

GROUNDWATER MONITORING PLAN

PLANT WANSLEY – ASH POND 1 (AP-1)
HEARD AND CARROLL COUNTIES, GEORGIA

FOR



Georgia
Power

REVISION 0
MAY 2024



GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Approved
Solid Waste Management Program

Approved By: _____

Geosyntec
consultants

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I. CERTIFICATION

This *Groundwater Monitoring Plan for Georgia Power Company - Plant Wansley Ash Pond 1 (AP-1)* has been prepared by a qualified groundwater scientist or engineer with Geosyntec Consultants, Inc. (Geosyntec) to meet the requirements contained in Chapter 391-3-4-.10 of the Georgia Environmental Protection Division (GA EPD) Rules of Georgia, Solid Waste Management, Coal Combustion Residuals (i.e., State CCR Rule). References to the appropriate sections of the State CCR Rule are incorporated throughout this document.

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the State of Georgia Rules of Solid Waste Management. According to 391-3-4-.01, a Qualified Groundwater Scientist is "a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action." The design of the groundwater monitoring system was developed in compliance with GA EPD Rules of Solid Waste Management, Chapter 391-3-4.10(6).

Signature: _____

Date: 07/01/2024



Signature: _____

Date: July 01, 2024



1. INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (GA EPD) to detect and quantify potential changes in groundwater chemistry. This *Groundwater Monitoring Plan* (Plan) describes the groundwater monitoring program for Ash Pond 1 (AP-1) at Georgia Power Company's (GPC's) Plant Wansley. This plan meets the requirements of GA EPD regulations referenced on the certification page and uses GA EPD's *Manual for Ground Water Monitoring* dated September 1991 as a guide. Groundwater at the Site is monitored using a comprehensive well network that meets federal and state monitoring requirements. Groundwater monitoring well and piezometer locations are presented on **Figure A-1** and monitoring well and piezometer construction details in **Tables A-1** and **A-2**, respectively. Routine sampling and reporting began after the background groundwater conditions were established between May 2016 to September 2017. Based on groundwater conditions at the Site, an assessment monitoring program and assessment of corrective measures (ACM) program were established in January 2018 and October 2022, respectively. During the most recent annual reporting period, the Site remained in assessment monitoring.

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

In accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule (§257.90), which is incorporated by Georgia State CCR Rule by reference, a detection monitoring well network for AP-1 has been installed and certified by a qualified professional engineer. This certification was placed in the facility's operating record. The existing monitoring wells were installed following the guidelines presented herein. Additionally, this plan documents the methods for future monitoring well installation and/or replacement, and procedures for well abandonment. As required by 391-3-4.10(6)(g), a minor modification will be submitted to GA EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment must be directed by a qualified groundwater scientist.

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

The following section presents a summary of the geologic and hydrogeologic conditions for the Site currently and post closure as described in the *Hydrogeologic Assessment Report* (Revision 04) (HAR Rev. 04). The summary below presents only relevant information related to the groundwater monitoring network. The HAR Rev. 04 contains more detailed information regarding lithology, hydraulic conductivity, and the conceptual site model for groundwater flow.

2.1 SITE GEOLOGY

AP-1 is located in the Piedmont Physiographic Province of western Georgia, which is characterized by gently rolling hills and narrow valleys with locally pronounced linear ridges. Geologic mapping performed by Golder (2015) and revised by Geosyntec (2018) indicates that the Site is underlain by schist, amphibolite, gneiss, and quartzite. AP-1 is underlain primarily by four lithologic units; (i) alluvial deposits (ii) residual soils and saprolite, (iii) partially weathered rock (PWR), and (iv) metamorphic crystalline bedrock. Historically, AP-1 received sluiced CCR until April 2019, and CCR material is present across the bottom of AP-1 at variable thickness.

Based on subsurface investigations, the CCR material consists of fly ash, generally described as dark to medium gray, soft, and loose to very loose fine sand and silts with some clay. Discontinuous lenses of coarser bottom ash are present throughout the unit, generally described as dark gray, well-graded, fine to coarse sand and fine gravel. Alluvial deposits related to stream and drainage processes are present but not laterally continuous across the Site and likely correspond with former stream channels buried during the construction of the surface impoundment. Alluvium consists of organic silt and fine sand over-bank deposits and fine to coarse sand channel deposits. Residual and saprolitic soils (residual soil/saprolite) resulting from the in-situ weathering of the parent bedrock material make up a large portion of the Site subsurface and is generally encountered across the Site. Residual soils and saprolite are described primarily as sandy silt, silty sand, sandy clay, and silty clay. As the saprolite transitions to more rock-like material approaching the bedrock surface, a zone referred to as PWR is encountered. The PWR unit is the hard, semi-consolidated, weathered to intensely fractured rock interface. PWR may include hard, but friable, decomposed rock, as well as gravel to cobble-size rock fragments bound by clay and silt saprolite matrix. The bedrock at the Site is composed primarily of graphitic schist, muscovite schist, biotite schist, schist with interlayered mafic units, amphibolite/hornblende gneiss, granitic gneiss (Long Island Creek Gneiss), and feldspathic quartzite. The ridges to the northwest and southeast of the surface impoundment are underlain by muscovite schist and Long Island Creek Gneiss, respectively, both of which are relatively resistant to weathering. AP-1 and the Storage Water Pond, however, are underlain by schist with interlayered mafic units and feldspathic quartzite, which are more susceptible to weathering, and, thus, the layer of saprolite and PWR is thicker.

2.2 SITE HYDROGEOLOGY

While the aquifer characteristics of each lithologic unit may vary, the groundwater is interconnected between these units, and they effectively act as one, unconfined aquifer. According to previous site investigations, the potentiometric surface is a subdued reflection of the topography. The top of rock surface also generally follows topography and likely controls groundwater flow direction in the uppermost aquifer, which occurs within the saprolite and PWR and is hydraulically connected to the bedrock via

fractures and deeply weathered areas of the rock. Recharge is by precipitation infiltrating through the saprolite to the bedrock. Groundwater flow in the bedrock is restricted entirely to flow through fractures. As described in the text of the SAR (SCS, 2007) and demonstrated by associated geotechnical data and boring logs, the top of rock is slightly to strongly weathered but becomes less weathered with depth. In general, core recovery increases significantly with depth as the rock becomes less weathered. Rock Quality Designation (RQD) increases significantly with depth. These site-specific data support and additional published data on bedrock hydrogeology describe a general decrease in size and occurrence of fractures with depth. Therefore, we infer that groundwater within the bedrock is primarily present in fractures that decrease in size and density with depth.

Aquifer testing was conducted by Southern Company Services (SCS) and contracted consulting firms in 2016, 2017, 2020, and 2022 to evaluate hydraulic conditions in the vicinity of AP-1. Results of these field events are discussed in detail in the HAR Rev. 04. Estimated horizontal hydraulic conductivity (K_h) values based on the aquifer testing activities at wells and piezometers (**Tables A-1** and **A-2**; obtained from the HAR Rev. 04) indicate that the bedrock has a lower geometric mean K_h (6.24×10^{-5} centimeters per sec; cm/sec) than the residual soil/saprolite and the PWR (1.21×10^{-4} cm/sec and 1.13×10^{-4} cm/sec, respectively), however, it should be noted that localized variation in thickness of the residual soil/saprolite and PWR, variable bedrock fracture density, and fractured bedrock zones may result in areas in which the fractured bedrock exhibits higher K_h values than in the overlying units. The primary zone of groundwater flow was found to be in the PWR and upper fractured surface of the bedrock, often referred to as the “transition zone”, and is expected to be greater than the overlying saprolite and the underlying competent bedrock.

Vertical hydraulic conductivity (K_v) values were measured in laboratory permeability tests on sonic drilling cores and Shelby Tubes collected from borings in CCR, alluvium, saprolite, and PWR in March 2017. The K_v obtained from the alluvium (fine-grained, over-bank deposits) was 4.6×10^{-7} cm/sec. The saprolite samples ranged an order of magnitude from 5.1×10^{-6} cm/sec to 5.5×10^{-5} cm/sec, and the PWR core yielded a K_v of 7.6×10^{-6} cm/sec.

A potentiometric surface map depicting groundwater flow in the vicinity of AP-1 is provided on **Figure A-2** in **Appendix A**. The potentiometric surface map represents data recorded in February 2023. Groundwater in the area generally flows to the south and east toward the Chattahoochee River, however, groundwater in the near vicinity of AP-1 flows from the topographic ridges around the pond inward into the impoundment, with the exception of a component of flow away from AP-1 in a generally southeastern direction near the southeastern corner of the impoundment. In general, steeper potentiometric contours in areas of higher topographic relief give way to lower gradients as the land surface flattens toward the river.

In February 2023, the full pool elevation of AP-1 was approximately 785 ft NAVD88. During the proposed closure by removal, the free water in AP-1 will be removed and CCR excavated. During the post closure period, AP-1 will refill naturally and remain as a service water/industrial water pond. The full pool elevation of this proposed industrial pond post closure will fluctuate in the range of the free pool elevation during historical AP-1 operations, which was 781.5 to 798 ft NAVD88. Should the post closure full pool elevation be on the low end of this range, hydraulic gradients and groundwater flow velocities would be similar to what is currently (February 2023) observed in AP-1 and presented in the HAR Rev. 04. Should the post closure full pool elevation be on the high end of this range, hydraulic gradients and groundwater flow velocities would be expected to be similar to what was observed in October 2017 when the full pool elevation of AP-1 was approximately 795 ft NAVD88. A potentiometric surface map from October 2017 is

provided on **Figure A-3** to illustrate the groundwater flow expected in the vicinity of AP-1 with a high full pool elevation. These potentiometric surfaces provide endmembers and a representative range for groundwater flow. In addition, they indicate that the compliance groundwater monitoring network will remain downgradient of AP-1 in the post closure period as long as the post closure pool elevation remains within the proposed range. Groundwater monitoring will continue, and the status of downgradient wells will be evaluated and refined, as needed, during the post closure care period.

Groundwater hydraulic gradients were calculated for flow path lines at AP-1 in February 2023 and October 2017. The 2017 gradients were obtained from the 2017 Annual Groundwater Monitoring and Corrective Action Report (ERM, 2018). In February 2023, hydraulic gradients along groundwater flow path lines from PZ-18 to PZ-17, PZ-01 to WGWC-17, and from PZ-10 to WGWC-19, are estimated to be 0.007 feet per foot (ft/ft), 0.081 ft/ft, and 0.100 ft/ft, respectively. Groundwater flow velocity in the vicinity of AP-1 is estimated to be approximately 0.068 ft/day, or 24.7 ft/year in 2023. The average hydraulic gradients along groundwater flow path lines associated with AP-1 in 2017 were 0.019 ft/ft (PZ-18 to PZ-17), 0.006 ft/ft (WGWC-16 to PZ-16) and 0.088 ft/ft (PZ-10 to WGWC-19). Groundwater flow velocity in the vicinity of AP-1 was estimated to be approximately 0.10 ft/day or 36.8 ft/year in 2017. The supporting hydraulic gradient calculations and groundwater flow velocity calculations are presented in **Table A-3**.

Additional details regarding the hydrogeologic conditions in the vicinity of AP-1 are provided in the HAR Rev. 04.

3. SELECTION OF WELL LOCATIONS

Groundwater monitoring wells were installed to monitor the uppermost occurrence of groundwater beneath the Site (i.e., the saprolite/PWR/bedrock aquifer). Locations were selected based on the AP-1 footprint and geologic and hydrogeologic considerations. Georgia Power follows the recommendation as stated in Chapter 2 of the *Manual for Groundwater Monitoring* (GA EPD, 1991) to establish well spacing based on site-specific conditions. A map depicting the detection monitoring well network screened within the saprolite/PWR/bedrock aquifer for AP-1 is included as **Figure A-1** in **Appendix A**. A more detailed discussion of the hydrogeological investigations conducted in support of monitoring well placement is provided in the HAR Rev. 04.

Locations are chosen to serve as upgradient (GWA), or downgradient (GWC) based on groundwater flow direction determined by potentiometric evaluation. The well naming nomenclature is based on Georgia EPD's Industrial Waste Disposal Site Design and Operations Plan – Supplemental Data for Solid Waste Handling Permit (undated). Wells are positioned to provide adequate coverage to detect potential impacts from the CCR impoundment. Both background and downgradient wells are screened in the uppermost aquifer. Groundwater levels are currently monitored in all monitoring well and piezometer locations to establish potentiometric conditions at the Site.

Monitoring wells are generally located outside of areas with frequent auto traffic; however, wells may be installed in heavily trafficked areas when necessary to meet the groundwater monitoring objectives of the GA EPD rules. In addition to the potentiometric surface map, **Appendix A** also includes a tabulated list (**Tables A-1** and **A-2**) of location coordinates for the individual detection monitoring wells, assessment wells, and piezometers used for water level monitoring. Additional well construction details (i.e., top-of-casing elevation, well depths, and screened intervals) are also provided on these tables. Any change to the groundwater monitoring network must be made by a minor modification to the permit pursuant to 391-3-4-.10(6)(g).

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT AND REPORTING

The AP-1 monitoring well network described in this plan is already in place. Existing monitoring wells were installed following USEPA Region 4 Science and Ecosystem Support Division (SESD) guidance document, *Design and Installation of Monitoring Wells* (USEPA, SESDGUID-101-R1; USEPA, SESDGUID-101-R2) as a general guide for best practices. Boring and well construction logs for detection monitoring wells are included in **Appendix A**. Additional monitoring wells, if necessary, will be installed in accordance with the following procedures.

4.1 DRILLING

A variety of well drilling methods are available for the purpose of installing groundwater wells. Drilling methodology may include, but not be limited to, hollow stem augers, direct push, air rotary, mud rotary, or rotasonic techniques. The drilling method shall minimize the disturbance of subsurface materials and shall not cause impact to the groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in site-specific geology. Monitoring wells will be installed using the most current version of the USEPA Region 4 SESD SESDGUID-101-R# as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the most current version of the USEPA Region 4 SESD *Operating Procedure for Field Equipment Cleaning and Decontamination* (USEPA, SESDGUID-205-R#) as a guide. Drilling and well installation activities will be directed by a qualified groundwater scientist.

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

All drilling for any subsurface hydrologic investigation, installation or abandonment of groundwater monitoring wells will be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council. Proof of bonding for wells installed at the unit is included as **Attachment A-2** in **Appendix A**. For future installations, proof of bonding will be included in the well installation reports.

As required by 391-3-4.10(6)(g), a minor modification will be submitted to GA EPD prior to the installation or decommissioning of monitoring wells. Well installation must be directed by a qualified groundwater scientist.

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.

WELL CASINGS AND SCREENS

American Society for Testing and Materials (ASTM), National Science Foundation (NSF) rated, Schedule 40, 2-inch polyvinyl chloride (PVC) pipe with flush threaded connections will be used for the well riser and

screens. Compounds that can cause PVC to deteriorate (e.g., organic compounds) are not expected at this facility. If conditions warrant, other USEPA approved and appropriate materials may be used for construction.

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 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.

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 a minimum of two feet above the top of the well screen.

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

The annulus above the bentonite seal will be grouted with cement/bentonite placed via tremie pipe from the top of the bentonite seal. During grouting, care will be taken to assure that the bentonite seal is not

disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity.

PROTECTIVE CASING AND WELL COMPLETION

After allowing the grout to settle, the well will be finished by installing a flush-mount or above-ground protective casing as appropriate, and building a surface cap. The use of flush-mount wells will generally be limited to paved surfaces unless Site operations warrant otherwise. The surface cap will extend from the top of the cementitious grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 2 feet from the edge of the well casing and sloped to drain water away from the well.

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

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

The groundwater monitoring well details attached in **Appendix B1**, Groundwater Monitoring Well Detail and **Appendix B2**, Groundwater Monitoring Well Detail Flush-Mount Surface Completion, illustrate the general design and construction details for a monitoring well.

WELL DEVELOPMENT

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

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

Many geologic formations contain clay and silt particles that are small enough to work their way through the wells' filter packs over time. Therefore, the turbidity of the groundwater from the monitoring wells may gradually increase over time after initial well development. As a result, the monitoring wells may have to be redeveloped periodically to remove the silt and clay that has worked its way into the filter pack of the monitoring wells. Each monitoring well should be redeveloped when sample turbidity values have

significantly increased since initial development or since prior redevelopment. The redevelopment should be performed as described above. Well development data will be provided as part of the well installation report.

The certified surveyor's reports are included as **Attachment A-3** in **Appendix A**. Monitoring well logs for the existing monitoring well network are also included in **Appendix A**, as **Attachment A-1**.

4.3 ABANDONMENT

Per Georgia Rule 391-3-4.10(6)(g), monitoring wells require replacement after two consecutive dry sampling events, unless an alternate schedule has been approved by GA EPD. Monitoring wells will be abandoned using industry-accepted practices and using the Manual for Groundwater Monitoring (1991) and (O.C.G.A) 12-5-120, 1985 as guides. The wells will be abandoned under the supervision of a qualified groundwater scientist registered to practice in the State of Georgia. A well abandonment report will be submitted to EPD within 60 days of completion of well abandonment. The wells will be abandoned under the direction of a professional geologist (P.G.) or engineer (P.E.) registered in Georgia. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole.

4.4 DOCUMENTATION

Within 60 days of the construction, survey, and development or abandonment of each new groundwater monitoring well completed under the direction of a qualified groundwater scientist or engineer, a well installation/abandonment report will be submitted to GA EPD. The following information will be documented in this report.

1. Well identification
2. Well drilling date
3. Well development date
4. Name of drilling contractor and type of drill rig
5. Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Standards Advisory Council
6. Narrative of drilling technique applied, well construction details, and well development procedures, including dates, drilling fluids used (if applicable), well casing and screen materials, screen slot size, and joint type
7. Details of filter pack material/size, emplacement method (narrative), and volume
8. Seal emplacement method and type/volume of sealant
9. Borehole diameter and well casing diameter
10. Well Depth (± 0.1 ft.)
11. Type of protective well cap

12. Surface seal and volumes/mix of annular seal material
13. Screen length and interval reported in feet below ground surface and elevation
14. Well location data given to within an accuracy of 0.5 feet based on survey data recorded from an acceptable survey point datum by a Georgia-registered professional surveyor
15. Well elevation data given to within an accuracy of 0.01 feet based on survey data recorded from an acceptable survey point datum by a Georgia-registered professional surveyor
16. Lithologic logs
17. Documentation that water quality field parameters meet well development criteria (Section 4.2)
18. Documentation of ground surface elevation (± 0.01 feet)
19. Documentation of top of casing elevation (± 0.01 feet)
20. Schematic of the well with dimensions for all components (e.g., casing, screen, sump, well pad)

In accordance with the Georgia Water Well Standards Act (O.C.G.A. § 12-5-134(5)(d)(vii), at least once every five years, the owner of the property on which a monitoring well is constructed shall have the monitoring well(s) inspected by a professional engineer or professional geologist, who shall direct appropriate remedial corrective work to be performed if the well does not conform to standards. Well inspection records and records of remedial corrective work are subject to review by EPD. Additionally, as part of the post closure plan, the cost estimate based upon current year cost for the well inspections must be provided for as part of the cost calculations for the groundwater monitoring period.

5. GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

The following describes AP-1 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 were collected from each groundwater detection well of the AP-1 network between May 2016 and September 2017 and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset, with the exception of WGWC-20, WGWC-21, WGWC-22, WGWC-23, WGWC-24, and WGWC-25, which were installed in 2020 and were sampled four times to establish a background statistical dataset. 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. Pursuant to 391-3-4-.10(6), an assessment monitoring program was established for AP-1 based on statistically significant increases documented in the *2017 Annual Groundwater Monitoring and Corrective Action Report* (Environmental Resources Management, 2018). Georgia Power initiated an assessment of corrective measures (ACM) program on October 27, 2022. An ACM Report for AP-1 was submitted to GA EPD in March 2023. Georgia Power will continue to complete assessment monitoring activities as required in Chapter 391-3-4-.10(6).

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 Methods, the groundwater samples will be analyzed using methods specified in USEPA Manual SW-846, USEPA 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), ASTM, or other suitable analytical methods approved by GA EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Conference (NELAC). 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

MONITORING PARAMETER		GROUNDWATER MONITORING	
		Background	Semi-Annual Events
Field Parameters	Temperature	X	X
	pH	X	X
	Oxidation Reduction Potential (ORP)	X	X
	Turbidity	X	X
	Specific Conductance	X	X
	Dissolved Oxygen (DO)	X	X
Appendix III (Detection test parameters from 40 CFR 257, Subpart D)	Boron	X	X
	Calcium	X	X
	Chloride	X	X
	Fluoride	X	X
	pH	X	X
	Sulfate	X	X
	Total Dissolved Solids	X	X
Appendix IV (Assessment test parameters from 40 CFR 257, Subpart D)	Antimony	X	Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4.10(6).
	Arsenic	X	
	Barium	X	
	Beryllium	X	
	Cadmium	X	
	Chromium	X	
	Cobalt	X	
	Fluoride	X	
	Lead	X	
	Lithium	X	
	Mercury	X	
	Molybdenum	X	
	Selenium	X	
	Thallium	X	
	Radium 226 & 228	X	

**TABLE 2
ANALYTICAL METHODS**

Parameters	USEPA Method Number
Boron	6010D/6020B
Calcium	6010D/6020B
Chloride	300.0/300.1/9250/9251/9253/9056A
Fluoride	300.0/300.1/9214/9056A
pH	150.1 field
Sulfate	9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	160/2540C
Antimony	EPA 7040/7041/6010D/6020B
Arsenic	EPA 7060A/7061A/6010D/6020B
Barium	EPA 7080A/7081/6010D/6020B
Beryllium	EPA 7090/7091/6010D/6020B
Cadmium	EPA 7130/7131A/6020B
Chromium	EPA 7190/7191/6010D/6020B
Cobalt	EPA 7200/7201/6010D/6020B
Fluoride	300.0/300.1/9214/9056A
Lead	EPA 7420/7421/6010D/6020B
Lithium	6010D/6020B
Mercury	7470
Molybdenum	6010D/6020B
Selenium	EPA 7740/7741A/6010D/6020B
Thallium	EPA 7840/7841/6010D/6020B
Radium 226 and 228 combined	EPA 903/9320/9315

6. GROUNDWATER SAMPLE COLLECTION

During each sampling event, groundwater 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. EPA approved alternative industry accepted sampling methodology may be used when appropriate. The applied groundwater purging and sampling methodologies will be discussed in the groundwater semi-annual monitoring reports submitted to GA EPD.

For groundwater sampling, positive gas displacement PVC, 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 in general accordance with USEPA LSASDPROC-205-R#.

Per Georgia Rule 391-3-4-.10(6)(g) monitoring wells require replacement after two consecutive dry sampling events. Well installation must be directed by a qualified groundwater scientist. A minor modification shall be submitted to GA EPD in accordance with Rule 391-3-4-.02 prior to the installation or decommissioning of monitoring wells.

7. CHAIN-OF-CUSTODY

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

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

The samples will remain in the custody of assigned personnel, an assigned agent, or the laboratory. If the samples are transferred to other employees for delivery or transport, the sampler or possessor will relinquish possession and the samples must be received by the new owner. The transfer times and dates during transfer of samples between individuals will be documented on the COC included with the laboratory reports.

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

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

8. FIELD QUALITY ASSURANCE / QUALITY CONTROL

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

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

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

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

9. REPORTING RESULTS

A semi-annual groundwater report that documents the results of sampling and analysis will be submitted to GA EPD. Semi-annual groundwater monitoring reports will be submitted to GA EPD within 90 days of receipt of the groundwater analytical data from the laboratory, and signed and sealed by a Georgia-registered P.G. or P.E. At a minimum, semi-annual reports will include:

1. A narrative describing sampling activities and findings including a summary of the number of samples collected, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs.
2. A narrative of purging/sampling methodologies, which will include the type of sampling equipment used.
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 Georgia-registered P.G. or P.E.
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 installed or abandoned during the preceding year, 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. Field logs and forms for each sampling event to include, but not limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.
16. Documentation of non-functioning wells.
17. Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL).
18. Statistical analyses.
19. Certification by a qualified groundwater scientist.
20. Plume delineation (if applicable based on exceedances of groundwater protection standards).
21. Trend analyses (if applicable based on exceedances of groundwater protection standards).
22. Annual updated potable water well survey (if applicable based on exceedances of groundwater protection standards).

10. STATISTICAL ANALYSIS

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

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

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

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

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

FIGURE 1. STATISTICAL ANALYSIS PLAN OVERVIEW

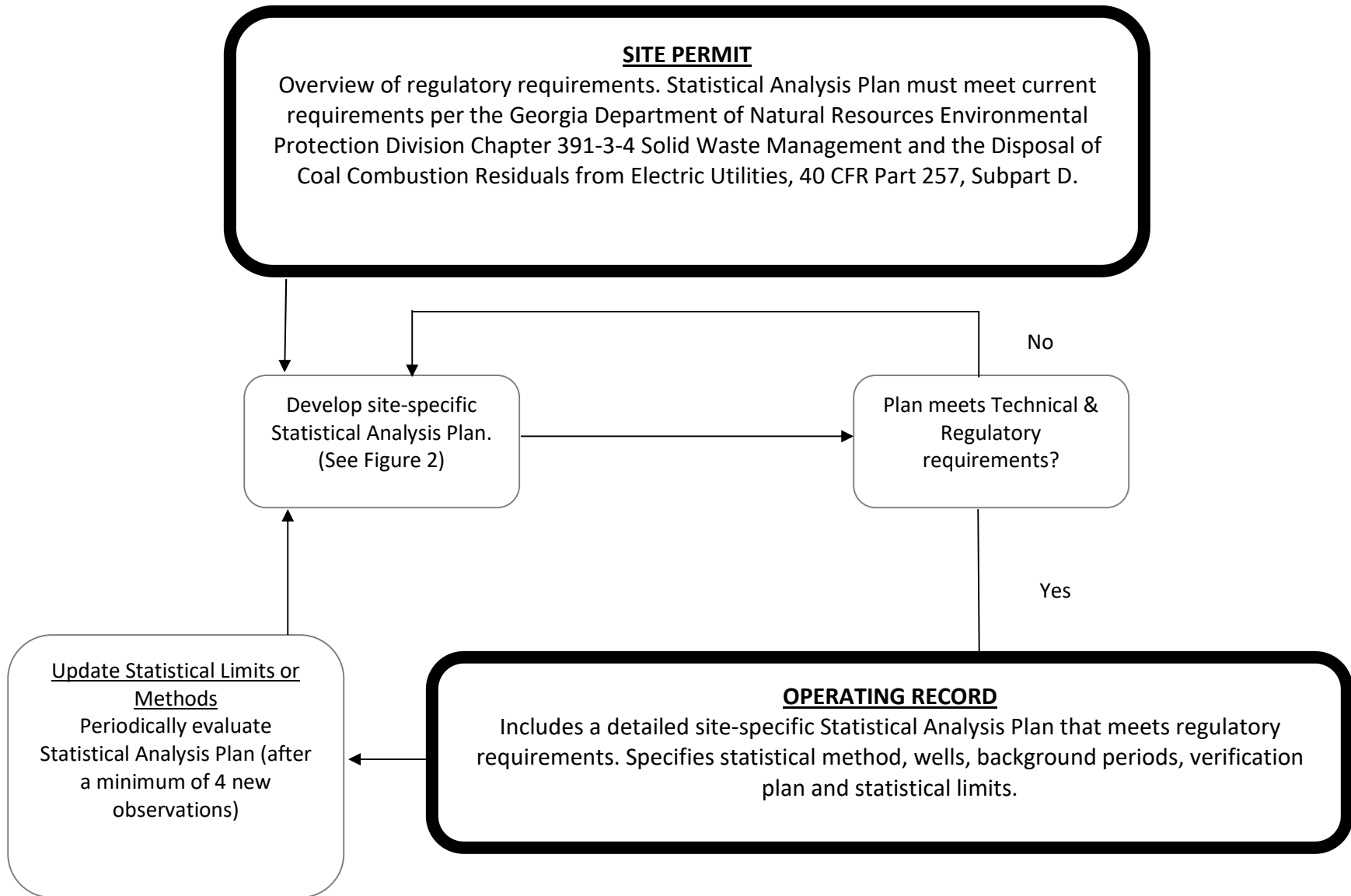
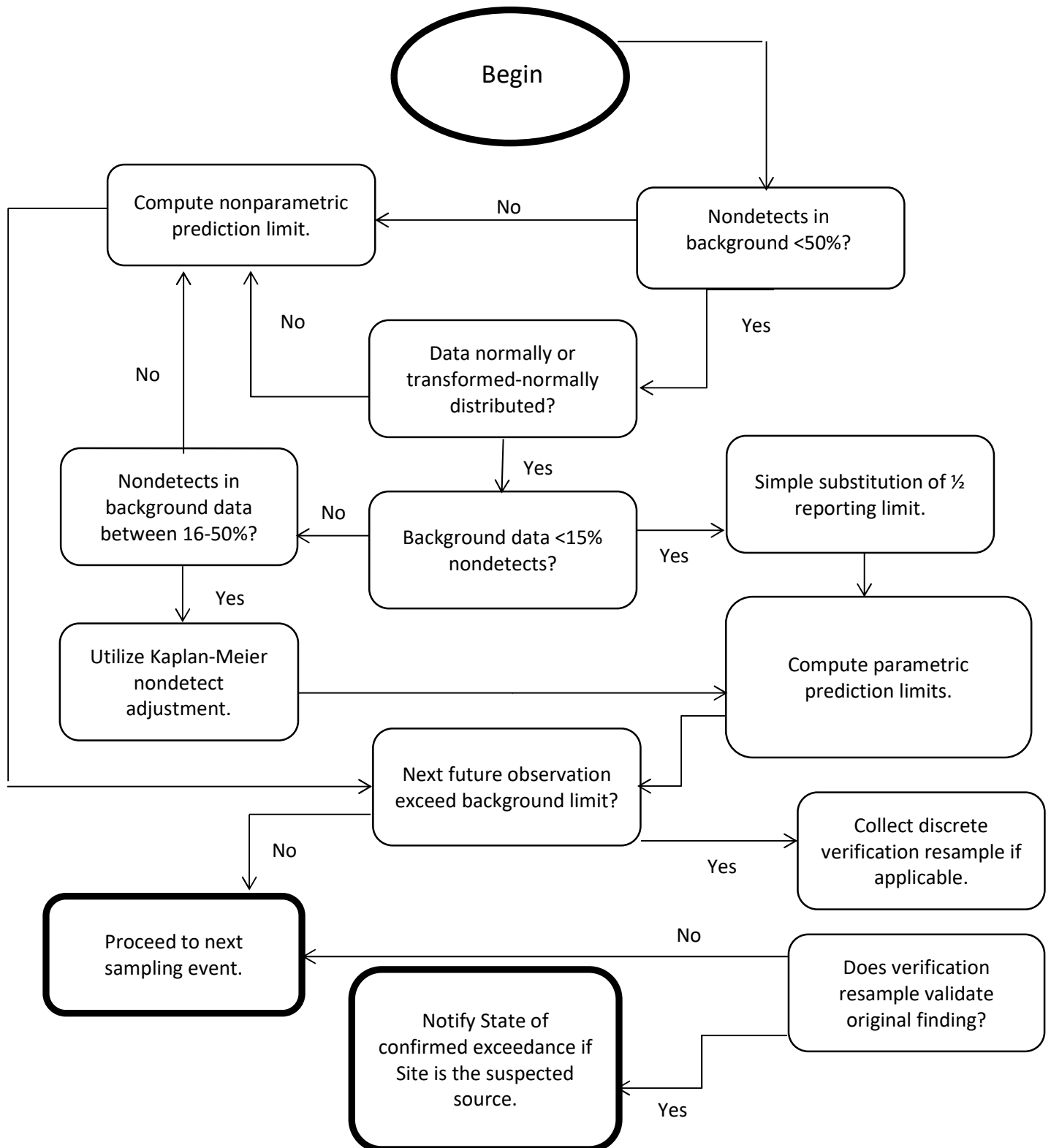


FIGURE 2. DECISION LOGIC FOR COMPUTING PREDICTION LIMITS



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APPENDICES

- A. MONITORING SYSTEM DETAILS
- B. GROUNDWATER MONITORING WELL DETAIL
- C. GROUNDWATER SAMPLING PROCEDURE

A. MONITORING SYSTEM DETAILS

TABLE A-1	AP-1 MONITORING NETWORK WELL DETAILS
TABLE A-2	AP-1 WATER LEVEL MONITORING NETWORK PIEZOMETER DETAILS
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ATTACHMENT A-2	WELL DRILLERS’ PERFORMANCE BONDS
ATTACHMENT A-3	CERTIFIED WELL NETWORK SURVEY DATA

Table A-1
AP-1 Monitoring Network Well Details
Plant Wansley, Heard and Carroll Counties, Georgia

Well ID	Previous Well / Piezometer ID	Installation Date	Purpose	Northing ^(1,3)	Easting ^(1,3)	Ground Surface Elevation ^(2,3) (ft NAVD88)	Top of Casing Elevation ^(2,3) (ft NAVD88)	Well Depth ⁽⁴⁾ (ft BTOC)	Top of Screen Elevation ^(2,3) (ft NAVD88)	Bottom of Screen Elevation ^(2,3) (ft NAVD88)	Screened Media	K _h ⁽⁵⁾ (cm/sec)
Upgradient Detection Monitoring Wells												
WGWA-1	APA-1	10/21/2015	Monitoring, background	1250656.10	2035580.71	780.37	782.93	129.56	663.37	653.37	PWR	2.0E-03
WGWA-2	APA-2D	10/16/2015	Monitoring, background	1251556.40	2035590.11	755.77	758.23	102.46	665.77	655.77	PWR/Bedrock	2.7E-04
WGWA-3	PZ-02	12/15/2014	Monitoring, background	1240848.21	2022350.10	826.63	828.91	18.68	820.23	810.23	Saprolite/Bedrock	---
WGWA-4	PZ-02D	01/13/2015	Monitoring, background	1240879.58	2022339.66	831.33	834.34	74.31	780.43	760.43	Bedrock	4.1E-04
WGWA-5	PZ-03S	12/23/2014	Monitoring, background	1241997.94	2022368.85	899.28	902.15	23.66	888.88	878.88	Saprolite/PWR/Bedrock	1.2E-03
WGWA-6	PZ-03D	01/13/2015	Monitoring, background	1241932.02	2022360.58	894.62	897.13	104.91	822.62	792.62	Bedrock	1.1E-03
WGWA-7	PZ-05	12/22/2014	Monitoring, background	1243338.63	2023843.81	894.49	897.33	40.04	867.69	857.69	Bedrock	3.7E-03
WGWA-18	PZ-07	12/16/2014	Monitoring, background	1244592.56	2025580.71	875.47	878.02	39.95	848.47	838.47	Saprolite/Bedrock	1.4E-04
Downgradient Detection Monitoring Wells												
WGWC-8	APC-1	10/29/2015	Monitoring, downgradient	1242929.40	2029644.58	777.70	780.08	59.38	730.70	720.70	Bedrock	2.2E-05
WGWC-9	PZ-09	12/4/2014	Monitoring, downgradient	1242801.12	2029115.75	809.33	812.03	61.50	760.93	750.93	PWR	6.0E-05
WGWC-10	APC-3D	10/27/2015	Monitoring, downgradient	1240971.96	2026725.61	809.61	812.38	148.77	673.61	663.61	Saprolite/PWR	1.7E-05
WGWC-11	PZ-14	12/8/2014	Monitoring, downgradient	1240860.18	2025773.39	821.44	823.96	51.22	783.14	773.14	Saprolite	1.5E-04
WGWC-12	APC-4D	10/22/2015	Monitoring, downgradient	1240827.68	2025755.99	820.57	823.04	76.47	756.57	746.57	Bedrock	6.9E-04
WGWC-13	APC-5D	11/4/2015	Monitoring, downgradient	1240610.93	2024585.91	807.32	809.78	95.46	734.32	714.32	Bedrock	9.5E-06
WGWC-14A	--	01/31/2017	Monitoring, downgradient	1240604.54	2024599.63	808.20	810.94	42.74	778.20	768.20	Saprolite/PWR	1.2E-04
WGWC-15	APC-6D	11/11/2015	Monitoring, downgradient	1240483.16	2023912.92	802.03	804.69	56.16	758.53	748.53	Bedrock	1.6E-06
WGWC-16	APC-6S	11/11/2015	Monitoring, downgradient	1240480.46	2023903.77	801.72	804.21	34.50	779.72	769.72	Saprolite/PWR	7.1E-05
WGWC-17	APC-7	11/06/2015	Monitoring, downgradient	1240052.06	2022623.82	813.36	816.00	95.94	730.36	720.36	Bedrock	1.1E-04
WGWC-19	APC-2	10/28/2015	Monitoring, downgradient	1241851.51	2028949.19	780.60	783.42	94.82	698.60	688.60	Bedrock	1.3E-04
WGWC-20	PZ-22	09/29/2020	Monitoring, downgradient	1243350.76	2029769.43	804.88	807.95	43.17	775.18	765.18	Bedrock	1.5E-04
WGWC-21	PZ-23S	10/02/2020	Monitoring, downgradient	1242139.33	2028512.65	831.79	834.41	71.70	773.11	763.11	Bedrock	8.4E-08
WGWC-22	PZ-24	10/18/2020	Monitoring, downgradient	1241695.25	2028116.05	807.00	810.37	43.85	776.92	766.92	PWR/Bedrock	1.3E-05
WGWC-23	PZ-25S	10/04/2020	Monitoring, downgradient	1240769.79	2027414.58	820.50	823.80	53.80	780.40	770.40	PWR	1.2E-04
WGWC-24	PZ-26S	10/17/2020	Monitoring, downgradient	1239916.68	2024139.82	802.22	804.80	40.77	774.43	764.43	PWR	2.2E-04
WGWC-25	PZ-27S	10/28/2020	Monitoring, downgradient	1240184.18	2023616.69	805.98	808.98	39.87	779.51	769.51	Saprolite/PWR	2.9E-04
Assessment Monitoring Wells												
WGWC-27	--	9/27/2022	Assessment	1243215.51	2029878.92	778.05	780.54	41.69	749.15	739.15	Bedrock	9.2E-06
WGWC-28D	--	8/18/2023	Assessment	1243337.13	2029751.04	805.36	808.24	206.70	609.06	599.06	Bedrock	---
PZ-26D	--	10/12/2020	Assessment	1239919.453	2024146.348	802.307	804.934	80.1	735.234	725.234	Bedrock	1.90E-05

Notes:
ft = feet
BTOC = below top of casing
PWR = Partially Weathered Rock
K_h = horizontal hydraulic conductivity
cm/sec = centimeter per second
--- = Location not tested
(1) Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet.
(2) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88). Ground surface elevation defined at the survey nail installed within the well pad.
(3) Survey of WGWA-1 through WGWA-18 and WGWC-8 through WGWC-19 was completed by GEL Solutions and certified June 16, 2020. Survey of WGWC-20 through WGWC-25 and PZ-26D was completed by GEL Solutions and certified on November 17, 2020. Survey of WGWC-27 was completed by GEL Solutions and certified on October 13, 2022. Survey of WGWC-28D was completed by GEL Solutions and certified on September 5, 2023.
(4) Total well depth accounts for sump if data provided on well construction logs.
(5) K_h as determined by slug testing (in piezometers and wells) or iso-flow packer testing (in open bedrock boreholes). Horizontal hydraulic conductivity in bedrock is from targeted tests of fracture zones and not likely representative of bulk permeability of the rock units.

Table A-2
AP-1 Water Level Monitoring Network Piezometer Details
Plant Wansley, Heard and Carroll Counties, Georgia

Piezometer ID ⁽¹⁾	Purpose	Northing ^(2,4)	Easting ^(2,4)	Ground Surface Elevation ^(3,4) (ft NAVD88)	Top of Casing Elevation ^(3,4) (ft NAVD88)	Well Depth ⁽⁵⁾ (ft BTOC)	Top of Screen Elevation ^(3,4) (ft NAVD88)	Bottom of Screen Elevation ^(3,4) (ft NAVD88)	Screened Media	K _h ⁽⁶⁾ (cm/sec)
PZ-01	Water level	1240249.86	2022319.93	853.91	856.72	49.31	817.81	807.81	Bedrock	3.2E-04
PZ-04	Water level	1242592.03	2023595.91	886.13	889.01	20.48	878.93	868.93	Saprolite/Bedrock	---
PZ-06	Water level	1244382.89	2024661.39	912.30	915.15	26.95	898.60	888.60	Bedrock	3.9E-03
PZ-08	Water level	1245514.59	2026807.30	864.65	867.29	40.84	836.85	826.85	Saprolite/Bedrock	2.4E-03
PZ-10	Water level	1242058.41	2028554.29	829.26	832.02	31.96	810.46	800.46	Bedrock	1.1E-06
PZ-11	Water level	1240578.87	2026933.09	820.21	823.09	33.78	799.71	789.71	Saprolite/Bedrock	1.7E-04
PZ-12	Water level	1240837.96	2026731.01	816.17	818.74	49.77	779.37	769.37	Saprolite	5.4E-05
PZ-15	Water level	1240457.61	2025105.38	824.59	826.86	41.47	795.79	785.79	Saprolite	3.9E-05
PZ-16	Water level	1239419.77	2023662.22	798.05	800.70	26.15	785.05	775.05	Saprolite	3.6E-04
PZ-17	Water level	1239270.02	2023086.50	828.54	831.01	51.57	789.84	779.84	Saprolite	6.6E-04
PZ-18	Water level	1239569.52	2022299.20	812.10	814.51	36.71	788.20	778.20	Saprolite	2.8E-04
PZ-20	Water level	1243496.86	2030132.73	784.45	787.30	37.85	759.45	749.45	Saprolite	---
PZ-23D	Water level	1242139.53	2028520.87	831.89	834.32	94.80	749.92	739.92	Bedrock	4.5E-04
PZ-27D	Water level	1240190.93	2023620.36	806.22	809.28	81.72	737.96	727.96	Bedrock	7.8E-04
PZ-28	Water level	1240066.02	2022624.73	813.57	816.18	72.90	753.68	743.68	Saprolite/PWR	1.2E-04
PZ-29S	Water level	1244317.13	2028839.68	805.80	805.30	45.42	770.28	760.28	Dike Material	---
PZ-29D	Water level	1244304.90	2028853.29	805.77	805.24	126.95	688.69	678.69	Saprolite/PWR/Bedrock	8.3E-06
WGWC-14 ⁽⁷⁾	Water level	1240621.86	2024584.92	806.87	809.50	52.00	764.87	754.87	PWR/Bedrock	---
WGWC-26D	Water level	1243343.66	2029758.85	805.06	808.23	69.27	749.31	739.31	Bedrock	7.1E-05
WAMW-1	Water level	1241843.66	2028944.63	780.05	782.66	124.60	668.40	658.40	Bedrock	---
WAMW-2	Water level	1241547.56	2028806.27	768.39	770.82	86.91	694.19	684.19	Bedrock	---

Notes:

ft = feet

BTOC = below top of casing

PWR = Partially Weathered Rock

K_h = horizontal hydraulic conductivity

cm/sec = centimeter per second

--- = Location not tested

(1) Piezometers used only to gauge water levels in vicinity of AP-1 and refine the AP-1 potentiometric map.

(2) Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet.

(3) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88). Ground surface elevation defined at the survey nail installed within the well pad.

(4) Survey of PZ-01 through PZ-20, and WAMW-1 and WAMW-2 was completed by GEL Solutions and certified June 16, 2020. Survey of PZ-23D through PZ-29D was completed by GEL Solutions and certified on November 17, 2020. Survey of WGWC-26D was completed by GEL Solutions and certified on October 13, 2022.

(5) Total well depth accounts for sump if data provided on piezometer construction logs.

(6) K_h as determined by slug testing (in piezometers and wells) or iso-flow packer testing (in open bedrock boreholes). Horizontal hydraulic conductivity in bedrock is from targeted tests of fracture zones and not likely representative of bulk permeability of the rock units.

(7) Well WGWC-14 was replaced as a compliance well by WGWC-14A in 2017.

Table A-3
Horizontal Groundwater Gradient and Flow Velocity Calculations
Plant Wansley AP-1, Heard and Carroll Counties, Georgia

October 2, 2017										
Flow Path Direction ⁽¹⁾	K _h (ft/day)	n _e	h ₁ (ft)	h ₂ (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/day) ⁽²⁾	Average V (ft/day) ⁽²⁾	V (ft/yr) ⁽²⁾	V (ft/yr) ⁽²⁾
PZ-18 to PZ-17	0.67	0.25	796.97	781.09	840	0.019	0.051	0.101	18.5	36.8
WGWC-16 to PZ-16	0.67	0.25	795.46	788.51	1080	0.006	0.017		6.3	
PZ-10 to WGWC-19	0.67	0.25	804.33	762.32	480	0.088	0.235		85.6	

February 13, 2023										
Flow Path Direction	K _h (ft/day)	n _e	h ₁ (ft)	h ₂ (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/day) ⁽²⁾	Average V (ft/day) ⁽²⁾	V (ft/yr) ⁽²⁾	V (ft/yr) ⁽²⁾
PZ-18 to PZ-17	0.27	0.25	799.20	793.38	840	0.007	0.007	0.068	2.7	24.7
PZ-01 to WGWC-17	0.27	0.25	818.00	787.92	373	0.081	0.087		31.8	
PZ-10 to WGWC-19	0.27	0.25	808.51	763.72	446	0.100	0.108		39.6	

Notes:

ft = feet

ft/day = feet per day

ft/ft = feet per foot

ft/yr = feet per year

K_h = horizontal hydraulic conductivity

n_e = effective porosity

h₁, h₂ = groundwater elevation at identified wells

Δh/Δl = hydraulic gradient

Δh = change in groundwater elevation between identified wells

Δl = distance between identified wells

V = groundwater flow velocity

(1) Groundwater velocity calculations obtained from the 2017 Annual Groundwater Monitoring and Corrective Action Report (ERM, 2018)

(2) Groundwater flow velocity equation: $V = [K * (\Delta h / \Delta l)] / n_e$



Legend

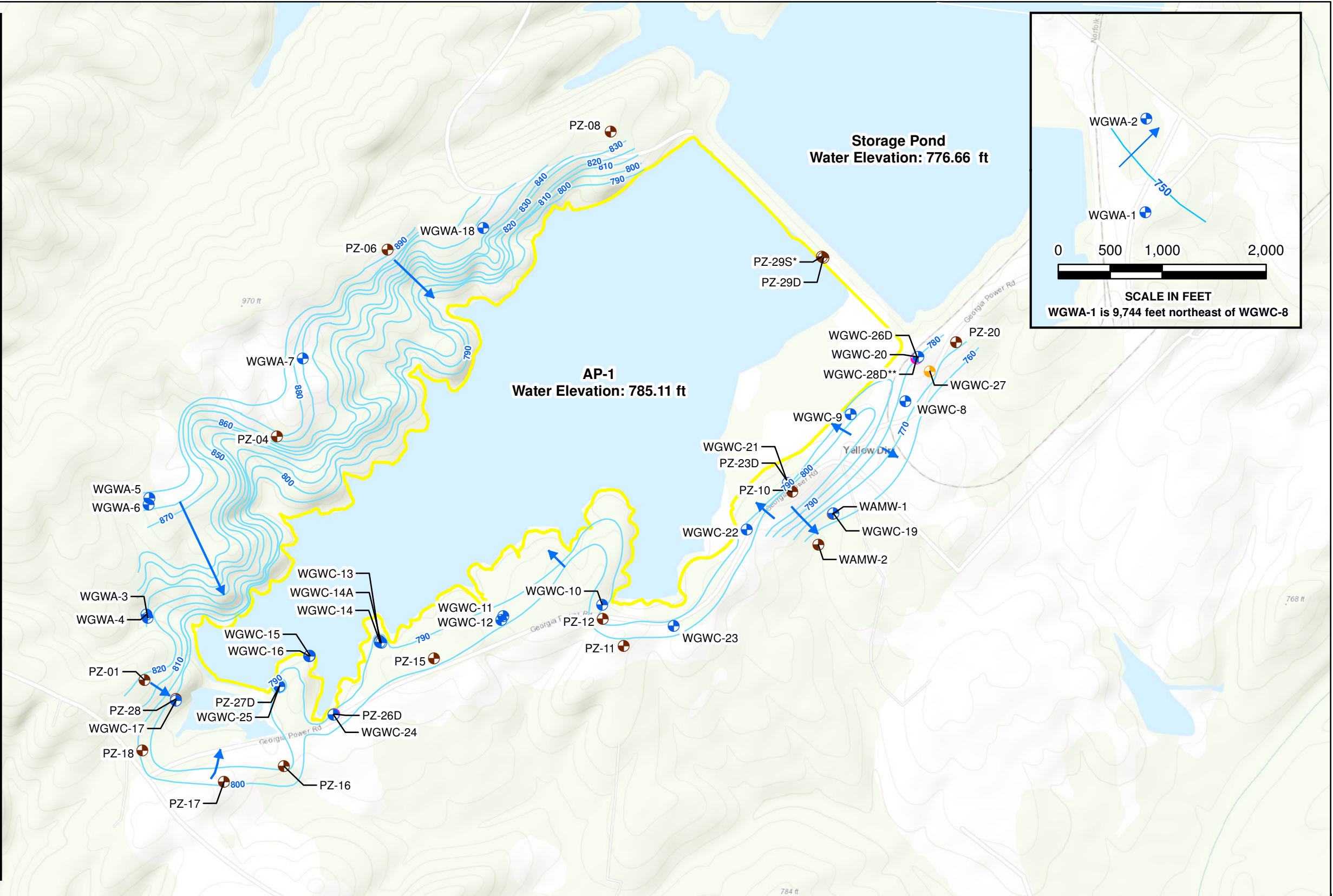
- Detection Monitoring Well
- Horizontal Assessment Monitoring Well
- Vertical Assessment Monitoring Well
- Piezometer
- Approximate AP-1 Boundary

Note:
1. Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c). Surface water body southwest of AP-1 added.

0 500 1,000
SCALE IN FEET

GROUNDWATER MONITORING NETWORK GEORGIA POWER COMPANY PLANT WANSLEY AP-1 HEARD AND CARROLL COUNTIES, GEORGIA	
 consultants	Figure A-1
Kennesaw, GA	April 2024

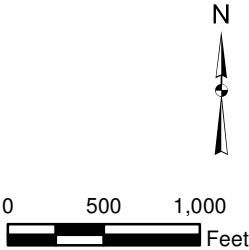
Well ID	Top of Casing Elevation ⁽¹⁾ (ft)	February 13, 2023	
		Depth to Water (ft BTOC)	Groundwater Elevation ⁽¹⁾ (ft)
WGWA-1	782.93	25.66	757.27
WGWA-2	758.23	8.19	750.04
WGWA-3	828.91	2.62	826.29
WGWA-4	834.34	4.25	830.09
WGWA-5	902.15	13.47	888.68
WGWA-6	897.13	16.65	880.48
WGWA-7	897.33	26.82	870.51
WGWA-18	878.02	19.79	858.23
WGWC-8	780.08	2.12	777.96
WGWC-9	812.03	19.11	792.92
WGWC-10	812.38	20.80	791.58
WGWC-11	823.96	27.13	796.83
WGWC-12	823.04	26.46	796.58
WGWC-13	809.78	18.71	791.07
WGWC-14A	810.94	19.29	791.65
WGWC-15	804.69	18.10	786.59
WGWC-16	804.21	17.41	786.80
WGWC-17	816.00	28.08	787.92
WGWC-19	783.42	19.70	763.72
WGWC-20	807.95	27.36	780.59
WGWC-21	834.41	48.77	785.64
WGWC-22	810.37	15.22	795.15
WGWC-23	823.80	30.26	793.54
WGWC-24	804.80	11.61	793.19
WGWC-25	808.98	16.23	792.75
WGWC-26D	808.23	28.77	779.46
WGWC-27	780.54	6.75	773.79
WGWC-14	809.50	18.67	790.83
PZ-01	856.72	38.71	818.01
PZ-04	889.01	10.82	878.19
PZ-06	915.15	19.63	895.52
PZ-08	867.29	31.18	836.11
PZ-10	832.02	23.51	808.51
PZ-11	823.09	20.95	802.14
PZ-12	818.74	29.54	789.20
PZ-15	826.86	30.80	796.06
PZ-16	800.70	10.93	789.77
PZ-17	831.01	37.63	793.38
PZ-18	814.51	15.31	799.20
PZ-20	787.30	14.89	772.41
PZ-23D	834.32	48.75	785.57
PZ-26D	804.93	12.88	792.05
PZ-27D	809.28	18.89	790.39
PZ-28	816.18	27.36	788.82
PZ-29S	805.30	21.89	783.41
PZ-29D	805.24	23.77	781.47
WAMW-1	782.66	20.43	762.23
WAMW-2	770.82	12.99	757.83



Legend

- Detection Monitoring Well
- Horizontal Assessment Monitoring Well
- Vertical Assessment Monitoring Well
- Piezometer
- Approximate Groundwater Flow Direction
- Groundwater Elevation Iso-Contour
- Approximate AP-1 Boundary

Note:
1. Water level elevation recorded on February 13, 2023. Elevation provided in feet (ft) referenced to the North American Vertical Datum (NAVD) 88.
2. Water levels in wells and piezometers measured from feet below top of casing (ft BTOC).
3. Monitoring wells and piezometers with S and D label designation were not used for contouring.
4. * indicates piezometer PZ-29S is installed within the dike materials and may not be representative of actual groundwater conditions.
5. ** indicates WGWC-28D was installed April 2023. No water elevation recorded during the February 2023 event.
6. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



POTENTIOMETRIC SURFACE CONTOUR MAP
FEBRUARY 2023

GEORGIA POWER COMPANY
PLANT WANSLEY AP-1
HEARD AND CARROLL COUNTIES, GEORGIA

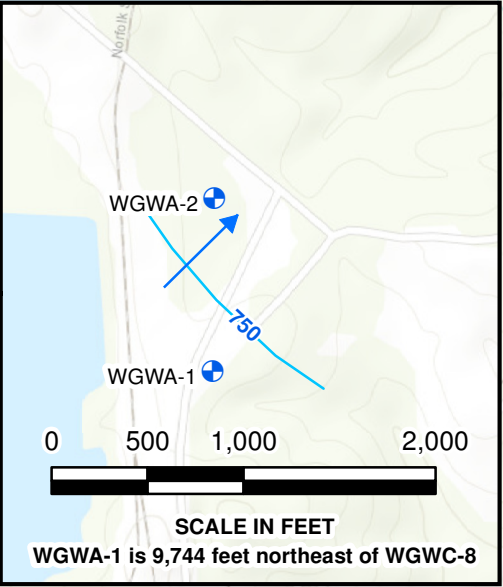
Geosyntec
consultants

Kennesaw, GA

April 2024

Figure
A-2

Well ID	Top of Casing Elevation ⁽¹⁾ (ft)	October 2, 2017	
		Depth to Water (ft BTOC)	Groundwater Elevation ⁽¹⁾ (ft)
WGWA-1	782.90	27.28	755.62
WGWA-2	758.30	10.83	747.47
WGWA-3	829.00	3.39	825.61
WGWA-4	834.30	5.59	828.71
WGWA-5	902.10	14.97	887.13
WGWA-6	897.10	15.45	881.65
WGWA-7	897.40	26.43	870.97
WGWC-8	780.00	4.99	775.01
WGWC-9	812.08	15.65	796.43
WGWC-10	812.60	20.04	792.56
WGWC-11	824.00	27.81	796.19
WGWC-12	823.10	27.14	795.96
WGWC-13	810.00	15.95	794.05
WGWC-14A	811.09	17.95	793.14
WGWC-15	804.50	9.99	794.51
WGWC-16	805.00	9.54	795.46
WGWC-17	816.00	20.78	795.22
WGWA-18	915.30	20.12	895.18
WGWC-19	783.40	21.08	762.32
WGWC-14	809.50	15.59	793.91
PZ-1	856.78	38.20	818.58
PZ-4	889.09	18.71	870.38
PZ-6	915.33	21.11	894.22
PZ-8	882.84	29.35	853.49
PZ-10	832.16	27.83	804.33
PZ-11	822.99	22.19	800.80
PZ-12	818.88	27.15	791.73
PZ-13	850.04	53.33	796.71
PZ-15	826.96	31.00	795.96
PZ-16	800.55	12.04	788.51
PZ-17	831.21	50.12	781.09
PZ-18	814.12	17.15	796.97
PZ-20	787.27	17.59	769.68
PZ-21	814.71	21.05	793.66

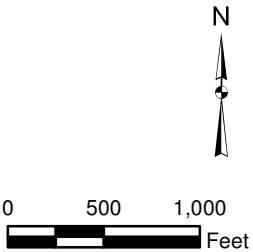


Legend

- Detection Monitoring Well
- Piezometer
- Approximate Groundwater Flow Direction
- Groundwater Elevation Iso-Contour
- Approximate AP-1 Boundary

- Current Monitoring Network
(Installed After 2017)
- Detection Monitoring Well
 - Horizontal Assessment Monitoring Well
 - Vertical Assessment Monitoring Well
 - Piezometer

Note:
1. Water level elevation recorded on October 2, 2017. Elevation provided in feet (ft) referenced to the North American Vertical Datum (NAVD) 88.
2. Water levels in wells and piezometers measured from feet below top of casing (ft BTOC).
3. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



POTENTIOMETRIC SURFACE CONTOUR MAP
OCTOBER 2017

GEORGIA POWER COMPANY
PLANT WANSLEY AP-1
HEARD AND CARROLL COUNTIES, GEORGIA

Geosyntec
consultants

Kennesaw, GA

April 2024

Figure
A-3

RECORD OF BOREHOLE WGWA1/APA-1

SHEET 1 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 127.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/19/15
DATE COMPLETED: 10/21/15

NORTHING: 1250656.10
EASTING: 2035580.71
GS ELEVATION: 780.37
TOC ELEVATION: 782.93

DEPTH W.L.: 27.6' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/21/15
TIME W.L.: 07:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	780	0.00 - 4.00 SILT; orange, dry (fill)	ML							WELL CASING Interval: -2.5'-118' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 117'-127' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 116-127' Type: #1 Sand/ Pre-packed Filter FILTER PACK SEAL Interval: 114'-116' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-114' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5	775	4.00 - 26.00 CLAYEY SILT; sample mostly broken down into SILT-sized fragments; light brown to light orange brown, dry. Clasts in sample are very fine grained muscovite-plagioclase schist. (ML) (overburden)	ML		776.37 4.00					
10	770									
15	765		ML							
20	760									
25	755				754.37 26.00					
30	750	26.00 - 37.00 grayish-red to grey and red. top 1' is dry, 27' and deeper is moist. Greater abundance of rock fragments in sample 1-2" in diameter. Muscovite-plagioclase schist with <5% quartz. Visible, very fine foliated texture, weathered (sapolite)	ML							
35	745									
40	740	37.00 - 42.00 SAPROLITE ROCK; moist, grey and brown quartzose schist with about 5% muscovite, <5% garnet <1mm-3mm. Broken into fragments up to 3" in diameter	PWR		743.37 37.00					
45	735	42.00 - 47.00 moist, grey and light red, weathered muscovite schist interlayered with quartz-rich lenses up to 2" thick (scarce)			738.37 42.00					
		Log continued on next page								

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito


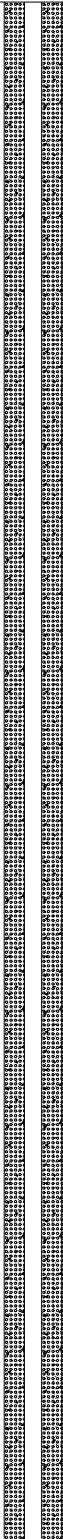
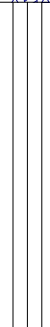






GA INSPECTOR: Shannon George, P.G.
CHECKED BY: Rachel P. Kirkman, P.G.
DATE: 9/29/17



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

SHEET 2 of 3

DEPTH W.L.: 27.6' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/21/15
TIME W.L.: 07:50

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
45	735	42.00 - 47.00 moist, grey and light red, weathered muscovite schist interlayered with quartz-rich lenses up to 2" thick (scarce) <i>(Continued)</i>			733.37					<p>WELL CASING Interval: -2.5'-118' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</p> <p>WELL SCREEN Interval: 117'-127' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</p> <p>FILTER PACK Interval: 116-127' Type: #1 Sand/ Pre-packed Filter</p> <p>FILTER PACK SEAL Interval: 114'-116' Type: 3/8" Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0'-114' Type: Portland Type 1</p> <p>WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum</p> <p>DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic</p>
		47.00 - 57.00 CLAYEY SILT; moist, white, 90% plagioclase, 5% muscovite, <5% quartz, with a 2" lense of muscovite schist and weathered pegmatite	ML		47.00					
50	730									
55	725				723.37					
		57.00 - 64.00 SAPROLITE ROCK; moist, orange-brown muscovite plagioclase schist. <5% quartz. metamorphic texture present. Quartzite/quartz rich lenses at 64-66', 80-80.1', and 87-88'			57.00					
60	720									
		64.00 - 77.00 POOR RECOVERY; broken quartzose schist, white to grey, wet			716.37					
65	715				64.00					
70	710		TWR							
					703.37					
75	705									
		77.00 - 87.00 SAPROLITE ROCK; weathered muscovite schist, metamorphic foliation, lenses of quartz-rich weather resistant material, moist			77.00					
80	700									
85	695									
		87.00 - 88.00 brown, wet, foliated quartzite	TWR		693.37					
		88.00 - 91.00 moist, orange/brown, garnet muscovite schist, oxidized feldspar, weathered quartz			87.00 692.37 88.00					
90	690	Log continued on next page								

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWA1/APA-1

SHEET 3 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 127.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/19/15
DATE COMPLETED: 10/21/15

NORTHING: 1250656.41
EASTING: 2035580.13
GS ELEVATION: 780.37
TOC ELEVATION: 782.93

DEPTH W.L.: 27.6' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/21/15
TIME W.L.: 07:50

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
90	690	91.00 - 107.00 SAPROLITE; moist, white/orange/brown, weathered garnet mica schist	TWR		689.37					WELL CASING Interval: -2.5'-118' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 117'-127' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 116-127' Type: #1 Sand/ Pre-packed Filter FILTER PACK SEAL Interval: 114'-116' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-114' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
					91.00					
95	685									
100	680									
105	675									
		107.00 - 113.00 wet, broken rock fragments	TWR		673.37					
					107.00					
110	670									
		113.00 - 117.00 moist, weathered orange soil with faint fabric			667.37					
			TWR		113.00					
115	665									
		117.00 - 126.50 TRANSITIONALLY WEATHERED ROCK; wet, brown rock fragments up to 3" in diameter			663.37					
					117.00					
120	660		TWR							
		126.50 - 127.00 SAPROLITE; light brown wix of clay, silt, fine to coarse sand and angular gravel			653.37					
					127.00					
		Boring completed at 127.00 ft								
125	655									
130	650									
135	645									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWA2/APA-2D

SHEET 1 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 107.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/15/15
DATE COMPLETED: 10/16/15

NORTHING: 1251556.40
EASTING: 2035590.11
GS ELEVATION: 755.77
TOC ELEVATION: 758.23

DEPTH W.L.: 11.55' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/20/15
TIME W.L.: 10:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	755	0.00 - 5.00 SILTY CLAY; reddish-brown, firm, moist. No fabric. <5% mica flakes. Fill/overburden soil	CL		750.77					WELL CASING Interval: -2.5'-90' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 90'-100' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 87'-100' Type: #1 Sand/Pre-packed Filter FILTER PACK SEAL Interval: 84'-87' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-84' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5	750	5.00 - 7.00 SILTY CLAY; orange-red to orange-brown, moist. Oxidized and mottled black stringers (Mn Oxide) and white veins of plagioclase, weathered (saprolite)	CL		5.00					
		7.00 - 25.00 SILTY CLAY; saprolite			7.00					
10	745									
15	740		CL							
20	735									
25	730	25.00 - 30.00 CLAYEY SILT; moist, pale brown, some red clay, plagioclase stringers	ML		25.00					Portland Type 1
30	725	30.00 - 60.00 SANDY SILT; dry to moist, pale yellow to brown. Fabric not evident			30.00					
35	720		ML							
40	715									
45		Log continued on next page								

BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWA2/APA-2D

SHEET 2 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 107.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/15/15
DATE COMPLETED: 10/16/15

NORTHING: 1251556.40
EASTING: 2035590.11
GS ELEVATION: 755.77
TOC ELEVATION: 758.23

DEPTH W.L.: 11.55' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/20/15
TIME W.L.: 10:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS				
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC						
					DEPTH (ft)									
45	710	30.00 - 60.00 SANDY SILT; dry to moist, pale yellow to brown. Fabric not evident (Continued)	ML		695.77					WELL CASING Interval: -2.5'-90' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 90'-100' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 87'-100' Type: #1 Sand/Pre-packed Filter FILTER PACK SEAL Interval: 84'-87' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-84' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic				
50	705													
55	700													
60	695	60.00 - 70.00 SANDY SILT; Quartzite rock hard cobble rock fragments	ML		60.00									
65	690													
70	685	70.00 - 77.00 dry, pale yellow to brown, gravelly			685.77									
		73.00 - 77.00 NO RECOVERY	ML		678.77									
75	680	77.00 - 81.00 SILTY CLAY; sandy; green, moist, weathered rock with chlorite			77.00									
80	675	81.00 - 83.00 GRAVELLY SILT; transitionally weathered rock, dry, pale brown	ML		81.00									
		83.00 - 90.00 TRANSITIONALLY WEATHERED ROCK; brown, >3" rock fragments, moist	TWR		672.77									
85	670				83.00									
90					665.77									
Log continued on next page														

BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWA2/APA-2D


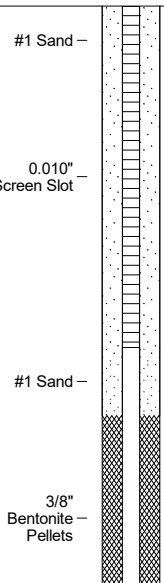
SHEET 3 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 107.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/15/15
DATE COMPLETED: 10/16/15

NORTHING: 1251556.40
EASTING: 2035590.11
GS ELEVATION: 755.77
TOC ELEVATION: 758.23

DEPTH W.L.: 11.55' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/20/15
TIME W.L.: 10:30

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
90	665	90.00 - 107.00 BEDROCK; SCHIST to SCHISTOSE GNEISS; grey, trace garnets (1-3mm), trace muscovite	BR		90.00					WELL CASING Interval: -2.5'-90' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 90'-100' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 87'-100' Type: #1 Sand/Pre-packed Filter FILTER PACK SEAL Interval: 84'-87' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-84' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
95	660	97.00 - 107.00 quartzite with muscovite, pyrite, garnet								
100	655									
105	650				648.77					
		Boring completed at 107.00 ft								
110	645									
115	640									
120	635									
125	630									
130	625									
135										

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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





LOG OF TEST BORING AND WELL INSTALLATION

WGWA-3 (PZ-02)

PAGE 1 OF 1

ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

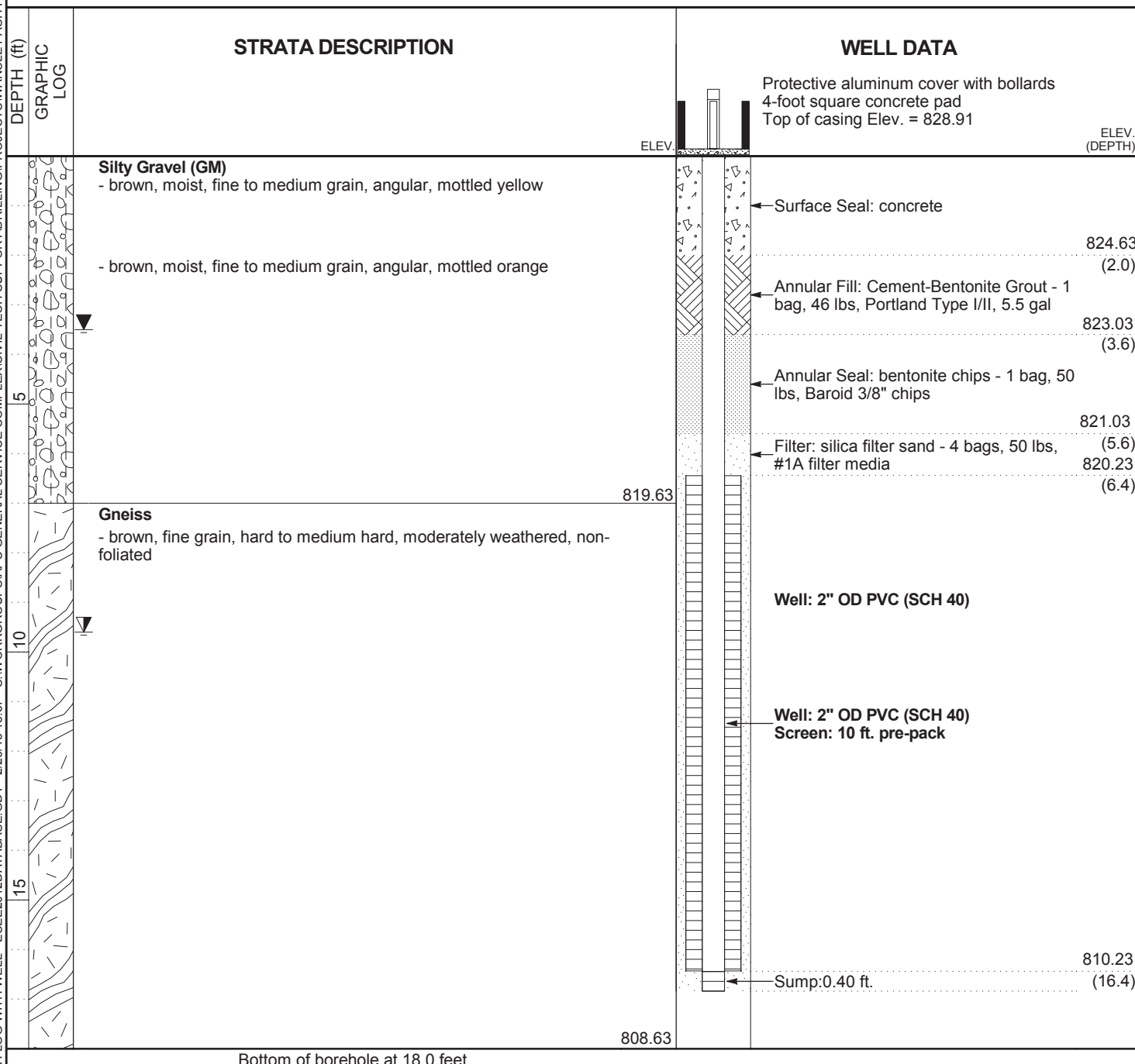
DATE STARTED 12/15/2014 COMPLETED 12/15/2014 SURF. ELEV. 826.63 COORDINATES: N:1240848.21 E:2022350.10

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 18 ft. GROUND WATER DEPTH: DURING _____ COMP. 3.5 ft. DELAYED 9.6 ft. after 24 hrs.

NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

BORING WGWA-4
(PZ-02D) PAGE 1 OF 2
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 1/6/2015 COMPLETED 1/13/2015 SURF. ELEV. 831.33 COORDINATES: N:1240879.58 E:2022339.66
CONTRACTOR SCS 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 70 ft. GROUND WATER DEPTH: DURING _____ COMP. _____ DELAYED 4.88 ft. after 1000 hrs.
NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			ELEV.	ELEV. (DEPTH)
			Protective aluminum cover with bollards 2-foot square concrete pad Top of casing Elev. = 834.34	
			Surface Seal: concrete	829.33 (2.0)
5				
10		Gneiss with interlayered schist - light blue-gray, red staining, fine to medium grain, medium hard to hard, moderately to highly weathered, inclined, banded, quartz, biotite, muscovite - brown with red stained fractures, fine to medium grain, medium hard to hard, moderately to highly weathered, inclined, banded, low to moderate angle fractures, fracture healing by quartz+felspar		822.93
15		- brown with red stained fractures, fine to medium grain, medium hard to hard, moderately to highly weathered, inclined, banded, low to moderate angle fractures, fracture healing by quartz+felspar		
20		- light blue-gray with red to dark brown stining, very fine to medium grain, medium hard to hard, moderately weathered, inclined, banded, low to high angle fractures, quartz, biotite, muscovite		
25		- blue-gray with red staining, very fine to medium grain, hard, not to moderately weathered, inclined, banded, low angle fractures with partial to complete healing, open fractures along foliation planes, quartz, felspar, biotite, pyrite		
30		- light blue-gray, very fine to medium grain, hard, not to slightly weathered, inclined, banded, low angle fractures, open to completely healed, felspar, muscovite, biotite, trace chortite		
35		- light blue-gray, very fine to medium grain, hard, not to slightly weathered, inclined, banded, low angle fractures, open to completely healed, felspar, muscovite, biotite, trace chortite		
40			Annular Fill: Cement-Bentonite Grout - 6 bags, 46 lbs, Portland Type I/II, 33 gal	

(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\WANSLEY ASH_POND_1 (2).GPJ

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PIANT_WANSLEY_ASH_POND_1 (2).GDT



LOG OF TEST BORING AND WELL INSTALLATION

**BORING WGW-4
(PZ-02D)**

PAGE 2 OF 2

ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			Protective aluminum cover with bollards 2-foot square concrete pad Top of casing Elev. = 834.34	
			ELEV. (CONTINUED)	ELEV. (DEPTH)
		Gneiss with interlayered schist(Con't)		
45		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite		789.23 (42.1)
50		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite	Annular Seal: bentonite pellets - 1/2 bucket, 3/8" pellets, 5 gal bucket	785.83 (45.5)
55		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite	Filter: silica filter sand - 3 bags, 50 lbs, #1A filter media	780.43 (50.9)
60		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite	Well: 2" OD PVC (SCH 40)	
65		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, numerous low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite	Well: 2" OD PVC (SCH 40) Screen: 20 ft. pre-pack	
70		- gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, numerous low- and high-angle fractures, biotite, quartz, feldspar, trace pyrite		
		Bottom of borehole at 70.0 feet.		761.33
			Sump: 0.40 ft.	760.43



LOG OF TEST BORING AND WELL INSTALLATION

WGWA-5 (PZ-03S)

PAGE 1 OF 1

ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

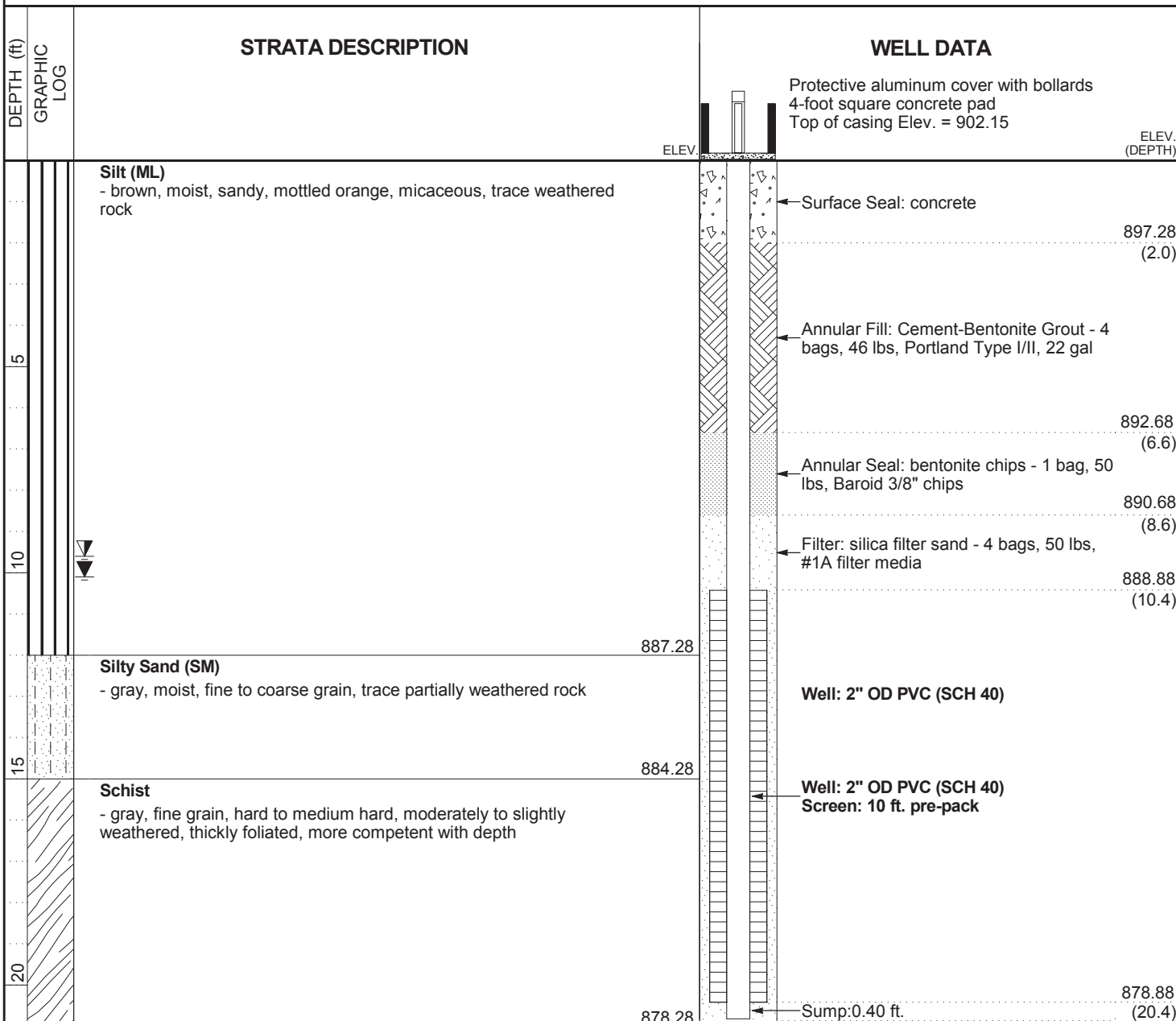
DATE STARTED 12/23/2014 COMPLETED 12/23/2014 SURF. ELEV. 899.28 COORDINATES: N:1241997.94 E:2022368.85

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 21 ft. GROUND WATER DEPTH: DURING _____ COMP. 10.1 ft. DELAYED 9.6 ft. after 24 hrs.

NOTES _____



Bottom of borehole at 21.0 feet.

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

**BORING WGWA-6
(PZ-03D)**

PAGE 1 OF 3

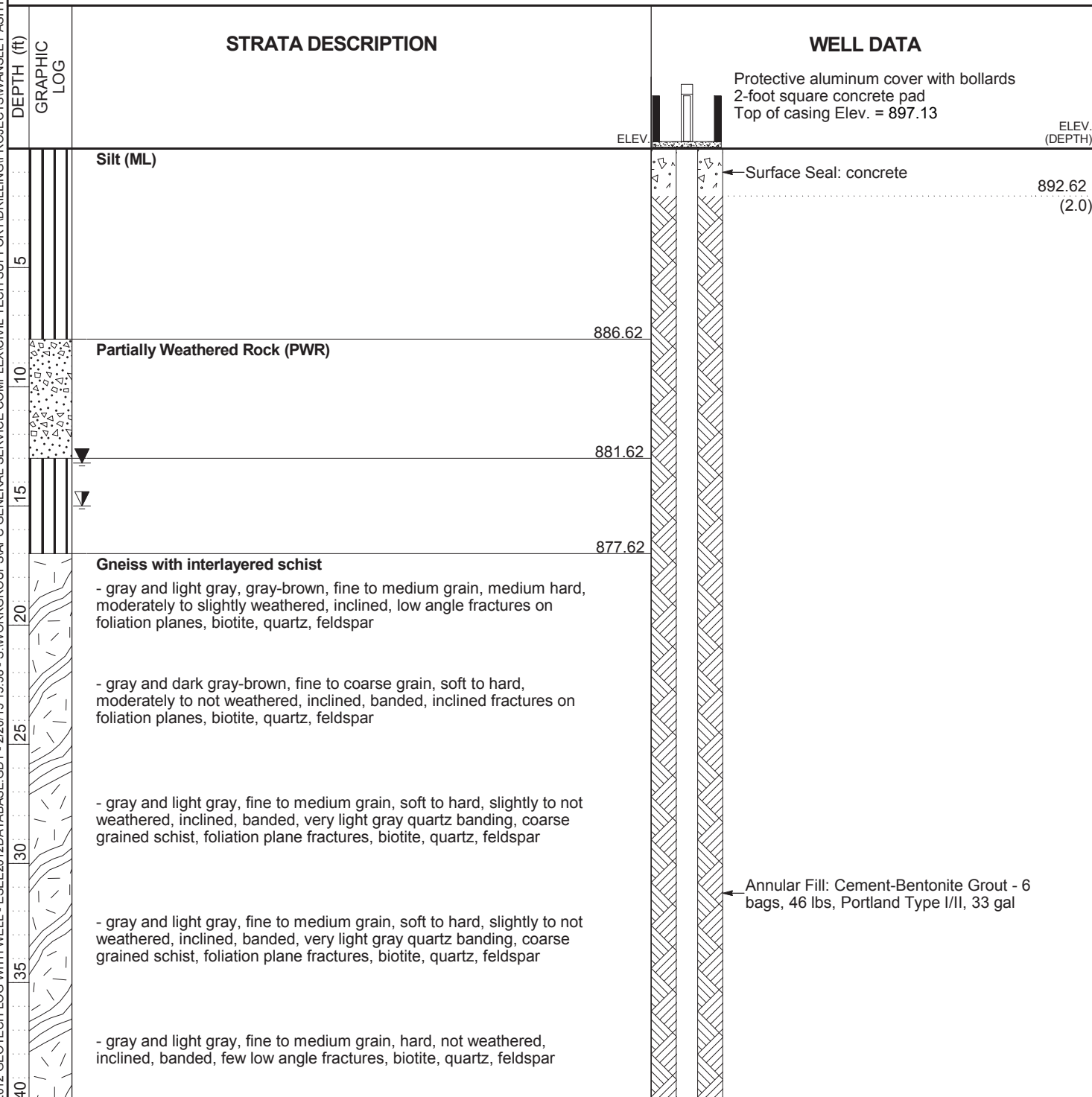
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/16/2014 COMPLETED 1/13/2015 SURF. ELEV. 894.62 COORDINATES: N:1241932.02 E:2022360.58
CONTRACTOR SCS 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 100.5 ft. GROUND WATER DEPTH: DURING _____ COMP. 13.2 ft. DELAYED 15 ft. after 24 hrs.
NOTES _____



(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PIANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

BORING WGWA-6
(PZ-03D) PAGE 2 OF 3
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
		ELEV. (CONTINUED)	ELEV. (DEPTH)
	Gneiss with interlayered schist(Con't)		
45	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding		
50	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, trace pyrite on foliation planes		
55	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes		
60	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes		
65	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes		834.12 (60.5)
70	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, garnet up to 4mm		829.02 (65.6)
75	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, garnet up to 4mm		822.62 (72.0)
80	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds		
85	- gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, finer grained downward		
		Well: 2" OD PVC (SCH 40)	
		Well: 2" OD PVC (SCH 40) Screen: 30 ft. pre-pack	

(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GDT



LOG OF TEST BORING AND WELL INSTALLATION

BORING WGWA-6
(PZ-03D) PAGE 3 OF 3
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA
			Protective aluminum cover with bollards 2-foot square concrete pad Top of casing Elev. = 897.13
90		Gneiss with interlayered schist (Con't) - gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, massive quartz vein - gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, massive quartz vein - gray and light gray, fine to coarse grain, hard, not weathered, inclined, banded, coarse grained schist, quartz-felsic banding, pyrite common on foliation planes, micro-folds, massive quartz vein	ELEV. (CONTINUED)
95			
100			
		Bottom of borehole at 100.5 feet.	794.12
			792.62 Sump: 0.40 ft.



LOG OF TEST BORING AND WELL INSTALLATION

WGWA-7 (PZ-05)

PAGE 1 OF 1

ECS38198

SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

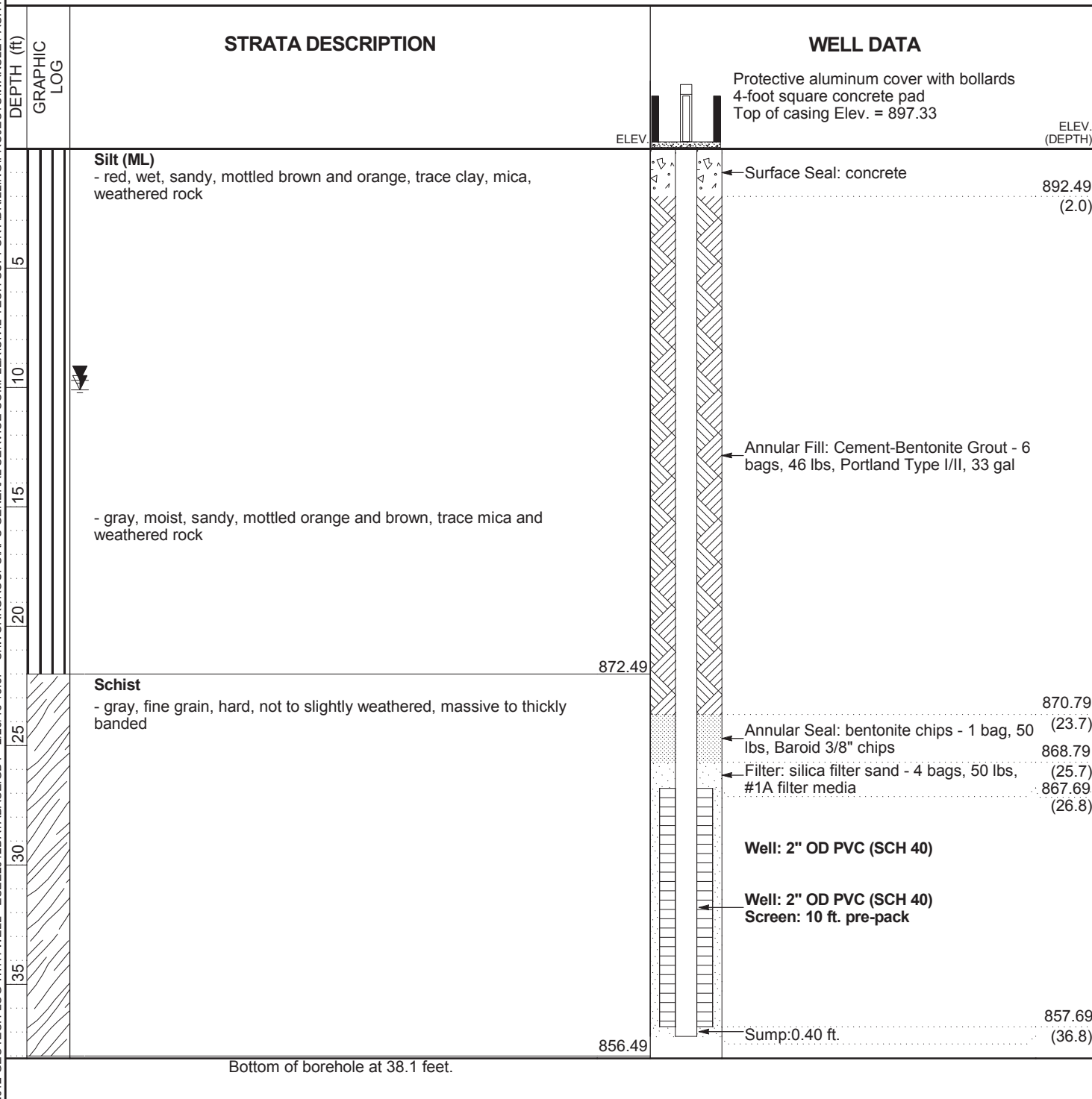
DATE STARTED 12/22/2014 COMPLETED 12/22/2014 SURF. ELEV. 894.49 COORDINATES: N:1243338.63 E:2023843.81

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 38.1 ft. GROUND WATER DEPTH: DURING _____ COMP. 9.7 ft. DELAYED 10.1 ft. after 24 hrs.

NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

WGWA-18 (PZ-07)

PAGE 1 OF 1

ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

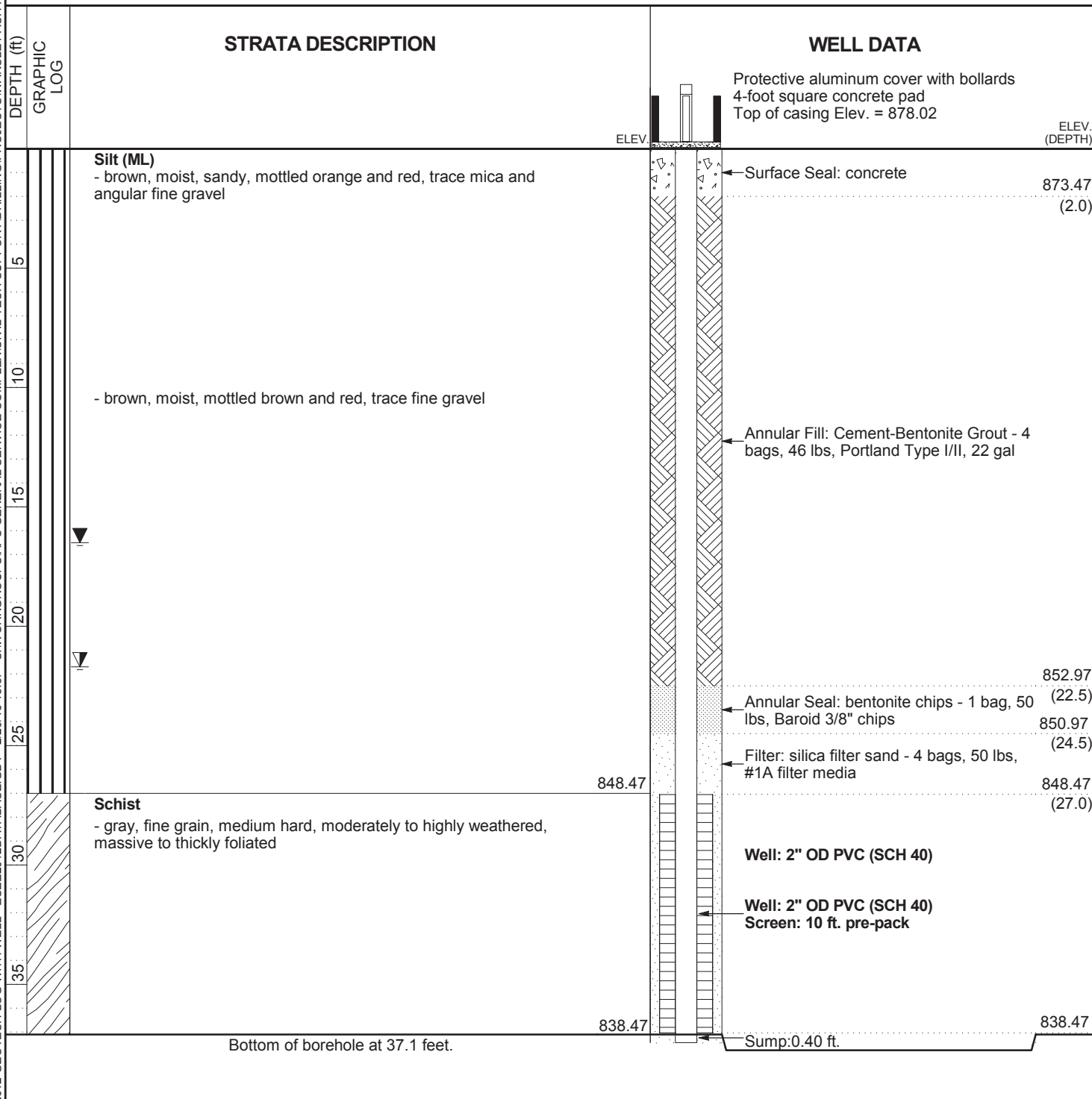
DATE STARTED 12/16/2014 COMPLETED 12/16/2014 SURF. ELEV. 875.47 COORDINATES: N: 1244592.56 E:2025580.71

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE BEARING

BORING DEPTH 37.1 ft. GROUND WATER DEPTH: DURING COMP. 16.5 ft. DELAYED 21.7 ft. after 24 hrs.

NOTES



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WGWA-18 (PZ-07) ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

RECORD OF BOREHOLE WGWC8/APC-1

SHEET 1 of 2

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 57.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/29/15
DATE COMPLETED: 10/29/15

NORTHING: 1242929.40
EASTING: 2029644.58
GS ELEVATION: 777.70
TOC ELEVATION: 780.08

DEPTH W.L.: 36' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/02/2015
TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 2.00 SAPROLITE; overburden, dry to moist, brown to reddish orange	ML		775.70					WELL CASING Interval: -2.5'-47' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 47'-57' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 45'-57' Type: #1 Sand/Prepacked Filter FILTER PACK SEAL Interval: 41.5'-45' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-41.5' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: Hydrovac/4-inch Sonic Rock Drill: 4-inch Sonic
775		2.00 - 4.00 CLAYEY SILT; dry to moist, brown overburden (saprolite)			2.00					
					773.70					
5		4.00 - 8.00 red orange overburden (saprolite)	ML		4.00					
770					769.70					
10		8.00 - 24.00 dry to moist, brown to reddish orange			8.00					
765										
15										
760										
20										
755					753.70				Portland Type 1	
25		24.00 - 28.00 GRAVELLY CLAY; wet, yellow-orange, trace black and white stringers, manganese oxide and weathered feldspar, lean clay	GC		24.00					3/8" Bentonite Pellets
750					749.70					
30		28.00 - 29.00 CLAYEY SAND/TRANSITIONALLY WEATHERED ROCK; wet, brown, clayey silt, some fine to coarse sand, some fine gravel size rock fragments	TWR		28.00					
					748.70					
745		29.00 - 57.00 Mylonitic QUARTZITE ROCK; white to light brown, rock is less coherent and likely fractured around 54-56' interval	BR		29.00					
740										3/8" Bentonite Pellets
40										
735										
45										

Log continued on next page

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWC8/APC-1


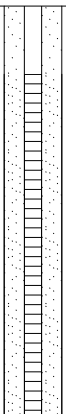
SHEET 2 of 2

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 57.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/29/15
DATE COMPLETED: 10/29/15

NORTHING: 1242929.40
EASTING: 2029644.58
GS ELEVATION: 777.70
TOC ELEVATION: 780.08

DEPTH W.L.: 36' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/02/2015
TIME W.L.: 12:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
45		29.00 - 57.00 Myonitic QUARTZITE ROCK; white to light brown, rock is less coherent and likely fractured around 54-56' interval (Continued)	BR							WELL CASING Interval: -2.5'-47' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 47'-57' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 45'-57' Type: #1 Sand/Prepacked Filter FILTER PACK SEAL Interval: 41.5'-45' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-41.5' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: Hydrovac/4-inch Sonic Rock Drill: 4-inch Sonic
730										
50										
725										
55										
720		Boring completed at 57.00 ft			720.70					
60										
715										
65										
710										
70										
705										
75										
700										
80										
695										
85										
690										
90										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

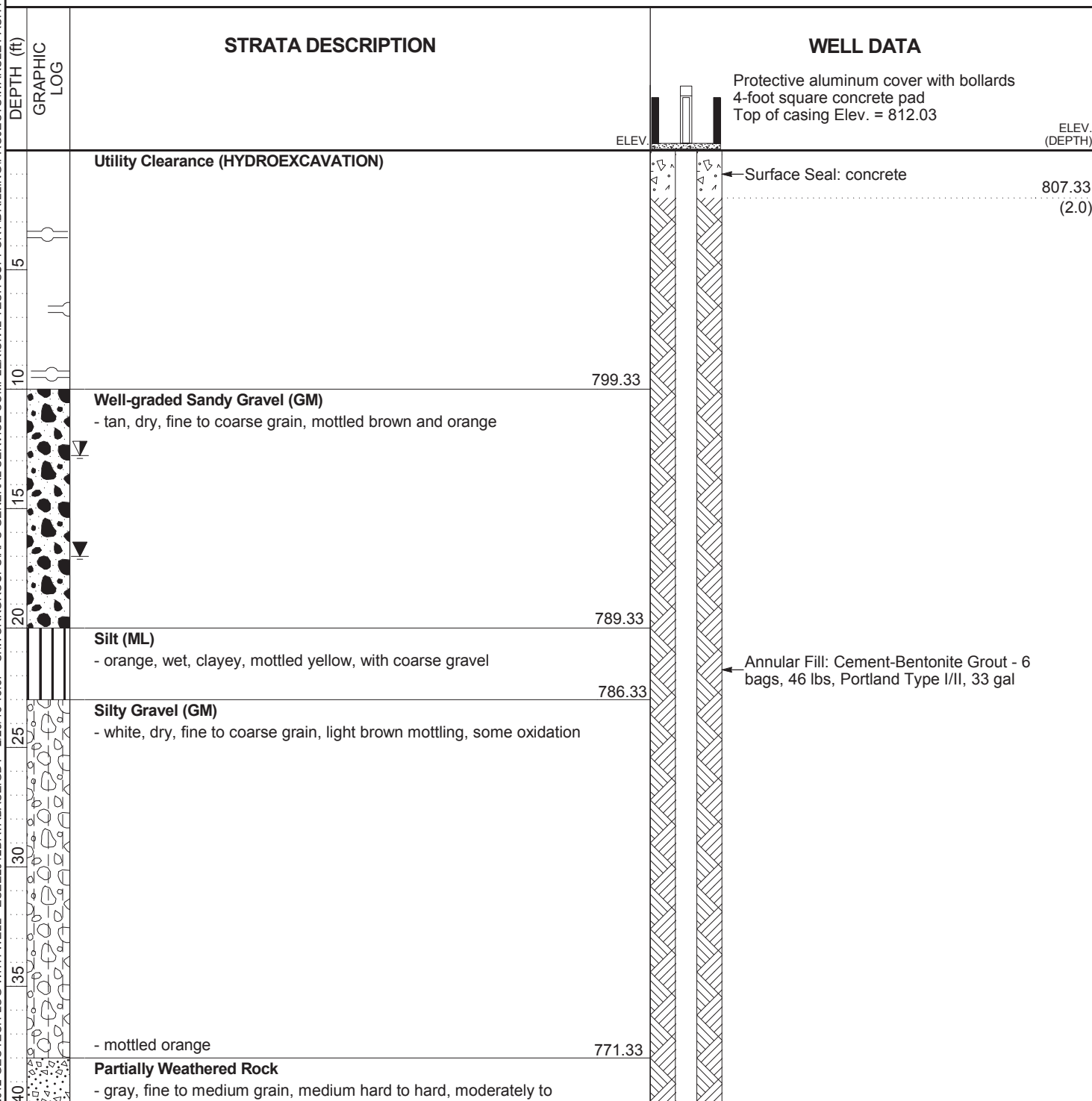
DATE STARTED 12/4/2014 COMPLETED 12/4/2014 SURF. ELEV. 809.33 COORDINATES: N:1242801.12 E:209115.75

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE BEARING

BORING DEPTH 58 ft. GROUND WATER DEPTH: DURING COMP. 17 ft. DELAYED 12.78 ft. after 24 hrs.

NOTES



(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GDT

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GDT



LOG OF TEST BORING
AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV. (CONTINUED)	WELL DATA	ELEV. (DEPTH)
45		highly weathered, with oxidation Partially Weathered Rock(Cont)		Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 812.03	767.83 (41.5)
50				Annular Seal: bentonite chips - 1 bag, 50 lbs, Baroid 3/8" chips	765.23 (44.1)
55				Filter: silica filter sand - 4.5 bags, 50 lbs, #1A filter media	760.93 (48.4)
				Well: 2" OD PVC (SCH 40)	
				Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
			751.33		750.93

Bottom of borehole at 58.0 feet.

Sump:0.40 ft.

RECORD OF BOREHOLE WGWC10/APC-3D

SHEET 1 of 4

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 146.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/27/15
DATE COMPLETED: 10/27/15

NORTHING: 1240971.96
EASTING: 2026725.61
GS ELEVATION: 809.61
TOC ELEVATION: 812.38

DEPTH W.L.: 7.73' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/27/15
TIME W.L.: 14:41

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 11.00 SILT; dry to moist, yellow to orange-red, some clay, some very fine sand, trace muscovite	ML							WELL CASING Interval: -2.5'-136' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 136'-146' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 134'-136' Type: #1 Sand Prepacked Filter FILTER PACK SEAL Interval: 131.5'-134' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-131.5' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
5	805	6.00: Shelby Tube Collected: 6'-8'								
10	800	11.00 - 23.00 CLAYEY SILT; dry to moist, orange to red, 5-10% muscovite, trace black MnO, trace garnet, trace quartz, saprolite	ML		798.61 11.00					
15	795									
20	790	23.00 - 37.00 SILT; moist, yellow brown, some clay, come very fine sand, layers of white CLAYEY SILT, 3" thick lense of weathered pegmatite material at 25', 39', and 42'	ML		786.61 23.00					
25	785									
30	780	36.00: Shelby Tube Collected: 36'-38'	ML		772.61 37.00					
35	775	37.00 - 40.00 CLAYEY SILT; some weathered pegmatite material, white/pink weathered potassium feldspar and plagioclase								
40	770	40.00 - 47.00 SILT; moist, yellow brown, some clay, come very fine sand, layers of white CLAYEY SILT, 3" thick lense of weathered pegmatitic material at 42'	ML		769.61 40.00					
45	765	Log continued on next page								

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWC10/APC-3D

SHEET 2 of 4

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 146.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/27/15
DATE COMPLETED: 10/27/15

NORTHING: 1240971.96
EASTING: 2026725.61
GS ELEVATION: 809.61
TOC ELEVATION: 812.38

DEPTH W.L.: 7.73' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/27/15
TIME W.L.: 14:41

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
45			ML		762.61 47.00					WELL CASING Interval: -2.5'-136' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 136'-146' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 134'-136' Type: #1 Sand Prepacked Filter FILTER PACK SEAL Interval: 131.5'-134' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-131.5' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
50	760	47.00 - 58.00 SAPROLITE; moist, grayish brown with some orange mineral oxidation, weathered muscovite schist, predominately weathered feldspars, 10-15% muscovite, <10% quartz	ML							
55	755				751.61					
60	750	58.00 - 58.10 1" black layer with gravel size quarts grains, silt sized black particles 58.10 - 88.00 moist, grayish brown with some orange mineral oxidation, weathered muscovite schist, predominately weathered feldspars			58.10					
65	745								Portland Type 1	
70	740									
75	735									
80	730									
85	725									
90	720	88.00 - 92.00 SANDY SILT; moist to wet, orange brown, sandy silt, very fine to fine sand, trace fine gravel, micaceous	ML		721.61 88.00					

Log continued on next page

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

SHEET 3 of 4

DEPTH W.L.: 7.73' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/27/15
TIME W.L.: 14:41

[illegible]

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

SHEET 4 of 4

DEPTH W.L.: 7.73' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/27/15
TIME W.L.: 14:41

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

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



WGWC-11 (PZ-14)

PAGE 1 OF 2

ECS38198



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/8/2014 COMPLETED 12/9/2014 SURF. ELEV. 821.44 COORDINATES: N:1240860.18 E:2025773.39

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE BEARING

BORING DEPTH 47 ft. GROUND WATER DEPTH: DURING COMP. 27 ft. DELAYED 31.6 ft. after 24 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 823.96 ELEV. (DEPTH)
0		Silt (ML) - red, moist, sandy, mottled yellow, trace mica	Surface Seal: concrete 819.44 (2.0)
5		- mottled yellow, trace gravel	
10			
15		- mottled brown	
20			Annular Fill: Cement-Bentonite Grout - 6 bags, 46 lbs, Portland Type I/II, 33 gal
25			
30		- gray, moist, mottled orange, black, and white, micaceous	
35			Annular Seal: bentonite chips - 1 bag, 50 lbs, Baroid 3/8" chips 788.84 (32.6) 786.84 (34.6)
40			Filter: silica filter sand - 3.5 bags, 50 lbs, #1A filter media 783.14 (38.3)

(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\WANSLEY ASH_POND_1 (2).GPD



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DEPTH (ft) GRAPHIC LOG		STRATA DESCRIPTION	WELL DATA	
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 823.96	
45		Silt (ML)(Con't)	ELEV. (CONTINUED)	ELEV. (DEPTH)
			Well: 2" OD PVC (SCH 40)	
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
		Bottom of borehole at 47.0 feet.	774.44	773.14
			Sump: 0.40 ft.	

RECORD OF BOREHOLE WGWC12/APC-4D

SHEET 1 of 2

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 77.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/22/15
DATE COMPLETED: 10/22/15

NORTHING: 1240827.68
EASTING: 2025755.99
GS ELEVATION: 820.57
TOC ELEVATION: 823.04

DEPTH W.L.: 20.1' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/22/15
TIME W.L.: 08:05

[illegible]

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWC12/APC-4D

SHEET 2 of 2

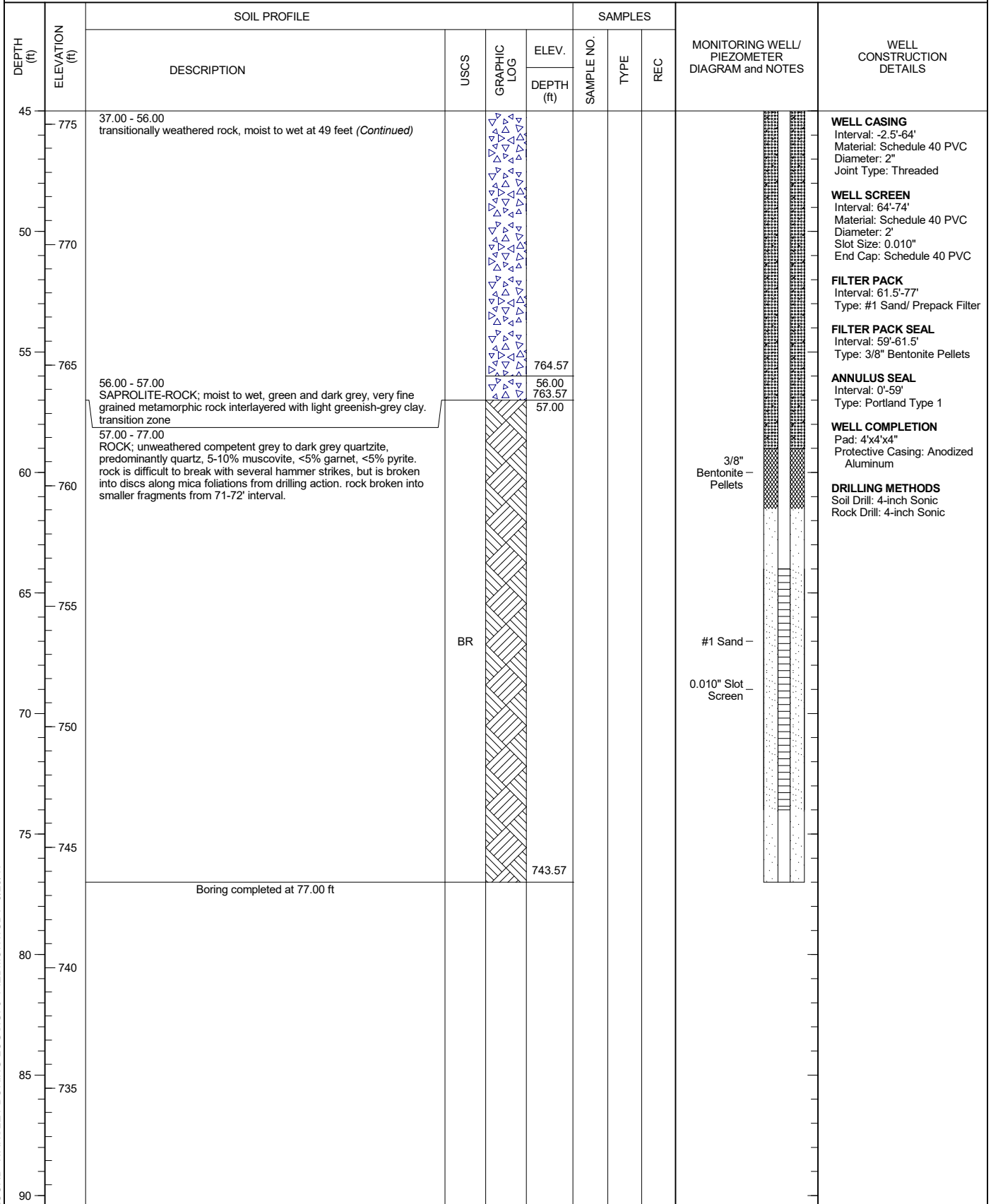
PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 77.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/22/15
DATE COMPLETED: 10/22/15

NORTHING: 1240827.68
EASTING: 2025755.99
GS ELEVATION: 820.57
TOC ELEVATION: 823.04

DEPTH W.L.: 20.1' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/22/15
TIME W.L.: 08:05

BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17



LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWC13/APC-5D

SHEET 1 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 96.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/2/15
DATE COMPLETED: 11/4/15

NORTHING: 1240610.93
EASTING: 2024585.91
GS ELEVATION: 807.32
TOC ELEVATION: 809.78

DEPTH W.L.: 20.25' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/4/15
TIME W.L.: 10:08

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 2.00 SILT; moist, orange overburden	ML		805.32					WELL CASING Interval: -2.5'-73' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 73'-93' 3" Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 69.5'-96' Type: #1 Sand/ Prepack Filter FILTER PACK SEAL Interval: 66.5'-69.5' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-66.5' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
805		2.00 - 7.00 CLAYEY SILT; moist, brown, micaceous, trace garnets up to 1cm, materials are loose/soft	ML		2.00					
5					800.32					
800		7.00 - 22.00 SILTY SAND; moist to wet (18 - 26 feet), orange, brown and white (saprolite)			7.00					
10										
795										
15			SM							
790		16.00: Shelby Tube Collected: 16'-17'								
20					785.32					
785		22.00 - 26.00 SAPROLITE; weathered pegmatite	ML		22.00					
25					781.32					Portland Type 1
780		26.00 - 28.00 trace quartz, wet			26.00					
30					779.32					
775		28.00 - 35.00 SILTY CLAY; moist, very light brown. metamorphic foliation present. trace gravel size quartzite rock fragments (saprolite)	CL		28.00					
35					772.32					
770		35.00 - 36.00 SAPROLITE-ROCK; weathered micaceous meta-quartzite	TWR		35.00					
40					771.32					
765		36.00 - 46.00 ROCK; light brown quartzite with light orange oxidation, micaceous meta quartzite	BR		36.00					
45										
		Log continued on next page								

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

SHEET 2 of 3

DEPTH W.L.: 20.25' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/4/15
TIME W.L.: 10:08

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

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



RECORD OF BOREHOLE WGWC13/APC-5D


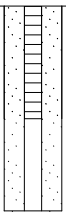
SHEET 3 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 96.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/2/15
DATE COMPLETED: 11/4/15

NORTHING: 1240610.93
EASTING: 2024585.91
GS ELEVATION: 807.32
TOC ELEVATION: 809.78

DEPTH W.L.: 20.25' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/4/15
TIME W.L.: 10:08

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
90		87.00 - 96.00 grey and pink quartzite (Continued)								WELL CASING Interval: -2.5'-73' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 73'-93' 3" Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 69.5'-96' Type: #1 Sand/ Prepack Filter FILTER PACK SEAL Interval: 66.5'-69.5' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-66.5' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
715										
95					711.32					
		Boring completed at 96.00 ft								
710										
100										
705										
105										
700										
110										
695										
115										
690										
120										
685										
125										
680										
130										
675										
135										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

WELL NUMBER WGWC-14A

PAGE 1 OF 1

ERM
3200 Windy Hill Rd Ste 1500W
Atlanta, GA 30339
Telephone: 678-486-2700

COORDINATES: N:1240604.54 E:2024599.63

CLIENT Southern Company Services, Inc.

PROJECT NAME Plant Wansley

PROJECT NUMBER 0372406

PROJECT LOCATION AP-1

DATE STARTED 1/31/17 **COMPLETED** 1/31/17

GROUND ELEVATION 808.20 **HOLE SIZE** 4.25 inches

DRILLING CONTRACTOR Southern Company Services, Inc

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger 2"

AT TIME OF DRILLING ---

LOGGED BY MR **CHECKED BY** GEJ

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						Casing Type: PVC
			ML		(ML) Orange SILT, non-plastic, dry	
					2.0	
	SS	100	SM		806.20 (SM) Brownish orange Silty SAND, loose, micaceous, dry	
5					(SM) SAA, with white feldspar veins	
	SS	100	SM			
10					(SM) SAA, medium dense, denser with depth, well graded, fine - coarse grained	
	SS	100	SM			
15					(SM) SAA, reddish orange, moist	
	SS	90	SM			
					18.5	
20			CL		789.70 (CL) Orange Silty CLAY, stiff, low plasticity, moist	
					(CL) Reddish orange Silty CLAY, medium stiff, low plasticity, wet	
	SS	70	CL			
					24.0 (CL) Orange Silty CLAY, stiff, low plasticity, saprolitic, wet	
25					784.20	
					(CL) SAA, very stiff	
	SS	60	CL			
					28.0	
30					780.20	
	SS	60			PWR, foliated	
					33.0	
35					775.20	
40						

Refusal at 40.0 feet.
Bottom of borehole at 40.0 feet.

70/30
Portland
Cement /
bentonite mix

PEL plug 3/8"

20/40
industrial
quartz (ANSI
std 61)
4" UPACK

RECORD OF BOREHOLE WGWC15/APC-6D

SHEET 1 of 2

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 53.50 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/11/15
DATE COMPLETED: 11/11/15

NORTHING: 1240483.16
EASTING: 2023912.92
GS ELEVATION: 802.03
TOC ELEVATION: 804.69

DEPTH W.L.: 5.85' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/13/15
TIME W.L.:

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC			
					DEPTH (ft)						
0		0.00 - 3.00 CLAYEY SILT; homogenous overburden, orange brown, dry to moist	ML							<div>Well casing diagram showing Portland Type 1 casing from 0 to 22.00 ft depth.</div> <div>Well casing diagram showing 3/8 inch Bentonite Pellets from 33.00 to 43.00 ft depth.</div>	<div>WELL CASING Interval: -2.5'-43' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded</div> <div>WELL SCREEN Interval: 43.5'-53.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC</div> <div>FILTER PACK Interval: 41'-53.5' Type: #1 Sand/Prepack filter</div> <div>FILTER PACK SEAL Interval: 38.8'-41' Type: 3/8" Bentonite Pellets</div> <div>ANNULUS SEAL Interval: 0'-38.8' Type: Portland Type 1</div> <div>WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum</div> <div>DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic</div>
800		3.00 - 5.00 CLAYEY SILT; homogenous overburden some coarse gravel, some subrounded weathered cobbles of quartzite, trace white and black staining, orange brown, dry to moist				799.03					
		5.00 - 7.00 CLAYEY SILT; homogenous overburden, orange brown, black foliations, moist, soft				3.00					
5					797.03						
					5.00						
795					795.03						
		7.00 - 9.00 SILTY SAND; grey/brown, silty sand to clayey sand, moist Shelby Tube Collected: 7'-9'	SM		7.00						
					793.03						
10		9.00 - 11.00 SILTY SAND; with some gravel, subangular, slightly weathered quartzite; greyish brown, moist			9.00						
					791.03						
790		11.00 - 14.00 GRAVELLY CLAYEY SILT; fine to coarse quartzite gravel, some medium coarse sand, trace black, brown and white micaceous foliations; greyish brown	MLG		11.00						
					788.03						
15		14.00 - 16.00 SILTY CLAY; micaceous, grey, trace brown and black foliations, dry. soft to firm	CL		14.00						
					786.03						
785		16.00 - 22.00 CLAYEY GRAVEL; fine to coarse gravel and cobbles, some white quartzite, red, orange and black staining, brown silty clay, moist Shelby Tube Collected: 17.1'-17.5'	GC		16.00						
					780.03						
20											
780		22.00 - 24.50 TRANSITIONALLY WEATHERED ROCK/SAPROLITE; cobble and pulverized quartzite	TWR		22.00						
					777.53						
25		24.50 - 27.00 weathered quartzose schist, trace fine pyrite, drill pulverized rock into grey powder, some 3-4" cobbles			24.50						
					775.03						
775		27.00 - 29.00 weathered, quartzose gravel, some grey clay			27.00						
					773.03						
30		29.00 - 30.00 weathered, pulverized schist, wet			29.00						
		30.00 - 33.00 weathered, quartzose gravel, some grey clay, wet			772.03						
770					30.00						
					769.03						
35		33.00 - 37.00 BEDROCK; quartzose schist/gneiss, large garnets, green amphibole, mica, black hornblende/biotite, white feldspar	BR		33.00						
					765.03						
765		37.00 - 43.00 various sizes of mafic gneiss and quartzose schist, weathered			37.00						
					759.03						
40											
760		43.00 - 53.50 mafic gneiss, fine to coarse grey gravel, small weathered cobbles, bedrock			43.00						
45		Log continued on next page									

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: David Wilcox

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



RECORD OF BOREHOLE WGWC15/APC-6D


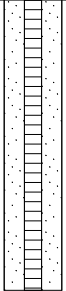
SHEET 2 of 2

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 53.50 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/11/15
DATE COMPLETED: 11/11/15

NORTHING: 1240483.16
EASTING: 2023912.92
GS ELEVATION: 802.03
TOC ELEVATION: 804.69

DEPTH W.L.: 5.85' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/13/15
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
45		43.00 - 53.50 mafic gneiss, fine to coarse grey gravel, small weathered cobbles, bedrock (<i>Continued</i>)								WELL CASING Interval: -2.5'-43' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 43.5'-53.5' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 41'-53.5' Type: #1 Sand/Prepack filter FILTER PACK SEAL Interval: 38.8'-41' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-38.8' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
755					748.53					
50		Boring completed at 53.50 ft								
750										
55										
745										
60										
740										
65										
735										
70										
730										
75										
725										
80										
720										
85										
715										
90										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: David Wilcox

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWC16/APC-6S

SHEET 1 of 1

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 32.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/11/15
DATE COMPLETED: 11/11/15

NORTHING: 1240480.46
EASTING: 2023903.77
GS ELEVATION: 801.72
TOC ELEVATION: 804.21

DEPTH W.L.: 5.99' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/13/15
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
0		0.00 - 3.00 CLAYEY SILT (ML); Trace mica flakes, orange brown, homogenous, moist (wet from previous drilling), firm	ML							
800						798.72				
		3.00 - 5.00 trace coarse gravel, trace mica flakes, light and trace foliations, firm gravel-subrounded quartzite								
5					3.00					
					796.72					
		5.00 - 7.00 SILTY CLAY (ML); trace coarse sand (black, subrounded, firm), orange brown, some light brown and black foliation, moist	ML							
795						5.00				
					794.72					
		7.00 - 9.00 SILTY SAND (SM); poorly graded, fine to coarse, angular, white quartzite, some clay, orange brown, wet Shelby Tube Collected: 7'-9'	SM							
						7.00				
					792.72					
10		9.00 - 11.00 CLAYEY SILT (ML); saprolite, trace coarse sand, trace fine gravel, stained black and white quartzite, black, dark brown and light brown foliations, some mica flakes, dry to moist	ML							
						9.00				
						790.72				
790		11.00 - 15.00 CLAYEY SILT with GRAVEL; fine to coarse brown gravel, trace rounded cobbles, trace medium coarse sand, quartzite stained black and red, some black foliations, moist			11.00					
					786.72					
15		15.00 - 17.00 SILTY SAND; trace fine gravel (quartzite, quartz and schist), orange brown, dry to moist	SM							
785						15.00				
					784.72					
		17.00 - 20.00 SILTY CLAY (ML); gravelly, fine to coarse gravel, cobbles of white quartzite, trace mica flakes, red, orange and black stringers, moist	ML							
						17.00				
					781.72					
20		20.00 - 22.00 SILT (ML); micaceous, trace to large cobbles of quartzite, angular, white/black/orange weathered schist	MLG							
780						20.00				
					779.72					
		22.00 - 26.00 SAPROLITE (ML); pulverized quartzose schist, some cobbles of quartzose schist with coarse sand, orange staining, dry			22.00					
25					775.72					
		26.00 - 26.30 GRAVELLY SILT (MLG); brown, weathered micaceous schist, small fracture with fine gravel, dark brown, red brow, orange foliations, moist	ML							
775						26.00				
					774.72					
		26.30 - 27.00 SILT (ML); micaceous, grey silt, moist	TWR							
						27.00				
		27.00 - 28.00 SAPROLITE				773.72				
						28.00				
					772.71					
30					29.00					
					771.72					
		28.00 - 29.00 TRANSITIONALLY WEATHERED ROCK; saprolite and gravel, quartzose schist, some cobbles, dry			30.00					
770					770.72					
		29.00 - 30.00 sand and gravel, coarse, weathered quartzose schist, small to large cobbles, dry			31.00					
					769.72					
		30.00 - 31.00 sand and gravel, some grey quartzose schist, some silt, fine to coarse sand, fine to coarse gravel, trace cobbles, angular								
35										
		31.00 - 32.00 sand and gravel, saprolite and coarse, weathered quartzose schist, small to large cobbles, some sand, dry								
765										
		Boring completed at 32.00 ft								
40										
760										
45										

Portland
Type 1

3/8"
Bentonite –
Pellets

#1 Sand –

0.010" slot
screen

WELL CASING
Interval: -2.5'-23'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

WELL SCREEN
Interval: 22'-32'
Material: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

FILTER PACK
Interval: 20'-32'
Type: #1 Sand/Prepack Filter

FILTER PACK SEAL
Interval: 17.5'-20'
Type: 3/8" Bentonite Pellets

ANNULUS SEAL
Interval: 0'-17.5'
Type: Type 1 Portland

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

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

RECORD WANSLEY BORING LOGS.GPJ | PIEDMONT.GDT 9/29/17

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: David Wilcox

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



RECORD OF BOREHOLE WGWC17/APC-7


SHEET 1 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 97.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/6/15
DATE COMPLETED: 11/6/15

NORTHING: 1240052.06
EASTING: 2022623.82
GS ELEVATION: 813.36
TOC ELEVATION: 816.00

DEPTH W.L.: 23' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/6/15
TIME W.L.: 08:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 13.00 CLAYEY SILT; moist, orange red and orange brown, mottled, homogenous, soft.	ML							WELL CASING Interval: -2.5'-83' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 83'-93' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 81'-94' Type: #1 sand/ Prepack Filter FILTER PACK SEAL Interval: 78.5'-81' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-78.5' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
810										
5		7.00: Shelby Tube Collected: 7'-9'								
805										
10										
800		13.00 - 17.00 CLAYEY SILT; dry to moist, light brown to orange, mottled, relict metamorphic texture, fine to medium sand, light brown	ML		800.36					
15					13.00					
795		17.00 - 27.00 SILTY SAND; Fine to medium, light brown Shelby Tube Collected: 17'-19'	SM							
20										
790										
25										
785		27.00 - 37.00 CLAYEY SILT; dry to moist, light brown to orange, mottled, relict metamorphic texture, fine to medium sand, light brown	ML		27.00					
30										
780										
35										
775		37.00 - 42.00 CLAYEY SILT and SILT; dry to moist, brown and grey, metamorphic texture observed, predominantly feldspar, varying amounts of quartz (<5-15%), biotite and muscovite (5-15%), saprolite			776.36					
40					37.00					
770		42.00 - 47.00 NO RECOVERY; not competent (soil washout)			771.36					
45		Log continued on next page			42.00					

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

SHEET 2 of 3

DEPTH W.L.: 23' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/6/15
TIME W.L.: 08:00

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

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



RECORD OF BOREHOLE WGWC17/APC-7


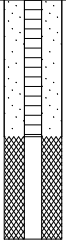

SHEET 3 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 97.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 11/6/15
DATE COMPLETED: 11/6/15

NORTHING: 1240052.06
EASTING: 2022623.82
GS ELEVATION: 813.36
TOC ELEVATION: 816.00

DEPTH W.L.: 23' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 11/6/15
TIME W.L.: 08:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
90		82.00 - 93.00 quartzite (Continued)			720.36					WELL CASING Interval: -2.5'-83' Material: Schedule 40 PVC Diameter: 6" Joint Type: Threaded WELL SCREEN Interval: 83'-93' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 81'-94' Type: #1 sand/ Prepack Filter FILTER PACK SEAL Interval: 78.5'-81' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-78.5' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
720		93.00 - 97.00 SCHIST; fractured quartzitic schist	BR		93.00					
95					716.36					
715		Boring completed at 97.00 ft								
100										
710										
105										
705										
110										
700										
115										
695										
120										
690										
125										
685										
130										
680										
135										

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWC19/APC-2


SHEET 1 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 92.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/28/15
DATE COMPLETED: 10/28/15

NORTHING: 1241851.51
EASTING: 2028949.19
GS ELEVATION: 780.60
TOC ELEVATION: 783.42

DEPTH W.L.: 20.5' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/28/15
TIME W.L.: 13:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0	780	0.00 - 27.00 SILTY SAND; reddish orange overburden	SM							WELL CASING Interval: -2.5'-82' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 82'-92' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 79.1'-92' Type: #1 Sand/Prepacked Filter FILTER PACK SEAL Interval: 77'-79.1' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-77' Type: Portland Type 1 WELL COMPLETION Pad: 4"x4"x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: Hydrovac/4-inch Sonic Rock Drill: 4-inch Sonic
5	775									
10	770									
15	765									
20	760	22.00: Shelby Tube Collected: 22'-24'	ML		753.60				Portland Type 1	
25	755									
30	750	27.00 - 30.00 SILT; dry to moist, light brown, brown, orange brown and grey. Trace white feldspar and black MnO laminations, trace fine gravel, quartz-rich lense from 30-33' (35% quartz). some weathered schist (saprolite)			27.00					
35	745	30.00 - 33.00 some severely weathered gneiss			750.60					
40	740				30.00					
45		33.00 - 60.00 dry to moist, light brown, brown, orange brown and grey. Trace white feldspar and black MnO laminations, trace fine gravel, quartz-rich lense from 30-33' (35% quartz). some weathered schist (saprolite)			747.60					
					33.00					

Log continued on next page

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

SHEET 2 of 3

NORTHING: 1241851.51
EASTING: 2028949.19
GS ELEVATION: 780.60
TOC ELEVATION: 783.42

DEPTH W.L.: 20.5' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/28/15
TIME W.L.: 13:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE		SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.			TYPE	REC
					DEPTH (ft)					
45	735	33.00 - 60.00 dry to moist, light brown, brown, orange brown and grey. Trace white feldspar and black MnO laminations, trace fine gravel, quartz-rich lense from 30-33' (35% quartz). some weathered schist (saprolite) (Continued)								
50	730									
55	725									
60	720	60.00 - 63.00 stiffer with trace gravel			720.60 60.00					
65	715	63.00 - 70.00 TRANSITIONALLY WEATHERED ROCK; brown micaceous schist and garnetiferous greywacke, dry	PWR		63.00					
70	710	70.00 - 87.00 ROCK; garnetiferous greywacke with white plagioclase laminations	BR		710.60 70.00					
75	705									
80	700									
85	695				693.60					
90		87.00 - 92.00 ROCK; wet, dark grey micaceous schist	BR		87.00					

Log continued on next page

3/8" Bentonite – Pellets

#1 Sand –

0.010" Slot Screen

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



BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

RECORD OF BOREHOLE WGWC19/APC-2



SHEET 3 of 3

PROJECT: SCS Wansley
PROJECT NUMBER: 154117
DRILLED DEPTH: 92.00 ft
LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
DATE STARTED: 10/28/15
DATE COMPLETED: 10/28/15

NORTHING: 1241851.51
EASTING: 2028949.19
GS ELEVATION: 780.60
TOC ELEVATION: 783.42

DEPTH W.L.: 20.5' (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 10/28/15
TIME W.L.: 13:10

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
90	690	87.00 - 92.00 ROCK; wet, dark grey micaceous schist <i>(Continued)</i>	BR		688.60					WELL CASING Interval: -2.5'-82' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 82'-92' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 79.1'-92' Type: #1 Sand/Prepacked Filter FILTER PACK SEAL Interval: 77'-79.1' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-77' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: Hydrovac/4-inch Sonic Rock Drill: 4-inch Sonic
		Boring completed at 92.00 ft								
95	685									
100	680									
105	675									
110	670									
115	665									
120	660									
125	655									
130	650									
135										

BOREHOLE RECORD WANSLEY BORING LOGS.GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

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



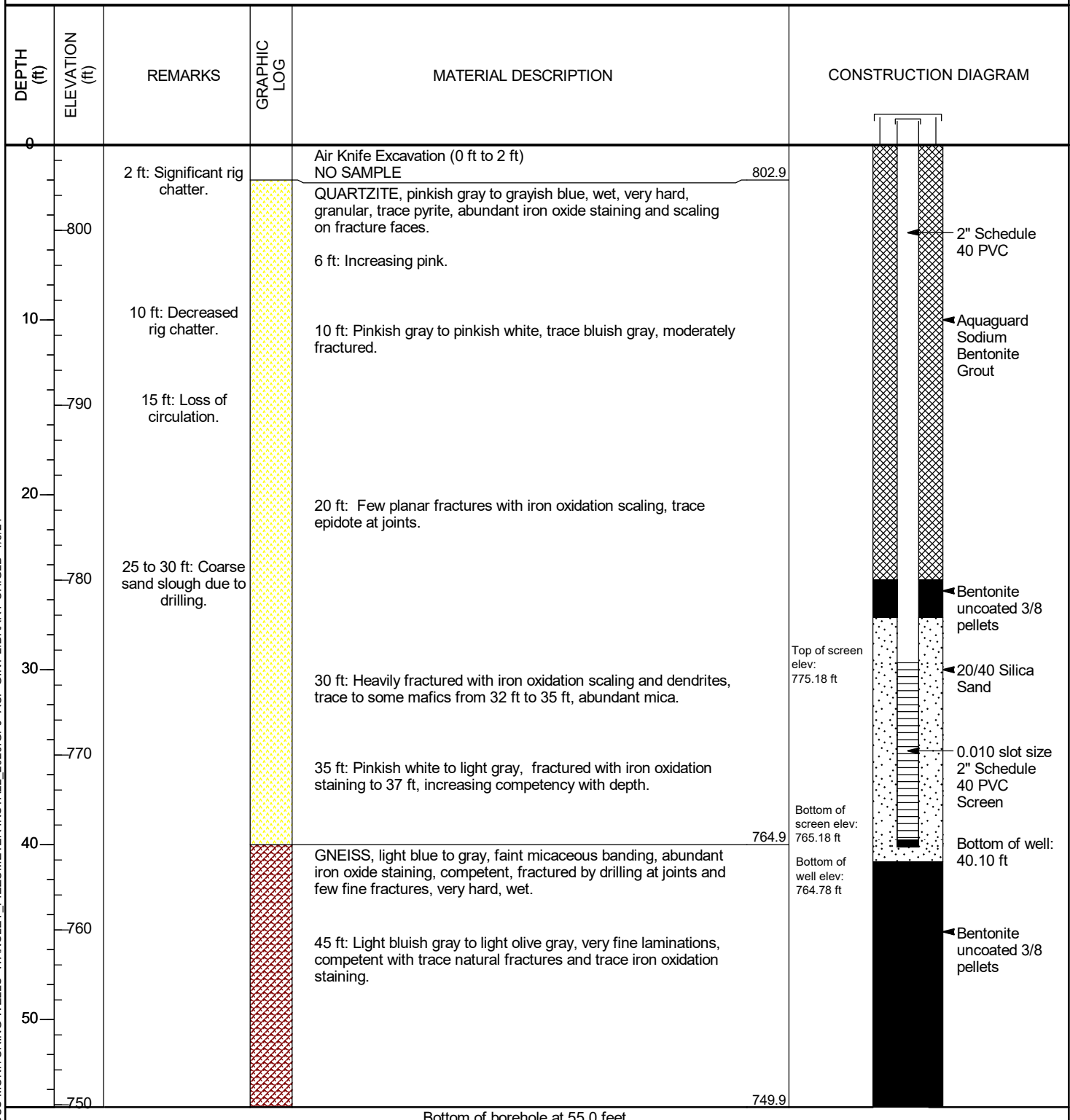


Geosyntec Consultants
1255 Roberts Boulevard
Kennesaw, GA 30144

WGWC-20 (PZ-22)

PAGE 1 OF 1

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 9/29/20 COMPLETED 9/29/20	NORTHING 1243350.76 ft EASTING 2029769.43 ft
DRILLER Cascade Drilling	GROUND ELEVATION 804.88 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 807.95 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY A. Ramsey CHECKED BY A. Reimer



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1

DATE STARTED 10/2/20

COMPLETED 10/2/20

NORTHING 1242139.33 ft

EASTING 2028512.65 ft

DRILLER Cascade Drilling

GROUND ELEVATION 831.79 ft

BORING DIAMETER 6 in.

DRILLING METHOD Sonic

TOP OF CASING ELEVATION 834.41 ft

SAMPLING METHOD 4 in. core 6 in. override

GEOPHYSICAL CONTRACTOR ---

RIG TYPE Terrasonic 1051181

LOGGED BY A. Ramsey

CHECKED BY A. Reimer

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
0				Air Knife Excavation (0 ft to 10 ft) NO SAMPLE	
5					2" Schedule 40 PVC
10				NO RECOVERY (10 ft to 17 ft)	Aquaguard Sodium Bentonite Grout
15					
20				GNEISS, bluish gray, abundant iron oxidation and scaling on fracture faces, thin to moderate laminations, wet.	
25				20 ft: Bluish gray and olive to olive gray.	
30				26 ft: Bluish gray.	
35				30 to 40 ft: Abundant potential fractures throughout.	
40				33 ft to 36 ft: Recovered core broke into pebble sized fragments.	

ACS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21

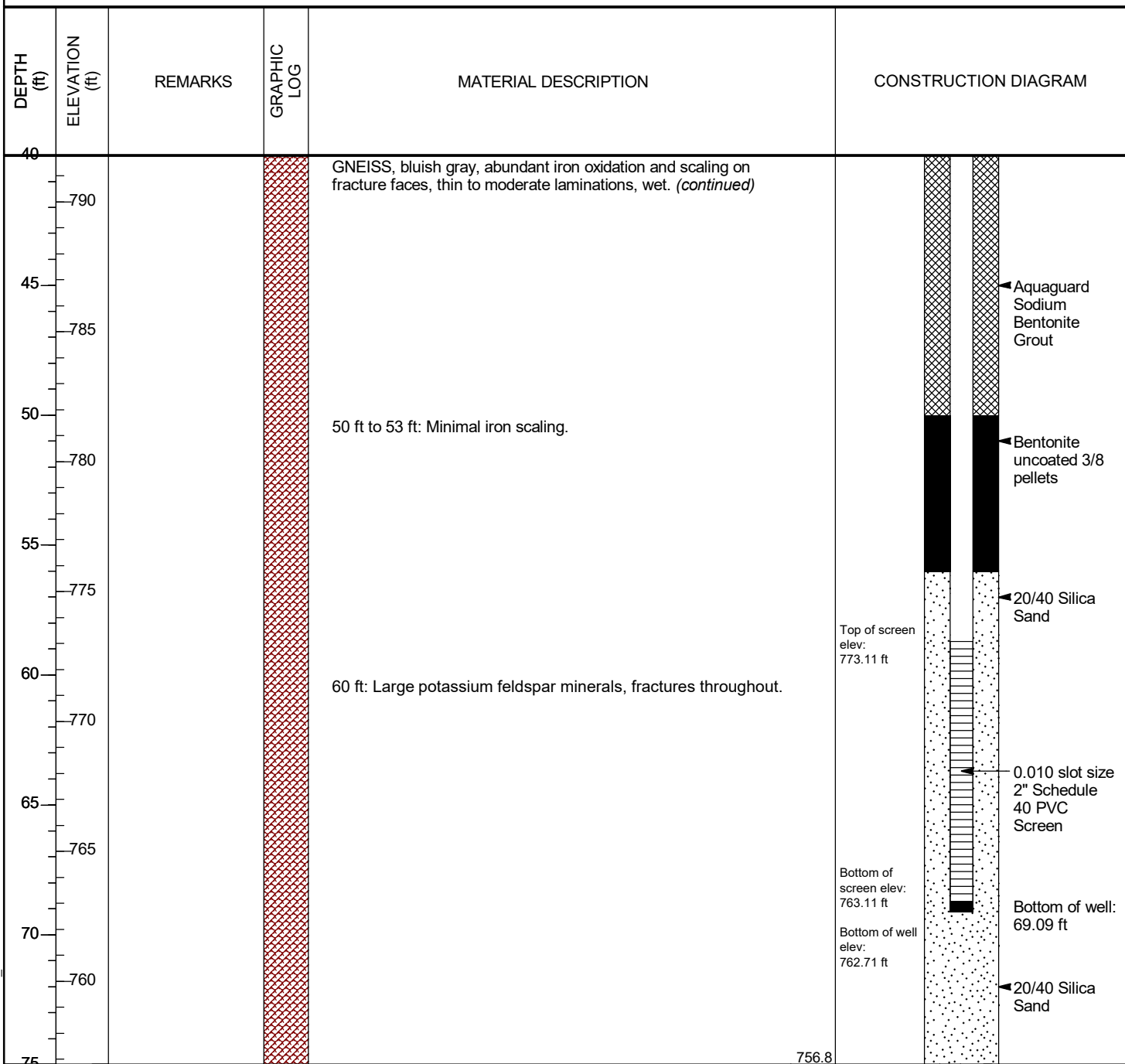
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CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1



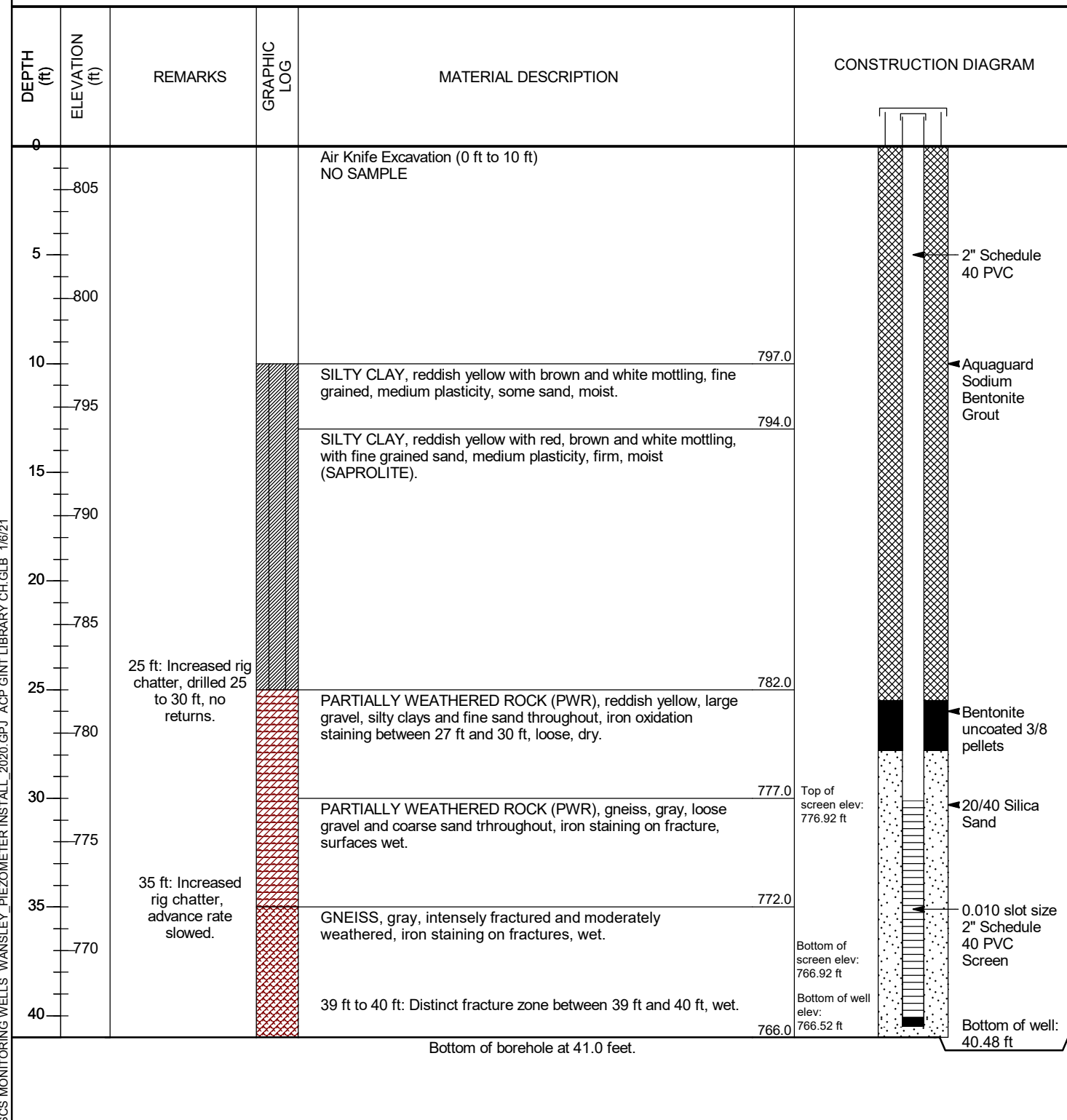


Geosyntec Consultants
1255 Roberts Boulevard
Kennesaw, GA 30144

WGWC-22 (PZ-24)

PAGE 1 OF 1

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/18/20	COMPLETED 10/18/20
DRILLER Cascade Drilling	NORTHING 1241695.25 ft
DRILLING METHOD Sonic	EASTING 2028116.05 ft
SAMPLING METHOD 4 in. core 6 in. override	GROUND ELEVATION 807.00 ft
RIG TYPE Terrasonic 1051181	BORING DIAMETER 6 in.
	TOP OF CASING ELEVATION 810.37 ft
	GEOPHYSICAL CONTRACTOR ---
	LOGGED BY T. Kessler
	CHECKED BY A. Reimer



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/6/21

CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1

DATE STARTED 10/4/20

COMPLETED 10/4/20

NORTHING 1240769.79 ft

EASTING 2027414.58 ft

DRILLER Cascade Drilling

GROUND ELEVATION 820.50 ft

BORING DIAMETER 6 in.

DRILLING METHOD Sonic

TOP OF CASING ELEVATION 823.80 ft

SAMPLING METHOD 4 in. core 6 in. override

GEOPHYSICAL CONTRACTOR ---

RIG TYPE Terrasonic 1051181

LOGGED BY A. Ramsey

CHECKED BY A. Reimer

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
0	820			Air Knife Excavation (0 ft to 10 ft) NO SAMPLE	
5	815				
10	810	10 ft: Very poor recovery, very soft with sporadic hard intervals.		PARTIALLY WEATHERED ROCK (PWR), gneiss, very pale reddish brown, thinly laminated, laminations are friable into coarse sand, some iron staining and scaling, hard. 810.5	
15	805				
20	800	20 ft: Very soft, core washed out by drilling.		NO RECOVERY (20 ft to 30 ft) 800.5	
25	795				
30	790			PARTIALLY WEATHERED ROCK (PWR), highly weathered gneiss, very pale reddish yellowish brown, soft with trace hard pieces, clayey sand, very fine to coarse, iron staining in bottom 2 ft, trace banding visible, dry to wet. 790.5	
35	785	35 ft: Drilled without water.			
40	780			38 ft: Iron oxide staining between 38 ft and 40 ft. 780.5	
				PARTIALLY WEATHERED ROCK (PWR), highly weathered gneiss, pale reddish brown, hard to very hard, moderately friable, some coarse sand, abundant iron staining and scaling. 775.5	

(Continued Next Page)


6SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21

CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
45	775			PARTIALLY WEATHERED ROCK (PWR), gneiss, with trace very hard schistose gneiss fragments and clayey sandy silt, pale reddish brown, banded, micaceous, non plastic, some iron staining, hard, moist to dry.	 <p>Bottom of screen elev: 770.40 ft</p> <p>Bottom of well elev: 770.00 ft</p> <p>Bottom of well: 50.50 ft</p> <p>0.010 slot size 2" Schedule 40 PVC Screen</p> <p>Bentonite uncoated 3/8 pellets</p>
50	770				
55	765			SCHIST, black, very hard, thinly laminated.	
60	760			GNEISS, pink, very pale brown, massive with some thin laminations.	
65	755				
70	750				
75				Bottom of borehole at 75.0 feet.	

