GROUNDWATER MONITORING PLAN

PLANT BOWEN
COAL COMBUSTION RESIDUALS (CCR) LANDFILL

BARTOW COUNTY, GEORGIA

FOR

Georgia Power

SEPTEMBER 2022
REVISION 2– May 2026

Stantec

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GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved
Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:26:06 -04'00'

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I. CERTIFICATION

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the Rules of Solid Waste Management and 40 CFR Part 258.50(g). According to 391-3-4-.01, a Qualified Groundwater Scientist is "a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action." The design of the groundwater monitoring system was developed in compliance with the Georgia Environmental Protection Division (Georgia EPD) Rules of Solid Waste Management, Chapter 391-3-4-.10(6).

Signature: _____

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Date: 5/13/2026

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1. INTRODUCTION

Groundwater and surface water monitoring is required by the Georgia Environmental Protection Division (Georgia EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater and surface water monitoring program for Landfill Cells 1-10 (Site). This plan meets the requirements of Georgia EPD rules and uses Georgia EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Groundwater and surface water sampling locations are presented on Plant Bowen Solid Waste Disposal Facilities Monitoring Well Network for the Site (**Appendix A: Groundwater Monitoring Network Documentation)**.

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

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

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Geologic conditions for this Site are described in a report prepared by Southern Company Services Earth Science and Environmental Engineering titled *Combustion By-Products Storage Facility Site Acceptability Report* dated 2002, the *Plant Bowen Proposed Coal Combustion By-Product Monofill Addendum I Site Acceptability Report – Hydrogeological Assessment and Demonstration of Engineering Measures*, dated 2004, the *Composite Site Acceptability Report for CCR Landfill Permit,* dated 2022, the *Summary of Geologic and Hydrologic Conditions* dated 2024 and the *Summary of Geologic and Hydrologic Conditions Addendum* dated 2025.

The geology and hydrogeology of the Site are summarized below. The area is underlain by residuum clayey soils that transition into sedimentary bedrock. Karst terrain exists in the area. The uppermost aquifer is comprised of terrace deposits and clayey soils and the upper fractured sedimentary bedrock with groundwater flow direction generally toward the Etowah River.

2.1 Regional Geology

The Site lies within the Valley and Ridge physiographic province about three to four miles north of the Cartersville Fault. The Cartersville Fault separates the late Precambrian-aged metamorphic rocks to the east and south from the Cambrian-aged sedimentary rocks to the north and west.

Plant Bowen lies within an area mapped as Knox Group undifferentiated with a southwestern portion of the facility mapped as Newala Limestone in the work by Croft (1963). The Site is located on the northeast portion of Plant Bowen **(Figure A1: Monitoring Well Network)**.

2.2 Site Geology

The lithologies present at the Site from the ground surface to depth are Terrace Deposits, a residuum clay overburden, dolomite, and limestone bedrock.

The Knox Group produces a characteristic orange to red clayey residuum that ranges in thickness from 19 to 127 feet across the Site and often contains weathered chert and dolomite fragments. Outcrops for geological mapping are rare and occur primarily in quarries and along streams. Terrace deposits (silt and clay with some gravel and sand) overlay the clayey residuum in some areas but are not continuous across the landfill area. The Terrace Deposits with the clayey residuum comprise the overburden.

The Knox Group dolomite consists predominantly of medium gray to medium dark gray, medium bedded to massive, fine to medium-grained rock. The Knox Group limestone was logged predominantly as light gray to medium light-gray, thin to medium-bedded, fine to medium-grained, argillaceous limestone. Some very occasional thin to medium beds of crystalline limestone or fine-grained calcareous sandstone were noted. The vigorous reaction to dilute hydrochloric acid was a major distinguishing feature between the limestone and dolomite. Fine-grained pyrite was noted in a few of the limestone core samples (SCS, 2002). Solution cavities are sometimes noted in the dolomite/limestone bedrock at the Site. These solution cavities are generally filled with residual clay and silt or may be open in some instances.

2.3 Site Hydrogeology

Two main geologic layers are present at the Site: overburden (residuum clay and partially weathered rock), and carbonate bedrock (dolomite and limestone). Overburden materials are very heterogeneous ranging in composition from well-graded gravelly sand to fat clay. The primary source of recharge for the uppermost aquifer is infiltration of rainfall. Bedrock underlying the Site (officially mapped as Knox undifferentiated) exhibits minor and discontinuous solution features within the underlying carbonate bedrock, which are predominately formed along initial discontinuities including joints, fractures, and bedding planes. These karst features may be partially or completely filled with soft unconsolidated solids or may be empty or filled with water. The top of the karst features is usually identified as having a thin zone of weathered carbonate bedrock. To monitor the karst, a subset of wells is instrumented with pressure transducers to collect and record groundwater elevations multiple times daily from monitoring wells located around the perimeter of the Site. The logged data are uploaded after each reading via telemetry to a central database.

Rain-filled surface depressions are located between Cells 1 & 2 and Cells 5 & 6, 7 & 8 and fluctuate in size depending upon rainfall. These depressions were present prior to the construction of the landfill and do not appear to have flowing water. A spring is located to the northeast of Cells 3 & 4 as shown on **Figure A1**. Water is present in the spring intermittently. The Etowah River to the west, north and east of the Site, and the general service pond to the southwest of Cells 9 & 10 are present at the Site but outside of the landfill permit boundary.

The uppermost aquifer for groundwater monitoring purposes is unconfined and, depending on the variability of weathering characteristics, the groundwater surface may occur in the overburden or carbonate bedrock. Continuous groundwater elevation monitoring data correlate with rainfall and river elevation data from the Site. These data suggest a direct groundwater communication between overburden and upper bedrock. The overburden and the upper fractured sedimentary bedrock comprise the uppermost aquifer beneath the Site area. At a few locations around the landfill, particularly at areas of relatively higher elevations and at areas with relatively thinner overburden, the first groundwater is encountered in the upper fractured bedrock. Based on these data and field observations, it is assumed that the overburden and upper fractured bedrock are a single, interconnected water bearing zone below the unsaturated overburden.

Horizontal groundwater flow rates in 2025 at the Site range from approximately 3.1 to 44 feet per year in the overburden and from approximately 30 to 31 feet per year in the upper bedrock (**Table 1: Groundwater Flow Velocity Calculations – 2025)**, based on horizontal hydraulic conductivity data reported in the *Plant Bowen Proposed Coal Combustion By-Product Storage Facility Site Acceptability Report* (SCS, 2002) and additional slug testing conducted in 2015, 2016, 2024 and 2025. Groundwater generally flows toward the Etowah River to the north, east, and south-east of the Site with semi-radial flow from Cells 3 & 4, 5 & 6, and 7 & 8. Observed groundwater elevations are consistent with previous observations **(Figure A2: Potentiometric Surface – August 2025)**.

