft. bags)
		ı	and dish brown (2.5VD 4/4), and dish unlique (7.5VD 6/6) and block			1H		
			- 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					Standpipe: 2" OD PVC (SCH 40)



BORING PZ-25 S PAGE 2 OF 2

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC SOUTHERN ZZ COMPANY **LOG OF TEST BORING** ECS38467 PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer weak Moderate Strong 3ROUNDWATER 3BSERVATIONS WELL DATA **ELEVATION** GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; 4-foot square concrete pad Elastic Silt (MH)(Con't) Standpipe: 2" OD PVC (SCH 40) Screen: 55 - yellowish red / light brown (5YR 5/6) 10 ft; 0.010" Slot Prepack Sump:0.2000000000000003 ft. Bottom of borehole at 56.0 feet. cave-in to 56 ft. 60 65 70 75 80 85 90 95 100 105



-250	<u> </u>					BORING PZ-26 PAGE 1 OF
SC		HERN ZA LOG OF TEST I	30F	RING	j	ECS3840
SOI			Addit	tional Hy	/drogeol	ological Investigation (2016)
EAR	TH SO	CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION	l_Plar	nt Scher	er	
		TED 6/1/2016 COMPLETED 6/1/2016 SURF. ELEV. 48				
		OR _ Cascade EQUIPMENT _ Tracked _ ME Y J. Asua _ LOGGED BY _ W. Shaughnessy _ CHECKED B				
		PTH 46 ft. GROUND WATER DEPTHDURING				
				Z	<u>د</u> س	WELL DATA
I	9,,		ELEVATION	HCL	ATE TON	WEEL BATTA
DEPIH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	EVA]	RE/	Y A A	Completion: protective aluminum cover with bollards
_	Ö		ELE	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	4-foot square concrete pad
	///	Lean Clay (CL)		We Str	GF	・ひ)・ひ) Surface Seal:
		- dark red (2.5YR 3/6) dry, with silt				concrete
_						
5		- red (2.5YR 4/6)				
		- red (2.5YR 4/8)				
		164 (2.611 1/6)				
10		Sandy Silt (ML)				
		▼ - red (2.5YR 4/6) and reddish black (2.5YR 2.5/1) dry, with mica				
15		- yellowish red (5YR 4/6) damp, with mica				Annular Fill: Cement-Bentonite Grout (3 -
		- red (2.5YR 4/6) wet				bags PC, 1/4 - 55# bag gel, 5 gal. water)
		Poorly-graded Sand with Silt (SP-SM)				
20		 mottled yellowish red (5YR 5/8) and black (5YR 2.5/1) fine-grain with mica 	ea,			
		- mottled strong brown (7.5YR 4/6) and black (7.5YR 2.5/1)				
25						
30						Annular Seal:
						bentonite pellets (1 - 5 gal. buckect 3/8" pellets)
		Elastic Silt (MH)				Filter: 20/40 silica filter sand (5 - 0.5
35		- olive brown (2.5Y 4/4) wet, with fine sand, micaceous Silty Sand (SM)		-		cubic ft. bags)
	$\begin{array}{ccc} 1 & 1 & 1 \\ 1 & 1 & 1 \end{array}$	- light olive brown (2.5Y 5/6) fine-grained, micaceous				
						Standpipe:
40						2" OD PVC (SCH 40) Screen:
						10 ft; 0.010" Slot Prepack
	111	Poorly-graded Sand (SP)		-		
45	111	- gray / light olive gray (5Y 6/1) and white / yellowish gray (5Y 8/1) to coarse-grained	fine _			Sump:0.200000000000000 ft
		1 to obdito graniou	/	1 1 1		Cave-in to 46 ft.



SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/7/16 11:23 - S:WORKGROUPS/APC GENERAL

LOG OF TEST BORING

BORING PZ-27 D PAGE 1 OF 3 ECS38467

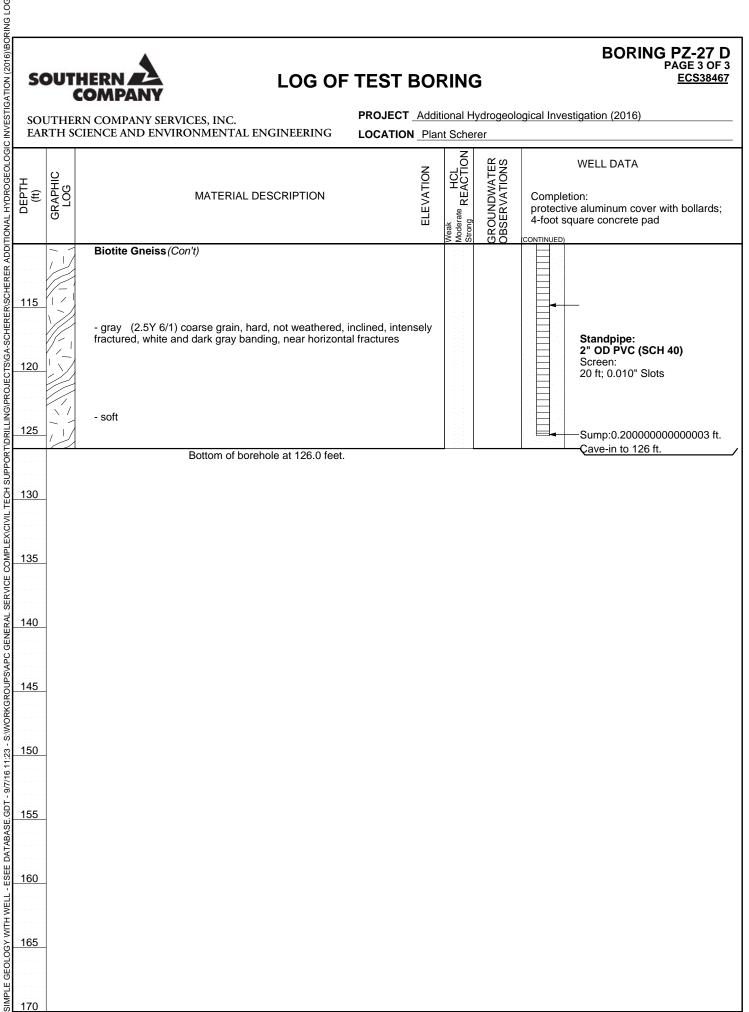
HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 6/14/2016 COMPLETED 6/17/2016 SURF. ELEV. 472.4 COORDINATES: N:33.082900 E:-83.809300 EQUIPMENT Tracked METHOD Rotosonic CONTRACTOR Cascade DRILLED BY M. Pope LOGGED BY W. Shaughnessy CHECKED BY B. Smelser ANGLE **BEARING** BORING DEPTH 126 ft. GROUND WATER DEPTHDURING _____ COMP. ____ DELAYED _10 ft. after 24 hrs. NOTES , HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Clayey Sand (SC) - dark brown (7.5YR 3/3) damp, fine to medium-grained Surface Seal: Lean Clay (CL) concrete B - mottled yellowish red (5YR 4/6) and yellowish brown (10YR 5/6) damp, medium, with mica - dark brown (10YR 3/3) with fine quartz gravel **▼** Well-graded Sand with Silt (SW-SM) - yellowish red / light brown (5YR 5/6) and yellowish brown (10YR 5/6) moist, fine to coarse-grained, with mica - very dark gray (10YR 3/1) black (10YR 3/1) oxidation mottling - dark brown (7.5YR 3/4) wet - brown (7.5YR 4/3) and strong brown (7.5YR 4/6) fine to coarsegrained Annular Fill: - dark yellowish brown (10YR 4/4) wet Cement-Bentonite Grout (4 - 94# Clayey Sand (SC) bags PC, 1/2 - 55# bag gel, 75 - grayish brown (2.5Y 5/2) wet, with mica gal. water) 30 Well-graded Sand with Silt (SW-SM) - grayish brown (2.5Y 5/2) and white / yellowish gray (5Y 8/1) partially weathered rock biotite gneiss, fine to coarse-grained, 35 - olive gray (5Y 4/2) wet, fine to coarse-grained 40 - 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 Well-graded Sand (SW)



SC	UTHER	HERN 🔼 LOG OF TEST BOF					PAGE 2 OF 3
EA		COMPANY	RING	j			ECS38467
		RN COMPANY SERVICES, INC. CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION Plan			ogica	l Inve	estigation (2016)
FTH (£)		ALICELINE ENVIRONMENTAL ENVIRO					WELLBATA
DE DE	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	pro		WELL DATA etion: ve aluminum cover with bollards; equare concrete pad
		Well-graded Sand (SW)(Con't)	Str. We	<u> </u>	CONT	INUED)	Annular Fill:
55		 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 					Cement-Bentonite Grout (4 - 94 bags PC, 1/2 - 55# bag gel, 75 gal. water)
60		Biotite Gneiss - 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					
65		 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 					
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 					
70		- increased granitic composition 71 to 73 ft., light gray with black banding					
75		- gray (2.5Y 5/1) coarse grain, medium hard to very hard, folded, moderately fractured, black and white banding					Annular Seal: bentonite pellets (1 - 5 gal. buckect 3/8" pellets (98-102.5 ft.), 6 - 50# bags 3/8" chips
80							(54-98 ft.)
85		- gray (2.5Y 5/1) coarse grain, soft to hard, not weathered, moderately fractured, black and white banding, thin to medium bedded					
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 					
105		- intensely fractured, 100 to 101 ft.					Filter: -20/40 silica filter sand (10 - 0.5 cubic ft. bags)
100		- 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					Standpipe: 2" OD PVC (SCH 40)



BORING PZ-27 D PAGE 3 OF 3 ECS38467





SIMPLE GEOLOGY WITH WELL - ESEE DATABASE. GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC

LOG OF TEST BORING

BORING 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	STAF	RTED 5/25/2016 CC	MPLETED <u>5/26/2016</u> SU	IRF. ELEV. 473.0	C	OORDIN	IATES	6: N:3	33 082910 F:-83 809300
		OR Cascade		Tracked METHO				1 _11.0	00.002010 2. 00.000000
								SLE	BEARING_
			OUND WATER DEPTHDURIN						
DEPTH (ft)	GRAPHIC LOG		MATERIAL DESCRIPTION	ELEVATION	HCL HCL	GROUNDWATER OBSERVATIONS	pro		WELL DATA ion: e aluminum cover with bollards; uare concrete pad
	/				Weak Moderate Strong	GRO OBS	4-10	701 SQ	uare concrete pau
			3/3) damp, fine to medium-gra	ained			₹ .	.₽,	_Surface Seal: concrete
5		 Lean Clay (CL) mottled yellowish redamp, medium, with 	d (5YR 4/6) and yellowish bromica	own (10YR 5/6)					
			3/3) with fine quartz gravel						
10		Well-graded Sand w			4				
			brown (5YR 5/6) and yellowis	h brown (10YR 5/6)					
15		- very dark gray(10 ^v	'R 3/1) black (10YR 3/1) oxida	tion mottling					Annular Fill: Cement-Bentonite Grout (2 - 94# bags PC, 1/4 - 55# bag gel, 55 gal. water)
20		- dark brown (7.5YR	3/4) wet						
25		- brown (7.5YR 4/3) grained	and strong brown (7.5YR 4/6)	fine to coarse-					
		- dark yellowish brow	n (10YR 4/4) wet		-				
30		Clayey Sand (SC) - grayish brown (2.5)	7 5/2) wet, with mica						Annular Seal:
								-	-bentonite pellets (1 - 5 gal. buckect 3/8" pellets)
35			rith Silt (SW-SM) 7 5/2) and white / yellowish gregoeiss, fine to coarse-graine					-	Filter: -20/40 silica filter sand (4 1/2 - 0.5 cubic ft. bags)
		- olive gray (5Y 4/2)	wet, fine to coarse-grained						ott ottate in objet,
40									Standpipe: _2" OD PVC (SCH 40) Screen:
		- mottled olive gray (5Y 4/2) and white / yellowish	gray (5Y 8/1)					10 ft; 0.010" Slot Prepack
45									-Sump:0.20000000000000003 ft.
			Bottom of borehole at 46.0 feet	i.					Cave-in to 46 ft.



HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/1/16 11:23 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

LOG OF TEST BORING

BORING PZ-28 I PAGE 1 OF 2 ECS38467

PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 6/3/2016 COMPLETED 6/3/2016 SURF. ELEV. 481.3 COORDINATES: N:33.082440 E:-83.808200 EQUIPMENT Tracked METHOD Rotosonic CONTRACTOR Cascade DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser ANGLE BEARING BORING DEPTH 70 ft. GROUND WATER DEPTHDURING COMP. DELAYED 15.5 ft. after 24 hrs. NOTES HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Silt (ML) Surface Seal: - red (2.5YR 5/8) residuum dry, medium stiff, no, micaceous concrete 5 10 Poorly-graded Sand with Silt (SP-SM) - yellowish red (5YR 5/8) saprolite moist, loose, fine-grained, with mica, oxidation 15 V 20 Silt (ML) - 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, 25 Annular Fill: oxidation Cement-Bentonite Grout (5 - 94# bags PC, 1/4 - 55# bag gel, 55 gal. water) Poorly-graded Sand with Silt (SP-SM) - mottled light gray (2.5Y 7/2), olive brown (2.5Y 4/3) and dusky yellow green (5GY 5/2) saprolite moist, loose 30 35 40 - greenish gray (10Y 5/1) moist 45 Well-graded Sand (SW) - greenish gray (10Y 5/1), black (N1) and white (N9) moist, loose, biotite and feldspar, some mica



SOUTHERN COMPANY SERVICES INC BORING PZ-28 PAGE 2 OF 2 ECS38467 PROJECT Additional Hydrogeological Investigation (2016)									
		di Comi Airi Services, inc.	PROJECT <u>Addit</u> -OCATION <u>Plan</u>		_	ogica	l Investig	ation (2016)	
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	pro 4-f	ompletion otective a foot squa	VELL DATA n: aluminum cover with bollards are concrete pad	
55		- yellowish brown / moderate yellowish brown (10YR 5/4 (2.5Y 8/1) very soft, highly weathered, banded Biotite Gneiss (<i>Con't</i>) - yellowish brown / moderate yellowish brown (10YR 5/4 8/1) and dark greenish gray (10Y 4/1) very soft to soft, be horizontal to sub-vertical fractures	1), white (2.5Y anded,		<u> </u>	CONT	b b	Annular Seal: pentonite pellets (3/4 - 5 gal. puckect 3/8" pellets) Filter: 20/40 silica filter sand (4 1/2 -	
60		 dark bluish gray (5PB 4/1) and very light gray (N8) ha slightly weathered, banded, horizontal to sub-vertical frac fractured 	rd to very hard, ctures, intensely				\$ 22 \$ 22	0.5 cubic ft. bags) Standpipe: 2" OD PVC (SCH 40) Screen:	
70		- greenish black (5GY 2.5/1) and medium light gray (No moderately weathered, banded, horizontal to sub-vertical intensely fractured Bottom of borehole at 70.0 feet.	s) slightly to I fractures,				\$	0.999999999999999999999999999999999999	
75									
80	_								
85	_								
90									
95									
100									
105									
110									



SIMPLE GEOLOGY WITH WELL - ESEE DATABASE. GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC

LOG OF TEST BORING

BORING PZ-29 S PAGE 1 OF 1 ECS38467

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING
LOCATION Plant Scherer

DATE	STAE	PTED 5/26/2016	COMPLETED 5/26/2016 SU	DE ELEV 499.4		COOPDIA	IATE	2. Ni-	22 082000 E+ 82 807400	1		
				Tracked METH			VAIL). <u>IV.</u>	55.062090 L65.607400)		
							ANG	31 F	BEARING			
			ft. GROUND WATER DEPTHDURING					ANGLE BEARING BEARING				
			_ GROOND WATER DEI TIDORIN		, <u></u>	<u> </u>			<u> </u>			
11012												
DEPTH (ft)	GRAPHIC LOG		MATERIAL DESCRIPTION	EL EVATION	Weak Moderate REACTION	GROUNDWATER OBSERVATIONS	pro	oot so	WELL DATA ion: e aluminum cover with but the concrete pad	oollards;		
		Sandy Lean C	lay (CL) /8) dry, with mica				.₽.	.₽.	_Surface Seal:			
10 15 20	5	Sandy Silt (MI - red (2.5YR 4		/R 2.5/1) dry					Annular Fill: Cement-Bentonite Grobags PC, 1/4 - 55# bagal. water)	out (2 - 94# g gel, 55		
30		- dark yellowish ▼ - olive brown (- light olive bro	,	edium-grained					Annular Seal: —bentonite pellets (1 - 5 buckect 3/8" pellets) Filter:	i gal.		
35		- olive brown(2.5Y 4/3)						20/40 silica filter sand cubic ft. bags)	(5 - 0.5		
40		- mottled clive	gray / light plive gray (EV E/2) and d	ark groonish arov					Standpipe: _2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prep			
45		(10Y 4/1) weat	gray / light olive gray (5Y 5/2) and da hered biotite gneiss						—Sump:0.20000000000 —Çave-in to 46 ft.	00003 ft.		
			Bottom of borehole at 46.0 feet						Vave-III 10 40 II.	/		