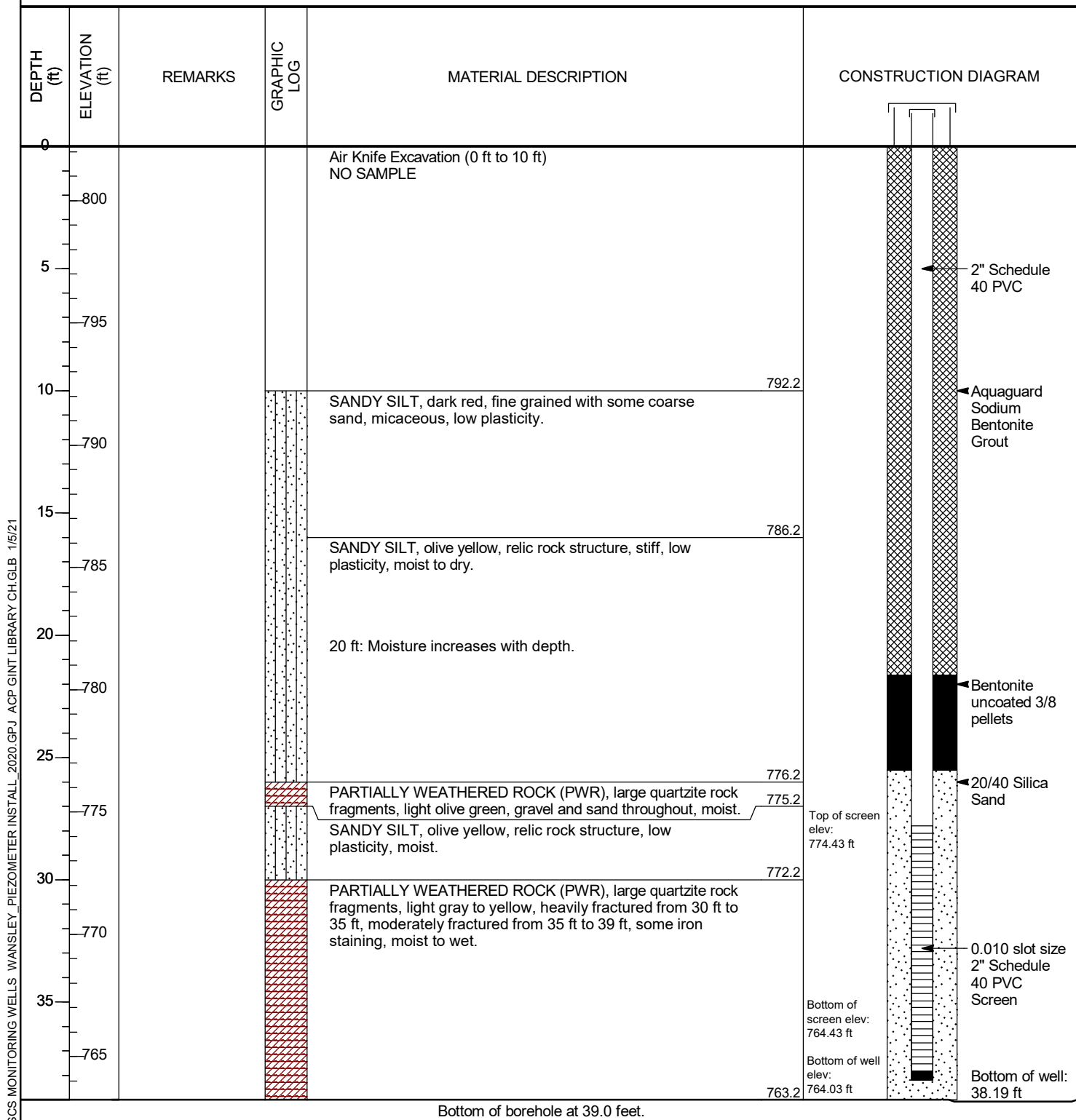


Geosyntec Consultants
1255 Roberts Boulevard
Kennesaw, GA 30144

WGWC-24 (PZ-26S)

PAGE 1 OF 1

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/17/20 COMPLETED 10/17/20	NORTHING 1239916.68 ft EASTING 2024139.82 ft
DRILLER Cascade Drilling	GROUND ELEVATION 802.22 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 804.80 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY V. Taukoor CHECKED BY A. Reimer



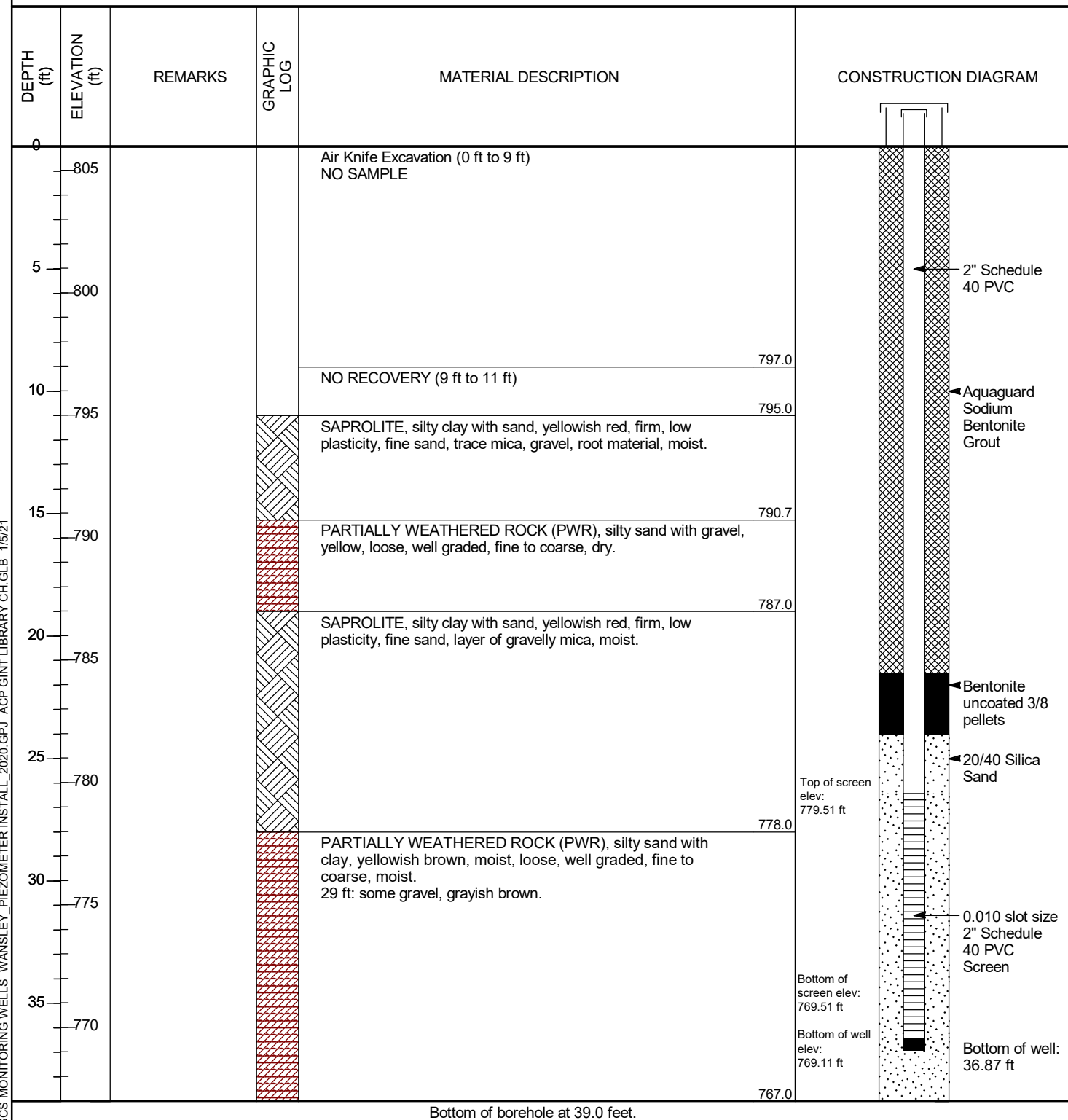


Geosyntec Consultants
1255 Roberts Boulevard
Kennesaw, GA 30144

WGWC-25 (PZ-27S)

PAGE 1 OF 1

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/28/20 COMPLETED 10/28/20	NORTHING 1240184.18 ft EASTING 2023616.69 ft
DRILLER Cascade Drilling	GROUND ELEVATION 805.98 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 808.98 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY T. Wilson CHECKED BY A. Reimer



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21

Drilling Start Date: 09/26/2022	Boring Depth (ft): 70	Well Depth (ft TOC): 69.57
Drilling End Date: 09/26/2022	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 27.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic	Ground Surface Elev. (ft): 805.06 NAV88	Screen Material: Sch 40 PVC Slotted
Driller: Cory Franklin	Top of Casing Elev. (ft): 808.23 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler	Location (N,E): 1243343.658, 2029758.846	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0				GR	(0') Hand augered material. Not logged.	Hand augered to 1.5 feet bgs.	805
1.5				CB	(1.5') QUARTZITE; pinkish gray, hard, heavily fractured and broken into gravel at joints, trace bluish gray quartzite gravel, trace pyrite, abundant iron staining.	Hard drilling.	800
10				CB	(10') Gray to grayish blue, heavily fractured at 10 and 20 feet bgs, abundant iron oxide staining in fractures, trace epidote at joints.		795
15				CB			790
20				CB	(20') Heavy iron staining throughout.		785
25				CB	(25') Heavily fractured from 25-26.5 and 29-30 feet bgs, unfractured rock is bluish gray.		780
30				CB	(30') Grayish blue, fractures at 30-32 feet bgs, iron staining in fracture zone.		775
32				CB	(32') Sand-filled fracture zone from 32-26 feet bgs consisting of poorly graded SAND (SP), subangular, medium to coarse grain, damp		770
36				CB	(36') Grayish blue, fractures at 36-40 feet bgs, iron staining and fracture zone.		765
40				CB	(40') Pinkish gray, fracture at 44 feet bgs, trace iron staining.		

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Well completed with aboveground (+3.17 ft) PVC stickup. Well depth measured from top of casing (TOC). Seal extended due to proximity of adjacent well screen.

Drilling Start Date: 09/26/2022	Boring Depth (ft): 70	Well Depth (ft TOC): 69.57
Drilling End Date: 09/26/2022	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 27.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic	Ground Surface Elev. (ft): 805.06 NAV88	Screen Material: Sch 40 PVC Slotted
Driller: Cory Franklin	Top of Casing Elev. (ft): 808.23 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler	Location (N,E): 1243343.658, 2029758.846	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
45				CB	(46') GNEISS; light blue to gray, hard, trace micaceous banding, trace fractures but largely competent.		760
50					(49') Fine laminations, fines from 49-50 feet bgs from drilling. (50') QUARTZITE; pinkish gray, hard, largely competent with minor fractures, iron oxide staining from 50-52 feet bgs.	Driller reports soft conditions at 49 feet bgs. Hard drilling.	755
55				CB	(54') GNEISS; light bluish gray to dark gray, hard, fine to medium laminations, competent.		750
60					(58') Fines/silty sand intermixed from 58-60 feet bgs with trace dark gray quartzite. (60') Light bluish gray, fine to medium laminations.	Filter Pack: Five 50-lbs bags of 20/40 sand equating to 2.5 cubic feet in volume. Top Seal: One five-gallon bucket of coated bentonite pellets and five 50-lbs bags of bentonite chips.	745
65				CB			740
70					(69') Medium grain sand at 69 feet bgs. (70') Boring terminated.		

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Well completed with aboveground (+3.17 ft) PVC stickup. Well depth measured from top of casing (TOC). Seal extended due to proximity of adjacent well screen.

Drilling Start Date: 09/26/2022	Boring Depth (ft): 40	Well Depth (ft TOC): 42.18
Drilling End Date: 09/27/2022	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 29.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic	Ground Surface Elev. (ft): 778.05 NAV88	Screen Material: Sch 40 PVC Slotted
Driller: Cory Franklin	Top of Casing Elev. (ft): 780.54 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler	Location (N,E): 1243215.513, 2029878.918	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0					(0') CLAY (CL); reddish-brown, moist, firm, medium plasticity, coarse angular gravel throughout with trace silt and sand.	Hand augered to 10 feet bgs.	775
5				GR	(5') PARTIALLY WEATHERED ROCK; relict rock structures from 5-10 feet bgs.		770
10					(10') Yellowish red, relict rock structures throughout.		765
15				CB	(16.5') SANDY SILTY CLAY (CL); white to pinkish white, moist, firm, medium to low plasticity, relict rock structures throughout.		760
20							755
25				CB	(23') White, dry, hard, friable, light gray gneiss fragments throughout. (23.5') SILTY CLAY (CL-ML); yellowish red, wet, soft, low plasticity to nonplastic, trace fine sand. (25') SANDY CLAY (CL); white to pinkish white, dry to moist, firm, low to medium plasticity, PWR throughout.	Rock encountered at 26 feet bgs; hard drilling. PWR appears to be gneiss. Wet zone largely influenced by drilling water in rods. No signs of staining.	750
30					(26') GNEISS; dark to light gray, dry, hard, competent, trace quartzite banding throughout, trace garnets, trace hornblende and plagioclase. (29') Light gray, wet, fractured, abundant fine to coarse sand and trace silt.	Filter Pack: Six 50 lbs bags 20/40 sand equating to 3 cubic feet in volume. Top Seal: One five gallon bucket of coated bentonite pellets	745
35				CB	(30') Heavily fractured, abundant iron oxide staining throughout but heavy from 30-32 feet bgs. (35') Stiff, broken into gravel with fine to medium grain light gray sand.	Very hard drilling. Rod drop from 36.5 to 37 feet bgs.	740
40					(40') Boring terminated.		

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Well completed with aboveground (+2.49 feet) PVC stickup. Well depth measured from top of casing (TOC).

Drilling Start Date: 06/26/2023	Boring Depth (ft): 220	Well Depth (ft TOC): 209.6
Drilling End Date: 08/18/2023	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 32.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic TSI-150T	Ground Surface Elev. (ft): 805.36 NAV88	Screen Material: Sch 40 PVC U-Pack
Driller: C. Franklin/B. Griffis	Top of Casing Elev. (ft): 808.24 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler/T. Payne	Location (N,E): 1243337.13, 2029751.04	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0				GR	(0') Hand augered material. Not logged.		805
5				CB	(2') QUARTZITE; pinkish gray, hard, heavily fractured, broken into gravel and joints, trace bluish gray quartzite gravel, trace gneiss gravel, iron staining in joints.	Hard drilling ~300 gallons used, ~50% retention, gravel largely generated by rig	800
10				CB	(10') QUARTZITE; pinkish gray, hard, heavily fractured, trace light bluish gray quartzite gravel and trace gneiss throughout, abundant iron oxide staining in fractures.	~200 gallons of water used, ~60% return	795
15				CB			790
20				CB	(20') No recovery.		785
25				CB			780
30				CB	(30') QUARTZITE; pinkish gray (unfractured rock is grayish blue), hard, heavily fractured, abundant iron oxide staining.	~60-70% water return	775
35				CB	(35') Grayish blue from 35-36 feet bgs.		770
40				CB	(39') Silty/fine sand from 39-40 feet bgs. (40') QUARTZITE; grayish blue (pinkish gray in fracture zones), hard, largely competent with minimal fractures.	Low water return ~20%	765
45							

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Boring backfilled with bentonite pellets to 207.8 ft bgs prior to well installation. Well completed with aboveground (+2.88 ft) PVC stickup with metal protective cover and guard posts set in concrete. Well depth measured from top of casing (TOC).

Drilling Start Date: 06/26/2023	Boring Depth (ft): 220	Well Depth (ft TOC): 209.6
Drilling End Date: 08/18/2023	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 32.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic TSI-150T	Ground Surface Elev. (ft): 805.36 NAV88	Screen Material: Sch 40 PVC U-Pack
Driller: C. Franklin/B. Griffis	Top of Casing Elev. (ft): 808.24 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler/T. Payne	Location (N,E): 1243337.13, 2029751.04	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
45				CB	(48') Iron oxide staining evident in fracture zones.		760
50				CB	(50') QUARTZITE; pinkish gray to grayish blue, hard, competent, quartz seams throughout.		755
55				CB			750
60				CB	(60') QUARTZITE; bluish gray green, hard, competent, quartz seams throughout.	Switch bit	745
65				CB	(64') Iron staining. (65') Same as above.		740
70				GR	(67') GNEISS; light bluish gray, hard, fine laminations, micaceous. (69') Large fracture zone with iron oxide staining from 69-70 feet bgs. (70') Competent.	Packer testing conducted from 70-80 ft bgs	735
75				CB			730
80				CB	(80') AMPHIBOLITE GNEISS; gray to dark gray, hard, fine laminations, competent, pink quartz inclusions throughout.	Packer testing conducted from 80-90 ft bgs	725
85				CB			720
90							

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Boring backfilled with bentonite pellets to 207.8 ft bgs prior to well installation. Well completed with aboveground (+2.88 ft) PVC stickup with metal protective cover and guard posts set in concrete. Well depth measured from top of casing (TOC).

Drilling Start Date: 06/26/2023	Boring Depth (ft): 220	Well Depth (ft TOC): 209.6
Drilling End Date: 08/18/2023	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 32.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic TSI-150T	Ground Surface Elev. (ft): 805.36 NAV88	Screen Material: Sch 40 PVC U-Pack
Driller: C. Franklin/B. Griffis	Top of Casing Elev. (ft): 808.24 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler/T. Payne	Location (N,E): 1243337.13, 2029751.04	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
90					(90') SILTY SAND (SM); gray, loose, fine-grained with abundant angular gravel (amphibolite gneiss), moist.	Fine sand likely crushed from drill rig Packer testing conducted from 90-100 ft bgs	715
95				CB	(96') PARTIALLY WEATHERED ROCK; dark brown, loose, thin fine sand lenses (~1 cm thick) separating PWR layers, contain horizontal stained banding, relict rock structure, abundant medium to coarse grained sand (subangular), wet to moist becoming dry at 98 feet bgs, abundant iron staining.		710
100					(98') AMPHIBOLITE GNEISS; dark gray, hard, large grains and abundant pink quartz inclusions.	Packer testing conducted from 100-110 ft bgs	705
105				CB	(100') Same as above. (105') Rock is broken into angular gravel.		700
110					(110') With pink quartzite (similar to 2-10 ft bgs), rock is broken into angular gravel throughout.	Pump dry from 110-120 feet bgs; unable to seal packer Overdrilling very difficult; stall rod location/lock rods multiple times, suspect bit damage Pull 6 inches out to replace bit	695
115				GR	(112') Fractures with abundant iron staining. (117') Fractures with abundant iron staining.		690
120					(120') AMPHIBOLITE GNEISS/GNEISS; dark gray, hard, some visible thin laminations, large grains with abundant pink/orange quartz inclusions, rock is broken into gravel and iron staining present from 120-122 feet bgs.	Low water return - suspect highly fractured	685
125				CB	(128') Rock is broken into gravel.		680
130					(130') Pinkish gray from 130-132 feet bgs, heavily fractured quartzite, coarse and angular to subangular sand, abundant iron staining from 130-132 feet bgs.	Suspect sand due to rig crush Hole accepting water	675
135							

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Boring backfilled with bentonite pellets to 207.8 ft bgs prior to well installation. Well completed with aboveground (+2.88 ft) PVC stickup with metal protective cover and guard posts set in concrete. Well depth measured from top of casing (TOC).

Drilling Start Date: 06/26/2023	Boring Depth (ft): 220	Well Depth (ft TOC): 209.6
Drilling End Date: 08/18/2023	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 32.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic TSI-150T	Ground Surface Elev. (ft): 805.36 NAV88	Screen Material: Sch 40 PVC U-Pack
Driller: C. Franklin/B. Griffis	Top of Casing Elev. (ft): 808.24 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler/T. Payne	Location (N,E): 1243337.13, 2029751.04	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
135				CB		Harder drilling	670
140				CB	(140') AMPHIBOLITE GNEISS/GNEISS; dark gray, hard, thin visible laminations, pink quartz inclusions throughout.	~50% water retention Packer testing conducted from 140-150 ft bgs	665
145				CB	(145') Broken into gravel from 145-150 feet bgs.		660
150				CB	(149') Heavily weathered gneiss and abundant iron staining. (150') Micaceous.	50% return Packer testing conducted from 150-160 ft bgs	655
155				CB			650
160				CB	(159') Trace iron staining. (160') Same as above. (161') Iron staining from 161-162 feet bgs.	60% return Packer testing conducted from 160-170 ft bgs	645
165				GR			640
170				CB	(170') Same as above.	No packer due to similarity to previous intervals, lack of fracture	635
175				CB	(174') Trace iron staining.		630
180							

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Boring backfilled with bentonite pellets to 207.8 ft bgs prior to well installation. Well completed with aboveground (+2.88 ft) PVC stickup with metal protective cover and guard posts set in concrete. Well depth measured from top of casing (TOC).

Drilling Start Date: 06/26/2023	Boring Depth (ft): 220	Well Depth (ft TOC): 209.6
Drilling End Date: 08/18/2023	Boring Diameter (in): 6	Well Diameter (in): 2
Drilling Company: Cascade Drilling	Sampling Method(s): Core Barrel	Screen Slot (in): 0.010
Drilling Method: Sonic 4x6	DTW During Drilling (ft): 32.0	Riser Material: Sch 40 PVC
Drilling Equipment: Terrasonic TSI-150T	Ground Surface Elev. (ft): 805.36 NAV88	Screen Material: Sch 40 PVC U-Pack
Driller: C. Franklin/B. Griffis	Top of Casing Elev. (ft): 808.24 NAV88	Seal Material(s): Grout/Bentonite
Logged By: T. Kessler/T. Payne	Location (N,E): 1243337.13, 2029751.04	Filter Pack: 20/40 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
180					(180') Same as above.	Core return in larger pieces, more competent	625
185				CB			620
190					(189') Abundant/heavy iron staining and weathering. (190') GNEISS/AMPHIBOLITE GNEISS; gray to dark gray, hard, visible thin and large laminations, heavily fractured with pink quartzite and iron staining from 190-193 ft bgs.		615
195				CB			610
200					(196') Broken into coarse gravel, iron staining from 196-197 feet bgs. (200') Dark gray, laminations throughout, gneiss with olivine.	Filter Pack: Four 50-lbs bags of 20/40 sand equating to 2 cubic feet in volume. Top Seal: One five-gallon bucket of coated bentonite pellets.	605
205				CB	(204') Heavily fractured from 204-207 ft bgs, white and pink quartzite inclusions.		600
210					(208.5') Heavily fractured. (210') Same as above.		595
215				CB			590
220					(217') Dark red inclusions, some iron staining.		

NOTES: Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988. Boring backfilled with bentonite pellets to 207.8 ft bgs prior to well installation. Well completed with aboveground (+2.88 ft) PVC stickup with metal protective cover and guard posts set in concrete. Well depth measured from top of casing (TOC).



ATLANTIC COAST CONSULTING, INC.

WAMW-1

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 124.94 ft. TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 14-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 16-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

TOC Elev. 782.66 NAVD86

WATER 1ST ENCOUNTERED:

55' BGS

WATER AFTER 48 HOURS:

21.34' TOC

Elevation
NAVD86

Depth
BGS

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

6" OD 0-122'

Reddish orange, silty SAND (overburden)
(SM)

29.0 - 39.0 Recovery (10/10)

Reddish orange to light brown, sandy SILT, trace gravel, MnO laminations (ML)

39.0 - 49.0 Recovery (10/10)

Reddish orange to light brown, sandy SILT, trace gravel, MnO laminations (ML)

49.0 - 59.0 Recovery (10/10)

Reddish orange to light brown, sandy SILT, trace gravel, MnO laminations (ML)

MATERIALS:

GROUT:
MANUFACTURER



Portland Type I/II Cement
Sakrete

BENTONITE SEAL:
MANUFACTURER



3/8" Bentonite Pellets
PDS

FILTER PACK SAND:
MANUFACTURER



20/40 Mesh
Filter Media GP#1

WELL SCREEN:
MANUFACTURER
SLOT SIZE:



Sch. 40 - 2" PVC
Silver-Line™
0.010-Inch Slot

WELL CASING:
MANUFACTURER



Sch. 40 - 2" PVC
Silver-Line™

TOC - Top of Casing

ID - Inside Diameter; OD - Outside Diameter

NAVD86 - North American Vertical Datum of 1986

BGS - Below Ground Surface



ATLANTIC COAST CONSULTING, INC.

WAMW-1

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 124.94 ft TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 14-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 16-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

TOC Elev. 782.66 NAVD88

WATER 1ST ENCOUNTERED: 55' BGS

WATER AFTER 48 HOURS: 21.34' TOC

Elevation
NAVD88

Depth
BGS

54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78

6" OD 0-122'

49.0 - 59.0 Recovery (10/10)

Reddish orange to light brown, sandy SILT, trace gravel, MnO laminations (ML)

59.0 - 69.0 Recovery (10/10)

Brown to tan, white and gray, silty Sand, trace gravel, Saprolite (SM)

69.0 - 79.0 Recovery (8/10)

Brown to tan, white and gray, silty Sand, trace gravel, Saprolite (SM)

MATERIALS:

GROUT:

MANUFACTURER:



Portland Type I/II Cement
Sakrete

BENTONITE SEAL:

MANUFACTURER:



3/8" Bentonite Pellets
PDS

FILTER PACK SAND:

MANUFACTURER:



20/40 Mesh
Filter Media GP#1

WELL SCREEN:

MANUFACTURER:

SLOT SIZE:



Sch. 40 - 2" PVC
Silver-Line™
0.010-Inch Slot

WELL CASING:

MANUFACTURER:



Sch. 40 - 2" PVC
Silver-Line™

TOC - Top of Casing

ID - Inside Diameter, OD - Outside Diameter

NAVD88 - North American Vertical Datum of 1988

BGS - Below Ground Surface



ATLANTIC COAST CONSULTING, INC.

WAMW-1

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 124.94 ft. TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 14-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 16-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

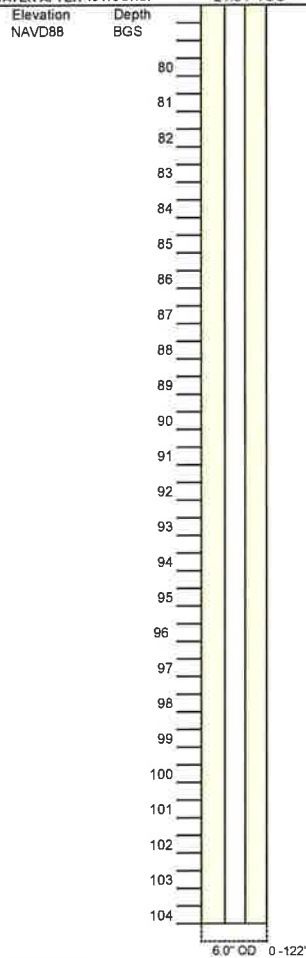
METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

TOC Elev. 782.66 NAVD88

WATER 1ST ENCOUNTERED: 55' BGS

WATER AFTER 48 HOURS: 21.34' TOC

79.0 - 89.0 Recovery (4/10)
Dark gray micaceous Schist, wet - broken pieces

89.0 - 92.0 Recovery (0/3)

92.00 - 99.00
No recovery99.00 - 109.00 Recovery (5/10)
Dark gray micaceous Schist, wet**MATERIALS:**

GROUT:		Portland Type I/II Cement
MANUFACTURER:		Sakrete
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		PDS
FILTER PACK SAND:		20/40 Mesh
MANUFACTURER:		Filter Media GP#1
WELL SCREEN:		Sch. 40 - 2" PVC
MANUFACTURER:		Silver-Line™
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Silver-Line™

TOC = Top of Casing

ID = Inside Diameter; OD = Outside Diameter

NAVD88 = North American Vertical Datum of 1988

BGS = Below Ground Surface



ATLANTIC COAST CONSULTING, INC.

WAMW-1

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 124.94 ft TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 14-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 16-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

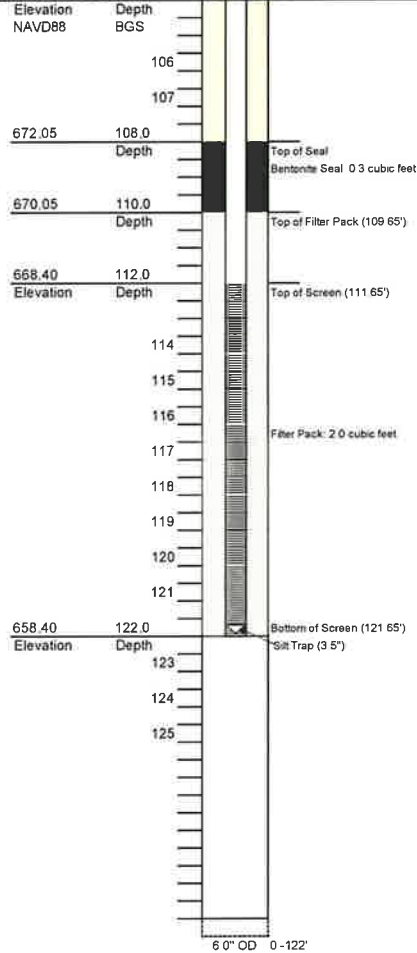
TOC Elev. 782.66 NAVD88

WATER 1ST ENCOUNTERED:

55' BGS

WATER AFTER 48 HOURS:

21.34' TOC



99.00 - 109.00 Recovery (5/10)
Dark gray micaceous Schist, wet

109.00 - 119.00 Recovery (0/10)
No recovery

115.00 - 118.00
Large fracture, produces groundwater

119.0 - 125.0 Recovery (0/6)
No recovery

Boring terminated at 125' BGS

MATERIALS:

GROUT:		Portland Type I/II Cement
MANUFACTURER:		Sakrete
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		PDS
FILTER PACK SAND:		20/40 Mesh
MANUFACTURER:		Filter Media GP#1
WELL SCREEN:		Sch. 40 - 2" PVC
MANUFACTURER:		Silver-Line TM
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Silver-Line TM

TOC - Top of Casing

ID - Inside Diameter, OD - Outside Diameter

NAVD88 - North American Vertical Datum of 1988

BGS - Below Ground Surface

 ATLANTIC COAST CONSULTING, INC.		WAMW-2 BORING ID																																	
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> PROJECT: Plant Wansley - Ash Pond TOTAL DEPTH: 85.14 ft. TOC DATE BEGIN: 12-Sep-2018 DATE COMPLETE: 14-Sep-2018 INSTALLED BY: Cascade SUPERVISED BY: Ryan Walker WATER 1ST ENCOUNTERED: 44' BGS WATER AFTER 48 HOURS: 14.42' TOC </td> <td style="width: 50%; vertical-align: top;"> PROJECT NO.: I054-110 SITE LOCATION: Carrollton, Georgia DRILLER: Issac Youub RIG TYPE: T-300 Rotosonic METHOD: Rotosonic TOC Elev. 770.82 NAVD88 </td> </tr> </table>			PROJECT: Plant Wansley - Ash Pond TOTAL DEPTH: 85.14 ft. TOC DATE BEGIN: 12-Sep-2018 DATE COMPLETE: 14-Sep-2018 INSTALLED BY: Cascade SUPERVISED BY: Ryan Walker WATER 1ST ENCOUNTERED: 44' BGS WATER AFTER 48 HOURS: 14.42' TOC	PROJECT NO.: I054-110 SITE LOCATION: Carrollton, Georgia DRILLER: Issac Youub RIG TYPE: T-300 Rotosonic METHOD: Rotosonic TOC Elev. 770.82 NAVD88																															
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		<p> Northing: 1241547.56 Easting: 2028806.27 </p> <p> SURFACE COMPLETION: 4"x4" Aluminum Protective Casing 4"x4"x4" Concrete Pad Weather Resistant Lock Survey Pin </p> <p> SOIL DESCRIPTION </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">0.00 - 10.00'</td> <td>No recovery; Hydrovac</td> </tr> <tr> <td>10.0 - 19.0'</td> <td>Orange to reddish brown, SILT, little quartz gravel (ML)</td> </tr> <tr> <td>19.0 - 29.0 Recovery (10/10)</td> <td>Orangish brown, clayey SILT (MH)</td> </tr> </table>	0.00 - 10.00'	No recovery; Hydrovac	10.0 - 19.0'	Orange to reddish brown, SILT, little quartz gravel (ML)	19.0 - 29.0 Recovery (10/10)	Orangish brown, clayey SILT (MH)																											
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<p>MATERIALS:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">GROUT:</td> <td style="width: 10%;"></td> <td>Portland Type I/II Cement</td> </tr> <tr> <td>MANUFACTURER</td> <td></td> <td>Sakrete</td> </tr> <tr> <td>BENTONITE SEAL:</td> <td></td> <td>3/8" Bentonite Pellets</td> </tr> <tr> <td>MANUFACTURER</td> <td></td> <td>PDS</td> </tr> <tr> <td>FILTER PACK SAND:</td> <td></td> <td>20/40 Mesh</td> </tr> <tr> <td>MANUFACTURER</td> <td></td> <td>Filter Media GP#1</td> </tr> <tr> <td>WELL SCREEN:</td> <td></td> <td>Sch. 40 - 2" PVC</td> </tr> <tr> <td>MANUFACTURER</td> <td></td> <td>Silver-Line™</td> </tr> <tr> <td>SLOT SIZE</td> <td></td> <td>0.010-Inch Slot</td> </tr> <tr> <td>WELL CASING:</td> <td></td> <td>Sch. 40 - 2" PVC</td> </tr> <tr> <td>MANUFACTURER</td> <td></td> <td>Silver-Line™</td> </tr> </table>		GROUT:		Portland Type I/II Cement	MANUFACTURER		Sakrete	BENTONITE SEAL:		3/8" Bentonite Pellets	MANUFACTURER		PDS	FILTER PACK SAND:		20/40 Mesh	MANUFACTURER		Filter Media GP#1	WELL SCREEN:		Sch. 40 - 2" PVC	MANUFACTURER		Silver-Line™	SLOT SIZE		0.010-Inch Slot	WELL CASING:		Sch. 40 - 2" PVC	MANUFACTURER		Silver-Line™	<p> TOC - Top of Casing ID - Inside Diameter; OD - Outside Diameter NAVD88 - North American Vertical Datum of 1988 BGS - Below Ground Surface </p>
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MANUFACTURER		Silver-Line™																																	



ATLANTIC COAST CONSULTING, INC.

WAMW-2

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: J054-110

TOTAL DEPTH: 86.14 ft. TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 12-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 14-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

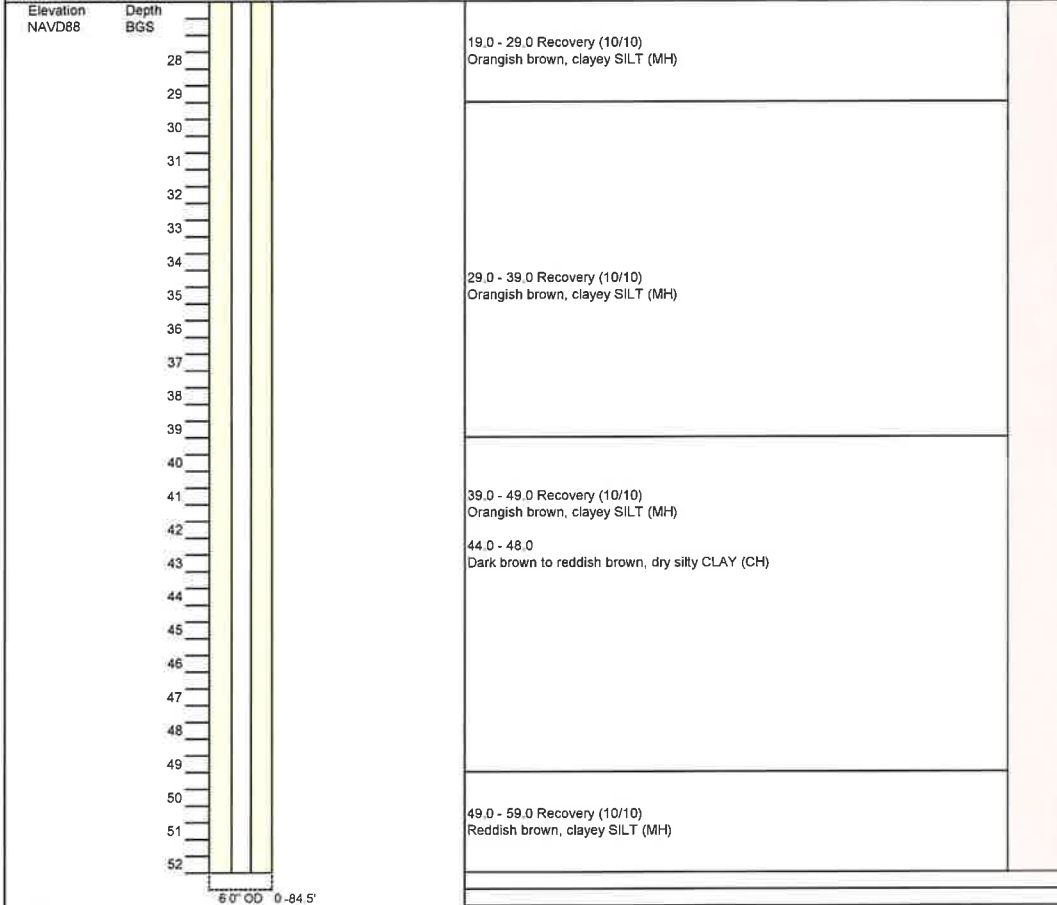
METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

TOC Elev. 770.82 NAVD88

WATER 1ST ENCOUNTERED: 44' BGS

WATER AFTER 48 HOURS: 14.42' TOC

**MATERIALS:**

GROUT:		Portland Type I/II Cement
MANUFACTURER:		Sakrete
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		PDS
FILTER PACK SAND:		20/40 Mesh
MANUFACTURER:		Filter Media GP#1
WELL SCREEN		Sch. 40 - 2" PVC
MANUFACTURER:		Silver-Line™
SLOT SIZE:		0.010-Inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Johnson Screens™

TOC - Top of Casing

ID - Inside Diameter, OD - Outside Diameter

NAVD88 - North American Vertical Datum of 1988

BGS - Below Ground Surface



ATLANTIC COAST CONSULTING, INC.

WAMW-2

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 86.14 ft. TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 12-Sep-2018

DRILLER: Issac Youub

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RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

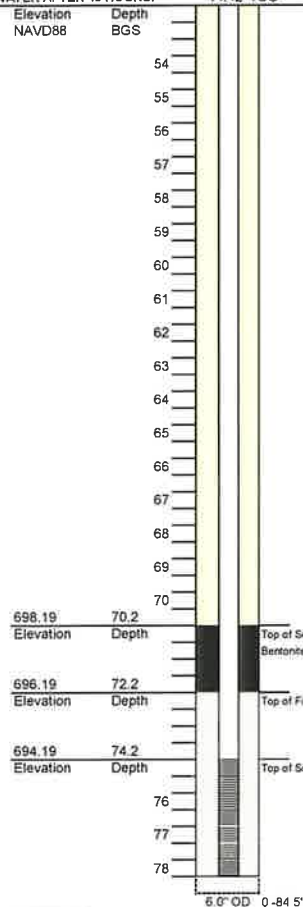
TOC Elev. 770.82 NAVD88

WATER 1ST ENCOUNTERED:

44' BGS

WATER AFTER 48 HOURS:

14.42' TOC

**MATERIALS:**

GROUT:		Portland Type I/II Cement
MANUFACTURER:		Sakrete
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		PDS
FILTER PACK SAND:		20/40 Mesh
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MANUFACTURER:		Silver-Line™
SLOT SIZE:		0.010-inch Slot
WELL CASING:		Sch. 40 - 2" PVC
MANUFACTURER:		Johnson Screens™

Reddish brown, clayey SILT (MH)

55.00 - 56.00

Brown, wet SILT

56.00 - 59.00

Light brown, orange and gray, dry to moist, SILT (MH) Saprolite

59.0 - 69.0 Recovery (4.2/10)

Brown micaceous schist and
garnetiferous greywacke, dry

69.0 - 79.0 Recovery (3.4/10)

Brown to gray, greywacke/schist with white plagioclase laminations, some garnets
with banding.

TOC - Top of Casing

ID - Inside Diameter; OD - Outside Diameter

NAVD88 - North American Vertical Datum of 1988

BGS - Below Ground Surface



ATLANTIC COAST CONSULTING, INC.

WAMW-2

BORING ID

PROJECT: Plant Wansley - Ash Pond

PROJECT NO.: 1054-110

TOTAL DEPTH: 86.14 ft. TOC

SITE LOCATION: Carrollton, Georgia

DATE BEGIN: 12-Sep-2018

DRILLER: Issac Youub

DATE COMPLETE: 14-Sep-2018

RIG TYPE: T-300 Rotosonic

INSTALLED BY: Cascade

METHOD: Rotosonic

SUPERVISED BY: Ryan Walker

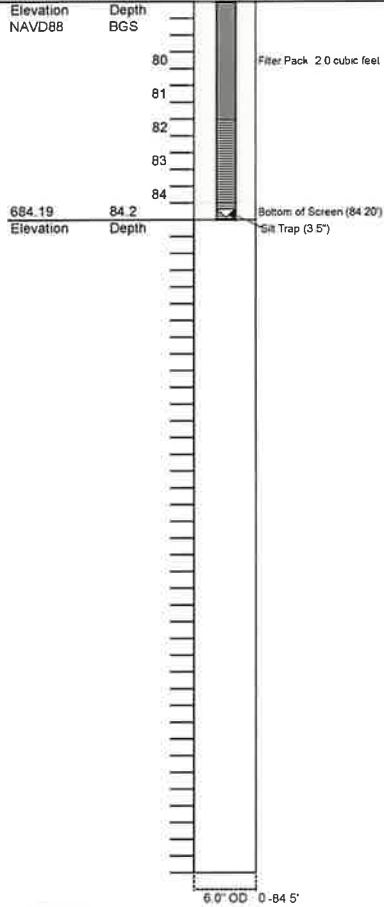
TOC Elev. 770.82 NAVD88

WATER 1ST ENCOUNTERED:

44' BGS

WATER AFTER 48 HOURS:

14.42' TOC



69.0 - 79.0 Recovery (3.4/10)

79.0 - 84.0 Recovery (1.0/5.0)

Dark brown to gray, wet micaceous, Schist/Greywacke with banding

Boring terminated at 84.5' BGS

MATERIALS:

GROUT:		Portland Type I/II Cement
MANUFACTURER:		Sakrete
BENTONITE SEAL:		3/8" Bentonite Pellets
MANUFACTURER:		PDS
FILTER PACK SAND:		20/40 Mesh
MANUFACTURER:		Filter Media GP#1
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MANUFACTURER:		Johnson Screens™

TOC - Top of Casing

ID - Inside Diameter; OD - Outside Diameter

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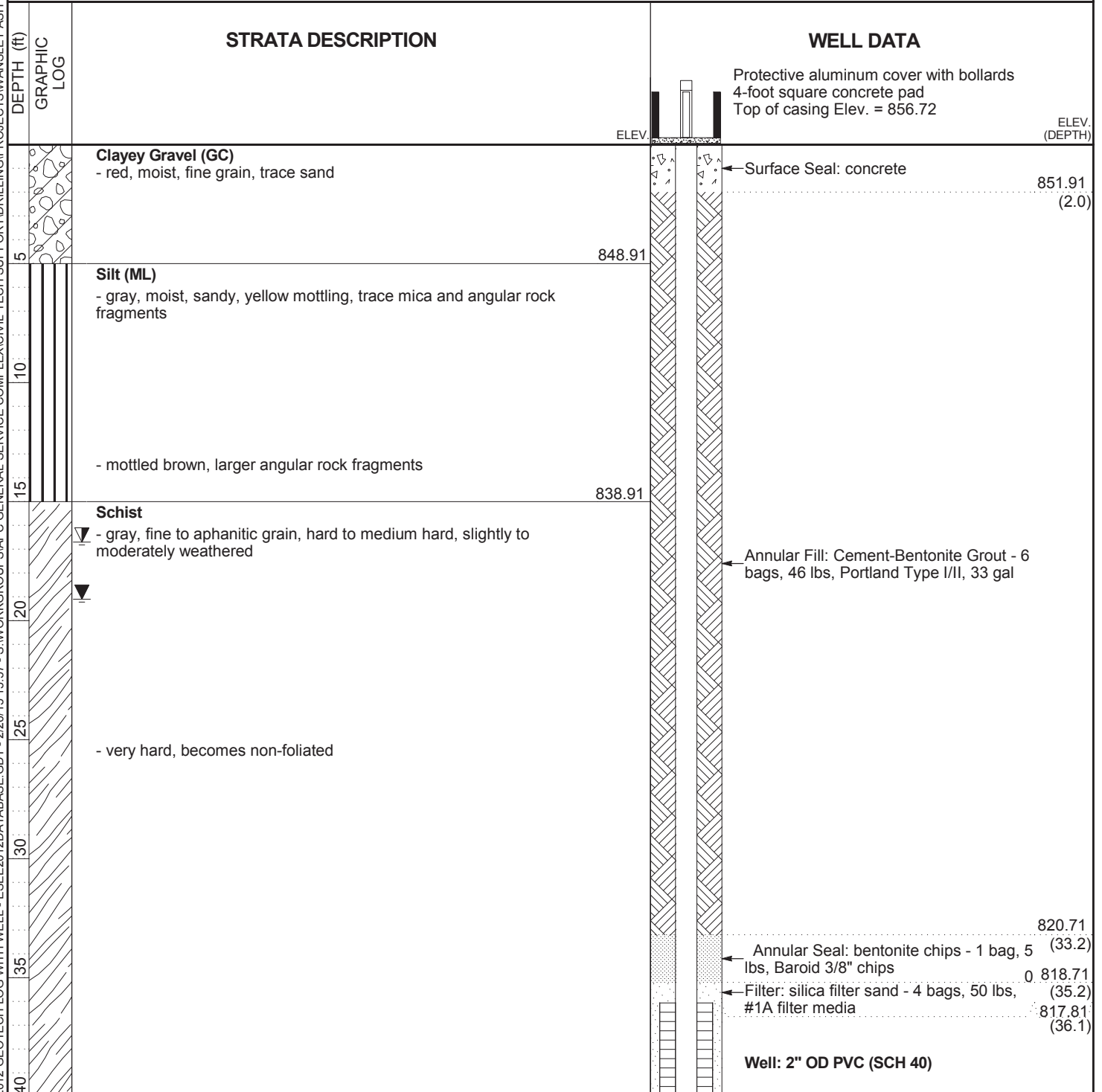
LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/12/2014 COMPLETED 12/12/2014 SURF. ELEV. 853.91 COORDINATES: N:1240249.86 E:2022319.93
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 47.6 ft. GROUND WATER DEPTH: DURING _____ COMP. 19.1 ft. DELAYED 16.7 ft. after 24 hrs.
NOTES _____



(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PIANT_WANSLEY_ASH_POND_1 (2).GPJ




LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-01
PAGE 2 OF 2
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 856.72	
45		Schist(Con't)	ELEV. (CONTINUED)	ELEV. (DEPTH)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
			Sump: 0.40 ft.	807.81 (46.1)
				806.31

Bottom of borehole at 47.6 feet.



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/22/2014 COMPLETED 12/22/2014 SURF. ELEV. 886.13 COORDINATES: N:1242592.03 E:2023595.91

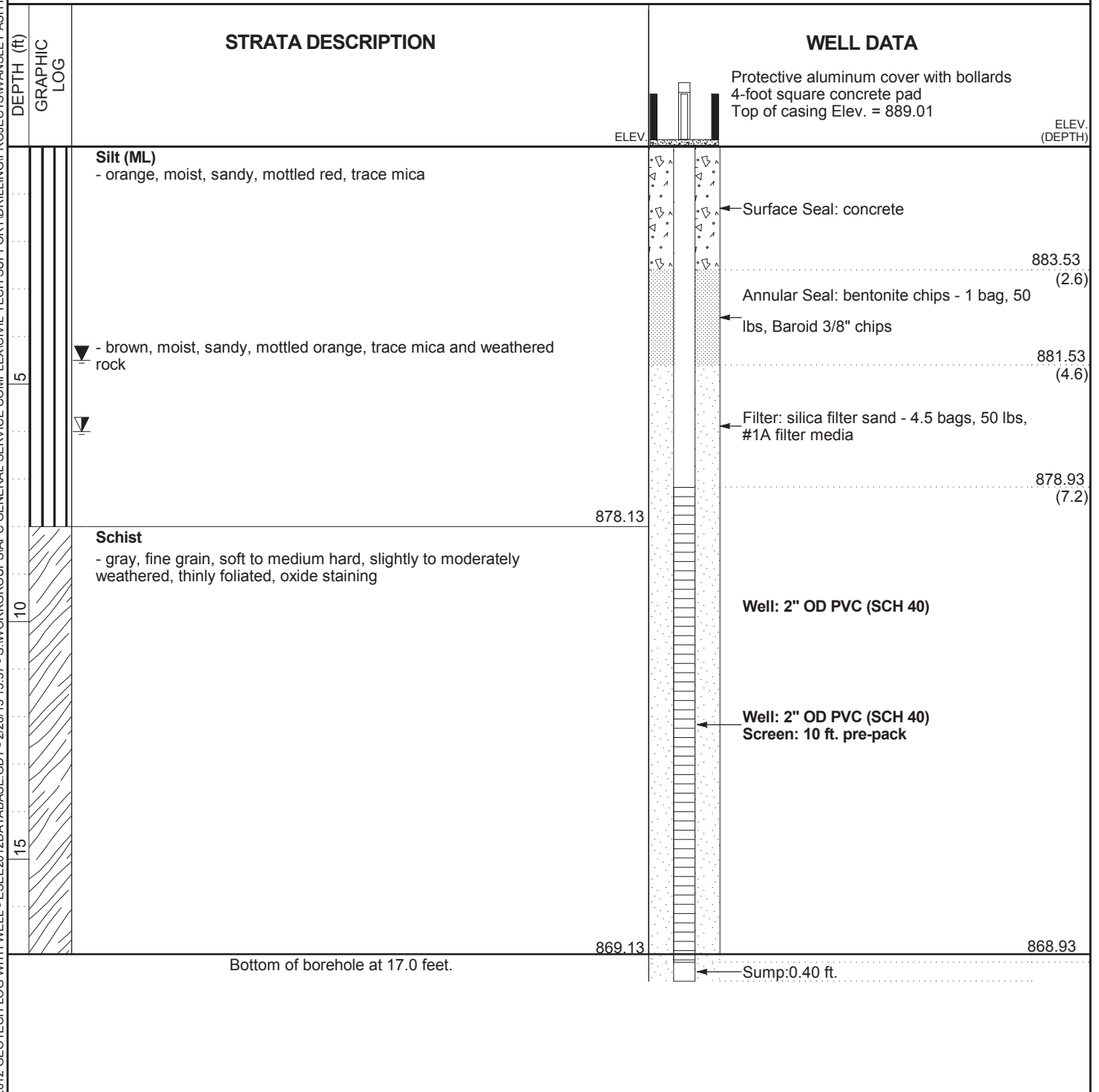
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 17 ft. GROUND WATER DEPTH: DURING _____ COMP. 4.5 ft. DELAYED 6 ft. after 24 hrs.

NOTES _____

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



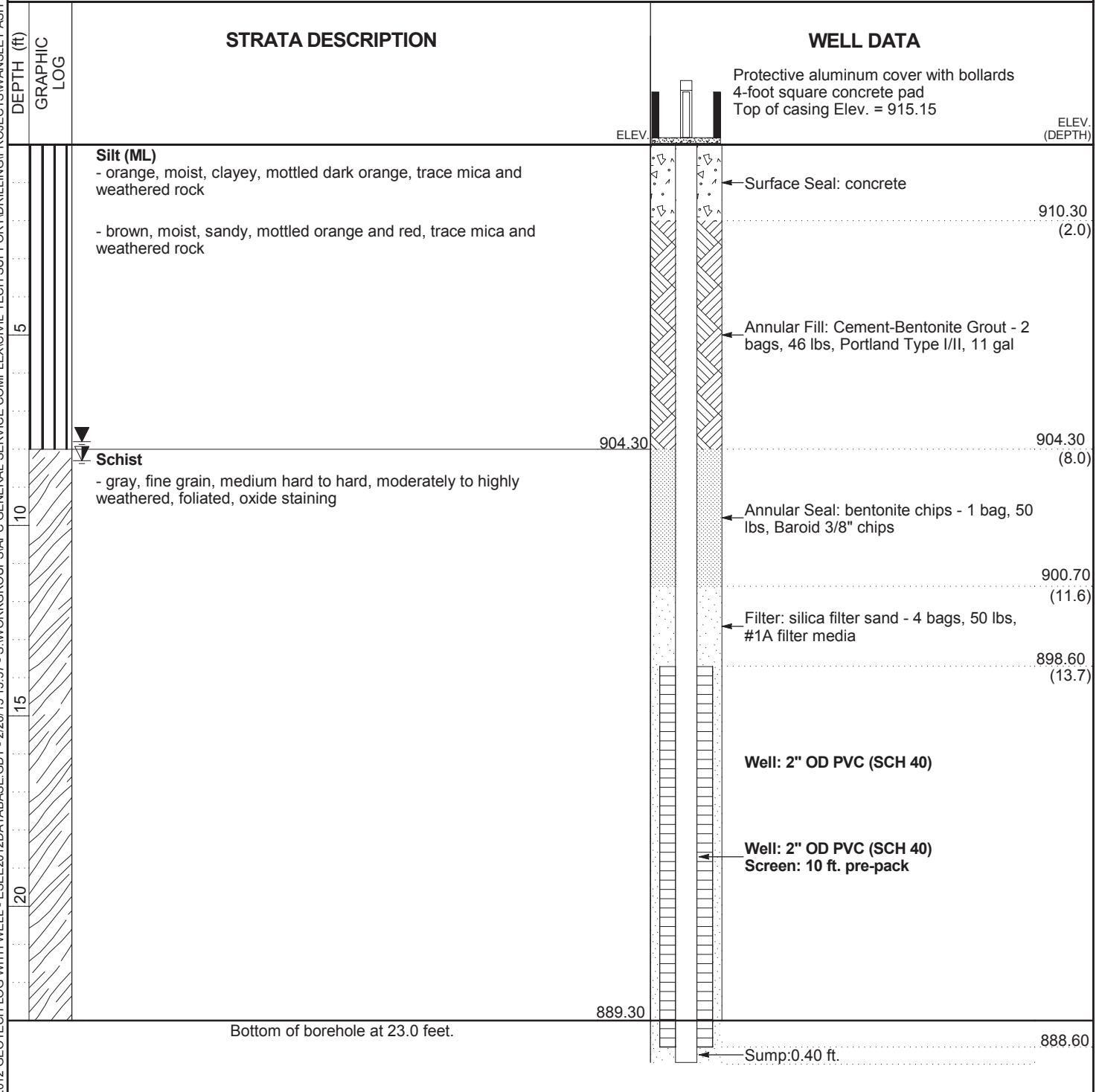


LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/16/2014 COMPLETED 12/17/2014 SURF. ELEV. 912.30 COORDINATES: N:1244382.89 E:2024661.39
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 23 ft. GROUND WATER DEPTH: DURING _____ COMP. 7.8 ft. DELAYED 8.3 ft. after 24 hrs.
NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

BORING PZ-08
PAGE 1 OF 1
ECS38198

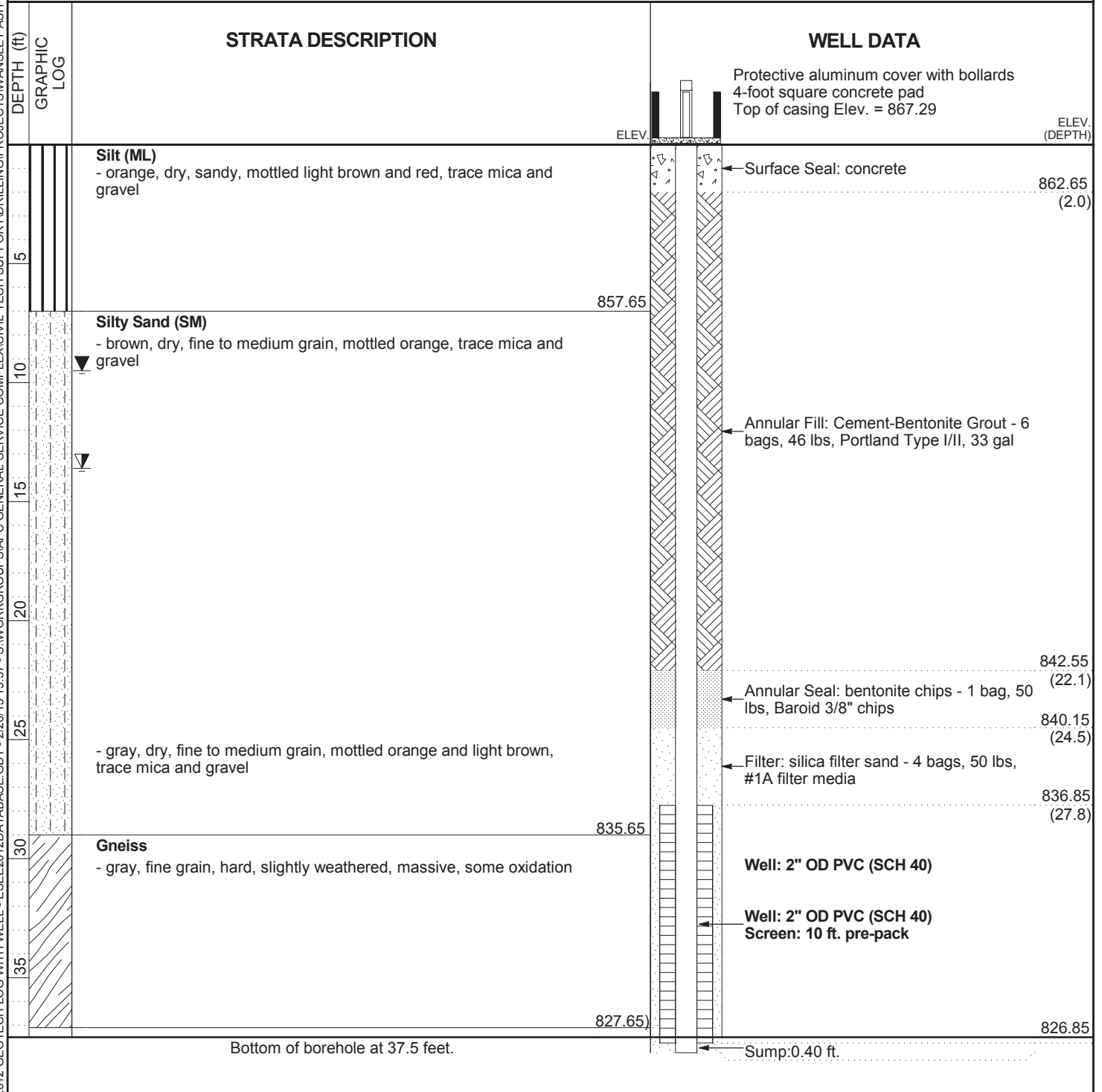


LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/15/2014 COMPLETED 12/15/2014 SURF. ELEV. 864.65 COORDINATES: N:1245514.59 E:2026807.30
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 37.5 ft. GROUND WATER DEPTH: DURING _____ COMP. 9.5 ft. DELAYED 13.6 ft. after 24 hrs.
NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

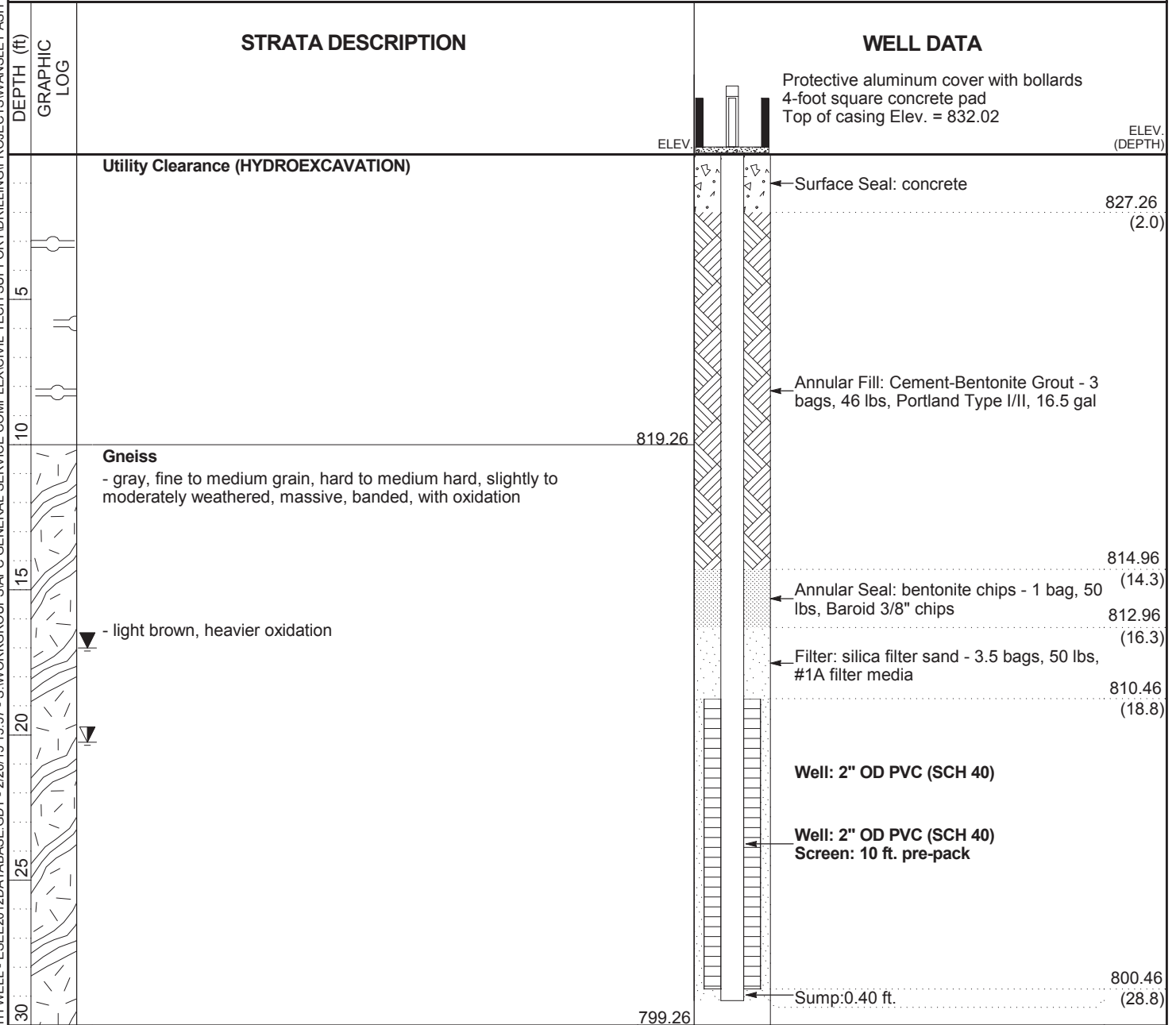


LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/5/2014 COMPLETED 12/5/2014 SURF. ELEV. 829.26 COORDINATES: N:1242058.41 E:2028554.29
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 30 ft. GROUND WATER DEPTH: DURING _____ COMP. 17 ft. DELAYED 20.25 ft. after 24 hrs.
NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:57 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

BORING PZ-11
PAGE 1 OF 1
ECS38198



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

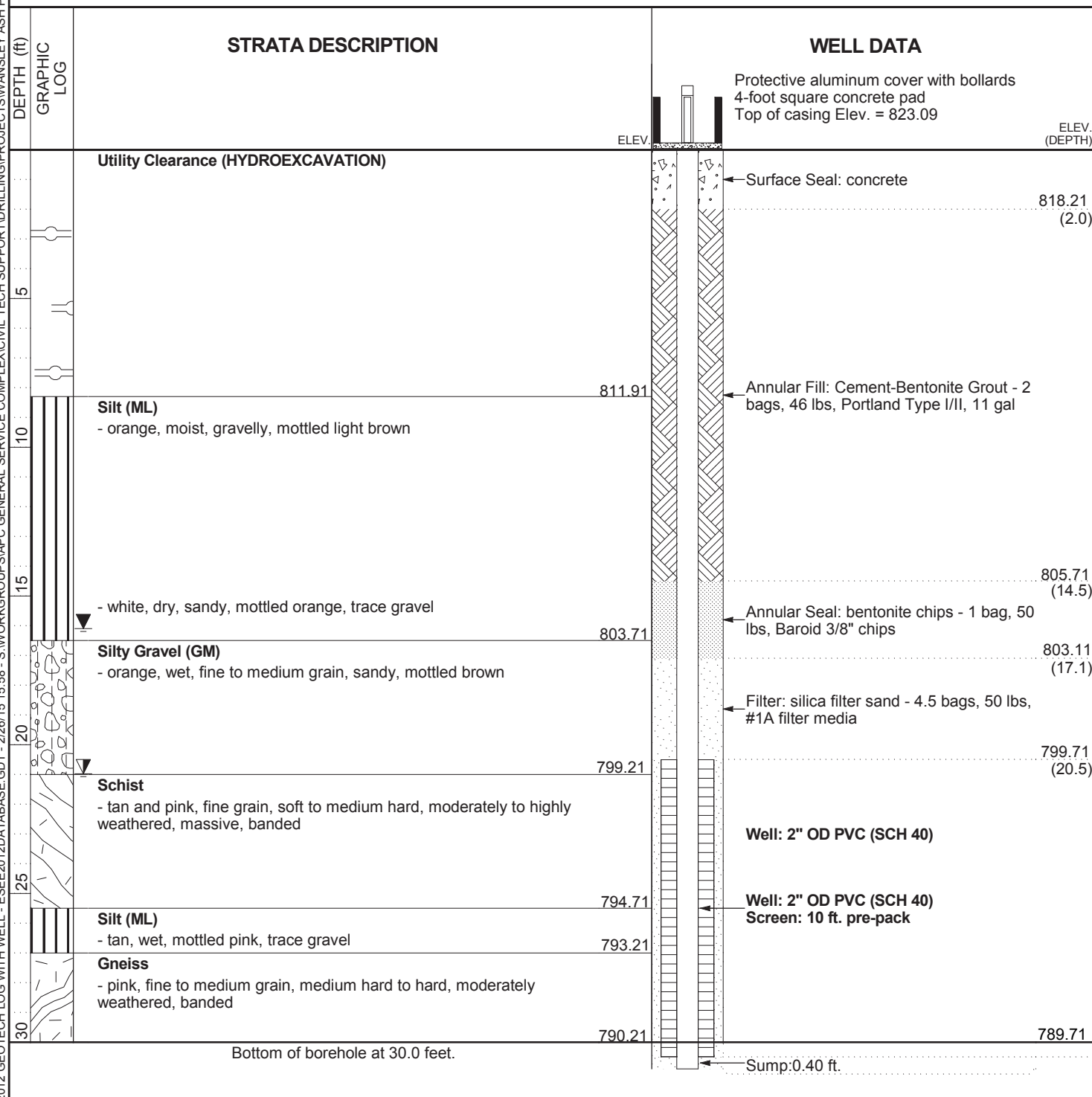
DATE STARTED 12/4/2014 COMPLETED 12/5/2014 SURF. ELEV. 820.21 COORDINATES: N:1240578.87 E:2026933.09

CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 30 ft. GROUND WATER DEPTH: DURING _____ COMP. 16.1 ft. DELAYED 20.98 ft. after 24 hrs.

NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/8/2014 COMPLETED 12/8/2014 SURF. ELEV. 816.17 COORDINATES: N:1240838.50 E:2026731.05
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 47 ft. GROUND WATER DEPTH: DURING _____ COMP. 22 ft. DELAYED 24.28 ft. after 24 hrs.
NOTES _____

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA
		Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 818.74
		ELEV. (DEPTH)
	Silt (ML) - orange, dry, sandy, mottled red and white, micaceous, trace gravel	← Surface Seal: concrete 814.17 (2.0)
5		
10		
15	- red, moist, mottled yellow with black spots, micaceous, trace gravel	
20		← Annular Fill: Cement-Bentonite Grout - 6 bags, 46 lbs, Portland Type I/II, 33 gal
25		
30		
35	- mottled orange	783.57 (32.6) ← Annular Seal: bentonite chips - 1 bag, 50 lbs, Baroid 3/8" chips 781.57 (34.6) ← Filter: silica filter sand - 3.5 bags, 50 lbs, #1A filter media 779.37 (36.8)
40		Well: 2" OD PVC (SCH 40)

(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\WANSLEY ASH_POND_1 (2).GDT



LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-12
PAGE 2 OF 2
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 818.74	
45		Silt (ML)(Con't)	ELEV. (CONTINUED)	ELEV. (DEPTH)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
			769.17	769.37
		Bottom of borehole at 47.0 feet.	Sump: 0.40 ft.	