TABLE 1
GROUNDWATER FLOW VELOCITY CALCULATIONS - 2025

Georgia Power Company - Plant Bowen
Landfill Cells 1-10
Bartow County, GA

Flow Paths		Groundwater Measurement Date	Groundwater Elevations in Well Pairs (h_1, h_2) (feet)		Change in Elevation (Δh) (feet)	Distance Measured (L) (feet)	Hydraulic Gradient (i) (feet/foot)	Estimated Sitewide Hydraulic Conductivity (K) (feet/day) [1]	Estimated Effective Porosity (n_e)[2]	Calculated Groundwater Flow Velocity (V) (feet/day)	Calculated Groundwater Flow Velocity (V) (feet/year)
Landfill Cells 1 & 2	GWA-39RZ to GWC-10R	2/17/2025	671.37	657.99	13.38	2960	0.00452	0.18	0.01	0.081	30
		8/14/2025	665.32	651.16	14.16	2960	0.00478	0.18	0.01	0.086	31
Landfill Cells 3 & 4	GWC-37 to GWC-18	2/17/2025	652.78	650.13	2.65	1038	0.00255	0.18	0.01	0.046	17
		8/14/2025	650.74	646.94	3.80	1038	0.00366	0.18	0.01	0.066	24
Landfill Cells 5 & 6 and 7 & 8	GWC-31S to GWC-31 [3]	11/18/2025	649.85	649.83	0.02	42	0.0005	0.18	0.01	0.01	3.1
Landfill Cells 9 & 10	GWA-40 to GWC-47	2/17/2025	664.05	652.22	11.83	1786	0.006624	0.18	0.01	0.12	44
		8/14/2025	658.22	647.71	10.51	1786	0.005885	0.18	0.01	0.11	39

Notes:

1. The estimated sitewide hydraulic conductivity values of 0.18 ft/day is the geometric mean of slug testing data in the 2002 Plan Bowen Proposed Coal Combustion By-Product Storage Facility Site Acceptance Report, and additional slug testing completed in 2015, 2016, 2024 and 2025 (Table A1)
2. An estimated effective porosity of 0.01 (based on default soil type value for silty clays to clays in USEPA 530/SW-89-031) of the screened horizon.
3. GWC-31S was installed after the August 2025 sampling event. Gauging data from November 18, 2025 was used in the groundwater flow velocity calculations and is presented in Appendix C.

3.SELECTION OF WELL LOCATIONS

Groundwater monitoring wells are installed to monitor the uppermost aquifer beneath the Site. Locations are selected based on disposal cell layouts and site geologic and hydrogeologic considerations. Georgia Power Company (GPC) follows the recommendation as stated in Chapter 2 of the Manual for Groundwater Monitoring (1991) to determine well spacing based on site-specific conditions. 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 (May 2014). Monitoring wells have been identified for ten Landfill units (Cells 1-10). The wells associated with Cells 5 & 6 and 7 & 8 were installed in June 2023 under the direction of a qualified groundwater scientist. A well installation report documenting the well locations with the construction details and well logs was submitted to Georgia EPD in the Well Installation Report, Plant Bowen Landfill Cells 5 & 6, and 7 & 8 dated August 8, 2023, and the Well Installation Report, Plant Bowen Landfill Cells 3 & 4, 5 & 6, and 7 & 8 dated January 16, 2026.

Monitoring wells will be 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 Georgia EPD Rules.

A map depicting monitoring well locations is included in **Appendix A - Figure A1**. A tabulated list of individual monitoring wells used for groundwater sampling and water levels including well construction details such as location coordinates, top-of-casing elevation, well depths and screened intervals is included in **Appendix A - Table A1**.

Any change to the groundwater monitoring or surface water monitoring network must be made by a minor modification to the permit pursuant to 391-3-4-.02(3)(b)6.

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

The existing monitoring well network for the Site is in place. Existing monitoring wells were installed following Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Design and Installation of Monitoring Wells as a general guide for best practices. Boring logs and well construction diagrams, proof of bonding, and certified surveyor's reports for the existing monitoring wells are provided in **Appendix A**. Monitoring well logs are included as **Attachment A1: Well Construction and Boring Logs**. The following sections describe the methods used for well drilling, construction, abandonment, and reporting for modification to the well network at the Site.

4.1 Drilling

A variety of well drilling methods are available for the purpose of installing groundwater wells. Drilling methodology may include, but not be limited to: hollow stem augers, direct push, air rotary, mud rotary, or rotosonic techniques. The drilling method 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 Region 4 U.S. Environmental Protection Agency (USEPA) Science and Ecosystem Support Division (SESD) Operating Procedure SESDGUID-101-R2 and updates as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the current version of the USEPA procedure LSASDPROC-205-R4 for Field Equipment Cleaning and Decontamination as a general guide.

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

All drilling for any subsurface hydrologic investigation, installation, or abandonment of groundwater wells at a landfill in Georgia must 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 Landfill, installed from 2007 to the present, is included as **Attachment A2: Well Drilling Contractor Proof of Bonding** in **Appendix A**. For future installations, proof of bonding will be included in the well installation reports. Drilling and well installation activities will be directed by a qualified groundwater scientist registered in Georgia.

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 appropriate materials may be used for construction with prior written approval from the Georgia EPD.

Well Intake Design

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

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

Pre-packed dual-wall well screens may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. Pre-packed well screens will be installed following general industry standards and using the latest version of the USEPA SESDGUID-101-R2 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 a cement and/or bentonite mixture (approximately 94 pounds cement / 3 to 5 pounds bentonite / 6.5 gallons of potable water) placed via tremie pipe from the top of the bentonite seal. During grouting, care will be taken to assure that the bentonite seal is not disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity.

Protective Casing and Well Completion

After allowing the grout to settle, the well will be finished by installing a flush-mount or above-ground protective casing as appropriate, and building a surface cap. The use of flush-mount wells will generally be limited to paved surfaces unless site operations warrant otherwise. The surface cap will extend from the top of the cementitious grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 2 feet from the edge of the well casing, four inches thick, 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 may be installed around each above-grade groundwater monitoring well. Well construction in high traffic areas will generally be limited unless site conditions warrant otherwise.