S	JUT	HERN LOG OF TEST B	ΛP	INIC	<u> </u>			BORING PZ-30 PAGE 1 OF ECS3846
		COMPANY				logiog	مريوا ا	
SOI EAI	JTHE RTH S	RN COMPANY SERVICES, INC. CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION				iogica	ii iiive	estigation (2016)
		RTED 6/2/2016 COMPLETED 6/2/2016 SURF. ELEV. 475.4 FOR Cascade EQUIPMENT Tracked METI						
		Y T. Ardito LOGGED BY P. Alexander CHECKED BY						
		EPTH 87 ft. GROUND WATER DEPTHDURING C	OMF	·		_ DE	LAYE	ED _18.9 ft. after 24 hrs.
NOTE	:S							
			7	NO	E S			WELL DATA
# # # #	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION	GROUNDWATER OBSERVATIONS		omple	otion:
7	GRA	WATERIAL DESCRIPTION	LEV	ate RI	UND ERV	pr	otecti	ive aluminum cover with bollards. square concrete pad
			Ш	Weak Moderate Strong	GRO OBSI	4-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	oquale collolete pau
		Sandy Silt (ML) - red (2.5YR 5/6) residuum dry, stiff, no, fine-grained, trace mica				4.	₽,	Surface Seal:
						$\langle \cdot \rangle$		
5								
10		- damp						
15		Silt (ML) - mottled yellowish red / light brown (5YR 5/6) and strong brown (7.5	VD					
		5/6) residuum dry, soft, low, fine-grained, trace mica, oxidation	IK					
		▼ Poorly-graded Sand with Silt (SP-SM)						
20		- brown (7.5YR 5/4) residuum moist, loose, fine-grained, with mica						
	Ì							
25	i							Annular Fill:
	1							Cement-Bentonite Grout (6 - 9 bags PC, 1/2 - 55# bag gel, 7
	1							gal. water)
30								
		Sandy Silt (ML) - mottled brown (7.5YR 5/4) and reddish yellow (7.5YR 8/6) saprolite	е					
35		moist, no, with mica, oxidation						-
55								
		Poorly-graded Sand with Silt (SP-SM)						
40		- 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								
		- 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				\mathbb{M}	\mathbb{N}	1



so		LOG OF	TEST BOR	RING	;			BORING PZ-30 I PAGE 2 OF 2 ECS38467
	THER	N COMPANY SERVICES, INC. IENCE AND ENVIRONMENTAL ENGINEERING	PROJECT Additi			ogical	I Inve	stigation (2016)
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	pro 4-f	omple otectivitoot s	WELL DATA tion: we aluminum cover with bollards; quare concrete pad
55 60 65 70 75		Biotite Gneiss - olive gray / light olive gray (5Y 5/2) and pale yellow soft, highly weathered, banded - dark gray (N3) and very light gray (N8) soft, highly weathered - black (5Y 2.5/1) and light olive brown (2.5Y 5/4) moves weathered - very dark greenish gray (10Y 3/1) and very light gray moderately weathered, foliated	veathered, banded oderately to highly					Annular Fill: Cement-Bentonite Grout (6 - 94 bags PC, 1/2 - 55# bag gel, 70 gal. water) Annular Seal: bentonite pellets (1 - 5 gal. buckect 3/8" pellets) Filter: 20/40 silica filter sand (6 - 0.5 cubic ft. bags) Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack
		Bottom of borehole at 87.0 feet.						—Sump:0.2000000000000003 ft. —Çave-in to 87 ft.
95								



HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTIDRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

BORING PZ-31 I PAGE 1 OF 2

LOG OF TEST BORING ECS38467 PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer **DATE STARTED** 6/1/2016 **COMPLETED** 6/2/2016 **SURF. ELEV.** 463.8 **COORDINATES:** N:33.081910 E:-83.804700 EQUIPMENT Tracked METHOD Rotosonic CONTRACTOR Cascade **DRILLED BY** T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser ANGLE **BEARING** BORING DEPTH 77 ft. GROUND WATER DEPTHDURING COMP. 24 ft. DELAYED 28.1 ft. after 200 hrs. **NOTES** HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Silt (ML) Surface Seal: - red (10R 5/6) residuum dry, stiff, no, trace mica concrete 5 10 - red (2.5YR 5/8) residuum dry, some mica 15 - oxidation Poorly-graded Sand with Silt (SP-SM) - mottled reddish yellow (7.5YR 6/6) and pink / moderate orange pink (5YR 8/4) residuum damp, loose, fine-grained 20 - strong brown (7.5YR 4/6) and white (N9) residuum moist, soft, finegrained, feldspar and biotite 25 Annular Fill: Cement-Bentonite Grout (6 - 94# bags PC, 1/2 - 55# bag gel, 70 gal. water) Poorly-graded Sand with Silt (SP-SM) - greenish gray (5G 5/1) and very light gray (N8) saprolite moist, fine-30 grained, some mica 35 40 **Biotite Gneiss** - yellowish brown / moderate yellowish brown (10YR 5/4), light greenish gray (10Y 7/1) and white (N9) highly weathered, felspar banding - greenish gray (5GY 5/1) and greenish black (5GY 2.5/1) soft, highly weathered, felspar banding



BORING PZ-31 I PAGE 2 OF 2 ECS38467

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; Moderate 4-foot square concrete pad Biotite Gneiss (Con't) Annular Fill: Cement-Bentonite Grout (6 - 94# bags PC, 1/2 - 55# bag gel, 70 55 gal. water) - dark gray (N3) and very light gray (N8) soft to medium hard, Annular Seal: -bentonite pellets (3/4 - 5 gal. buckect 3/8" pellets) moderately weathered, felspar banding Filter: 20/40 silica filter sand (7 1/2 -0.5 cubic ft. bags) 65 - bluish black (10B 2.5/1) and white (N9) very hard, slightly weathered, horizontal and sub-vertical fractures, felspar banding Standpipe: 2" OD PVC (SCH 40) 70 Screen: 10 ft; 0.010" Slot Prepack Sump:0.199999999999989 ft. Cave-in to 77 ft. Bottom of borehole at 77.0 feet. 80 85 90 95 100 105



SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/7/16 11:23 - S:WORKGROUPS/APC GENERAL

LOG OF TEST BORING

BORING PZ-32 D PAGE 1 OF 3 ECS38467

HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 5/31/2016 COMPLETED 6/1/2016 SURF. ELEV. 462.3 COORDINATES: N:33.081590 E:-83.803800 CONTRACTOR Cascade EQUIPMENT Tracked METHOD Rotosonic DRILLED BY J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser ANGLE BEARING BORING DEPTH 126.5 ft. GROUND WATER DEPTHDURING COMP. 23.5 ft. DELAYED 24.5 ft. after 24 hrs. **NOTES** , HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA **ELEVATION** GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Silt (ML) Surface Seal: - red (2.5YR 4/6) residuum dry, stiff, no concrete 5 Clayey Sand (SC) - red (10R 5/6) dry, loose, fine-grained, some oxidation 10 Sandy Silt (ML) - reddish yellow (5YR 6/6) dry Silty Sand (SM) - 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 20 25 Annular Fill: Cement-Bentonite Grout (4 - 94# - mottled light yellowish brown (10YR 6/4) and light olive brown (2.5Y bags PC, 1/2 - 55# bag gel, 80 5/4) gal. water) Sandy Silt (ML) 30 - bluish gray (10B 5/1) and white (N9) moist, medium stiff, some clay, varying amounts of sand 35 Poorly-graded Sand with Clay (SP-SC) - white (7.5YR 8/1), very dark bluish gray (10B 3/1) and very dark gray (10YR 3/1) moist, loose, fine-grained 40 - 2" sand (SW) seam at 41 ft. 45 Well-graded Sand (SW) - greenish black (10GY 2.5/1) saprolite medium to coarse-grained, weathered biotite gneiss, some silt, pulverized rock (sand with gravel)



Z016)/B(BORING PZ-32 D PAGE 2 OF 3
S(HERN (A) LOG OF TEST BOF	RINC	3		ECS38467
SO EAL		RN COMPANY SERVICES, INC. CIENCE AND ENVIRONMENTAL ENGINEERING PROJECT _Addit LOCATION _Plan			ogical I	nvestigation (2016)
						WELL DATA
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION MATERIAL DESCRIPTION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	prote 4-foo	npletion: ective aluminum cover with bollards; ot square concrete pad
		Well-graded Sand (SW)(Con't)	≲≥∽	<u> </u>	CONTINU	JED)
SO EAI (#) 55 60 60 65 60 60 65 60 60 60 60 60 60 60 60 60 60 60 60 60		- SW: - greenish black (10GY 2.5/1) medium to coarse-grained, weathered biotite gneiss, some silt - very dark greenish gray (5GY 3/1)				Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 80 gal. water)
65		Well-graded Sand with Silt (SW-SM) - 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 Biotite Gneiss				
75		 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 				Annular Seal: bentonite pellets (1 - 5 gal.
80		- not to moderately weathered				buckect 3/8" pellets (89-93 ft.), 6 - 50# bags 3/8" chips (66-89 ft.)
90		- slightly fractured, feldspar rich 84-86 ft. Granitic Gneiss White (10VP 8/4) and gray (10VP 6/4) medium to see real grain hard.	-			
80 85 85 90 95 100 20 100 100 100 100 100 100 100 100		 - white (10YR 8/1) and gray (10YR 6/1) medium to coarse grain, hard, not to slightly weathered, inclined, banded, slightly fractured 				Filter:
100		Biotite Gneiss - dark gray (10YR 4/1) and black (10YR 2/1) medium to coarse grain, not to slightly weathered, medium bedded, white banding	=			Standpipe: 2" OD PVC (SCH 40)
105		Granitic Gneiss - gray (10YR 6/1) and pink (5YR 7/3) medium to coarse grain, not weathered	-			Screen: 30 ft; 0.010" Slots
110		Biotite Gneiss - dark gray (10YR 4/1), black (10YR 2/1) and white (10YR 8/1) not weathered, medium bedded, slightly to moderately fractured, sub-				



SC	DUTH	IERN A	LOG OF	TEST BO	RING	}		BORING PZ-32 [PAGE 3 OF ECS3846
SOI		N COMPANY SERVICES, INC.		PROJECT Add	itional H	ydrogeolo	ogical Inve	stigation (2016)
EAF	RTH SC	IENCE AND ENVIRONMENTAL EN	IGINEERING	LOCATION Pla		er		
DEPTH (ft)	GRAPHIC LOG	MATERIAL DE	SCRIPTION	ELEVATION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	Complei protective 4-foot so	WELL DATA tion: ve aluminum cover with bollards; quare concrete pad
115		horizontal fractures Biotite Gneiss (Con't) - quartz healed fractures (sub-vertic - medium to coarse sand in fractures						
120		coarse grain, not to highly weather fractured, alternating competent roc	ed, medium bedde k and sand filled fr	ed, moderately actures				Standpipe: 2" OD PVC (SCH 40) Screen: 30 ft; 0.010" Slots
125								—Sump:0.2000000000000003 ft. Cave-in to 126.5 ft.
		Bottom of boreh	ole at 126.5 feet.					Cave-in to 126.5 ft.
130								
135								
4.40								
140	_							
115								
145	_							
150								
155								
160								
160								
165								
170								



ADDITIONAL

SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/7/16 11:23 - S:WORKGROUPS/APC GENERAL

LOG OF TEST BORING

BORING PZ-32 S PAGE 1 OF 2 ECS38467

HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 5/31/2016 COMPLETED 6/1/2016 SURF. ELEV. 462.3 COORDINATES: N:33.081600 E:-83.803800 CONTRACTOR Cascade EQUIPMENT Tracked METHOD Rotosonic **DRILLED BY** J. Asua LOGGED BY P. Alexander CHECKED BY B. Smelser ANGLE BEARING BORING DEPTH 57 ft. GROUND WATER DEPTHDURING 26 ft. COMP. 21.3 ft. DELAYED 23.8 ft. after 200 hrs. NOTES , HCL REACTION 3ROUNDWATER 3BSERVATIONS **WELL DATA** ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Silt (ML) Surface Seal: - red (2.5YR 4/6) residuum dry, stiff, no concrete 5 Clayey Sand (SC) - red (10R 5/6) dry, loose, fine-grained, some oxidation 10 Sandy Silt (ML) - reddish yellow (5YR 6/6) dry Silty Sand (SM) - 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 Annular Fill: 20 Cement-Bentonite Grout (2 - 94# \blacksquare bags PC, 1/4 - 55# bag gel, 55 gal. water) - light brown (7.5YR 6/4) 25 ∇ - mottled light yellowish brown (10YR 6/4) and light olive brown (2.5Y 5/4)Sandy Silt (ML) 30 - bluish gray (10B 5/1) and white (N9) moist, medium stiff, some clay, varying amounts of sand 35 Poorly-graded Sand with Clay (SP-SC) - white (7.5YR 8/1), very dark bluish gray (10B 3/1) and very dark gray (10YR 3/1) moist, loose, fine-grained 40 Annular Seal: - 2" sand (SW) seam at 41 ft. -bentonite pellets (1 - 5 gal. buckect 3/8" pellets) -20/40 silica filter sand (5 - 0.5 45 cubic ft. bags) Well-graded Sand (SW) Standpipe: - greenish black (10GY 2.5/1) saprolite medium to coarse-grained, 2" OD PVC (SCH 40) weathered biotite gneiss, some silt, pulverized rock (sand with gravel) Screen: 10 ft; 0.010" Slot Prepack



BORING PZ-32 S PAGE 2 OF 2

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC **LOG OF TEST BORING** ECS38467 PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer weak Moderate Strong GROUNDWATER OBSERVATIONS WELL DATA **ELEVATION** GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; 4-foot square concrete pad Well-graded Sand (SW)(Con't) Standpipe: 2" OD PVC (SCH 40) Screen: 55 10 ft; 0.010" Slot Prepack Sump:0.2000000000000003 ft. Çave-in to 57 ft. Bottom of borehole at 57.0 feet. 60 65 70 75 80 85 90 95 100 105



SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/7/16 11:23 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORTIDRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

LOG OF TEST BORING

BORING PZ-33 I PAGE 1 OF 2 ECS38467

HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 6/7/2016 COMPLETED 6/8/2016 SURF. ELEV. 466.3 COORDINATES: N:33.082010 E:-83.799400 EQUIPMENT Tracked METHOD Rotosonic CONTRACTOR Cascade **DRILLED BY** J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser ANGLE BEARING BORING DEPTH 76.5 ft. GROUND WATER DEPTHDURING COMP. DELAYED 39 ft. after 100 hrs. NOTES , HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Sandy Lean Clay (CL) Surface Seal: - red (2.5YR 4/6) dry, no concrete Sandy Silt (ML) - red (2.5YR 4/6) dry, no - yellowish red / light brown (5YR 5/6) Well-graded Sand with Silt (SW-SM) - mottled yellowish red / light brown (5YR 5/6) and black (5YR 2.5/1) dry, fine to coarse-grained 20 Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 90 gal. water) Clayey Sand (SC) - mottled strong brown (7.5YR 5/8), yellowish brown (10YR 5/8) and 30 white (10YR 8/1) dry, fine to medium-grained 35 40 Well-graded Sand with Silt (SW-SM) - 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 Well-graded Sand (SW) - 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



S	OUTI C	HERN LOG OF TOMPANY	TEST BOI	RING	}		BORING PZ-33 I PAGE 2 OF 2 ECS38467
		in COMPANT SERVICES, INC.	PROJECT Addit		_	ogica	al Investigation (2016)
		SELVED FILLED ELVINOTATE ELVELLEDING	LOCATION FIAI			Τ	
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	pr 4-	WELL DATA ompletion: rotective aluminum cover with bollards; -foot square concrete pad
		Well-graded Sand (SW)(Con't)		≤ ≥ Ø	<u> </u>	CONT	TINUED)
55		- mottled dark gray (7.5YR 4/1) and white (N9)					Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 90
60		Well-graded Sand with Silt (SW-SM) - very dark greenish gray (10Y 3/1) wet, fine to coarse-g gravel (pulverized rock/biotite gneiss)	grained, with				gal. water)
65							Annular Seal:
70							0.5 cubic ft. bags) Standpipe:
		Biotite Gneiss - dark greenish gray (10G 4/1) coarse grain, medium ha moderately to highly weathered, vuggy, black and white	ard to soft,				2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack
75	-	and feldspar	banding, quartz			甩	Sump:0.200000000000003 ft.
		- Driller indicated competent rock at 76.5 ft. Bottom of borehole at 76.5 feet.					Cave-in to 76.5 ft.
80							
85							
90							
95							
100							
105	-						
110							



		A					BORING PZ-34
SC		HERN A LOG OF TEST I	3OF	RING	j		ECS38
SOI			Addit	ional Hy	/drogeolo	ogical Inve	estigation (2016)
EAR	TH S	CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION	l_Plan	t Scher	er		
				-			
		RTED 6/3/2016 COMPLETED 6/4/2016 SURF. ELEV. 44 FOR Cascade EQUIPMENT Tracked ME					
		Y J. Asua LOGGED BY W. Shaughnessy CHECKED B					
ORII	NG DE	PTH 46 ft. GROUND WATER DEPTHDURING	СОМ	P. <u>13 f</u>	t.	DELAY	ED
OTE	S						
				Z	~ ~		NA/ELL DATA
<u>-</u>	2		<u>N</u>	HCL REACTION	GROUNDWATER OBSERVATIONS		WELL DATA
(#)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	REA	VAT.	Comple	
)	GR		EE	Weak Moderate Strong	SER		ive aluminum cover with bollard square concrete pad
	///	Lean Clay (CL)		We Moc Strc	GR OB	·5, ·5,	
		- red (2.5YR 4/6) dry, no					Surface Seal: concrete
5							
		Sandy Silt (ML)					
	111	- reddish brown (2.5YR 4/4)		1			
0	Ш	Elastic Silt (MH) - mottled strong brown (7.5YR 5/6) and black (7.5YR 2.5/1) damp	_				
		medium ▼ Well-graded Sand with Silt (SW-SM)	/				
_		- mottled yellowish brown (10YR 5/6), black (10YR 2/1) and white (10YR 8/1) damp, fine to medium-grained					A 1 =:11
5		- mottled light olive brown (2.5Y 5/4), black (10YR 2/1) and white					Annular Fill: Cement-Bentonite Grout (3
		(10YR 8/1) saprolite					bags PC, 1/2 - 55# bag gel, gal. water)
0.							
		- light olive brown (2.5Y 5/3) moist					
25							
		- mottled olive (5Y 5/3) and strong brown (7.5YR 5/6) wet					
		olivo grov / light olivo grov (EV 5/0)					
30		- olive gray / light olive gray (5Y 5/2)					Annular Seal:
		- mottled olive gray / light olive gray (5Y 5/2), strong brown (7.5YR	5/6)				→ bentonite pellets (1 - 5 gal.
		and white (7.5YR 8/1) weathered feldspar	,				buckect 3/8" pellets) Filter:
35							20/40 silica filter sand (5 - 0 cubic ft. bags)
							Jubio in Dugo,
40							Standpipe:2" OD PVC (SCH 40)
		- mottled dark gray (2.5Y 4/1) and white (7.5YR 8/1) weathered bi	otite				Screen: 10 ft; 0.010" Slot Prepack
		gneiss					•
45							—Sump:0.2000000000000003
	<u>ئم°ملمٽم</u>	Bottom of borehole at 46.0 feet.				1	Cave-in to 46 ft.