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PIANT_WANSLEY_ASH_POND_1 (2).GDT

Abandoned in 2019 during construction activities

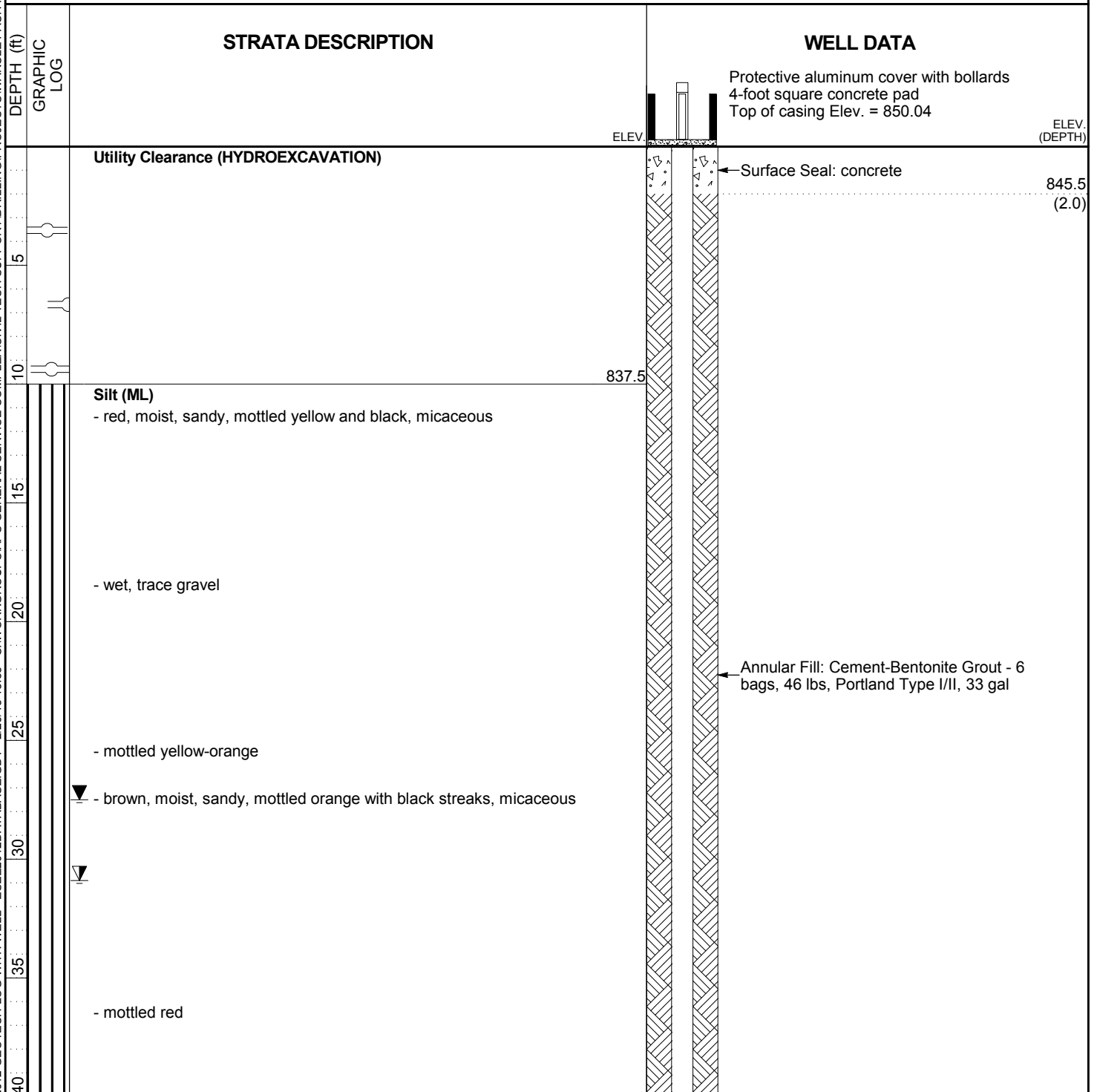


LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/9/2014 COMPLETED 12/9/2014 SURF. ELEV. 847.5 COORDINATES: N:33.408958 E:-85.051632
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 56.9 ft. GROUND WATER DEPTH: DURING _____ COMP. 27.5 ft. DELAYED 30.9 ft. after 24 hrs.
NOTES _____



(Continued Next Page)

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PIANT_WANSLEY_ASH_POND_1 (2).GPD



Abandoned in 2019 during construction activities

LOG OF TEST BORING AND WELL INSTALLATION

BORING PZ-13
PAGE 2 OF 2
ECS38198

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 850.04	
			ELEV. (CONTINUED)	ELEV. (DEPTH)
45		Silt (ML)(Con't) - gray, trace coarse gravel		805.0
			Annular Seal: bentonite chips - 0.5 bag, 50 lbs, Baroid 3/8" chips	(42.5)
50			Filter: silica filter sand - 4.5 bags, 50 lbs, #1A filter media	803.0
		- wet		(44.5)
				800.2
55		- orange	Well: 2" OD PVC (SCH 40)	(47.3)
			Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	
		Bottom of borehole at 56.9 feet.	Sump: 0.40 ft.	790.2



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DATE STARTED 12/10/2014 COMPLETED 12/10/2014 SURF. ELEV. 824.59 COORDINATES: N:1240457.61 E:2025105.38

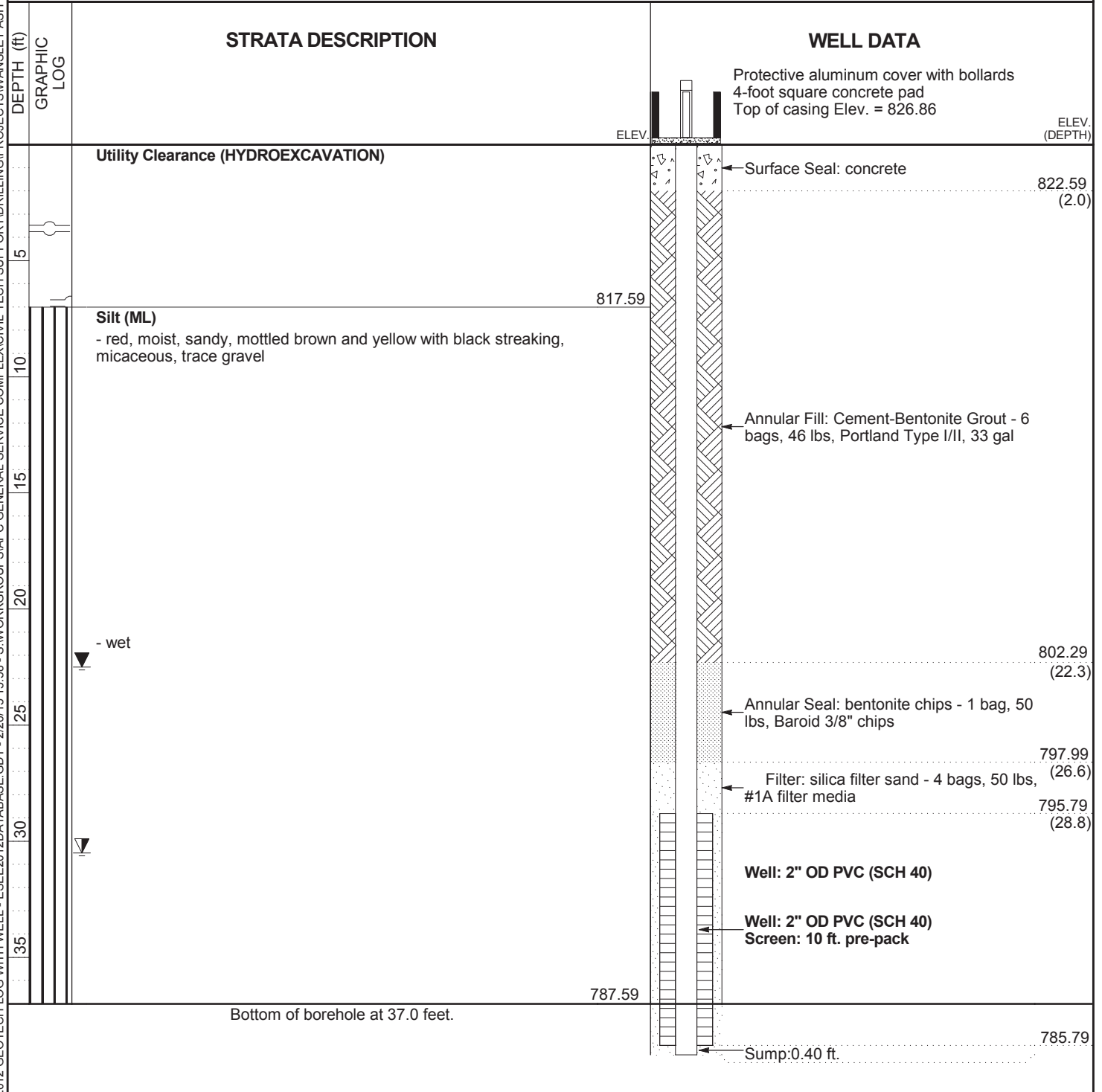
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic

DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 37 ft. GROUND WATER DEPTH: DURING _____ COMP. 22.5 ft. DELAYED 30.5 ft. after 24 hrs.

NOTES _____

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



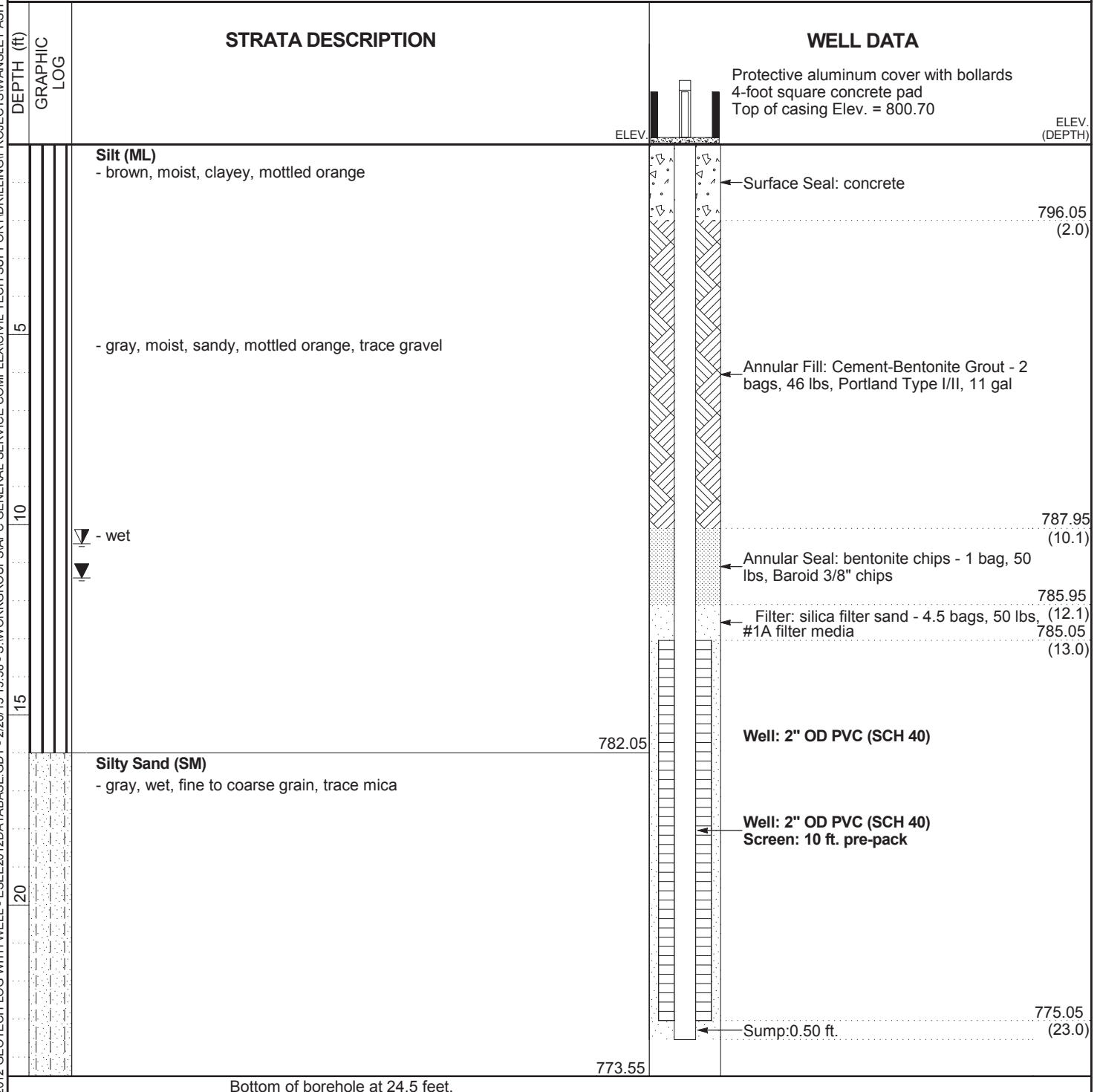


LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/10/2014 COMPLETED 12/11/2014 SURF. ELEV. 798.05 COORDINATES: N:1239419.77 E:2023662.22
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T. Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 24.5 ft. GROUND WATER DEPTH: DURING _____ COMP. 11.4 ft. DELAYED 10.5 ft. after 24 hrs.
NOTES _____



2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Wansley

DATE STARTED 12/11/2014 COMPLETED 12/11/2014 SURF. ELEV. 828.54 COORDINATES: N:1239270.02 E:2023086.51
CONTRACTOR CASCADE EQUIPMENT SONIC METHOD Rotosonic
DRILLED BY T.Ardito LOGGED BY S. Baxter CHECKED BY L. Millet ANGLE _____ BEARING _____
BORING DEPTH 48 ft. GROUND WATER DEPTH: DURING _____ COMP. 23.1 ft. DELAYED 23.6 ft. after 24 hrs.
NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	WELL DATA	
			ELEV.	(DEPTH)
			Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 831.01	
		Silt (ML) - orange, moist, clayey, mottled yellow, trace mica and angular rock	← Surface Seal: concrete	826.54 (2.0)
5				
		- orange, moist, sandy, mottled light brown and yellow, trace mica		
10				
15				
		- mottled red	← Annular Fill: Cement-Bentonite Grout - 6 bags, 46 lbs, Portland Type I/II, 33 gal	
20				
25		- tan, very moist		
30				
		- dark brown, dry, sandy, micaceous, with gravel		
35			← Annular Seal: bentonite chips - 1 bag, 50 lbs, Baroid 3/8" chips	794.94 (33.6)
			← Filter: silica filter sand - 4 bags, 50 lbs, #1A filter media	792.94 (35.6)
40				789.84 (38.7)

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2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 2/26/15 15:58 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY ASH POND PIEZOMETER\PLANT_WANSLEY_ASH_POND_1 (2).GPJ



LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers

LOCATION Plant Wansley

DEPTH (ft)		GRAPHIC LOG		STRATA DESCRIPTION	ELEV.	(CONTINUED)	WELL DATA	ELEV. (DEPTH)
							Protective aluminum cover with bollards 4-foot square concrete pad Top of casing Elev. = 831.01	
45				Silt (ML)(Con't)	780.54		Well: 2" OD PVC (SCH 40) Well: 2" OD PVC (SCH 40) Screen: 10 ft. pre-pack	779.84
				Bottom of borehole at 48.0 feet.			Sump: 0.40 ft.	



775.10

WELL NUMBER PZ-20

PAGE 1 OF 1

ERM
3200 Windy Hill Rd Ste 1500W
Atlanta, GA 30339
Telephone: 678-486-2700

COORDINATES: N:1243496.86 E:2030132.73

CLIENT Southern Company Services, Inc.

PROJECT NAME Plant Wansley

PROJECT NUMBER 0372406

PROJECT LOCATION AP

DATE STARTED 1/31/17 COMPLETED 1/31/17

GROUND ELEVATION 784.45 HOLE SIZE 4.25 inches

DRILLING CONTRACTOR Southern Company Services, Inc

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger 2"

AT TIME OF DRILLING 14.50 ft

LOGGED BY MR CHECKED BY GEJ

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				Hydrovac. No sample collected	Casing Type: PVC
5					
10				10.0 (SM) white, brown, & red Silty SAND, loose, moist	70/30 Portland Cement / bentonite mix
15	SS	SM		14.0 (SM) red silty SAND, very dense, moist	
		SM		15.0 (SM) reddish pink Silty SAND with lenses of white CLAY, loose, moist	
20	SS	SM		20.0 (SP-SM) reddish orange SAPROLITE, poorly graded, granitic remnant rock fabric, moist	765.45
25	SS	SP-SM		25.0 (SP) red, brown, & orange coarse SAND, loose, quartz, wet	761.95
30	SS	SP		(SP) SAA	759.45
35	SS	SP		Refusal at 35.0 feet. Bottom of borehole at 35.0 feet.	749.45

ERM
3200 Windy Hill Rd Ste 1500W
Atlanta, GA 30339
Telephone: 678-486-2700

Abandoned in 2019

WELL NUMBER PZ-21

PAGE 1 OF 1

CLIENT Southern Company Services, Inc.

PROJECT NAME Plant Wansley

PROJECT NUMBER 0372406

PROJECT LOCATION AP

DATE STARTED 1/25/17 COMPLETED 1/25/17

GROUND ELEVATION HOLE SIZE 4.25 inches

DRILLING CONTRACTOR Southern Company Services, Inc

GROUND WATER LEVELS:

DRILLING METHOD Hollow Stem Auger 2"

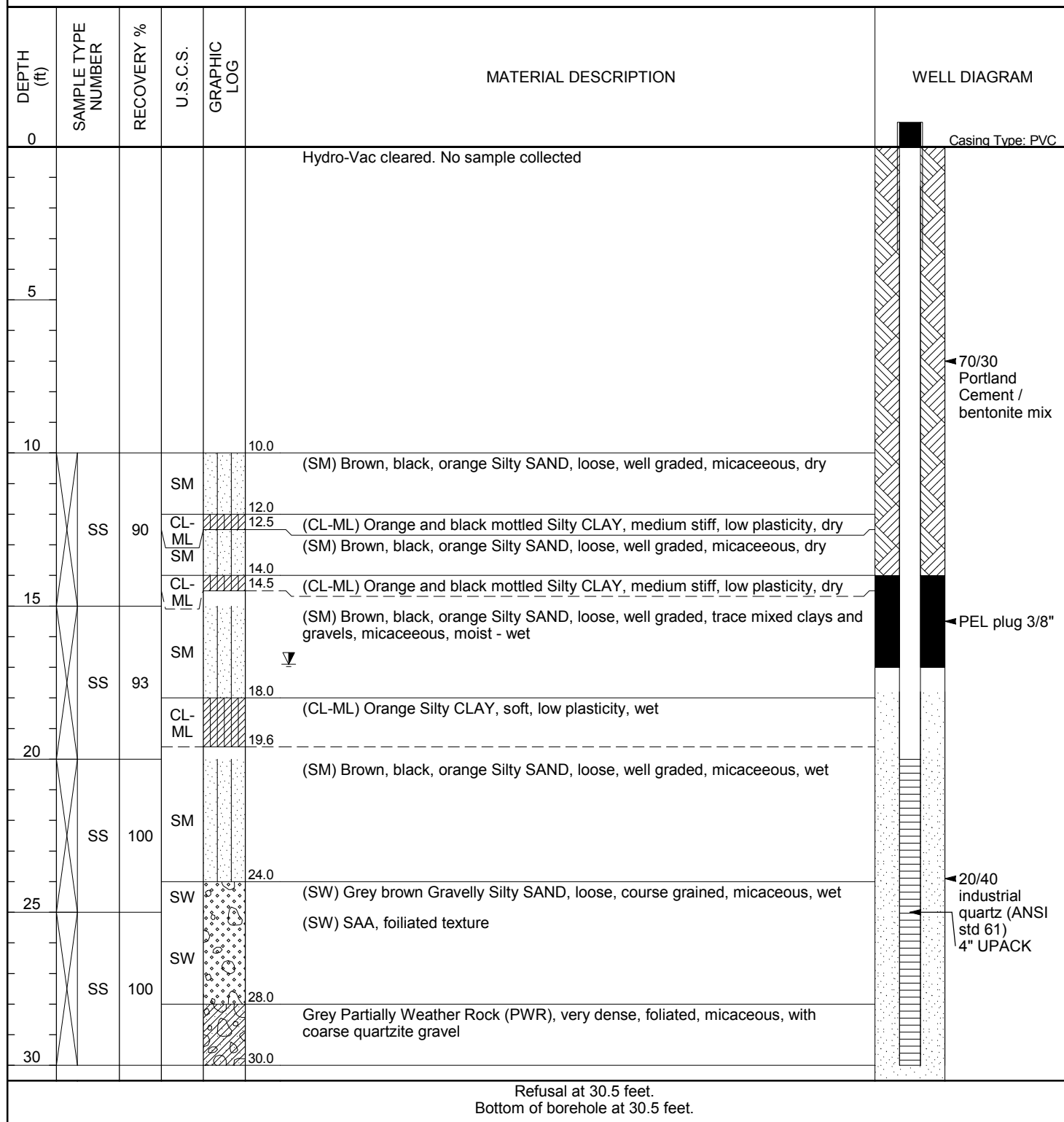
AT TIME OF DRILLING ---

LOGGED BY AS CHECKED BY GEJ

AT END OF DRILLING ---

NOTES

▼ AFTER DRILLING 16.90 ft





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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-23D

PAGE 1 OF 2

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 9/30/20	COMPLETED 10/2/20
DRILLER Cascade Drilling	NORTHING 1242139.53 ft
DRILLING METHOD Sonic	EASTING 2028520.87 ft
SAMPLING METHOD 4 in. core 6 in. override	GROUND ELEVATION 831.89 ft
RIG TYPE Terrasonic 1051181	BORING DIAMETER 6 in.
	TOP OF CASING ELEVATION 834.32 ft
	GEOPHYSICAL CONTRACTOR ---
	LOGGED BY A. Ramsey
	CHECKED BY A. Reimer

SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
0				Air Knife Excavation (0 ft to 5 ft) NO SAMPLE	
830		5 ft: Significant rig chatter.		826.9	
10		10 ft: Decreased rig chatter, advance rate slowed ~50%.		PARTIALLY WEATHERED ROCK (PWR), gneiss, very pale brown to brown, wet, very thin lamination, hard, friable, some coarse silty sand throughout, few 2 inch thick competent non-friable fragments, wet.	2" Schedule 40 PVC
820				14 ft: Highly weathered, white to reddish brown, clayey with silty to very fine sand, original bandad structure visible, abundant iron oxidation staining to 18 ft, very soft to soft, low plasticity to non-plastic, moist to 18 ft then dry.	Aquaguard Sodium Bentonite Grout
20				811.9	
810		27 ft: Some water circulation loss observed.		GNEISS, gray to bluish gray, iron scaling present on fracture faces and vertical hairline fractures, broken into cobble size pieces along joints, faint thin banding, very hard, wet. Fracture zone between 20 ft and 23 ft.	
30				25 ft: Fracture zone between 25 ft and 27 ft.	
800				30 ft: Fracture zone between 30 ft and 33 ft.	
40		40 ft: Significantly increased rig chatter, no return of drill water.		35 ft: Fracture zone between 35 ft and 36 ft.	
790				47 ft: Little to no iron scaling.	
				781.9	

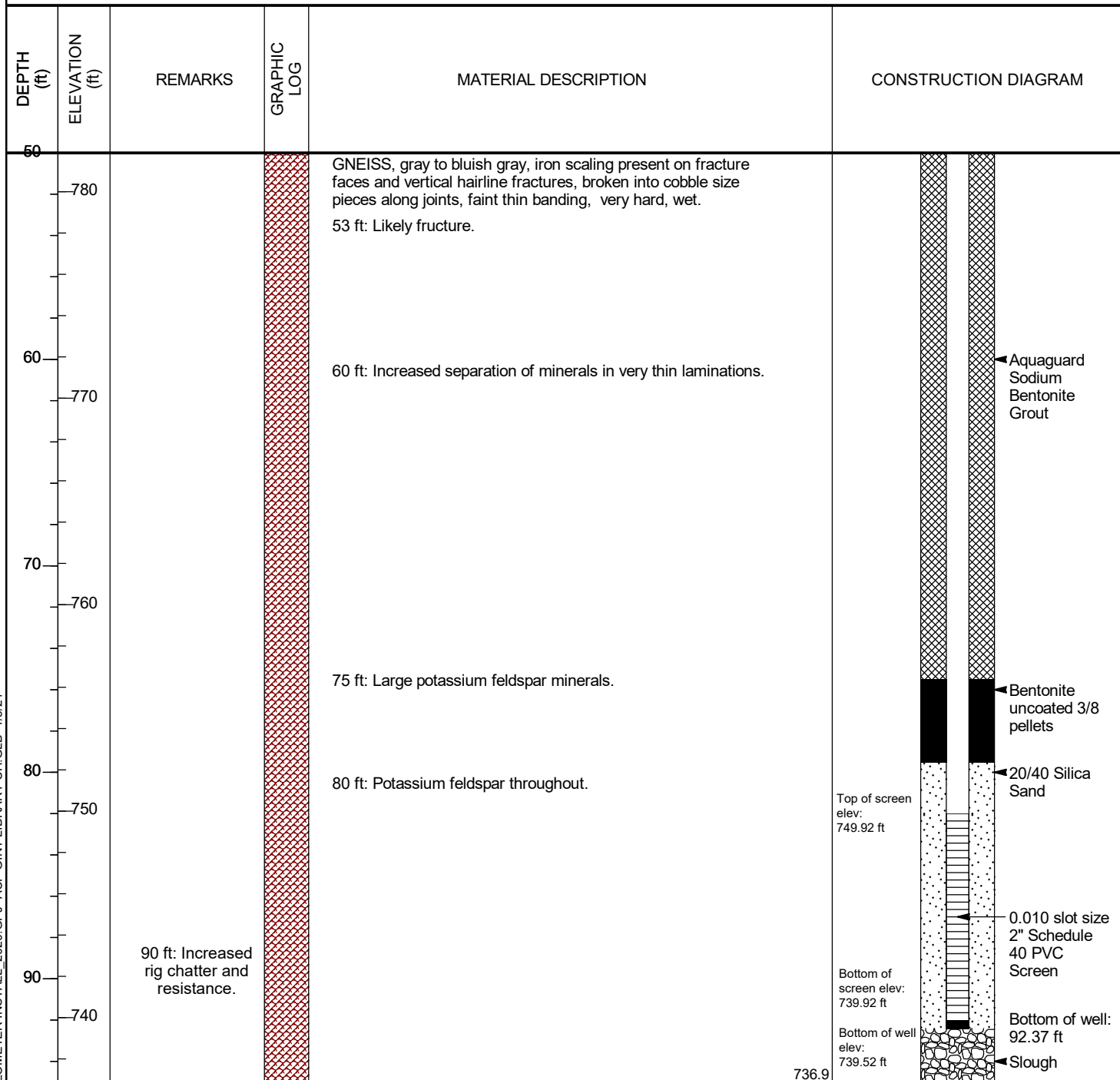
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CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

Borehole abandoned with sodium bentonite grout

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/20/20	COMPLETED 10/20/20
DRILLER Cascade Drilling	NORTHING Unknown
DRILLING METHOD Sonic	EASTING Unknown
SAMPLING METHOD 4 in. core 6 in. override	GROUND ELEVATION ---
RIG TYPE Terrasonic 1051181	BORING DIAMETER 6 in.
	TOP OF CASING ELEVATION ---
	GEOPHYSICAL CONTRACTOR ---
	LOGGED BY T. Wilson
	CHECKED BY A. Reimer

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION
0		Boring abandoned due to jammed rods.		Air Knife Excavation (0 ft to 10 ft) NO SAMPLE
10				SAPROLITE, reddish yellow, soft, silts and fine sands, medium plasticity, iron staining between 18 ft and 19 ft, relic rock structure throughout, soft, dry. PARTIALLY WEATHERED ROCK (PWR), reddish yellow, soft, silts and fine sands, medium plasticity, iron staining between 18 ft and 19 ft, relic rock structure throughout, soft, dry.
20				20 ft: Strong brown.
30				PARTIALLY WEATHERED ROCK (PWR), gneiss, pinkish gray, weathered, silty sand, fine grained, medium plasticity, with large rock fragments, soft. 30 ft: Strong brown.
40				PARTIALLY WEATHERED ROCK (PWR), muscovite schist, brown to grayish brown, weathered, silty sand, fine to coarse grained, large rock fragments, minimal iron staining at 55 ft, dry.
50				MUSCOVITE SCHIST, black, thin laminations, hard.
60				GNEISS, pink, pale brown, massive, with thin laminations, some hard, weak foliations.

Bottom of borehole at 60.0 feet

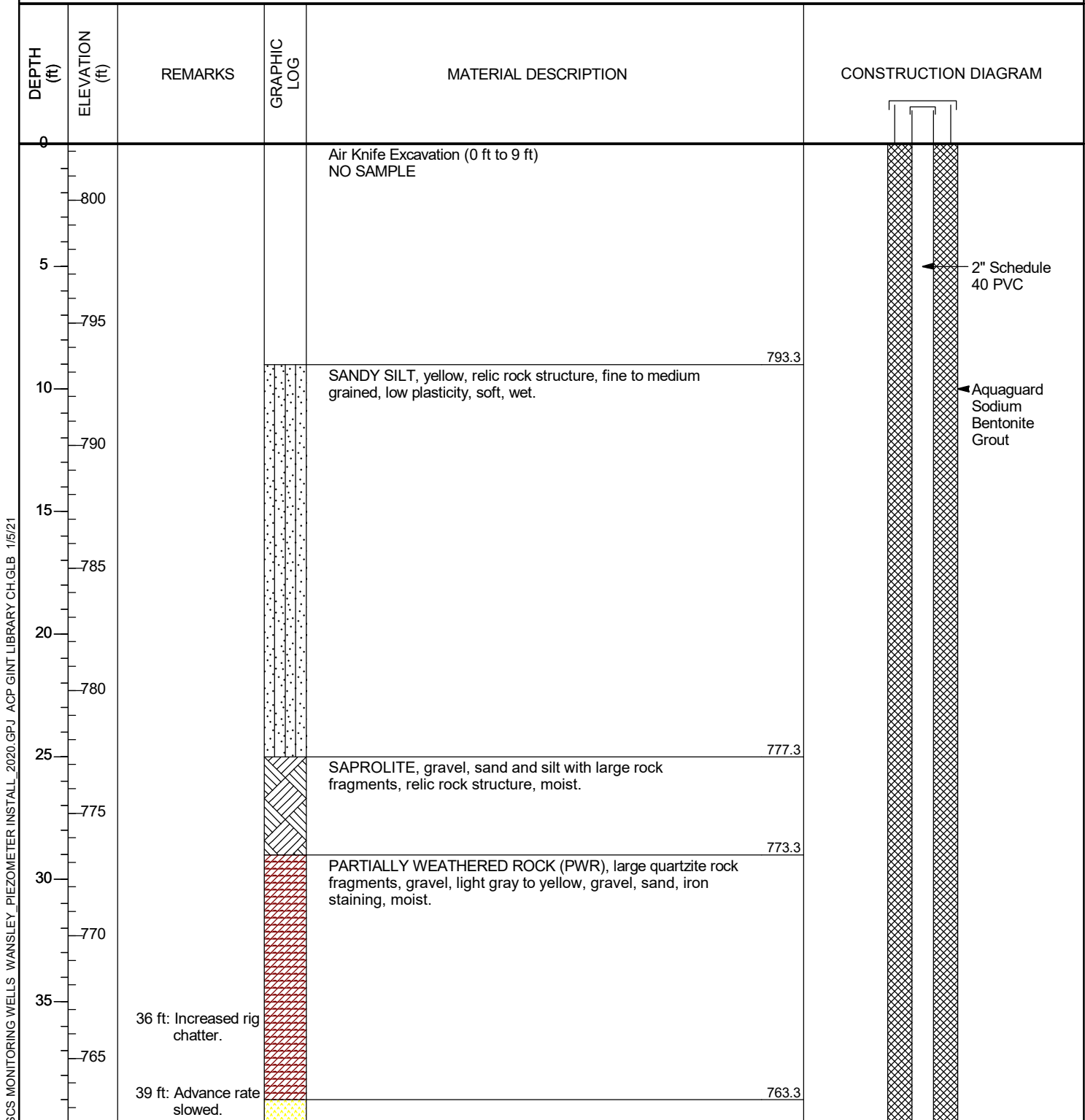


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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-26D

PAGE 1 OF 2

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/12/20 COMPLETED 10/12/20	NORTHING 1239919.45 ft EASTING 2024146.35 ft
DRILLER Cascade Drilling	GROUND ELEVATION 802.31 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 804.93 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY T. Kessler CHECKED BY A. Reimer



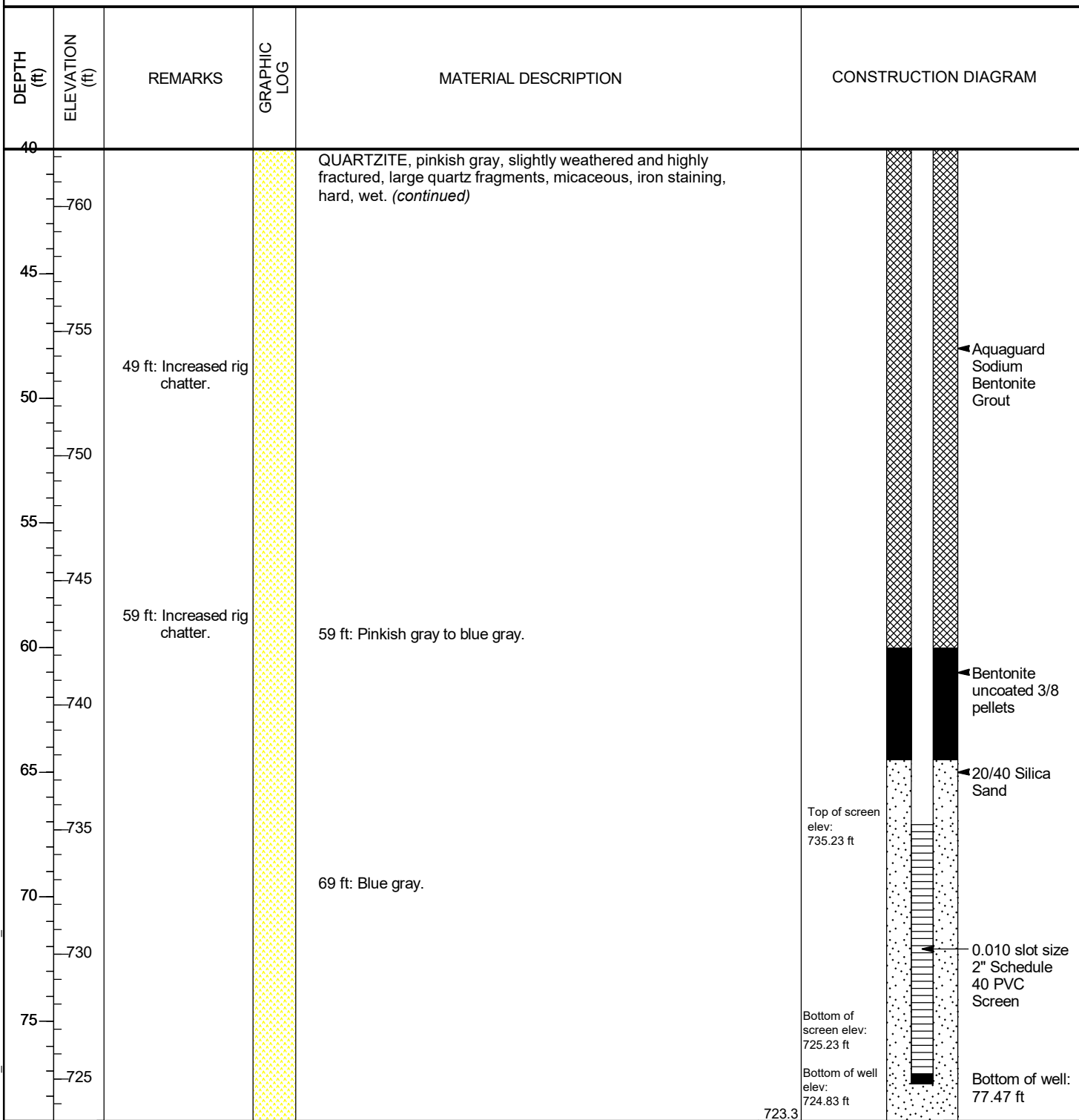
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CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1



Bottom of borehole at 79.0 feet.

SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

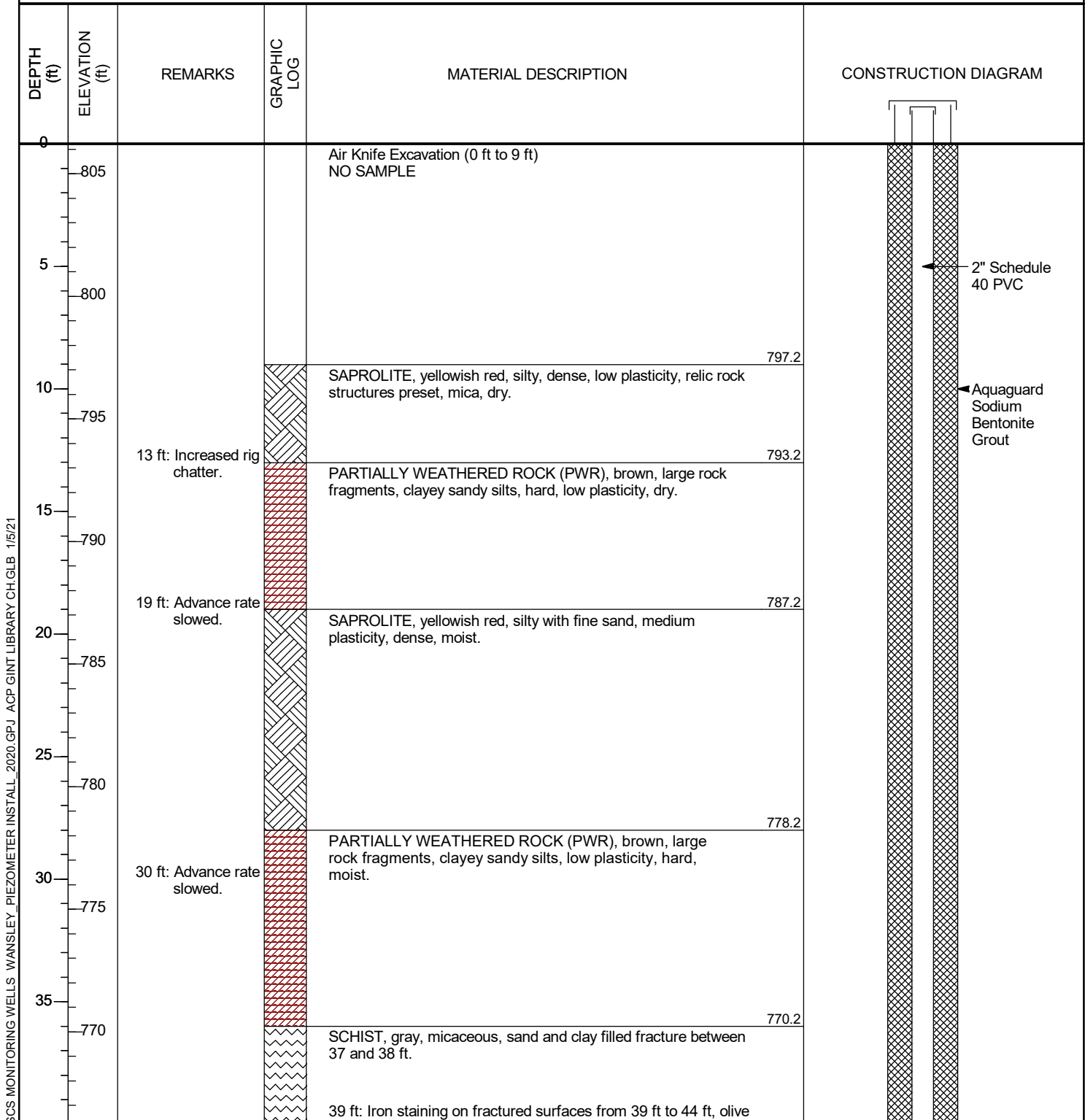


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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-27D

PAGE 1 OF 2

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/15/20 COMPLETED 10/15/20	NORTHING 1240190.93 ft EASTING 2023620.36 ft
DRILLER Cascade Drilling	GROUND ELEVATION 806.22 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 809.28 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY T. Kessler CHECKED BY A. Reimer



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

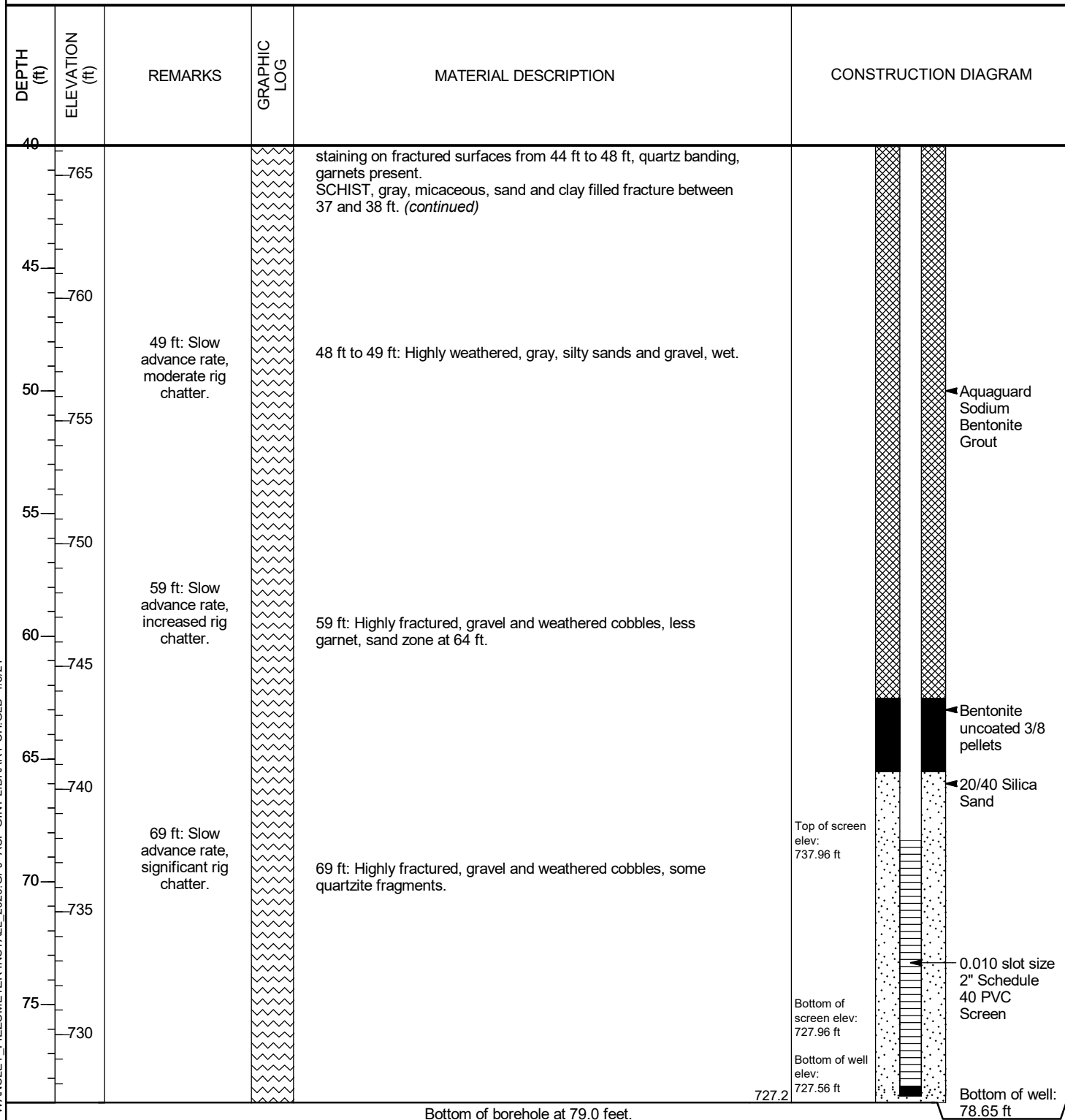
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CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1



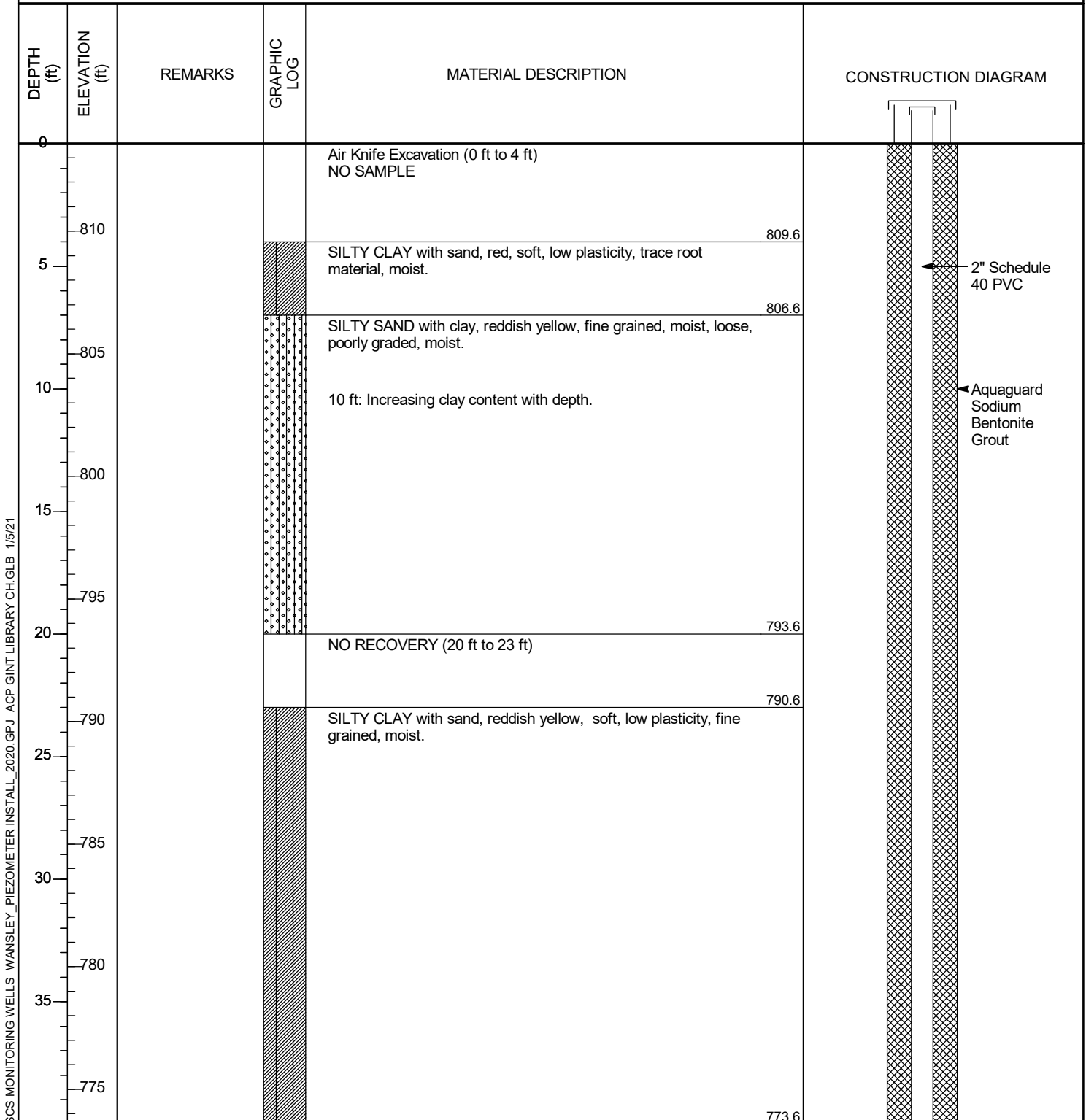


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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-28

PAGE 1 OF 2

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/29/20 COMPLETED 10/29/20	NORTHING 1240066.02 ft EASTING 2022624.73 ft
DRILLER Cascade Drilling	GROUND ELEVATION 813.57 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 816.18 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY T. Wilson CHECKED BY A. Reimer



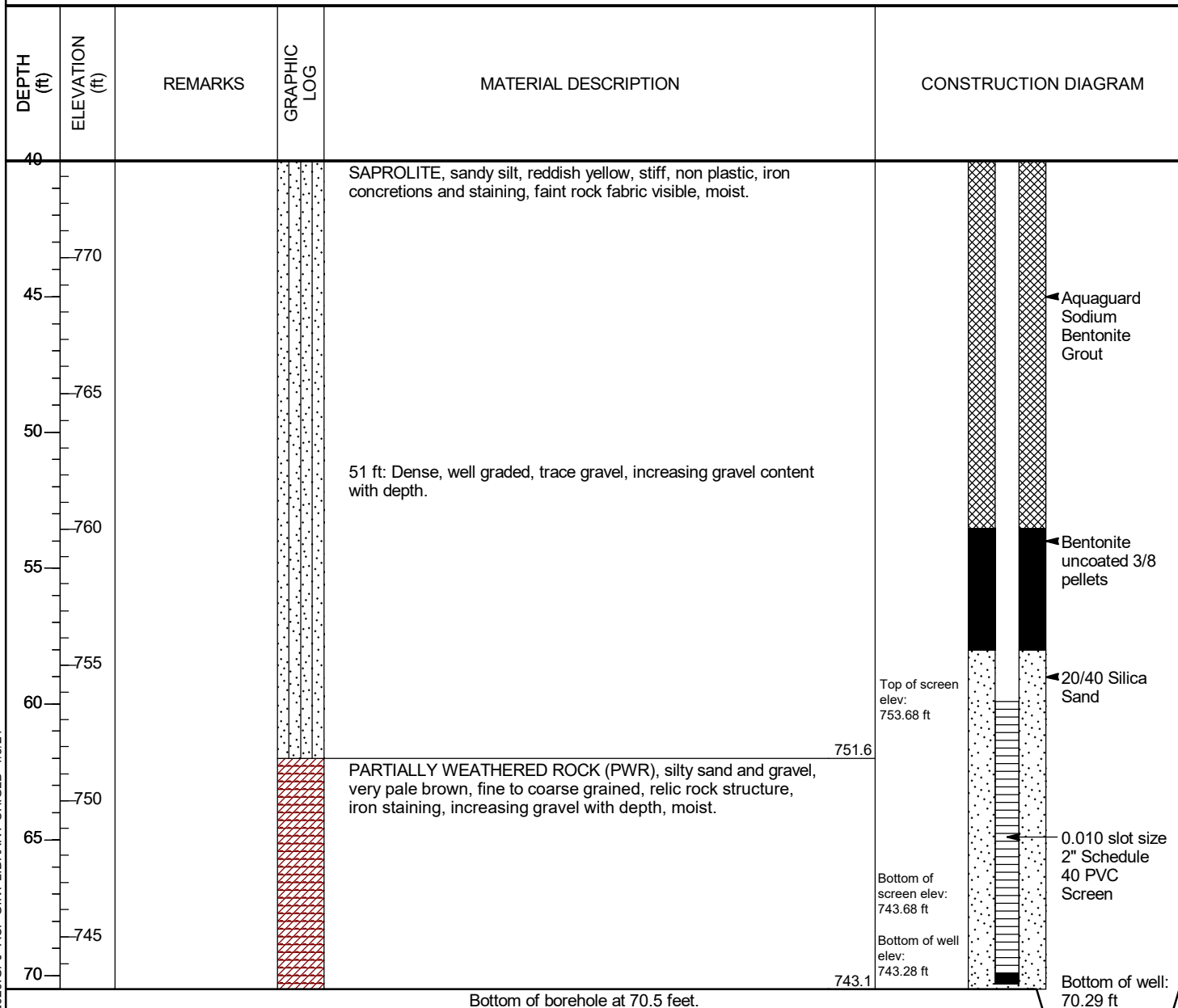
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CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21

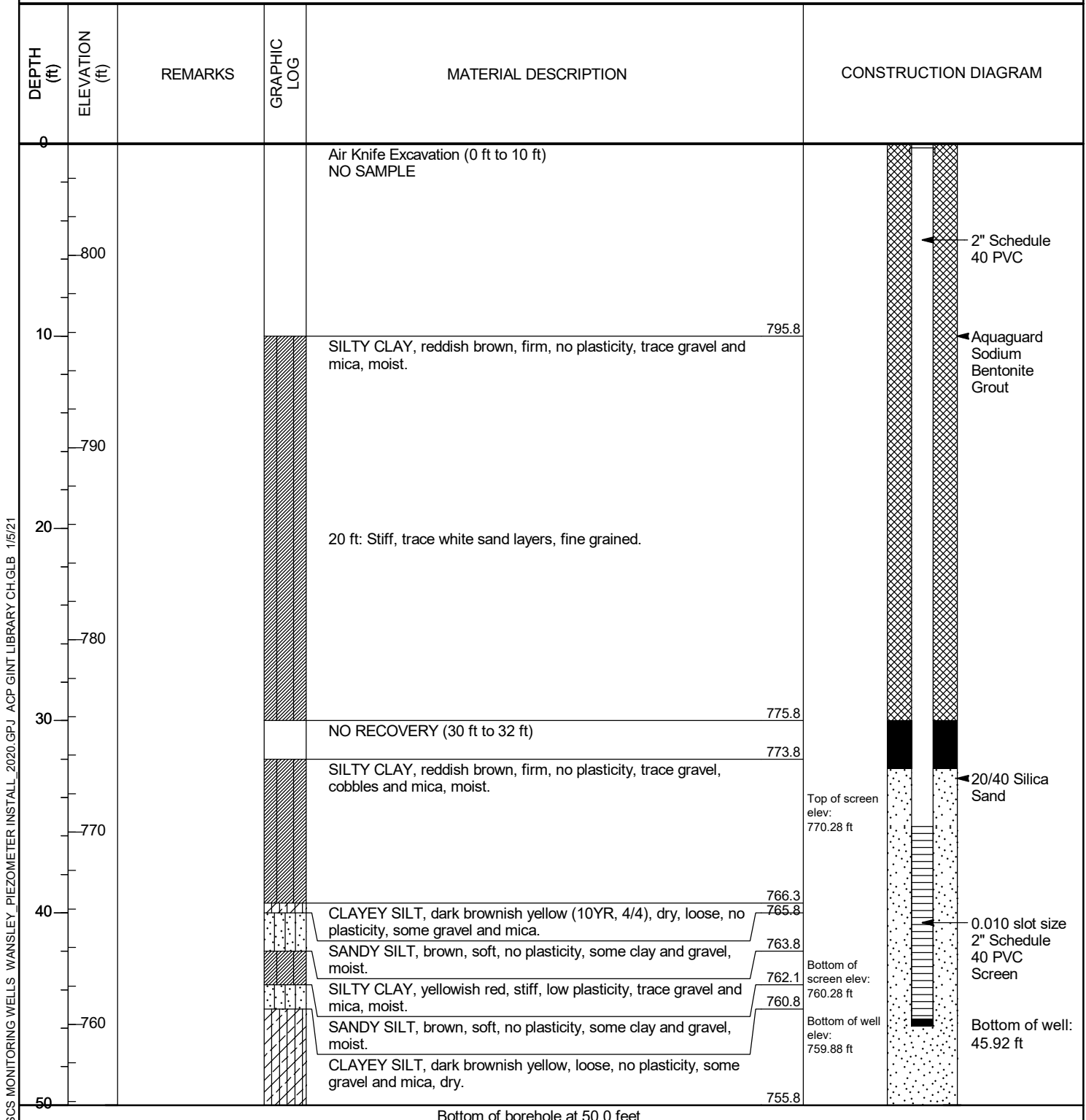


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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-29S

PAGE 1 OF 1

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/30/20 COMPLETED 10/31/20	NORTHING 1244317.13 ft EASTING 2028839.68 ft
DRILLER Cascade Drilling	GROUND ELEVATION 805.80 ft BORING DIAMETER 6 in.
DRILLING METHOD Sonic	TOP OF CASING ELEVATION 805.30 ft
SAMPLING METHOD 4 in. core 6 in. override	GEOPHYSICAL CONTRACTOR ---
RIG TYPE Terrasonic 1051181	LOGGED BY T. Wilson CHECKED BY A. Reimer



SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH.GLB 1/5/21



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1255 Roberts Boulevard
Kennesaw, GA 30144

PIEZOMETER PZ-29D

PAGE 1 OF 3

CLIENT Southern Company Services	PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation
PROJECT NUMBER GW7327	PROJECT LOCATION Plant Wansley AP-1
DATE STARTED 10/31/20	COMPLETED 11/1/20
DRILLER Cascade Drilling	NORTHING 1244304.90 ft
DRILLING METHOD Sonic	EASTING 2028853.29 ft
SAMPLING METHOD 4 in. core 6 in. override	GROUND ELEVATION 805.77 ft
RIG TYPE Terrasonic 1051181	BORING DIAMETER 6 in.
	TOP OF CASING ELEVATION 805.24 ft
	GEOPHYSICAL CONTRACTOR ---
	LOGGED BY T. Wilson
	CHECKED BY A. Reimer

SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
0				Air Knife Excavation (0 ft to 10 ft) NO SAMPLE	
800					
10				795.8 NO RECOVERY (10 ft to 11 ft) 794.8	
				SILT, dark yellowish brown to reddish brown, soft, few coarse gravel, some clay, non plastic, moist.	
790					
20				20 ft: Stiff.	
780					
30				775.8 NO RECOVERY (30 ft to 31 ft) 774.8	
				SILT, reddish brown, soft, few coarse gravel, some clay, non plastic, moist.	
770					
40				767.3 CLAYEY SILT, dark yellowish brown, soft, few coarse gravel mica present, dry.	
760					
				755.8	

(Continued Next Page)

CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1

SCS MONITORING WELLS WANSLEY_PIEZOMETER INSTALL_2020.GPJ ACP GINT LIBRARY CH GLB 1/5/21

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
50				SANDY SILT, yellowish brown, yellowish red, light greenish gray, and strong brown, stiff, trace fine to coarse gravel, some clay, non plastic, mica present, moist.	
60				CLAYEY SILT, strong brown, soft, few coarse gravel mica present, dry.	
70				SANDY SILT, yellowish brown, yellowish red, light greenish gray, and strong brown, stiff, trace fine to coarse gravel, some clay, non-plastic, mica present, moist.	
80				CLAYEY SILT, reddish brown, very stiff, few fine to coarse gravel, little fine-medium sand, medium plasticity, moist.	
90				SANDY SILT, strong brown, very stiff, little coarse gravel, some clay, non-plastic, mica present, moist.	
100				NO RECOVERY (100 ft to 102 ft)	
				SILTY CLAY, red, stiff, trace fine to coarse gravel, non-plastic, increasing clay content with depth, moist.	

(Continued Next Page)

CLIENT Southern Company Services

PROJECT NAME Plant Wansley Ash Pond 1 (AP-1) Piezometer Installation

PROJECT NUMBER GW7327

PROJECT LOCATION Plant Wansley AP-1

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
110				SILTY CLAY, red, stiff, trace fine to coarse gravel, non-plastic, increasing clay content with depth, moist. (<i>continued</i>)	
	690				
120				SILT, light greenish gray, soft, some clay, non-plastic, trace subrounded gravel, moist.	
				NO RECOVERY (120 ft to 126 ft)	
	680				
				SCHIST, light grayish olive, weathered, numerous natural fractures with iron staining, with weathered garnets and mica, thinly foliated.	

Bottom of borehole at 129.0 feet.

RECORD OF BOREHOLE WGWC-14/APC-5S

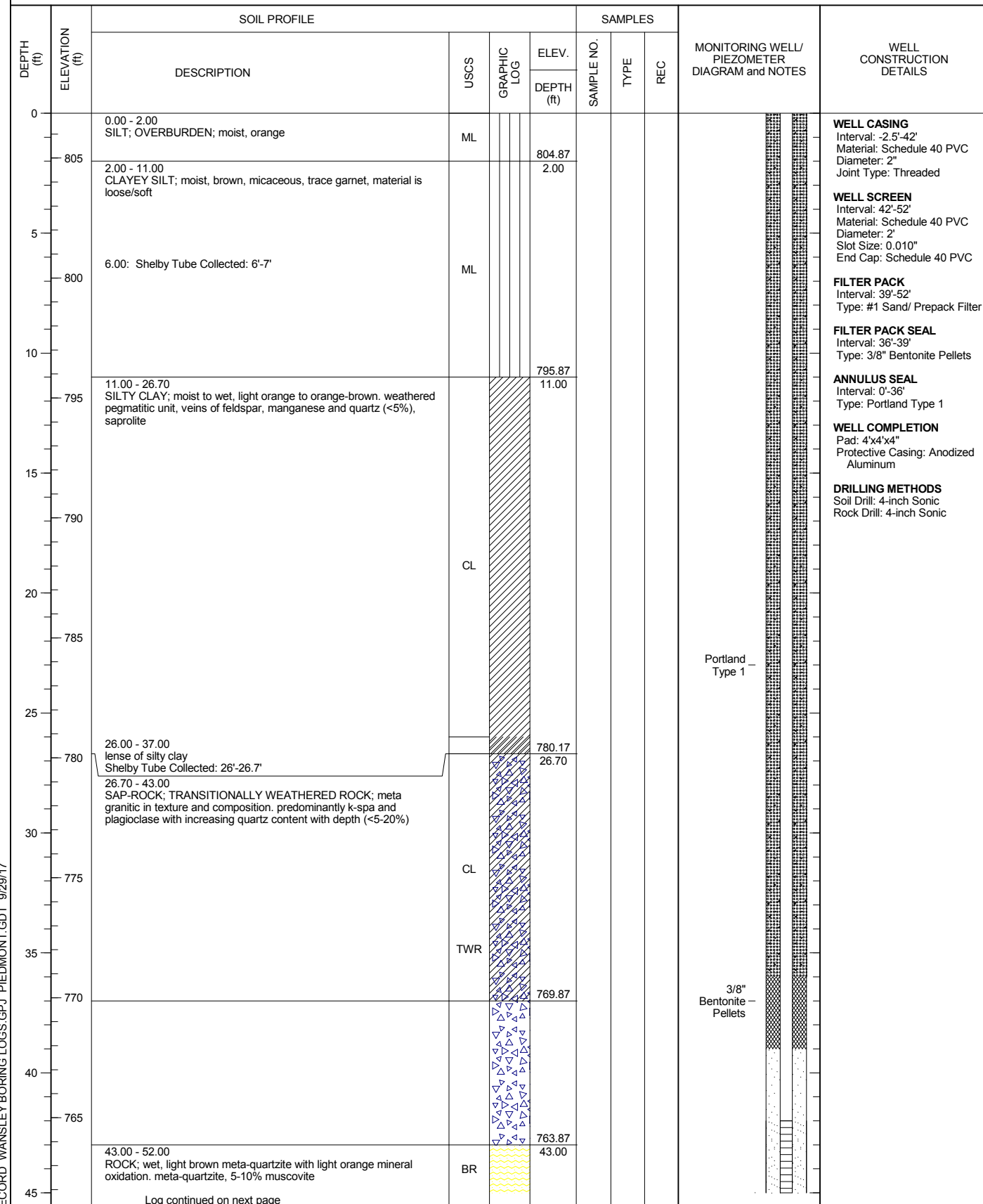
SHEET 1 of 2

PROJECT: SCS Wansley
 PROJECT NUMBER: 154117
 DRILLED DEPTH: 52.00 ft
 LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
 DATE STARTED: 11/4/15
 DATE COMPLETED: 11/5/15

NORTHING: 1,240,621.86
 EASTING: 2,024,584.92
 GS ELEVATION: 806.87
 TOC ELEVATION: 809.50 ft

DEPTH W.L.: 33' (bgs)
 ELEVATION W.L.: (amsl)
 DATE W.L.: 11/4/15
 TIME W.L.: 14:00



BOREHOLE RECORD WANSLEY BORING LOGS GPJ PIEDMONT.GDT 9/29/17

LOG SCALE: 1 in = 5.5 ft
 DRILLING COMPANY: Cascade Drilling
 DRILLER: Tom Ardito

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



RECORD OF BOREHOLE WGWC-14/APC-5S



SHEET 2 of 2

PROJECT: SCS Wansley
 PROJECT NUMBER: 154117
 DRILLED DEPTH: 52.00 ft
 LOCATION: Carrollton, GA

DRILL RIG: PS-150 Track Mounted Rig
 DATE STARTED: 11/4/15
 DATE COMPLETED: 11/5/15

NORTHING: 1,240,621.86
 EASTING: 2,024,584.92
 GS ELEVATION: 806.87
 TOC ELEVATION: 809.50 ft


DEPTH W.L.: 33' (bgs)
 ELEVATION W.L.: (amsl)
 DATE W.L.: 11/4/15
 TIME W.L.: 14:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
45		43.00 - 52.00 ROCK; wet, light brown meta-quartzite with light orange mineral oxidation. meta-quartzite, 5-10% muscovite (<i>Continued</i>)	BR						#1 sand 0.010" slot screen 	WELL CASING Interval: -2.5'-42' Material: Schedule 40 PVC Diameter: 2" Joint Type: Threaded WELL SCREEN Interval: 42'-52' Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: Schedule 40 PVC FILTER PACK Interval: 39'-52' Type: #1 Sand/ Prepack Filter FILTER PACK SEAL Interval: 36'-39' Type: 3/8" Bentonite Pellets ANNULUS SEAL Interval: 0'-36' Type: Portland Type 1 WELL COMPLETION Pad: 4'x4'x4" Protective Casing: Anodized Aluminum DRILLING METHODS Soil Drill: 4-inch Sonic Rock Drill: 4-inch Sonic
760										
50		Boring completed at 52.00 ft								
755					754.87					
55										
750										
60										
745										
65										
740										
70										
735										
75										
730										
80										
725										
85										
720										
90										

LOG SCALE: 1 in = 5.5 ft
 DRILLING COMPANY: Cascade Drilling
 DRILLER: Tom Ardito

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



		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA1 Page: 1 of 7
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Drilling Start Date: 03/25/2016 Drilling End Date: 04/11/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Russell Enfinger Logged By: Jeremy Gasser	Boring Depth (ft): 126 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 25.10 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2027872.516, 1243351.278 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
0											
5					SS	03/17 15:40	3	1.3	(4.5') Brownish gray Gravel w/some brown Clay (archived). Sample ID: B1:5-6 (5') Brown moist Clay, w/some seams of black Sand.	B1:5-6	815
							8				
							10				
							9				
10					SS	03/17 15:57	6	1.1	(9') Brownish red, Clayey Sand, moist. Sample ID: B1:9-11	B1:9-11	810
							5				
							7				
							10				
15					SS	03/17 16:00	9	0.0	(14') No Recovery in SS, broke catcher, one rock (small), with some wood debris.		805
							11				
							12				
							11				
20					SS	03/17 16:10	6	0.2	(19') No Recovery in SS, 2 inch in shoe; brownish red, clay w/some sand, moist, soft. Sample ID: B1:19-21	B1:19-21	800
							4				


NOTES: See notes on page 7.

PIEZOMETER LOG

Boring Depth (ft):	126
Boring Diameter (in):	4.25
Sampling Method(s):	N/A
DTW During Drilling (ft):	-
DTW After Drilling (ft):	25.10
Ground Surface Elevation (ft msl):	819.64
Location (X,Y) (ft):	2027872.516, 1243351.278 (State Plane, GA West)

DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
20											
25					SS	03/17 16:20	2 1 1 2	1.6	(24') Dark gray, very soft, saturated Fly ASH. Sample ID: B1:24-26	B1:24-26 (SS)	795
30					SS	03/17 16:35	3 2 4 3	0.7	(29') Dark grayish black, wet, poorly graded Bottom ASH. Sample ID: B1:29-31	B1:29-31 (SS)	790
35					SS	03/17 16:45	3 2 1 2	0.8	(34') Dark gray, wet, poorly graded finer Bottom ASH. Sample ID: B1:34-36	B1:34-36 (SS)	785
					PS	03/17 17:00		1.0	(36.5') Fine grained, poorly graded Bottom ASH, dark gray. Sample ID: ST:1A (PS)	ST:B1A (PS)	
40					PS	03/17 17:15		1.3	(39') Fine, blackish gray, poorly graded Bottom ASH. Sample ID: ST:18 (PS)	ST:B1B (PS)	780


NOTES: See notes on page 7.

	Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA1 Page: 3 of 7
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Drilling Start Date: 03/25/2016 Drilling End Date: 04/11/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Russell Enfinger Logged By: Jeremy Gasser	Boring Depth (ft): 126 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 25.10 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2027872.516, 1243351.278 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	
40						03/17 17:15		1.3			
45					SS	03/17 17:35	WR WR WR WR	0.0	(44') No Recovery: Weight of rod took SS to approximately 46 ft bgs.		775
50					SS	03/17 18:00	1 WR WR WR	2.0	(49') Gray, very soft/soupy Fly ASH. Sample ID: B1:49-51 (SS)	B1:49-51	770
55					SS	03/17 18:15	WR WR WR WR	0.0	(54') No recovery, traces of very fine saturated Fly ASH.		765
60					SS	03/17 18:35	WR WR	0.0	(59') No Recovery.		760


NOTES: See notes on page 7.

	Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA1 Page: 4 of 7
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Drilling Start Date: 03/25/2016 Drilling End Date: 04/11/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Russell Enfinger Logged By: Jeremy Gasser	Boring Depth (ft): 126 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 25.10 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2027872.516, 1243351.278 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	
60									(60') No Recovery.		
65					SS	03/17 18:55	2 1 1 1	2.0	(64') Very soft, dark gray, very fine, saturated Fly ASH. Sample ID: B1:64-66 (SS)	B1:64-66 (SS)	755
70											750
75					PS	03/17 19:35		2.0	(75') Dark gray, fine grained, Bottom ASH. Sample ID ST:1C (PS)	ST:B1C: (PS)	745
					SS	03/18 09:50	5 3 5 4	2.0	(77') Well graded, dark gray, saturated Bottom ASH. Sample ID: B1:77-78 (SS)	B1:78-79 (SS)	
80									(78') Fine, dark gray, stiff, Fly ASH. Sample ID: B1:78-79 (SS)		740

NOTES: See notes on page 7.


	Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA1 Page: 5 of 7
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Drilling Start Date: 03/25/2016 Drilling End Date: 04/11/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Russell Enfinger Logged By: Jeremy Gasser	Boring Depth (ft): 126 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 25.10 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2027872.516, 1243351.278 (State Plane, GA West)
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
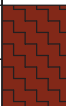
DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	
80											
85					SS	03/18 11:15	WR WR WR WR	2.0	(85') Very soft, dark gray Fly ASH. Sample ID: B1:85-87 (SS)	B1:85-87 (SS)	735
90					SS	03/18	WR WR WR WR	0.4	(90') Soft Fly ASH. (Sample collected inside casing, see notes.) Sample ID: B1:90-92 (SS)	B1:90-92 (SS)	730
95					PS	03/18 13:35		2.0	(95') Dark gray, fine Fly ASH, wet. Sample ID: ST:1D (PS)	ST:1D (PS)	725
100					SS	03/21 09:50	WR WR	2.0	(99') Dark gray, soft Fly ASH. Sample ID: B1:99-101 (SS)	B1:99-101 (SS)	720

NOTES: See notes on page 7.

NOTES: See notes on page 7.

	Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA1 Page: 7 of 7
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Drilling Start Date: 03/25/2016 Drilling End Date: 04/11/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Russell Enfinger Logged By: Jeremy Gasser	Boring Depth (ft): 126 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 25.10 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2027872.516, 1243351.278 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA1-Shallow	PZA1-Mid	PZA1-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
120					RC	03/21 12:20	>50	0.5			
125						11:40		0.2	(125') BEDROCK (Metamorphic Schist)		695
130									Attempted to rock core after 2 hours drill hard advanced 2 feet. Pulled core recovered rock fragments but no rock core. Abandoned borehole at 126 ft bgs with grout.		690


NOTES: A 4 inch borehole was drilled using only water to set the piezometers.
 All three wells were fully developed by J. Gasser. At least 10 well volumes were removed and turbidity was reduced to less than 10 NTU.
 Piezometer wells are 2 inch ID, Schedule 40 PVC, with a 5 foot High Yield PrePack, 0.010 inch Slot, Non metals, Fine (#0 Sand).
 Boring above the top of the well was filled with approximately 2 feet of sand, 10 feet of bentonite, and cement grout.
 All PVC wells were cut 3.5 feet above ground surface and covered with an aluminum protective casing.
 Aluminum protective casing was filled with pea gravel and concreted in place.
 A 1/4 inch Vent hole was drilled in the well, just under the cap, and a 1/4 inch Weep hole was drilled in the bottom of the aluminum casing. Four bollards were installed in front of the wells.
 Screened elevations are: PZA1-Shallow (50-55 ft bgs), PZA1-Mid (65-70 ft bgs), and PZA1-Deep (93.5-98.5 ft bgs).
 Depth measured during installation and as shown in this log refers to depth below ground surface.
 Depth below ground surface is from the top of ground at the location, not the top of the aluminum protective casing or PVC pipe.
 Elevation was measured by SCS prior to drilling.

NOTES: See notes on page 7.

PIEZOMETER LOG
Boring No. PZA2
Page: 1 of 8

Boring Depth (ft):	144
Boring Diameter (in):	4.25
Sampling Method(s):	N/A
DTW During Drilling (ft):	-
DTW After Drilling (ft):	24.35
Ground Surface Elevation (ft msl):	819.64
Location (X,Y) (ft):	2028520.791, 1243229.309 (State Plane, GA West)


[illegible]

		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 2 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
20											
25											
30											
35					SS	03/14 10:35	6 3 3 3	0.0	(34') No recovery without sample catcher, minimum amounts of coarse, black Bottom ASH. No sample bagged.		
40					SS	03/14 11:20	5 4	0.6			
									(39') Black, coarse, Bottom ASH, no archive sample. Sample ID: B2a:39-41 (SS)	B2a:39-41 (SS)	780


NOTES: See notes on page 8.