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

Well Development

No sooner than 24 hours after well construction is completed, wells will be developed by alternately purging and surging until relatively clear discharge water with little turbidity is observed. The goal will be to achieve a turbidity of less than 5 nephelometric turbidity units (NTUs); however, formation-specific conditions may not allow this target to be accomplished. Development can be discontinued once a measured turbidity less than 10 NTUs is achieved. Additionally, the stabilization criteria contained in **Appendix C: Groundwater Sampling Procedures** should be met after well development and during low-flow sampling. A variety of techniques may be used to develop site groundwater monitoring wells and should be in accordance with USEPA SESDGUID-101-R2. The method used must create reversals or surges in flow to eliminate bridging by particles around the well screen. These reversals or surges can be created by using surge blocks, bailers, or pumps. The wells will be developed using a pump capable of inducing the stress necessary to achieve the development goals. All development equipment will be decontaminated prior to first use and between wells.

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

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

4.3 Well Abandonment

Per Georgia EPD 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 the Georgia EPD. A minor modification will be submitted in accordance with 391-3-4-.02(3)(b)6 prior to the installation or decommissioning of monitoring wells. Well replacement and abandonment will be directed by a qualified groundwater scientist, registered to practice in the State of Georgia.

Monitoring wells will be abandoned using industry-accepted practices and using the Manual for Groundwater Monitoring (1991) and Georgia Water Well Standards Act (1985) as guides. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole. Any piezometers or groundwater wells located within the footprint of future landfill expansion will be over-drilled prior to abandonment. Well abandonment reports will be submitted to Georgia EPD within 60 days of completion of well abandonment by a qualified groundwater scientist or engineer and will follow the applicable documentation requirements for well abandonment described in Section 4.4.

4.4 Documentation

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

- Well Identification
- Name of drilling contractor and type of drill rig
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Council
- Dates of drilling and initial well emplacement
- Drilling technique used and drilling fluid if used
- Borehole diameter and well casing diameter
- Well depth (±0.1 ft.)
- Well location (±0.5 ft.)
- Lithologic logs
- Well casing materials
- Casing and screen joint type
- Screen materials and design
- Screen length
- Screened interval in feet below ground surface and elevation (in feet NAVD88)
- Screened interval lithology

- Screen slot size
- Details of filter pack construction including material/size and volume, and placement depths
- Filter pack emplacement method (narrative)
- Sealant emplacement method and including material/size and volume, and placement depths
- Type of protective well cap and sump dimension for each well
- Surface seal construction including materials, volumes/mix of annular seal material
- Documentation stating that a Georgia-registered professional surveyor shall certify that the horizontal accuracy for the installed monitoring wells is 0.5 feet, and vertical accuracy for elevations to 0.01 feet using a known datum. Certified surveyor's reports are included in **Attachment A3: Surveyor's Certification** in **Appendix A**
- Schematic of the well with dimensions
- Well development dates
- Well turbidity following development
- Narrative of well development method(s)-specific well development procedures

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.

5. GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

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

Table 2: Groundwater Monitoring Parameters & Frequency presents the groundwater monitoring parameters and sampling frequency. A minimum of eight independent samples from each groundwater well will be collected and analyzed for EPD-approved modified Appendix I and Appendix II test parameters (a subset of the full list contained in 40 CFR 258), as well as 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for Appendix I and III will be at least semi-annual during the active life of the facility and the post-closure care period. If required, Georgia Power will conduct assessment monitoring in accordance with the Georgia Rules for Solid Waste Management Chapter 391-3-4-.10 to also include EPD-approved modified Appendix II and 40 CFR, Subpart D Appendix IV test parameters.

As shown on **Table 3: Analytical Methods**, the groundwater samples will be analyzed using methods specified in USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility and be less than regulatory standards. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP) and will also have a Stipulation Letter from the Georgia EPD accepting the laboratory's NELAP certification. Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

TABLE 2
GROUNDWATER MONITORING PARAMETERS & FREQUENCY
Plant Bowen
Landfill Cells 1-10
Bartow County, Georgia

Monitoring Parameters		Groundwater Monitoring Frequency Semi-Annual Events
Field Parameters	Temperature	X
	pH	X
	Specific Conductance	X
	Oxidation Reduction Potential (ORP)	X
	Turbidity	X
	Dissolved Oxygen (DO)	X
Appendix I and II (EPD-approved modified Appendix I and II test parameters from 40 CFR 258, Subpart E)	Antimony	X
	Arsenic	X
	Barium	X
	Beryllium	X
	Cadmium	X
	Chromium	X
	Cobalt	X
	Copper	X
	Lead	X
	Mercury	X
	Nickel	X
	Selenium	X
	Silver	X
	Thallium	X
	Vanadium	X
	Zinc	X
Appendix III (Detection test parameters from 40 CFR 257, Subpart D)	Boron	X
	Calcium	X
	Chloride	X
	Fluoride	X
	pH (field)	X
	Sulfate	X
	Total Dissolved Solids	X

TABLE 2 - continued
GROUNDWATER MONITORING PARAMETERS & FREQUENCY
Plant Bowen
Landfill Cells 1-10
Bartow County, Georgia

Monitoring Parameters		**Groundwater Monitoring Frequency** **Semi-Annual Events**
Appendix IV (Assessment test parameters from 40 CFR 257, Subpart D)	Antimony	Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4-.10(6).
	Arsenic	
	Barium	
	Beryllium	
	Cadmium	
	Chromium	
	Cobalt	
	Fluoride	
	Lead	
	Lithium	
	Mercury	
	Molybdenum	
	Selenium	
	Thallium	
	Radium 226 & 228	

TABLE 3
ANALYTICAL METHODS
Plant Bowen
Landfill Cells 1 - 10
Bartow County, Georgia

Parameters	USEPA Method Number
Boron	EPA 6010D/6020B
Calcium	EPA 6010D/6020B/7140
Chloride	EPA 300.0/300.1/9250/9251/9253/9056A
Fluoride	EPA 300.0/300.1/9214/9056A
pH	EPA 150.1 field
Sulfate	EPA 300.0/300.1/9035/9036/9038/9056A
Total Dissolved Solids (TDS)	EPA 160.1/ Standard Method 2540C
Antimony	EPA 6010D/6020B/7040/7041
Arsenic	EPA 6010D/6020B/7060A/7061A
Barium	EPA 6010D/6020B/7080A/7081
Beryllium	EPA 6010D/6020B/7090/7091
Cadmium	EPA 6010D/6020B/7130/7131A
Chromium	EPA 6010D/6020B/7190/7191
Cobalt	EPA 6010D/6020B/7200/7201
Copper	EPA 6010D/6020B
Lead	EPA 6010D/6020B/7420/7421
Lithium	EPA 6010D/6020B/7430
Mercury	EPA 7470A
Molybdenum	EPA 6010D/6020B/7480/7481
Nickel	EPA 6010D/6020B
Selenium	EPA 6010D/6020B/7740/7741A
Silver	EPA 6010D/6020B
Thallium	EPA 6010D/6020B/7840/7841
Vanadium	EPA 6010D/6020B
Zinc	EPA 6010D/6020B
Radium 226 and 228 combined	EPA 9315/9320

6. SAMPLE COLLECTION

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

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

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

During each sampling event, surface water samples will be collected and handled in accordance with the procedures specified in **Appendix D: Surface Water Sampling and Analysis Procedures.** These procedures were developed using field sampling guidelines described in the USEPA Region 4 Laboratory Services and Applied Science Division (LSASD) Operating Procedure for Surface Water Sampling (LSASDPROC-201-R5) and updates. For surface water sampling, dedicated, non-dedicated, or disposable sampling equipment may be used.