BORING PZ-35 I PAGE 1 OF 2 ECS38467

Screen:

10 ft; 0.010" Slot Prepack

HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG **PROJECT** Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 6/22/2016 COMPLETED 6/22/2016 SURF. ELEV. 474.5 COORDINATES: N:33.083012 E:-83.809238 EQUIPMENT Tracked METHOD Rotosonic CONTRACTOR Cascade **DRILLED BY** J. Asua LOGGED BY W. Shaughnessy CHECKED BY B. Smelser ANGLE **BEARING** ADDITIONAL BORING DEPTH 56 ft. GROUND WATER DEPTHDURING COMP. DELAYED 5.3 ft. after 100 hrs. NOTES SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER , HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA **ELEVATION SRAPHIC** DEPTH (ft) MATERIAL DESCRIPTION Completion: flush-mount 8" diameter steel cover; 4-foot **Joderate** square concrete pad Sandy Silt (ML) - dark red (2.5YR 3/6) dry Surface Seal: Poorly-graded Sand with Silt (SP-SM) concrete - dark red (10R 3/6) dry B 5 Clayey Sand (SC) - dark reddish brown (2.5YR 3/4) dry, cohesive - yellowish red / light brown (5YR 5/6) Poorly-graded Sand with Silt (SP-SM) 10 - mottled red (2.5YR 4/6) and brown (7.5YR 4/4) moist, fine-grained, micaceous - mottled light yellowish brown (10YR 6/4), red (2.5YR 4/6) and black 15 (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 SIMPLE GEOLOGY WITH WELL - ESEE DATABASE GDT - 9/7/16 11:23 - S:WORKGROUPS/APC GENERAL - mottled light yellowish brown (10YR 6/4) and strong brown (7.5YR 20 Annular Fill: Cement-Bentonite Grout (4 - 94# bags PC, 1/2 - 55# bag gel, 60 gal. water) Well-graded Sand with Silt (SW-SM) - mottled strong brown (7.5YR 4/6) and black (N1) wet, fine to coarsegrained, micaceous 30 - mottled brown (10YR 5/3) and white (N9) weathered feldspar Poorly-graded Sand (SP) - mottled dark gray (2.5Y 4/1) and light olive brown (2.5Y 5/6) fine-35 Well-graded Sand with Silt (SW-SM) - damp - olive brown (2.5Y 4/3) fine to coarse-grained Annular Seal: 40 bentonite pellets (1 - 5 gal. - olive brown (2.5Y 4/3), white (N9) and light gray (10YR 7/1) with buckect 3/8" pellets) gravel (residual/pulverized rock) 20/40 silica filter sand (4 1/2 -45 0.5 cubic ft. bags) Standpipe: Well-graded Sand with Clay (SW-SC) 2" OD PVC (SCH 40) - dark greenish gray (10Y 4/1) with gravel (residual/pulverized rock)



SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S.WORKGROUPS/APC GENERAL SERVICE COMPLEX/CIVIL TECH SUPPORT/DRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL HYDROGEOLOGIC INVESTIGATION (2016)/BORING LOC

BORING PZ-35 I PAGE 2 OF 2

ECS38467 LOG OF TEST BORING PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer , REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA **ELEVATION** GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: flush-mount 8" diameter steel cover; 4-foot Moderate square concrete pad **Biotite Gneiss** - dark gray (10YR 4/1) and light gray (10YR 7/1) medium to coarse grain, medium hard to hard, slightly to highly weathered, inclined, Standpipe: 2" OD PVC (SCH 40) moderate to intensely fractured, white banding Screen: 10 ft; 0.010" Slot Prepack Sump:0.2000000000000003 ft. Bottom of borehole at 56.0 feet. Cave-in to 56 ft. 60 65 70 75 80 85 90 95 100 105



SIMPLE GEOLOGY WITH WELL - ESEE DATABASE, GDT - 97/16 11:23 - S:WORKGROUPS/APC GENERAL SERVICE COMPLEXICIVIL TECH SUPPORTIDRILLING/PROJECTS/GA-SCHERER/SCHERER ADDITIONAL

LOG OF TEST BORING

BORING PZ-36 I PAGE 1 OF 2 ECS38467

HYDROGEOLOGIC INVESTIGATION (2016)\BORING LOG PROJECT Additional Hydrogeological Investigation (2016) SOUTHERN COMPANY SERVICES, INC. EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING **LOCATION** Plant Scherer DATE STARTED 6/4/2016 COMPLETED 6/5/2016 SURF. ELEV. 478.9 COORDINATES: N:33.079730 E:-83.805300 CONTRACTOR Cascade EQUIPMENT Tracked METHOD Rotosonic DRILLED BY T. Ardito LOGGED BY P. Alexander CHECKED BY B. Smelser ANGLE BEARING BORING DEPTH 97 ft. GROUND WATER DEPTHDURING COMP. DELAYED 49.8 ft. after 24 hrs. NOTES HCL REACTION 3ROUNDWATER 3BSERVATIONS WELL DATA ELEVATION GRAPHIC LOG DEPTH (ft) MATERIAL DESCRIPTION Completion: protective aluminum cover with bollards; **Joderate** 4-foot square concrete pad Silt (ML) Surface Seal: - red (2.5YR 4/6) dry, stiff, no concrete 5 10 - red (2.5YR 5/6) dry, stiff, some mica 15 - saprolite Poorly-graded Sand with Silt (SP-SM) - mottled reddish brown (5YR 5/4) and white (N9) damp, loose 25 Annular Fill: - mottled strong brown (7.5YR 5/6), pink (5YR 7/3) and light red (2.5YR Cement-Bentonite Grout (6 - 94# 6/6) bags PC, 1/2 - 55# bag gel, 70 gal. water) - slight oxidation Well-graded Sand with Silt (SW-SM) - 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 - relict fractures 38 to 43 ft. 40 Poorly-graded Sand with Silt (SP-SM) - mottled reddish yellow (7.5YR 6/6), yellow (10YR 7/6) and light yellowish brown (2.5Y 6/3) saprolité wet, very loose, some mica 45 - relict fractures 46 to 48 ft. (horizontal and sub-vertical) Poorly-graded Sand with Clay (SP-SC)

(Continued Next Page)

- mottled light gray (10YR 7/2), light reddish brown (2.5YR 6/3) and light



S		LOG OF	TEST BOI	RING	}			BORING PZ-36 I PAGE 2 OF 2 ECS38467
	UTHER	N COMPANY SERVICES, INC. IENCE AND ENVIRONMENTAL ENGINEERING	PROJECT Addit			ogica	l Inve	estigation (2016)
								WELL DATA
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	pre 4-1		
55		reddish brown (2.5YR 7/4) saprolite moist, loose, son oxidation 47 to 56 ft., foliation 55 to 57 ft. Poorly-graded Sand with Clay (SP-SC) <i>Con't)</i> - mottled gray (2.5Y 6/1), olive gray / light olive gray (dark gray (5Y 3/1) saprolite moist, loose, some mica	5Y 5/2) and very					Annular Fill: Cement-Bentonite Grout (6 - 94 bags PC, 1/2 - 55# bag gel, 70
70 75		Biotite Gneiss - greenish gray (10Y 6/1), white (7.5YR 8/1) and dark (10GY 4/1) very soft to soft, highly weathered, banded bluish gray (10B 5/1) and light bluish gray (5PB 8/1 weathered, banded, water staining, moderately disinted white (10YR 8/1) and greenish gray (5BG 5/1) very moderately weathered, banded, water staining, moderately water staining, water staining, water staining, water staining, water staining, water staining, wa	d) soft, highly egrated y soft to soft,					gal. water)
80		 medium light gray (N6), white (N9) and dark bluish ghard, slightly weathered, banded, horizontal and subwater staining, slightly disintegrated dark bluish gray (10B 4/1) hard, slightly weathered, 	vertical fractures,					Annular Seal: bentonite pellets (1 - 5 gal. buckect 3/8" pellets) Filter: 20/40 silica filter sand (6 - 0.5 cubic ft. bags)
90		- white (N9) and bluish gray (10B 5/1) hard, slightly visub-vertical fractures, water staining, slightly disintegring intensity fractured	veathered, banded,					Standpipe:2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack
95		- hard, not to slightly weathered, massive, horizontal a fractures, slightly disintegrated	and sub-vertical					—Sump:0.20000000000000 ft.
100		Bottom of borehole at 97.0 feet.		<u> </u>				—Çave-in to 97 ft.

RECORD OF BOREHOLE PZ-36S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 56.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/22/18 DATE COMPLETED: 8/22/18 NORTHING: 1,120,400.37 EASTING: 2,407,247.17 GS ELEVATION: 479.21 ft TOC ELEVATION: 482.19 ft SHEET 1 of 2

DEPTH W.L.: 35.5 ft

ELEVATION W.L.: 446.69 ft

DATE W.L.: 8/24/18

TIME W.L.: 09:05

		SOIL PROFILE					SAM	MPLES	s	DIAGRAM and	NOTES	
	EVATION (ft)			O	ELEV.	<u></u>				DIAGRAM and MONITORING PIEZOME	WELL/ TER	WELL
£ (£)	ELEVA (ft	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT	2.98 ft AGS _	PZ 36	CONSTRUCTION DETAILS
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		(11)					stick up	2000 0000 2000 0000	PZ 36 Borehole Diameter: 6" WELL CASING Interval: 0-45'
5 -	- 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		475.21 4.00	N _O	8-1	ROTO SONIC	<u>7.50</u> 10.00			Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 45-55' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2"
0 -	- 470 - -	10.00 - 20.00 Silty CLAY with some sand; sand: fine to coarse; red; cohesive; w <pl firm="" residuum<="" stiff;="" td="" to="" w~pl;=""><td></td><td></td><td>469.21 10.00</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK Interval: 43-55' Type: Double Wall U-Pack Screen Quantity: 200 lbs</td></pl>			469.21 10.00							Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK Interval: 43-55' Type: Double Wall U-Pack Screen Quantity: 200 lbs
5 —	- - 465 - -		CL			N	S-2	ROTO SONIC	2.00 10.00			FILTER PACK SEAL Interval: 38.8-43' Type: 3/8" Pel-Plug Quantity: 5 gallons ANNULUS SEAL Interval: 0-38.8' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 470 Ibs Quick Gel: 12 lbs Water: 60 gallons
0-	- - 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		459.21 20.00					Portland Cement and _ Quick Gel Bentonite Mix		water: 60 gallons
25 —	- 455 - -	25.00 - 30.00 Clayey SAND; sand: fine to coarse; reddish brown; micacaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC		454.21 25.00	ON N	S-3	ROTO SONIC	<u>8.50</u> 10.00		00000 00000	
0-1	- - 450 - -	30.00 - 40.00 Clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; red to light grey; micacaceous; non-cohesive; moist; compact to dense; SAPROLITE			449.21 30.00							
5-	- 445 -		SC			No	S-4	ROTO SONIC	<u>10.00</u> 10.00			
-	- - - 440											

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

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-36S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 56.00 ft

DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/22/18 DATE COMPLETED: 8/22/18

NORTHING: 1,120,400.37 EASTING: 2,407,247.17 GS ELEVATION: 479.21 ft TOC ELEVATION: 482.19 ft

SHEET 2 of 2 DEPTH W.L.: 35.5 ft ELEVATION W.L.: 446.69 ft DATE W.L.: 8/24/18 TIME W.L.: 09:05

	7	SOIL PROFILE					SAI	MPLES	s	DIAGRAM and MONITORING PIEZOME	NOTES WELL!	
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	PID (ppm)	NUMBER	TYPE	REC / ATT	PIEZOME"	PZ 36	WELL CONSTRUCTION DETAILS
40 -	- - -	40.00 - 50.00 Clayey-Silty SAND; orange to light tan; micacaceous; non-cohesive; wet; compact to dense; SAPROLITE		9	(ft) 40.00	<u> </u>	Z		32	3/8" PEL-PLUG _ Bentonite Pellets		PZ 36 Borehole Diameter: 6" WELL CASING Interval: 0-45' Material: Schedule 40
- - 45 -	- 435 		SC-SM		-	No No	S-5	ROTO SONIC	10.00 10.00	Filter Sil –		Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 45-55'
- - -	- - - - 430				400.04			RC		0.010" Slotted		Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4
50 —	-	50.00 - 56.00 Clayey-Silty SAND; orange to light tan; micacaceous; non-cohesive; wet; compact to dense; SAPROLITE	SC-SM	1	429.21	ON	S-6	ROTO SONIC	5.00	Schedule 40 _ PVC Double Wall U-Pack screen		Interval: 43-55' Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK SEAL Interval: 38.8-43' Type: 3/8" Pel-Plug
- 55 — -	— 425 –	Boring completed at 56.00 ft			423.21			ROTC	6.00	Filter Sil —		Quantity: 5 gallons ANNULUS SEAL Interval: 0-38.8' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 470
60 —	- - 420											lbs Quick Gel: 12 lbs Water: 60 gallons
- - -	- -											
65 —	— 415 – –											
70 —	- - 410 											
-	- -											
75 — -	— 405 –											
80 —	- - 400											
DRII	LLING	LE: 1 in = 5 ft COMPANY: Cascade M. Rodrigues		CH	INSPE ECKEI TE: 1() BY	: Tin			ards, PG	G	OLDER





SO	LIT	HERN LOG OF TEST	B∕ı	SINI <i>C</i>	<u> </u>		BORING PZ-37 PAGE 1 OF 2 ECS38467
50		COMPANY				la ada a l lav	
		RN COMPANY SERVICES, INC. CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION				iogicai in	vestigation (2016)
		TED 6/2/2016 COMPLETED 6/2/2016 SURF. ELEV. 47 OR Cascade EQUIPMENT Tracked MB				_	N:33.081830 E:-83.801500
		/ J. Asua LOGGED BY W. Shaughnessy CHECKED B					E BEARING
		PTH _72.5 ft GROUND WATER DEPTHDURING	COM	Р		_ DELA	YED 43 ft. after 48 hrs.
	<u> </u>			7			
_	೦		N _O	HCL	ATER ONS		WELL DATA
(#)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	REAL	VATI		oletion: ctive aluminum cover with bollards;
ב	<u>е</u>			Weak Moderate Strong	GROUNDWATER OBSERVATIONS		t square concrete pad
		Sandy Silt (ML)		⊗ ŭ ŭ	00	· \$	Surface Seal:
		- dark red (2.5YR 3/6) dry					concrete
5		rod (2 EVD 4/6)					
		- red (2.5YR 4/6)					
		- yellowish red (5YR 4/6)					
10							
		Silty Sand (SM)					
	$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$	- red (10R 5/6) dry, fine-grained, with mica					
		- weak red (10R 5/3)					
	1 1 1 1 1 1 1 1 1						
20	1 1 1 1						
	1 1 1 1 1 1 1	 mottled reddish brown (2.5YR 4/4) and reddish black (2.5YR 2.5 dry, weathered schist 	5/1)				
25		- weak red (2.5YR 5/2)	_				Annular Fill:
		- mottled reddish brown (2.5YR 4/4) and strong brown (7.5YR 5/6)				Cement-Bentonite Grout (4 - 94 bags PC, 1/2 - 55# bag gel, 90
	Ш	Elastic Silt (MH) - reddish brown (2.5YR 4/4) wet					gal. water)
30		Silty Sand (SM) - reddish brown (2.5YR 5/4) fine to coarse-grained. with mica					
		vollouish rod (EVP 4/6) and roddish brawn (2 EVP 4/4) with and	rec				
35	1 1 1 1 1 1 1 1 1	- yellowish red (5YR 4/6) and reddish brown (2.5YR 4/4) with coa gravel (residual quartz+feldspar viens)	is c				
		- mottled grayish brown (10YR 5/2) and white (10YR 8/1)		1			
40	$\ \ \ $	Silt (ML) - mottled strong brown (7.5YR 5/8) and black (7.5YR 2.5/1)					
+∪		Silty Sand (SM)					
	1 1 1 1 1 1 1 1 1	y - light brown (7.5YR 6/4) fine to coarse-grained. with mica					
45		Silt (ML) - strong brown (7.5YR 4/6) and black (7.5YR 2.5/1)					
		- strong brown (7.5 f x 4/6) and black (7.5 f x 2.5/1) - dark yellowish brown (10YR 4/4)				KAK	