		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 3 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	
40					SS	03/14 11:20	5	0.6			
							5				
45					SS	03/14 13:20	4	0.9	(44') Top 8 inch (45-45.75 ft bgs): black, very coarse, Bottom ASH, pebbles (Archive).	B2a:44-46 (SS)	775
							2		(44.8') 45.75 - 46 ft bgs: fine, Fly ASH (sample). Sample ID: B2a:44-46 (SS)		
							4				
					PS	03/14 14:00	1	1.0	(46.5') Black, coarse Bottom ASH. Sample ID: B2aA (PS)	B2aA (PS)	
50					SS	03/14 14:15	4	0.8	(49') Black, coarse, Bottom ASH (All sample no archive). Sample ID: B2a:49-51 (SS)	B2a:49-51 (SS)	770
							4				
							4				
					PS	03/14 14:40		1.5	(51.5') Black, coarse, Bottom ASH, large chunk on top (1/2 golf ball size). Sample ID: B2aB (PS)	B2aB (PS)	
55					SS	03/14 14:55	4	0.8	(54') Black coarse, Bottom ASH (All sample, no archive). Sample ID: B2a:54-56 (SS). Still using sample catcher.	B2a:54-56 (SS)	765
							6				
							5				
							6				
60					SS	03/14 15:15	3	1.3	(59') Black, coarse, Bottom ASH (Sample and archive). Sample ID: B2a:59-61 (SS). Still using sample catcher.	B2a:59-61 (SS)	760
							4				


NOTES: See notes on page 8.

		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 4 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
60											
					PS	03/14 15:15	6 4	1.3			
						03/14 15:35		1.0	(61.5') Top: black, coarse, Bottom ASH.	B2aC (PS)	
									(62.5') Bottom: dark gray, soft, saturated, Fly ASH, fine grained. Sample ID: B2aC (PS). Casing sank into hole while trying to get SS setup, fished out and pressed on to 70 ft.		755
65											
					SS	03/14 16:42	6 7 8 3	2.0	(69') From 69 to 70.5 ft bgs: black, coarse, Bottom ASH (Archive). Sample ID: B2a:69-70.5 (SS)	B2a:70.5-71 (SS)	750
70									(70.5') From 70.5 to 71.0: dark gray, fine, saturated, Fly ASH (Sample). Sample ID: B2a:70.5-71 (SS)		
									(73') Want to sample 73-75 with SS and weight of rod dropped SS to 83 feet.		
									(74') Upon advancing casing from 74 to 85, after 83.85 SS, casing fell again to 80 ft bgs.		745
75											
80											740


NOTES: See notes on page 8.

		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 5 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Mud Rotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
80											
85					SS	03/14 17:30	11 7 5 7	24.0	(83') From 83 to 84.5: soft, fine, gray Fly ASH, somewhat stiff (Sample). Sample ID: B2a:83-84.5 (SS)	B2a:85.5-85 (SS)	735
					PS	03/14 17:50		1.9	(84.5') From 84.5-85: black, coarse, Bottom ASH (Archive). Sample ID: B2a:85.5-85 (SS)	B2aD (PS)	
									(86') Gray, fine, saturated Fly ASH. Sample ID: B2aD (PS)		
90									(88') End of 3/14/2016		
									(89') Casing dropped in the hole. Sarah Fick requested casing and rods be controlled to only advance to desired depth.		730
95					SS	03/15 09:45	9 39 50	1.3	(96.5') Gray, fine, saturated, Fly ASH. Sample ID: B2a:96.5-98 (SS). Sample ID: B2a:96.5-98 (SS)	B2a:96.5-98 (SS)	
					SS	03/15 10:04	45 43	1.0	(98') At 98 ft, rock fragments, tan, moist, dense, Sandy GRAVEL (Native).	B2a:99-100.5 (SS)	
100									(99') Sample ID: B2a:99-100.5 (SS)		720

NOTES: See notes on page 8.


		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 6 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: WaterRotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
100											
					SS	03/15 10:04	50	1.0			
					SS	03/15 10:40	15 13 13 18	1.1	(102') Light brown Sandy SILT with mica, soft, moist, W/A 1 in rock in top of sample. Sample ID: B2a:103.5-104 (SS)	B2a:103.5-104 (SS)	
									(103.5') Red (light) brown Sandy CLAY, stiff, moist.	ST:2aE (PS)	715
									(104') ~2 inch Bentonite in top of tube. Sample ID: ST:2aE (PS)		
					SS	03/15 16:00	11 7 8 11	1.5	(107') Red brown SILT, stiff, moist. Sample ID: B2a:107-109 (SS)	B2a:107-109 (SS)	710
					SS	03/15 16:50	55	1.8	(114') Light brown, layered SAND/MICA, very friable (Archive).		705
									(119') Light brown, layered SAND/MICA, very friable (Archive).		700
120											

NOTES: See notes on page 8.

NOTES: See notes on page 8.

		Client: Southern Company Services Project: Plant Wansley Ash Pond Closure Address: 1371 Liberty Church Rd., Carrollton, GA	PIEZOMETER LOG Boring No. PZA2 Page: 8 of 8
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Drilling Start Date: 04/05/2016 Drilling End Date: 04/12/2016 Drilling Company: Walker-Hill Environmental (WHE) Drilling Method: Water Rotary Drilling Equipment: Foremost B-59 Driller: Terry Orso Logged By: Jeremy Gasser	Boring Depth (ft): 144 Boring Diameter (in): 4.25 Sampling Method(s): N/A DTW During Drilling (ft): - DTW After Drilling (ft): 24.35 Ground Surface Elevation (ft msl): 819.64 Location (X,Y) (ft): 2028520.791, 1243229.309 (State Plane, GA West)
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DEPTH (ft)	LITHOLOGY	PZA2-Shallow	PZA2-Mid	PZA2-Deep	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
					Sample Type	Date & Time	Blow Counts	Recovery (ft)		Sample ID	ELEV. (ft msl)
140					SS	03/16 17:00	37 50 66 65	2.0	(142') Brown Sandy SILT with mica, weathered rock. Sample ID: B2a:142-144	B2a:142-144	675
145									Terminate boring at 144 ft bgs on 3/16/2016. Grouted bottom portion of hole.		670
150											

NOTES: A 4 inch borehole was drilled using only water to set the piezometers.

All three wells were fully developed by J. Gasser. At least 10 well volumes were removed and turbidity was reduced to less than 10 NTU.

Piezometer wells are 2 inch ID, Schedule 40 PVC, with a 5 foot High Yield PrePack, 0.010 inch Slot, Non metals, Fine (#0 Sand).

Boring above the top of the well was filled with approximately 2 feet of sand, 10 feet of bentonite, and cement grout.

All PVC wells were cut 3.5 feet above ground surface and covered with an aluminum protective casing.

Aluminum protective casing was filled with pea gravel and concreted in place.

A 1/4 inch Vent hole was drilled in the well, just under the cap, and a 1/4 inch Weep hole was drilled in the bottom of the aluminum casing. Four bollards were installed in front of the wells.

Screened elevations are: PZA2-Shallow (50-55 ft bgs), PZA2-Mid (72-77 ft bgs), and PZA1-Deep (90-95 ft bgs).

Depth measured during installation and as shown in this log refers to depth below ground surface.

Depth below ground surface is from the top of ground at the location, not the top of the aluminum protective casing or PVC pipe.

Elevation at B-2 was not measured in the field. As built elevation is reported. Dikes are relatively flat and location B-2 was comparable to location B-1, which matched the as built elevation.

NOTES: See notes on page 8.

NOTES: Boring backfilled with cement bentonite grout. Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988.

Drilling Start Date: **09/24/2022**
Drilling End Date: **09/24/2022**
Drilling Company: **Cascade Drilling**
Drilling Method: **Sonic 4x6**
Drilling Equipment: **Terrasonic**
Driller: **Cory Franklin**
Logged By: **T. Kessler**

Boring Depth (ft): **70**
Boring Diameter (in): **6**
Sampling Method(s): **Core Barrel**
DTW During Drilling (ft): **28.0**
DTW After Drilling (ft): **--**
Ground Surface Elev. (ft): **804.93 NAV88**
Location (N,E): **1243334.918, 2029756.286**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
45					(39') QUARTZITE; pinkish gray to grayish blue, hard, heavily fractured, trace mafics and mica, abundant iron staining. <i>(continued)</i> (45') Trace iron staining.		45
50				CB	(50') No iron staining.		50
55					(53') Sand-filled fracture zone from 53-60 feet bgs consisting of Poorly Graded SAND (SP); reddish-brown, moist to wet, loose, medium to coarse grained and subangular to subrounded.		55
60				CB	(59') Angular quartzite gravel from 59-60 feet. (60') Wet, trace fractures.	Replace drill bit and conduct dry 10 foot run. Pump test not performed due to sand collapse.	60
65							65
70					(70') Boring terminated.		70

NOTES: Boring backfilled with cement bentonite grout. Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988.

Drilling Start Date: 09/26/2022
Drilling End Date: 09/26/2022
Drilling Company: Cascade Drilling
Drilling Method: Sonic 4x6
Drilling Equipment: Terrasonic
Driller: Cory Franklin
Logged By: T. Kessler

Boring Depth (ft): 40
Boring Diameter (in): 6
Sampling Method(s): Core Barrel
DTW During Drilling (ft): 27.0
DTW After Drilling (ft): --
Ground Surface Elev. (ft): 804.86 NAV88
Location (N,E): 1243337.255, 2029761.15

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	Sample Type	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	ELEVATION (ft NAV88)
0				GR	(1') Hand augered material. Not logged.		0
5				CB	(2') QUARTZITE; pinkish gray to grayish blue, wet, very hard, sections broken into gravel size pieces and sand, trace pyrite, abundant iron oxidation staining at fractures.	Hard drilling. Abundant rig chatter.	5
10				CB	(10') Increasing pink, fracture surfaces heavily stained.	Hard drilling.	10
15							15
20				CB	(20') With silt.		20
25							25
27					(27') PARTIALLY WEATHERED ROCK; reddish-brown, moist, firm, relict rock structures, coarse quartzite gravel.		27
30				CB	(28') QUARTZITE; pinkish gray to grayish blue, dry, hard, crushed powder from drilling. (30') Wet, sections broken into gravel and coarse sand, trace gneiss gravel and pyrite, abundant iron oxide staining at fractures.		30
35							35
40					(40') Boring terminated.		40

NOTES: Boring backfilled with cement bentonite grout. Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988.

NOTES: Boring backfilled with cement bentonite grout. Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Vertical elevations are referenced to the North American Vertical Datum (NAVD) of 1988.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
 Page: **1 of 10**

Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Air knifed for utility clearance to 7'			805
5							(7') SILT with abundant mica (ML); sparse fine to medium gravel, dry, red (2.5YR 5/8)			800
10				SC	12.5		(12') SILT with clay (ML); abundant coarse mica, sparse fine gravel, dry, yellowish red (5YR 5/6)			795
15							(15') SILT with clay (ML); abundant fine mica, red (10R 4/8)			790
20							(16.5') SILT with clay (ML); abundant fine mica, dry, olive brown (2.5Y 4/3) (17') SILT with clay (ML); sparse fine gravel, abundant fine mica, dry, yellowish red (5YR 5/6) (18.5') SILT with clay (ML); abundant fine gravel (one cobble ~3" diameter), dry, brown (10YR 5/3)			

NOTE: No water level measurement was taken for PB-1.

BORING LOG
Boring No. **PB-1**
Page: **2 of 10**

Drilling Start Date:	2/27/2017	Boring Depth (ft):	196	Well Depth (ft):	N/A
Drilling End Date:	3/2/2017	Boring Diameter (in):	6" x 4"	Well Diameter (in):	N/A
Drilling Company:	Cascade	Sampling Method(s):	ST, SC, HQ	Screen Slot (in):	N/A
Drilling Method:	Sonic/HQ Rock Coring	DTW During Drilling (ft):	--	Riser Material:	N/A
Drilling Equipment:	Full size truck	DTW After Drilling (ft):	--	Screen Material:	N/A
Driller Name:	V. Scott	Top of Casing Elev. (ft):	805.86	Seal Material(s):	N/A
Logged By:	J. Griffin	Location (Y, X):	1245266.59, 2027870.47	Filter Pack:	N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)	Photo				
20				SC	9		Photo 2 of photo log	(20') SILT with clay (ML); abundant fine to medium mica, sparse fine and coarse gravel with cobbles up to 4", dry, light yellowish brown (2.5Y 6/3)	PB-1 (25-27)	Shelby Tube collection attempt; crushed	785
25				ST	0						780
30				SC	12.5			(33') SILT with clay (ML); abundant fine to medium mica, with fine and coarse gravel, dry, yellowish red (5YR 5/6)	PB-1 (36-37)	Shelby Tube collected	775
35				ST	2						770
40											

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
 Page: **3 of 10**

Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
40							(33') SILT with clay (ML); abundant fine to medium mica, with fine and coarse gravel, dry, yellowish red (5YR 5/6) (continued)	PB-1 (41-42)		765
				SC	9					
45							(46') SILT with clay (ML); with fine to medium mica, sparse fine gravel, dry, red (2.5YR 4/6), feldspathic zone at 55' to 56.5' with feldspar gravel up to 2" diameter	PB-1 (47-49)	Shelby Tube collected	760
				ST	2					
50								PB-1 (50-51)		755
				SC	12					
55							(56.5') SILT with clay (ML); sparse fine gravel, abundant fine to medium mica, dry, red (2.5YR 5/8)			750
				SC	3					
60										

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
 Page: **4 of 10**

Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
60				ST	2		(56.5') SILT with clay (ML); sparse fine gravel, abundant fine to medium mica, dry, red (2.5YR 5/8) (<i>continued</i>)	PB-1 (60-62)	Shelby Tube collected as a disturbed sample; tube bent	745
				ST	2		(63') SILT with clay (ML); abundant fine mica with visible rock fabric (banding of mafic minerals), trace fine gravel, red (2.5YR 5/8), SAPROLITE	PB-1 (62-64)	Shelby Tube collected	
65				SC	3			PB-1 (65-66)		740
70				SC	12			PB-1 (72-73)		735
75										730
80										

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
 Page: **5 of 10**

Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
80				SC	12		(63') SILT with clay (ML); abundant fine mica with visible rock fabric (banding of mafic minerals), trace fine gravel, red (2.5YR 5/8), SAPROLITE (<i>continued</i>)			725
85										720
90				SC	11					715
95								PB-1 (95-96)		710
100							(99') SILT with clay (ML); abundant coarse mica, dry, grayish brown (2.5Y 5/2)			



NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
 Page: **6 of 10**

Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
100				SC	11		(99') SILT with clay (ML); abundant coarse mica, dry, grayish brown (2.5Y 5/2) (continued)	PB-1 (103-104)		705
105										700
110				SC	12		(107') SILT with clay (ML); trace fine and medium gravel, soft, slightly moist, light olive brown (2.5Y 5/3)	PB-1 (113-114)		695
115										690
120								PB-1		

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
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Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
120				SC	13		(120') Becomes very dark greenish gray (5BG 3/1), schistose fabric observed; highly weathered garnets	(120-121)		685
125							(123') Becomes light olive brown (2.5Y 5/3)			680
130				SC	10		(129') Becomes olive gray (5Y 4/2)	PB-1 (130-131)		675
135							(134') SCHIST, cobbles of highly weathered, foliated, weak rock with disseminated garnets and quartz banding in a silt matrix, PARTIALLY WEATHERED ROCK	PB-1 (136-137)	Tougher drilling (slow advancement)	670
140										

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **PB-1**
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Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)					
140				SC	7		Photo 14 of photo log	(134') SCHIST, cobbles of highly weathered, foliated, weak rock with disseminated garnets and quartz banding in a silt matrix, PARTIALLY WEATHERED ROCK <i>(continued)</i>	PB-1 (141-142)		665
145								(142') SCHIST, slightly weathered, blueish black (5PB 2.5/1), intensely fractured (high angle) along foliation, iron oxide staining on fracture faces, disseminated garnets; strong			
150				HQ	2.5	73	Photo 15 of photo log	(147') Fine and coarse gravel with cobbles up to 4", moderately fractured, iron oxide staining on fracture faces at 147'-150' and 157'-158'	PB-1 (146-147)	Switch to HQ Coring (3.75") 6" casing stopped	660
155				HQ	5.4	61		(151.5') As above; slightly fractured, no iron oxide staining on fracture faces, unweathered		Difficulty drilling and extracting core from barrel	655
160											650

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
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Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)					
160				HQ	10.3	87					645
165											640
170								(169') As above; slightly fractured			635
175				HQ	10	100		(175') Quartz band with pyrite mineralization			630
180											

NOTE: No water level measurement was taken for PB-1.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-1**
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Drilling Start Date: 2/27/2017	Boring Depth (ft): 196	Well Depth (ft): N/A
Drilling End Date: 3/2/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.86	Seal Material(s): N/A
Logged By: J. Griffin	Location (Y, X): 1245266.59, 2027870.47	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)					
180				HQ	7	58	Photo 19 of photo log	(179') As above; moderately fractured, less quartz banding than above, iron oxide staining on fracture faces at 179.5', 183'-184', 185'-186.5' (<i>continued</i>)			625
185								(186') As above; moderately fractured zones of intense weathering at 187', 191', 192', 193', 195'; 189'-190' intense dissolution along quartz band (with vugs) and heavy oxidation of mafic minerals			620
190				HQ	10	81		(189') Higher density of garnet and large in size, up to 0.4" diameter			615
195											610
(196.0') Boring Terminated											

NOTE: No water level measurement was taken for PB-1.




Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

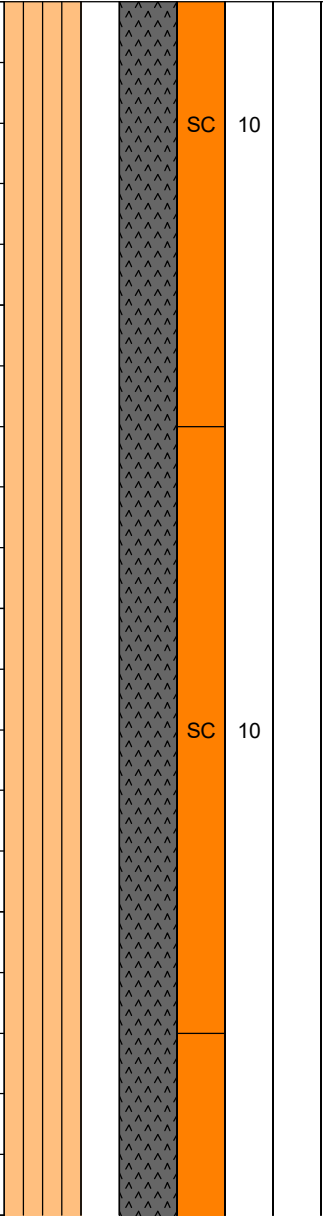


BORING LOG
 Boring No. **PB-2**
 Page: **1 of 10**

Drilling Start Date: 3/8/2017	Boring Depth (ft): 189	Well Depth (ft): N/A
Drilling End Date: 3/10/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.81	Seal Material(s): N/A
Logged By: N. Tilahun	Location (Y, X): 1244620.03, 2028513.2	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Air knifed for utility clearance to 7'			805
5							(7') CLAY (CL); trace fine to coarse sand, trace angular gravel, medium plasticity, soft, moist, red (2.5YR 4/8), DIKE MATERIAL			800
							(7.5') SILT (ML); trace fine to coarse sand, trace angular gravel, medium plasticity, dry, dark brown (7.5YR 3/4), DIKE MATERIAL	PB-2 (9-10)		
10								PB-2 (10-11)		
				SC	10		(12') SILT (ML); abundant mica, trace fine to coarse angular gravel, medium plasticity, dry, reddish yellow (7.5YR 7/8)		Photo represents recovered sample between 13-14 ft interval.	795
15										790
							(17') SILT with clay (ML); abundant mica, trace fine to coarse angular gravel, medium plasticity, soft, dry, brownish yellow (10YR 6/8)			
							(18.5') Becomes dark yellowish brown (10YR 4/6)			
20							(19.5') Becomes yellowish brown (10YR 5/8)			

NOTE: No water level measurement was taken for PB-2.

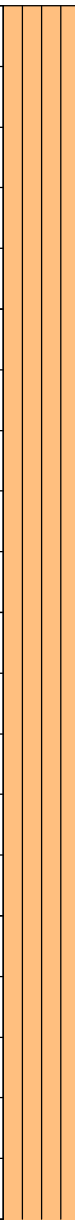

		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-2 Page: 2 of 10	
Drilling Start Date: 3/8/2017 Drilling End Date: 3/10/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: N. Tilahun		Boring Depth (ft): 189 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Casing Elev. (ft): 805.81 Location (Y, X): 1244620.03, 2028513.2		Well Depth (ft): N/A Well Diameter (in): N/A Screen Slot (in): N/A Riser Material: N/A Screen Material: N/A Seal Material(s): N/A Filter Pack: N/A	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)			
				Sample Type	Recovery (ft)	RQD (%)							
20				SC	10		(19.5') Becomes yellowish brown (10YR 5/8) <i>(continued)</i>	PB-2 (20-21)		785			
(21') SILT with clay (ML); abundant mica, trace fine to coarse angular gravel, medium plasticity, soft, dry, red (2.5YR 4/8)							780						
(22') Becomes brown (7.5YR 5/4)													
(24') Becomes yellowish brown (10YR 5/8)													
(27') SILT with clay (ML); abundant mica, little fine to coarse angular gravel, medium plasticity, soft, moist, reddish brown (2.5YR 4/3)													
(28') Becomes red (2.5YR 4/8)													
(29.5') Becomes trace rock fragments of slate (angular), reddish brown (2.5YR 4/3)											PB-2 (30-31)	775	
(32') SILT with clay (ML); abundant mica, little fine to coarse angular gravel, medium plasticity, soft, moist, red (2.5YR 5/8)													770
40													

NOTE: No water level measurement was taken for PB-2.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. PB-2 Page: 3 of 10
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Drilling Start Date: 3/8/2017 Drilling End Date: 3/10/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: N. Tilahun	Boring Depth (ft): 189 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Casing Elev. (ft): 805.81 Location (Y, X): 1244620.03, 2028513.2	Well Depth (ft): N/A Well Diameter (in): N/A Screen Slot (in): N/A Riser Material: N/A Screen Material: N/A Seal Material(s): N/A Filter Pack: N/A
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)		
				Sample Type	Recovery (ft)	RQD (%)	Photo						
40				SC	10			(39') SILT with clay (ML); abundant mica, trace fine to coarse angular gravel, low plasticity, soft, dry, pinkish gray (7.5YR 6/2), slightly laminated layers <i>(continued)</i>	PB-2 (40-41)		765		
							(42') SILT with clay (ML); abundant mica (fine to coarse), trace fine to coarse angular gravel, medium plasticity, soft, dry, reddish brown (2.5YR 5/4), laminated layers near 47'						
45											760		
50							SC	10			(49') SILT with clay (ML); abundant mica, trace angular boulders, fine to coarse angular gravel, low plasticity, dry, light brown (7.5YR 6/4)	PB-2 (50-51)	755
55											(53.5') Becomes reddish brown (2.5YR 5/4) (54.5') Becomes light brown (7.5YR 6/4)		750
60				SC	3			(57') SILT with clay (ML); abundant mica, trace angular boulders, fine to coarse angular gravel, medium plasticity, soft, moist, light brown (7.5YR 6/4), pockets of fine white sand					

NOTE: No water level measurement was taken for PB-2.

BORING LOG
Boring No. **PB-2**
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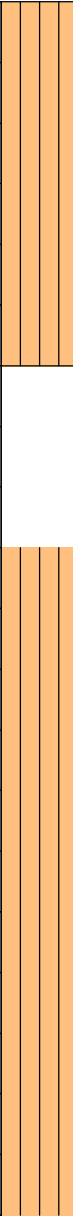


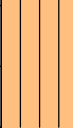


Drilling Start Date:	3/8/2017	Boring Depth (ft):	189	Well Depth (ft):	N/A
Drilling End Date:	3/10/2017	Boring Diameter (in):	6" x 4"	Well Diameter (in):	N/A
Drilling Company:	Cascade	Sampling Method(s):	ST, SC, HQ	Screen Slot (in):	N/A
Drilling Method:	Sonic/HQ Rock Coring	DTW During Drilling (ft):	--	Riser Material:	N/A
Drilling Equipment:	Full size truck	DTW After Drilling (ft):	--	Screen Material:	N/A
Driller Name:	V. Scott	Top of Casing Elev. (ft):	805.81	Seal Material(s):	N/A
Logged By:	N. Tilahun	Location (Y, X):	1244620.03, 2028513.2	Filter Pack:	N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
60										745
							(60') SILT with clay (ML); abundant mica, trace fine grained sand, low plasticity, very soft, moist, yellow (10YR 7/8)			
							(61') Becomes dark brown (7.5YR 3/4)			
							(61.5') Becomes trace angular boulders, trace fine to coarse sand, trace fine to coarse angular gravel, olive gray (5Y 5/2)			
							(62.5') SILT with clay (ML); abundant mica, trace fine to coarse sand and gravel, angular gravel, low plasticity, very soft, moist, light brown (7.5YR 6/4), trace angular boulders, white fine sand pockets.			
65				SC	10		(63') SILT with clay (ML); abundant mica, little fine sand, dry, yellow (10YR 7/8), trace angular boulders, trace coarse gravel (angular).	PB-2 (60-61)		740
							(65') Becomes light brown (7.5YR 6/4)			


NOTE: No water level measurement was taken for PB-2.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. PB-2 Page: 5 of 10
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Drilling Start Date: 3/8/2017 Drilling End Date: 3/10/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: N. Tilahun	Boring Depth (ft): 189 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Casing Elev. (ft): 805.81 Location (Y, X): 1244620.03, 2028513.2	Well Depth (ft): N/A Well Diameter (in): N/A Screen Slot (in): N/A Riser Material: N/A Screen Material: N/A Seal Material(s): N/A Filter Pack: N/A
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
80				ST	0		(75') SILT with clay (ML); abundant mica, trace sub rounded boulders, olive brown (2.5Y 4/4) (continued)	PB-2 (83-84)	Sample was lost	725
85							(86') No Recovery	PB-2 (84-86)		720
								PB-2 (87-89)		
90							(89') SILT with clay (ML); trace fine sand, abundant mica, low plasticity, soft, reddish brown (2.5Y 5/4), trace sub rounded boulders		Photo represents recovered sample between 94-95 ft interval.	715
								PB-2 (89-90)		
95							(95') Tree branch	PB-2 (97-98)		710
				ST	2			PB-2 (98-100)		
100										

NOTE: No water level measurement was taken for PB-2.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. PB-2 Page: 6 of 10
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Drilling Start Date: 3/8/2017 Drilling End Date: 3/10/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: N. Tilahun	Boring Depth (ft): 189 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Casing Elev. (ft): 805.81 Location (Y, X): 1244620.03, 2028513.2	Well Depth (ft): N/A Well Diameter (in): N/A Screen Slot (in): N/A Riser Material: N/A Screen Material: N/A Seal Material(s): N/A Filter Pack: N/A
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)	Photo				
100				SC	6		Photo 10 of photo log	(101') SILT with clay (ML); abundant mica, trace fine to coarse angular gravel, medium plasticity, hard, moist, reddish brown (2.5YR 5/4)	PB-2 (106-107)	Photo represents recovered sample between 106-107 ft interval.	705
105								(105') CLAY (CL); trace coarse gravel (sub-rounded), medium plasticity, hard, moist, reddish yellow (7.5YR 6/8)			700
								(107') No Recovery			
110				SC	4			(113') SILT with clay (ML); abundant mica, trace fine to coarse, angular gravel, low plasticity, soft, dry, olive brown (2.5Y 4/4)	PB-2 (116-117)		695
								(115') Becomes light brown (7.5YR 6/4)			
115								(117') No Recovery			
120				SC	3			(119') CLAY with silt (CL); medium plasticity, soft, moist, brown (7.5YR 5/4)			690

NOTE: No water level measurement was taken for PB-2.

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BORING LOG
 Boring No. **PB-2**
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Drilling Start Date: 3/8/2017	Boring Depth (ft): 189	Well Depth (ft): N/A
Drilling End Date: 3/10/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.81	Seal Material(s): N/A
Logged By: N. Tilahun	Location (Y, X): 1244620.03, 2028513.2	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
120							(119') CLAY with silt (CL); medium plasticity, soft, moist, brown (7.5YR 5/4) (<i>continued</i>)			685
							(122') No Recovery			
125										680
							(127') CLAY (CL); little silt, medium plasticity, soft, moist, reddish yellow (7.5YR 7/8), ALLUVIUM	PB-2 (127-128)		
							(129') CLAYEY SAND (SC); little silt, medium dense, reddish yellow (7.5YR 7/8), fine grained, poorly graded, ALLUVIUM	PB-2 (129-130)	Photo represents recovered sample between 129-130 ft interval.	
130				SC	10		(130.5') CLAYEY GRAVEL (GC); little silt, moist, dark gray (7.5YR 4/1), fine to coarse grained, well graded, rounded, ALLUVIUM	PB-2 (131-132)		675
							(132') CLAY with silt (CL); some silt, medium plasticity, firm, moist, olive yellow (2.5Y 6/6), SAPROLITE	PB-2 (132-133)	Photo represents recovered sample between 133-134 ft interval.	
							(134') SILT (ML); with clay, low plasticity, soft, moist, brown (7.5YR 5/4), foliation, SAPROLITE	PB-2 (134-135)		670
135										
							(137') CLAY with silt (CL); some silt, abundant mica, medium plasticity, firm, moist, light olive brown (2.5Y 5/6), SAPROLITE			
							(139') SILT (ML); soft, dry, olive yellowish brown (2.5Y 6/4), decomposed rock fragments of mica, SAPROLITE			
140										

NOTE: No water level measurement was taken for PB-2.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **PB-2**
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Drilling Start Date: 3/8/2017	Boring Depth (ft): 189	Well Depth (ft): N/A
Drilling End Date: 3/10/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.81	Seal Material(s): N/A
Logged By: N. Tilahun	Location (Y, X): 1244620.03, 2028513.2	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
140				SC	7		(139') SILT (ML); soft, dry, olive yellowish brown (2.5Y 6/4), decomposed rock fragments of mica, SAPROLITE (continued)	PB-2 (137-138)		665
145							(144') No Recovery	PB-2 (142-143)		660
150				SC	0				Driller felt drilling through competent material, but couldn't retrieve the sample	655
155										650
160							(157') No Recovery from 157' to 173'			

NOTE: No water level measurement was taken for PB-2.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **PB-2**
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Drilling Start Date: 3/8/2017	Boring Depth (ft): 189	Well Depth (ft): N/A
Drilling End Date: 3/10/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.81	Seal Material(s): N/A
Logged By: N. Tilahun	Location (Y, X): 1244620.03, 2028513.2	Filter Pack: N/A

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
160							(157') No Recovery from 157' to 173' (continued)			645
165				SC	4				Driller felt competent material but couldn't retrieve sample	640
170										635
175							(173') SCHIST, highly weathered, high angle fractures, gray (4.5YR 5/1), fine to coarse, iron oxide staining on fracture surfaces, thin to very thick bedding, some grains of garnet, TOP OF ROCK			630
180				SC	2		(177') SCHIST, intensely weathered, intensely fractured, gray (4.5YR 5/1), iron oxide staining on fracture surfaces		End of day 3/8/2017 Photo represents recovered sample between 178-179 ft interval.	

NOTE: No water level measurement was taken for PB-2.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-2**
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Drilling Start Date: 3/8/2017	Boring Depth (ft): 189	Well Depth (ft): N/A
Drilling End Date: 3/10/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): N/A
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: N/A
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: N/A
Driller Name: V. Scott	Top of Casing Elev. (ft): 805.81	Seal Material(s): N/A
Logged By: N. Tilahun	Location (Y, X): 1244620.03, 2028513.2	Filter Pack: N/A

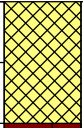
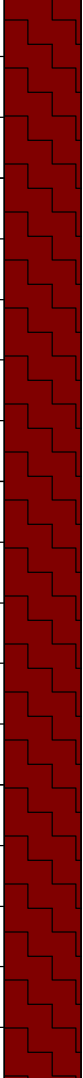
DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	BORING COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
180				HQ	2	0	(177') SCHIST, intensely weathered, intensely fractured, gray (4.5YR 5/1), iron oxide staining on fracture surfaces (continued)		End of day 3/9/2017, start of day 3/10/2017, HQ Coring begins. Photo represents recovered sample between 184-185 ft interval.	625
							(182') Same as above, intensely weathered and fractured			
185				HQ	5	35	(184') SCHIST, moderately weathered, thinly to thickly bedded, gray (7.5YR 5/1), very hard, fine to coarse crystal size, moderately fractured, high angle fractures, iron oxide staining on fracture surfaces, some fine to coarse garnet grains, fractures are planar and not healed (top 3.8'), bottom 12' is mechanical break			620
(189.0') Boring Terminated										

NOTE: No water level measurement was taken for PB-2.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **PB-3D/3S**
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Drilling Start Date: 2/23/2017	Boring Depth (ft): 63	Well Depth (ft): (28-38) & (52-62)
Drilling End Date: 2/24/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: V. Scott	Ground Surface Elev. (ft): 804.57	Seal Material(s): Bentonite
Logged By: J. Ivanowski	Location (Y, X): 1243273.69, 2029686.62	Filter Pack: 20/40 silica sand

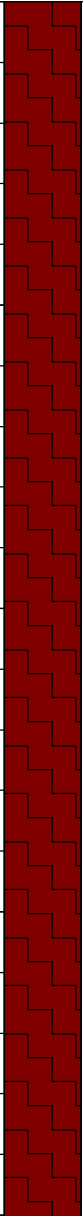

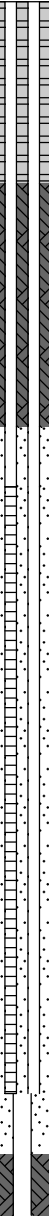
DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') SILTY CLAY with gravel, with railroad ballast, fill		Air-knifed to top of rock	
5							(2') METAQUARTZITE, intensely fractured, pale yellow to white, granular, very hard, iron oxide staining, cataclasite, iron oxide scale		Good water return (~50%)	800
10							(7') METAQUARTZITE, intensely fractured, white to pale brown, granular, iron oxide staining, cataclasite, iron oxide scaling, increasing competency with depth		Hard drilling, ~50% return	795
15							(17') Same as above, more fractured		Softer drilling, slightly less water return	790
20										785

NOTE:

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No.-**PB-3D/3S**
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Drilling Start Date: 2/23/2017	Boring Depth (ft): 63	Well Depth (ft): (28-38) & (52-62)
Drilling End Date: 2/24/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: V. Scott	Ground Surface Elev. (ft): 804.57	Seal Material(s): Bentonite
Logged By: J. Ivanowski	Location (Y, X): 1243273.69, 2029686.62	Filter Pack: 20/40 silica sand

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
20							(20') METAQUARTZITE, intensely fractured, pale yellow to white, iron oxide staining, felsic cataclasite, iron oxide staining			780
25										
30							(30') GNEISS, intensely fractured, pale blue to pink, weakly foliated, staining of fracture surfaces			775
35							(32') METAQUARTZITE, intensely fractured, pale brown to tan, cataclasite, gravelly, highly oxidized			770
40							(36') Same rock as above, more competent, fewer natural fractures			765

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **PB-3D/3S**
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Drilling Start Date: 2/23/2017	Boring Depth (ft): 63	Well Depth (ft): (28-38) & (52-62)
Drilling End Date: 2/24/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: V. Scott	Ground Surface Elev. (ft): 804.57	Seal Material(s): Bentonite
Logged By: J. Ivanowski	Location (Y, X): 1243273.69, 2029686.62	Filter Pack: 20/40 silica sand

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
40							(40.5') GNEISS, foliated, pale blue to pink, increasing competency			
45										760
				HQ	2	92	(47') GNEISS, distinct mineral banding, blueish gray and pink, few very high angle (~65°) healed hairline fractures; high RQD; no oxidation present		Stopped for 2/23/17, started HQ Coring on 2/24/17, water return ~80%	
50				HQ	7	87	(49') Becoming more pink, cataclastic, abundant intersecting healed hairline fractures; possible water-bearing fractures at 49.2', 50.7', 52.5', 54.0' (very slight film on fracture surfaces; no staining)		Very hard, slow, 2 hrs to drill 7 ft, water return ~80%	755
55				HQ	3	54	(57') GNEISS, low angle open fractures, pale brown to tan, heavily oxidized, scale on surfaces (58') GNEISS, steep foliated, blueish gray		Very slow, water recovery ~60%	750
60										745

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**


BORING LOG
 Boring No. **PB-3D/3S**
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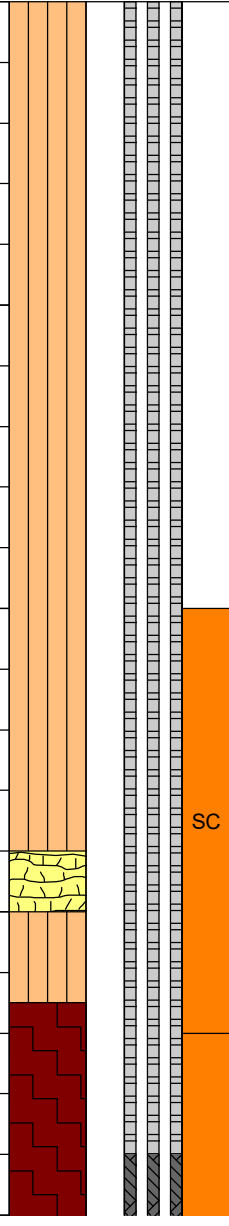
Drilling Start Date: 2/23/2017	Boring Depth (ft): 63	Well Depth (ft): (28-38) & (52-62)
Drilling End Date: 2/24/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Full size truck	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: V. Scott	Ground Surface Elev. (ft): 804.57	Seal Material(s): Bentonite
Logged By: J. Ivanowski	Location (Y, X): 1243273.69, 2029686.62	Filter Pack: 20/40 silica sand

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)	Photo				
60								(58') GNEISS, steep foliated, blueish gray(continued)			

(63.0') Boring Terminated

NOTE:

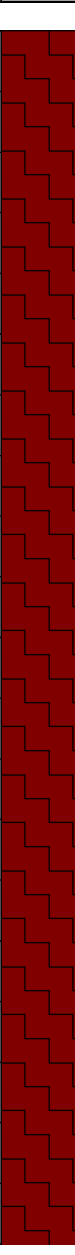
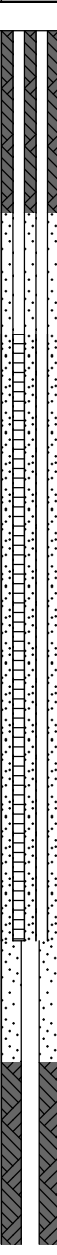
		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-4D/4S Page: 1 of 4	
Drilling Start Date: 2/21/2017 Drilling End Date: 2/22/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: J. Ivanowski		Boring Depth (ft): 80 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 809.43 Location (Y, X): 1242790.61, 2029126.42		Well Depth (ft): (25-35) & (63-73) Well Diameter (in): 1 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: 20/40 silica sand	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') SANDY SILT with cobbles (ML)		0-10' removed by air knife	805
						(8') Becomes very hard			800	
5										
10							(10') SILT with angular gravel (ML); very dense, wet, pale yellow to white, relict rock fabric, SAPROLITE	PB-4 (11-12)		
15							(14') PARTIALLY WEATHERED ROCK, hard, dry, fragments of gneiss			
							(15') SILT with angular gravel (ML); very dense, wet, pale yellow to white, relict rock fabric, SAPROLITE	PB-4 (15-16)	~75% water recovery Driller reported very hard drilling ~50% water recover	
							(16.5') METAQUARTZITE, banded, pale gray to white			
20							(17.5') METAQUARTZITE, granular, intensely fractured rock, felsic gneiss to quartzite, abundant oxidation along fractures			


NOTE:

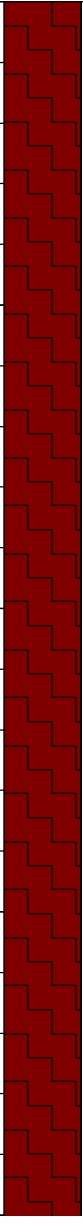


	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. PB-4D/4S Page: 2 of 4
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Drilling Start Date: 2/21/2017 Drilling End Date: 2/22/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: J. Ivanowski	Boring Depth (ft): 80 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 809.43 Location (Y, X): 1242790.61, 2029126.42	Well Depth (ft): (25-35) & (63-73) Well Diameter (in): 1 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: 20/40 silica sand
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	Sample Type	Recovery (ft)	RQD (%)	Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
20				SC	6		Photo 5 of photo log	(20') As above; metaquartzite, intensely fractured, iron oxide staining along fracture surfaces, rock is broken into large gravel and small cobble size fragments	PB-4 (24-25)	Driller reports 50% water return during run	785
25											
30				SC	6.5		Photo 10 of photo log				780
35											775
40				HQ	1.8			(37') As above; intensley fractured, sand and mud filled fracture at 38.1'		Switched to HQ coring, pulled 2' core due to blockage ~40% water return	770
40										~40% water	

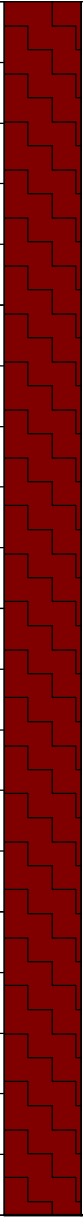
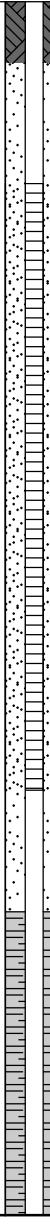

NOTE:

		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-4D/4S Page: 3 of 4	
Drilling Start Date: 2/21/2017 Drilling End Date: 2/22/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: J. Ivanowski		Boring Depth (ft): 80 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 809.43 Location (Y, X): 1242790.61, 2029126.42		Well Depth (ft): (25-35) & (63-73) Well Diameter (in): 1 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: 20/40 silica sand	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
40				HQ	5	27	Photo 13 of photo log (40') METAQUARTZITE, iron oxide staining, high angle fractures with oxide stained surfaces, surfaces are smooth-undulating (43') Increasing competency with depth (44') Intensely fractured zone, heavily oxidized (44.4') Sand filled fracture (47') More competent, few high angle fractures, oxidized surfaces (47.9') Mud-filled fracture (49') GNEISS, banded, dark gray to blue, more competent few fractures, fracture zone at 49.5 (52') Pale yellow to orange, open fracture (52.5') GNEISS, blue to gray, mechanical breaks (53') Pale brown, intensely fractured, oxidized fracture zone at 54.5' (54.5') GNEISS, blue to gray, mylonitized with white augen, oxidized fractures at 56.4', 59.5', 61.0', 61.5', 61.7', and 62.1'		recovery ~50% water recovery, used ~200 gallons per 5' run Used ~250 gal for this 7' run, return ~60% End for 2/21/17 ~100 gal water used, ~70% recovery	765 760 755 750
45				HQ	5	43				
50				HQ	7	60				
55										
60										

NOTE:

		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-4D/4S Page: 4 of 4	
Drilling Start Date: 2/21/2017 Drilling End Date: 2/22/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Full size truck Driller Name: V. Scott Logged By: J. Ivanowski		Boring Depth (ft): 80 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 809.43 Location (Y, X): 1242790.61, 2029126.42		Well Depth (ft): (25-35) & (63-73) Well Diameter (in): 1 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: 20/40 silica sand	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)	
				Sample Type	Recovery (ft)	RQD (%)					
60				HQ	8	64	(54.5') GNEISS, blue to gray, mylonitized with white augen, oxidized fractures at 56.4', 59.5', 61.0', 61.5', 61.7', and 62.1' (continued) (64') GNEISS, dark blue to gray, no staining, high angle fractures; open fractures at 64.5', 65.2', 65.4', 65.5', and 66.0' (66.5') Intensely fractured from 66.5' to 67.0', filled with sand and gravel, stained with iron-oxide (68') GNEISS, poorly weathered, very dark blue to gray, strong quartz banding with epidote, few hairline fractures (high angle)		~20% water recovery Very hard, slow drilling, good water return >70%	745 740 735 730	
Photo 20 of photo log											
65				HQ	4	21					
70				HQ	6	74	(74') As above; pink potassium feldspar pegmatites, nearly unfractured				Photo 27 of photo log
75				HQ	6	90					
80	(80.0') Boring Terminated										

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-5D/5S**
 Page: **1 of 4**

Drilling Start Date: 3/15/2017	Boring Depth (ft): 71	Well Depth (ft): (37-47) & (55-65)
Drilling End Date: 3/21/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: J. Chellberg	Top of Casing Elev. (ft): 807.04	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location (Y, X): 1241689.23, 2028113.72	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Air Knifed for Utility Clearance			
5										805
				SC	0		(7') No Recovery			800
10				ST	2		(10') Shelby Tube	PB-5 (10-12)		
							(12') CLAY (CL); few silt, medium plasticity, soft, moist, reddish yellow (7.5YR 7/8), SAPROLITE	PB-5 (12-13)		795
15				SC	9		(14.5') SILTY SAND (SM); few clay, medium dense, light brown (7.5YR 6/4), fine grained, poorly graded, SAPROLITE			
							(17') Becomes pink (7.5YR 8/4), laminated (undulating), dark layers	PB-5 (17-18)		790
20										

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-5D/5S**
 Page: **2 of 4**

Drilling Start Date: 3/15/2017	Boring Depth (ft): 71	Well Depth (ft): (37-47) & (55-65)
Drilling End Date: 3/21/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: J. Chellberg	Top of Casing Elev. (ft): 807.04	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location (Y, X): 1241689.23, 2028113.72	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
20							(20') CLAY (CL); few silt, medium plasticity, soft, moist, reddish yellow (7.5YR 6/8), non-uniform lamination, SAPROLITE			785
							(22.5') SAND (SP); few clay, medium dense, moist, pink (7.5YR 8/4), poorly graded, laminated, SAPROLITE	PB-5 (23-24)		
25				SC	12		(25') INTENSELY WEATHERED ROCK, pink (7.5YR 8/4), fine, dry, loose, intensely weathered rock fragments (fragile), laminated rock fragments	PB-5 (20-21) PB-5 (26-27)		780
30				SC	4		(32') Becomes brown (7.5YR 5/4)	PB-5 (31-32) PB-5 (32-33)		775
35				SC	7	0	(33') GNEISS (LONG ISLAND CREEK GNEISS), moderately weathered, massive, pinkish gray (7.5YR 6/2), very hard, fine to medium crystal size, weakly foliated, slightly fractured, with quartz, TOP OF ROCK			770
40										

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-5D/5S**
 Page: **3 of 4**

Drilling Start Date: 3/15/2017	Boring Depth (ft): 71	Well Depth (ft): (37-47) & (55-65)
Drilling End Date: 3/21/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: J. Chellberg	Top of Casing Elev. (ft): 807.04	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location (Y, X): 1241689.23, 2028113.72	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
40				HQ	1.8	71	(40') GNEISS (LONG ISLAND CREEK GNEISS), slightly weathered, massive, pinkish gray (7.5YR 6/2), fine, very hard, weakly foliated, moderately fractured, fractured at 41' and 41.5' (narrow, not healed, iron oxide staining, planar), several vertical joints		Sonic drilling ends, HQ coring begins	765
				HQ	2.5	0	(42') Becomes moderately weathered, intensely fractured			
45				HQ	2.5	57	(44.5') Becomes highly weathered and moderately fractured			
				HQ			(46') Becomes slightly weathered and fractured			760
				HQ	5	100	(47') Mostly mechanical break or breaks along joint, fresh			
50				HQ						755
				HQ	5	100				
55				HQ						750
				HQ	3	100	(57') Fresh, mechanical break			
60										

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-5D/5S**
 Page: **4 of 4**

Drilling Start Date: 3/15/2017	Boring Depth (ft): 71	Well Depth (ft): (37-47) & (55-65)
Drilling End Date: 3/21/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: J. Chellberg	Top of Casing Elev. (ft): 807.04	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location (Y, X): 1241689.23, 2028113.72	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)				
60				HQ	2	71	Photo 11 of photo log			
							(60') Becomes slightly weathered (weathering is near fracture), fracture zone from ~60.5' to 61' (narrow, not healed, iron oxide staining, planar, horizontal to high dip angle)			
				HQ	5	100	(62') Becomes fresh, tight fractures along joints (healed, clay staining, planar, horizontal to high angled), mostly mechanical breaks			745
65							(65') Reddish yellow (7.5YR 7/8), Becomes redding yellow (7.5YR 7/8)			
				HQ	4	100	(67') Reddish yellow (7.5YR 7/8), Becomes redding yellow (7.5YR 7/8), fresh, mechanical breaks along joints			740
70							(71.0') Boring Terminated			

NOTE:

BORING LOG
Boring No. **PB-6D/6S**
Page: **1 of 5**

Well Depth (ft):	(29-39) & (70-80)
Well Diameter (in):	1
Screen Slot (in):	0.01
Riser Material:	PVC
Screen Material:	PVC
Seal Material(s):	Bentonite
Filter Pack:	Sand Pack

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-6D/6S**
 Page: **2 of 5**

Drilling Start Date: 3/22/2017	Boring Depth (ft): 93	Well Depth (ft): (29-39) & (70-80)
Drilling End Date: 4/6/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Top of Casing Elev. PB-6D (ft): 811.90	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-6D (Y, X): 1240830.30, 2027196.10	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			Photo	Top of Casing Elev. PB-6S (ft): 812.07 Location PB-6S (Y, X): 1240830.36, 2027190.85	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)						
20				SC	5		Photo 4 of photo log		(20') Reddish yellow (7.5YR 8/6)	PB-6 (23-24)	Wet due to drilling water	790
									(21') PARTIALLY WEATHERED ROCK, moderately weathered, laminated, pink (7.5YR 8/3), fine, loose. hard rock fragments			
25									(25') INTENSELY WEATHERED ROCK, reddish yellow (7.5YR 8/6), fine, moist, loose, intensely weathered rock fragments (fragile)			
									(31') PARTIALLY WEATHERED ROCK, reddish yellow (7.5YR 8/6), fine, moist (could be drilling water), loose, hard rock fragments (moderately weathered, laminated)			
30									(34') Pink (7.5YR 8/3), dry			
				SC	8		Photo 5 of photo log		(35') Reddish yellow (7.5YR 8/6), bigger rock fragments	PB-6 (38-39)	Moist due to drilling water	775
35												
40												

NOTE:

BORING LOG
Boring No. **PB-6D/6S**
Page: **3 of 5**

Well Depth (ft):	(29-39) & (70-80)
Well Diameter (in):	1
Screen Slot (in):	0.01
Riser Material:	PVC
Screen Material:	PVC
Seal Material(s):	Bentonite
Filter Pack:	Sand Pack

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-6D/6S**
 Page: **4 of 5**

Drilling Start Date: 3/22/2017	Boring Depth (ft): 93	Well Depth (ft): (29-39) & (70-80)
Drilling End Date: 4/6/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Top of Casing Elev. PB-6D (ft): 811.90	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-6D (Y, X): 1240830.30, 2027196.10	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			Photo	Top of Casing Elev. PB-6S (ft): 812.07 Location PB-6S (Y, X): 1240830.36, 2027190.85	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)						
60				HQ	5	50			(58') As above, 58'-60.5' intensely fractured and moderately weathered fracture at 61.5' (continued)			750
65				HQ	5	100			(63') As above, high angle tight fractures along joints, fracture at 67.5', fresh			745
70				HQ	5	40			(68') As above, mechanical break along high angle joints		150 to 100 gallons of water returned	740
75				HQ	5	20		Photo 12 of photo log	(70') As above, fracture zone: green and iron oxide staining on fracture surface, moderately weahtered, gray (7.5YR 5/1)			735
									(73') As above, fracture zones from 73'-74.5' and 74.5'-78', green and iron oxide staining on fracture surface, highly weathered from 73'-74.5', red (2.5YR 5/8) and slightly weathered from 74.5'-78', gray (7.5 YR 5/1)		Water returned	
80									(78') As above, intensely fractured, slightly weathered, green staining on fracture surface, gray (7.5YR 5/1)			

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-6D/6S**
 Page: **5 of 5**

Drilling Start Date: 3/22/2017	Boring Depth (ft): 93	Well Depth (ft): (29-39) & (70-80)
Drilling End Date: 4/6/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 1
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Top of Casing Elev. PB-6D (ft): 811.90	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-6D (Y, X): 1240830.30, 2027196.10	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft msl)
				Sample Type	Recovery (ft)	RQD (%)					
80				HQ	5	50		(78') As above, intensely fractured, slightly weathered, green staining on fracture surface, gray (7.5YR 5/1)(continued)			730
85				HQ	5	72		(83') As above, slightly weathered and fractured, fractures at 83.7' and 86', gray (7.5YR 5/1)		Water returned (which could be from any of the fractures from 70'-88')	725
90				HQ	5	100		(88') As above, fresh, mechanical break along joints			720
(93.0') Boring Terminated											

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-7**
 Page: **1 of 9**

Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Air knifed for utility clearance			815
5										810
				SC	0		(7') No recovery			
10										805
				SC	3					800
15										
							(17') CLAY with silt (CL); some silt, medium plasticity, soft, moist, reddish yellow (7.5YR 6/8), foliation (angular rock fragments in a black layer near the bottom), SAPROLITE	PB-7 (18-19)		
20										

NOTE:

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **PB-7**
Page: **2 of 9**




Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
20							(17') CLAY with silt (CL); some silt, medium plasticity, soft, moist, reddish yellow (7.5YR 6/8), foliation (angular rock fragments in a black layer near the bottom), SAPROLITE(continued)	PB-7 (24-25)		795
25				SC	6.5					790
30				SC	7		(30') Becomes red (2.5YR 5/8)	PB-7 (29-30)		785
35				ST	2		(35') Angular fine gravel (quartz) in black layer at 49'	PB-7 (34-35)		780
40				SC	3			PB-7 (35-37)		

NOTE:

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. PB-7 Page: 3 of 9
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Drilling Start Date: 3/23/2017 Drilling End Date: 3/31/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Terra Sonic Driller Name: A. Blackwood Logged By: N. Tilahun and J. Griffin	Boring Depth (ft): 167 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 816.51 Location (Y, X): 1240837.08, 2026768.14	Well Depth (ft): (65-75) Well Diameter (in): 2 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: Sand Pack
--	---	--

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)	Photo				
40				SC	10			(35') Angular fine gravel (quartz) in black layer at 49'(continued)	PB-7 (44-45)		775
45											770
50											
55				SC	12			(51') As above, abundant white banding	PB-7 (54-55)		765
60											760

NOTE:

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **PB-7**
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Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
60							(51') As above, abundant white banding(continued)			755
65				SC	11		(65') Coarse angular cobbles (quartz?)	PB-7 (64-65)		750
70										745
75				SC	10		(75') Becomes light olive brown (2.5Y 5/3)	PB-7 (74-75)		740
80										

NOTE:

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **PB-7**
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Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
80							(80') Becomes brownish yellow (10YR 6/8)			735
								PB-7 (83-84)		
								PB-7 (84-85)		
85				SC	13.5		(86') Fine and coarse gravel (quartz?) layer, angular, up to 2" diameter	PB-7 (86-87)		730
90							(90') CLAY with intact rock fragment (CL); olive (5Y 4/2), easily broken by hand, some fragments cannot be broken by hand, INTENSELY WEATHERED ROCK	PB-7 (90-91)		725
95								PB-7 (94-95)	Hard drilling, core barrel is advancing very slowly	720
100										

NOTE:

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **PB-7**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic/HQ Rock Coring**
Drilling Equipment: **Terra Sonic**
Driller Name: **A. Blackwood**
Logged By: **N. Tilahun and J. Griffin**

Boring Depth (ft): **167**
Boring Diameter (in): **6" x 4"**
Sampling Method(s): **ST, SC, HQ**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Ground Surface Elev. (ft): **816.51**
Location (Y, X): **1240837.08, 2026768.14**

Well Depth (ft): **(65-75)**
Well Diameter (in): **2**
Screen Slot (in): **0.01**
Riser Material: **PVC**
Screen Material: **PVC**
Seal Material(s): **Bentonite**
Filter Pack: **Sand Pack**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
100				SC	11.5		(100') PARTIALLY WEATHERED ROCK, slightly weathered, gray (7.5YR 5/1), fine to coarse, moist, thinly to thickly bedded, loose, hard rock fragments (abundant mica, some grains of garnet and quartz)	PB-7 (104-105)	Hard drilling	715
105							(104') Becomes reddish yellow (7.5YR 6/8)			710
110										705
115							(115') Becomes gray (7.5YR 5/1)			700
120							(118') Becomes pinkish gray (7.5YR 6/2), dry			

NOTE:



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BORING LOG
 Boring No. **PB-7**
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Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
120							(118') Becomes pinkish gray (7.5YR 6/2), dry(<i>continued</i>)			
							(121') No Recovery			695
							(122') Becomes gray (7.5YR 5/1), moist			
125				SC	9			PB-7 (124-125)	Hard drilling	
								PB-7 (127-128)		690
							(128.5') Becomes pinkish gray (7.5YR 6/2), dry	PB-7 (129-130)		
130							(130') Becomes pinkish gray (7.5YR 5/1), moist, abundant platy rock fragments (schist), some rock fragments contain large grains of quartz and have irregular shape (non-platy)			685
135				SC	6				Hard drilling	680
								PB-7 (137-138)		
140										

NOTE:



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BORING LOG
 Boring No. **PB-7**
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Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
140				SC	3		(140') SCHIST, thinly to thickly bedded, gray (7.5YR 5/1), fine to coarse, very hard, fresh, weak bedding planes and high angle joints, some quartz banding, TOP OF ROCK		Hard drilling	675
145				HQ	4	100	(143') SCHIST, thinly to thickly bedded, gray (7.5YR 5/1), fine to coarse, very hard, fresh, unfractured, mechanical breaks along high angled joints, few quartz banding, some coarse quartz grains, abundant mica		Sonic drilling ends at 143' (3/29/2017), HQ rock coring begins at 143' (3/30/2017)	670
150				HQ	5.5	100				665
155				HQ	5	100				660
160										

NOTE:



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BORING LOG
 Boring No. **PB-7**
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Drilling Start Date: 3/23/2017	Boring Depth (ft): 167	Well Depth (ft): (65-75)
Drilling End Date: 3/31/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): 2
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: A. Blackwood	Ground Surface Elev. (ft): 816.51	Seal Material(s): Bentonite
Logged By: N. Tilahun and J. Griffin	Location (Y, X): 1240837.08, 2026768.14	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)	
				Sample Type	Recovery (ft)	RQD (%)					Photo
160			HQ	5	100	of photo log	(143') SCHIST, thinly to thickly bedded, gray (7.5YR 5/1), fine to coarse, very hard, fresh, unfractured, mechanical breaks along high angled joints, few quartz banding, some coarse quartz grains, abundant mica(continued)			655	
165			HQ	4.5	100					650	
(167.0') Boring Terminated											

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **PB-8D/I/S**
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Drilling Start Date: 4/12/2017	Boring Depth (ft): 147	Well Depth (ft): (45-55) (75-85) (121-131)
Drilling End Date: 4/20/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: M. Hanson and J. Triepke	Ground Surface Elev. PB-8D (ft): 847.24	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-8D (Y, X): 1241128.67, 2026529.99	Filter Pack: Sand Pack




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Topsoil; FILL			
5				SC	10		(2') CLAY with silt (CL); some silt, abundant mica, medium plasticity, soft, dry, reddish yellow (7.5YR 6/8), foliation, SAPROLITE	PB-8 (4-5)		845
10							(7') SANDY SILT (ML); abundant mica, non plastic, loose, dry, reddish yellow (7.5YR 8/6), mostly silt, foliation, rock fragments of mica (fragile), INTENSELY WEATHERED ROCK	PB-8 (8-9)		840
15				SC	10			PB-8 (14-15)		835
20								PB-8 (19-20)		830

NOTE:

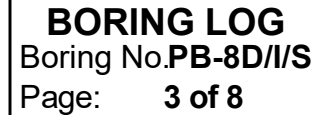
Easting and Northing in NAD 83. Elevation in NAVD 88.

 <p>engineers scientists innovators</p>	<p>Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116</p>	<p>BORING LOG Boring No. PB-8D/I/S Page: 2 of 8</p>
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Drilling Start Date: 4/12/2017 Drilling End Date: 4/20/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Terra Sonic Driller Name: M. Hanson and J. Triepke Logged By: N. Tilahun	Boring Depth (ft): 147 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. PB-8D (ft): 847.24 Location PB-8D (Y, X): 1241128.67, 2026529.99	Well Depth (ft): (45-55) (75-85) (121-131) Well Diameter (in): N/A Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: Sand Pack
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
20				SC	10		(19') CLAY with silt (CL); trace fine to coarse gravel of quartz, some silt, low plasticity, soft, dry, brown (7.5YR 5/4), foliation, SAPROLITE (20') CLAY with silt (CL); some silt, abundant mica, medium plasticity, soft, dry, brown (7.5YR 5/4), foliation, SAPROLITE (26') Becomes reddish yellow (7.5YR 8/6)	PB-8 (24-25)		825
25										
30				SC	8			PB-8 (34-35)		815
40										810

NOTE:



DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)	Photo				
40				SC	12		Photo 6 of photo log	(40') CLAY (CL); some fine to coarse gravel, some mica, medium plasticity, soft, dry, brown (7.5YR 5/4)	PB-8 (44-45)		805
								(42') Hard, gray (7.5YR 5/1), angular			800
45								(45') CLAY with silt (CL); some silt, abundant mica, low plasticity, soft, dry, gray (7.5YR 6/1), foliation			800
				SC	8						795
50											
55				SC	10		Photo 7 of photo log	(58') CLAY with silt (CL); some silt, abundant mica, low plasticity, soft, dry, gray (7.5YR 6/1), fragile, mica rock fragments, INTENSELY WEATHERED ROCK	PB-8 (59-60)		790
60						(58.9') Becomes trace fine to coarse sand, moist					

NOTE:



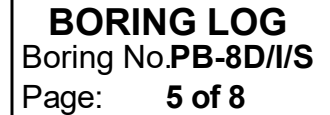
Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-8D/I/S**
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Drilling Start Date: 4/12/2017	Boring Depth (ft): 147	Well Depth (ft): (45-55) (75-85) (121-131)
Drilling End Date: 4/20/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: M. Hanson and J. Triepke	Ground Surface Elev. PB-8D (ft): 847.24	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-8D (Y, X): 1241128.67, 2026529.99	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
60							(60') Becomes dry			
				SC	10.5		(64') Becomes slightly hard, some rock fragments of mica, fine to coarse grained			785
65							(65') Becomes wet, driller saw water dripping as he pulled out sample	PB-8 (66-67)		
				SC	4.5		(67') Becomes wet, medium plasticity			780
70							(68.5') Becomes medium hard, some rock fragments of mica, fine to coarse grained, dry, low plasticity			
				SC	2		(72') No recovery			775
75										770
							(78') Becomes wet, medium plasticity	PB-8 (79-80)		
80							(79.5') Becomes dry			

NOTE:



Drilling Start Date:	4/12/2017	Boring Depth (ft):	147	Well Depth (ft):	(45-55) (75-85) (121-131)
Drilling End Date:	4/20/2017	Boring Diameter (in):	6" x 4"	Well Diameter (in):	N/A
Drilling Company:	Cascade	Sampling Method(s):	ST, SC, HQ	Screen Slot (in):	0.01
Drilling Method:	Sonic/HQ Rock Coring	DTW During Drilling (ft):	--	Riser Material:	PVC
Drilling Equipment:	Terra Sonic	DTW After Drilling (ft):	--	Screen Material:	PVC
Driller Name:	M. Hanson and J. Triepke	Ground Surface Elev. PB-8D (ft):	847.24	Seal Material(s):	Bentonite
Logged By:	N. Tilahun	Location PB-8D (Y, X):	1241128.67, 2026529.99	Filter Pack:	Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)	
				Sample Type	Recovery (ft)	RQD (%)					Photo
80				9			Photo 11 of photo log	(80') No recovery (81') Becomes dry (87') Becomes dry, reddish yellow (7.5YR 8/6), low plasticity (92') Becomes moist, light brown (7.5YR 6/4), medium plasticity (96') Becomes moist, gray (7.5YR 5/1), low plasticity (99') Becomes dry	PB-8 (89-90)		<div><div>765</div><div>760</div><div>755</div><div>750</div></div>
85											
90											
95											
100											

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **PB-8D/I/S**
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Drilling Start Date: 4/12/2017	Boring Depth (ft): 147	Well Depth (ft): (45-55) (75-85) (121-131)
Drilling End Date: 4/20/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: M. Hanson and J. Triepke	Ground Surface Elev. PB-8D (ft): 847.24	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-8D (Y, X): 1241128.67, 2026529.99	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
100							(100') No recovery			
105				SC	8		(102') Mica SCHIST, gray (7.5YR 5/1), highly fractured rock, rounded, fine to coarse grain, TOP OF ROCK		Broken due to drilling	745
110							(108') Bigger rock fragments		Too hard to push Shelby Tube from 108' to 110'	740
115				SC	8.5		(111.5') Mica SCHIST, thinly to thickly bedded, gray (7.5YR 5/1), fine to medium, medium hard, fresh, platy rock fragments, slightly fractured (pyrite staining on fracture surfaces), some quartz grains			735
							(115') Irregular shaped (not platy) rock fragments			
120							(117') As above, GNEISS, massive bedding, banded, foliation, hard			730

NOTE:

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**


BORING LOG
 Boring No. **PB-8D/I/S**
 Page: **8 of 8**

Drilling Start Date: 4/12/2017	Boring Depth (ft): 147	Well Depth (ft): (45-55) (75-85) (121-131)
Drilling End Date: 4/20/2017	Boring Diameter (in): 6" x 4"	Well Diameter (in): N/A
Drilling Company: Cascade	Sampling Method(s): ST, SC, HQ	Screen Slot (in): 0.01
Drilling Method: Sonic/HQ Rock Coring	DTW During Drilling (ft): --	Riser Material: PVC
Drilling Equipment: Terra Sonic	DTW After Drilling (ft): --	Screen Material: PVC
Driller Name: M. Hanson and J. Triepke	Ground Surface Elev. PB-8D (ft): 847.24	Seal Material(s): Bentonite
Logged By: N. Tilahun	Location PB-8D (Y, X): 1241128.67, 2026529.99	Filter Pack: Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
140				HQ	5	100	<p>(137') As above, fracture at 138.5' and 140', thin white banding, ~4" thick quartz layer near top (137')(continued)</p> <p>(142') As above, tight fractures at 143.5' and 144', thin white banding</p>			705
145										
(147.0') Boring Terminated										

NOTE:

Easting and Northing in NAD 83. Elevation in NAVD 88.

		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-9 Page: 1 of 4	
Drilling Start Date: 4/13/2017 Drilling End Date: 4/19/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Terra Sonic Driller Name: M. Hanson and J. Triepke Logged By: N. Tilahun		Boring Depth (ft): 75 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 820.49 Location (Y, X): 1241490.28, 2026504.40		Well Depth (ft): (60-70) Well Diameter (in): 2 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: Sand Pack	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
0							(0') Topsoil; FILL			820
5				SC	9		(3') CLAY with silt (CL); some silt, low plasticity, soft, moist, brown (7.5YR 5/4), SAPROLITE	PB-9 (4-5)		815
							(7") SILT with fine sand (ML); some fine sand, loose, moist, light brown (7.5YR 6/3), fragile mica rock fragments, INTENSELY WEATHERED ROCK	PB-9 (7-8)		
10							(9') SILT with clay (ML); some clay, some rock fragments of mica (small to large, hard, irregular to platy), low plasticity, soft, moist, light brown (7.5YR 6/3)			810
15				SC	10					805
							(17') Becomes gray (7.5YR 6/1), platy rock fragments	PB-9 (17-18)		
20				SC	1		(18') Becomes gray (7.5YR 6/1)			

Photo 1 of photo log

Photo 2 of photo log

NOTE:




Page: 2 of 4

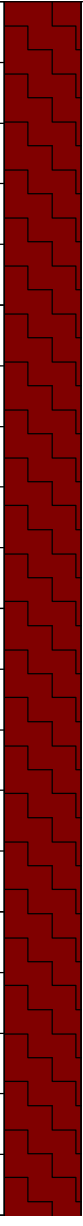
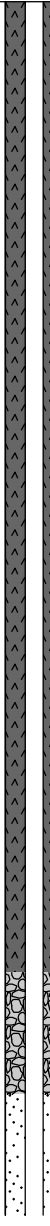

Drilling Start Date:	4/13/2017	Boring Depth (ft):	75	Well Depth (ft):	(60-70)
Drilling End Date:	4/19/2017	Boring Diameter (in):	6" x 4"	Well Diameter (in):	2
Drilling Company:	Cascade	Sampling Method(s):	ST, SC, HQ	Screen Slot (in):	0.01
Drilling Method:	Sonic/HQ Rock Coring	DTW During Drilling (ft):	--	Riser Material:	PVC
Drilling Equipment:	Terra Sonic	DTW After Drilling (ft):	--	Screen Material:	PVC
Driller Name:	M. Hanson and J. Triepke	Ground Surface Elev. (ft):	820.49	Seal Material(s):	Bentonite
Logged By:	N. Tilahun	Location (Y, X):	1241490.28, 2026504.40	Filter Pack:	Sand Pack

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)		
				Sample Type	Recovery (ft)	RQD (%)					Photo	
20				SC	8		Photo 4 of photo log	(19') MICA SCHIST, thinly to thickly bedded, gray (7.5YR 5/1), fine to medium, hard, fresh, platy rock fragments, abundant mica grains and pyrite, few bands of quartz layer, TOP OF ROCK(continued)			800	
25											795	
30				HQ	2							790
35				HQ	5	100						785
40				HQ	5	70						
						</						

NOTE:


Easting and Northing in NAD 83. Elevation in NAVD 88.

		Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116		BORING LOG Boring No. PB-9 Page: 3 of 4	
Drilling Start Date: 4/13/2017 Drilling End Date: 4/19/2017 Drilling Company: Cascade Drilling Method: Sonic/HQ Rock Coring Drilling Equipment: Terra Sonic Driller Name: M. Hanson and J. Triepke Logged By: N. Tilahun		Boring Depth (ft): 75 Boring Diameter (in): 6" x 4" Sampling Method(s): ST, SC, HQ DTW During Drilling (ft): -- DTW After Drilling (ft): -- Ground Surface Elev. (ft): 820.49 Location (Y, X): 1241490.28, 2026504.40		Well Depth (ft): (60-70) Well Diameter (in): 2 Screen Slot (in): 0.01 Riser Material: PVC Screen Material: PVC Seal Material(s): Bentonite Filter Pack: Sand Pack	

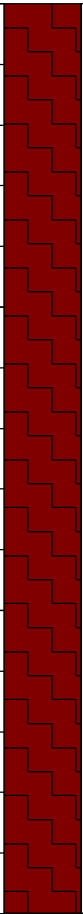
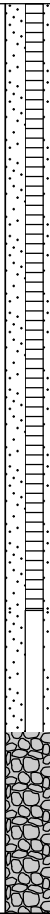

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)	
				Sample Type	Recovery (ft)	RQD (%)					
40				HQ	5	100	(36') As above, fresh, mechanical break along tight fractures on joints(<i>continued</i>) (41') As above, fresh, mechanical break along tight fractures or joints		Fast drilling (1 ft/min)	780	
45				HQ	5	100	(46') As above, fresh, mechanical break along tight fractures or joints			775	
50				HQ	5	100	(48.6') Thick quartz layer from 48.6'-49', white			770	
55				HQ	5	100	(51') As above, fresh mechanical break along tight fractures or joints			0.3 ft/min drilling	765
60				HQ	5	93	(56') As above, fresh, fractures at 57.5' and 59.1' (slight clay and pyrite staining, narrow, parrallel to bedding plane, planar, not healed), mechanical breaks along bedding planes			0.3 ft/min drilling	

NOTE:

Easting and Northing in NAD 83. Elevation in NAVD 88.