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 dates(s) and time(s) of sample transfer between individuals

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

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

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

8. FIELD AND LABORATORY QUALITY ASSURANCE / QUALITY CONTROL

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

- Field Equipment Rinsate Blanks - Where sampling equipment is not new or dedicated, an equipment rinsate blank will be collected at a rate of one blank per 10 samples using non-dedicated equipment.

- Field Duplicates - Field duplicates are collected by filling additional containers at the same location, and the field duplicate is assigned a unique sample identification number. One blind field duplicate will be collected for every 20 samples.

- Field Blanks - Field blanks are collected in the field using the same water source that is used for decontamination. The water is poured directly into the supplied sample containers in the field and submitted to the laboratory for analysis of target constituents. One field blank will be collected for every 20 samples.

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. The calibration will be conducted each day prior to the initiation of sampling. Daily calibration will be documented on field forms and these field forms will be included in each groundwater monitoring report.

Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and all checks and recalibration steps will be documented on the field 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 if recalibration does not improve instrument function. Completed 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 Georgia EPD. Semi-annual groundwater monitoring reports will be submitted to the Georgia EPD within 90 days of receipt and analysis of the groundwater analytical data from the laboratory. At a minimum, semi-annual reports will include:

1. A narrative describing sampling activities and findings including a summary of the number of samples collected, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs.
2. A brief overview of purging/sampling methodologies.
3. Discussion of results.
4. Recommendations for the future monitoring consistent with the Rules.
5. Potentiometric surface contour map for the aquifer(s) being monitored signed and sealed by a 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 decommissioned 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. A record of field sampling conditions including, well signage, well access, sampling and purging equipment condition and site conditions that may affect sampling will be recorded on Well Inspection Forms. These forms will be included as an appendix to the semi-annual groundwater monitoring reports.
16. Documentation of non-functioning wells, dry surface water sampling locations.
17. Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL).

18. An iso-concentration map of Appendix IV constituents (if applicable based on exceedances of groundwater protection standards).
19. Potable water well survey (annually, if applicable based on exceedances of groundwater protection standards)
20. Statistical analyses.
21. Certification by a qualified groundwater scientist.
22. Tabulated water quality results for the samples of discharging surface water collected semi-annually from the designated surface water sampling locations. The table will present data for the current reporting period. Data from historical monitoring events associated with the surface water monitoring program will be provided in report appendices.

10. STATISTICAL ANALYSIS

Groundwater quality data from each sampling event will be statistically evaluated to determine if there has been a statistically significant change in groundwater chemistry. Historical background data will be used to determine statistical limits. Statistical analysis techniques will be consistent with the methodology presented in *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance*, March 2009, EPA 530/R-09-007 (USEPA, 2009).

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

1. A prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit (§257.93(f)(3)).

2. A control chart approach that gives control limits for each constituent (§257.93(f)(4)).

3. Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g) or §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).

Based on site-specific conditions, statistical methods may be intrawell, interwell, or combination of both. Intrawell methods use background data for individual wells and may be overly sensitive to natural variation; therefore, statistically significant increases (SSIs) may occur as a result of natural variation rather than facility impacts. A second step can be used to further evaluate the results and mitigate SSIs that result from natural variation. In instances where intrawell statistical methods identify an apparent SSI, a second step of interwell statistical evaluation may be used to determine whether the measurement exceeds the sitewide background limit. This is similar in concept to the procedure used in compliance monitoring programs where an interwell statistical limit is used to determine background per USEPA Unified Guidance (2009). Both interwell and intrawell methods may use a 1-of-2 resample plan, allowing for a collection of an independent resample to confirm or disconfirm the initial finding. If the result does not exceed sitewide (interwell) background, an SSI is not declared, and no further action is needed to stay in detection monitoring. Trend tests will continue to be included in Semi-Annual and Annual Groundwater Monitoring and Corrective Action Reports for constituents exhibiting an SSI using an intrawell statistical method that does not exceed sitewide (interwell) background.

A site-specific statistical analysis plan that provides details regarding the statistical methods to be used will be placed in the Site's operating record pursuant to 391-3-4-.10(6) and §257.93. **Figure 1: Statistical Analysis Plan Overview** includes a flowchart that depicts the process that will be followed to develop the site-specific plan**. Figure 2: Decision Logic for Determining Appropriate Statistical Method**, depicts the decision logic that will be used to determine the

appropriate method as required by 391-3-4-.10(6) or §257.93. **Figure 3: Decision Logic for Computing Intrawell Prediction Limits**, presents the logic that will be used to calculate site-specific intrawell statistical limits and test compliance results against those limits. **Figure 4: Decision Logic for Computing Interwell Prediction Limits**, presents the logic that will be used to calculate site-specific interwell statistical limits and test compliance results against those limits.

11. REFERENCES

Croft, M.G., 1963. Geology and Ground-Water Resources of Bartow County, Georgia. U.S. Geological Survey Water-Supply Paper 1619-FF, 37 p.