	Silt (ML) (Con't) Silty Sand (SM) - olive brown (2 saprolite fine to	TRONMENTAL ENGINEERING MATERIAL DESCRIPTION	LOCATION PIE	-	ROUNDWATER BSERVATIONS	Comple protect 4-foot:	tive aluminum cover with bollards; square concrete pad
60	Silt (ML) (Con't) Silty Sand (SM - olive brown (2 saprolite fine to) .5Y 4/4) and olive gray / light olive gr coarse-grained, with mica		Weak Moderate HCL Strong	GROUNDWATER OBSERVATIONS	protect 4-foot:	etion: tive aluminum cover with bollards; square concrete pad Annular Fill: Cement-Bentonite Grout (4 - 94 bags PC, 1/2 - 55# bag gel, 90 gal. water) Annular Seal: bentonite pellets (1 - 5 gal. buckect 3/8" pellets) Filter:
60	Silty Sand (SM - olive brown (2 saprolite fine to) .5Y 4/4) and olive gray / light olive gr coarse-grained, with mica	ay (5Y 5/2)				Annular Fill: Cement-Bentonite Grout (4 - 94 bags PC, 1/2 - 55# bag gel, 90 gal. water) Annular Seal: —bentonite pellets (1 - 5 gal. buckect 3/8" pellets) Filter:
70	- dark gray (10	andy Gravel (GW)				H	cubic ft. bags)
	hard, not to slig	iss, feldspar and quartz /1) and white / yellowish gray (5Y 8/1 ntly weathered, banded, moderately fr) coarse grain,	1			Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack Sump:0.2000000000000003 ft.
80	· A	Bottom of borehole at 72.5 feet.			ļ		Çave-in to 72.5 ft.
85							
90							
95							
100							
105							



							BOR	ING PZ-38 I PAGE 1 OF 2
S		LOG OF TEST	BOR	RING	•			ECS38467
SO	UTHE	RN COMPANY SERVICES, INC. PROJECT	Additi	onal Hy	ydrogeol	ogica	al Investigation (2016)	
		CIENCE AND ENVIRONMENTAL ENGINEERING LOCATION	N Plant	t Scher	er			
				_				
		RTED _6/22/2016 COMPLETED _6/23/2016 SURF. ELEV48 FOR _Cascade EQUIPMENT _Tracked MI					S: N:33.082673 E:-8	3.808276
		Y J. Asua LOGGED BY W. Shaughnessy CHECKED B					IGLE BE	ARING
		PTH 76 ft. GROUND WATER DEPTHDURING						
NOTE	S							
				Z	Υ (0		VA/ELL DATA	
I	ဋ		NO.	HCL REACTION	GROUNDWATER OBSERVATIONS		WELL DATA	
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	REA	VAT		ompletion:	r ataal aayari 4 far
_	R.		ELE	Weak Moderate Strong	SER		ush-mount 8" diameter quare concrete pad	r steel cover; 4-100
		Sandy Silt (ML)		We. Moc Stro	GR	.11	·5,	
		- dark red (2.5YR 3/6) dry				4	Surface Seal	:
						.0.	concrete	
5		- with mica						
		Poorly-graded Sand with Silt (SP-SM)						
10		- yellowish red / light brown (5YR 5/6) dry, fine-grained						
		Elastic Silt (MH) - yellowish red / light brown (5YR 5/6) and brown (7.5YR 5/4)						
15		micaceous - brown (7.5YR 5/3) damp						
15	Ш	√						
		Poorly-graded Sand with Silt (SP-SM) - grayish brown (10YR 5/2) fine-grained, micaceous						
20		Well-graded Sand (SW)						
		- black (N1) and very light gray (N8) coarse-grained, weathered fe seam	ldspar					
		Poorly-graded Sand with Silt (SP-SM)	0.14:04					
25		 grayish brown (10YR 5/2) and strong brown (7.5YR 4/6) saprolifine-grained, white banding, interbedded by weathered feldspar and approximately a	e wet, d					
		quartz seams					Annular Fill:	
							bags PC, 1/2	onite Grout (4 - 9 - 55# bag gel, 90
30							gal. water)	
35								
		Well-graded Sand with Silt (SW-SM)						
		 mottled olive gray / light olive gray (5Y 5/2) and pale yellow (5Y 8 saprolite wet, fine to coarse-grained 	3/2)					
40		-						
		- 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		,						
						M		
	00000			: : I		\searrow	$\mathcal{S}_{\mathcal{A}}$	



sc	UTI	LOG OF TEST BOY			BORING PZ-38 PAGE 2 OF 2 ECS38467
		N COMPANY SERVICES, INC. PROJECT <u>Addit</u> LOCATION <u>Plar</u>		_	logical Investigation (2016)
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Weak Moderate Strong	GROUNDWATER OBSERVATIONS	WELL DATA Completion: flush-mount 8" diameter steel cover; 4-foc square concrete pad
55 60 65 70		Well-graded Sand with Silt (SW-SM)(Con't) - 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) Poorly-graded Sand (SP) - yellowish brown (10YR 5/6) and dark grayish brown (2.5Y 4/2) finegrained Biotite Gneiss - grayish brown (2.5Y 5/2) fine to coarse grain, gravelly sand (pulverized weathered rock)	W/ MA	<u> </u>	Annular Fill: Cement-Bentonite Grout (4 - 94 bags PC, 1/2 - 55# bag gel, 90 gal. water) Annular Seal:bentonite pellets (1 - 5 gal. buckect 3/8" pellets) Filter:20/40 silica filter sand (4 1/2 - 0.5 cubic ft. bags) Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack
	<u> </u>	Bottom of borehole at 76.0 feet.			Cave-in to 76 ft.
80					
90					
105					

RECORD OF BOREHOLE PZ-39S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 80.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/21/18 DATE COMPLETED: 8/21/18 NORTHING: 1,120,177.25 EASTING: 2,407,470.86 GS ELEVATION: 471.87 ft TOC ELEVATION: 474.49 ft SHEET 1 of 2
DEPTH W.L.: 35.9 ft
ELEVATION W.L.: 438.59 ft
DATE W.L.: 8/24/18
TIME W.L.: 09:10

	Т					T			N: 4/4		TIME W.L		\dashv
. 2	2 0	SOIL PROFILE		Т		_		MPLE:		DIAGRAM and MONITORING PIEZOME	NOTES WELL/ TER	WELL	
(f)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC	DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	2.62 ft AGS _ Stick up	PZ 39	CONSTRUCTION DETAILS	
0 +	470	0.00 - 6.50 clayey SILT with some organic matter; dark reddish brown; non-cohesive; moist; compact; RESIDUUM								Stick up		PZ 39 Borehole Diameter: 6" WELL CASING Interval: 0-76 Material: Schedule 40	
† + 5+			ML			_S	S-1	ROTO SONIC	10.00 10.00			PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN	
+	465	6.50 - 10.00 silty CLAY; grey to brown; cohesive; w~PL; soft to firm; RESIDUUM	CL		465.37 6.50	-		ROT	10.00			Interval: 66-76' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/ 2" Inner Slot Size: 0.010 End Cap: 0.4	
	460	10.00 - 20.00 silty CLAY; high plasticity; red to reddish brown; cohesive; w>PL; stiff to very stiff; RESIDUUM			461.87 10.00							FILTER PACK Interval: 64-79' Type: Double Wall U-Pack Screen Quantity: 200 lbs	
- - - - i-			CL			ON.	S-2	ROTO SONIC	7.50			FILTER PACK SEAL Interval: 62.5-64' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-62.5'	
+	455		- GE			2	S	ROTO	10.00			Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 658 lb Quick Gel: 25lbs Water: 80 gallons	
+		20.00 - 30.00 silty-sandy CLAY and clayey SAND mix; sand: fine; red; cohesive; w <pl firm;="" residuum<="" soft="" td="" to="" w~pl;=""><td></td><td></td><td>451.87 20.00</td><td></td><td></td><td></td><td></td><td></td><td>X X</td><td></td><td></td></pl>			451.87 20.00						X X		
	450		CL-SC			N _O	S-3	ROTO SONIC	7.50 10.00				
	445												
	440	30.00 - 35.00 clayey SAND with silt; sand: fine to coarse; red to orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		30.00					Portland Cement and _ Quick Gel Bentonite Mix			
	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			436.87 35.00	- 9 <u>V</u>	8.4	ROTO SONIC	10.00 10.00				
- - - -		Log continued on next page	SC		431.87								

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

AA BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-39S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 80.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/21/18 DATE COMPLETED: 8/21/18 NORTHING: 1,120,177.25 EASTING: 2,407,470.86 GS ELEVATION: 471.87 ft TOC ELEVATION: 474.49 ft SHEET 2 of 2
DEPTH W.L.: 35.9 ft
ELEVATION W.L.: 438.59 ft
DATE W.L.: 8/24/18
TIME W.L.: 09:10

z	SOIL PROFILE					SAI	MPLES	5	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER WELL	
(ft) ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	PIEZOMETER WELL CONSTRUCTION PZ 39 DETAILS	
	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	No	S-5	ROTO SONIC	<u>9.50</u> 10.00	PZ 39 Borehole Diameter: 6 WELL CASING Interval: 0-76 Material: Schedule 4 PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 66-76' Material: 0.010" Slott Schedule 40 PVC Diameter: 4" Outer/2 Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK Interval: 64-79' Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK Interval: 62-564' Type: 38" PEL-PLU Quantity: 5 gallons ANNULUS SEAL Interval: 0-62.5" Type: Portland Ceme and Quick Gel Bentonite Mix Quantity: Cement: 6t lb Quick Gel: 25lbs Water: 80 gallons	D ed
	50.00 - 57.00 clayey SAND with silt; sand: fine to coarse; red to orange; non-cohesive; wet; loose to compact; RESIDUUM	SC		421.87 50.00	No	9-S	ROTO SONIC	10.00	FILTER PACK Interval: 64-79' Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK SEAL Interval: 62.5-64' Type: 3/8" PEL-PLU Quantity: 5 gallons ANNULUS SEAL Interval: 0-62.5' Type: Portland Ceme and Quick Gel Bentonite Mix Outsities Constants	ent
415 0 410	57.00 - 60.00 silty SAND with trace clay; micacaceous; tan to grey; non-cohesive; moist to wet; compact to dense; SAPROLITE 60.00 - 68.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; tan to grey; micacaceous; non-cohesive; moist to wet; compact to dense; SAPROLITE	SM		414.87 57.00 411.87 60.00					Quantity: Cement: 6t lb Quick Gel: 25lbs Water: 80 gallons	0
 5 405		SM			No	Z-S	ROTO SONIC	10.00 10.00	3/8" PEL-PLUG Bentonite Pellets	
	68.00 - 70.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; dark grey; micacaceous; non-cohesive; moist; dense; SAPROLITE 70.00 - 77.00 silty SAND with trace clay and some fine gravel; sand: fine to coarse; dark grey; micacaceous; non-cohesive; moist; dense; SAPROLITE	SM		403.87 68.00 401.87 70.00					FilterSil —	
 5 395	77.00 - 80.00 silty SAND with trace clay and some gravel; sand: fine to	SM		394.87 77.00	ON	φ. 	ROTO SONIC	<u>9.00</u> 10.00	FilterSil —	
†	silty SAND with trace clay and some graver; sand: line to coarse; gravel: fine to coarse; dark grey; micacaceous; non-cohesive; moist; dense to very dense; TWR Note: Drill chatter at 77'	SM		-					3/8"	

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

AA BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-40I

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 84.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/15/18 DATE COMPLETED: 8/15/18 NORTHING: 1,116,959.59 EASTING: 2,406,964.09 GS ELEVATION: 509.76 ft TOC ELEVATION: 512.22 ft SHEET 1 of 3

DEPTH W.L.: 31.8 ft

ELEVATION W.L.: 480.42 ft

DATE W.L.: 8/17/18

TIME W.L.: 13:25

									N: 512		TIME W.L		4
	z	SOIL PROFILE			ı		SAI	MPLES	5	DIAGRAM and MONITORING PIEZOME	NOTES WELL/		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	2.46 ft AGS _ Stick up	PZ 40	WELL CONSTRUCTION DETAILS	
0 —	- -	0.00 - 10.00 Hydrovac from 0-10'								энэх ар		PZ 40 Borehole Diameter: 6" WELL CASING Interval: 0-73' Material: Schedule 40 PVC	 (
5 — - -	— 505 —											Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner	- - 5 -
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			499.76 10.00							Slot Size: 0.010" End Cap: 0.4 FILTER PACK Interval: 70-84' Type: Double Wall U-Pack Screen Quantity: 250 lbs	- - - 1
- - 15 — -	495 495 		МН			o Z	8-1	ROTO SONIC	7.00 10.00			FILTER PACK SEAL Interval: 70-65.5' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-65.5' Type: Portland Cement and Quick Gel Bentonite Gel Mix Quantity: Cement: 752 Ibs Quick Gel: 37.5 Ibs Water: 70 gallons	- - - 1 -
20 —	— 490 —	20.00 - 22.80 silty CLAY with some sand; sand: fine to coarse; reddish brown; cohesive; w <pl; compact;="" firm;="" residuum<="" soft="" td="" to=""><td>CL</td><td></td><td>489.76 20.00</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-:</td></pl;>	CL		489.76 20.00								-:
- 25	_ 485 _	22.80 - 27.60 sandy SILT with some clay; sand: fine to coarse; reddish brown with black; micacaceous; non-cohesive; moist; loose; RESIDUUM	SM		486.96 22.80	o _N	S-2	ROTO SONIC	<u>8.00</u> 10.00		2000 P0001		 - - -
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; -="" 30.00="" 36.80="" clay;="" cohesive;="" firm;="" red;="" residuum="" silty="" soft="" to="" w="">PL; very soft; RESIDUUM</pl;>	CL		482.16 27.60 479.76 30.00								:
- - - 35 -	_ _ _ _ 475		CL		472.96	ON.	S-3	ROTO SONIC	<u>9.50</u> 10.00	Portland Cement and _ Quick Gel Bentonite Mix			 - - - -
25 —	_ _ _ 470	36.80 - 40.00 clayey SAND; sand: fine; reddish-pink; micacaceous; non-cohesive; wet; compact; SAPROLITE Log continued on next page	SC		36.80 469.76						### ##################################		- - -

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

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-40I

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 84.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/15/18 DATE COMPLETED: 8/15/18 NORTHING: 1,116,959.59 EASTING: 2,406,964.09 GS ELEVATION: 509.76 ft TOC ELEVATION: 512.22 ft SHEET 2 of 3

DEPTH W.L.: 31.8 ft

ELEVATION W.L.: 480.42 ft

DATE W.L.: 8/17/18

TIME W.L.: 13:25

		SOIL PROFILE					SAI	MPLES	s T	DIAGRAM and NOTES		-
(#)	EVATION (ft)		S	OHIC G	ELEV.	(mda				DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION	
5	ELE	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT	PZ 40	DETAILS	
40 -	-	40.00 - 50.00 clayey SAND; sand: fine; reddish pink; micacaceous; cohesive; w <pl; saprolite<="" soft="" soft;="" td="" to="" very=""><td></td><td></td><td>40.00</td><td></td><td></td><td></td><td></td><td>200 200 200 200 200 200 200 200 200 200</td><td>PZ 40 Borehole Diameter: 6"</td><td>_</td></pl;>			40.00					200 200 200 200 200 200 200 200 200 200	PZ 40 Borehole Diameter: 6"	_
+	-										WELL CASING Interval: 0-73' Material: Schedule 40	
=	-										PVC Diameter: 2" Joint Type:	
15 —	- 465		sc			2	84	ROTO SONIC	<u>5.00</u> 10.00		Flush/Thread WELL SCREEN	
	-							RO			Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC	
-	-										Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4	
io –	- 460				459.76					X X	FILTER PACK Interval: 70-84'	
"	-	50.00 - 55.00 sandy CLAY; sand: fine to coarse; light tan; micacaceous; cohesive; w>PL; soft to firm; SAPROLITE			50.00						Type: Double Wall U-Pack Screen Quantity: 250 lbs	
-	-		СН							X X	FILTER PACK SEAL Interval: 70-65.5' Type: 3/8" PEL-PLUG	
-	-							SEC			Quantity: 5 gallons ANNULUS SEAL	
5 –	455 	55.00 - 57.50 clayey SAND; sand: fine to coarse; brown; micacaceous;			454.76 55.00	2	S-5	ROTO SONIC	10.00 10.00	X	Interval: 0-65.5' Type: Portland Cement and Quick Gel	
-	-	noń-cohesive to cohesive; moist to wet; compact; SAPROLITE	SC		452.26			×			Bentonite Gel Mix Quantity: Cement: 752 lbs Quick Gel: 37.5	
-	-	57.50 - 65.00 clayey SAND; sand: fine to coarse; dark grey; micacaceous; highly weathered rock; non-cohesive; moist; compact to dense;			57.50					XII XII	lbs Water: 70 gallons	
50 —	 450	SĂPŔOLITE										
+	-		SC									
-	_											
-	-							ONIC				
i5 —	445 -	65.00 - 68.50 clayey SAND with some gravel; sand: fine to coarse; gravel:			65.00	욷	9-S	ROTO SONIC	8.00 10.00			
-	-	fine to coarse; light grey to grey; micacaceous; some weathered quartz; orange mottling; non-cohesive; moist to wet; dense; TWR	sc					<u>«</u>		RXX RXX		
	-	68.50 - 70.00			441.26 68.50					3/8" PEL-PLUG _ Bentonite Pellets		
~ - -	- 440	silty GRAVEL; gravel: fine to coarse; dark grey; micacaceous; highly weathered rock; non-cohesive; wet; dense to very dense; BEDROCK			439.76							
-	- -	70.00 - 80.00 BIOTITE GNEISS; fresh; banded coarse and fine; gneissic banding; crystals fine to coarse; strong								Filter Sil -		
-	-											
	- 435							SONIC				
5 -	-					2	S-7	ROTO SONIC	8.50 10.00	0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen		
+	-							_		0.010" Slotted		
-	- -									Schedule 40 PVC Double Wall U-Pack		
- 1	- 430				429.76					Screen		