		Client: Southern Company Services		BORING LOG	
Project: Plant Wansley Pre-Design Investigation		Boring No. PB-9		Page: 4 of 4	
Address: 1371 Liberty Church Rd. Carrollton, GA 30116					

Drilling Start Date: 4/13/2017		Boring Depth (ft): 75		Well Depth (ft): (60-70)	
Drilling End Date: 4/19/2017		Boring Diameter (in): 6" x 4"		Well Diameter (in): 2	
Drilling Company: Cascade		Sampling Method(s): ST, SC, HQ		Screen Slot (in): 0.01	
Drilling Method: Sonic/HQ Rock Coring		DTW During Drilling (ft): --		Riser Material: PVC	
Drilling Equipment: Terra Sonic		DTW After Drilling (ft): --		Screen Material: PVC	
Driller Name: M. Hanson and J. Triepke		Ground Surface Elev. (ft): 820.49		Seal Material(s): Bentonite	
Logged By: N. Tilahun		Location (Y, X): 1241490.28, 2026504.40		Filter Pack: Sand Pack	

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	WELL COMPLETION	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft NAVD 88)
				Sample Type	Recovery (ft)	RQD (%)				
60				HQ	4	40	<p>(61') As above, fresh, moderately fractured, slight pyrite and clay staining, clay fillings might be washed away by drilling water, fractures have irregular surface (planar to undulating), rock fragments don't fit well and only 4' of rock recovered which could imply soft fillings (clay) existed between rock fragments and washed out</p> <p>(66') Same as above, fresh, intensely fractured, soft near fractures</p> <p>(67.5') Same as above, fresh, mechanical break along bedding planes and tight fractures</p> <p>(70') Same as above, fresh, mechanical break along bedding planes and tight fractures</p>		Drilling water is muddy	760
						755				
65										750
70										750
75				HQ	5	100				
(75.0') Boring Terminated										

NOTE:



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-1**
 Page: **1 of 6**

Drilling Start Date: **4/27/2017**
 Drilling End Date: **4/27/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **110**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.8**
 Location (Y, X): **1242218, 2026683.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

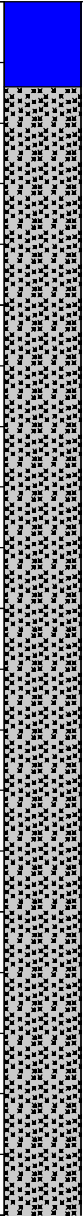


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-1**
Page: **2 of 6**

Drilling Start Date: **4/27/2017**
Drilling End Date: **4/27/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1242218, 2026683.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20			CB	3		(3.3') Water (ash pond) (continued)	S-1 (29-30)	Top of ash determined using weighted tag line. Photo represents recovered sample between 22-24 ft interval.	775
25						(21.4') Top of Ash, dark gray, very fine grained			
30									770
35			CB	4					765
40							S-1 (39-40)		760

NOTE:

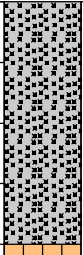


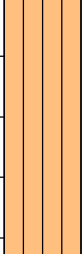





1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-1**
Page: **3 of 6**

Drilling Start Date: **4/27/2017**
Drilling End Date: **4/27/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1242218, 2026683.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40			CB	10		(21.4') Top of Ash, dark gray, very fine grained (continued)	S-1 (43-44)	Photo represents recovered sample between 47-49 ft interval.	755
45						(44') SILT with minor clay (ML); fine mica, non plastic, dry, olive (5Y 5/3), fine grained, weak relict rock fabric, coarse mica from 51-52' and 59-60', SAPROLITE (44.5') White micaceous (fine) silt lens underlain by ~2" of coarse angular gravel	S-1 (46-47)		750
50			CB	10		(51') Coarse mica from 51' to 52' (52') Becomes brownish yellow (10YR 6/8)	S-1 (54-55)		745
55						(59') As above with sparse angular gravel, olive (5Y 5/3), coarse mica from 59' to 60'			740
60			CB	10					

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-1**
Page: **4 of 6**

Boring Depth (ft):	110
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.8
Location (Y, X):	1242218, 2026683.9

NOTE:


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-1**
Page: **5 of 6**

Drilling Start Date: **4/27/2017**
Drilling End Date: **4/27/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1242218, 2026683.9**




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80			CB	6		(80') METAMORPHIC ROCK (GARNET SCHIST), greenish black (10Y 2.5/1), hard, highly fractured, abundant iron oxide staining on fracture faces, weathered; PARTIALLY WEATHERED ROCK		Photo represents recovered sample between 84-85 ft interval.	715
85						(87') Greenish gray (10Y 6/1), some rock fragments that cannot be broken by hand in silt matrix, PARTIALLY WEATHERED ROCK			710
90			CB	5		(90') METAMORPHIC ROCK (GARNET SCHIST), greenish black (10Y 2.5/1), large porphyroblastic garnets (dark red), abundant pyrite, high angle fractures along foliation, iron oxide staining on fracture faces, weathered			705
95									700
100									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-1 Page: 6 of 6
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Drilling Start Date: 4/27/2017 Drilling End Date: 4/27/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 110 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.8 Location (Y, X): 1242218, 2026683.9
--	---

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100			CB	5		(90') METAMORPHIC ROCK (GARNET SCHIST), greenish black (10Y 2.5/1), large porphyroblastic garnets (dark red), abundant pyrite, high angle fractures along foliation, iron oxide staining on fracutre faces, weathered (continued)			Photo represents recovered sample between 108-110 ft interval.	695
105										690
										685
110										680

(110.0') Boring Terminated

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-2**
 Page: **1 of 5**

Drilling Start Date: **4/24/2017**
 Drilling End Date: **4/25/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **85**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.55**
 Location (Y, X): **1242377.9, 2026690.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-2**
Page: **2 of 5**

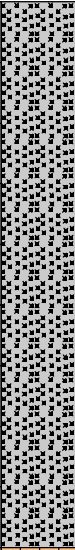


Boring Depth (ft):	85
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.55
Location (Y, X):	1242377.9, 2026690.3

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-2 Page: 3 of 5
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Drilling Start Date: 4/24/2017 Drilling End Date: 4/25/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 85 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.55 Location (Y, X): 1242377.9, 2026690.3
--	---

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT	Sample Type	Recovery (ft)	Blow Counts	Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
40								(24.3') Top of Ash, dark gray, very fine grained (<i>continued</i>)			755
45				CB	8				S-2 (46-47)	Photo represents recovered sample between 47'-49' interval.	
50								(49') SILT with minor clay (ML); and fine rounded gravel (some garnets), non plastic, soft, moist, brownish yellow (10YR 6/6), micaceous (fine), homogeneous texture, SAPROLITE	S-2 (49-50)	Photo represents recovered sample between 51'-53' interval.	750
55				CB	10			(54') SILT with minor clay (ML); and fine to medium mica, dark gray (10YR 4/1), relict rock fabric (schistose texture), large (up to 1") garnets (rounded and dark red) (55') Large sub-angular cobble	S-2 (54-55)		745
60								(58') SILT with minor clay (ML); greenish gray (10G 5/1), homogeneous texture, non-micaceous, large sub-angular gravel (quartz) at 58'	S-2 (59-60)		740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-2**
Page: **4 of 5**

Drilling Start Date: **4/24/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **85**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242377.9, 2026690.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(60') Intermixed with silt, minor clay and sparse fine sand (fines are primary component of this interval), cobbles consist of highly weathered mica, garnet SCHIST. Cobbles are white (7.5R8/1) at 60' and 70', quartz band (1" thick) at 60', silica rich, sparse fine weathered garnets; PARTIALLY WEATHERED ROCK			
65			CB	9		(65') Cobbles are greenish black (10GY 2.5/1) from 65-68'	S-2 (64-65)		
							S-2 (67-68)	Photo represents recovered sample between 66'-68' interval.	735
70						(70') SCHIST, highly weathered, white (7.5YR 8/1), (near complete dissolution of mica and garnets), fractured along foliation, silica-rich, sparse garnets			730
75			CB	6				Outer Casing set at 70'	725
								Photo represents recovered sample between 78'-80' interval.	
80									720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-2**
 Page: **5 of 5**

Drilling Start Date: **4/24/2017**
 Drilling End Date: **4/25/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **85**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.55**
 Location (Y, X): **1242377.9, 2026690.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80			CB	2		(80') As above, iron oxide staining along fracture faces			715
85						(85.0') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-3**
 Page: **1 of 7**

Drilling Start Date: **4/21/2017**
 Drilling End Date: **4/24/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.55**
 Location (Y, X): **1242720.3, 2026787.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-3**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/24/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242720.3, 2026787.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3.3') Water (ash pond) (continued)			
25			CB	2		(24') Top of Ash, SILT with very fine sand (ML-SM); non plastic, very soft, saturated, dark gray		Top of ash determined using weighted tag line. Photo represents recovered sample between 24'-26' interval.	775
30									770
35			CB	3					765
40							S-3 (38-39)		760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-3**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/24/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242720.3, 2026787.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40									
						(24') Top of Ash, SILT with very fine sand (ML-SM); non plastic, very soft, saturated, dark gray <i>(continued)</i>		Photo represents recovered sample between 40'-42' interval.	
45			CB	1					755
50									750
55			CB	1					745
60						(58') CLAY (CL); non plastic, very soft, saturated, very dark gray, silty, FLY ASH			740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-3**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/24/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242720.3, 2026787.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(58') CLAY (CL); non plastic, very soft, saturated, very dark gray, silty, FLY ASH <i>(continued)</i>	S-3 (62-63)	Photo represents recovered sample between 60'-80' interval.	
65			CB	4					735
70									730
75			CB	3					725
80									720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-3**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/24/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242720.3, 2026787.5**



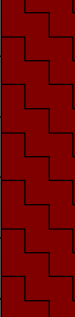

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(80') Becomes very loose, with silt, very fine grained, saturated, FLY ASH			
85			CB	5		(85') Soft soupy mix of FLY ASH (above) and native soil (below)			715
						(87') CLAYEY SAND (SC); soft, strong brown, fine grained, organic rich, roots, ALLUVIUM	S-3 (87-88)		
						(89') CLAYEY SAND (SC); mottled very dark gray and pale greenish gray, fine grained, ALLUVIUM	S-3 (89-90)		710
90			CB	5		(90.5') Pale gray, hard, dry, decomposed rock (quartzite), PARTIALLY WEATHERED ROCK	S-3 (92-93)	Photo represents recovered sample between 92'-94' interval. Driller reports hard drilling, "feels like rock"	
						(93.5') CLAYEY SAND with roots (SC); with rounded gravel, soft, wet, very dark brown, ALLUVIUM			705
95						(94.5') SANDY SILT (ML); moderately stiff, dry, red brown, ALLUVIUM	S-3 (95-96)		
						(95') SAND with angular schist gravel (SW); loose, wet, light brown, fine to medium grained, ALLUVIUM			
						(96.5') SANDY SILT (ML); stiff, dry, light olive brown, relict rock fabric, SAPROLITE	S-3 (97-98)	Photo represents recovered sample between 95'-97' interval. Very hard drilling	
100			CB	5		(98') PARTIALLY WEATHERED ROCK, pale yellow to gray, very hard, dry, foliation visible, decomposed rock; SCHIST			700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-3 Page: 6 of 7
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Drilling Start Date: 4/21/2017 Drilling End Date: 4/24/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski and J. Griffin	Boring Depth (ft): 140 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.55 Location (Y, X): 1242720.3, 2026787.5
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT	Sample Type	Recovery (ft)	Blow Counts	Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
100				CB	10			(100') PARTIALLY WEATHERED ROCK, Same as above, decomposed rock, cobble sized fragments of rock, very hard, dry, quartzite; PARTIALLY WEATHERED ROCK		Photo represents recovered sample between 99'-100' interval.	695
105								(103') Gravelly-sandy zone, wet			
								(103.5') PARTIALLY WEATHERED ROCK, Same as above (at 100'), dry quartzite; PARTIALLY WEATHERED ROCK			
								(107') Becoming dry pulverized rock			
110								(111') QUARTZITE, yellow to brown, fine to medium, intensely fractured, weathered surfaces with abundant iron-oxide staining, metamorphic fabric present, abundant sand filling of fractures, trace mica		Photo represents recovered sample between 110'-113' interval.	690
115				CB	8						685
120											680

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-3**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/24/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **140**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.55**
Location (Y, X): **1242720.3, 2026787.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120									
125			CB	8		(120') METAQUARTZITE, intensely fractured, granular (fine to medium), very hard, metamorphic fabric (faint foliation), iron-oxide on fracture surfaces, trace mica, few very small garnets	S-3 (123-124)	Photo represents recovered sample between 123'-126' interval.	675
130									670
135			CB	5				Stopped drilling for day (4/21/2017)	665
140									660

(140.0') Boring Terminated

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.55 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-4**
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Drilling Start Date: **4/19/2017**
 Drilling End Date: **4/20/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

Boring Depth (ft): **160**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.3**
 Location (Y, X): **1242966.6, 2026848.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-4**
Page: **2 of 8**

Drilling Start Date: **4/19/2017**
Drilling End Date: **4/20/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **160**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.3**
Location (Y, X): **1242966.6, 2026848.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3.3') Water (ash pond) (continued)			
25									775
30									770
35						(32.7') Top of Ash, SANDY SILT (SM-ML); non plastic, very loose, saturated, gray, very fine grained, poorly graded		Top of ash determined using weighted tag line. Photo represents recovered sample between 33'-40' interval.	765
40			CB	1					760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-4**
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Drilling Start Date: **4/19/2017**
Drilling End Date: **4/20/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **160**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.3**
Location (Y, X): **1242966.6, 2026848.2**

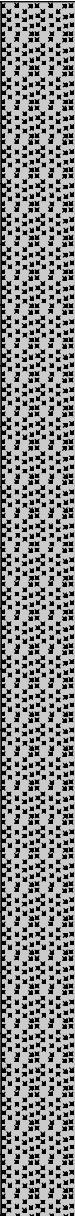


DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(32.7') Top of Ash, SANDY SILT (SM-ML); non plastic, very loose, saturated, gray, very fine grained, poorly graded (continued)	S-4 (42-43)	Photo represents recovered sample between 40'-50' interval.	
45									755
50			CB	5		(49.5') SILTY SAND (SM); very loose, saturated, dark gray to red, well graded, BOTTOM ASH			750
55			CB	4		(51') SILT (ML); trace clay, non plastic, very soft, gray, FLY ASH		Photo represents recovered sample between 50'-60' interval.	745
60									740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.


	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-4 Page: 4 of 8
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Drilling Start Date: 4/19/2017 Drilling End Date: 4/20/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski	Boring Depth (ft): 160 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.3 Location (Y, X): 1242966.6, 2026848.2
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT		MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo		
60			CB	4			(60') Becomes more clayey with depth, FLY ASH	735
65							Photo represents recovered sample between 60'-70' interval.	
70								730
75			CB	3			S-4 (72-73)	725
80							Photo represents recovered sample between 70'-80' interval.	720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-4 Page: 5 of 8
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Drilling Start Date: 4/19/2017 Drilling End Date: 4/20/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski	Boring Depth (ft): 160 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.3 Location (Y, X): 1242966.6, 2026848.2
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo				
80			CB	6.5			(60') Becomes more clayey with depth, FLY ASH (continued)	S-4 (86-87)	Photo represents recovered sample between 90'-92' interval.	715
85							(84') ORGANIC CLAY (CL); non plastic, very soft, wet, black (84.5') VERY CLAYEY SAND (SC); soft, olive brown, fine grained, poorly graded, organic material, roots throughout, ALLUVIUM			
90							(91') CLAYEY SAND (SC); stiff, wet, pale blue gray, ALLUVIUM			
95							(93') SANDY SILT (ML-SM); stiff, moist, mottled yellow brown to gray			
100							(96.5') SILTY GRAVEL (GP-GM); wet, gray to brown, BLASTED ROCK (97.5') SILTY SAND (SM); stiff, dry, brown to gray, fine grained, relict gneissic structure, SAPROLITE			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-4**
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Drilling Start Date: **4/19/2017**
Drilling End Date: **4/20/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **160**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.3**
Location (Y, X): **1242966.6, 2026848.2**

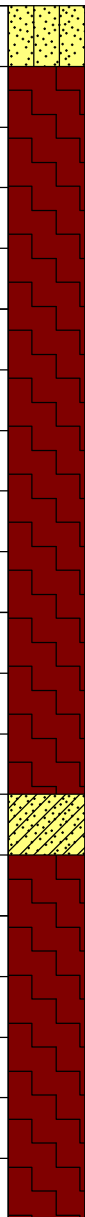

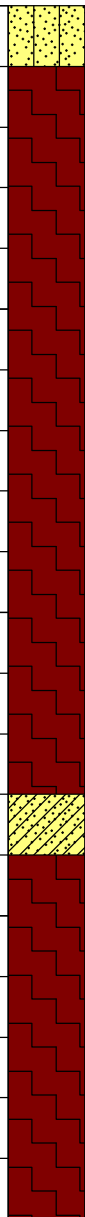

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100						(100') Becomes very gravelly, SAPROLITE	S-4 (101-102)		
						(103') Mottled dark gray to brown, angular gravel bound in clay, (quartzite), PARTIALLY WEATHERED ROCK		Driller reports much harder drilling	695
105			CB	10		(103.5') QUARTZITE, intensely weathered, pale gray to blue to pink, very hard, dry, pulverized by drilling, PARTIALLY WEATHERED ROCK		Photo represents recovered sample between 106'-108' interval.	
						(106') Dry, SAPROLITE			
						(107.5') QUARTZITE, intensely weathered, dry, PARTIALLY WEATHERED ROCK	S-4 (109-110)		690
110									
115			CB	10		(115.5') QUARTZITE, rock			685
						(116') SAND with silt (SM-SP); very hard, dry, pale yellow brown to gray, fine grained, relict rock fabric, SAPROLITE	S-4 (117-118)	Photo represents recovered sample between 117'-120' interval.	
120									680

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-4 Page: 7 of 8
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Drilling Start Date: 4/19/2017 Drilling End Date: 4/20/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski	Boring Depth (ft): 160 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.3 Location (Y, X): 1242966.6, 2026848.2
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)	
			Sample Type	Recovery (ft)	Blow Counts					Photo
120			CB	9		(116') SAND with silt (SM-SP); very hard, dry, pale yellow brown to gray, fine grained, relict rock fabric, SAPROLITE (continued) (121') QUARTZITE, pale yellow to brown, fine, intensely fractured, metamorphic fabric, oxide staining on surfaces (123') DECOMPOSED QUARTZITE, dry, PARTIALLY WEATHERED ROCK	S-4 (133-134)	Photo represents recovered sample between 125'-130' interval.	675	
125		670								
130										
135						(129') QUARTZITE, steep fractures (>45°), yellow brown, metamorphic fabric, mica, iron oxide staining along surfaces, fine to medium quartz grains (133') CLAYEY SAND (SC); very loose, saturated, pale yellow to brown, fine to coarse grained (134') Interbedded lenses of quartzite and clayey sand (SC), about 1' thick, sand zones are very loose, likely sand filled large fractures				665
140										660

NOTE:





1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-4**
Page: **8 of 8**

Drilling Start Date: **4/19/2017**
Drilling End Date: **4/20/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **160**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.3**
Location (Y, X): **1242966.6, 2026848.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140			CB	7				Driller reports harder drilling, sandy return water Photo represents recovered sample between 140'-143' interval.	655
145						(140') SAND (SW); loose, saturated, light reddish brown, fine to coarse grained, quartz (141') QUARTZITE, steep fractures, reddish brown, intensely to moderately fractured, iron oxide staining throughout mica, fine to medium quartz grains			
								Photo represents recovered sample between 150'-154' interval.	650
150						(147') Sandy-gravelly zone, weathered quartzite fracture zone			
155			CB	6				Photo represents recovered sample between 158'-160' interval.	645
160						(157') DECOMPOSED QUARTZITE, dark blue gray, wet, rock and clay, PARTIALLY WEATHERED ROCK (157.5') QUARTZITE, massive, dark blue to gray, dry, very fine grained, intensely fractured			
(160.0') Boring Terminated									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.3 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
 Drilling End Date: **4/18/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.8**
 Location (Y, X): **1243209.6, 2026961.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Easting and Northing in NAD 83. Elevation in NAVD 88. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-5**
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Boring Depth (ft):	150
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.8
Location (Y, X):	1243209.6, 2026961.3

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243209.6, 2026961.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(39.9') Top of Ash, fine grained (continued)			
45			CB	0				Top of ash determined using weighted tag line.	755
50									750
55			CB	5					745
60							S-5 (59-60)	Photo represents recovered sample between 58'-60' interval.	740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243209.6, 2026961.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(39.9') Top of Ash, fine grained (continued)			
65			CB	6					735
70							S-5 (69-70)	Photo represents recovered sample between 68'-70' interval.	730
75			CB	7					725
80							S-5 (79-80)	Photo represents recovered sample between 79'-80' interval.	720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243209.6, 2026961.3**




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(39.9') Top of Ash, fine grained (<i>continued</i>)			
85			CB	8					715
						(87') CLAY with silt (CL); and fine sand, medium plasticity, stiff, moist, brown to red (7.5YR 5/3 to 2.5YR 5/6), color variation over several layers, FILL	S-5 (87-88)	Photo represents recovered sample between 86'-88' interval.	
90						(89') SILT with clay (ML); trace fine to medium sand, stiff, slightly moist, light olive brown (2.5Y 5/6), moderate relict rock fabric present, micaceous (fine), SAPROLITE	S-5 (92-93) S-5 (93-94)		710
95			CB	10					705
100								Photo represents recovered sample between 96'-98' interval.	700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-5 Page: 6 of 8
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Drilling Start Date: 4/13/2017 Drilling End Date: 4/18/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski	Boring Depth (ft): 150 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.8 Location (Y, X): 1243209.6, 2026961.3
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo			
100			CB	10		(89') SILT with clay (ML); trace fine to medium sand, stiff, slightly moist, light olive brown (2.5Y 5/6), moderate relict rock fabric present, micaceous (fine), SAPROLITE (continued)	S-5 (103-104)	Photo represents recovered sample between 103'-105' interval.	695
105						(102') As above; coarse mica (abundant), strong relict rock fabric			
110			CB	10		(107') Becomes brownish yellow (10YR 6/6)	S-5 (109-110)	More difficult drilling	690
115							S-5 (115-116)	Photo represents recovered sample between 117'-119' interval.	685
120									680

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243209.6, 2026961.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120						(120') Becomes light olive gray (5Y 6/2)			
125			CB	10		(126') Pockets of white, completely weathered feldspar with a granite texture; pegmatite		Photo represents recovered sample between 124'-125' interval.	675
130			CB	2		(130') PARTIALLY WEATHERED ROCK, very dark greenish gray (10GY 3/1), schistose texture, abundant fine material, sand, gravel, cobbles are angular, abundant iron staining on fracture faces, feldspar pyroclasts, schist cobble recovered from drill bit	S-5 (128-129)		670
135						(134') AMPHIBOLITE GNEISS, very dark blue gray, very hard, moderately fractured, few quartz veins, steep foliation >45°, some staining on fracture surfaces, few small garnets, trace mica		Stopped for the day (4/13/2017) Photo represents recovered sample between 134'-136' interval.	665
140									660

NOTE:




1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-5**
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Drilling Start Date: **4/13/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243209.6, 2026961.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140			CB	8.5		(144') As above, distorted mineral-filled near vertical fractures, more abundant garnet, trace pyrite, green mineral (chlorite) along fractures		Photo represents recovered sample between 140'-142' interval.	
145						(147') Vertical fracture with iron oxide staining from 147-150' bds.		Driller reports hard drilling, 90% water loss	655
150						(150.0') Boring Terminated			650

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-6**
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Drilling Start Date:	4/11/2017
Drilling End Date:	4/12/2017
Drilling Company:	Cascade
Drilling Method:	Sonic
Drilling Equipment:	Mini Sonic 100C
Driller Name:	B. Lindsey
Logged By:	J. Griffin

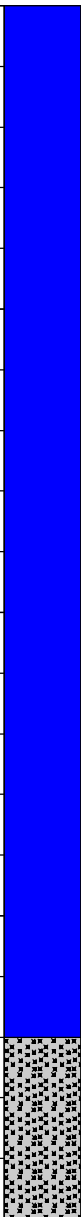
Boring Depth (ft):	150
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.8
Location (Y, X):	1243480.8, 2027022.2

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- NOTE:
1. Drilling was completed in the ash pond from the deck of a barge.
 2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
 3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-6**
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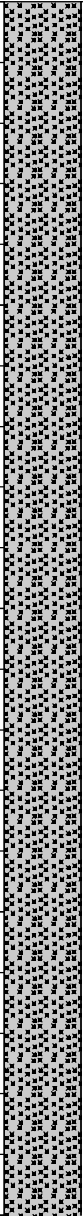


Boring Depth (ft):	150
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.8
Location (Y, X):	1243480.8, 2027022.2

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo				
20							(3.3') Water (ash pond) (continued)			775
25										770
30										765
35										760
40								(37') Top of Ash, dark gray, very fine grained		Top of ash determined using weighted tag line.

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-6 Page: 3 of 8
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Drilling Start Date: 4/11/2017	Boring Depth (ft): 150
Drilling End Date: 4/12/2017	Boring Diameter (in): 4 x 6
Drilling Company: Cascade	Sampling Method(s): CB, ST
Drilling Method: Sonic	DTW During Drilling (ft): --
Drilling Equipment: Mini Sonic 100C	DTW After Drilling (ft): --
Driller Name: B. Lindsey	Top of Deck Elev. (ft): 799.8
Logged By: J. Griffin	Location (Y, X): 1243480.8, 2027022.2

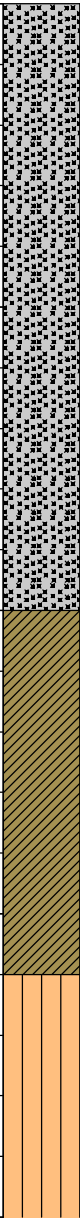


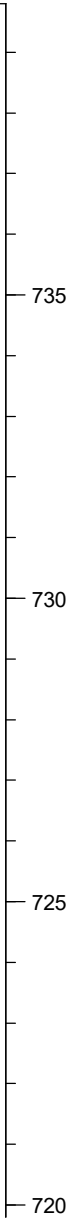

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40			CB	0		(37') Top of Ash, dark gray, very fine grained (continued)	S-6 (59-60)	No Recovery	755
45									750
50									
55			CB	5				Photo represents recovered sample between 55'-57' interval.	745
60									740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-6 Page: 4 of 8
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Drilling Start Date: 4/11/2017 Drilling End Date: 4/12/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 150 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.8 Location (Y, X): 1243480.8, 2027022.2
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)								
			Sample Type	Recovery (ft)	Blow Counts					Photo							
60			7	2		(37') Top of Ash, dark gray, very fine grained (continued)	S-6 (69-70)	Photo represents recovered sample between 69'-70' interval.									
65																735	
70														(70') CLAY with silt (CL); with fine sand, medium plasticity, stiff, moist, pale yellow and red and brown (2.5Y 7/4 and 2.5YR 4/6 and 10YR 5/3), color variation over several layers, coarse angular quartz gravel at 72', root material throughout, large schistose cobble at 74'	S-6 (70-72)		730
75														(76') SILT with clay (ML); with fine sand, non plastic, medium stiff, moist, yellow (10YR 7/6), weak relict rock fabric present, coarse angular gravel at 78', SAPROLITE	S-6 (72-73)	Photo represents recovered sample between 73'-75' interval.	725
80			10				S-6 (79-80)		720								

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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Boring No. **S-6**
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Drilling Start Date: **4/11/2017**
Drilling End Date: **4/12/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243480.8, 2027022.2**






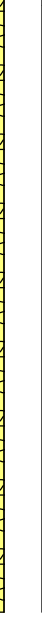


DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(76') SILT with clay (ML); with fine sand, non plastic, medium stiff, moist, yellow (10YR 7/6), weak relict rock fabric present, coarse angular gravel at 78', SAPROLITE (continued)		Photo represents recovered sample between 80'-81' interval.	
85			CB	10		(84') CLAY with minor silt (CL); dry, grayish brown (2.5Y 5/2), strong relict rock fabric present, fissile fracturing, SAPROLITE	S-6 (85-86)		715
90						(87.5') SILT with clay (ML); trace fine sand, dark gray (5Y 4/2), Micaceous (fine), iron staining throughout interval, SAPROLITE	S-6 (88-89)	Photo represents recovered sample between 86'-87' interval.	710
95			CB	10		(93') PARTIALLY WEATHERED ROCK, dark gray (5Y 4/2), dry, schistose texture, abundant iron staining on fracture faces, micaceous, matrix composed of silt with clay and fine sand (mostly silt), rock fragments from gravel to cobble size	S-6 (97-98)	Photo represents recovered sample between 97'-99' interval.	705
100									700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-6 Page: 6 of 8
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Drilling Start Date: 4/11/2017 Drilling End Date: 4/12/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 150 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.8 Location (Y, X): 1243480.8, 2027022.2
--	---




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo			
100			CB	10			S-6 (104-105)	Photo represents recovered sample between 107'-109' interval.	695
105			CB	10			S-6 (109-110)		690
110			CB	10				Photo represents recovered sample between 113'-115' interval.	685
115									680
120									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-6 Page: 7 of 8
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Drilling Start Date: 4/11/2017 Drilling End Date: 4/12/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 150 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.8 Location (Y, X): 1243480.8, 2027022.2
--	---

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT	Sample Type	Recovery (ft)	Blow Counts	Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
120			CB	5				(120') METAMORPHIC ROCK (SCHIST), highly fractured (gravel to cobble size), very micaceous, abundant iron staining on fracture faces, appears to have abundant dissolution of minerals in rock fabric, sand and fines between solid core pieces, unweathered pieces contain very large mica and disseminated garnets, abundant feldspar porphyroclasts throughout	S-6 (138-139)	Photo represents recovered sample between 124'-125' interval. Used water, fines washed out	675
125											
130											
135											
140											

NOTE:




1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-6**
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Drilling Start Date: **4/11/2017**
Drilling End Date: **4/12/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **150**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243480.8, 2027022.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140			CB	5		(120') METAMORPHIC ROCK (SCHIST), highly fractured (gravel to cobble size), very micaceous, abundant iron staining on fracture faces, appears to have abundant dissolution of minerals in rock fabric, sand and fines between solid core pieces, unweathered pieces contain very large mica and disseminated garnets, abundant feldspar porphyroclasts throughout <i>(continued)</i>		Photo represents recovered sample between 148'-149' interval.	655
145						(145') As above, highly fractured rock composed of medium gravel to large cobbles, trace fines, abundant natural fracturing with iron staining on fracture faces, some mechanical fracturing from sonic methods			
150						(150.0') Boring Terminated			650

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
 Drilling End Date: **4/10/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **800**
 Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			800
3						(3') Water (ash pond)			795
5									790
10									785
15									780
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

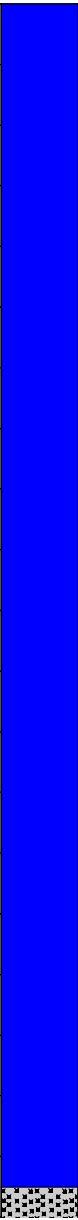


Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-7**
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Drilling Start Date:	4/7/2017
Drilling End Date:	4/10/2017
Drilling Company:	Cascade
Drilling Method:	Sonic
Drilling Equipment:	Mini Sonic 100C
Driller Name:	B. Lindsey
Logged By:	J. Ivanowski and J. Griffin

Boring Depth (ft):	170
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	800
Location (Y, X):	1243715.9, 2027092.2

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo				
20							(3') Water (ash pond) <i>(continued)</i>			780
25										775
30										770
35										765
40									Top of ash determined using	760

NOTE:



1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**





DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(39.5') Top of Ash, SILT (ML); trace fine clay, very loose, saturated, very dark gray <i>(continued)</i>		weighted tag line.	760
45			CB	2				Poor recovery due to very loose near-liquid consistency of ash. Photo represents recovered sample between 45'-46' interval.	755
50									750
55			CB	3			S-7 (53-54)	Photo represents recovered sample between 55'-56' interval.	745
60									740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-7 Page: 4 of 9
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Drilling Start Date: 4/7/2017 Drilling End Date: 4/10/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Ivanowski and J. Griffin	Boring Depth (ft): 170 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 800 Location (Y, X): 1243715.9, 2027092.2
--	---

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo			
60			CB	5			S-7 (72-73)	Photo represents recovered sample between 60'-65' interval.	740
65									735
70									730
75									725
80			CB	8.5			S-7 (77-78)	Photo represents recovered sample between 70'-72' interval.	720

NOTE:

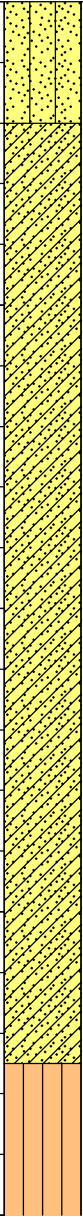


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80			CB	10		(80.5') SILT with fine sand (SM-ML); medium stiff, moist, gray to brown, micaceous, strong relict rock fabric, SAPROLITE	S-7 (81-82)	Photo represents recovered sample between 80'-82' interval.	720
85						(82') CLAYEY SAND (SC); soft, saturated, pale red to brown, fine grained, no rock fabric	S-7 (85-86)		715
						(88') CLAYEY SAND with large gravel (SC-GC); loose, saturated, brown to gray, fine to medium grained, rock fragments (quartzite fragments), SAPROLITE-PARTIALLY WEATHERED ROCK	S-7 (88-89)		710
90						(90') CLAYEY SAND (SC); non plastic, medium stiff, moist, red to yellow to brown, fine grained, weak relict rock fabric, SAPROLITE		Photo represents recovered sample between 87'-90' interval.	705
95						(97.5') SILT (ML); trace angular gravel, very stiff, dry, mottled white and brown and gray, relict fabric, iron oxide staining, SAPROLITE	S-7 (98-99)		700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100						(97.5') SILT (ML); trace angular gravel, very stiff, dry, mottled white and brown and gray, relict fabric, iron oxide staining, SAPROLITE <i>(continued)</i>			700
							S-7 (103-104)	Photo represents recovered sample between 102'-104' interval.	
105			CB	10		(105') PARTIALLY WEATHERED ROCK, pale brown, dry, pulverized			695
						(107') Mottled brown and tan and yellow, very stiff, dry, strong relict rock fabric, angular rock fragments throughout, schistose, PARTIALLY WEATHERED ROCK	S-7 (108-109)	Photo represents recovered sample between 108'-110' interval. Driller reports very hard drilling	
110						(109.5') Crushed rock, quartz fragments broken by drilling			690
						(110') SANDY SILT (ML); non plastic, stiff, dry, brown, fine sand, weak relict structure, SAPROLITE		Driller reports soft drilling throughout this run	
								Very poor recovery of 15' run from 110-125'	
115								Difficult to determine which section of core was lost	685
								Photo represents recovered sample between 115'-116' interval.	
120			CB	3					680

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120						(110') SANDY SILT (ML); non plastic, stiff, dry, brown, fine sand, weak relict structure, SAPROLITE <i>(continued)</i>			680
						(123') Lens of quartzite gravel, rock fragments			
125						(125') SILT with fine sand (SM-GM); medium to coarse gravel, pale yellow (2.5Y 8/4), gravel has weak relict tock fabric, pieces can be broken by hand		Photo represents recovered sample between 126'-128' interval. Stopped drilling for the day (4/7/17)	675
			CB	5					
130									670
			CB	0				Material fell out of the core barrel	665
135							S-7 (137-138)		
140									660

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140						(140') SAND with silt (SM); fine to coarse grained, abundant angular coarse and fine angular gravel (up to 0.5"), gravel has weak relict rock fabric, some places cannot be broken by hand, PARTIALLY WEATHERED ROCK with SAPROLITE			660
145			CB	5					655
150						(150') PARTIALLY WEATHERED ROCK, with few large cobbles of competent rock up to core barrel diameter	S-7 (148-149)	Photo represents recovered sample between 148'-150' interval.	650
155			CB	7			S-7 (155-156)	Photo represents recovered sample between 154'-155' interval.	645
160									640

NOTE:


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-7**
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Drilling Start Date: **4/7/2017**
Drilling End Date: **4/10/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243715.9, 2027092.2**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
160							(160') AMPHIBOLITE, dark greenish gray (10GY 4/1), highly fractured			640
165			CB	2.5					Boring collapse Photo represents recovered sample between 165'-166' interval.	635
170							(168') Cobbles and coarse gravel have abundant iron staining	S-7 (169-170)		630
(170.0') Boring Terminated										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
 Drilling End Date: **4/6/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.8**
 Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
 Drilling End Date: **4/6/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.8**
 Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3.3') Water (ash pond) (continued)			
25									775
30									770
35									765
38.5						(38.5') Top of Ash, SILT (ML); non plastic, very soft, loose, saturated, dark gray		Top of ash determined using weighted tag line.	
40									760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**
BORING LOG
 Boring No. **S-8**
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 Drilling Start Date: **4/4/2017**
 Drilling End Date: **4/6/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

 Boring Depth (ft): **170**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.8**
 Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40									
45			CB	9		(38.5') Top of Ash, SILT (ML); non plastic, very soft, loose, saturated, dark gray (continued)			755
50							S-8 (48-49)	Photo represents recovered sample between 40'-50' interval.	750
55			CB	0		(55') SAND (SW-SM); trace fine gravel, loose, wet, dark gray, fine to medium grained, BOTTOM ASH	S-8 (56-57)	Photo represents recovered sample between 57'-60' interval.	745
60									740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(55') SAND (SW-SM); trace fine gravel, loose, wet, dark gray, fine to medium grained, BOTTOM ASH (continued)			
65			CB	0				Sample lost, based on soft drilling, suspected ash	735
70						(70') SILTY SAND (SM); loose, saturated, red to brown, fine grained, ALLUVIUM (71') SANDY CLAY (SC); soft, wet, yellow to red to brown, laminated, ALLUVIUM		Photo represents recovered sample between 70'-72' interval.	730
75			CB	9			S-8 (74-75) S-8 (70-71)		725
80						(79') Becomes yellow brown, more sandy			720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(79') Becomes yellow brown, more sandy (continued)			
85			CB	10		(82') CLAY (CL); trace fine sand, low plasticity, medium stiff, wet, light yellow to brown, very weak relict rock fabric, SAPROLITE	S-8 (84-85)	Photo represents recovered sample between 88'-90' interval.	715
90									710
95			CB	10		(94') SANDY CLAY (SC-CL); non plastic, soft, pale brown to pink, quartz sand grains, weak relict rock fabric, SAPROLITE	S-8 (96-97)	Photo represents recovered sample between 95'-97' interval.	705
100									700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100						(100') Becomes stiffer with depth			
105			CB	10				Photo represents recovered sample between 103'-105' interval.	695
110			CB	5		(109') SILT (ML); trace clay, non plastic, very stiff, dry, brown, relict foliation, SAPROLITE			690
115			CB	5		(112') SILT with fine to coarse gravel (ML); non plastic, very stiff, dry, streaked white and brown and pink, grading to PARTIALLY WEATHERED ROCK	S-8 (113-113.5)	Photo represents recovered sample between 112'-115' interval.	685
120			CB	5		(116')(116') Dry White, pulverized PARTIALLY WEATHERED ROCK, quartz and feldspar (116.5') DECOMPOSED SCHIST, strongly foliated, very dark gray to brown, amphibolite, PARTIALLY WEATHERED ROCK			680

NOTE:




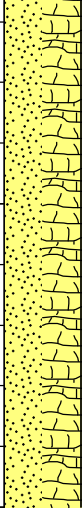


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120			CB	0		(116.5') DECOMPOSED SCHIST, strongly foliated, very dark gray to brown, amphibolite, PARTIALLY WEATHERED ROCK (continued)	S-8 (127-128)	Core sample lost, driller reports soft zone from 122-125	
125						(124.5') SILT (ML); dry, pale yellow to brown, relict rock structure, SAPROLITE			675
						(126') DECOMPOSED SCHIST, pale yellow to white to brown, hard, dry		Photo represents recovered sample between 128'-130' interval.	670
130									
135			CB	0			S-8 (127-128)	Driller made 20' run after reporting intermittent soft and hard drilling zones, concerned about core loss	665
140									660

NOTE:




1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-8**
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Drilling Start Date: **4/4/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.8**
Location (Y, X): **1243963.6, 2027141.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140			CB	2.5		(140') Soft sand-filled zones, loose pink quartz and feldspar gravel, fine to coarse sand		Lost most of core, driller reported interlayered hard (rock) and soft zones	655
145						(147.5') Quartz-feldspar pegmatite fragments (148') DECOMPOSED SCHIST, very stiff to hard, moist, amphibolite, PARTIALLY WEATHERED ROCK			
150									
155						(155') Pink quartz and potassium feldspar rock fragments, PARTIALLY WEATHERED ROCK			
160								Driller could not advance deeper without using mud, very hard, open hole from 130-152', core barrel contained 10' of fine to medium sand with gravel	650
								Photo represents recovered sample between 152'-160' interval.	645
									640

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-8**
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Boring Depth (ft):	170
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.8
Location (Y, X):	1243963.6, 2027141.5

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
160			CB	6.5		(160') QUARTZITE, massive, hard, intensely fractured, iron oxide staining on fracture surfaces, possible pegmatite	S-8 (164-165)	Photo represents recovered sample between 160'-162' interval. Photo represents recovered sample between 164'-166' interval. Using water to drill, likely flushed out the softer partially weathered rock zone, driller reports interlayered hard and soft zones	635
						(162') SAND with gravel, quartz fragments, loose, saturated, yellow to reddish brown			
						(162.5') DECOMPOSED GNEISS, banded, dark gray, dry, strong relict rock fabric, friable, PARTIALLY WEATHERED ROCK			
165						(168') SAND, loose, saturated, reddish brown, fine to coarse grained, well graded, angular, quartz, potassium feldspar			
						(169') Dry, as at 162.5, PARTIALLY WEATHERED ROCK			
170	(170.0') Boring Terminated								630

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
 Drilling End Date: **3/23/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **798.8**
 Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3.3') Water (ash pond) (continued)			
25									775
30									770
35			CB	0		(31.5') Top of Ash, no recovery		Photo represents recovered sample between 35'-37' interval. Top of ash determined using weighted tag line.	765
40									760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(40') SILT (ML); very loose, wet, very dark gray, FLY ASH			
45			CB	4		(48') Silty medium sand (SW-SM); very loose, wet, very dark gray, BOTTOM ASH (49') CLAY (CL); non plastic, very soft, wet, black, FLY ASH		Photo represents recovered sample between 50'-53' interval.	755
50							S-9 (52-53)		
55			CB	8		(53') SILT (ML); non plastic, very soft, black, FLY ASH (54') SILT (ML); very soft to loose, wet, black to gray, FLY ASH (56') SANDY SILT (SM-ML); stiff, dry, mottled yellow and red and brown, relict banding and rock fabric, oxide staining along fracture surfaces, SAPROLITE	S-9 (54-55)	Photo represents recovered sample between 57.5'-60' interval.	745
60									740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60									
65			CB	10		(61') SANDY CLAY (SC-CL); soft, moist, reddish brown, relict rock fabric, weathered feldspar veins, occasional zones (~3" thick) of very soft, wet sandy clay to clayey sand, SAPROLITE		Photo represents recovered sample between 60'-63' interval.	735
70						(68.5') Becomes wet, softer			730
75			CB	10			S-9 (75-76)	Photo represents recovered sample between 74'-76' interval.	725
80						(78') VERY SANDY CLAY (CL); non plastic, stiff, moist, mottled yellow and brown, SAPROLITE		Driller reports stiffer drilling	720

NOTE:

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2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(78') VERY SANDY CLAY (CL); non plastic, stiff, moist, mottled yellow and brown, SAPROLITE <i>(continued)</i>			
						(82') CLAYEY SAND (SC); soft, wet, yellow to red, fine grained, no rock fabric evident			
85			CB	11		(85') SANDY CLAY (SC-CL); non plastic, soft, moist, red, rock fabric present, SAPROLITE			715
						(88.6') Thin (~1") vein of quartz rock			710
90									
95			CB	9.5		(97') Becomes stiff, more dry, more pronounced rock fabric	S-9 (98-99)	Photo represents recovered sample between 96'-98' interval.	705
									700
100									

NOTE:

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2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100						(97') Becomes stiff, more dry, more pronounced rock fabric (continued)			
						(101.6') SANDY CLAY (CL); medium plasticity, soft, moist, brown, no rock structure			
105			CB	8.5		(106') SILT (SM-ML); stiff, dry, dark brown, mica and feldspar, SAPROLITE			695
						(109') Weathered feldspar vein	S-9 (108-109)	Photo represents recovered sample between 104'-106' interval.	690
110									
						(114') Partially weathered rock vein (potassium feldspar) (~3" thick)			685
115			CB	10		(116') Becomes very stiff, dry, occasional gravel size rock fragments and small garnets (5mm)		Photo represents recovered sample between 116'-118' interval.	680
120									

NOTE:

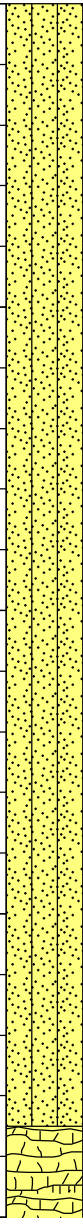


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)	
			Sample Type	Recovery (ft)	Blow Counts					Photo
120						(116') Becomes very stiff, dry, occasional gravel size rock fragments and small garnets (5mm) (continued)	S-9 (120-121.5)			
125		ST	2			(125') SILTY SAND with gravel (SM); medium stiff, wet, white, quartz and potassium feldspar, rock fragments, PARTIALLY WEATHERED ROCK	S-9 (125-127)	Photo represents recovered sample between 124'-126' interval.	675	
						(127') SILT (SM-ML); stiff, dry, brown, relict banding, SAPROLITE			Driller reports harder drilling	
						(129') PARTIALLY WEATHERED ROCK lens				670
130						(130.5') Becomes very stiff, rock structures becoming more pronounced				
							(137.5') PARTIALLY WEATHERED ROCK lens		Photo represents recovered sample between 136'-138' interval.	665
135							(138.5') PARTIALLY WEATHERED ROCK, hard, dry, schistose, mica lenses			660
140										

NOTE:

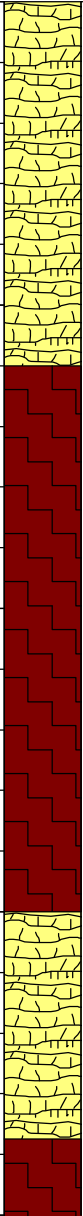

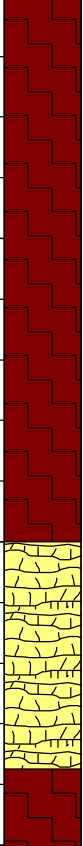

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140		CB	6	2.7		(138.5') PARTIALLY WEATHERED ROCK, hard, dry, schistose, mica lenses <i>(continued)</i>		6' run from 140'-146' due to hard drilling and rig chatter, photo represents recovered sample between 140'-142' interval.	655
145						(143') WEATHERED QUARTZ-MICA SCHIST, dry pulverized rock, PARTIALLY WEATHERED ROCK			
						(146') QUARTZ-MICA SCHIST			
						(147') DECOMPOSED SCHIST, intensely fractured bordering on PARTIALLY WEATHERED ROCK			
150		CB	3	3		(150') QUARTZ-MICA SCHIST, thinly foliated, oxide staining, sandy, intensely fractured, quartz-potassium feldspar pegmatite present at ~153'		Photo represents recovered sample between 152'-154' interval. Low recovery due to wash out	645
155						(155') Very stiff to hard, dry, schist parent material, PARTIALLY WEATHERED ROCK			
160						(158.75') MICA SCHIST, foliated, sandy, intensely fractured, weathered			

NOTE:

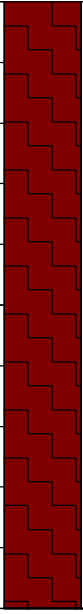


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-9**
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Drilling Start Date: **3/22/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski**

Boring Depth (ft): **170**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.8**
Location (Y, X): **1244281.3, 2027256.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
160			CB	8		(158.75') MICA SCHIST, foliated, sandy, intensely fractured, weathered (<i>continued</i>)		Driller reports much harder drilling. Return water changed from red-brown to greenish-gray. Photo represents recovered sample between 163'-166' interval. Water loss decreased but driller reports "crunchy" drilling suggesting that rock is fractured	635
165						(161') GNEISS, blue to gray, granular to aphanitic, visible mica, amphibole, pink potassium feldspar and quartz pegmatites at 163' (fracture extent is difficult to determine due to sonic disturbance)			
170						(170.0') Boring Terminated			630

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.8 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
 Drilling End Date: **3/17/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **168**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **798.3**
 Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3.3						(3.3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

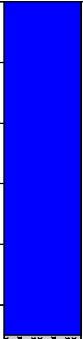


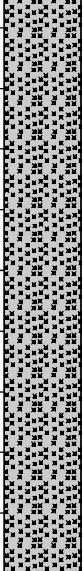


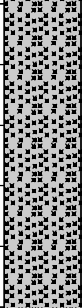

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
Drilling End Date: **3/17/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **168**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.3**
Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20			CB	2		(3.3') Water (ash pond) (continued)			775
25						(25.5') Top of Ash, dark gray, very fine grained		Top of ash determined using weighted tag line.	770
30			CB	2				Photo represents recovered sample between 35'-40' interval.	765
35									760
40			CB	2					

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.3 ft MSL.
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Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
 Drilling End Date: **3/17/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **168**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **798.3**
 Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40			ST	2		(25.5') Top of Ash, dark gray, very fine grained (continued)	S-10 (58-60)	0'-60' of core only resulted in 2' of material at the bottom from 58'-60'; most ash	755
45									750
									745
50									740
55									
60									

NOTE:




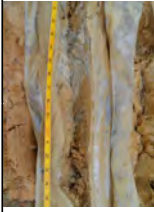
1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
Drilling End Date: **3/17/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **168**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.3**
Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60			CB	2		(60') SILT with fine and medium angular gravel (ML); wet, light red (2.5YR 7/8), mafic banding (relict rock fabric), SAPROLITE	S-10 (69-70)	washed out of core barrel; only water remained in sample bags Photo represents recovered sample between 62'-64' interval. A core catcher was used. Although there was only 2' of ash recovered, there was saprolite residue on the core catcher at the bottom of the core barrel.	735
65									
70			CB	8		(73.5') Becomes white and pink (2.5YR 8/4), with mica (74') Light greensih gray (10GY 7/1) bands with coarse angular gravel from 74' to 74.5'		Photo represents recovered sample between 69'-70' interval.	730
75									
80						(78') Fine angular gravel to 79'	S-10 (73-74)		725
							S-10 (79-80)		720

NOTE:





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3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
Drilling End Date: **3/17/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **168**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.3**
Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80			CB	15		(80') Becomes soft, with sand, and fine gravel, moist, yellow (10YR 8/6)	S-10 (85-86)	Photo represents recovered sample between 80'-82' interval. Originally supposed to be a 20' run but driller stopped at 15' due to tighter drilling.	715
85									710
90							S-10 (93-94)		705
95			CB	3		(95') Becomes pale brown (10YR 6/3), 1" gravel at 96' (96') Becomes stiff, dry		Photo represents recovered sample between 98'-100' interval.	700
100									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
Drilling End Date: **3/17/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **168**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.3**
Location (Y, X): **1244514.9, 2027234**




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100			CB	3		(100') Becomes wet, pale brown (10YR 6/3), sparse fine and coarse gravel (up to 2" in diameter)	S-10 (104-105)		695
105			CB	5		(105') METAMORPHIC ROCK (GNEISS/AMPHIBOLITE), felspathic, micaceous with visible jointing, cobbles up to 4" in diameter (same diameter of the core barrel), some sand present, but primarily angular gravel that is fractured into shards (given the fissile nature of the rock) with sand and clay, PARTIALLY WEATHERED ROCK		Photo represents recovered sample between 108'-110' interval.	690
110			CB	5			S-10 (114-115)	Photo represents recovered sample between 115'-117' interval.	685
115			CB	5		(115') METAMORPHIC ROCK (GNEISS/AMPHIBOLITE), reddish yellow (5YR 6/6), highly fractured, abundant iron staining on fracture faces, mineral dissolution along fractures, HIGHLY FRACTURED ROCK	S-10 (116-117)		680
120									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.3 ft MSL.
3. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. S-10 Page: 7 of 9
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Drilling Start Date: 3/13/2017 Drilling End Date: 3/17/2017 Drilling Company: Cascade Drilling Method: Sonic Drilling Equipment: Mini Sonic 100C Driller Name: B. Lindsey Logged By: J. Griffin	Boring Depth (ft): 168 Boring Diameter (in): 4 x 6 Sampling Method(s): CB, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 798.3 Location (Y, X): 1244514.9, 2027234
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT		MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo		
120							(115') METAMORPHIC ROCK (GNEISS/AMPHIBOLITE), reddish yellow (5YR 6/6), highly fractured, abundant iron staining on fracture faces, mineral dissolution along fractures, HIGHLY FRACTURED ROCK (<i>continued</i>)	675
125			CB	1			Photo represents recovered sample between 120'-122' interval. Driller indicates that approximately 5' of material fell back into the boring; sloughing/loose material.	
							(130') SAND, reddish yellow (5YR 6/6), highly decomposed rock, primarily clean, medium to coarse subangular sand with cobbles up to 4" diameter, trace fines, cobbles have iron staining on fracture faces, near complete disintegration of rock in this interval	670
130							Photo represents recovered sample between 130'-132' interval.	
135			CB	6			S-10 (138-139)	665
140								660

NOTE:


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3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
Drilling End Date: **3/17/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **168**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.3**
Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
140							(130') SAND, reddish yellow (5YR 6/6), highly decomposed rock, primarily clean, medium to coarse subangular sand with cobbles up to 4" diameter, trace fines, cobbles have iron staining on fracture faces, near complete disintegration of rock in this interval <i>(continued)</i>			655
145			CB	0					Driller indicates the casing is dropping in the boring. Casing advanced to 135'. The driller indicates the sand is flowing back into the casing and could lock the core barrel inside the casing, gel added to prevent this.	650
150							(150') METAMORPHIC ROCK (GNEISS/AMPHIBOLITE), slightly weathered, very dark greenish gray (10GY 3/1), fresh, pieces up to 4" diameter, mixed with clay (likely due to drilling), feldspar, mica			645
155			CB	7					Photo represents recovered sample between 154'-155' interval.	640
160										

NOTE:

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3. Borings were backfilled with grout using tremie method.

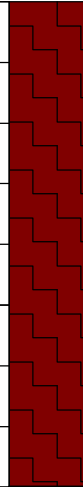


Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-10**
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Drilling Start Date: **3/13/2017**
 Drilling End Date: **3/17/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **168**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **798.3**
 Location (Y, X): **1244514.9, 2027234**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
160			CB	2			(150') METAMORPHIC ROCK (GNEISS/AMPHIBOLITE), slightly weathered, very dark greenish gray (10GY 3/1), fresh, pieces up to 4" diameter, mixed with clay (likely due to drilling), feldspar, mica (<i>continued</i>)			635
165			CB	4			(163') Some pyrite along fractured surfaces			

(168.0') Boring Terminated

NOTE:

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3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-11**
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Boring Depth (ft):	130
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	798.5
Location (Y, X):	1244858.6, 2027430.6

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-11**
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Boring Depth (ft):	130
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	798.5
Location (Y, X):	1244858.6, 2027430.6

NOTE:

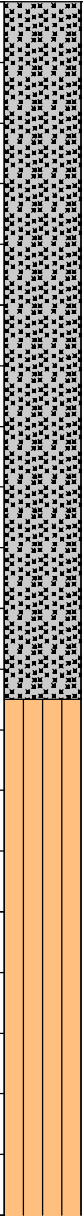
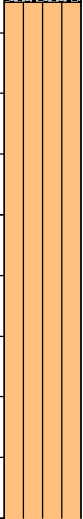
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2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
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BORING LOG
Boring No. **S-11**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **130**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.5**
Location (Y, X): **1244858.6, 2027430.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(40') Becomes very fine sand to silt		40'-45'	
						(42') SILTY SAND (SM); very loose, saturated, black, medium to coarse grained, BOTTOM ASH	S-11 (42-43)	Photo represents recovered sample between 40'-45' interval.	755
45						(43') SILT, dark gray, FLY ASH			
						(48') SILT with clay (ML); non plastic, very soft, black, FLY ASH			750
50						(51.5') SILT (ML); non plastic, soft, moist, red to brown, relict rock fabric, micaceous, SAPROLITE	S-11 (52-54)	50'-52' Photo represents recovered sample between 50'-52' interval.	745
55						(57') SANDY SILT (ML); soft, moist, red, SAPROLITE		Photo represents recovered sample between 56'-58' interval. 56'-58'	
60							S-11 (59-60)		740

NOTE:

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Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-11**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **130**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.5**
Location (Y, X): **1244858.6, 2027430.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(57') SANDY SILT (ML); soft, moist, red, SAPROLITE (continued)			
						(63') SILT (ML); non plastic, soft, moist, brown, no rock fabric evident			735
65						(65') VERY SILTY SAND (SM); wet, yellow to brown, fine grained, gravel is weathered rock fragments, iron oxide nodules	S-11 (67-68)	Photo represents recovered sample between 66'-68' interval. 66'-68'	730
70						(71') Becomes mottled, with brown sandy saprolite nodules			725
75						(75') SILT (ML); non plastic, medium stiff, moist, gray to brown, very micaceous rock fabric, SAPROLITE	S-11 (78-79)		720
80						(79') Becomes dry			

NOTE:

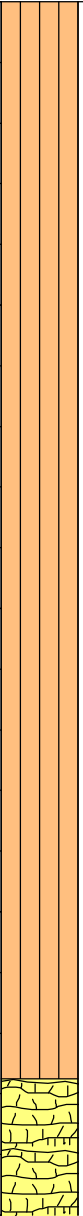



1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-11**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **130**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.5**
Location (Y, X): **1244858.6, 2027430.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(80') Becomes micaceous, dry, SAPROLITE			
85								84'-86' Photo represents recovered sample between 84'-86' interval.	715
90						(91') SILT (ML); and gravel, ~15% clay, non plastic, very stiff, dry, gray to brown, micaceous, strong relict foliation, SAPROLITE		90'-92' Photo represents recovered sample between 90'-92' interval.	710
95							S-11 (94-95)		705
							S-11 (96-97)		
						(97.75') As above with fragments of weathered rock, very stiff, dry, PARTIALLY WEATHERED ROCK		98'-100' Photo represents recovered sample between 98'-100' interval.	700
100									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
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Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **S-11**
Page: **6 of 7**

Drilling Start Date: **3/23/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Ivanowski and J. Griffin**

Boring Depth (ft): **130**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **798.5**
Location (Y, X): **1244858.6, 2027430.6**

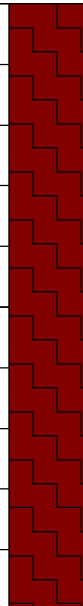

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100			CB	3		(97.75') As above with fragments of weathered rock, very stiff, dry, PARTIALLY WEATHERED ROCK (continued)	S-11 (109-110)	Stop drilling for the day (3/23/2017)	695
105						(106') METAMORPHIC ROCK (SCHIST) (CL); with medium to coarse gravel (schist), olive (5Y 5/2), one piece of gravel is the same diameter as the inner core barrel (3.75"), PARTIALLY WEATHERED ROCK		Drilling very slow, 108'-110' Photo represents recovered sample between 108'-110' interval.	690
110						(110') METAMORPHIC ROCK (SCHIST), greenish black (5GY 2.5/1), highly fractured, very micaceous, small weathered garnets, abundant iron staining on fracture faces (MUSCOVITE SCHIST)			685
115						(115') As above, competent rock, larger dissiminated garnets with very strong banding			680
120									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
3. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **S-11**
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Boring Depth (ft):	130
Boring Diameter (in):	4 x 6
Sampling Method(s):	CB, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	798.5
Location (Y, X):	1244858.6, 2027430.6

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120			CB	6		(115') As above, competent rock, larger dissiminated garnets with very strong banding (continued)		122'-124' Photo represents recovered sample between 122'-124' interval. Material left in hole	675
125									670
130	(130.0') Boring Terminated								

(130.0') Boring Terminated

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 798.5 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **S-12**
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Drilling Start Date: **3/28/2017**
 Drilling End Date: **3/31/2017**
 Drilling Company: **Cascade**
 Drilling Method: **Sonic**
 Drilling Equipment: **Mini Sonic 100C**
 Driller Name: **B. Lindsey**
 Logged By: **J. Griffin**

Boring Depth (ft): **110**
 Boring Diameter (in): **4 x 6**
 Sampling Method(s): **CB, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3						(3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

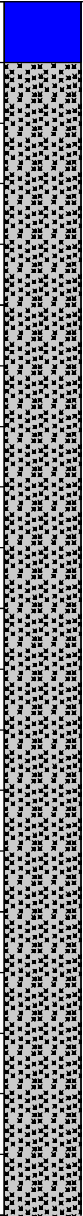
1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-12**
Page: **2 of 6**

Drilling Start Date: **3/28/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued) (21') Top of Ash, gray (N6), very fine grained		Top of ash determined using weighted tag line.	
25			CB	6					775
30							S-12 (29-30)		770
35			CB	5				Photo represents recovered sample between 30'-32' interval.	765
40							S-12 (39-40)		760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-12**
Page: **3 of 6**

Drilling Start Date: **3/28/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(21') Top of Ash, gray (N6), very fine grained <i>(continued)</i>			
45			CB	8.5		(45') CLAY (CL); dry, red (2.5YR 4/8), SAPROLITE	S-12 (45-46)	Photo represents recovered sample between 44'-46' interval.	755
						(46') SILT with clay (ML); wet, light yellowish brown (2.5Y 6/3), homogenous texture (i.e. no rock fabric evident), micaceous (fine)			750
50									
55			CB	9				Photo represents recovered sample between 55'-57' interval.	745
60							S-12 (59-60)		740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-12**
Page: **4 of 6**

Drilling Start Date: **3/28/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(60') CLAY (CL); dry, light olive to brown (2.5Y 5/3), minor rock fabric texture (localized); micaceous (fine)			
65			CB	9.5			S-12 (64-65)		735
70						(68') Fine angular gravel at 68'			730
75			CB	10		(75') White clay/silt lens from 75-80', dry	S-12 (74-75)	Photo represents recovered sample between 74'-76' interval.	725
80									720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-12**
Page: **5 of 6**

Drilling Start Date: **3/28/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(75') White clay/silt lens from 75-80', dry (continued)	S-12 (80-81)		
85			CB	10			S-12 (84-85)		715
						(87') SCHIST, light olive brown (2.5Y 5/3), dry, coarse grained mica, strong foliation, coarse gravel to cobbles with clay, PARTIALLY WEATHERED ROCK	S-12 (89-90)	Photo represents recovered sample between 87'-89' interval.	710
90						(90') As above, SCHIST, competent, sparse weathered garnets			
95			CB	7					705
						(94') Becomes well foliated (fine) gneissic texture, abundant mica, white (2.5Y 8/1), highly fractured with abundant iron staining on fracture faces, transition zone with weathering/dissolution, sparse weathered garnets		Photo represents recovered sample between 95'-97' interval.	
100									700

NOTE:

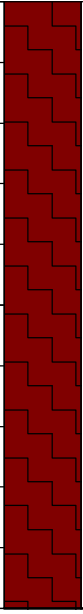



1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **S-12**
Page: **6 of 6**

Drilling Start Date: **3/28/2017**
Drilling End Date: **3/31/2017**
Drilling Company: **Cascade**
Drilling Method: **Sonic**
Drilling Equipment: **Mini Sonic 100C**
Driller Name: **B. Lindsey**
Logged By: **J. Griffin**

Boring Depth (ft): **110**
Boring Diameter (in): **4 x 6**
Sampling Method(s): **CB, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1245104.9, 2027483.6**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100			CB	8			(94') Becomes well foliated (fine) gneissic texture, abundant mica, white (2.5Y 8/1), highly fractured with abundant iron staining on fracture faces, transition zone with weathering/dissolution, sparse weathered garnets (continued)		Photo represents recovered sample between 106'-108' interval.	695
105							(104') Becomes greenish black (10Y 2.5/1)			
							(108') SCHIST, with disseminated garnets, small fractures			
110							(110.0') Boring Terminated			690

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-1**
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Drilling Start Date: **3/21/2017**
 Drilling End Date: **3/23/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser**

Boring Depth (ft): **84**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1242292.9, 2026700.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
5						(3.5') Water (ash pond)			795
10									790
15									785
20						(19') Top of Ash, very soft, wet, dark gray to black, fine grained		Top of ash determined using weighted tag line.	780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-1**
Page: **2 of 5**


Drilling Start Date: **3/21/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser**

Boring Depth (ft): **84**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1242292.9, 2026700.5**


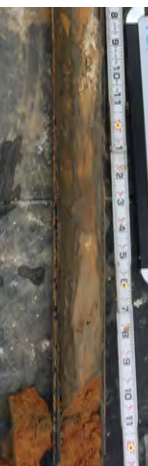

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
20			SPT		WOR WOR WOR WOR		(19') Top of Ash, very soft, wet, dark gray to black, fine grained (continued)		Sample poured out of split spoon N=0	775
25			SPT	0	WOH WOH WOH WOH				Sample poured out of split spoon N=0	770
30			SPT	1.7	WOR WOR WOR WOR		(32') FLY ASH, non plastic, very soft, wet, black, fine grained, non cohesive		N=0	765
35			SPT	1.8	WOR WOR WOH 3		(38.7') SILT with mica (ML); non plastic, moist, light brown, cohesive (39') As above; non plastic, moist, cohesive		N=0 Top of Native Soil 38.7' Drilled to 39' and set bentonite plug	760
40										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. M-1 Page: 3 of 5
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Drilling Start Date: 3/21/2017 Drilling End Date: 3/23/2017 Drilling Company: Thompson Engineering Drilling Method: Mud Rotary Drilling Equipment: CME-45C Driller Name: S. White and R. Odom Logged By: J. Gasser	Boring Depth (ft): 84 Boring Diameter (in): 4 Sampling Method(s): SPT, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799 Location (Y, X): 1242292.9, 2026700.5
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
40							(39') As above; non plastic, moist, cohesive (<i>continued</i>)		from 39-41'	
			SPT	1.6	6 9 12 15		(42') SILT with mica (ML); non plastic, very stiff, moist, light brown with layering of dark brown, fine grained, non cohesive	ST-M1-1	Top 2" of spoon were bentonite plug, N=21	755
45			ST	1			(46') SILT with medium grain mica (ML); very stiff, moist, light brown, fine grained		Could only push 13", pushing barge up	
			SPT	1.5	8 9 12 15		(46.9') SILT (ML); with medium grained mica, non plastic, very stiff, moist, brown, non cohesive		N=21 Photo represents recovered sample between 46'-48' interval.	
			SPT	1	2 9 9 15		(48') SILT (ML); and medium grained mica, non plastic, very stiff, moist, brownish red to brownish gray, non cohesive		N=18	750
50			SPT	1.5	13 26 33 50		(50') SILT with increasing amounts of mica (ML); and schist (medium grained with trace coarse grain), non plastic, hard, moist, gray, non cohesive		N=59	
			SPT	1.3	7 9 13 49		(52') SILT (ML); low plasticity, moist, brown, cohesive		N=22	
			SPT	0.3	2 50/4.5		(53') SILT with feldspar and trace quartz grains (ML); non plastic, very stiff, white, non cohesive			
55			SPT	0.3	2 50/4.5		(54') SILT with feldspars (ML); non plastic, hard, white, non cohesive		Hard layer at 54.5'	745
			SPT	2	2 2 4		(57') LEAN CLAY with silt (CL); medium plasticity, very soft, moist, brown		N=4 Photo represents recovered sample between 57'-59' interval.	740
			SPT	2	2 2 4		(57.7') SILT (ML); non plastic, very soft, moist, white			
60			SPT	2	2 2 4		(58') SILT (ML); low plasticity, soft, moist, brownish orange			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-1**
Page: **4 of 5**

Drilling Start Date: **3/21/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser**

Boring Depth (ft): **84**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1242292.9, 2026700.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60			ST	1.6			(58') SILT (ML); low plasticity, soft, moist, brownish orange (continued)	ST-M1-2		
					5 11 16 20		(62') SILT with increasing amounts of medium grained mica (ML); non plastic, very stiff, moist, brown with gray streaks, non cohesive		N=27	
			SPT	1.4			(64') SANDY SILT with mica (SM); non plastic, very stiff, moist, brown to gray, non cohesive			735
65			SPT	1.6	6 13 16 23		(66') SANDY SILT with medium grain mica (SM); non plastic, hard, moist, gray with brown, non cohesive		N=30, Photo represents recovered sample between 66'-68' interval.	
			SPT	1.8	11 12 18 23		(68') SANDY SILT with medium grain mica (SM); non plastic, hard, moist, gray with brownish white, non cohesive			730
			SPT	1.7	9 13 18 28		(70') SANDY SILT with mica (SM); non plastic, hard, moist, gray with brown, non cohesive, increased mica and garnets (most medium grain, some coarse)		N=61	
70			SPT	1.6	11 23 38 50/5.5					
			SPT	1.8	20 30 30 31				N=60, Photo represents recovered sample between 72'-74' interval.	725
75										
			SPT	0.7	25 50/2		(77') SCHIST, with mica sheeting and feldspars, black, crumbles easily, some brown silt, PARTIALLY WEATHERED ROCK		Partially Weathered Rock contact at 78.5'	720
80										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

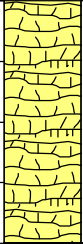


Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-1**
 Page: **5 of 5**

Drilling Start Date: **3/21/2017**
 Drilling End Date: **3/23/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser**

Boring Depth (ft): **84**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1242292.9, 2026700.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
80			SPT		50/1.5		(77') SCHIST, with mica sheeting and feldspars, black, crumbles easily, some brown silt, PARTIALLY WEATHERED ROCK <i>(continued)</i> (82') SCHIST, with mica, feldspars, black, very hard, quartz placed in layers, PARTIALLY WEATHERED ROCK			
(84.0') Boring Terminated										715

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-2**
 Page: **1 of 4**

Drilling Start Date: **3/23/2017**
 Drilling End Date: **3/23/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser**

Boring Depth (ft): **76.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.5**
 Location (Y, X): **1242560.2, 2026755.1**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
5						(4') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.5 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-2**
Page: **2 of 4**

Drilling Start Date: **3/23/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser**

Boring Depth (ft): **76.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.5**
Location (Y, X): **1242560.2, 2026755.1**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(4') Water (ash pond) (continued)			
25						(24') Top of Ash		Top of ash determined using weighted tag line.	775
30			SPT	0	WOR WOR WOR	(28') FLY ASH, very soft, dark gray, fine		N=0	770
35			SPT	1	WOR WOR WOR	(33') FLY ASH, non plastic, very soft, wet, dark gray to black, fine grained, non cohesive		N=0	765
40			SPT	1.3	WOR WOR WOR	(38') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, non cohesive		N=0	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.5 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **M-2**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser**