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FIGURE 1: STATISTICAL ANALYSIS PLAN OVERVIEW

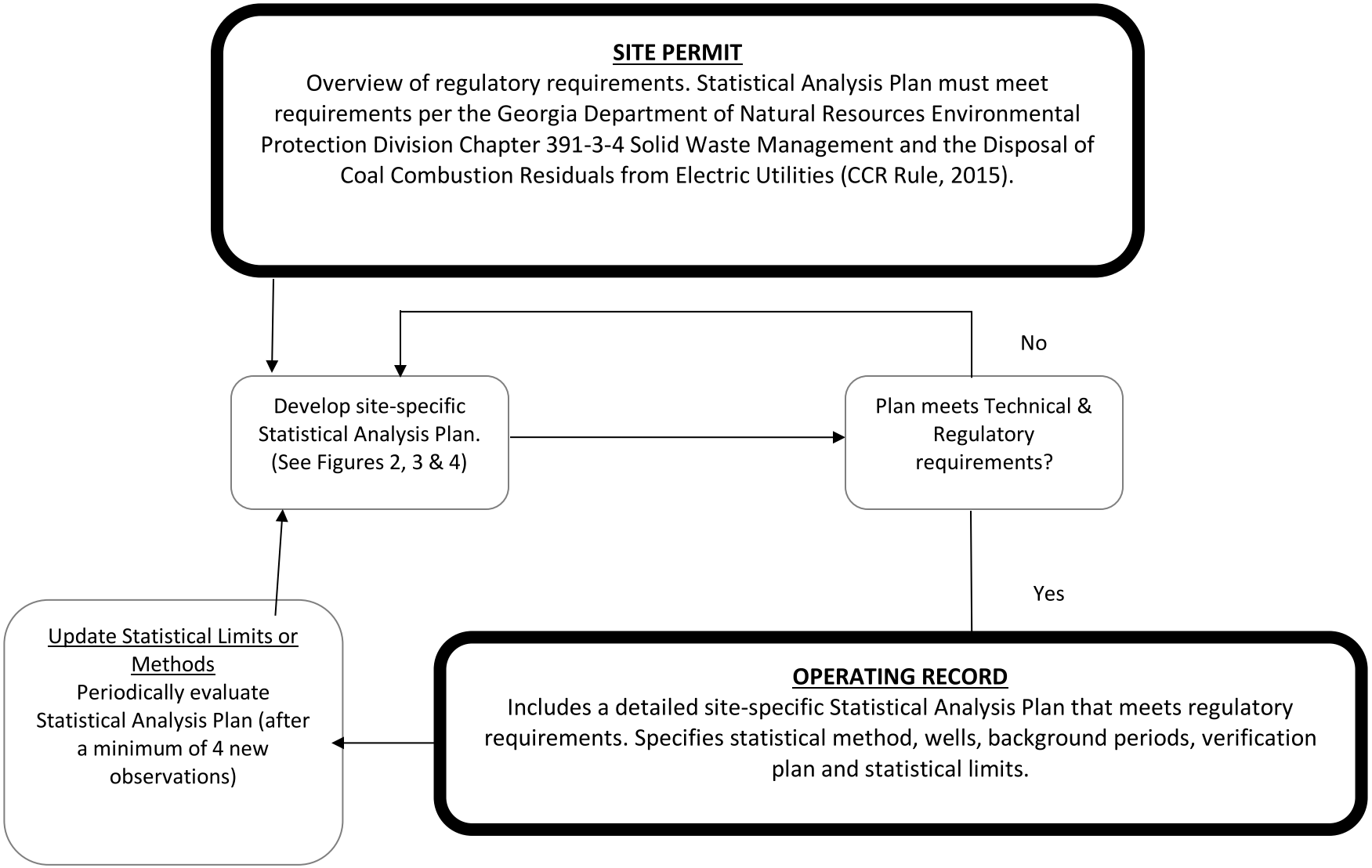


FIGURE 2. DECISION LOGIC FOR DETERMINING APPROPRIATE STATISTICAL METHOD