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

AA BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-40I

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

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

NORTHING: 1,116,959.59 EASTING: 2,406,964.09 GS ELEVATION: 509.76 ft TOC ELEVATION: 512.22 ft

SHEET 3 of 3 DEPTH W.L.: 31.8 ft ELEVATION W.L.: 480.42 ft DATE W.L.: 8/17/18 TIME W.L.: 13:25

						100				2.22 ft TIME W.L	15.25
_	NOI	SOIL PROFILE				_		MPLES		DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	PZ 40	CONSTRUCTION DETAILS
80 —		80.00 - 84.00 BIOTITE GNEISS; fresh; banded coarse and fine; gneissic banding; crystals fine to coarse; strong			(ft) 80.00	8	S-8	ROTO SONIC	4.00 4.00	Filter Sil —	PZ 40 Borehole Diameter: 6" WELL CASING Interval: 0-73' Material: Schedule 40 PVC Diameter: 2"
85 — -	425 	Boring completed at 84.00 ft			425.76					[1.1.1.1]	Joint Type: Flush/Thread WELL SCREEN Interval: 73-83' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner
90 —	- - 420 -										Siot Size: 0.010" End Cap: 0.4 FILTER PACK Interval: 70-84' Type: Double Wall U-Pack Screen Quantity: 250 lbs
-	- - - - 115										FILTER PACK SEAL Interval: 70-65.5' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-65.5'
95 — - - -	415 										Interval: U-05.5 Type: Portland Cement and Quick Gel Bentonite Gel Mix Quantity: Cement: 752 Ibs Quick Gel: 37.5 Ibs Water: 70 gallons
00 -	410 										
05 —	- 405 										
10 —	- - - 400										
15 —	- - - - 395										
-	- - -										
DRII	LLING	LE: 1 in = 5 ft 6 COMPANY: Cascade 1 M. Rodrigues		CHE	INSPE ECKEI FE: 10	D BY	: Tin			nards, PG G	OLDER



RECORD OF BOREHOLE PZ-41S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 45.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/16/18 DATE COMPLETED: 8/16/18 NORTHING: 1,116,799.23 EASTING: 2,407,126.21 GS ELEVATION: 488.44 ft TOC ELEVATION: 491.35 ft SHEET 1 of 2 DEPTH W.L.: 25.8 ft ELEVATION W.L.: 465.55 ft DATE W.L.: 8/17/18 TIME W.L.: 14:45

						100	ELEV	ATIO	N: 49	1.33 แ	I IME W.L	L 14.40	
	z	SOIL PROFILE					SAI	MPLES	3	DIAGRAM and MONITORING PIEZOME	NOTES WELL/		
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV.	PID (ppm)	NUMBER	TYPE	'ATT	PIEZOME	PZ 41	WELL CONSTRUCTION DETAILS	
	EE	DESCRIPTION	ŠN	GRAI	DEPTH (ft)	DID (NOM	₹	REC / ATT	2.91 ft AGS _		DETAILS	
0 —	-	0.00 - 12.00 Hydrovac 0-12'			()					Stick up	0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	PZ 41	 0
-	-	inglionad o i										Borehole Diameter: 6" WELL CASING	=
_	-										0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Interval: 0-45' Material: Schedule 40 PVC	_
-	— 485 -											Diameter: 2" Joint Type: Flush/Thread	-
5 —												WELL SCREEN	- 5
-	-										00000 00000 00000 00000 00000 00000 00000 0000 00000 0000 00000 0000 00000 0000 00000 0000	Interval: 35-45' Material: 0.010" Slotted Schedule 40 PVC	-
-	-										# 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Diameter: 4" Outer/2" Inner	_
_	480										00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	Slot Size: 0.010 End Cap: 0.4	
10 —	-										00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	FILTER PACK Interval: 32-45'	- 1
_	_										90000 90000 90000 90000 90000 9000 90000 9000 90000 9000 90000 9000	Type: Double Wall U-Pack Screen Quantity: 250 lbs	-
-	-	12.00 - 20.00			476.44 12.00						7000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	FILTER PACK SEAL Interval: 27-32'	-
-	— 475	silty SAND with trace organics and clay; sand: fine to coarse; reddish brown with black and orange mottling; micacaceous; non-cohesive; moist; loose to compact; RESIDUUM			-					Portland Cement and _ Quick Gel		Type: 3/8" PEL-PLUG Quantity: 5 gallons	-
15 —	-							2		Bentonite Mix		ANNULUS SEAL Interval: 0-27'	- - 1
-	-		SM			o N	S-1	ROTO SONIC	5.50			Type: Portland Cement and Quick Gel Bentonite Mix	'
_	-							ROTO	8.00			Quantity: Cement: 282 lbs Quick Gel: 12.5	-
_											7000 7000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	lbs Water: 40 gallons	_
-	-				468.44								-
20 —	-	20.00 - 30.00 silty, clayey SAND; sand: fine to coarse; reddish brown;			20.00								- 20
_	-	micacaceous; non-cohesive; moist to wet; compact;RESIDUUM											
_	405												_
_	— 465 –							ONIC					-
25 —	<u> </u> -		SC-SM			2	S-2	ROTO SONIC	9.00 10.00		00000 0000 00000 0000 00000 0000 00000 0000 00000 0000 00000 0000 00000 0000 00000 0000 00000 0000		- 2
=	-							RC					-
	}												
_	— 460 -									3/8" PEL-PLUG			_
30 —		30.00 - 35.00			458.44 30.00					Bentonite Pellets			- 30
_	ļ -	clayey SAND; sand: fine to coarse; light grey to tan; micacaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM											-
-	-		sc								**** **** 		-
_	455							೨					
35 —	-	35.00 - 40.00			453.44 35.00	2	S-3	ROTO SONIC	10.00				- 3
_	_	silty-sandy CLAY with trace fine gravel; sand: fine to coarse; light grey and tan; micacaceous; cohesive; w <pl td="" to="" very<="" w~pl;=""><td></td><td></td><td>33.00</td><td></td><td></td><td>ROTC</td><td>10.00</td><td></td><td></td><td></td><td>-</td></pl>			33.00			ROTC	10.00				-
_	-	soft to firm; SAPROLITE	CL										-
25 — 25 — 30 — 35 — 40 —	— 450									FilterSil -			
40	-				448.44					0.010" Slotted			_
40 —		Log continued on next page	1								'	1	- 40

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

AA BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-41S

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

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

NORTHING: 1,116,799.23 EASTING: 2,407,126.21 GS ELEVATION: 488.44 ft TOC ELEVATION: 491.35 ft

SHEET 2 of 2 DEPTH W.L.: 25.8 ft ELEVATION W.L.: 465.55 ft DATE W.L.: 8/17/18 TIME W.L.: 14:45

		SOIL PROFILE					SAM	MPLES	s	DIAGRAM and	NOTES	
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT	DIAGRAM and MONITORING PIEZOMET	WELL/ FER PZ 41	WELL CONSTRUCTION DETAILS
40 —		40.00 - 41.00 silty-sandy CLAY with trace gravel; sand: fine to coarse; gravel: fine to coarse; grey; micacaceous; cohesive; w~PL; firm; SAPROLITE 41.00 - 43.00 silty SAND with trace gravel; sand: fine to coarse; gravel: fine; light grey to grey; micacaceous; non-cohesive; dry; dense to very dense; TWR 43.00 - 45.00 clayey- silty SAND with some silt and gravel; sand: fine to coarse; gravel: fine to coarse; gravel; micacaceous; non-cohesive; moist to wet; dense; TWR Boring completed at 45.00 ft	CL SM		40.00 447.44 41.00 445.44 43.00 443.44	OZ .	S-4	ROTO SONIC	<u>3.00</u> 5.00	Schedule 40 PVC Double Wall U-Pack Screen		PZ 41 Borehole Diameter: 6" WELL CASING Interval: 0-45' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 35-45'
50 —	- - 440 - -											Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK Interval: 32-45' Type: Double Wall U-Pack Screen
55 —	- - 435 - -											Quantity: 250 lbs FILTER PACK SEAL Interval: 27-32' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-27' Type: Portland Cement and Quick Gel
60 —	- - 430 											Bentonite Mix Quantity: Cement: 282 lbs Quick Gel: 12.5 lbs Water: 40 gallons
- 65 —	- - 425 -											
-	- - - 420											
70 —	- - - - 415											
75 —	_ _ _ _ _ 410											
DRII	LLING	LE: 1 in = 5 ft cCOMPANY: Cascade M. Rodrigues		CHI	INSPE ECKEI FE: 10) BY	: Tin			ards, PG	G	OLDER



RECORD OF BOREHOLE PZ-42I

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 105.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/20/18 DATE COMPLETED: 8/21/18 NORTHING: 1,116,014.66 EASTING: 2,405,294.40 GS ELEVATION: 500.38 ft TOC ELEVATION: 502.97 ft SHEET 1 of 3

DEPTH W.L.: 9.5 ft

ELEVATION W.L.: 493.47 ft

DATE W.L.: 8/22/18

TIME W.L.: 15:15

		0011 5525115						4DI = -					_
.	<u>N</u>	SOIL PROFILE						MPLES		DIAGRAM and N MONITORING V PIEZOMETE	OTES VELL/ :R	WELL	
(ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT	2.59 ft AGS	PZ 42	CONSTRUCTION DETAILS	
0 -	500 	0.00 - 10.00 Hydrovac 0-10'			(4)					Stick up		PZ 42 Borehole Diameter: 6" WELL CASING Interval: 0-96' Material: Schedule 40 PVC	_
5 — -	- 495 											Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 86-96' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2"	I
- 0 -	- - 490	10.00 - 20.00 Clayey SILT with some sand; sand: fine to coarse; red; micacaceous; non-cohesive; wet; loose to compact;RESIDUUM			490.38							Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK Interval: 83-96' Type: Double Wall U-Pack Screen Quantity: 500 lbs	
- - - 15 —	- - - - 485 -		ML			ON.	8-1	ROTO SONIC	<u>10.00</u> 10.00			FILTER PACK SEAL Interval: 77-83' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-77' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 940 Ibs Quick Gel: 37.5 Ibs Water: 80 gallons	
0 —	- - - 480 -	20.00 - 30.00 sitty CLAY with some sand; sand: fine to coarse; red to reddish brown; micacaceous; cohesive; w~PL to w>PL; loose to compact; RESIDUUM			480.38								
5 —	- - 475 - -		CL			o Z	S-2	ROTO SONIC	10.00 10.00	170	004 70004		
0 -	- - - 470 -	30.00 - 37.00 silty CLAY with some sand; sand: fine to coarse; red to reddish brown; micacaceous; cohesive; w~PL to w>PL; loose to compact; RESIDUUM			470.38 30.00					X			
- - 5 —	- - - - 465		CL		462.22	No	S-3	ROTO SONIC	<u>9.50</u> 10.00				
-	-	37.00 - 40.00 clayey SAND with silt; sand: fine to coarse; brown to grey, micacaceous; non-cohesive; wet; compact; SAPROLITE	sc		463.38 37.00					Portland Cement and Quick Gel Bentonite Mix			

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

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-42I

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

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

NORTHING: 1,116,014.66 EASTING: 2,405,294.40 GS ELEVATION: 500.38 ft TOC ELEVATION: 502.97 ft

SHEET 2 of 3 DEPTH W.L.: 9.5 ft ELEVATION W.L.: 493.47 ft DATE W.L.: 8/22/18 TIME W.L.: 15:15

DESCRIPTION 0.00 - 45.00 ayey SAND with silt; sand: fine to coarse; brown to grey; iicacaceous; non-cohesive; wet; compact; SAPROLITE 5.00 - 50.00 Ilty SAND with some clay and gravel; sand: fine to coarse; ravel: fine; grey; micacaceous; non-cohesive; moist; compact of dense; SAPROLITE	SOSO SC	GRAPHIC	DEPTH (ft) 40.00	PID (ppm)	NUMBER	TYPE	REC / ATT	DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER PZ 42	WELL CONSTRUCTION DETAILS
ayey SAND with silt; sand: fine to coarse; brown to grey; iicacaceous; non-cohesive; wet; compact; SAPROLITE 5.00 - 50.00 Ilty SAND with some clay and gravel; sand: fine to coarse; ravel: fine; grey; micacaceous; non-cohesive; moist; compact			40.00					<u>P</u>	
Ity SAND with some clay and gravel; sand: fine to coarse; ravel: fine; grey; micacaceous; non-cohesive; moist; compact			455.38					W W	Borehole Diameter: 6" /ELL CASING nterval: 0-96' //aterial: Schedule 40
	SM		45.00	No	8.4	ROTO SONIC	<u>10.00</u> 10.00	D J W E M D S E	PVC Joiameter: 2" Joiameter: 2" Joint Type: Flush/Thread //ELL SCREEN Interval: 86-96' Joiaterial: 0.010" Slotted Schedule 40 PVC Joiameter: 4" Outer/2" Inner Slot Size: 0.010 Ind Cap: 0.4
0.00 - 60.00 Ity SAND with some clay and gravel; sand: fine to coarse; ravel: fine; grey; micacaceous; non-cohesive; moist to wet; ense to very dense; SAPROLITE			450.38 50.00					FI C	ILTER PACK Interval: 83-96' 'ype: Double Wall U-Pack Screen Quantity: 500 lbs ILTER PACK SEAL Interval: 77-83' 'ype: 3/8" PEL-PLUG
	SM			No	8-5	ROTO SONIC	8.50 10.00	Al T	NNULUS SEAL nterval: 0-77' ype: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 940 lbs Quick Gel: 37.5 lbs Water: 80 gallons
0.00 - 70.00 o Recovery ote: Assumed SAPROLITE based on surrounding samples			440.38			ONIC			
	SM		430.38	No	9-8	ROTO SONIC	10.00		
0.00 - 77.00 Ity SAND to sitty GRAVEL; sand: fine to coarse; gravel: fine to parse; black to dark grey; micacaceous; non-cohesive; wet; ense to very dense; SAPROLITE	SM-GM		70.00	No	8-7	ROTO SONIC	<u>6.00</u> 10.00		
7.00 - 80.00 Ity SAND/GRAVEL; sand: fine to coarse; gravel: fine to parse; grey to dark grey; micacaceous; non-cohesive; dry to loist; dense to very dense; TWR Log continued on next page	SM-GM		77.00					3/8" PEL-PLUG _	
7.0 Ity	SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE 10 - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page 1 in = 5 ft	SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GN 00 - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page	SAND to sitly GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM O - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page 1 in = 5 ft GA	70.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM O - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page 1 in = 5 ft GA INSPE	70.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page 1 in = 5 ft GA INSPECTO	70.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM O - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page	00 - 77.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM O - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page	00 - 70.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM ON - 80.00 SAND/GRAVEL; sand: fine to coarse; gravel: fine to se; grey to dark grey; micacaceous; non-cohesive; dry to st; dense to very dense; TWR Log continued on next page	3/8" PEL-PLUG _ Log continued on next page 1077.00 SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to se; black to dark grey; micacaceous; non-cohesive; wet; se to very dense; SAPROLITE SM-GM SM-GM A23.38 77.00 A23.38 PEL-PLUG _ SM-GM SM-GM A20.38 PEL-PLUG _ SM-GM A20.38 PEL-PLUG _ SM-GM A20.38 CA INSPECTOR: C. Tidwell