Boring Depth (ft): **76.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.5**
Location (Y, X): **1242560.2, 2026755.1**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(38') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, non cohesive <i>(continued)</i>			
45			SPT	1.3	WOR WOR WOR	(43') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, non cohesive		N=0 Photo represents recovered sample between 43'-45' interval.	755
50			ST	0		(48') FLY ASH, very soft, wet, dark gray, fine grained	M2 (48-50)	Attempted Shelby Tube, no recovery.	750
55			SPT	1.2	WOR WOR WOR	(53') FLY ASH, non plastic, very soft, wet, dark gray with black, fine grained, non cohesive		N=0	745
60			SPT	1.9	WOR WOR WOR	(58') FLY ASH, non plastic, very soft, wet, dark gray with black, fine grained, non cohesive		N=0	740

NOTE:





1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.5 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **M-2**
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Drilling Start Date: **3/23/2017**
Drilling End Date: **3/23/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser**

Boring Depth (ft): **76.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.5**
Location (Y, X): **1242560.2, 2026755.1**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60							(58') FLY ASH, non plastic, very soft, wet, dark gray with black, fine grained, non cohesive <i>(continued)</i>			
65			SPT	1.3	13 15 18 23		(63') SILT (ML); non plastic, hard, moist, light brown with orange sections, non cohesive		Top of Native Soil assumed at 63', N=33 Photo represents recovered sample between 63'-65' interval.	735
							(68') SILT (ML); non plastic, hard, moist, gray with white brown to tan layers, non cohesive		Set casing into native at 66' and overdrilled to 68'	
70			SPT	1.9	12 11 25 50/5		(70') SILT (ML); non plastic, hard, moist, light brownish tan, non cohesive		N=36 Photo represents recovered sample between 68'-70' interval; Estimated recovery based on drilled depth during SPT run	730
			SPT	0.8	39 50/3				Partially Weathered Rock at 69.5'	
75			SPT	0.4	50/5		(73') SILT with sand (little fine to medium non-uniform) (ML); non plastic, hard, moist, gray with light brown and some faint streaks of red, non cohesive		Photo represents recovered sample between 70'-72' interval.	725
			SPT	0.2	50/2		(76') SCHIST, light brownish tan with white, hard, highly fractured, with mica and feldspars, laid in sheets that can be split apart		Auger Refusal	
							(76.2') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.5 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **M-3**
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Drilling Start Date: **3/27/2017**
 Drilling End Date: **3/28/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White**
 Logged By: **J. Ivanowski and H. Lutz**

Boring Depth (ft): **94.6**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1242893.1, 2026855.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3						(3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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BORING LOG
 Boring No. **M-3**
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Drilling Start Date: **3/27/2017**
 Drilling End Date: **3/28/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White**
 Logged By: **J. Ivanowski and H. Lutz**

Boring Depth (ft): **94.6**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1242893.1, 2026855.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued)			775
25						(27') Top of Ash			
30			SPT	WOR WOR WOR WOR		(31') BOTTOM ASH with silt, and poorly sorted coarse sand, very loose, wet, black to light yellowish brown (31.5') SANDY SILT (SM); very loose, wet, gray, very fine grained, poorly graded, FLY ASH		Top of ash determined using weighted tag line. N=0	770
35						(38') SANDY SILT (SM); very loose, wet, gray, very fine grained, poorly graded, FLY ASH			
40			SPT	WOR WOR WOR WOR				N=0	765
									760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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BORING LOG
 Boring No. **M-3**
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Drilling Start Date: **3/27/2017**
 Drilling End Date: **3/28/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White**
 Logged By: **J. Ivanowski and H. Lutz**

Boring Depth (ft): **94.6**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1242893.1, 2026855.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
40							(38') SANDY SILT (SM); very loose, wet, gray, very fine grained, poorly graded, FLY ASH <i>(continued)</i>			
							(43') SILT (ML); non plastic, very soft, wet, very dark gray, FLY ASH		N=0	755
45							(44.5') SILTY CLAY (CL); low plasticity, very soft, wet, dark gray, cohesive, FLY ASH			
							(48') CLAYEY SILT (ML); trace very fine grained sand, low plasticity, very soft, wet, dark gray, cohesive, FLY ASH		N=0	750
50							(53') SANDY SILT (ML); little fine sand, non plastic, very soft, wet, dark gray, FLY ASH		N=0	745
55							(58') SANDY SILT (ML); little fine sand, non plastic, very soft, wet, dark gray, FLY ASH			
60									Rods and sampler slipped and pushed to ~75' the driller recovered the rods	
									N=0	740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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Boring No. **M-3**
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Drilling Start Date: **3/27/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White**
Logged By: **J. Ivanowski and H. Lutz**

Boring Depth (ft): **94.6**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1242893.1, 2026855.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(58') SANDY SILT (ML); little fine sand, non plastic, very soft, wet, dark gray, FLY ASH (<i>continued</i>)			
			SPT		WOR WOR WOR	(63') SILT (ML); trace fine sand, non plastic, very soft, wet, very dark gray, uniform, FLY ASH		N=0	735
65						(64.5') SILTY SAND (ML); trace clay, very loose, wet, dark gray, fine to medium grained, well graded, FLY ASH			
			ST	0.9		(68') FLY ASH	M-3 (68-70)	Collected Shelby Tube with Piston Sampler	730
70									
			SPT		WOR WOR WOR	(73') SILT, trace clay, non plastic, very soft, wet, dark gray (2.5Y 3/1), uniform, FLY ASH		N=0, Photo represents recovered sample between 73'-75' interval.	725
75									
			SPT		WOR WOR WOR	(78') SILT, trace clay, non plastic, very soft, wet, dark gray (2.5Y 3/1), uniform, FLY ASH		N=0	720
80									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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Boring No. **M-3**
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Drilling Start Date: **3/27/2017**
Drilling End Date: **3/28/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White**
Logged By: **J. Ivanowski and H. Lutz**

Boring Depth (ft): **94.6**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1242893.1, 2026855.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(78') SILT, trace clay, non plastic, very soft, wet, dark gray (2.5Y 3/1), uniform, FLY ASH (<i>continued</i>)		Mud rotary to 83'	
						(83') SILT (ML); trace fine sand, non plastic, very soft, wet, dark gray, FLY ASH		N=0, Photo represents recovered sample between 83'-85' interval.	715
						(84.1') SAND (SW-SM); low plasticity, loose, wet, light olive brown (2.5Y 5/3), fine to coarse grained		Ash-Native soil contact at 84.1'	
85						(84.6') SAND with silt (SP-SC); with roots and woody debris, non plastic, soft, wet, very dark grayish brown, very fine grained			
						(85') SAND with silt (SP-SC); and clay, medium dense, wet, dark grayish brown (2.5Y 4/2), very fine grained, uniform			
								Sampler dropped full length of SPT and 6-8" with one blow of hammer, N=0	710
90						(90.3') SCHIST, very light gray, weathered bedrock, friable sandy, mica component of parent rock obvious, while no garnet obvious, possible garnet schist parent rock		Contact defined for top of partially weathered rock at 90.3'	
						(92.5') SCHIST, micaceous weathered schist rock as above, has large angular gravels of quartzite within schist		Photo represents recovered sample between 91'-92' interval.	705
						(94.6') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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BORING LOG
 Boring No. **M-4**
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Drilling Start Date: **3/28/2017**
 Drilling End Date: **3/29/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **107.3**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243097.5, 2026930.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
0							(0') Barge Deck			
							(3') Water (ash pond)			795
5										790
10										785
15										780
20										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **M-4**
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Boring Depth (ft):	107.3
Boring Diameter (in):	4
Sampling Method(s):	SPT, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799
Location (Y, X):	1243097.5, 2026930.5

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued)			775
25									
30									770
35									765
34.5'						(34.5') Top of Ash, SAND with silt (SM); non plastic, very soft, wet, very dark gray (2.5Y 3/1), very fine grained, uniform, poorly graded		Top of ash determined using weighted tag line - recovery not anticipated from this material	
40								No Recovery, N=0	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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BORING LOG
 Boring No. **M-4**
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Drilling Start Date: **3/28/2017**
 Drilling End Date: **3/29/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **107.3**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243097.5, 2026930.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
40							(34.5') Top of Ash, SAND with silt (SM); non plastic, very soft, wet, very dark gray (2.5Y 3/1), very fine grained, uniform, poorly graded <i>(continued)</i>			
45			SPT	1	WOR WOR WOR WOR				N=0	755
50			SPT	0	WOR WOR WOR WOR				No Recovery, N=0	750
55			SPT	0	WOR WOR WOR WOR				No Recovery, N=0	745
60			SPT	0.4	WOR WOR WOR WOR				N=0	740

NOTE:

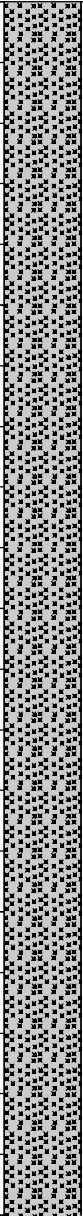
1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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BORING LOG
Boring No. **M-4**
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Drilling Start Date: **3/28/2017**
Drilling End Date: **3/29/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **107.3**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1243097.5, 2026930.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60			SPT	1.4	WOR WOR WOR	(63') SAND with silt (SC); and increasing clay content, low to medium plasticity, soft, wet, dark gray, fine grained, ASH	M-4 (68-70)	N=0, Photo represents recovered sample between 63'-65' interval.	735
65			ST	1.1					730
70			SPT	2	WOR WOR WOR	(73') FLY ASH (SC); low plasticity, very soft, saturated to wet, dark gray, fine grained		N=0	725
75			SPT	2	WOR WOR WOR	(78') FLY ASH (SC); low plasticity, very loose, dark gray, fine grained		N=0	720
80									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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Boring No. **M-4**
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Drilling Start Date: **3/28/2017**
Drilling End Date: **3/29/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **107.3**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1243097.5, 2026930.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
80							(78') FLY ASH (SC); low plasticity, very loose, dark gray, fine grained <i>(continued)</i>			
			SPT	2	WOR WOR WOR WOR		(83') FLY ASH, very soft, dark gray, fine grained		N=0	715
85										
			SPT	1.1	WOR WOR WOR 1		(88') LEAN CLAY (CL); few organics, medium plasticity, very soft, moist, brown, cohesive (88.92') LEAN CLAY (CL); very soft, gray		Native at 88'	710
90										
			SPT	0.4	28 31 14 8		(91.5') LEAN CLAY (CL); with sand, medium plasticity, very stiff, moist, brown to gray, cohesive, PARTIALLY WEATHERED ROCK		N=45	
95			SPT	0.9	2 7 27 50/5		(94') SILTY SAND with gravel (SM); non plastic, very dense, moist, light brown to brown, quartzite, non cohesive, PARTIALLY WEATHERED ROCK		Partially Weathered Rock at 95.5'	705
			SPT	1.2	11 28 46 48		(98') SILTY SAND with gravel (SM); non plastic, very dense, moist, brown with layers of light brown, non cohesive		N=74	700
100										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-4**
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Drilling Start Date: **3/28/2017**
 Drilling End Date: **3/29/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **107.3**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243097.5, 2026930.5**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100			SPT	0.8	25 31 50/4		(98') SILTY SAND with gravel (SM); non plastic, very dense, moist, brown with layers of light brown, non cohesive <i>(continued)</i>			695
105							(103') SILTY SAND with gravel (5m) (SM); non plastic, moist, brown, non cohesive			
							(107') SCHIST, gray to brown, highly fractured (107.3') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
 Drilling End Date: **4/4/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
0							(0') Barge Deck			
3							(3') Water (ash pond)			795
5										
10										790
15										785
20										780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
 Drilling End Date: **4/4/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued)			
25									775
30									770
35									765
40								Top of ash	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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BORING LOG
 Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
 Drilling End Date: **4/4/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
40							(40') Top of Ash		determined using weighted tag line.	
45			SPT	0	WOR WOR WOR WOR		(43') FLY ASH, dark gray		No recovery, N=0	755
50			SPT	1.3	WOR WOR WOR WOR		(48') FLY ASH, non plastic, wet, dark gray, fine grained, non cohesive		N=0	750
55			SPT	1.3	WOR WOR WOR WOR		(53') FLY ASH, low plasticity, wet, dark gray, fine grained, cohesive (from 53' 9" to 53' 10" coarse grained bottom ash)		N=0	745
60			SPT	2	WOR WOR WOR WOR		(58') FLY ASH, low plasticity, wet, dark gray, fine grained, cohesive		N=0	740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
 Drilling End Date: **4/4/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60							(58') FLY ASH, low plasticity, wet, dark gray, fine grained, cohesive <i>(continued)</i>			
			ST	0			(63') As above; FLY ASH	M-5 (63-65)	Attempted Shelby Tube with Piston Sampler, no recovery	735
65										
			ST	0			(68') As above; FLY ASH	M-5 (68-70)	Attempted Shelby Tube, no recovery	730
70										
			SPT	1.1			(73') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, cohesive		N=0	725
75										
			SPT	2			(78') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, non cohesive		N=0	720
80										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-5**
 Page: **5 of 7**

Drilling Start Date: **3/30/2017**
 Drilling End Date: **4/4/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(78') FLY ASH, non plastic, very soft, wet, dark gray, fine grained, non cohesive <i>(continued)</i>			
			ST	1.5		(82') CLAYEY SAND with gravel (SC); medium plasticity, moist, light gray, cohesive	M-5 (83-85)	Driller encountered native soil at 82'	715
85			SPT	1	3 5 7 12	(85.17') SILT with sand (ML); little uniform fine to medium sand, non plastic, stiff, moist, brown, cohesive, 1 large rock		N=12	
			SPT	1.6	4 8 15 15	(87') SILT (ML); non plastic, very stiff, moist, brown with some red and brown mixed, non cohesive		N=23	
90			SPT	1.8	5 10 14 30	(89') SILT with fine to medium sand (ML); non plastic, very stiff, moist, brown, non cohesive, sand increases with depth, one large rock		N=24	710
			SPT	1.8	12 26 33 44	(91') SANDY SILT (ML); non plastic, hard, moist, brown, non cohesive, PARTIALLY WEATHERED ROCK		N=59	
			SPT	1.3	15 25 33 50/4	(93') SILTY SAND (SM); non plastic, very dense, moist, brown with red, non cohesive, sand is non-uniform medium to coarse, PARTIALLY WEATHERED ROCK		N=58	705
95									
			SPT	1.9	6 9 13 19	(98') SILT with sand, trace clay, low plasticity, very stiff, moist, dark brown, cohesive		N=22	700
100									

NOTE:




1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
Drilling End Date: **4/4/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100							(98') SILT with sand, trace clay, low plasticity, very stiff, moist, dark brown, cohesive <i>(continued)</i>			
			SPT	1.7	11 18 26 34		(103') SILT (ML); non plastic, hard, moist, dark brown with some red and gray, non cohesive		N=44	695
105							(107') SILT with sand (ML); non plastic, hard, moist, brown with black seams, non cohesive		N=53	
			SPT	1.6	13 24 29 40		(109') SILTY SAND with gravel (SM); some clay, low to medium plasticity, loose, moist, mottled reddish brown with very pale brown with black lenses (2.5YR 4/4, 10YR 7/4), structure apparent, angular gravel sized fragments, weathered in place, saprolite, angular medium to coarse grained sand, SAPROLITE-WEATHERED ROCK		Photo represents recovered sample between 113'-115' interval. N=36	690
110										
			SPT	1.6	16 20 26 32					
			SPT	1.7	18 35 46 50/4				N=81	685
115										
			SPT	2	11 21 28 32		(118.7') SAND (SP); non plastic, dense, dry, light gray (2.5Y 7/1), fine to medium grained, poorly graded		Photo represents recovered sample between 118'-120' interval.	680
120										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

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BORING LOG
Boring No. **M-5**
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Drilling Start Date: **3/30/2017**
Drilling End Date: **4/4/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **128.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1243387.8, 2027006.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
120							(119.3') SILTY SAND (SM); non plastic, dry, pale yellow (2.5Y 4/4), fine to medium grained, friable <i>(continued)</i>		N=49	
							(122') SILTY SAND with gravel (SM); some clay, non plastic, weathered to dense, dry, mottled black with strong brown with dark brown with light gray (7.5YR 2.5/1, 7.5YR 5/8, 7.5YR 3/4, 7.5YR 7/1), weathered schist rock, friable, easily identifiable micasous minerals (~10-15%), weakly foliated, iron staining prevalent (~30%), very angular where broken apart, weathered material with gravel sized angular rocks in shoe		Photo represents recovered sample between 123'-125' interval. N=81 Much harder drilling from 125' to 128', drilling 10 min/ft in this material with 3 7/8" tricone	675
125			SPT	1.6	35 43 38 47					
			SPT		50/2					

(128.2') Boring Terminated

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-6**
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Drilling Start Date: **5/2/2017**
 Drilling End Date: **5/3/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **R. Odom and H. Lewis**
 Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **800**
 Location (Y, X): **1243653.5, 2027079.7**

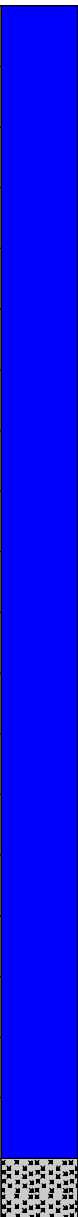
DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			800
5						(3') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **M-6**
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Boring Depth (ft):	123.1
Boring Diameter (in):	4
Sampling Method(s):	SPT, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	800
Location (Y, X):	1243653.5, 2027079.7

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued)			780
25									775
30									770
					</				


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
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BORING LOG
Boring No. **M-6**
Page: **3 of 7**

Drilling Start Date: **5/2/2017**
Drilling End Date: **5/3/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **R. Odom and H. Lewis**
Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243653.5, 2027079.7**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(39') Top of Ash, very soft, saturated (<i>continued</i>)			760
45			SPT	0	WOR WOR WOR WOR			Set casing initially at 43', N=0	755
			SPT	2	WOR WOR WOR WOR			N=0, Photo represents recovered sample between 48'-50' interval.	750
50									
			SPT	0.7	WOR WOR WOR WOR			N=0	745
55									
			SPT	0	WOR WOR WOR WOR			No Recovery, N=0	740
60									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
Boring No. **M-6**
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Drilling Start Date: **5/2/2017**
Drilling End Date: **5/3/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **R. Odum and H. Lewis**
Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243653.5, 2027079.7**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(48') SILTY SAND with clay (SM); loose, saturated, dark gray, very fine to fine grained, rapid dilatancy, uniform, ASH <i>(continued)</i>			740
			SPT	1.3	WOR WOR WOR WOR	(63') SILT with sand (SM); very soft, saturated, dark gray, very fine to fine grained, rapid dilatancy, uniform, ASH		N=0	
65									735
			ST	1		(67') SILTY SAND with clay (SM); loose, saturated, dark gray, very fine to medium grained, rapid dilatancy, uniform, clay becomes a part of the ash unit, ASH	M-6 (68-70)	During sample movement bottom 12" slid/fell out, only 12" remain in tube, other sample material in grab bags	730
70									
			SPT	2	3 6 9 13	(73') SILT with sand and clay (ML); non plastic, medium dense, moist, reddish yellow with black and strong brown mottling (7.5YR 6/6, 7.5YR 4/6), very fine to fine grained sand, friable, relic rock structure, NATIVE		Top of Native Soil at 73', N=15, Photo represents recovered sample between 73'-75' interval.	725
75									
			SPT	1.1	6 17 13 15	(77') SILTY SAND with gravel (SM); non plastic, medium dense, very coarse grained, friable, 0.5' lens of angular feldspar gravels/pebbles, very coarse grained sand and silt from 78.3' to 78.7'		N=30	720
80									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



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 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **M-6**
 Page: **5 of 7**

Drilling Start Date: **5/2/2017**
 Drilling End Date: **5/3/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **R. Odom and H. Lewis**
 Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **800**
 Location (Y, X): **1243653.5, 2027079.7**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(77') SILTY SAND with gravel (SM); non plastic, medium dense, very coarse grained, friable, 0.5' lens of angular feldspar gravels/pebbles, very coarse grained sand and silt from 78.3' to 78.7' (continued)			720
			SPT	1.8	7 4 7 11	(83.5') SILTY SAND (SM); soft, moist, light brown and reddish yellow (7.5YR 6/4, 7.5YR 4/4), fine to medium grained sand, friable, uniform		N=11	
85			ST	1.5			M-6 (86-88)	Left sample overnight 5/2/2017	715
								Hard drill from 88'-89'; R.O.P.=3.5 min/ft.	
90			SPT	1.7	8 8 12 15	(90') SILTY SAND (SM); moist to dry, dark yellowish brown with brownish yellow (10YR 4/4, 10YR 6/6), fine to medium grained sand (~5% mica grains), friable, lens of angular very coarse grained sand (plagioclase feldspar)		N=20	710
								92'-94'; R.O.P.=3.5 to 4 min/ft.	
95			SPT	1.5	10 12 12 22	(94') SILTY SAND with silt (SM); non plastic, medium dense, moist to dry, fine to medium grained, friable, >5% micaceous grains, relic foliation of micaceous grains, veining etc., COMPLETELY WEATHERED SCHISTOSE ROCK		N=24	705
			SPT	1.4	12 15 25 31	(98') As above, becomes brown (10YR 4/3)		N=43	700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-6**
Page: **6 of 7**

Drilling Start Date: **5/2/2017**
Drilling End Date: **5/3/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **R. Odum and H. Lewis**
Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1243653.5, 2027079.7**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100						(98') As above, becomes brown (10YR 4/3) (continued)			700
			SPT	1.7	20 16 18 28	(102') SILTY SAND (SM); (same as above) base rock slightly less weathered with depth		N=34, Photo represents recovered sample between 102'-104' interval.	
105			SPT	1.7	14 25 28 50/3.5	(106') MUSCOVITE SCHIST, very stiff to hard, moist to dry, minerals present: mica, biotite, mica foliated with parent rock structure, friable, PARTIALLY WEATHERED ROCK		N=53 Photo represents recovered sample between 106'-108' interval.	695
			SPT	1.6	18 21 32 48	(108') SILTY SAND with angular gravel (SM); very stiff to hard, muscovite schist becoming less weathered with depth, very coarse grained sand, pebbles, angular, friable, HIGHLY WEATHERED ROCK		N=53 110'-113'; R.O.P.=~6 to 8 min/ft	690
110			SPT	0.5	50/5	(113') SCHIST, non plastic, hard, brown (10YR 4/3), angular (broken) gravel with fine to coarse grained sands, friable, strong relic rock structure present, shistose foliation-micaceous grains aligned, breaks along foliation plane, PARTIALLY WEATHERED ROCK		Over drill, 115'-116'; R.O.P.=4.5 to 5 min/ft.	685
115			SPT	0.3	50/3.5			Photo represents recovered sample between 108'-110' interval. drilling very hard between 116'-117'; R.O.P.=6.25 min/ft	680
120									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-6**
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Drilling Start Date: **5/2/2017**
 Drilling End Date: **5/3/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **R. Odom and H. Lewis**
 Logged By: **H. Lutz**

Boring Depth (ft): **123.1**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **800**
 Location (Y, X): **1243653.5, 2027079.7**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120					50/1	(113') SCHIST, non plastic, hard, brown (10YR 4/3), angular (broken) gravel with fine to coarse grained sands, friable, strong relic rock structure present, shistose foliation-micaceous grains aligned, breaks along foliation plane, PARTIALLY WEATHERED ROCK (continued)			680

(123.1') Boring Terminated

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-7**
 Page: **1 of 8**

Drilling Start Date: **4/26/2017**
 Drilling End Date: **5/2/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1243915.6, 2027155.3**


DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3						(3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

BORING LOG
Boring No. **M-7**
Page: **2 of 8**

Boring Depth (ft):	153.1
Boring Diameter (in):	4
Sampling Method(s):	SPT, ST
DTW During Drilling (ft):	--
DTW After Drilling (ft):	--
Top of Deck Elev. (ft):	799.25
Location (Y, X):	1243915.6, 2027155.3

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo				
20							(3') Water (ash pond) <i>(continued)</i>			775
25										770
30										765
35										760
40								(39') Top of Ash	Top of ash determined using weighted tag line.	760

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-7**
Page: **3 of 8**

Drilling Start Date: **4/26/2017**
Drilling End Date: **5/2/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1243915.6, 2027155.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(39') Top of Ash <i>(continued)</i>			
45			SPT	0.2	WOR WOR WOR	(43') SILTY SAND with clay (SM); loose, ASH		N=0	755
50			SPT	2	WOR WOR WOR	(48') SILTY SAND with clay (SM); non plastic, loose, saturated, dark gray, very fine to coarse grained, rapid dilatancy, uniform, lower portion of run increasing grain size with increasing clay, ASH		Photo represents recovered sample between 48'-50' interval. N=0	750
55			SPT	1.9	WOR WOR WOR	(53') CLAYEY SAND with silt (SC); very soft, saturated, dark gray, very fine to coarse grained, rapid dilatancy, ASH		N=0	745
60			ST	1.8			M-7 (58-60)		740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-7**
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Drilling Start Date: **4/26/2017**
Drilling End Date: **5/2/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1243915.6, 2027155.3**

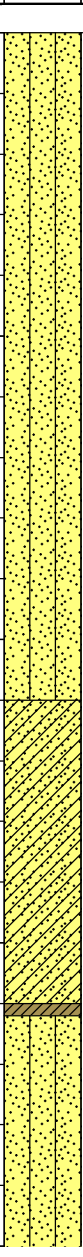


DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(53') CLAYEY SAND with silt (SC); very soft, saturated, dark gray, very fine to coarse grained, rapid dilatancy, ASH (continued)			
			SPT	1.4	WOR WOR WOR WOR	(64') As above, angular gravel <5% in bottom 0.5' appears to be reddish black slag, ASH		N=0	735
65						(68') SILTY SAND with silt and clay (SM); non plastic, loose, dry, olive brown to greenish gray, friable, color variation throughout run (68.6') Becomes brown (69') Becomes white red mottled (69.6') Becomes red		Top of native soil at 68', N=2, Photo represents recovered sample between 68'-70' interval.	730
70			SPT	1.8	1 1 1 2				
			SPT	1.6	4 3 3 2	(72') SILTY SAND (SM); non plastic, dry to moist, very fine to very coarse grained, large pink and white plagioclase rocks ~2mm+ accross, HIGHLY WEATHERED ROCK (73') SILTY SAND with clay (SM-SC); low plasticity, soft, moist, brown (10YR 5/6), fine to medium grained, friable. some relic foliation of mica grains, black veins/interbeds cross cutting brown unit, COMPLETELY WEATHERED ROCK		N=6	725
75						(76') Becomes red with strong brown and specs of black (2.5YR 5/8, 7.5YR 5/6)		N=2	720
			SPT	2	1 1 1 3				
80									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. M-7 Page: 5 of 8
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Drilling Start Date: 4/26/2017 Drilling End Date: 5/2/2017 Drilling Company: Thompson Engineering Drilling Method: Mud Rotary Drilling Equipment: CME-45C Driller Name: S. White and R. Odom Logged By: H. Lutz	Boring Depth (ft): 153.1 Boring Diameter (in): 4 Sampling Method(s): SPT, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.25 Location (Y, X): 1243915.6, 2027155.3
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts	Photo			
80			SPT	1.6	1 2 3 5		M-7 (84-86)	N=5 No recovery below, loose	715
			ST						
85			SPT	1.8	1 3 7 6			N=10	
90			SPT	1.6	6 9 13 19			N=22	
95			SPT	2	9 14 11 14			N=25, Photo represents recovered sample between 96'-98' interval.	
100									700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-7**
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Drilling Start Date: **4/26/2017**
Drilling End Date: **5/2/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1243915.6, 2027155.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100			ST	0.8			(97.7') SILTY SAND with clay (SM); yellowish brown (continued)	M-7 (100-100.8)	Only pushed 10" on undisturbed sample at 100', above the 10" material fell back down hole prior to push N=21	695
			SPT	1.6	10 9 12 18		(101') SILTY SAND with clay (SM); low to medium plasticity, loose, moist, fine to very coarse grained, friable, very coarse sand to gravel, mica grains show relic rock structure, lenses at 101.3-101.5' and 102.3-102.4' with high amounts of very angular white plagioclase grains.			
105			SPT	2	10 13 17 21		(105') CLAYEY SAND with silt (SC); medium to high plasticity, soft, greenish gray dark yellowish brown (GLEY 15/2, 10YR 4/4), green updates chlorite predominant in grains (105.6') Low plasticity, brown (106.3') Very angular white/pink blocky plagioclase rocks, loose, friable (106.6') CLAYEY SAND with silt (SC); soft, moist, dark yellowish brown (10YR 4/4), fine to medium grained		N=30	
110			SPT	1.9	13 14 19 22		(109') SILTY SAND with clay (SM); with gravel size pink plagioclase rocks, stiff to very stiff, grayish green (GLEY 14/2), medium to coarse grained, amphibolite, plagioclase, epidote, chlorite, mica grains, completely weathered		N=33	690
115			SPT	1.5	12 25 22 22		(113') Becomes fine to medium grained, yellowish brown mottled with yellow (10YR 5/8, 10YR 7/6), some small lenses of angular broken plagioclase rocks (those lenses are loose, <0.5" fewer than four over 2' run), relic native rock structure, foliation of grains present, COMPLETELY WEATHERED ROCK		N=42	685
			SPT	1.6	12 24 25 33				N=49, Photo represents recovered sample between 115'-117' interval.	
120					15 25		(119') Becomes very stiff, dry, yellowish brown with yellow (10YR 5/8, 10YR 7/6), friable, fine to medium grained sand			680

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-7**
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Drilling Start Date: **4/26/2017**
Drilling End Date: **5/2/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1243915.6, 2027155.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
120			SPT	1.8	26 34	(119') Becomes very stiff, dry, yellowish brown with yellow (10YR 5/8, 10YR 7/6), friable, fine to medium grained sand (continued)		N=51	
			SPT	1.5	25 21 21 22	(123') Same as above (SM) Silty Sand with clay, low plasticity, ~10% mica grains - shows signs of foliation (relic rock structure), COMPLETELY WEATHERED ROCK		N=42	675
125			SPT	1.1	25 50/5.5	(127.5') Becomes very stiff to hard		Photo represents recovered sample between 127'-129' interval.	670
130			SPT	0.4	50/5	(131') SILTY SAND (SM); non plastic, hard, dry, yellowish brown with yellow (10YR 5/8, 10YR 7/6), fine to medium grained, friable, amphibolite, mica, schistose foliation evident			665
135			SPT	1.3	19 32 50/6	(135') SILTY SAND with clay (SM); with angular/blocky very coarse grained gravel plag. rocks, low to non plasticity plasticity, stiff to hard, moist to dry, medium to coarse grained, friable, increase in black material in this run, up to 30-35% (biotite/amphibolite), COMPLETELY WEATHERED ROCK		Photo represents recovered sample between 135'-137' interval.	660
140			SPT	0.9	27 50/5				

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-7**
 Page: **8 of 8**

Drilling Start Date: **4/26/2017**
 Drilling End Date: **5/2/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **153.1**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1243915.6, 2027155.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
140							(135') SILTY SAND with clay (SM); with angular/blocky very coarse grained gravel plag. rocks, low to non plasticity plasticity, stiff to hard, moist to dry, medium to coarse grained, friable, increase in black material in this run, up to 30-35% (biotite/amphibolite), COMPLETELY WEATHERED ROCK (continued)			
			SPT	0.3	50/4		(143') Becomes fine to coarse grained, dark brown mottled with black and reddish brown (7.5YR 3/3), angular, 2-3mm diameter blocky pink plagioclase feldspar			655
145										
			SPT	0.5	50/4		(148') (SM) Same as above, amphibolite schist rock, weathered with brown interbeds (~2" thick) strong defined foliation relic rock structure			650
150										
			SPT		50/1		(153.1') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-8**
 Page: **1 of 8**

Drilling Start Date: **4/21/2017**
 Drilling End Date: **4/25/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3						(3') Water (ash pond)		Initial casing set at 3.5'	795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-8**
 Page: **2 of 8**

Drilling Start Date: **4/21/2017**
 Drilling End Date: **4/25/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(3') Water (ash pond) (continued)			
25									775
30									770
35						(32') Top of Ash, very soft, "fluffy"		Top of ash determined using weighted tag line.	765
40						(38') SAND with silt, saturated, very fine grained, ASH		N=0	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-8**
Page: **3 of 8**

Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(38') SAND with silt, saturated, very fine grained, ASH (continued)			
45			SPT	1	WOR WOR WOR WOR	(42') SAND with silt (SM); very soft, saturated, dark gray, very fine grained, ASH		N=0	755
50			SPT	1.6	WOR WOR WOR	(48') SILTY SAND with clay, soft, saturated, dark gray, very fine to coarse grained sand, low plasticity where higher clay content/coarser grained ash found at bottom of run (coarseness and clay content increase with depth), ASH		N=0, Photo represents recovered sample between 48'-50' interval.	750
55			SPT	2	WOR WOR WOR WOR			N=0	745
60			UD	2			M-8 (58-60)	Run GUS Piston Sampler, full 24" recovery	740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-8**
Page: **4 of 8**

Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60						(59.5') Bottom of Shelby tube has dark gray ash w/ brown clay component (top of native soil possibly at ~60') (continued)			
						(60') SILTY SAND with clay (SM); non plastic, very loose to loose, moist, mottled, very fine to fine grained, friable, NATIVE			
			SPT	2	1 1 2 2			N=3, Photo represents recovered sample between 63'-65' interval.	735
65						(64.4') SILTY SAND (SM); non plastic, white, fine grained, uniform from 64.4 to 64.6' (no clay)			
			SPT	2	2 3 4 2	(66') SILTY SAND with clay (SM); non plastic to low plasticity, very loose to loose, moist, very fine to fine grained, subrounded to subangular, mottled red (10R 4/8) with reddish yellow (7.5YR 6/8) with black (7.5YR 2.5/1) veining surrounded by reddish yellow (7.5YR 6/8) "halos" and intermittent layers, <1' thickness white (7.5YR 3/1) sand with silt zones, uniform, no clay		N=7	730
70									
			SPT	2	1 1 1 3			N=2	
75									
			ST	2			M-8 (74-76)		725
			SPT	2	1 3 3 4			N=6	720
80						(79.5') <0.1' zone with angular gravel (quartz)			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-8**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80						(79.5') <0.1' zone with angular gravel (quartz) (continued)			
			SPT	2	2 3 3 5	(82') Angular quartz gravel zone to 82.3' (82.3') SILTY SAND with clay (SM); slight coarsening of sand to very fine to medium grainind sands with silt, moist non plastic		N=6, Photo represents recovered sample between 82'-84' interval.	715
85			ST	2		(86') SILTY SAND with clay (SM); non plastic, loose, moist, fine to medium grained, yellowish red (5YR 4/6) with reddish yellow (5YR 6/6) with black (5YR 2.5/1) interbedded/veins, PARTIALLY WEATHERED ROCK	M-8 (86-88)	Photo represents recovered sample between 92'-94' interval.	710
90			SPT	2	2 16 16 10	(91.3') SILTY SAND (SM); dense, very coarse grained angular sands (2 mm diameter), gray (5YR 6/1) mica/white (5YR 8/1) quartz/pink (5YR 8/4) plagioclase, friable, COMPLETELY WEATHERED ROCK		N=32	
			SPT	2	2 3 4 7	(94') SILTY SAND (SM); non plastic, loose, moist (94.6') SAND with silt, white, fine to medium grained, lens from 94.6' to 94.7' (95.1') SAND with silt, white, fine to medium grained, lens from 95.1' to 95.2' (95.9') GRAVEL, angular (mm scale), mica/plagioclase lens from 95.9' to 96'		N=7, Photo represents recovered sample between 94'-96' interval.	705
95			SPT	2	2 5 7 11	(98') SILTY SAND with clay (SM); non plastic, loose, moist, yellowish red with reddish yellow mottling and black interbeds, fine to medium grained		N=12	700
100									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-8**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100			ST	2		(98') SILTY SAND with clay (SM); non plastic, loose, moist, yellowish red with reddish yellow mottling and black interbeds, fine to medium grained (<i>continued</i>)	M-8 (102-104)		
105			SPT	1.7	9 8 7 10	(106') SILTY SAND with clay (SM); non plastic, medium dense, moist, strong brown with black veining (7.5YR 5/6) (106.7') Angular gravel pink plagioclase/grey to white mica/quartz zone (very little silt/clay) (107.5') SILTY SAND with clay (SM); medium dense, as above		N=15, Photo represents recovered sample between 106'-108' interval.	695
110			SPT	2	4 5 8 15	(110') SILTY SAND with clay (SM); non plastic, dense to soft, moist, strong brown (7.5YR 5/6), fine to medium grained sand		N=13	690
115			SPT	2	6 9 12 18	(115') Becomes light olive brown (2.5Y 5/3)		N=21, Photo represents recovered sample between 114'-116' interval.	685
120			SPT	2	6 9 16 21	(118') Becomes medium grained, dry to moist, friable, relic rock structure, foliation of grains, mica sands and cross beds, VERY WEATHERED ROCK		N=25	680

NOTE:


1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-8**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
120			SPT	1.9	10 20 30 32		(118') Becomes medium grained, dry to moist, friable, relic rock structure, foliation of grains, mica sands and cross beds, VERY WEATHERED ROCK (continued)		N=50, Photo represents recovered sample between 122'-124' interval.	675
125			SPT	1.4	5 13 20 26		(122') SILTY SAND (SM); non plastic, very hard, dry, yellowish brown to brownish yellow (10YR 5/4 to 10YR 6/6), friable, predominately coarse grained material (5-10% mica grains), foliated			
130			SPT	1.7	7 15 15 25		(130') SILTY SAND (SM); very stiff, dry to moist, yellowish brown (10YR 5/8), medium to coarse grained sand with some very coarse grained sands, friable, strong foliation seen in mica grains, HIGHLY WEATHERED ROCK			
135			SPT	1.9	12 26 49 50/6		(134') Same as above with less weathered rock fragments at 134.9-135' and 135.4-135.5', angular pink feldspar (K-feldspar) ~2-3mm diameter			
140			SPT	0.9	44 50/6		(138') Hard, medium to coarse grained sand, coarse grains of plag. (white/pink) mica, biotite, relic structure, mica foliation, lenses of angular pink/white plag with mica (dry, friable, hard) at 138-138.1, COMPLETELY WEATHERED ROCK		N=75	665
										660

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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Drilling Start Date: **4/21/2017**
Drilling End Date: **4/25/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **153.2**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244190.4, 2027213.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
140			SPT	1.5	33 38 44 50/5.5	(143.3') White plagioclase/mica vein ~1" thick		N=82, Photo represents recovered sample between 142'-144' interval.	655
145			SPT	0.3	50/4	(147') Becomes medium to very coarse grained, yellowish brown (10YR 5/4), subangular to angular, non plastic, friable, mica biotite grains evident, foliation of mica grains evident, relic rock structures, COMPLETELY WEATHERED ROCK		147'-153'; R.O.P. increased from 2.5 min/ft to 5 min/ft	650
150			SPT		50/1.5	(153.2') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
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BORING LOG
 Boring No. **M-9**
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Drilling Start Date: **4/12/2017**
 Drilling End Date: **4/18/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1244471, 2027280.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
5						(3') Water (ash pond)			795
10									790
15									785
20									780

NOTE:

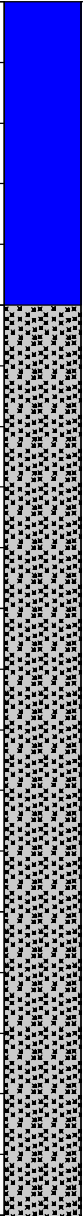

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-9**
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Drilling Start Date: **4/12/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
Boring Diameter (in): **3 7/8**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1244471, 2027280.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
20			SPT	2	WOR WOR WOR WOR		(3') Water (ash pond) (continued)			
25							(25') Top of Ash		Top of ash determined using weighted tag line.	775
30							(28') SAND with silt, non plastic, very loose, saturated, dark gray (2.5Y 5/1), very fine to fine grained, bottom of run shows heightened clay content-"sticky sand" composition, FLY ASH		N=0, Photo represents recovered sample between 28'-30' interval.	770
35							(33') Becomes very fine to fine grained, grading to medium to coarse grained ash with depth, ASH (34') SAND with silt and clay, non plastic, very loose, saturated, dark gray (2.5Y 5/1), medium to coarse grained, clay content higher in coarser grained material, low plasticity, some coarse grained ash particles are light gray (2.5Y 7/1), ASH		N=0	765
40			SPT	2	WOR WOR WOR		(38') SAND with clay, low plasticity, very loose, wet to saturated, dark gray (2.5Y 3/1), medium to coarse grained, uniform, ASH		N=0	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-9**
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Drilling Start Date: **4/12/2017**
 Drilling End Date: **4/18/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1244471, 2027280.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
40							(38') SAND with clay, low plasticity, very loose, wet to saturated, dark gray (2.5Y 3/1), medium to coarse grained, unifrom, ASH (<i>continued</i>)			
45			UD	1.7				M-9 (43-45)	Push GUS Piston Sampler, when piston sampler seal was released the sample fell out of tube. The sample was recovered as distrubed sample.	755
50			UD	2				M-9 (48-50)	Run GUS Piston Sampler, full 24" recovery	750
55			ST	2			(53') SILT with clay (ML); trace fine sand, non plastic, moist, orange, noncohesive	M-9 (53-55)	Set Shelby Tube overnight from 53' to 55'	745
			SPT	1.9	1 2 3 5		(55') LEAN CLAY (CL); medium plasticity, firm, moist, red orange, cohesive		N=5	
			SPT	1.5	2 4 4 7		(57') LEAN CLAY with few uniform medium sand (CL); few silt, medium plasticity, firm, moist, red orange, cohesive		N=8	
60										740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-9**
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Drilling Start Date: **4/12/2017**
 Drilling End Date: **4/18/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1244471, 2027280.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60							(57') LEAN CLAY with few uniform medium sand (CL); few silt, medium plasticity, firm, moist, red orange, cohesive (<i>continued</i>)			
			SPT		1 1 3 3		(61') LEAN CLAY (CL); little silt, medium plasticity, moist, orange to red with some white and black		N=4	
65							(65') LEAN CLAY (CL); little silt, medium plasticity, moist, orange to red with some white and black		N=3	735
			SPT	1.8	1 1 2 5					
			ST	2.2				M-9 (68-70)		730
70							(72') LEAN CLAY (CL); trace fine sand, medium plasticity, firm, moist, orange to red with streaks of black, cohesive		N=6	
			SPT	2	1 3 3 3					725
75							(76') LEAN CLAY (CL); and silt, medium plasticity, firm, moist, orange with streaks of black and white, cohesive, 1" seam of white clay and gravel		N=9	
			SPT	1.8	2 3 6 6					720
80										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-9**
 Page: **5 of 7**


Drilling Start Date: **4/12/2017**
 Drilling End Date: **4/18/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.25**
 Location (Y, X): **1244471, 2027280.3**

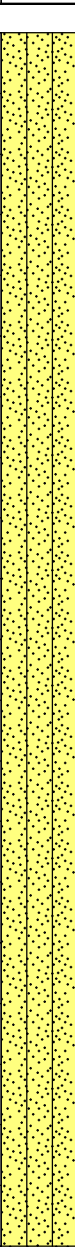
DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
80			SPT	2	4 3 5 8		(80') LEAN CLAY (CL); medium plasticity, firm, moist, orange with black streaks, cohesive, 1-2" seam white silty sand		N=8	
85			SPT	1.8	3 5 5 7		(84') LEAN CLAY with sand (CL); little silt, medium plasticity, firm, moist, orange to red marbled with black, cohesive		N=10	715
90			SPT	1.9	5 8 7 10		(88') CLAYEY SAND (SC); low plasticity, stiff, moist, orange to red marbled with black, cohesive, sand non-uniform		N=15	710
95			ST	2.3				M-9 (92-94)		705
100			SPT		5 7 11 12		(96') SILTY SAND (SM); non plastic, very stiff, moist, orange with red black, white streaks, non cohesive		N=18	700

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. M-9 Page: 6 of 7
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Drilling Start Date: 4/12/2017 Drilling End Date: 4/18/2017 Drilling Company: Thompson Engineering Drilling Method: Mud Rotary Drilling Equipment: CME-45C Driller Name: S. White and R. Odom Logged By: J. Gasser and H. Lutz	Boring Depth (ft): 132.1 Boring Diameter (in): 3 7/8 Sampling Method(s): SPT, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.25 Location (Y, X): 1244471, 2027280.3
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
100			SPT	2	5 10 11 14	(100.5') SILTY SAND with clay (SM); non plastic, medium dense, dry to moist, strong brown (7.5YR 5/8), medium grained, friable, relic rock structure black veining, two light gray (7.5YR 7/1) 0.5" layers at 101.5' and 102.4' (still part of overall composition-layer medium to coarse grains), zone from 101.1 to 101.3' increase in large grained mica flakes 1.3 mm diameter		N=21 Photo represents recovered sample between 100.5'-102.5' interval.	695
105			SPT	2	8 11 14 20	(105.5') Becomes medium dense, very strong relic structure, white veins, black grains		N=25	
110			SPT	2	7 10 18 20	(108.5') Becomes predominantly reddish brown (5YR 6/4), sandy grains, medium to coarse grained angular micaceous flat grains (completely weathered rock), predominantly strong veining and native structure evident		Photo represents recovered sample between 108.5'-110.5' interval. N=28	690
115			SPT	2	8 9 12 17			N=21 Photo represents recovered sample between 112.5'-114.5' interval.	685
120			SPT	1.8	14 23 26 32	(117') Hard, medium dense, angular, moderately cemented, predominately biotite/hornblende grains (mm scale) ~5% mica grains, relic foliation structure evident, black veining, white layers ~2-3" thickness (very coarse grained sand), completely weathered relic quartzite		N=49	680

NOTE:



1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
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Drilling Start Date: **4/12/2017**
Drilling End Date: **4/18/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **J. Gasser and H. Lutz**

Boring Depth (ft): **132.1**
Boring Diameter (in): **3 7/8**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.25**
Location (Y, X): **1244471, 2027280.3**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)	
			Sample Type	Recovery (ft)	Blow Counts						
120			SPT	1.5	12 25 35 34		(117") Hard, medium dense, angular, moderately cemented, predominately biotite/hornblende grains (mm scale) ~5% mica grains, relic foliation structure evident, black veining, white layers ~2-3" thickness (very coarse grained sand), completely weathered relic quartzite (continued)		N=60		
125			SPT	1.4	21 35 28 23		(120') SILTY SAND with gravel (SM); very hard, light brown to gray (7.5YR 6/4), gravel to very coarse grained sands angular/blocky 2-3 mm diameter scale, pink feldspars, white quartz, minerals evident, friable, HIGHLY TO MODERATELY WEATHERED ROCK		N=63, Photo represents recovered sample between 124.5'-126.6' interval.	675	
			SPT		50/4		(128.5') SILTY SAND (SM); stiff, dry, fine grained, friable (PARTIALLY WEATHERED ROCK)			670	
130								(131') Estimated top of rock			
				SPT		50/1		(132.1') Boring Terminated			

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.25 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-10**
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Drilling Start Date: **4/19/2017**
 Drilling End Date: **4/21/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **106.6**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1244699.9, 2027366.8**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
5						(3') Water (ash pond)			795
10									790
15									785
20						(17') Top of Ash, very fine grained, "fluffy"		Top of ash determined using weighted tag line, run 3 7/8" tricone with mud and 4" casing into top of ash	780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-10**
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Drilling Start Date: **4/19/2017**
Drilling End Date: **4/21/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **106.6**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244699.9, 2027366.8**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(17') Top of Ash, very fine grained, "fluffy" (continued)			
25			SPT	0.1	WOR WOR WOR WOR	(23') SILTY SAND (SM); non plastic, very loose, saturated, very dark gray (2.5Y 3/1), very fine to fine grained, rapid dilatancy, ASH		N=0	775
30			SPT	1.6	WOR WOR WOR WOR	(28') As above, slight increase in clay content slightly more cohesive with depth, ASH		N=0, Photo represents recovered sample between 28'-30' interval.	770
35			SPT	1.7	WOR WOR WOR WOR	(33') Increasing clay content with depth, still less than 5-10%, saturated material "sticky" to touch, ASH		N=0	765
40			ST	2		(38') SILTY SAND with clay (SM); non plastic to low plasticity plasticity, very loose, saturated, very dark gray, fine grained, uniform, ASH	M-10 (38-40)		760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-10**
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Drilling Start Date: **4/19/2017**
Drilling End Date: **4/21/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **106.6**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244699.9, 2027366.8**




DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(38') SILTY SAND with clay (SM); non plastic to low plasticity plasticity, very loose, saturated, very dark gray, fine grained, uniform, ASH (<i>continued</i>)			
45			SPT	1.5	WOR WOR WOR	(43') CLAYEY SAND with silt (SC); very loose, fine to coarse grained, slow dilatancy, increasing grain size, increasing clay with depth, ASH		N=0, Photo represents recovered sample between 43'-45' interval.	755
50			SPT	2	WOR WOR WOR	(48') Becomes high plasticity, coarseness of sand component is increasing with clay content-increasing with depth		N=0	750
55			UD	1		(54.5') Presumed top of NATIVE	M-10 (53-55)	Native at 54.5'	745
60			SPT	2	1 2 2	(58') SILTY/CLAYEY SAND (SM-SC); wet, fine grained, black white and yellow veins cross cutting red (2.5YR 5/8) mottled with light red (2.5YR 7/8) sandy matrix material, NATIVE		N=5, Photo represents recovered sample between 58'-60' interval.	740

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. M-10 Page: 4 of 6
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Drilling Start Date: 4/19/2017 Drilling End Date: 4/21/2017 Drilling Company: Thompson Engineering Drilling Method: Mud Rotary Drilling Equipment: CME-45C Driller Name: S. White and R. Odom Logged By: H. Lutz	Boring Depth (ft): 106.6 Boring Diameter (in): 4 Sampling Method(s): SPT, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799 Location (Y, X): 1244699.9, 2027366.8
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60			UD	2			(58') SILTY/CLAYEY SAND (SM-SC); wet, fine grained, black white and yellow veins cross cutting red (2.5YR 5/8) mottled with light red (2.5YR 7/8) sandy matrix material, NATIVE (continued)	M-10 (60-62)		
65			SPT	2	1 2 2 2		(64') CLAYEY SAND with silt (SC); very loose, wet to moist, light red (2.5YR 6/8), fine to very fine grained, white black and yellowish veins, apparent leaf on bit when came out of hole, NATIVE		N=4, Photo represents recovered sample between 64'-66' interval.	735
70			SPT	1.8	1 1 2 3				N=3	730
75			SPT	2	2 2 3 5		(72') Becomes moist, low to medium plasticity, with black specs		N=5	725
80			SPT	2	2 2 3 4		(77') Same as above with slight increase in sand size form		N=5, Photo represents recovered sample between 76'-78' interval.	720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-10**
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Drilling Start Date: **4/19/2017**
Drilling End Date: **4/21/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **106.6**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799**
Location (Y, X): **1244699.9, 2027366.8**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
80			UD	2		(77') Same as above with slight increase in sand size form (continued)	M-10 (80-82)		
85			SPT	2	2 2 5	(84') CLAYEY SAND with silt (SC); medium plasticity, very loose, reddish yellow (7.5YR 6/6), very fine to fine grained, with black veining and black medium grained sands (<2%) (0.15' quartz gravel clast angular from 85.6'-85.75')		N=4	715
90			SPT	2	1 1 2 5	(88') Same as above with slight increase in sand, decrease with percent of silt and clay		Gradual decrease in clay content, N=3, Photo represents recovered sample between 88'-90' interval.	710
95			SPT	1.8	5 8 11 16	(92') CLAYEY SAND with silt and gravel (SC); firm, moist, reddish yellow (7.5YR 6/6), sand grains increasing with depth from fine to medium grain size, gravels present <2%, increasing hardness with depth, friable, NATIVE		N=19	705
100			SPT	1.7	7 12 18 29			N=30, Photo represents recovered sample between 96'-98' interval.	700

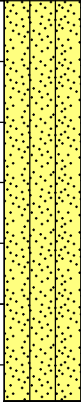

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**
BORING LOG
 Boring No. **M-10**
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 Drilling Start Date: **4/19/2017**
 Drilling End Date: **4/21/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

 Boring Depth (ft): **106.6**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799**
 Location (Y, X): **1244699.9, 2027366.8**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
100			SPT	1.5	25 31 32 50/6		(100') SAND with silt (SM); trace clay, non plastic, very hard, fine to medium grained, angular, friable, increasing component of quartz sands (>50%), relic laminated/foliated structure evident		N=63	695
105			SPT	1.4	5 26 50/4					
			SPT		50/1					
(106.6') Boring Terminated										

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-11**
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Drilling Start Date: **4/10/2017**
 Drilling End Date: **4/11/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **93.2**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.75**
 Location (Y, X): **1244961, 2027441.4**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			
3						(3') Water (ash pond)			795
5									
10									790
15									785
20									780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.75 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

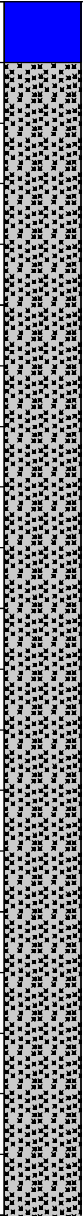


Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-11**
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Drilling Start Date: **4/10/2017**
 Drilling End Date: **4/11/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **S. White and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **93.2**
 Boring Diameter (in): **3 7/8**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **799.75**
 Location (Y, X): **1244961, 2027441.4**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
20							(3') Water (ash pond) (continued)		Top of ash determined using weighted tag line. "fluff" in to 3-4 feet	
25			SPT	1	WOR WOR WOR WOR		(21') Top of Ash, SAND with silt (SM); non plastic, very loose, saturated, very dark gray, very fine grained sand, uniform, non cohesive		N=0	775
30			UD	0					Piston Sample Run GUS Piston Sampler, no recovery	770
35			SPT	1.1	WOR WOR WOR WOR		(34') As above; becomes slight clay increase to <5% at 34'		N=0	765
40			UD	0					Piston Sample Run GUS Piston Sampler, no recovery	760

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.75 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-11**
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Drilling Start Date: **4/10/2017**
Drilling End Date: **4/11/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **93.2**
Boring Diameter (in): **3 7/8**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.75**
Location (Y, X): **1244961, 2027441.4**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(34') As above; becomes slight clay increase to <5% at 34' (continued)			
45			SPT	1.6	WOR WOR WOR WOR	(43') ASH with silt, with clay, non plastic, very soft, saturated, dark gray (5YR 3/1), fine grained, increasing clay content still only ~3-7% in fines		N=0, Photo represents recovered sample between 43'-45' interval.	755
50			UD	0		(47.7') Presumed top of NATIVE		Run GUS Piston Sampler, Pushed full 24", no recovery, damaged shelly tube on end	750
55			SPT	1.9	1 2 4 5	(50') INORGANIC SILT with micaceous fine sand (MH); soft, moist, yellowish red mottled with yellowish brown brown increasing with depth (5YR 4/6, 10YR 5/8), fine to coarse grained, mica pieces <2mm, angular, mica/schist structure foliation, some black veining evident (completely weathered muscovite schist)		N=6	
			SPT	2	3 3 4 6	(53') SILTY SAND (SM); low plasticity, medium dense, moist, yellowish brown mottled with brown (10YR 5/4, 10YR 4/3), fine to coarse grained, subrounded to angular, ~10% mica platy minerals (white), friable (~30-40% medium grained sand), obvious foliation/relic structure)		N=7, Photo represents recovered sample between 52'-54' interval.	
			ST	2			M-11 (54-56)	Run GUS Piston Sampler, full 24" recovery	745
60			SPT	1.9	4 6 7 9			N=13	740

NOTE:





1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.75 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-11**
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Drilling Start Date: **4/10/2017**
Drilling End Date: **4/11/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **S. White and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **93.2**
Boring Diameter (in): **3 7/8**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **799.75**
Location (Y, X): **1244961, 2027441.4**

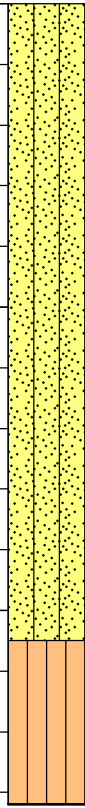


DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			Photo	MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts					
60			SPT	1.7	3 12 15		(53') SILTY SAND (SM); low plasticity, medium dense, moist, yellowish brown mottled with brown (10YR 5/4, 10YR 4/3), fine to coarse grained, subrounded to angular, ~10% mica platey minerals (white), friable (~30-40% medium grained sand), obvious foliation/relic structure) (continued)		N=19	
			SPT	1.5	6 7 6 6				N=13	
65			SPT	2	2 2 4 7		(64') Becomes more dense with depth, 3-5% mica (>1mm grain size)		N=6	735
			SPT	2	1 1 3 4		(65.5') SILTY SAND (SM); loose, moist, fine to coarse grained, color changes to uniform yellowish red (5YR 4/6) with 3-4 mm scale vein of 5YR 8/1 white sandy material		N=4, Photo represents recovered sample between 66'-68' interval.	
			SPT	2	1 2 4 6		(68') ~10% mica		N=6	
70			SPT	1.8	2 5 6 13		(70') Increase of mica grains to 15-20%, relic native rock structure and veining, foliated mica grains, hornblende and completely weathered micaceous schist		N=11	730
			SPT	1.8	10 12 13 15		(74') COMPLETELY WEATHERED ROCK, same as above, parent rock is muscovite schist		N=25	
75			SPT	1.9	7 12 18 25		(75') SILTY SAND (SM); stiff to medium dense, moist, fine to coarse grained, angular to subrounded, friable, ~15% micaceous grains (biotite <2%), foliation evident, sand grains increasing size with depth		N=30, Photo represents recovered sample between 74'-76' interval.	725
			SPT	1.5	10 11 15 17				N=26	
			SPT	1.8	10 24 50 34		(78') Becomes mottled very dark grayish brown with dark yellowish brown (10YR 3/2, 10YR 3/6), with large min. biotite extras, color variation from 78-84' BTOTC (79.1') Becomes very pale brown (10YR 8/3) (79.3') Becomes very dark grayish brown (10YR 3/2)		N=74	720

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.75 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

	Client: Southern Company Services Project: Plant Wansley Pre-Design Investigation Address: 1371 Liberty Church Rd. Carrollton, GA 30116	BORING LOG Boring No. M-11 Page: 5 of 5
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Drilling Start Date: 4/10/2017 Drilling End Date: 4/11/2017 Drilling Company: Thompson Engineering Drilling Method: Mud Rotary Drilling Equipment: CME-45C Driller Name: S. White and R. Odom Logged By: H. Lutz	Boring Depth (ft): 93.2 Boring Diameter (in): 3 7/8 Sampling Method(s): SPT, ST DTW During Drilling (ft): -- DTW After Drilling (ft): -- Top of Deck Elev. (ft): 799.75 Location (Y, X): 1244961, 2027441.4
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DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT				MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)				
			Sample Type	Recovery (ft)	Blow Counts	Photo								
80			SPT	1.5	2 8 15 17		(79.3') Becomes very dark grayish brown (10YR 3/2) (continued) (80.5') Becomes clay zone in middle of stiff silty SAND	M-11 (84-86)	N=23 N=7, Photo represents recovered sample between 82'-84' interval. Attempted Shelby Tube 84'-86', pushed ~2" refusal, no recovery	715				
			SPT	2	2 3 4 5		(82') From 82'-84' color variation mm scale bedding (angular 45°) 5YR 7/2 pinkish gray, 5YR 5/8 yellowish red, 5YR 3/2 dark reddish brown, firm (stiff), moist							
85			ST	0										
			SPT	1.1	26 50/5		(86') Non plastic, very hard, red (2.5YR 4/6), fine to coarse grained, same as above-less sand with depth, becomes uniform, friable, less sand with depth							
			SPT	0.2	50/2		(88') Angular 1-2" gravels (Schist)							
90														
			SPT	0.9	36 50/5		(90.5') SILT with fine to very fine sand (ML); hard, dry, yellowish red (5YR 5/8), friable, evident former rock structure including hornblende grains, biotite grains, foliation schistose structure							
			SPT		50/2									
(93.2') Boring Terminated														

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 799.75 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



Client: **Southern Company Services**
 Project: **Plant Wansley Pre-Design Investigation**
 Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
 Boring No. **M-12**
 Page: **1 of 4**

Drilling Start Date: **4/6/2017**
 Drilling End Date: **4/6/2017**
 Drilling Company: **Thompson Engineering**
 Drilling Method: **Mud Rotary**
 Drilling Equipment: **CME-45C**
 Driller Name: **P. Pitts and R. Odom**
 Logged By: **H. Lutz**

Boring Depth (ft): **73**
 Boring Diameter (in): **4**
 Sampling Method(s): **SPT, ST**
 DTW During Drilling (ft): **--**
 DTW After Drilling (ft): **--**
 Top of Deck Elev. (ft): **800**
 Location (Y, X): **1245236.4, 2027531.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
0						(0') Barge Deck			800
5						(3') Water (ash pond)			795
10									790
15									785
20						(18') Top of Ash		Top of ash determined using weighted tag line.	780

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-12**
Page: **2 of 4**

Drilling Start Date: **4/6/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **73**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1245236.4, 2027531.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
20						(18') Top of Ash (continued)			780
			SPT	1.2	WOR WOR WOR	(23') FLY ASH, non plastic, saturated, very dark gray (2.5Y 3/1), fine to very fine grained, rapid dilatancy, non cohesive, exhibits liquifaction		N=0, Photo represents recovered sample between 23'-25' interval.	775
25									
			SPT	0.6	WOR WOR WOR			N=0	770
30									
			ST	0			M-12 (33-35)	Shelby Tube (Piston Sampler) pushed 33'-35', no recovery	765
35						(36') NATIVE-identified from drilling only (drilling change), no sample			
			ST	2			M-12 (38-40)		760
40									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-12**
Page: **3 of 4**

Drilling Start Date: **4/6/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **73**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1245236.4, 2027531.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
40						(36') NATIVE-Identified from drilling only (drilling change), no sample <i>(continued)</i>		Hard zone from 41' to 42'	760
45			SPT	1.8	1 2 5 6	(43') SILTY SAND (SM); non plastic, firm, white with black specks (25%) (2.5Y 8/1), fine grained, laminated (mm scale) structure, white/light yellowish brown ~10% visible mica grains, appears to be completely weathered muscovite schist, original structure still present, COMPLETELY WEATHERED ROCK		N=7, Photo represents recovered sample between 43'-45' interval.	755
			SPT	1.6	2 6 4 9	(45') SILT with sand (MH); and clay, non plastic, soft, brown (10YR 5/3), relic structures/quartz veins, COMPLETELY WEATHERED ROCK		N=10	
			SPT	1.7	3 4 6 7	(46') SILTY SAND (SM); non plastic, loose, white with black specks (25%) (2.5Y 8/1), fine to very fine grained, laminated (mm scale) structure, white/light yellowish brown ~10% visible mica grains, COMPLETELY WEATHERED ROCK		N=10 Photo represents recovered sample between 53'-55' interval.	750
50			SPT	2	2 3 6 8	(47') INORGANIC SILT with micaceous sand (10-15% mica) (MH); non plastic, brown (10YR 5/3), coarse to very coarse grained, angular, obvious relic structure, sand total ~30-40%, COMPLETELY WEATHERED ROCK		N=9	
			SPT	2	5 7 8 10	(49.5') Harder-mica rich zone, zone of more preserved parent rock		N=15	
55			SPT	2	4 4 5 10	(51') Structure is foliated with dark and light veins		N=9 Completely weathered rock from 43' to 53' appears to be completely weathered muscovite schist, original structures still present	745
60			SPT	2	2 2 4 6	(53') Same as above, structure still apparent, increasing clay content in fines, estimated <50% clay, still no to low plasticity, brown (10YR 5/3), COMPLETELY WEATHERED ROCK		N=6, Photo represents recovered sample between 58'-60' interval.	740
						(57.5') CLAYEY SAND (SC); loose, moist to wet, fine to medium grained, subrounded, increased clay content, some remaining weathered rock structure; still completely weathered rock, higher sand component in this lens			

NOTE:

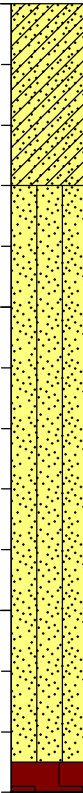

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.

Client: **Southern Company Services**
Project: **Plant Wansley Pre-Design Investigation**
Address: **1371 Liberty Church Rd. Carrollton, GA 30116**

BORING LOG
Boring No. **M-12**
Page: **4 of 4**

Drilling Start Date: **4/6/2017**
Drilling End Date: **4/6/2017**
Drilling Company: **Thompson Engineering**
Drilling Method: **Mud Rotary**
Drilling Equipment: **CME-45C**
Driller Name: **P. Pitts and R. Odom**
Logged By: **H. Lutz**

Boring Depth (ft): **73**
Boring Diameter (in): **4**
Sampling Method(s): **SPT, ST**
DTW During Drilling (ft): **--**
DTW After Drilling (ft): **--**
Top of Deck Elev. (ft): **800**
Location (Y, X): **1245236.4, 2027531.9**

DEPTH (ft)	GRAPHIC LOG	WATER LEVEL	COLLECT			MATERIAL DESCRIPTION	SAMPLE	REMARKS	ELEVATION (ft MSL)
			Sample Type	Recovery (ft)	Blow Counts				
60			SPT	2	6 7 8 12	(57.5') CLAYEY SAND (SC); loose, moist to wet, fine to medium grained, subrounded, increased clay content, some remaining weathered rock structure; still completely weathered rock, higher sand component in this lens <i>(continued)</i>		Start on 4/7/2017, new water level elevation that is ~2" higher than yesterday ~797 feet MSL	740
65			SPT	2	25 7 6 10	(63') SILTY SAND (SM); and <10% angular gravel (Shist bedrock material), brown olive to gray (10YR 5/3, 5Y 4/2), schist relic structure evident, foliation, COMPLETELY WEATHERED ROCK		N=15, Photo represents recovered sample between 63'-65' interval.	735
70						(72.5') Competent Rock (amphibolite schist?), rocks in shoe from 72.5 to 73 appear to be gravel size angular chunks of amphibolite schist, black and white, strong difference from competent weathered rock above (muscovite schist)		N=13 During mud rotary drilling from 70' to 73' drilling changed at 72.5' (top of rock), much harder, lower R.O.P. 1st Run on SPT @ 73' 50/1" Refusal	730
(73.0') Boring Terminated									

NOTE:

1. Drilling was completed in the ash pond from the deck of a barge.
2. Depths are in feet below deck surface. Deck surface at time of drilling was 800 ft MSL.
3. Drillers used split spoons for sampling and a tricone bit for rotary drilling.
4. Borings were backfilled with grout using tremie method.



LOG OF TEST BORING

BORING SPT-01

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 1/6/2015 **COMPLETED** 1/12/2015 **SURF. ELEV.** 915.1 **COORDINATES:** N:33.418589 E:85.061826
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 63 ft. **GROUND WATER DEPTH: DURING** 19 ft. **COMP.** 17 ft. **DELAYED** 17.5 ft. after 48 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
5		Lean Clay (CL) - red-brown and gray-brown, damp, very stiff, with mica	912.1	SS -1	1.0-2.5	10-8-10 (18)	
		Silty Sand (SM) - brown with black mottling, damp, dense, with mica and residual quartz rock		SS -2	3.5-5.0	15-21-22 (43)	
		- no recovery, sampler blocked by rock		SS -3	6.0-7.5	10-11-13 (24)	
10		Silt (ML) - gray-brown with white mottling, damp, very stiff, with sand	907.1	SS -4	8.5-10.0	9-9-9 (18)	
15		- gray-brown with white mottling, damp, very stiff, with sand		SS -5	13.5-15.0	5-9-11 (20)	
20		- dark brown with black mottling, wet, very stiff, <i>saprolite schist</i>		SS -6	18.5-20.0	5-9-13 (22)	
25		Silty Sand (SM) - gray-brown with black mottling, dry, very dense, <i>saprolite schist</i> , fine grained	892.1	SS -7	23.5-25.0	15-30-39 (69)	
30		Silt (ML) - gray-brown with black mottling, wet, very stiff, <i>saprolite schist</i>	887.1	SS -8	28.5-30.0	6-7-14 (21)	
35		- gray-brown with black mottling, wet, very stiff, <i>saprolite schist</i>		SS -9	33.5-35.0	5-8-12 (20)	
40		- gray-brown with black mottling, damp, hard, with sand		SS -10	38.5-40.0	6-14-29 (43)	

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LOG OF TEST BORING

BORING SPT-01

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
45		Silt (ML) (Con't)					
		- gray-brown with black mottling, damp, very hard, with sand		SS -11	43.5-43.8	50/3" (100+)	
50			868.1				
55		Gneiss					
		- dark gray to brown, fine to coarse grain, soft to hard, not to highly weathered, inclined, interlayered schist, intensely fractured		RC -12	47.0-53.0	63 (30)	
		- dark gray with light gray banding, fine grain, hard, not to slightly weathered, inclined, few fractures, interlayered biotite schist, moderately to slightly fractured		RC -13	53.0-56.0	100 (87)	
60		- dark gray with light gray banding, fine grain, hard to very hard, not weathered, inclined, numerous light red garnets (1-2 mm), interlayered biotite schist, slightly fractured		RC -14	56.0-63.0	97 (97)	
			852.1				

Bottom of borehole at 63.0 feet.



LOG OF TEST BORING

BORING SPT-02

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 1/13/2015 **COMPLETED** 1/14/2015 **SURF. ELEV.** 890.8 **COORDINATES:** N:33.423324 E:85.057460
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 53 ft. **GROUND WATER DEPTH: DURING** Dry **COMP.** Dry **DELAYED** Dry after 48 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
5		- boulders and partially weathered rock				Soil stripped in borrow area.
885.3						
10		Silt (ML) - gray-brown, dry, very stiff, with coarse-grained mica	SS -1	6.0-7.5	7-10-15 (25)	
15		- gray-brown to gray, dry, hard, with fine to coarse-grained mica	SS -2	8.5-10.0	11-15-17 (32)	
20		- gray and brown-gray, dry, very hard, <i>saprolite</i> , with fine-grained mica	SS -3	13.5-14.4	42-50/5" (100+)	
871.8						
25		Gneiss - gray to dark gray with interbedded light brown felsic-quartz veins, fine to medium grain, soft to hard, slightly to highly weathered, inclined, banded, biotite, quartz, feldspar, intensely fractured, iron stained fractures	RC -4	19.0-23.0	38 (0)	
30		- dark gray to black, white seams, medium to coarse grain, soft to hard, moderately weathered, inclined, banded, biotite, feldspathic-quartz seams 1-2 inches thick, moderately to intensely fractured	RC -5	23.0-28.0	78 (28)	
35		- dark gray to black, white seams, medium to coarse grain, soft to hard, moderately to highly weathered, inclined, banded, biotite, feldspathic-quartz seams 1-2 inches thick, iron staining, intensely fractured	RC -6	28.0-33.0	62 (0)	
852.8						
		- dark gray to black, white seams, medium to coarse grain, soft to medium hard, highly to completely weathered, inclined, banded, biotite, feldspathic-quartz seams 1-2 inches thick, intensely fractured	RC -7	33.0-38.0	8 (0)	

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LOG OF TEST BORING

BORING SPT-02

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
40		Gneiss - gray and dark gray with white seams, fine to coarse grain, medium hard to hard, not to moderately weathered, inclined, banded, interlayered schist, biotite, garnet (1-2 mm), feldspathic-quartz seams 1-2 inches thick, intensely fractured	RC -8	38.0-43.0	56 (8)	
45		- gray and dark gray, fine to coarse grain, hard, not to slightly weathered, inclined, banded, interlayered with coarse-grained schist, biotite, numerous garnets last 2 ft., not to slightly fractured	RC -9	43.0-48.0	102 (102)	
50		- gray and dark gray with light gray banding, fine to medium grain, hard, not weathered, inclined, banded, interlayered schist, biotite, feldspar, quartz, not to slightly fractured	RC -10	48.0-53.0	100 (100)	

837.8

Bottom of borehole at 53.0 feet.