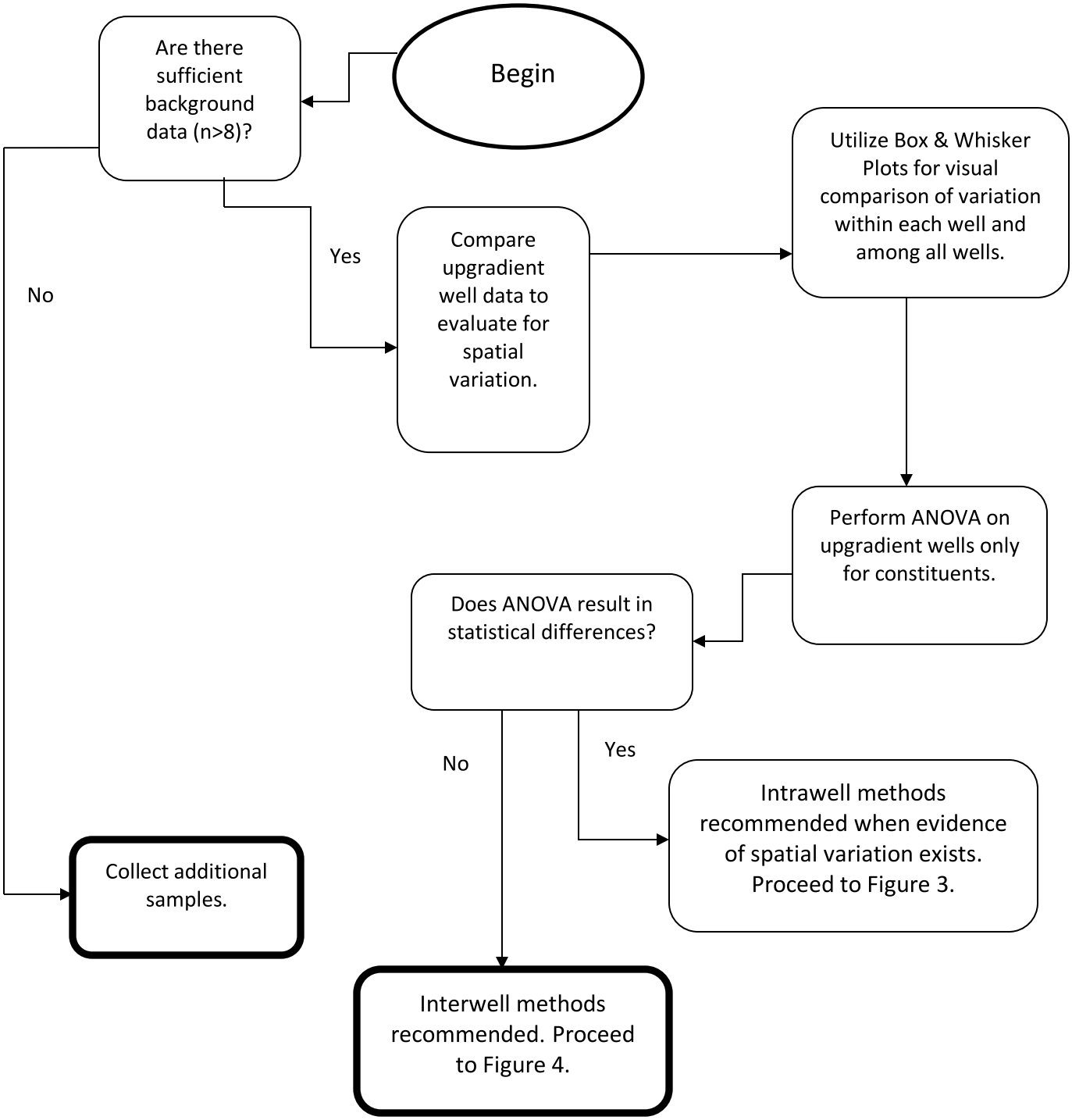


FIGURE 3: DECISION LOGIC FOR COMPUTING INTRAWELL PREDICTION LIMITS

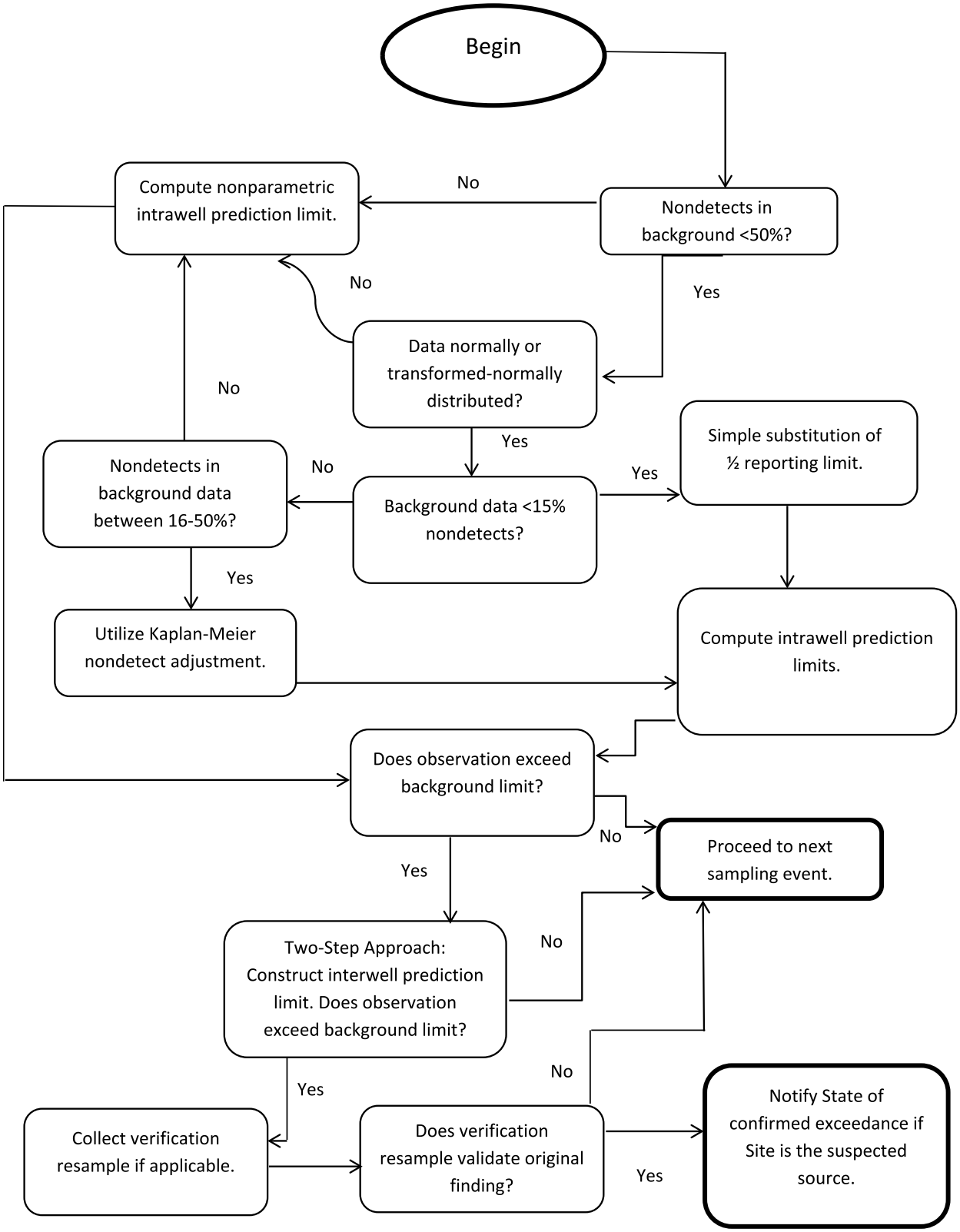
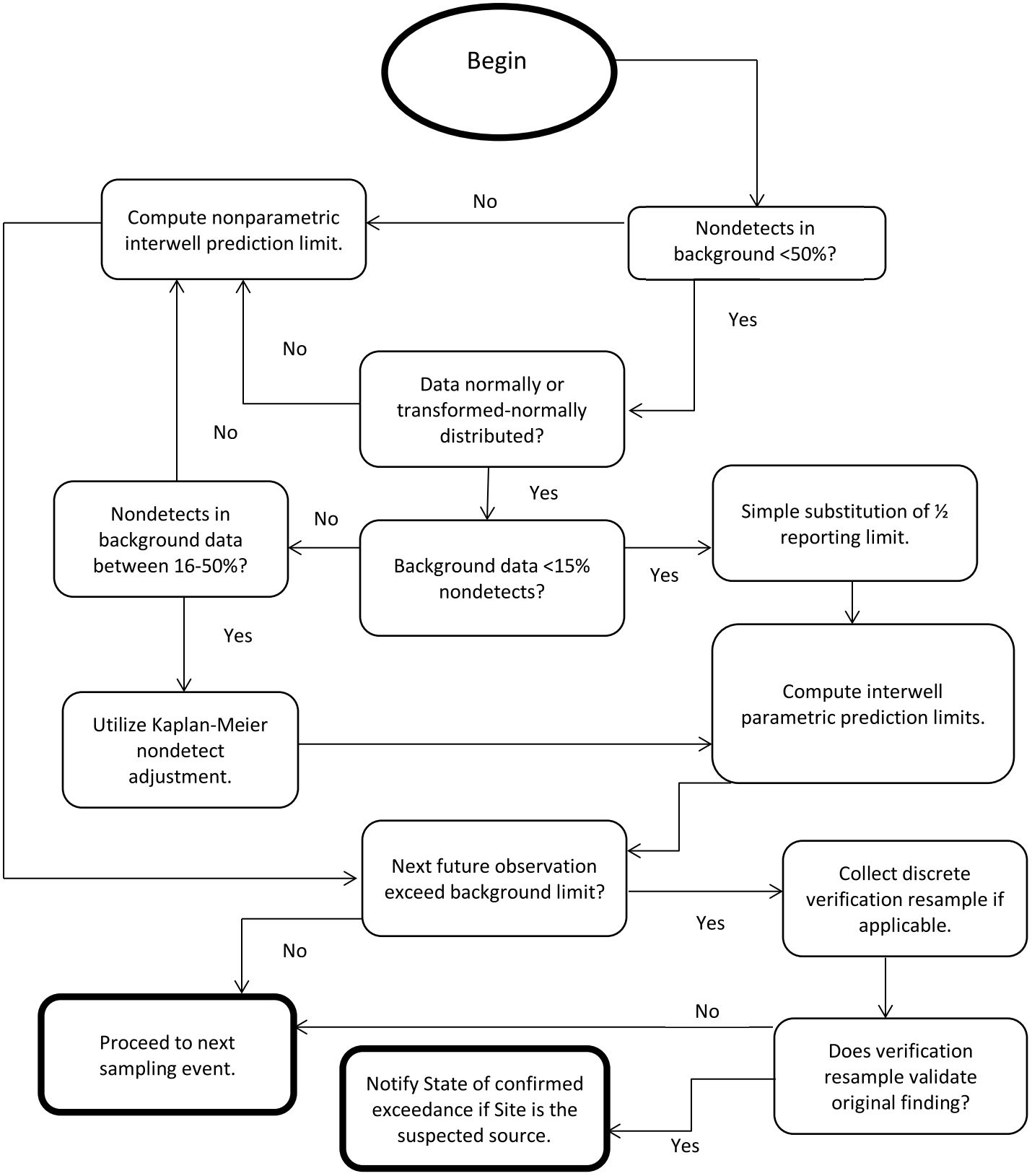