RECORD OF BOREHOLE PZ-42I

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

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

NORTHING: 1,116,014.66 EASTING: 2,405,294.40 GS ELEVATION: 500.38 ft TOC ELEVATION: 502.97 ft

SHEET 3 of 3 DEPTH W.L.: 9.5 ft ELEVATION W.L.: 493.47 ft DATE W.L.: 8/22/18 TIME W.L.: 15:15

	z	SOIL PROFILE					SAI	MPLE:	5	DIAGRAM an MONITORIN PIEZOME	NOTES WELL/	
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT	PIEZOME	PZ 42	WELL CONSTRUCTION DETAILS
80 -	420 	80.00 - 84.50 silty SAND to silty GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micacaceous; non-cohesive; wet; dense to very dense; TWR	SM-GM		80.00			O.		Bentonite Pellets		PZ 42 Borehole Diameter: 6" WELL CASING Interval: 0-96' Material: Schedule 40 PVC Diameter: 2" Joint Type:
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 due to biotite gneiss rock fragments (i.e., sonic-drilling induced wafers or disks) found in preceding and following intervals and drill chatter/hard drilling indicative of drilling in competent bedrock			415.88 415.38 85.00	ON	8-S	ROTO SONIC	<u>5.00</u> 10.00	FilterSil —		Flush/Thread WELL SCREEN Interval: 86-96' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK
90 —	410 	90.00 - 95.00 BIOTITE GNEISS; moderately weathered; crystals: medium to coarse; gneissic banding; black/white; strong			90.00			ONIC		0.010" Slotted Schedule 40 PVC Double Wall U-Pack Screen		Interval: 83-96' Type: Double Wall U-Pack Screen Quantity: 500 lbs FILTER PACK SEAL Interval: 77-83' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL
95 —	405 	95.00 - 100.00 No Recovery; possible high fracture zone Note: Assumed BEDROCK due to biotite gneiss rock fragments (i.e., sonic-drilling induced wafers or disks) and competent bedrock found in preceding interval and drill chatter/hard drilling indicative of drilling in competent bedrock			95.00	o _N	6-S	ROTO SONIC	<u>5.00</u> 10.00			Interval: 0-77' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 940 lbs Quick Gel: 37.5 lbs Water: 80 gallons
00 —	400 	100.00 - 105.00 No recovery; rock dropped out of sample Note: Assumed BEDROCK due to biotite gneiss rock fragments (i.e., sonic-drilling induced wafers or disks) and competent bedrock found in preceding interval and drill chatter/hard drilling indicative of drilling in competent bedrock			400.38 100.00	o _N	S-10	ROTO SONIC	<u>0.00</u> 5.00	Cave-in at bottom of – hole		
05 —	— 395 - - -	Boring completed at 105.00 ft			395.38							
10 -	390 											
- 115 — - -	- - 385 - - -											
DRII	LLING	LE: 1 in = 5 ft COMPANY: Cascade M. Rodrigues		CHE	INSPE ECKEI E: 10) BY	: Tin			ards, PG	G	OLDER



RECORD OF BOREHOLE PZ-43S

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 55.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/17/18 DATE COMPLETED: 8/17/18 NORTHING: 1,115,598.55 EASTING: 2,405,507.91 GS ELEVATION: 501.27 ft TOC ELEVATION: 504.00 ft SHEET 1 of 2
DEPTH W.L.: 19.0 ft
ELEVATION W.L.: 485.00 ft
DATE W.L.: 8/17/18
TIME W.L.: 15:00:00

SOIL PROFILE SAMPLES DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER ELEVATION (ft) DEPTH (ft) WFII GRAPHIC LOG ELEV. (mdd) AT NUMBER CONSTRUCTION uscs TYPE DESCRIPTION PZ 43 **DETAILS** REC/ 딢 DEPTH 2.73 ft AGS _ (ft) Stick up 0.00 - 10.00 PZ 43 Hydrovac 0-10 Borehole Diameter: 6" 500 WELL CASING Interval: 0-50.5 Material: Schedule 40 Diameter: 2 Joint Type: Flush/Thread 5 WELL SCREEN Interval: 40.5-50.5' Material: 0.010" Slotted 495 Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010 End Cap: 0.4 FILTER PACK 491.27 Interval: 37.5-52'
Type: Double Wall
U-Pack Screen
Quantity: 250 lbs 10 -10 10.00 clayey SILT with some sand; sand: fine to coarse; red; non-cohesive; wet; loose to very loose; RESIDUUM 490 FILTER PACK SEAL ML Interval: 32-37.5' Type: 3/8" PEL-PLUG Quantity: 5 gallons ROTO SONIC ANNULUS SEAL 486 27 Interval: 0-32'
Type: Portland Cement S-1 15 ဍ 6.50 10.00 15.00 - 20.00 15.00 Portland clayey SILT with some sand; sand: fine to coarse; light reddish tan; micacaceous; non-cohesive; wet; loose to compact; and Quick Gel Cement and Bentonite Mix 485 Quick Gel RESIDUUM Quantity: Cement: 282 lbs Quick Gel: 25 lbs ML Water: 45 gallons 481.27 20 20 20.00 - 30.00 20.00 clayey SILT with sand; sand: fine to coarse; reddish brown to brown; micacaceous; non-cohesive; moist to wet; compact to 480 dense; RESIDUUM 10/15/18 ROTO SONIC GDT 운 S-2 10.00 10.00 25 ML 25 GOLDER NJ-PA 05-24-06. 475 471.27 30 30 30.00 sitty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; brown; micacaceous; non-cohesive; moist to wet; dense; SAPROLITE 12 (2).GPJ 470 6 2018 ROTO SONIC 3/8" PEL-PLUG SCHERER SC-SM 운 10.00 10.00 Bentonite Pellets 35 465 PLANT RECORD Filter Sil -40 Log continued on next page

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

BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-43S

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

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

NORTHING: 1,115,598.55 EASTING: 2,405,507.91 GS ELEVATION: 501.27 ft TOC ELEVATION: 504.00 ft

SHEET 2 of 2 DEPTH W.L.: 19.0 ft ELEVATION W.L.: 485.00 ft DATE W.L.: 8/17/18 TIME W.L.: 15:00:00

	z	SOIL PROFILE					SAI	MPLE:	S	DIAGRAM and MONITORING PIEZOME	NOTES WELL/	
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	PIEZOME	TER PZ 43	WELL CONSTRUCTION DETAILS
40 - - -	460 	40.00 - 45.00 silty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; brown; micacaceous; non-cohesive; moist to wet; dense; SAPROLITE	SC-SM		40.00							PZ 43 Borehole Diameter: 6" WELL CASING Interval: 0-50.5' Material: Schedule 40 PVC Diameter: 2"
45 — - -	- 455 - -	45.00 - 50.00 sitty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; grey; micacaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE	SM-GM		456.27 45.00	. Q	8.4 4.8	ROTO SONIC	10.00 10.00	0.010" Slotted Schedule 40 _ PVC Double Wall U-Pack Screen		Joint Type: Flush/Thread WELL SCREEN 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
50 -	- - - 450	50.00 - 55.00 sitty-clayey SAND with some gravel; sand: fine to coarse; gravel: fine to coarse; grey; micacaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE			451.27 50.00	_		ONIC		Filter Sil –		FILTER PACK Interval: 37.5-52' Type: Double Wall U-Pack Screen Quantity: 250 lbs FILTER PACK SEAL
_ _ 55 —	-		SM-GN		446.27	⊗ N	S-5	ROTO SONIC	10.00 5.00	3/8" PEL-PLUG _ Bentonite Pellets		Interval: 32-37.5' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-32'
-	445 	Boring completed at 55.00 ft										Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 282 lbs Quick Gel: 25 lbs Water: 45 gallons
60 -	- 440 											
55 — -	- - - - 435											
70 —	-											
-	430 											
75 —	- - 425 -											
80 —	-											
DRIL	LLING	LE: 1 in = 5 ft : COMPANY: Cascade M. Rodrigues		CH	INSPE ECKEI TE: 10) BY	: Tin			ards, PG	G	OLDER



RECORD OF BOREHOLE PZ-44I

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 114.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/23/18 DATE COMPLETED: 9/5/18 NORTHING: 1,121,515.27 EASTING: 2,404,331.42 GS ELEVATION: 507.69 ft TOC ELEVATION: 510.19 ft SHEET 1 of 3

DEPTH W.L.: 19.8 ft

ELEVATION W.L.: 490.39 ft

DATE W.L.: 9/7/18

TIME W.L.: 07:55

	1					ELEV				TIME W.L	
	NO -	SOIL PROFILE					MPLES	S	DIAGRAM and MONITORING PIEZOME	NOTES WELL/ TER	\\\
(#)	ELEVATION (ft)	DESCRIPTION	SOSU	LOG —	EV. (Edd)	NUMBER	TYPE	REC / ATT	2.5 ft AGS	PZ 44	WELL CONSTRUCTION DETAILS
0 -	- - - 505	0.00 - 5.00 silty CLAY with some sand; sand: fine; red; cohesive; w <pl; fill<="" firm="" stiff;="" td="" to=""><td>CL</td><td></td><td></td><td></td><td>NIC</td><td></td><td>Stick up [—]</td><td></td><td>PZ 44 Borehole Diameter: 6" WELL CASING Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</td></pl;>	CL				NIC		Stick up [—]		PZ 44 Borehole Diameter: 6" WELL CASING Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread
5	- - - - 500	5.00 - 10.00 sitty CLAY-clayey SILT with trace sand; sand: fine; red; non-cohesive; wet; loose to compact; RESIDUUM	CL-ML		2.69	8-1	ROTO SONIC	8.00 10.00			WELL SCREEN Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4 FILTER PACK
) — [- - -	- - - - 495	10.00 - 15.00 clayey SILT with sand; sand: fine to coarse; orange brown; non-cohesive; moist to wet; compact; RESIDUUM	ML		7.69		0				Interval: 103-114' Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK SEAL Interval: 98-103' Type: 3/8" PEL-PLUG Quantity: 5 gallons
5 —	- - - - 490	15.00 - 20.00 sandy SILT-silty SAND; sand: fine to coarse; orange brown; non-cohesive; wet; loose; RESIDUUM	ML-SM	15	2.69	8-2	ROTO SONIC	<u>7.60</u> 10.00			ANNULUS SEAL Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 1128 Ibs Quick Gel: 150 lbs Water: 120 gallons
	- - - - 485 -	20.00 - 30.00 clayey-sitty SAND with some gravel; sand: fine to coarse; gravel: fine; orange brown; micacaceous; non-cohesive; moist to wet; compact to dense; RESIDUUM	SC SM	20	7.69	S-3	ROTO SONIC	9.00			
	- - - 480 -		SC-SM		7.69	·Ġ	ROTO	10.00			
) =	- - 475 -	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; micacaceous; non-cohesive; moist to wet; dense; RESIDUUM	SC	3(.00		ONIC				
5	- - - - 470	35.00 - 40.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; orange brown;micacaceous; weathered rock and black carbon deposits; non-cohesive; moist to wet; dense to very dense; RESIDUUM	SM-GM	35	2.69	8.4	ROTO SONIC	8.00 10.00			
-1				r rafet	1	1	I .	1		p. 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Í.

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

AA BOREHOL

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



RECORD OF BOREHOLE PZ-44I

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

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

NORTHING: 1,121,515.27 EASTING: 2,404,331.42 GS ELEVATION: 507.69 ft TOC ELEVATION: 510.19 ft

SHEET 2 of 3 DEPTH W.L.: 19.8 ft ELEVATION W.L.: 490.39 ft DATE W.L.: 9/7/18 TIME W.L.: 07:55

	N N	SOIL PROFILE					SAI	MPLES		DIAGRAM and MONITORING PIEZOMET	NOTES WELL/ FR	
(tt)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	PID (ppm)	NUMBER	TYPE	REC / ATT	FILZOWLI	PZ 44	WELL CONSTRUCTION DETAILS
45 —	- 465 	40.00 - 43.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; orange brown; micacaceous; weathered rock and black carbon deposits; non-cohesive; moist to wet; dense to very dense; RESIDUUM 42.00 - 45.00 silty GRAVEL and SAND with some clay; sand: fine to coarse; gravel: fine to coarse; tan to dark grey; micacaceous; weathered rock fragments; non-cohesive; moist to wet; dense; SAPROLITE 45.00 - 50.00 silty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micacaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM-GM		464.69 462.69 45.00	ON	S-5	ROTO SONIC	8.00 10.00	Porland Cement and _ Quick Gel		PZ 44 Borehole Diameter: 6" WELL CASING Interval: 0-114' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread WELL SCREEN Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2" Inner Slot Size: 0.010" End Cap: 0.4 FILTER PACK
50 —	- - - 455 - - -	50.00 - 60.00 silty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micacaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM		457.69 50.00	oN O	9-9	ROTO SONIC	8.00 10.00	Bentonite Mix		Interval: 103-114' Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK SEAL Interval: 98-103' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 1128 lbs Quick Gel: 150 lbs
60 —	- 450 - - - - - 445 - -	60.00 - 69.50 sitty SAND with clay and gravel; sand: fine to coarse; gravel: fine to coarse; grey to dark grey; micacaceous; weathered rock; non-cohesive; moist to wet; dense; SAPROLITE	SM		447.69 60.00	No ON	S-7	ROTO SONIC	<u>8.70</u> 10.00		2000 P000	Water: 120 gallons
70 —	440 435 	69.50 - 70.00 sitty GRAVEL with sand; sand: fine to coarse; gravel: fine; dark grey; micacaceous; non-cohesive; moist; dense to very dense; SAPROLITE 70.00 - 80.00 sitty SAND and sitty GRAVEL; sand: fine to coarse; gravel: fine; dark grey; micacaceous; non-cohesive; moist; dense to very dense; SAPROLITE	GM SM-GM		438.19 437.69 70.00	ON	8-8	ROTO SONIC	<u>10.00</u> 10.00			
	- 430 - - 	Log continued on next page LE: 1 in = 5 ft COMPANY: Cascade			427.69 \ INSP!	ECT(DR: (dwell			OLDER



RECORD OF BOREHOLE PZ-44I

PROJECT: Plant Scherer PROJECT NUMBER: 166235004 DRILLED DEPTH: 114.00 ft DRILL RIG: Geoprobe 8140LC DATE STARTED: 8/23/18 DATE COMPLETED: 9/5/18 NORTHING: 1,121,515.27 EASTING: 2,404,331.42 GS ELEVATION: 507.69 ft TOC ELEVATION: 510.19 ft SHEET 3 of 3

DEPTH W.L.: 19.8 ft

ELEVATION W.L.: 490.39 ft

DATE W.L.: 9/7/18

TIME W.L.: 07:55

	z -	SOIL PROFILE					SAI	MPLES		DIAGRAM and NC MONITORING WI PIEZOMETER	TES ELL/	
(t)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE	REC / ATT		Z 44	WELL CONSTRUCTION DETAILS
80 -	-	80.00 - 90.00 silty SAND and silty GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micacaceous; non-cohesive; moist to wet; dense to very dense; SAPROLITE			80.00						02 00 00 00 00 00 00 00 00 00 00 00 00 0	PZ 44 Borehole Diameter: 6" WELL CASING Interval: 0-114'
15 —	425 		SM-GN			ON.	S-9	ROTO SONIC	9.00			Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread
"	-		SIVI-GIV			Z	Ó	ROTO	10.00	X.	90000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	WELL SCREEN Interval: 104-114' Material: 0.010" Slotted Schedule 40 PVC Diameter: 4" Outer/2"
-	420 				417.69						00000 00000 00000 00000 00000 00000 0000	Inner Slot Size: 0.010" End Cap: 0.4 FILTER PACK Interval: 103-114'
~	- - - 415	90.00 - 91.00 silty SAND and GRAVEL; sand: fine to coarse; gravel: fine to coarse; dark grey; micacaceous; non-cohesive; wet; dense to very dense; SAPROLITE 91.00 - 97.00 silty GRAVEL with sand; sand: fine to coarse; gravel: fine to coarse; dark grey; micacaceous; non-cohesive; moist to wet;	SM-GN		90.00 416.69 91.00					3/8" PEL-PLUG _ Bentonite Pellets		Type: Double Wall U-Pack Screen Quantity: 200 lbs FILTER PACK SEAL Interval: 98-103' Type: 3/8" PEL-PLUG
5 —	- - -	very dense; weathered chlorite-actinolite schist; TWR	GM			o N	S-10	ROTO SONIC	<u>9.50</u> 10.00	X.	90 00 00 00 00 00 00 00 00 00 00 00 00 0	Quantity: 5 gallons ANNULUS SEAL Interval: 0-98' Type: Portland Cement and Quick Gel Bentonite Mix
-	- 410 -	97.00 - 100.00 CHLORITE-ACTINOLITE SCHIST; fresh to slightly weathered; crystals fine to coarse; strong rock; BEDROCK			410.69 97.00							Quantity: Cement: 1128 lbs Quick Gel: 150 lbs Water: 120 gallons
00 -	- - -	100.00 - 105.00 No Recovery Note: Assumed BEDROCK based on previous sample and hard			407.69 100.00					3/8" PEL-PLUG _ Bentonite Pellets		
-	405 	drilling						SIC				
)5 —	- - -	105.00 - 110.00 CHLORITE-ACTINOLITE SCHIST; fresh to slightly weathered; crystals fine to coarse; strong rock; BEDROCK			402.69 105.00	N _O	S-11	ROTO SONIC	3.00 10.00			
-	- 400 - -				397.69					FilterSil — 0.010" Slotted / Schedule 40		
10 —	- - - 395	110.00 - 114.00 CHLORITE-ACTINOLITE SCHIST; fresh to slightly weathered; crystals fine to coarse; very strong rock; BEDROCK			110.00	o _N	S-12	ROTO SONIC	<u>4.00</u> 4.00	PVC Double Wall U-Pack Screen		
5 —	-	Boring completed at 114.00 ft			393.69			RO				
=	- - - 390											
+	-											

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

GA INSPECTOR: C. Tidwell CHECKED BY: Timothy Richards, PG



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 65.80 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-01

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,117,001.06 EASTING: 2,398,512.88