LOG OF TEST BORING

BORING SPT-03

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 12/15/2015 **COMPLETED** 12/16/2015 **SURF. ELEV.** 923.8 **COORDINATES:** N:33.414990 E:85.061273
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 57 ft. **GROUND WATER DEPTH: DURING** 24 ft. **COMP.** 33 ft. **DELAYED** 33.5 ft. after 48 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
		ELEV.				
		Lean Clay (CL)				
		- red-brown, dry, stiff, <i>residuum</i>	SS -1	1.0-2.5	4-6-6 (12)	
		920.8				
		Silt (ML)				
		- pale red-brown with black and yellow mottling, dry, very stiff, <i>saprolite</i> , with clay	SS -2	3.5-5.0	6-11-13 (24)	
		- pale yellow- and red-brown, dry, very stiff, schist, with clay	SS -3	6.0-7.5	12-13-15 (28)	
		- pale red-brown, damp, very stiff, with mica and clay	SS -4	8.5-10.0	7-14-16 (30)	
		910.8				
		Clayey Sand (SC)				
		- pale red-brown with black mottles, wet, medium dense, fine to coarse grain, <i>saprolite</i> , laminated, with mica and silt	SS -5	13.5-15.0	10-12-13 (25)	
		- pale red-brown and pale brown, wet, medium dense, with residual quartz rock	SS -6	18.5-20.0	5-7-11 (18)	
		▽ - gray and brown-gray, wet, very dense, partially weathered rock	SS -7	23.5-23.8	50/4" (100+)	
		898.8				
		Gneiss				
		- gray and gray-brown, medium to coarse grain, medium hard, moderately to highly weathered, interlayered schist, intensely fractured	RC -1	25.0-32.0	93 (7)	
		- massive quartzite				
		↓				
		- gray and gray-brown, medium grain, medium hard, not to moderately weathered, interlayered biotite schist, intensely to moderately fractured	RC -2	32.0-37.0	36 (16)	
		886.8				

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LOG OF TEST BORING

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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
40		- gray with brown-yellow stained fractures, medium to coarse grain, medium hard to hard, not to moderately weathered, interlayered biotite schist, intensely fractured, near vertical fractures	RC -3	37.0-42.0	92 (14)	
45		- gray to dark gray, with dark gray-brown staining, medium to coarse grain, medium hard to hard, not to moderately weathered, interlayered biotite schist, moderately fractured	RC -4	42.0-47.0	78 (52)	
50		- gray to dark gray, medium grain, hard to very hard, not to moderately weathered, inclined, banded, interlayered biotite schist, slightly fractured	RC -5	47.0-52.0	100 (90)	
55		- gray to dark gray, fine to coarse grain, very hard, not to slightly weathered, inclined, banded, interlayered schist, biotite, slightly fractured	RC -6	52.0-57.0	90 (82)	

ELEV. 866.8

Bottom of borehole at 57.0 feet.



SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

DATE STARTED	<u>1/12/2015</u>	COMPLETED	<u>1/13/2015</u>	SURF. ELEV.	<u>916.2</u>	COORDINATES:	<u>N:33.418438 E:85.057485</u>
CONTRACTOR	<u>Ranger Consulting</u>	EQUIPMENT	<u>CME 550</u>	METHOD	<u>Mud Rotary; Casing Advance; NQ Diamond Core</u>		
DRILLED BY	<u>B. Ozment</u>	LOGGED BY	<u>W. Shaughnessy</u>	CHECKED BY	<u>L. Millet</u>	ANGLE	BEARING
BORING DEPTH	<u>48 ft.</u>	GROUND WATER DEPTH: DURING	<u>Dry</u>	COMP.	<u>25 ft.</u>	DELAYED	<u>25.5 ft. after 72 hrs.</u>
NOTES	<u></u>						

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS	
						PERCENT RECOVERY (RQD)		
5		Silt (ML)	910.2		SS -1	1.0-2.5	4-6-8 (14)	
		- red, dry, stiff						
		- brown-gray with light red laminations, dry, very hard						
		- no sample (fall-in material only)						
		- no recovery						
10			905.2		SS -3	6.0-7.5	4-3-2 (5)	
15		Gneiss			RC -5	11.0-18.0	63 (14)	
		- dark brown-gray, fine to coarse grain, soft to medium hard, moderately to highly weathered, inclined, quartz veins, feldspar, interbedded biotite schist, intensely fractured						
		- dark brown-gray, fine to coarse grain, soft to medium hard, highly weathered, inclined, quartz veins, feldspar, interbedded biotite schist, intensely fractured						
		- gray to dark gray, fine to coarse grain, soft to hard, slightly to highly weathered, inclined, banded, quartz veins, feldspar, interlayered biotite schist, moderately to intensely fractured						
		- dark brown-gray, fine to coarse grain, medium hard, moderately to highly weathered, inclined						
20					RC -6	18.0-23.0	38 (0)	
25					RC -7	23.0-28.0	80 (28)	
30					RC -8	28.0-33.0	66 (12)	
35					RC -9	33.0-38.0	42 (42)	
			878.2					

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LOG OF TEST BORING

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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
40		- gray to dark gray with light gray banding, medium to coarse grain, hard, not weathered, inclined, with micro-folds, interlayered schist, not to slightly fractured		RC -10	38.0-43.0	106 (106)	
45		- gray to dark gray with light gray banding, medium to coarse grain, hard, not weathered, inclined, with micro-folds, interlayered schist, not fractured	868.2	RC -11	43.0-48.0	84 (84)	

Bottom of borehole at 48.0 feet.



LOG OF TEST BORING

BORING SPT-05

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 12/17/2015 COMPLETED 12/18/2015 SURF. ELEV. 892.1 COORDINATES: N:33.422671 E:85.055294

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 78 ft. GROUND WATER DEPTH: DURING Dry COMP. 41 ft. DELAYED 41 ft. after 72 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
5		Silt (ML) - brown, damp, very stiff, with residual quartz rock		SS -1	1.0-2.5	4-8-9 (17)	
		- yellow-brown with black mottles, damp, stiff, with clay		SS -2	3.5-5.0	3-5-5 (10)	
		- brown with black and white banding, damp, very stiff, <i>saprolite</i> , with clay		SS -3	6.0-7.5	6-8-10 (18)	
		- gray-brown, very damp, very hard, <i>saprolite</i> , with sand		SS -4	8.5-9.5	40-50 (100+)	
			879.1				
15		Partially Weathered Rock (PWR) - gray-brown, dry, very hard, with silt and clay, mica		SS -5	13.5-15.0	7-15-37 (52)	
		- gray-brown, dry, very hard, with silt and clay, mica		SS -6	18.5-18.8	50/4" (100+)	
			870.1				
25		Gneiss - gray and gray-brown, fine to coarse grain, soft to medium hard, moderately to highly weathered, inclined, interbedded with feldspathic quartz veins, intensely fractured		RC -1	22.0-28.0	92 (17)	
		- gray and gray-brown, fine to medium grain, soft to medium hard, not to highly weathered, inclined, interlayered schist, coarse-grained feldspathic quartz seams, moderately fractured		RC -2	28.0-33.0	92 (40)	
		- gray to dark gray, brown-yellow where weathered, fine to medium grain, medium hard to hard, slightly to moderately weathered, inclined, interlayered schist, intensely fractured		RC -3	33.0-38.0	64 (0)	
			854.1				

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LOG OF TEST BORING

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
40		- gray to dark gray, brown-yellow where weathered, fine to medium grain, medium hard to hard, slightly to moderately weathered, inclined, coarse grained feldspathic quartz seams, biotite, slightly to moderately fractured	RC -4	38.0-43.0	98 (56)	
45		- gray and dark brown-gray, coarse grain, soft to hard, not to moderately weathered, inclined, massive quartz vein, interlayered biotite schist, moderately to slightly fractured	RC -5	43.0-48.0	98 (62)	
50		- dark brown-gray, soft, highly to completely weathered, mica schist, coarse-grained, feldspathic quartz seams	RC -6	48.0-53.0	4 (0)	
55		- brown, medium to coarse grain, soft to medium hard, highly weathered, silty clay and mica schist, intensely fractured	RC -7	53.0-58.0	38 (0)	
60		- dark brown-gray, medium to coarse grain, soft to medium hard, moderately to highly weathered, numerous fractures, feldspathic quartz seams, iron staining, moderately to intensely fractured	RC -8	58.0-63.0	108 (32)	
65		- dark brown-gray, coarse grain, medium hard, moderately to highly weathered, numerous fractures, feldspathic quartz seams, iron staining, moderately fractured	RC -9	63.0-68.0	112 (28)	
70		- dark gray with light gray felsic-quartz viens, fine to medium grain, hard, not to slightly weathered, not to slightly fractured	RC -10	68.0-73.0	100 (100)	
75		- dark gray with light gray felsic-quartz viens, fine to medium grain, hard, not to slightly weathered, not to slightly fractured	RC -11	73.0-78.0	100 (100)	
		814.1				

Bottom of borehole at 78.0 feet.



LOCATION Plant Wansley

BORING DEPTH 37 ft. **GROUND WATER DEPTH: DURING** 15 ft. **COMP.** 21.5 ft. **DELAYED** 22 ft. after 48 hrs.

NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
		ELEV.				
5		Lean Clay (CL) - pale red-brown and gray, dry, stiff, <i>residuum</i> , with mica - red-brown, dry, very stiff, <i>residuum</i> , with coarse-grained mica, residual schist	SS -1	1.0-2.5	5-6-4 (10)	
		856.5	SS -2	3.5-5.0	6-10-15 (25)	
10		Silt (ML) - pale gray-brown, dry, hard - pale brown with black mottles, wet, very stiff, mica seams throughout - pale brown, wet, very stiff, with mica	SS -3	6.0-7.5	13-25-46 (71)	
		843.5	SS -4	8.5-10.0	6-8-12 (20)	
15			SS -5	13.5-15.0	6-9-12 (21)	
20		Partially Weathered Rock (PWR) - no recovery- partially weathered rock	SS -6	18.5-18.5	50/0" (100+)	
		841.0				
25		Gneiss - gray to dark gray, medium to coarse grain, not to highly weathered, interlayered schist, quartz veins, fine grained garnets, moderately to intensely fractured - dark brown, highly weathered, iron staining 24.5-25 ft. - fracture zone 26-27 ft.	RC -1	21.0-28.0	93 (46)	
30			RC -2	28.0-33.0	104 (100)	
35		- gray to dark gray, medium to coarse grain, not to moderately weathered, inclined, few quartz veins, iron stained, interlayered biotite schist, slightly to intensely fractured - gray to dark gray, fine to medium grain, not weathered, few thin quartz veins, fine to medium-grained garnets, interlayered biotite schist, slightly fractured	RC -3	33.0-37.0	100 (100)	
		825.0				
Bottom of borehole at 37.0 feet.						



LOG OF TEST BORING

BORING SPT-07

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 1/22/2015 **COMPLETED** 1/28/2015 **SURF. ELEV.** 864.4 **COORDINATES:** N:33.431086 E:85.048013
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 88 ft. **GROUND WATER DEPTH: DURING** 25 ft. **COMP.** 29.5 ft. **DELAYED** 28.5 ft. after 100 hrs.
NOTES

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	Lean Clay (CL) - red, damp, medium stiff, with sand and silt 861.4	SS -1	1.0-2.5	2-3-5 (8)	
	Silt (ML) - red-brown and gray-brown, damp, very stiff, with coarse mica and clay - brown with black mottles, damp, very stiff, with clay 856.4	SS -2 SS -3	3.5-5.0 6.0-7.5	8-9-15 (24) 10-14-13 (27)	
10	Silty Sand (SM) - yellow-brown with black mottles, damp, dense, fine grained 851.4	SS -4	8.5-10.0	9-13-20 (33)	
15	Silt (ML) - brown with black mottles, damp, very stiff, with sand	SS -5	13.5-15.0	8-13-17 (30)	
20	- gray-brown and black, damp, hard, coarse saprolite schist, with clay	SS -6	18.5-20.0	9-13-19 (32)	
25	▽ - yellow-brown and brown with black mottles, wet, hard, with sand	SS -7	23.5-25.0	9-14-21 (35)	
30	▽ - yellow-brown and brown with black mottles, wet, very stiff, with sand	SS -8	28.5-30.0	6-11-16 (27)	
35	- light brown with black and pale yellow laminations, wet, very stiff, with clay	SS -9	33.5-35.0	7-10-16 (26)	
40	- gray and dark gray with white mottling, wet, very hard, with sand and residual quartz rock	SS -10	38.5-40.0	9-27-29 (56)	

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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
45		Silt (ML) (Con't) - gray-brown with black mottles, damp, very hard, saprolite schist, with sand	SS -11	43.5-45.0	15-21-36 (57)	
50		- brown-gray with red mottles, damp, very hard, saprolite, coarse mica	SS -12	48.5-49.5	43-50 (100+)	
55		- gray-brown, damp, hard, saprolite, fine to medium grained mica, with clay	SS -13	53.5-55.0	17-21-25 (46)	
60		- gray-brown with white laminations, damp, very hard, saprolite, garnets, with clay	SS -14	58.5-60.0	18-26-40 (66)	
65		- brown-gray, wet, very hard, with sand and weathered schist	SS -15	63.5-63.8	50/3" (100+)	
70		Gneiss				
75		- brown and gray, fine to coarse grain, medium hard, slightly to highly weathered, intensely fractured	RC -16	68.0-73.0	90 (10)	
80		- gray and dark gray with light gray banding, fine to coarse grain, medium hard, slightly to moderately weathered, interlayered schist, moderately to intensely fractured, iron stained fractures	RC -17	73.0-78.0	100 (36)	
85		- gray and dark gray with light gray banding, fine to coarse grain, medium hard, slightly to moderately weathered, interlayered schist, slightly fractured, iron stained fractures	RC -18	78.0-83.0	102 (98)	
		- dark gray to black, fine to coarse grain, hard to very hard, not weathered, micro-folds, garnets, pyrite on foliation planes, interlayered schist, moderately fractured	RC -19	83.0-88.0	100 (76)	
Bottom of borehole at 88.0 feet.						



LOG OF TEST BORING

BORING SPT-08

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 1/16/2015 **COMPLETED** 1/16/2015 **SURF. ELEV.** 930.8 **COORDINATES:** N:33.432606 E:85.044206
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 63 ft. **GROUND WATER DEPTH: DURING** 25 ft. **COMP.** 48 ft. **DELAYED** 48 ft. after 100 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
		Silt (ML)				
		- brown-gray with white mottles, damp, very stiff, saprolite schist, with clay	SS -1	1.0-2.5	6-12-17 (29)	
		- brown-gray with white mottles, damp, very hard, saprolite schist, with clay	SS -2	3.5-5.0	17-23-29 (52)	
		- brown-gray and red-brown, dry, very hard, saprolite schist, with clay	SS -3	6.0-7.5	19-37-46 (83)	
		- brown-gray and red-brown, dry, hard, saprolite schist, with clay	SS -4	8.5-10.0	10-15-18 (33)	
		- pink-gray, dry, very hard, saprolite, with clay and sand	SS -5	13.5-15.0	12-23-40 (63)	
		- dark brown-gray and yellow-red, dry, very hard, saprolite schist, with clay	SS -6	18.5-20.0	21-35-44 (79)	
		- gray-brown and red-brown with black mottles, wet, very hard, saprolite schist, with clay	SS -7	23.5-24.5	27-50 (100+)	
		- gray-brown and red-brown with black mottles, wet, very hard, saprolite schist, with clay	SS -8	28.5-30.0	16-20-30 (50)	
		- red-brown and black, wet, hard, saprolite schist, with clay	SS -9	33.5-35.0	17-15-20 (35)	
		- gray-brown with black laminations, wet, very hard, with sand and mica	SS -10	38.5-40.0	10-22-39 (61)	

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LOG OF TEST BORING

BORING SPT-08

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
		Silt (ML) (Con't)					
			887.8				
45		Partially Weathered Rock (PWR) - very hard, no recovery	885.8	SS -11	43.5- 44.1	45-50/1" (100+)	
		Gneiss - dark gray and white, medium grain, soft to medium hard, highly weathered, interlayered schist, intensely fractured		RC -12	45.0- 48.0	53 (0)	
50		- dark gray to black with light gray banding, fine to medium grain, medium hard to hard, not to highly weathered, inclined, banded, interlayered schist, slightly to intensely fractured, fresh last 2 feet		RC -13	48.0- 53.0	68 (40)	
55		- gray with light gray banding, fine to coarse grain, hard, not weathered, inclined, banded, interlayered schist, slightly fractured		RC -14	53.0- 63.0	98 (98)	
60			867.8				











Bottom of borehole at 63.0 feet.



ECS37440

LOCATION Plant Wansley

NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
		Lean Clay (CL) - red, dry, stiff, <i>residuum</i> , with silt and mica	910.0	 SS -1	1.0-2.5	3-4-5 (9)	24 hr and 48 hr: caved at 32 feet.
5		Silt (ML) - red with black and red-yellow mottles, dry, very stiff, saprolite schist, with clay		 SS -2	3.5-5.0	9-13-15 (28)	
		- red, red-brown and black, dry, very hard, saprolite schist, with clay		 SS -3	6.0-7.5	14-27-33 (60)	
10		- red, red-brown and black, dry, hard, saprolite schist, with clay		 SS -4	8.5-10.0	8-15-22 (37)	
15		- red, red-yellow, gray-brown with black mottling, damp, very stiff, with mica and clay		 SS -5	13.5-15.0	7-12-16 (28)	
20		- red-yellow and gray-brown with black mottling, damp, hard, with mica and clay		 SS -6	18.5-20.0	7-15-21 (36)	
25		- red-yellow and gray-brown with black mottling, damp, hard, with mica and clay		 SS -7	23.5-25.0	9-17-26 (43)	
30		- gray-brown with black mottles, dry, hard, with clay and sand		 SS -8	28.5-30.0	9-16-28 (44)	
35		- gray-brown and red-yellow layers, black mottling, damp, very hard, with clay, residual quartz rock and mica		 SS -9	33.5-33.9	50/5" (100+)	
40		- gray-brown and dark brown, damp, very hard, saprolite schist, with clay		 SS -10	38.5-39.4	38-50/5" (100+)	

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ECS37440

LOCATION Plant Wansley

Bottom of borehole at 75.0 feet.



LOG OF TEST BORING

BORING SPT-10

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 1/21/2015 **COMPLETED** 1/22/2015 **SURF. ELEV.** 884.2 **COORDINATES:** N:33.428059 E:85.045369
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 78 ft. **GROUND WATER DEPTH: DURING** 25 ft. **COMP.** 56 ft. **DELAYED** 56 ft. after 100 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
5		Lean Clay (CL) - red with red-yellow mottles, damp, medium stiff, with silt	881.2	SS -1	1.0-2.5	2-3-4 (7)	
10		Silt (ML) - red and gray-brown, damp, very stiff, saprolite schist	878.7	SS -2	3.5-5.0	5-7-13 (20)	
15		Silty Sand (SM) - brown and gray-brown with red-yellow mottling, wet, medium dense	876.2	SS -3	6.0-7.5	7-8-11 (19)	
20		Silt (ML) - red-brown with black mottles, damp, very stiff, saprolite schist	871.2	SS -4	8.5-10.0	7-12-16 (28)	
25		Lean Clay (CL) - red, damp, stiff, with silt and sand	866.2	SS -5	13.5-15.0	4-5-9 (14)	
30		Silt (ML) - brown-gray with black mottles, damp, hard, with clay	861.2	SS -6	18.5-20.0	12-23-22 (45)	
35		Silty Sand (SM) - dark gray, wet, very hard, with coarse sand	856.2	SS -7	23.5-25.0	20-28-39 (67)	
40		Silt (ML) - brown with black mottles, wet, very hard, with clay		SS -8	28.5-30.0	18-25-43 (68)	
		- gray-brown, wet, very hard, with sand and mica		SS -9	33.5-34.0	50 (100+)	
		- brown with yellow and white mottling, damp, hard, saprolite, with clay and mica		SS -10	38.5-40.0	10-17-25 (42)	

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LOG OF TEST BORING

BORING SPT-10
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
45		Silt (ML)(Con't)					
		- brown with black and red-yellow mottles, wet, very hard, with clay and sand		SS -11	43.5-44.4	23-50/5" (100+)	
50		- brown-gray with red-yellow mottles, wet, very hard, saprolite, with sand and mica		SS -12	48.5-49.4	28-50/5" (100+)	
55			831.2				
		Partially Weathered Rock (PWR)					
		- gray-brown with black and red-brown mottling, damp, very dense, clayey sand, fine grained		SS -13	53.5-55.0	10-28-38 (66)	
60		- very dense, no recovery		SS -14	58.5-58.7	50/2" (100+)	
65			822.2				
		Gneiss					
		- gray to dark gray, medium to coarse grain, soft to hard, slightly to highly weathered, biotite, quartz, moderately fractured		RC -15	62.0-68.0	22 (17)	
70		- gray to dark gray with light gray banding, medium to coarse grain, soft to hard, not to slightly weathered, biotite, quartz, moderately fractured		RC -16	68.0-73.0	100 (70)	
75		- gray to dark gray with light gray banding, medium to coarse grain, soft to hard, not to slightly weathered, biotite, quartz, moderately fractured		RC -17	73.0-78.0	100 (80)	
			806.2				

Bottom of borehole at 78.0 feet.



LOG OF TEST BORING

BORING SPT-11
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DATE STARTED 1/21/2015 COMPLETED 1/21/2015 SURF. ELEV. 903.5 COORDINATES: N:33.432904 E:85.040013

CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

BORING DEPTH 63 ft. GROUND WATER DEPTH: DURING 25 ft. COMP. 45.5 ft. DELAYED 45.5 ft. after 48 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	PERCENT RECOVERY (RQD)	COMMENTS
5		Lean Clay (CL) - red, dry, stiff, with silt	900.5	SS -1	1.0-2.5	5-6-6 (12)		
5		Silt (ML) - red, damp, stiff, with clay	898.0	SS -2	3.5-5.0	5-5-10 (15)		
10		Silty Sand (SM) - red-brown with black mottles, dry, medium dense	895.5	SS -3	6.0-7.5	6-10-13 (23)		
10		Silt (ML) - brown, damp, very stiff, with clay and mica		SS -4	8.5-10.0	5-6-13 (19)		
15		- brown-gray, dry, hard		SS -5	13.5-15.0	7-15-25 (40)		
20		- brown with dark brown mottles, dry, very hard, fine grained mica		SS -6	18.5-20.0	16-20-34 (54)		
25		Silty Sand (SM) - dark gray with white laminations, wet, very dense, saprolite	880.5	SS -7	23.5-25.0	8-38-44 (82)		
30		- dark gray with white laminations, wet, very dense, residual schist rock		SS -8	28.5-29.4	27-50/5" (100+)		
35		Partially Weathered Rock (PWR) - very dense, no recovery	870.5 868.5	SS -9	33.5-33.5	50/0" (100+)		
40		Gneiss - gray to dark brown-gray, medium to coarse grain, soft to medium hard, moderately to highly weathered, interlayered biotite schist, moderately fractured		RC -10	35.0-38.0	83 (47)		
				RC -11	38.0-43.0			

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LOG OF TEST BORING

BORING SPT-11

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
45		Gneiss (Con't) - dark brown and gray, dark gray, medium to coarse grain, medium hard to hard, slightly to highly weathered, interlayered biotite schist, slightly to moderately fractured	RC -11	38.0-43.0	64 (26)	
50		- dark brown-gray, coarse grain, soft, highly to completely weathered, intensely fractured	RC -12	43.0-48.0	22 (0)	
55		- gray and dark gray with light gray banding, fine to coarse grain, soft to hard, not to highly weathered, interlayered coarse schist, 1-foot weathered zone (51-52 ft.), slightly to intensely fractured	RC -13	48.0-53.0	82 (56)	
60		- gray to dark gray with light gray banding, fine to coarse grain, hard, not weathered, interlayered schist, not to slightly fractured	RC -14	53.0-58.0	112 (112)	
63.0		- gray to dark gray with light gray banding, fine to coarse grain, hard, not weathered, interlayered schist, not to slightly fractured	RC -15	58.0-63.0	100 (100)	

ELEV. 840.5

Bottom of borehole at 63.0 feet.



LOG OF TEST BORING

BORING SPT-12

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 1/20/2015 COMPLETED 1/20/2015 SURF. ELEV. 833.9 COORDINATES: N:33.433728 E:85.035814

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 36 ft. GROUND WATER DEPTH: DURING 15 ft. COMP. 12 ft. DELAYED 16 ft. after 48 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
5		Silt (ML) - red with red-yellow mottles, damp, medium stiff, with sand		SS -1	1.0-2.5	3-3-3 (6)	
		- gray-brown, red and red-brown, damp, very stiff, with clay and mica	828.4	SS -2	3.5-5.0	4-10-14 (24)	
10		Silty Sand (SM) - brown with pink and weak red mottles, damp, very dense, fine grain, with silt		SS -3	6.0-6.8	32-50/4" (100+)	
		- gray-brown, red with white mottles, damp, very dense, fine to coarse grain, with residual quartz rock and silt		SS -4	8.5-10.0	23-30-31 (61)	
15		- gray-brown with light gray mottles, wet, very dense		SS -5	13.5-14.5	25-50 (100+)	
20		Clayey Sand (SC) - brown, wet, very dense, with residual quartz rock	815.9	SS -6	18.5-18.5	50/0" (100+)	
25		Gneiss - gray to dark gray with light gray banding, medium to coarse grain, soft to hard, not to moderately weathered, banded, interlayered biotite schist, garnets up to 2 mm, quartz, slightly to moderately fractured	811.9	RC -1	22.0-28.0	73 (65)	
30		- gray to dark gray with light gray banding, fine to coarse grain, hard, not weathered, banded, interlayered biotite schist, garnets up to 2 mm, slightly fractured		RC -1	28.0-36.0	116 (116)	
35			797.9				

Bottom of borehole at 36.0 feet.



LOG OF TEST BORING

BORING SPT-13

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 2/17/2015 COMPLETED 2/17/2015 SURF. ELEV. 819.4 COORDINATES: N:33.413354 E:85.047660

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 60 ft. GROUND WATER DEPTH: DURING 25 ft. COMP. _____ DELAYED 20 ft. after 24 hrs.

 NOTES 0-25 ft. drilled with hollow stem auger

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	PERCENT RECOVERY (RQD)	COMMENTS
5		Lean Clay (CL) - red, damp, stiff, fill, with silt and mica	816.4	SS -1	1.0-2.5	3-6-6 (12)		
5		Silt (ML) - brown, dry, very stiff, with silt and mica	813.9	SS -2	3.5-5.0	8-9-9 (18)		
10		Silty Sand (SM) - brown and gray, dry, dense, some weathered schist rock	811.4	SS -3	6.0-7.5	15-18-18 (36)		
10		Lean Clay (CL) - brown, damp, stiff, with sand and mica		SS -4	8.5-10.0	4-5-8 (13)		
15		- red-brown and red, damp, stiff, with sand and mica		SS -5	13.5-15.0	7-6-8 (14)		
20		- red-brown and brown, damp, medium stiff, with sand and mica		SS -6	18.5-20.0	3-2-3 (5)		
25		Coal Combustion Byproduct (ASH) - very dark gray, wet, soft, with silt and sand	796.4	SS -7	23.5-25.0	2-1-2 (3)		
30		- black, wet, soft, fine to coarse grain, with sand		SS -8	28.5-30.0	3-2-2 (4)		
35		- very dark gray, wet, very soft, very fine grained		SS -9	33.5-35.0	WH-1-1 (2)		
40		- dark gray, wet, very soft, with clay and silt		SS -10	38.5-40.0	1-0-0 (0)		

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2012 GEOTECH ENGINEERING LOGS - ESEE2012DATABASE.GDT - 3/11/15 11:50 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\WANSLEY GEOTECH 2014\BORING LOGS\WANSLEY GEOTECH.GPJ



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BORING SPT-13

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
45		- very soft, no recovery	SS -11	43.5-45.0	WR-WR-WR (0)	
50		- very dark gray, wet, soft, very fine grained, with sand	SS -12	48.5-50.0	3-2-1 (3)	
55		- dark gray, wet, very soft, with clay and silt	SS -13	53.5-55.0	1-0-0 (0)	
60		- very dark gray, wet, medium stiff, very fine grained, with sand	SS -14	58.5-60.0	5-3-2 (5)	

Bottom of borehole at 60.0 feet.



LOG OF TEST BORING

BORING SPT-15

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 2/5/2015 COMPLETED 2/11/2015 SURF. ELEV. 819.6 COORDINATES: N:33.416780 E:85.045951

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 183 ft. GROUND WATER DEPTH: DURING 23 ft. COMP. 12 ft. DELAYED 9 ft. after 100 hrs.

NOTES _____

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
	Utility Clearance (HYDROEXCAVATION)				
5					
10	811.6 ▼ Silt (ML) - red-brown, damp, very stiff, with clay	SS -1	8.5- 10.0	22-13-9 (22)	
15	807.6 ▼ Lean Clay (CL) - red-brown, damp, stiff, with mica	SS -2	13.5- 15.0	4-6-8 (14)	
20	- red, damp, very stiff, silty	SS -3	18.5- 20.0	6-9-11 (20)	
25	796.6 ▼ Coal Combustion Byproduct (ASH) - black, wet, very soft, very fine grained	SS -4	23.5- 25.0	1-1-1 (2)	
30	- soft, no recovery	SS -5	28.5- 30.0	1-1-2 (3)	
35	- very dark gray, wet, medium stiff, very fine grained	SS -6	33.5- 35.0	2-2-3 (5)	
40	- very dark gray, wet, very soft, very fine grained	SS -7	38.5- 40.0	1-1-1 (2)	

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
45		Coal Combustion Byproduct (ASH)(Con't) - very dark gray, wet, very loose, fine to coarse grain, bottom ash	SS -8	43.5-45.0	1-1-2 (3)	
50		- dark gray, wet, very loose, fine to medium grain, bottom ash	SS -9	48.5-50.0	WH-WH-WH (0)	
55		- dark gray, wet, very loose, fine to medium grain, bottom ash	SS -10	53.5-55.0	2-2-1 (3)	
60		- dark gray, wet, very loose, fine to medium grain, bottom ash	SS -11	58.5-60.0	WR-WR-WR (0)	
65		- dark gray, wet, very soft, very fine grained, with silt	SS -12	63.5-65.0	WH-WH-WH (0)	
70		- dark gray, wet, very soft, very fine grained, with silt	SS -13	68.5-70.0	WR-WR-WR (0)	
75		- dark gray, wet, very soft, very fine grained, with silt	SS -14	73.5-75.0	WR-WR-WR (0)	
80		- dark gray, wet, very soft, very fine grained, with silt	SS -15	78.5-80.0	WR-WR-WR (0)	
85		- dark gray, wet, very soft, very fine grained, with silt	SS -16	83.5-85.0	WR-WR-WR (0)	
90		- no recovery	SS -17	88.5-90.0	WR-WR-WR (0)	

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BORING SPT-15

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
95		Coal Combustion Byproduct (ASH) (Con't) - dark gray, wet, very soft, very fine grained, with silt and sand		SS -18	93.5- 95.0	WR-WR-WR (0)	
100		- very dark gray, wet, very soft, with coarse sand		SS -19	98.5- 100.0	WR-WR-WR (0)	
105		- dark gray, wet, very soft, very fine grained, with silt		SS -20	103.5- 105.0	WR-WR-WR (0)	
110		- dark gray, wet, very soft, very fine grained, with silt		SS -21	108.5- 110.0	WR-WR-WR (0)	
115		- very dark gray to black, wet, very loose, coarse grained bottom ash		SS -22	113.5- 115.0	WR-WR-WR (0)	
120		- unable to advance casing, no sample	698.6				
125		Fat Clay (CH) - light gray, wet, very hard, <i>residuum</i> , silty		SS -23	123.5- 123.9	50/5" (100+)	
130		- pale yellow-brown with light yellow mottles, damp, very hard		SS -24	128.5- 129.9	38-40-50/5" (100+)	
135		Feldspathic quartzite - pink-gray with light gray banding, medium to coarse grain, medium hard to hard, not to slightly weathered, micro-folds, moderately to intensely fractured, iron staining in fractures, thinly foliated	686.6	RC -25	133.0- 138.0	108 (54)	
140		- pale gray-yellow to light gray, fine to medium grain, medium hard to hard, not to slightly weathered, foliated, intensely fractured, black mineralization in fractures		RC -26	138.0- 143.0	94 (38)	

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BORING SPT-15

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
145		Feldspathic quartzite(Con't)					
		- pale gray-yellow, medium to coarse grain, medium hard to hard, not to slightly weathered, foliated, elongated feldspar crystals (2-3 mm), intensely fractured		RC -26	143.0-148.0	100 (24)	
150		- pale gray-yellow, medium to coarse grain, medium hard to hard, slightly weathered, foliated, intensely fractured		RC -28	148.0-153.0	90 (18)	
155		- pale gray-yellow, medium to coarse grain, medium hard to hard, slightly weathered, foliated, moderately to intensely fractured		RC -29	153.0-158.0	114 (32)	
160		- light gray and pale yellow, medium to coarse grain, medium hard to hard, slightly to moderately weathered, quartz veins, moderately to intensely fractured		RC -30	158.0-163.0	88 (54)	
165		- pale gray-yellow, medium to coarse grain, medium hard to hard, slightly to moderately weathered, moderately to intensely fractured, interbedded with phyllite last 2 feet	651.6	RC -31	163.0-168.0	78 (20)	
170		Phyllite					
		- interlayered gray and gray-brown, fine to medium grain, medium hard to hard, slightly to moderately weathered, near horizontal, iron staining on foliation planes and fractures, interbedded with coarse-grained quartzite veins, intensely fractured		RC -32	168.0-173.0	96 (8)	
175		- gray and dark gray, fine grain, medium hard to hard, slightly weathered, near horizontal, fractures on foliation planes, iron staining on fractures, intensely fractured		RC -33	173.0-178.0	100 (0)	
180		- gray and dark gray, fine grain, medium hard to hard, slightly weathered, near horizontal, fractures on foliation planes, iron staining on fractures, moderately to intensely fractured	636.6	RC -34	178.0-183.0	98 (26)	
Bottom of borehole at 183.0 feet.							



LOG OF TEST BORING

BORING SPT-16

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation
LOCATION Plant Wansley
DATE STARTED 2/3/2015 **COMPLETED** 2/5/2015 **SURF. ELEV.** 813.9 **COORDINATES:** N:33.415144 E:85.043837
CONTRACTOR Ranger Consulting **EQUIPMENT** CME 550 **METHOD** Mud Rotary; Casing Advance; NQ Diamond Core
DRILLED BY B. Ozment **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 133 ft. **GROUND WATER DEPTH: DURING** 15 ft. **COMP.** 12 ft. **DELAYED** 2 ft. after 100 hrs.
NOTES

DEPTH (ft) GRAPHIC LOG	STRATA DESCRIPTION ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
				PERCENT RECOVERY (RQD)	
5	Coal Combustion Byproduct (Gypsum) (GYPSUM FILL) - pale yellow-brown, damp, stiff, clayey silt - pale yellow-brown, damp, very stiff, clayey silt - pale yellow-brown, wet, very stiff, clayey silt - pale yellow-brown, wet, hard, clayey silt	SS -1 SS -2 SS -3 SS -4	1.0-2.5 3.5-5.0 6.0-7.5 8.5-10.0	4-5-10 (15) 7-11-16 (27) 10-10-14 (24) 10-18-27 (45)	
15	Coal Combustion Byproduct (ASH) - dark gray to black, wet, loose, fine to coarse grain, with sand and silt, bottom ash	SS -5	13.5-15.0	1-3-3 (6)	
20	- dark gray, wet, very stiff, with clay, silt and sand	SS -6	18.5-20.0	1-10-14 (24)	
25	- dark gray, wet, soft, with clay, silt and sand	SS -7	23.5-25.0	1-1-2 (3)	
30	- soft, no recovery	SS -8	28.5-30.0	1-1-2 (3)	
35	- very soft, no recovery	SS -9	33.5-35.0	1-1-1 (2)	
40	- dark gray, wet, soft, with clay and silt	SS -10	38.5-40.0	2-2-1 (3)	

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LOG OF TEST BORING

BORING SPT-16

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
		ELEV.				
45		Coal Combustion Byproduct (ASH)(Con't)				
		- dark gray, wet, soft, with clay, silt and some coarse grained sand	SS -11	43.5-45.0	WR-2-2 (4)	
50		- dark gray, wet, medium dense, fine to coarse grain, bottom ash, with sand	SS -12	48.5-50.0	3-6-6 (12)	
55		- dark gray, wet, very soft, with clay and silt	SS -13	53.5-55.0	WH-WH-1 (1)	
60		- dark gray, wet, very soft, with clay and silt	SS -14	58.5-60.0	WH-WH-WH (0)	
65		- soft, no recovery	SS -15	63.5-65.0	2-2-1 (3)	
70		- very soft, no recovery	SS -16	68.5-70.0	WH-1-1 (2)	
75		- dark gray, wet, very soft, with clay and silt	SS -17	73.5-75.0	1-1-1 (2)	
80		- dark gray, wet, very soft, with clay and silt	SS -18	78.5-80.0	WR-WR-WR (0)	
85		- dark gray, wet, very soft, with clay and silt	SS -19	83.5-85.0	1-0-0 (0)	

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
		Coal Combustion Byproduct (ASH)(Con't)	725.9				
90		Elastic Silt (MH) - green-gray with pale yellow mottles, wet, very stiff, medium plasticity, with clay		SS -20	88.5- 90.0	6-11-13 (24)	
95		- yellow-red, yellow, light gray, and green-gray, wet, hard, medium to low plasticity, with sand		SS -21	93.5- 95.0	28-17-24 (41)	
			715.9				
100		Silt (ML) - yellow-brown with pale yellow mottling, wet, very hard, low plasticity, with sand		SS -22	98.5- 99.8	5-20-50/4" (100+)	
105		- green-brown with black mottling, wet, very hard, low plasticity, with sand and residual quartz rock		SS -23	103.5- 105.0	22-14-42 (56)	
			705.9				
110		Clayey Silty Sand (SC-SM) - gray with white mottling, wet, very dense, fine to coarse grain, with clay		SS -24	108.5- 108.8	50/3" (100+)	
			700.9				
115		Gneiss - dark gray, fine to medium grain, soft to medium hard, highly to completely weathered, interlayered biotite schist, feldspar, iron staining, intensely fractured		RC -25	113.0- 118.0	20 (0)	
120		- gray-brown and gray with white speckles, fine to coarse grain, soft to hard, moderately to highly weathered, inclined, interlayered biotite schist, feldspar, intensely fractured		RC -26	118.0- 123.0	46 (0)	
125		- gray with light gray quartz banding, fine to medium grain, soft to hard, not to slightly weathered, inclined, banded, interlayered biotite schist, pyrite on foliation planes, near vertical fractures, moderately fractured		RC -27	123.0- 128.0	100 (26)	
130		- gray with light gray quartz banding, fine to medium grain, soft to hard, not weathered, inclined, banded, interlayered biotite schist, moderately fractured		RC -28	128.0- 133.0	100 (68)	
			680.9				
Bottom of borehole at 133.0 feet.							



LOG OF TEST BORING

BORING SPT-17

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 1/5/2015 COMPLETED 1/6/2015 SURF. ELEV. 913.4 COORDINATES: N:33.419783 E:85.059606

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 83 ft. GROUND WATER DEPTH: DURING 15 ft. COMP. 11 ft. DELAYED 12 ft. after 48 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
						PERCENT RECOVERY (RQD)	
5		Lean Clay (CL) - red-brown and gray-brown, damp, stiff, <i>saprolite</i> , with mica		SS -1	1.0-2.5	3-4-5 (9)	
		- gray-brown, damp, very stiff, <i>saprolite</i> schist		SS -2	3.5-5.0	5-8-12 (20)	
		- gray-brown, damp, very stiff, <i>saprolite</i> schist		SS -3	6.0-7.5	12-14-17 (31)	
10		- gray-brown, damp, very stiff, <i>saprolite</i> schist		SS -4	8.5-10.0	11-13-12 (25)	
			900.4				
15		Silt (ML) - gray-brown, wet, very stiff, with some residual quartz rock, clay and mica		SS -5	13.5-15.0	8-12-17 (29)	
		- gray-brown, damp, very stiff, with some clay and mica		SS -6	18.5-20.0	8-9-10 (19)	
25		- gray-brown, damp, hard, with mica		SS -7	23.5-25.0	18-30-50 (100+)	
			885.4				
30		Partially Weathered Rock (PWR) - sampler blocked by rock		SS -8	28.5-30.0	6-12-20 (32)	
			880.4				
35		Gneiss - gray-brown and gray, medium to coarse grain, soft to medium hard, slightly to highly weathered, inclined, interlayered schist, intensely fractured		RC -9	33.0-43.0	31 (0)	
40							

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LOG OF TEST BORING

BORING SPT-17

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 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
45		Gneiss(Con't)				
50		- gray and dark gray, fine to coarse grain, medium hard to hard, not to moderately weathered, inclined, interlayered biotite schist, moderately fractured	RC -10	43.0-53.0	93 (40)	
55		- gray to dark gray, light gray banding, fine to coarse grain, hard to very hard, not to slightly weathered, inclined, coarse feldspar grains throughout, quartz veins, near vertical fractures, interlayered biotite schist, slightly to moderately fractured	RC -11	53.0-63.0	84 (54)	
60						
65		- gray to dark gray, light gray banding, fine to coarse grain, hard to very hard, not to slightly weathered, inclined, coarse feldspar grains throughout, quartz veins, near vertical fractures, interlayered biotite schist, slightly to moderately fractured	RC -12	63.0-73.0	91 (60)	
70						
75		- gray to dark gray, light gray banding, fine to medium grain, hard to very hard, not to slightly weathered, inclined, interlayered coarse-grained biotite schist, feldspar, not to slightly fractured	RC -13	73.0-83.0	99 (87)	
80						
		830.4				

Bottom of borehole at 83.0 feet.



LOG OF TEST BORING

BORING SPT-18

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ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

 PROJECT Geotechnical Investigation

 LOCATION Plant Wansley

 DATE STARTED 1/28/2015 COMPLETED 1/29/2015 SURF. ELEV. 915.3 COORDINATES: N:33.430628 E:85.046102

 CONTRACTOR Ranger Consulting EQUIPMENT CME 550 METHOD Mud Rotary; Casing Advance; NQ Diamond Core

 DRILLED BY B. Ozment LOGGED BY W. Shaughnessy CHECKED BY L. Millet ANGLE _____ BEARING _____

 BORING DEPTH 73 ft. GROUND WATER DEPTH: DURING 35 ft. COMP. 37 ft. DELAYED 37 ft. after 100 hrs.

NOTES _____

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	COMMENTS
					PERCENT RECOVERY (RQD)	
		ELEV.				
		Lean Clay (CL)				
		- red and dark gray, damp, very stiff, with sand, residual rock and mica	SS -1	1.0-2.5	6-8-8 (16)	
		Silt (ML)				
		- pale brown, dry, very stiff, with mica and clay	SS -2	3.5-5.0	6-9-11 (20)	
		- brown and dark red, dry, hard, with clay	SS -3	6.0-7.5	5-12-29 (41)	
		- brown, damp, very hard, with clay and some sand	SS -4	8.5-10.0	17-23-42 (65)	
		- brown with black mottles, damp, very hard, with clay and some sand	SS -5	13.5-15.0	16-28-50 (100+)	
		- brown with black mottles, damp, very hard, with clay, some sand and residual rock	SS -6	18.5-20.0	15-31-47 (78)	
		- pale brown, damp, very hard, with clay	SS -7	23.5-25.0	13-26-44 (70)	
		- brown with black mottles, damp, very stiff, with sand	SS -8	28.5-30.0	8-11-13 (24)	
		- brown, wet, very stiff, with sand, residual rock and mica	SS -9	33.5-35.0	15-11-13 (24)	
		- brown, wet, very stiff, with sand, residual rock and mica	SS -10	38.5-40.0	13-25-37 (62)	

(Continued Next Page)



LOG OF TEST BORING

BORING SPT-18

PAGE 2 OF 2

ECS37440

 SOUTHERN COMPANY SERVICES, INC.
 EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Geotechnical Investigation

LOCATION Plant Wansley

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE)	PERCENT RECOVERY (RQD)	COMMENTS
		Silt (ML) (<i>Con't</i>)						
			872.3					
45		Clayey Sand (SC) - gray-brown, wet, dense, fine grain		SS -11	43.5- 45.0	11-14-22 (36)		
50		- gray, wet, very dense, fine grain		SS -12	48.5- 50.0	13-24-25 (49)		
55		- gray, wet, very dense, fine grain		SS -13	53.5- 54.2	36-50/2" (100+)		
			859.3					
		Gneiss - dark brown and gray, medium grain, soft, highly weathered, inclined, white feldspathic quartz banding, moderately fractured		RC -14	56.0- 58.0	85 (40)		
60		- dark brown and gray, medium grain, soft, moderately to highly weathered, inclined, white feldspathic quartz banding, intensely fractured		RC -15	58.0- 63.0	28 (8)		
65		- gray to dark gray with light gray banding, medium to coarse grain, hard, not to slightly weathered, inclined, white feldspathic quartz banding, slightly to moderately fractured		RC -16	63.0- 68.0	112 (112)		
70		- gray to dark gray with light gray banding, medium to coarse grain, hard, not to slightly weathered, banded, garnets, slightly fractured		RC -17	68.0- 73.0	102 (96)		
			842.3					

Bottom of borehole at 73.0 feet.

SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of

Bond: Performance Bond for Water Well Contractors

dated

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

executed by Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

. as Principal,

and by Atlantic Specialty Insurance Company

. as Surety,

in favor of State of Georgia
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:
Michael Coleman

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider

is effective December 21, 2017
(MONTH-DAY-YEAR)

Signed and Sealed December 21, 2017
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

By: _____
(PRINCIPAL)

Atlantic Specialty Insurance Company

By: Elizabeth R. Hahn
Elizabeth R. Hahn, Attorney-in-Fact





Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Jill A. Wallace, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars (\$60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

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

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

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

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

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this eighth day of December, 2014.

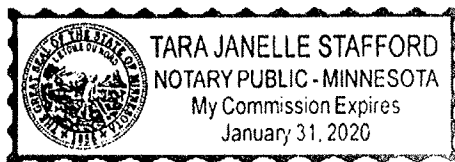


STATE OF MINNESOTA
HENNEPIN COUNTY

By

Paul J. Brehm, Senior Vice President

On this eighth day of December, 2014, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.

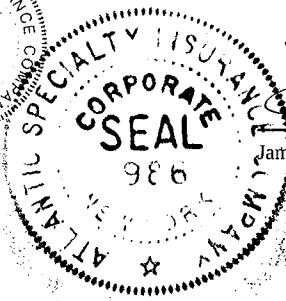


Notary Public

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

Signed and sealed. Dated 21 day of December, 2017

This Power of Attorney expires
October 1, 2019



James G. Jordan, Assistant Secretary

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America

, Surety upon

a certain Bond No. 4993104

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

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

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

does hereby continue said bond in force for the further period

beginning on June 30, 2017
(MONTH-DAY-YEAR)

and ending on June 30, 2018
(MONTH-DAY-YEAR)

Amount of bond \$10,000.00

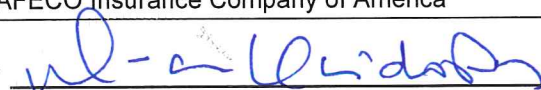
Description of bond Water Well Contractors & Drillers

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

Signed and dated on May 04, 2017
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By



D-Ann Kleidosty, Attorney-in-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7710213

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, **Brooke A. Sharp; Christine Doczy; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle**

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 4th day of April, 2017.



American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: David M. Carey
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 4th day of April, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS - Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 4th day of May, 2017.



By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

Bond Number 1001126889

Performance Bond For Drillers

Name of Driller Phillip Pitts and Stan White

Know All Men By These Presents

That we Phillip Pitts and Stan White and Thompson Engineering, Inc. any and all employees, officers and partners (collectively hereinafter, **Principal**), and we American Contractors Indemnity Company, duly organized under the laws of the State of California (hereinafter, **Surety**), are held and firmly bound unto the Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia (**Director**) and his or her Successor or Successors in office, as **Obligee**, in the full sum of **FIFTEEN THOUSAND DOLLARS (\$15,000.00)** for the payment of which will and truly to be made, the Principal and Surety bind ourselves, our heirs, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (O.C.G.A. §§ 12-5-120 *et seq.*) (the Act) requires that a Driller, as that term is defined by the Act, have a performance bond with the Director to ensure compliance with the Act; and WHEREAS the above bound Principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now and hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise it shall remain in full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in anyway discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption or modification.

This bond shall be effective from the 1st day of November, 2018 and shall continue in effect until June 30, 2019, unless sooner terminated by mutual agreement of Principal and Surety, provided that no such termination may be made unless sixty (60) days' prior written notice is made to the Director. In the event of such termination, the rights of the Director as Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

IN WITNESS THEREOF the Principal and Surety have caused these present to be duly signed and sealed, this the 26th day of February, 2019.

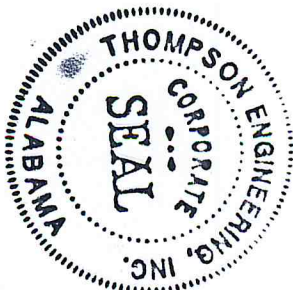
Principal
Thompson Engineering, Inc.

Print name: Chad R. Brown
Title: CLO + Secretary

Surety
American Contractors Indemnity Company

Dewey Brashier
Print name: Dewey Brashier
Title: Attorney-in-Fact

Seal:



Seal:

Revised March 2017



TOKIO MARINE
HCC

POWER OF ATTORNEY

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

KNOW ALL MEN BY THESE PRESENTS: That American Contractors Indemnity Company, a California corporation, Texas Bonding Company, an assumed name of American Contractors Indemnity Company, United States Surety Company, a Maryland corporation and U.S. Specialty Insurance Company, a Texas corporation (collectively, the "Companies"), do by these presents make, constitute and appoint:

Jim E. Brashier, Troy P. Wagener, Loren Richard Howell, Jr., Dewey Brashier,
Kathleen B. Scarborough, Susan Skrmetta, John W. Nance

its true and lawful Attorney(s)-in-fact, each in their separate capacity if more than one is named above, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include riders, amendments, and consents of surety, providing the bond penalty does not exceed *****Unlimited***** Dollars (***unlimited***). This Power of Attorney shall expire without further action on April 23rd, 2022. This Power of Attorney is granted under and by authority of the following resolutions adopted by the Boards of Directors of the Companies:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, The Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 1st day of June, 2018.

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

State of California

County of Los Angeles



By:

Daniel P. Aguilar, Vice President

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

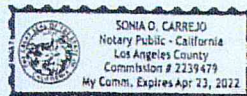
On this 1st day of June, 2018, before me, Sonia O. Carrejo, a notary public, personally appeared Daniel P. Aguilar, Vice President of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature

(seal)



I, Kio Lo, Assistant Secretary of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Los Angeles, California this 26th day of February, 2019.

Corporate Seals

Bond No. 1001126889

Agency No. 17033



Kio Lo, Assistant Secretary

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. 800033976

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

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

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

Issued on 9/27/2017
Expires on 6/30/2019
Renewed on 3/4/2019
Expires on 6/30/2021

does hereby continue said bond in force for the further period

beginning on 06/30/2019
(MONTH-DAY-YEAR)

and ending on 06/30/2021
(MONTH-DAY-YEAR)

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

Description of bond Performance Bond for Water Well Contractors

Premium: \$1200.00

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

Signed and dated on March 4th, 2019
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By 
Attorney-in-Fact Andrew P. Larsen

Parker, Smith & Feek, Inc.

Agent

2233 112th Ave NE Bellevue, WA 98004

Address of Agent

425-709-3600

Telephone Number of Agent



Power of Attorney

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

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

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

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

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

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

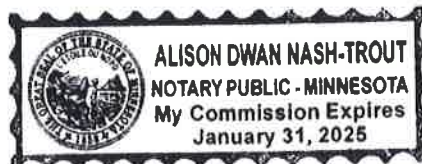
STATE OF MINNESOTA
HENNEPIN COUNTY



By

Paul J. Brehm, Senior Vice President

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

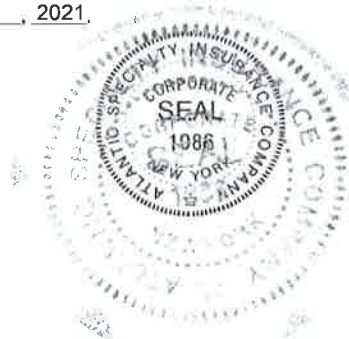


Notary Public

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

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

This Power of Attorney expires
January 31, 2025



Kara Barrow, Secretary

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. 800033976

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

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

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

does hereby continue said bond in force for the further period

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

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

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

Description of bond Performance Bond for Water Well Contractors

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

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

Atlantic Specialty Insurance Company

By 
Attorney-in-Fact Andrew P. Larsen

Parker, Smith & Feek, Inc.

Agent
2233 112th Ave NE Bellevue, WA 98004

Address of Agent

425-709-3600

Telephone Number of Agent

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. 800033976

dated effective September 27, 2017
(MONTH-DAY-YEAR)

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

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

does hereby continue said bond in force for the further period

beginning on June 30, 2023
(MONTH-DAY-YEAR)

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

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

Description of bond Performance Bond for Water Well Contractors

Premium:

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

Signed and dated on April 13, 2023
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By 
ATTORNEY-IN-FACT Carlos A. Albelo



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Megan Sivley, Melissa Haddick, Sandra Parker, Orlando Aguirre, Stacy Killebrew, Carlos A. Albelo**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

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

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

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

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

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this first day of January, 2023.

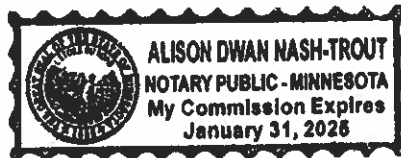


By

Sarah A. Kolar, General Counsel

STATE OF MINNESOTA
HENNEPIN COUNTY

On this first day of January, 2023, before me personally came Sarah A. Kolar, General Counsel of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and she acknowledged the execution of the same, and being by me duly sworn, that she is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.



Notary Public

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

Signed and sealed. Dated 13th day of April, 2023.



This Power of Attorney expires
January 31, 2025

Kara Barrow, Secretary

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail on Pad Northing	Nail on Pad Easting	Nail on Pad Elevation
PZ-1	1240249.8630	2022319.9310	856.72	1240249.9700	2022320.5080	853.91
PZ-4	1242592.0290	2023595.9140	889.01	1242592.3380	2023596.5490	886.13
PZ-6	1244382.8880	2024661.3940	915.15	1244383.1700	2024661.9960	912.30
PZ-8	1245514.5910	2026807.2980	867.29	1245514.7420	2026806.5550	864.65
PZ-10	1242058.4080	2028554.2850	832.02	1242059.0170	2028553.7330	829.26
PZ-11	1240578.8710	2026933.0880	823.09	1240579.6810	2026932.6430	820.21
PZ-12	1240837.9640	2026731.0050	818.74	1240838.5000	2026731.0470	816.17
PZ-15	1240457.6050	2025105.3770	826.86	1240456.9660	2025105.5600	824.59
PZ-16	1239419.7700	2023662.2240	800.70	1239419.1270	2023662.3410	798.05
PZ-17	1239270.0160	2023086.5000	831.01	1239269.7540	2023086.3130	828.54
PZ-18	1239569.5150	2022299.1990	814.51	1239569.7940	2022300.1040	812.10
PZ-20	1243496.8600	2030132.7300	787.30	1243495.6070	2030132.0520	784.45
WAMW-1	1241843.6600	2028944.6250	782.66	1241844.0310	2028943.9790	780.05
WAMW-2	1241547.5560	2028806.2670	770.82	1241547.1220	2028805.7030	768.39
WGWA-1	1250656.0950	2035580.7080	782.93	1250656.4090	2035580.1280	780.37
WGWA-2	1251556.3950	2035590.1080	758.23	1251556.3970	2035589.4980	755.77
WGWA-3	1240848.2140	2022350.0950	828.91	1240848.0950	2022350.8040	826.63
WGWA-4	1240879.5820	2022339.6570	834.34	1240879.8680	2022340.9730	831.33
WGWA-5	1241997.9440	2022368.8480	902.15	1241998.0000	2022369.7100	899.28
WGWA-6	1241932.0170	2022360.5840	897.13	1241931.8200	2022361.6140	894.62
WGWA-7	1243338.6270	2023843.8080	897.33	1243337.9640	2023843.4880	894.49
WGWA-18	1244592.5610	2025580.7050	878.02	1244592.1320	2025580.1320	875.47
WGWC-8	1242929.4040	2029644.5810	780.08	1242928.7100	2029644.4410	777.70
WGWC-9	1242801.1220	2029115.7520	812.03	1242800.5100	2029116.3540	809.33
WGWC-10	1240971.9590	2026725.6080	812.38	1240971.3740	2026725.3710	809.61
WGWC-11	1240860.1770	2025773.3940	823.96	1240859.5740	2025772.9470	821.44
WGWC-12	1240827.6760	2025755.9870	823.04	1240827.1900	2025755.4920	820.57
WGWC-13	1240610.9290	2024585.9120	809.78	1240610.3180	2024586.1010	807.32
WGWC-14A	1240604.5360	2024599.6310	810.94	1240603.9380	2024598.3360	808.20
WGWC-15	1240483.1620	2023912.9150	804.69	1240483.1680	2023912.2850	802.03
WGWC-16	1240480.4570	2023903.7730	804.21	1240480.3010	2023903.1200	801.72
WGWC-17	1240052.0560	2022623.8220	816.00	1240052.0140	2022623.1790	813.36
WGWC-19	1241851.5120	2028949.1850	783.42	1241851.9040	2028948.5970	780.60

Benchmark	Northing	Easting	Elevation
BM-W1	1243475.416	2029633.083	804.08
BM-W2	1251565.596	2035853.723	747.75

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 06/03/2020-06/10/2020. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM-W1 & BM-W2 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL



06/16/2020

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail on Pad Northing	Nail on Pad Easting	Nail on Pad Elevation
PZ-22	1243350.7570	2029769.4340	807.95	1243351.5210	2029768.3170	804.88
PZ-23D	1242139.5320	2028520.8680	834.32	1242138.6260	2028521.5100	831.89
PZ-23S	1242139.3280	2028512.6500	834.41	1242138.3710	2028513.3390	831.79
PZ-24	1241695.2460	2028116.0540	810.37	1241694.5570	2028117.2730	807.00
PZ-25S	1240769.7850	2027414.5750	823.80	1240770.8890	2027414.3720	820.50
PZ-26D	1239919.4530	2024146.3480	804.93	1239920.5460	2024145.9060	802.31
PZ-26S	1239916.6790	2024139.8210	804.80	1239917.8130	2024139.2740	802.22
PZ-27D	1240190.9250	2023620.3600	809.28	1240191.2500	2023619.0790	806.22
PZ-27S	1240184.1820	2023616.6900	808.98	1240184.5500	2023615.5290	805.98
PZ-28	1240066.0150	2022624.7330	816.18	1240066.0550	2022623.6960	813.57
PZ-29D	1244304.8990	2028853.2900	805.24	1244304.4270	2028852.7910	805.77
PZ-29S	1244317.1290	2028839.6800	805.30	1244316.6610	2028839.1970	805.80

PZ-22 has been renamed WGWC-20

PZ-23S has been renamed WGWC-21

PZ-24 has been renamed WGWC-22

PZ-25S has been renamed WGWC-23

PZ-26S has been renamed WGWC-24

PZ-27S has been renamed WGWC-25

Benchmark	Northing	Easting	Elevation
BM-W1	1243475.416	2029633.083	804.08

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 11/04/2020-11/05/2020. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM-W1 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL



[Handwritten Signature]

11/17/2020

GEL ENGINEERING OF NC INC**Plant Wansley Monitoring Wells**

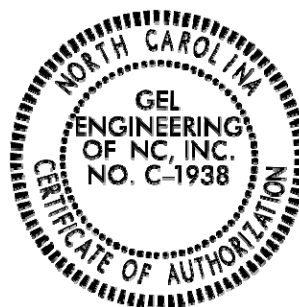
Field Surveys: 10/11/2022

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail or Pad Northing	Nail or Pad Easting	Nail or Pad Elevation	Description
WGWC-26D	1243343.658	2029758.846	808.23	1243344.161	2029757.977	805.06	NAIL
WGWC-27	1243215.513	2029878.918	780.54	1243215.002	2029879.991	778.05	NAIL
CSB-2022-01	1243334.918	2029756.286	804.93	N/A	N/A	N/A	BORING
CSB-2022-02	1243337.255	2029761.150	804.86	N/A	N/A	N/A	BORING
CSB-2022-03	1243341.239	2029768.805	804.81	N/A	N/A	N/A	BORING
Benchmark	Northing	Easting	Elevation				
BM-W1	1243475.416	2029633.083	804.08				

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 10/11/2022. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 & R12 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM-W1 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL



10/13/2022



COA - LS003119
Exp. 12/31/2022

GEL ENGINEERING OF NC INC**Plant Wansley Monitoring Wells**

Field Surveys: 8/29/2023

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail or Pad Northing	Nail or Pad Easting	Nail or Pad Elevation	Description
WGWC-28D	1243337.128	2029751.04	808.24	1243338.077	2029750.31	805.36	NAIL
Benchmark	Northing	Easting	Elevation				
BM-W1	1243475.416	2029633.083	804.08				

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING. DATE OF FIELD SURVEY & INSPECTION: 8/29/2023. FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD '88. EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 & R12 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM-W1 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL

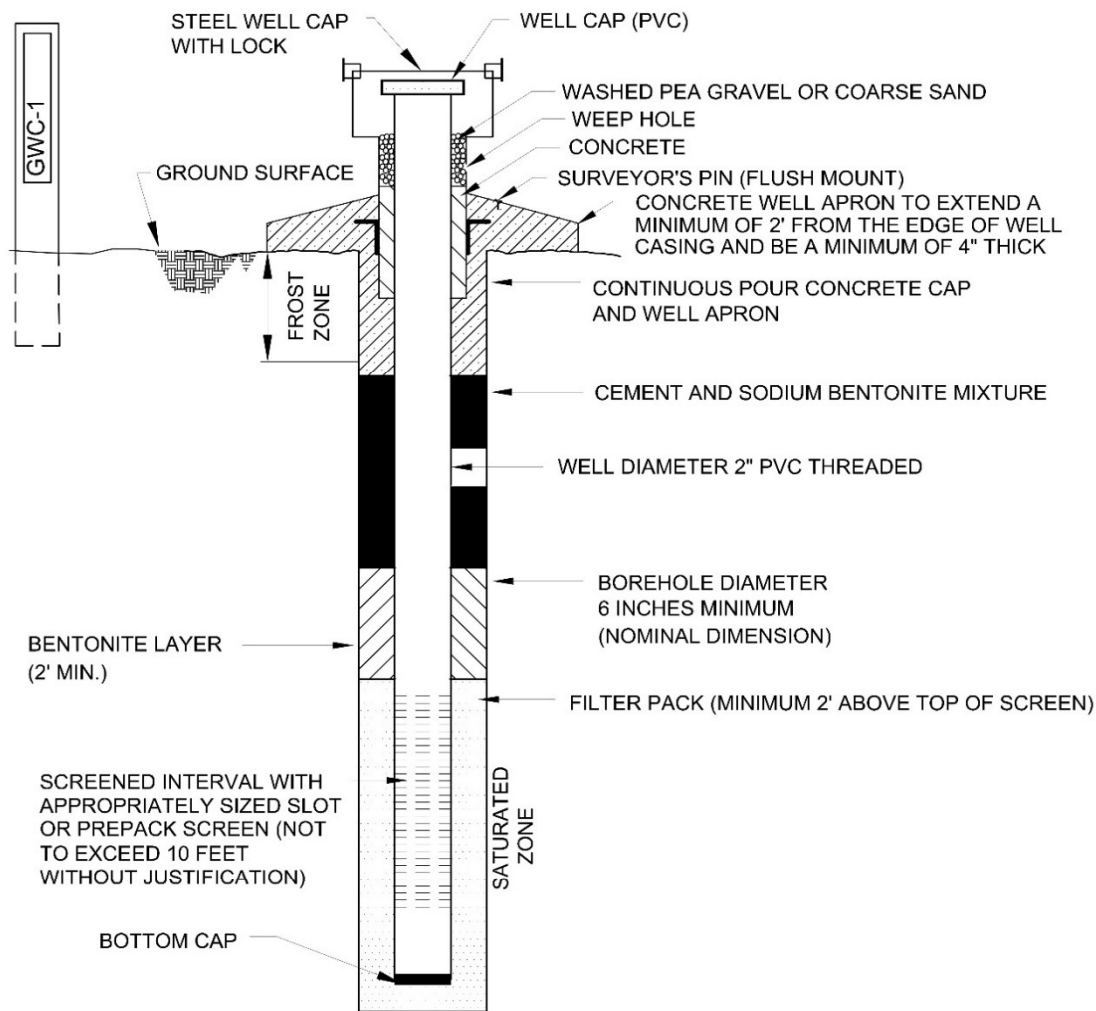


9/5/2023



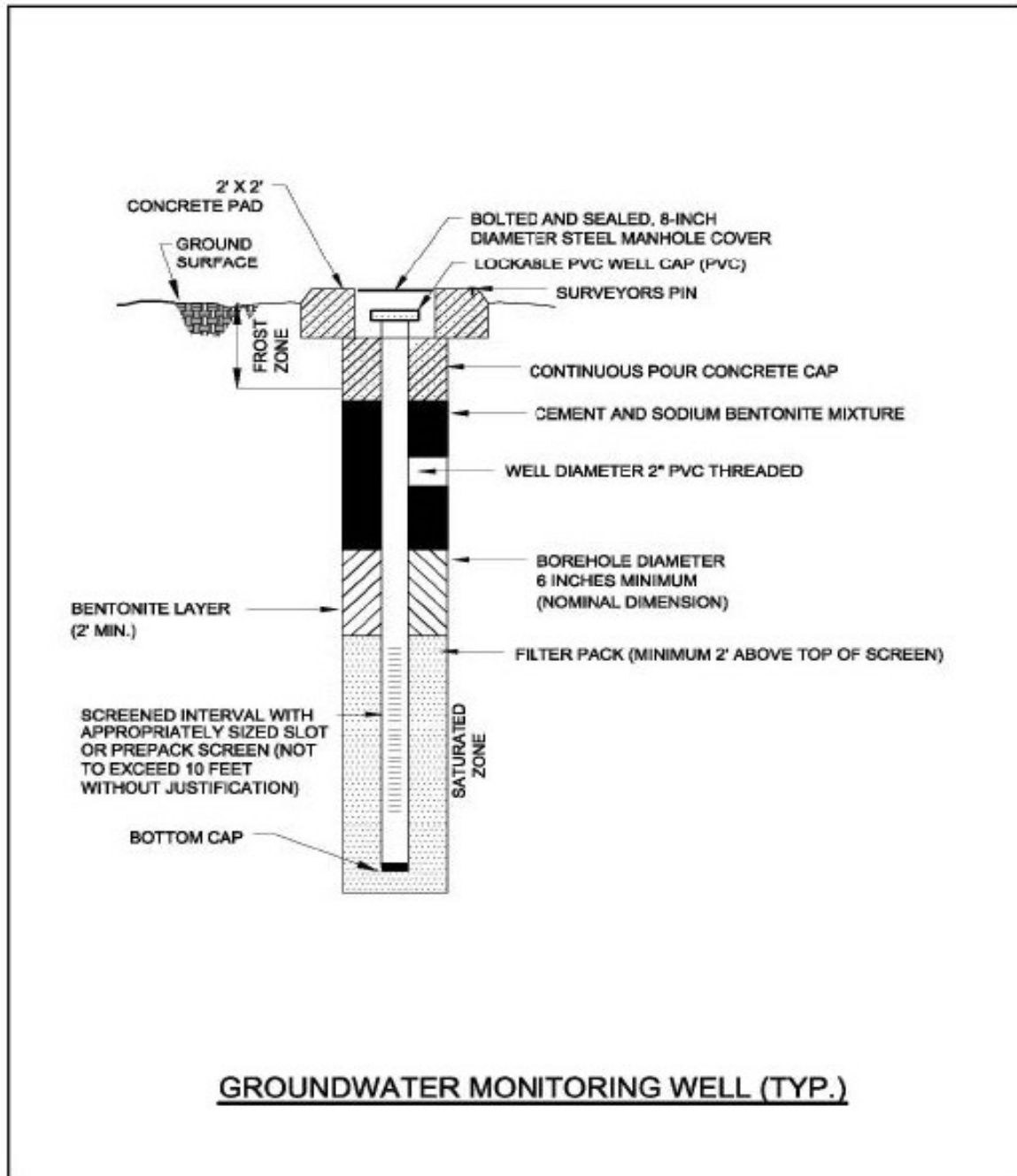
COA - LS003119
Exp. 12/31/2022

B1. GROUNDWATER MONITORING WELL DETAIL ABOVE-GROUND SURFACE COMPLETION



GROUNDWATER MONITORING WELL (TYP.)

B2. GROUNDWATER MONITORING WELL DETAIL FLUSH MOUNT SURFACE COMPLETION



C. GROUNDWATER SAMPLING PROCEDURE

Groundwater sampling will be conducted using the most current applicable USEPA Region 4 SESD Field Branches Quality System and Technical Procedures as a guide (<https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches>). 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.

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

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify Georgia Power if it appears that the well has been compromised.
2. Measure and record the depth to water in all wells to be sampled prior to purging using a water measuring device consisting of probe and measuring tape capable of measuring water levels with accuracy to 0.01 foot. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well.
3. Install Pump: If a dedicated pump is not present, slowly lower the pump into the well to the midpoint of the well screen or a depth otherwise approved by the hydrogeologist or project scientist. The pump intake must be kept at least two feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. All non-dedicated equipment will be decontaminated before use and between well locations using procedures described in the latest version of the USEPA Region 4 SESD guidance document, *Operating Procedure for Field Equipment Cleaning and Decontamination* (USEPA, SESDGUID-205-R#) 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 feet or less of variability. Avoid entraining air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.
6. Monitor Indicator Parameters: Monitor and record the field indicator parameters [turbidity, temperature, specific conductance, pH, oxidation-reduction potential (ORP), and dissolved oxygen (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 for pH

±5% for specific conductance (conductivity)

$\pm 10\%$ or ± 0.2 mg/L (whichever is greater) for DO where $DO > 0.5$ mg/L. If $DO < 0.5$ mg/L no stabilization criteria apply

< 5 NTU for turbidity

Temperature – Record only, not used for stabilization criteria

ORP – Record only, not used for stabilization criteria.

7. Collect samples at a low-flow rate according to the most current version of USEPA Region 4 SESD guidance document, *Operating Procedure for Groundwater Sampling* (USEPA, SESDPROC-301-R#), and such that drawdown of the water level within the well is stable. Flow rate must be reduced if excessive drawdown is observed during sampling. All sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.
8. Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results (i.e., > 10 NTU), duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45-micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. A new filter must be used for each well and each sampling event. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity. Additional details related to managing for elevated turbidity is discussed below.
9. All sample bottles will be filled, capped, and placed in an ice containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.
10. Sample containers and preservative will be appropriate for the analytical method being used.
11. Information contained on sample container labels will include:
 - a. Name of facility
 - b. Date and time of sampling
 - c. Sample description (well number)
 - d. Sampler's initials
 - e. Preservatives
 - f. Analytical method(s)
12. After samples are collected, samplers will remove all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.

13. Samples will be delivered to the laboratory following appropriate COC and temperature control requirements. The goal for sample delivery will be within 48 hours of collection.

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

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

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

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

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

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