FIGURE 4. DECISION LOGIC FOR COMPUTING INTERWELL PREDICTION LIMITS



APPENDICES

A. GROUNDWATER MONITORING NETWORK DOCUMENTATION
B. GROUNDWATER MONITORING WELL DETAILS
C. GROUNDWATER SAMPLING PROCEDURES
D. SURFACE WATER SAMPLING AND ANALYSIS PROCEDURES

A. GROUNDWATER MONITORING NETWORK DOCUMENTATION

Table A1
Summary of Well Installation Dates, Coordinates, Elevation Screen Interval, and Purpose
Georgia Power Company - Plant Bowen
Landfill Cells 1-10
Bartow County, GA

Well Name	Installation Date	Northing (feet, NAD83)[1]	Easting (feet, NAD83)[1]	Ground Surface Elevation (feet, NAVD88)[2]	Top of Casing Elevation (feet, NAVD88)[2]	Top of Screen Elevation (feet,NAVD88)[3]	Bottom of Screen Elevation (feet, NAVD88)[3]	Total Well Depth on Construction Log (feet below land surface)	Lithology Screened	Hydraulic Location and Purpose	Mean Horizontal Hydraulic Conductivity (feet per day)[6]
Cells 1 & 2 and 9 & 10											
GWA-1	4/12/2007	1502842.29	2071724.15	738.86	741.76	601.13	591.13	147.90	Overburden/Bedrock	Upgradient[4]	NA
GWA-2	4/4/2007	1502640.55	2071935.13	731.48	733.89	590.00	580.00	151.92	Overburden/Bedrock	Upgradient[4]	NA
GWA-2R	8/3/2007	1502615.38	2071965.52	732.66	734.83	637.53	627.53	106.03	Bedrock	Upgradient[4]	NA
GWA-3A	3/16/2021	1502374.48	2072061.21	728.68	731.68	601.88	591.88	137.27	Overburden	Upgradient[4]	NA
GWA-4R	3/13/2007	1502246.31	2072317.15	740.65	743.23	657.60	647.60	93.17	Bedrock	Upgradient[5]	NA
GWA-4RZ	10/28/2016	1502238.85	2072329.55	740.04	742.84	633.04	623.04	117.00	Bedrock	Upgradient[4]	NA
GWA-39Z	3/1/2016	1502655.66	2071120.65	731.80	735.15	628.30	618.30	113.80	Overburden	Upgradient[4]	1.3[7]
GWA-39RZ	11/4/2016	1502618.73	2071164.20	729.57	732.62	602.57	592.57	137.00	Bedrock	Upgradient[4]	NA
GWA-40	6/7/2011	1503195.09	2071299.94	728.93	731.77	589.03	579.03	150.20	Overburden	Upgradient[4]	NA
GWA-41	6/6/2011	1503519.02	2071046.18	738.91	742.35	646.41	636.41	102.54	Overburden	Upgradient[4]	NA
GWA-41R	6/1/2011	1503527.39	2071050.84	737.95	743.08	635.19	625.19	113.06	Bedrock	Upgradient[4]	NA
GWA-42	6/1/2011	1503823.34	2071049.95	734.45	738.05	662.69	652.69	82.06	Overburden	Upgradient[4]	NA
GWA-43	5/25/2011	1504129.20	2070982.44	707.61	710.94	627.71	617.71	90.20	Overburden	Upgradient[4]	NA
GWA-43R	5/25/2011	1504117.39	2070973.14	707.80	711.19	594.10	584.10	124.20	Bedrock	Upgradient[4]	NA
GWA-50	6/4/2008	1502154.80	2072442.13	728.74	731.21	644.71	634.71	94.33	Overburden	Upgradient[4]	NA
GWA-50R	6/10/2008	1502150.85	2072448.35	727.87	730.37	599.69	589.69	138.48	Bedrock	Upgradient[4]	NA
GWC-5	4/18/2006	1502341.56	2072677.44	735.11	737.56	634.00	624.00	111.29	Overburden	Downgradient[4]	NA
GWC-6	5/1/2007	1502520.08	2072962.89	725.97	728.64	628.35	618.35	107.53	Overburden	Downgradient[4]	NA
GWC-6RZ	4/28/2015	1502502.00	2072900.50	728.66	731.91	633.66	623.66	105.30	Bedrock	Downgradient[4]	16[7]
GWC-7Z	5/19/2016	1502640.13	2073193.22	709.70	713.04	606.00	596.00	114.00	Overburden	Downgradient[4]	NA
GWC-8Z	4/28/2015	1502827.67	2073526.15	698.68	702.09	635.68	625.68	73.30	Overburden	Downgradient[4]	0.053[7]
GWC-8RR	6/27/2011	1502857.71	2073501.74	698.96	701.92	601.96	591.96	107.30	Bedrock	Downgradient[4]	NA
GWC-9	8/16/2006	1503018.96	2073781.05	691.99	694.67	631.81	621.81	70.47	Overburden	Downgradient[4]	NA
GWC-10	9/6/2006	1503162.70	2074019.96	684.89	687.87	626.70	616.70	68.33	Overburden	Downgradient[4]	NA
GWC-10R	5/15/2007	1503154.01	2074020.44	685.33	687.95	599.83	589.83	95.18	Bedrock	Downgradient[4]	NA
GWC-11	6/1/2007	1503390.40	2073829.95	675.04	677.83	643.28	633.28	41.71	Overburden	Downgradient[4]	NA
GWC-11R	5/31/2007	1503395.25	2073828.03	675.98	677.73	608.08	598.08	78.85	Bedrock	Downgradient[4]	NA
GWC-12	6/4/2007	1503662.54	2073693.63	674.66	677.25	636.56	626.56	48.41	Overburden	Downgradient[4]	NA
GWC-13	5/31/2007	1503898.17	2073495.16	684.19	686.76	613.75	603.75	80.43	Overburden	Downgradient[4]	NA
GWC-13R	6/5/2007	1503908.53	2073501.95	683.17	685.97	594.17	584.17	99.10	Bedrock	Downgradient[5]	NA
GWC-13RZ	11/2/2016	1503926.70	2073517.44	681.71	684.60	589.71	579.71	102.00	Bedrock	Downgradient[4]	0.027[8]
GWC-14	8/22/2007	1504059.92	2073205.96	684.04	686.81	616.30	606.30	78.01	Overburden	Downgradient[5]	NA
GWC-14Z	11/3/2016	1504060.77	2073193.66	684.34	687.28	621.34	611.34	73.00	Overburden	Downgradient[4]	0.088[8]
GWC-15	6/1/2007	1503943.59	2072927.52	692.75	695.19	635.74	625.74	67.11	Overburden	Downgradient[5]	NA