 DATE STARTED: 11/6/15 DATE COMPLETED: 11/10/15
 GS ELEVATION: 549.84 TOC ELEVATION: 553.16 ft

SHEET 1 of 2 DEPTH W.L.:53.78' DATE W.L.:11/11/15 TIME W.L.:11:30

	7	SOIL PROFILE						SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 —	-	0.00 - 2.50 CLAYEY SILT; red/brown clay, trace to little sand, firm to stiff, dry, W <pl< td=""><td>МН</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td>WELL CASING Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6"</td></pl<>	МН								X	WELL CASING Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6"
-	-	2.50 - 5.00 reddish brown/beige mottled clay with trace fine sand, some mica, stiff to very stiff, dry to moist, W <pl< td=""><td></td><td></td><td>2.50</td><td>1</td><td>DO</td><td>4-5-7</td><td>12</td><td>1.20 1.50</td><td></td><td>Joint Type: Threaded SURFACE CASING Interval: N/A</td></pl<>			2.50	1	DO	4-5-7	12	1.20 1.50		Joint Type: Threaded SURFACE CASING Interval: N/A
5 -	— 545 –	5.00 - 8.50 more clay noted, reddish brown clay with trace fine sand and mica			544.84	2	DO	6-12-17	29	1.50 1.50		Material: N/A Diameter: N/A WELL SCREEN Interval: 54'-64'
-	-	8.50 - 13.50			541.34 8.50	3	DO	4-10-13	23	1.50 1.50		Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PVC
10 —	— 540 –	not mottled				4	DO	5-10-13	23	1.50 1.50	X X X X X X X X X X X X X X X X X X X	FILTER PACK Interval: 47.7'-65.8' Type: #1 sand FILTER PACK SEAL
-	- - -	13.50 - 14.50			536.34 13.50						X X	Interval: 45.1'-47.7' Type: 3/8" Bentonite Pellets ANNULUS SEAL
15 —	— 535 –	reddish brown clay with trace fine sand and mica 14.50 - 17.00 SILTY SAND; deeply weathered granitic gneiss, some quartz, partially weathered	SM		535.34 14.50	5	DO	2-7-5	12	1.00 1.50		Interval: 0'-45.1' Type: Portland Type I/Type II/Gel Mix WELL COMPLETION
_	- -	rock, white sand and silt, compact, dry, W <pl -="" 17.00="" 20.00="" brown="" fine="" light="" sand,<="" silt="" silt;="" td="" trace="" with=""><td>ML</td><td></td><td>17.00</td><td></td><td></td><td></td><td></td><td></td><td></td><td>Pad: 4'x4'x4" Protective Casing: Steel DRILLING METHODS Soil Drill: 3.25" HSA/HQ</td></pl>	ML		17.00							Pad: 4'x4'x4" Protective Casing: Steel DRILLING METHODS Soil Drill: 3.25" HSA/HQ
20 —	— 530 –	some mica, non-plastic, soft, dry to moist, W <pl -="" 20.00="" 25.00="" beige="" dry,="" fine="" light="" lots="" mica,="" non-plastic,="" of="" sand,="" silt,="" silver="" soft,="" td="" trace="" w<pl<="" white=""><td></td><td></td><td>529.84 20.00</td><td>6</td><td>DO</td><td>3-3-4</td><td>7</td><td>1.20 1.50</td><td></td><td>Rotary Rock Drill: 3.25" HSA/HQ Rotary</td></pl>			529.84 20.00	6	DO	3-3-4	7	1.20 1.50		Rotary Rock Drill: 3.25" HSA/HQ Rotary
-	_										Portland Type I/ Type — 1111 II/ Gel mix	-
25 — _	525 	25.00 - 30.00 light beige/white silt with mica and trace fine sand to deeply weathered granitic gneiss			524.84 25.00	7	DO	3-4-4	8	1.10 1.50	Portland Type I/ Type – II/ Gel mix	- - -
-	- -	with quartz, partially weathered rock, white sand and silt, compact, dry, W <pl< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td></pl<>										_
30 —	— 520 –	30.00 - 33.00 light to medium brown silt, trace to little sand, non-plastic, silt appears to be made of			519.84 30.00	8	DO	4-8-7	15	1.30 1.50	#	<u> </u> -
_	- -	biotite gneiss interlayered with quartz veins, soft, dry to moist, W <pl 33.00 - 40.00 SILTY SAND; light to medium brown silt</pl 			516.84 33.00							-
35 —	— 515 –	with trace fine sand, greenish weathering, non-plastic, soft, moist, W <pl< td=""><td></td><td></td><td></td><td>9</td><td>DO</td><td>3-6-8</td><td>14</td><td>1.40 1.50</td><td>_</td><td></td></pl<>				9	DO	3-6-8	14	1.40 1.50	_	
-	-		SM									-
40 — –	— 510 —	40.00 - 53.00 brown/white/green fine to coarse sand, non to low plasticity, dry to moist, soft, W <pl< td=""><td></td><td></td><td>509.84</td><td>10</td><td>DO</td><td>6-27-42</td><td>69</td><td>1.50 1.50</td><td></td><td>]</td></pl<>			509.84	10	DO	6-27-42	69	1.50 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



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 65.80 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-01

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,117,001.06 EASTING: 2,398,512.88

 DATE STARTED: 11/6/15 DATE COMPLETED: 11/10/15
 GS ELEVATION: 549.84 TOC ELEVATION: 553.16 ft

SHEET 2 of 2 DEPTH W.L.:53.78' DATE W.L.:11/11/15 TIME W.L.:11:30

	z	SOIL PROFILE				SAMPLES						
(£)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45 —	-	40.00 - 53.00 brown/white/green fine to coarse sand, non to low plasticity, dry to moist, soft, W <pl (continued)<="" td=""><td></td><td></td><td></td><td>11</td><td>DO</td><td>12-20-17</td><td>37</td><td>1.30 1.50</td><td>3/8" Bentonite – chips</td><td>WELL CASING Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</td></pl>				11	DO	12-20-17	37	1.30 1.50	3/8" Bentonite – chips	WELL CASING Interval: -3'-54' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
50 —	- 500					12	DO	14-21-29	50	1.40		SURFACE CASING Interval: N/A Material: N/A Diameter: N/A
-	- - -	53.00 - 58.00		₽.◊₽	496.84	12	БО	14-21-29	30	1.50		WELL SCREEN Interval: 54'-64' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010"
5 —	- 495 -	53.00 - 58.00 PARTIALLY WEATHERED ROCK; biotite gneiss with quartz and hornblende	PWR		53.00	13	_ DO _	50/3	_ 50	0.20	#1 cond	End Cap: Schedule 40 PV0 FILTER PACK Interval: 47.7'-65.8' Type: #1 sand
-		58.00 - 65.80			491.84 58.00						#1 sand —	FILTER PACK SEAL Interval: 45.1'-47.7' Type: 3/8" Bentonite Pelle
0 -	- 490 -	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%				14	CORE			1.00 1.50	0.010" slot _ screen	ANNULUS SEAL Interval: 0'-45.1' Type: Portland Type I/Typ II/Gel Mix WELL COMPLETION
_	-	Core Run (59.8'-64.8'): RQD=44%; REC=98% Core Run (64.8'-65.8'): RQD=82%; REC=90%	BR			15	CORE			4.90 5.00		Pad: 4'x4'x4" Protective Casing: Steel DRILLING METHODS Soil Drill: 3.25" HSA/HQ
5 —	 485 	Boring completed at 65.80 ft			484.04	16	CORE			0.90 1.00		Rotary Rock Drill: 3.25" HSA/HQ Rotary
-	-	· ·									-	
0 -	 480										- - -	
-	- - -										- - -	
5 —	475 										-	
-	-										- -	
0 -	470 -										- -	
5 —	- - - 465										- - -	
~ - -	-										-	
1	_										-	

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: DJ Wideman

GA INSPECTOR: Michael Boatman

DATE: 2/1/16

CHECKED BY: Rachel P. Kirkman, P.G.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 20.00 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-02

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,119,972.99

 DATE STARTED: 11/20/15
 EASTING: 2,398,005.52

 DATE COMPLETED: 11/20/15
 GS ELEVATION: 510.46

 TOC ELEVATION: 513.96 ft

SHEET 1 of 1 DEPTH W.L.:2.05' DATE W.L.:11/21/15 TIME W.L.:08:00

	_	SOIL PROFILE						SAMPLES				
(#)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 -	 510	0.00 - 2.50 CLAYEY SAND; red/brown clayey sand, fine to medium grain, non-plastic, some organic material, soft, moist to wet, W <pl< td=""><td>sc</td><td></td><td>507.96</td><td></td><td></td><td></td><td></td><td></td><td>Portland Type I/ Type –</td><td>WELL CASING Interval: -3'-10' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</td></pl<>	sc		507.96						Portland Type I/ Type –	WELL CASING Interval: -3'-10' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
5 —	 	2.50 - 6.00 red/brown clayey sand to orange/yellow clay with trace fine sand, low plasticity, soft, moist, W <pl< td=""><td></td><td></td><td>2.50</td><td>1</td><td>DO</td><td>4-4-3</td><td>7</td><td><u>0.80</u> 1.50</td><td>Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — chips</td><td>SURFACE CASING Interval: N/A Material: N/A Diameter: N/A</td></pl<>			2.50	1	DO	4-4-3	7	<u>0.80</u> 1.50	Portland Type I/ Type — II/ Gel mix 3/8" Bentonite — chips	SURFACE CASING Interval: N/A Material: N/A Diameter: N/A
-	505 	6.00 - 7.50 blue grey sandy clay, trace organica material, low plasticity, firm to stiff, moist, W <pl< td=""><td></td><td></td><td>504.46 6.00 502.96 7.50</td><td>2</td><td>DO</td><td>3-3-3</td><td>6</td><td>1.30 1.50</td><td>3/8" Bentonite – chips -</td><td>WELL SCREEN Interval: 10'-20' Material: Schedule 40 PVC Diameter: 2'</td></pl<>			504.46 6.00 502.96 7.50	2	DO	3-3-3	6	1.30 1.50	3/8" Bentonite – chips -	WELL SCREEN Interval: 10'-20' Material: Schedule 40 PVC Diameter: 2'
- - 10 —	-	7.50 - 13.00 sand and clay, soft, loose, low to non-plastic, moist to wet			7.50	3	DO	3-4-8	12	1.50 1.50		Slot Size: 0.010" End Cap: Schedule 40 PV FILTER PACK Interval: 8.3'-20'
-	500 				497.46	4	DO	2-3-3	6	1.50 1.50		Type: #1 sand FILTER PACK SEAL Interval: 5.3'-8.3' Type: 3/8" Bentonite Pelle
15 —	- - - 495	13.00 - 15.00 SILTY SAND; brownish white sand, trace to some silt, some mica, soft, loose, non-plastic, looks like weathered quartz vein or pegmatite, W <pl< td=""><td>SM</td><td></td><td>13.00 495.46 15.00</td><td></td><td></td><td></td><td></td><td>1.40</td><td>#1 sand</td><td>ANNULUS SEAL Interval: 0'-5.3' Type: Portland Type I/Typi II/Gel Mix</td></pl<>	SM		13.00 495.46 15.00					1.40	#1 sand	ANNULUS SEAL Interval: 0'-5.3' Type: Portland Type I/Typi II/Gel Mix
-	495 - -	15.00 - 20.00 brown/bronze and white sand with trace to some silt, non-plastic, loose, moist, W <pl< td=""><td></td><td></td><td>10.00</td><td>5</td><td>DO</td><td>13-12-10</td><td>22</td><td>1.40 1.50</td><td> </td><td>WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Steel</td></pl<>			10.00	5	DO	13-12-10	22	1.40 1.50		WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Steel
20 —	- - 490	Boring completed at 20.00 ft			490.46	6	DO	10-50/4	50	0.50		DRILLING METHODS Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
-	- 490 - -	5 ,					БО	10-30/4	50	0.80	-	
25 —	- - 485										- -	
-	-										- -	
0 -	- - - 480										-	
	-										- - -	
5 —	- - 475										-	-
	- - -										-	-
0 —	- 470										- - -	
-	- -										- -	-
+	_										-	-

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



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

 RECORD OF BOREHOLE LPZ-03

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,117,884.20 EASTING: 2,398,656.59

 DATE STARTED: 11/17/15 DATE COMPLETED: 11/18/15
 GS ELEVATION: 511.48 TOC ELEVATION: 515.11 ft

SHEET 1 of 1 DEPTH W.L.:6.48 DATE W.L.:1/14/16 TIME W.L.:11:13

	z	SOIL PROFILE			1			SAMPLES				
(tf)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0 —	- 510 	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< td=""><td>СН</td><td></td><td>508.98 2.50</td><td></td><td></td><td>oo mon diop</td><td></td><td></td><td>Portland Type I/ Type – II/ Gel mix</td><td>WELL CASING Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded</td></pl<>	СН		508.98 2.50			oo mon diop			Portland Type I/ Type – II/ Gel mix	WELL CASING Interval: -3'-25' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
5 —	- -	2.50 - 4.00 red brown mottled clay with trace fine sand, dry to moist, W <pl -="" 13.00<="" 4.00="" td=""><td></td><td></td><td>507.48 4.00</td><td>1</td><td>DO</td><td>4-6-10</td><td>16</td><td>1.40 1.50</td><td></td><td>SURFACE CASING Interval: N/A Material: N/A Diameter: N/A</td></pl>			507.48 4.00	1	DO	4-6-10	16	1.40 1.50		SURFACE CASING Interval: N/A Material: N/A Diameter: N/A
5 -	- 505	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< td=""><td></td><td></td><td></td><td>2</td><td>DO</td><td>5-10-12</td><td>22</td><td>1.50 1.50</td><td></td><td>WELL SCREEN Interval: 25'-35' Material: Schedule 40 PV</td></pl<>				2	DO	5-10-12	22	1.50 1.50		WELL SCREEN Interval: 25'-35' Material: Schedule 40 PV
-	_		МН			3	DO	5-7-9	16	1.50 1.50	Portland Type I/ Type —	Diameter: 2' Slot Size: 0.010" End Cap: Schedule 40 PV
10 — –	- 500					4	DO	3-5-8	13	1.50 1.50	II/ Germix	FILTER PACK Interval: 20'-35' Type: #1 sand *Heaving sands during well construction
-	- -	13.00 - 18.00 CLAYEY SAND; light green to beige sand,			498.48 13.00							FILTER PACK SEAL Interval: 17.7'-20' Type: 3/8" Bentonite Pelle
5 — -	- - - 495	fine to coarse, trace clay and gravel, non to low plasticity, compact, soft, very moist, W <pl< td=""><td>sc</td><td></td><td></td><td>5</td><td>DO</td><td>2-1-2</td><td>3</td><td>1.50 1.50</td><td></td><td>ANNULUS SEAL Interval: 0'-17.7' Type: Portland Type I/Typ II/Gel Mix</td></pl<>	sc			5	DO	2-1-2	3	1.50 1.50		ANNULUS SEAL Interval: 0'-17.7' Type: Portland Type I/Typ II/Gel Mix
-	- 495 - -	18.00 - 20.00			493.48 18.00						3/8"	WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Steel
0 —	- - 490 -	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	МН		491.48 20.00	6	DO	1-2-1	3	<u>1.50</u> 1.50	Bentonite – chips	DRILLING METHODS Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
- 5 —	- - -	25.00 - 30.30 yellow brown clay,, trace to some fine to			486.48 25.00	7	DO	1-2-2	4	1.50 1.50		-
	485 	medium sand, low to moderate plasticity, soft to very soft, wet, W>PL								1.00	#1 sand —	_ - -
0 - -	_ 480	30.30 - 35.00 SAPROLITE; white/black/brown sand and clay, low to non-plastic, deeply weathered granitic biotite gneiss, soft, wet			481.18	8	DO	1-2-2	4	0.90 1.50	0.010" slot _ screen	
-	- -	gramo siene gross, con, no	SC		170.10							-
5 —	- 475 	Boring completed at 35.00 ft			476.48	9	DO	1-2-3	5	1.50 1.50		- - -
_ 0 —	- -										-	_
-	— 470 –											-
- 5 —	-											_

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.



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

 RECORD OF BOREHOLE LPZ-04

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,115,963.34 EASTING: 2,397,083.70

 DATE STARTED: 11/18/15 DATE COMPLETED: 11/19/15
 GS ELEVATION: 457.83 TOC ELEVATION: 461.06 ft

SHEET 1 of 1 DEPTH W.L.:15.09' DATE W.L.:11/19/15 TIME W.L.:14:20

0 0 0 0 0 0 0 0 0 0		z	SOIL PROFILE						SAMPLES				
SULTY CLAY: models brown clay, firm to self, buy prisology, most, where the self, but the self, and the self, but the self, and the self, but the self		ELEVATIOI (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH	SAMPLE NO.	TYPE	per 6 in	N-VALUE	REC	PIEZOMETER	CONSTRUCTION
18.00 - 25.00 18.00 - 25.0	0 -	. 455	SILTY CLAY; reddish brown clay, firm to stiff, low plasticity, moist, W <pl< td=""><td>CL</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Interval: -3'-18' Material: Schedule 40 PVC Diameter: 6"</td></pl<>	CL									Interval: -3'-18' Material: Schedule 40 PVC Diameter: 6"
18.00 - 25.00 18.00 - 25.0		455	reddish brown clay, firm to stiff, low			2.50	1	DO	4-5-8	13			Interval: N/A Material: N/A
18.00 - 25.00 18.00 - 25.0	* 		CLAY; yellowish orange clay with fine to	СН		6.00	2	DO	2-5-7	12		Portland Type I/ Type – 11/ Gel mix	- WELL SCREEN Interval: 18'-28' Material: Schedule 40 PVC
18.00 - 25.00 18.00 - 25.0	-	- 450	W <pl 7.50 - 10.00 grayish white clay with trace to some fine to</pl 			7.50	3	DO	5-7-8	15	1.20 1.50	-	Slot Size: 0.010" End Cap: Schedule 40 PV
18.00 - 25.00 18.00 - 25.0	10 —		hard, dry to moist, W <pl -="" 10.00="" 13.00="" clayey="" fine="" orange="" sand;="" td="" to<="" yellowish=""><td>SC</td><td></td><td></td><td>4</td><td>DO</td><td>7-9-10</td><td>19</td><td></td><td></td><td>Interval: 16.5'-31.9' Type: #1 sand</td></pl>	SC			4	DO	7-9-10	19			Interval: 16.5'-31.9' Type: #1 sand
18.00 - 25.00 18.00 - 25.0	† †	- 445	low plasticity, dry to moist, W <pl Shelby Tube Collected: 10'-12' 13.00 - 18.00 red/brown/black/silver silt with some clay and trace coarse sand, non-plastic, mica,</pl 									3/8" Bentonite – chips	Interval: 12.5'-16.5' Type: 3/8" Bentonite Pellet ANNULUS SEAL Interval: 0'-12.5'
18.00 - 25.00 SILTLY SAND red/brown/black/silver sit with some clay and trace coarse sadn, non to low plasticity, soft, moist to wet, Wi-PL	15 —						5	DO	4-9-9	18	1.50 1.50	-	II/Gel Mix WELL COMPLETION Pad: 4'x4'x4"
SM 6 DO 2-2-2 4 150 15	-	- 440	SILTLY SAND; red/brown/black/silver silt with some clay and trace coarse sadn, non										DRILLING METHODS Soil Drill: 3.25" HSA/HQ
25.00 - 30.00 SAPROLITE; top 4 inches fine grain grantitic 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. 432.83 25.00 7 DO 2-3-4 7 1.50 1.50 427.83 30.00 - 35.00 interlayered fine grain grantitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse sand and silt. 422.83 35.00 - 40.00 interlayered sequence: fine grain grantitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse sand and silt, moist to wet, W>PL Boring completed at 40.00 ft 10 DO 11-17-20 37 0.90 Interlayered sequence: fine grain grantitic sand with trace silt and fine to coarse sand and silt, moist to wet, W>PL	20 T - -		composition, confinence to the first	SM			6	DO	2-2-2	4	1.50 1.50		Rotary
soft, W>PL; bottom 10 inches saprolite, fine to medium grain biotite gneiss, sand, silt, fine to coarse, soft, compact, W>PL 30.00 - 35.00	25 —	- 435	SAPROLITE; top 4 inches fine grain granitic				7	DO	2-3-4	7		screen =	
30.00 - 35.00 interlayered fine grain granitic sand with trace sit and fine to medium grain biotite gneiss saprolite with fine to coarse sand and sitt 35.00 - 40.00 interlayered sequence: fine grain granitic sand with trace sit and fine to medium grain biotite gneiss saprolite with fine to coarse sand with trace sit and fine to medium grain biotite gneiss saprolite with fine to coarse sand and silt, moist to wet, W-PL Boring completed at 40.00 ft 10 DO 11-17-20 37 0.90 1.50	- - -	- 430	soft, W>PL, bottom 10 inches saprolite, fine to medium grain biotite gneiss, sand, silt,										
Boring completed at 40.00 ft 10 DO 11-17-20 37 0.90 1.50	30		interlayered fine grain granitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse sand				8	DO	1-4-3	7	1.20 1.50		
Boring completed at 40.00 ft 10 DO 11-17-20 37 0.90 1.50		- 425										-	
Boring completed at 40.00 ft 10 DO 11-17-20 37 0.90 1.50		- 420	intertayered sequence: fine grain granitic sand with trace silt and fine to medium grain biotite gneiss saprolite with fine to coarse			35.00	9	DO	3-5-11	15	1.20 1.50	3/8" Bentonite – chips	
10 DO 11-17-20 37 0.90 1.50	.0 —	0	Design or constituted at 10 00 %			417.83						-	
_ - 415	+		Boring completed at 40.00 ft				10	DO	11-17-20	37	0.90 1.50	-	_
	+	- 415										-	-

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.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 103.40 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-05

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,115,329.72 EASTING: 2,399,698.73

 DATE STARTED: 10/28/15 DATE COMPLETED: 11/5/15
 GS ELEVATION: 520.97 TOC ELEVATION: 524.28 ft

SHEET 1 of 3 DEPTH W.L.:45.10' DATE W.L.:11/5/15 TIME W.L.:10:40

DESCRIPTION DIAGRAM and NOTES DETAILS DETA		z	SOIL PROFILE						SAMPLES				
Substitution Subs		ELEVATIO (ft)	DESCRIPTION	nscs	GRAPHIC	DEPTH (ft)	SAMPLE NO.	TYPE	per 6 in	N-VALUE	REC	PIEZOMETER	CONSTRUCTION
33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W-PL 35.00 - 40.00 white sand, fine to coarse with trace silt, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 480.97 480.97 480.97 480.97 480.97 480.97 40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining	1	520	SILT; soft sandy top soil followed by red silt and clay with mica, low plasticity, dry, compact, W>PL	ML									Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6"
33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biolite/feldspar pegmatite, loose, dry, W <pl -="" 35.00="" 40.00="" 45.00="" and="" biolite="" coarse="" coarse,="" feldspar="" fine="" green="" iron="" loose,="" mica,="" moist="" non-plastic,="" pegmatite,="" pepper="" quartz="" salt="" sand,="" silt,="" some="" staining="" staining<="" td="" texture,="" to="" trace="" weathered="" wet="" white="" with=""><td>+</td><td></td><td>red silt and clay, contains mica, low</td><td></td><td></td><td></td><td>1</td><td>DO</td><td>3-5-8</td><td>13</td><td></td><td></td><td>SURFACE CASING Interval: N/A</td></pl>	+		red silt and clay, contains mica, low				1	DO	3-5-8	13			SURFACE CASING Interval: N/A
33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W <pl -="" 35.00="" 40.00="" 45.00="" and="" biotite="" coarse="" coarse,="" feldspar="" fine="" green="" iron="" loose,="" mica,="" moist="" non-plastic,="" pegmatite,="" pepper="" quartz="" salt="" sand,="" silt,="" some="" staining="" staining<="" td="" texture,="" to="" trace="" weathered="" wet="" white="" with=""><td>1</td><td>515</td><td>red/brown silt, contains mica, non-plastic, 1 inch thick pegmatite lense at 6.7 feet, dry to</td><td></td><td></td><td></td><td>2</td><td>DO</td><td>4-8-11</td><td>19</td><td></td><td></td><td>Diameter: N/A WELL SCREEN Interval: 42.1'-52.1'</td></pl>	1	515	red/brown silt, contains mica, non-plastic, 1 inch thick pegmatite lense at 6.7 feet, dry to				2	DO	4-8-11	19			Diameter: N/A WELL SCREEN Interval: 42.1'-52.1'
A87.77	† -		8.00 - 10.00 SILTY CLAY; red/brown clay with some silt,	CL			3	DO	5-5-5	10	1.20 1.50		Diameter: 2'
A87.77 A87.77 A87.77 A85.97 A85.97 A85.00 A85.00 A86.97 A80.97		510	dry to moist 10.00 - 18.20 red/brown clay with some silt, contains				4	DO	2-4-5	9		#	Interval: 37.5'-53.1'
33.20 - 35.00 33.20 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W-PL 35.00 - 40.00 white sand, fine to coarse with trace silt, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 40.00 10 DO 32-50/3 >50 0.80 0.80 - 40.00 0.80 0.80 - 40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining 40.00 10 DO 32-50/3 >50 0.80 0.80 - 40.00 - 45.00 0.80 - 40.00	+		mica, coarse biotite and feldspar crystals,										FILTER PACK SEAL Interval: 34.9'-37.5' Type: 3/8" Bentonite Pellte
August A	5+										0.00	-	Interval: 0'-34.9' Type: Portland Type I/Typ
33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W-PL 35.00 - 40.00 white sand, fine to coarse with trace silt, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining	+	505					5	DO	2-3-4	7	1.50	Portland Type I/ Type —	WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Steel
33.20 - 35.00 SILTY SAND; white sand, fine to coarse, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, dry, W-PL 35.00 - 40.00 white sand, fine to coarse with trace silt, non-plastic, weathered quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining	+		SILTY SAND; tan to white sand, fine to coarse, trace silt, non-plastic, loose;									- II/ Gerillix	Rock Drill: 3.25" HSA/HQ
August A	1	500	medium, weathered amphibolite, firm, dry, moist; then to silty sand with biotite/quartz/feldspar pegmatite,	SM			6	DO	3-4-3	7		-	Rotary
8 DO 5-6-10 16 1.30 1.50 33.20 - 35.00	+		SILT; orange/brown silt with trace fine sand, weathered amphibolite, non-plastic, soft to										
8 DO 5-6-10 16 1.30 1.50 33.20 - 35.00		495	,,,				7	DO	5-6-6	12			
August A	+			ML									
quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 40.00 - 45.00		490					8	DO	5-6-10	16	1.30 1.50		
quartz/biotite/feldspar pegmatite, loose, moist to wet 480.97 480.97 480.97 480.97 480.97 40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining	 		SILTY SAND; white sand, fine to coarse,	SM		33.20							
quartz/biotite/feldspar pegmatite, loose, moist to wet 40.00 - 45.00		485	quartz/biotite/feldspar pegmatite, loose, dry, W <pl 35.00 - 40.00</pl 				9	DO	19-33-20	>50	1.40 1.50	3/8" - Bentonite -	-
40.00 - 45.00 green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining	†		non-plastic, weathered quartz/biotite/feldspar pegmatite, loose,			480 97						chips	
		480	green salt and pepper texture, sand, some silt, fine to coarse, some mica, iron staining				10	DO	32-50/3	>50	0.80		

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.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 103.40 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-05

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,115,329.72 EASTING: 2,399,698.73

 DATE STARTED: 10/28/15 DATE COMPLETED: 11/5/15
 GS ELEVATION: 520.97 TOC ELEVATION: 524.28 ft

SHEET 2 of 3 DEPTH W.L.:45.10' DATE W.L.:11/5/15 TIME W.L.:10:40

		SOIL PROFILE						SAMPLES				
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
45 —	475 	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	1.30 1.50	#1 sand /	WELL CASING Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded SURFACE CASING
50 —	470 	50.00 - 53.90 green salt and pepper texture, fine to coasrse sand and silt, some mica, iron staining evident, compact, wet			470.97 50.00	12	DO	5-8-10	18	1.50 1.50		Interval: N/A Material: N/A Diameter: N/A WELL SCREEN Interval: 42.1'-52.1' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010"
55 — -	_ _ 465	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,			53.90	13	DO	3-15-15	30	1.50 1.50	3/8" Bentonite – chips –	End Cap: Schedule 40 PVC FILTER PACK Interval: 37.5'-53.1' Type: #1 sand FILTER PACK SEAL Interval: 34.9'-37.5' Type: 3/8" Bentonite Pelltes
60 —	- - - - 460		ML			14	DO	7-9-15	24	1.50 1.50	- - - -	ANNULUS SEAL Interval: 0'-34.9' Type: Portland Type I/Type II/Gel Mix WELL COMPLETION Pad: 4'x4'x4"
- 65 — -	- - - - 455	63.00 - 68.00 SILTY SAND; white/black/green silty sand, fine to coarse, trace silt, non-plastic, compact, moist, W <pl (67.3'-73.5'):="" 68="" at="" auger="" core="" feet="" rec="78%</td" refusal="" rqd="56%;" run=""><td>SM</td><td></td><td>457.97 63.00</td><td>15</td><td>DO</td><td>10-17-25</td><td>42</td><td><u>1.50</u> 1.50</td><td>- - - -</td><td>Protective Casing: Steel DRILLING METHODS Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary</td></pl>	SM		457.97 63.00	15	DO	10-17-25	42	<u>1.50</u> 1.50	- - - -	Protective Casing: Steel DRILLING METHODS Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
70 —		68.00 - 103.00 BEDROCK; deeply weathered gneiss			452.97 68.00	16	CORE			4.80 6.20	- - - -	
- 75 — - -	 445 	76.60: Core Run (76.6'-81.2'): no recovery									- - - -	
80 — 80 — - - 85 — - - - 90 —	440 	81.20: Core Run (81.2'-85.7'): no recovery	BR				CORE			0.00 4.60 0.00 4.50	- - - -	
85 — - -	- - 435 - -	85.70: Core Run (85.7'-93'): no recovery				19	CORE			0.00 7.30	- - - -	
90 -	-	Log continued on next page						PECTOP:				

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.



PROJECT: Plant Scherer PROJECT NUMBER: 1542702 DRILLED DEPTH: 103.40 ft LOCATION: Juliette, GA

 RECORD OF BOREHOLE LPZ-05

 DRILL RIG: CME 550X (98977) Track Mounted Rig
 NORTHING: 1,115,329.72 EASTING: 2,399,698.73

 DATE STARTED: 10/28/15 DATE COMPLETED: 11/5/15
 GS ELEVATION: 520.97 TOC ELEVATION: 524.28 ft

SHEET 3 of 3 DEPTH W.L.:45.10' DATE W.L.:11/5/15 TIME W.L.:10:40

		SOIL PROFILE						SAMPLES				
_	N O	30IL FINOI ILL						SAIVIF LLS			MONITORING WELL	WELL
DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	nscs	GRAPHIC LOG	DEPTH (ft)	SAMPLE NO.	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	N-VALUE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
90 —	— 430 —	68.00 - 103.00 BEDROCK; deeply weathered gneiss (Continued)				19	CORE			0.00 7.30	- - -	WELL CASING Interval: -3.5'-43.1' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded
95 —	- -	93.00: Core Run (93'-98'): RQD=0%; REC=20%								1.00	- - -	SURFACE CASING Interval: N/A Material: N/A Diameter: N/A
-	425 	98.00: Core Run (98'-103.4'): RQD=62%;	BR			20	CORE			5.00	- - -	WELL SCREEN Interval: 42.1'-52.1' Material: Schedule 40 PVC Diameter: 2' Slot Size: 0.010"
100 —	_ _ _ 420	REC=90%				21	CORE			4.90 5.40	- - -	End Cap: Schedule 40 PVC FILTER PACK Interval: 37.5'-53.1' Type: #1 sand
-	-				417.97 103.00						- -	FILTER PACK SEAL Interval: 34.9'-37.5' Type: 3/8" Bentonite Pelltes
105 —	_	Boring completed at 103.40 ft			100.00						- -	ANNULUS SEAL Interval: 0'-34.9' Type: Portland Type I/Type II/Gel Mix
-	— 415 —										- - -	WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Steel
110 —	_ _ _										-	DRILLING METHODS Soil Drill: 3.25" HSA/HQ Rotary Rock Drill: 3.25" HSA/HQ Rotary
-	— 410 –										- -	
115 —	_										- - -	
-	— 405 —										- -	
120 —	_										- -	
120 — - -	— 400 —										-	
-	_										<u>-</u> -	
125 — - -	— 395 —											
-	_										- -	
130 — - -	_ 390 										_ _ _	
-	- -										- -	
135 —	_										_	

LOG SCALE: 1 in = 5.5 ft

DRILLING COMPANY: Southern Company Services

DRILLER: DJ Wideman

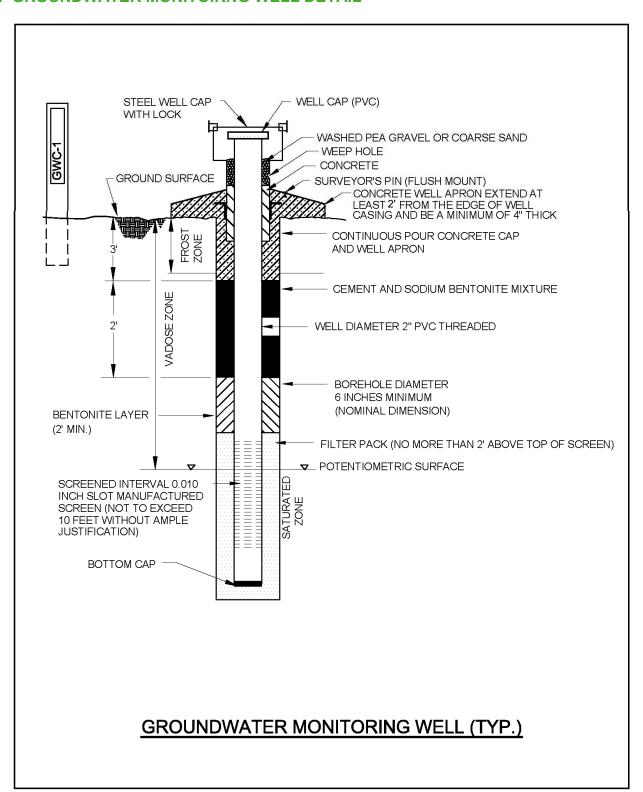
GA INSPECTOR: Michael Boatman CHECKED BY: Rachel P. Kirkman, P.G.



APPENDIX B

GROUNDWATER MONITORING WELL DETAIL

B. GROUNDWATER MONITOIRNG WELL DETAIL



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. 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.

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 GPC if it appears that the well has been compromised.
- 2) Measure and record the depth to water in all wells to be sampled prior to purging. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well.
- 3) Install Pump: If a dedicated pump is not present, slowly lower the 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 Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.
- 4) Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.
- 5) Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (ml/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 ft. or less of variability. Avoid entraining air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.
- 6) Monitor Indicator Parameters: Monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, 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:
 - ± 0.1 S.U. for pH
 - ± 5% for specific conductance (conductivity)
 - ± 10% for DO where DO>0.5 mg/L. If DO<0.5 mg/L no stabilization criteria apply
 - ≤ 10 NTUs for turbidity
 - Temperature Record only, not used for stabilization criteria
 - ORP Record only, not used for stabilization criteria.

- 7) Collect samples at a flow rate between 50 and 250 ml/min 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.
- 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.
- 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) 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 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 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.



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