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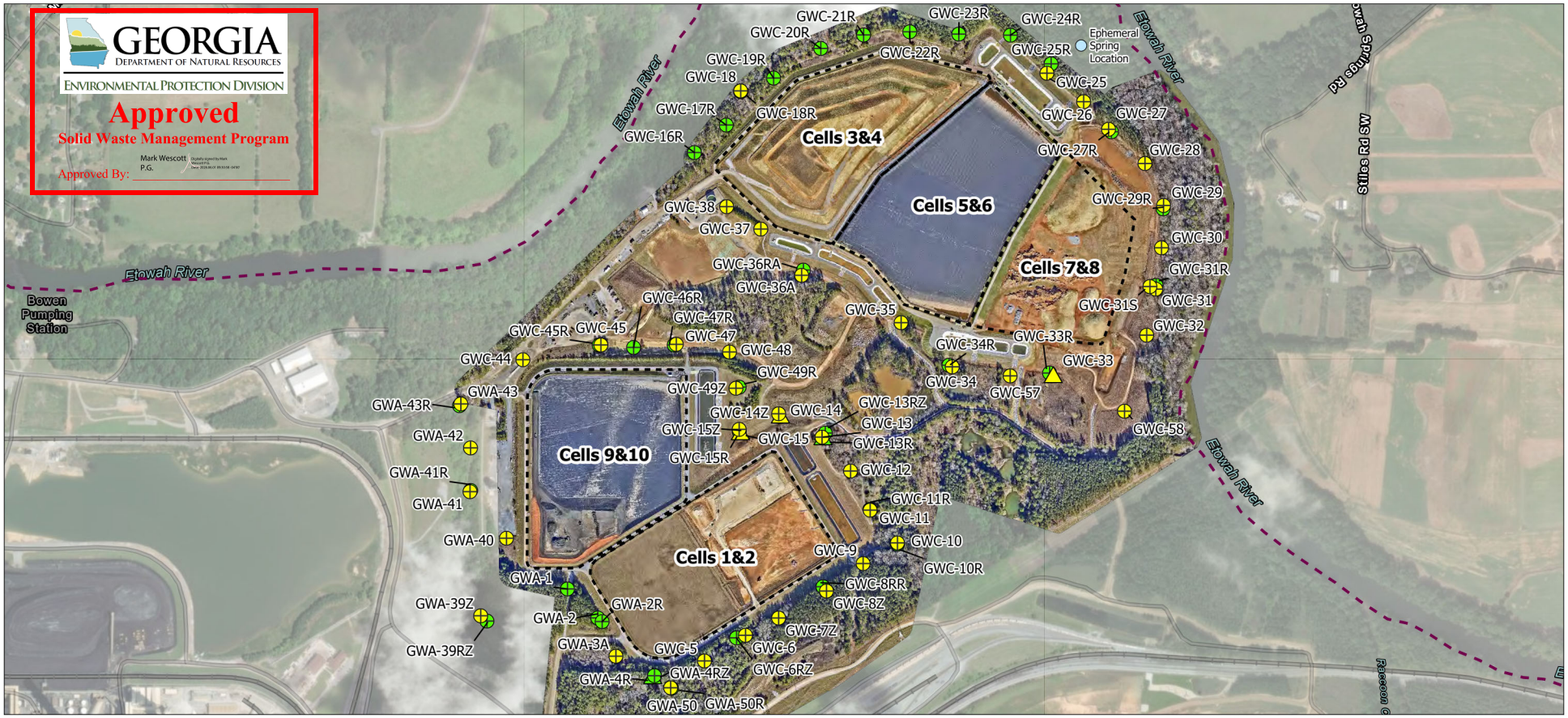
Landfill Cells 1-10
Bartow County, GA

Well Name	Installation Date	Northing (feet, NAD83)[1]	Easting (feet, NAD83)[1]	Ground Surface Elevation (feet, NAVD88)[2]	Top of Casing Elevation (feet, NAVD88)[2]	Top of Screen Elevation (feet,NAVD88)[3]	Bottom of Screen Elevation (feet, NAVD88)[3]	Total Well Depth on Construction Log (feet below land surface)	Lithology Screened	Hydraulic Location and Purpose	Mean Horizontal Hydraulic Conductivity (feet per day)[6]
GWC-15Z	10/31/2016	1503952.26	2072918.71	693.28	695.92	631.30	621.30	72.00	Overburden	Downgradient[4]	0.37[8]
GWC-15R	5/24/2007	1503936.17	2072919.39	693.39	696.13	611.25	601.25	92.36	Bedrock	Downgradient[4]	NA
GWC-44	6/9/2011	1504436.66	2071414.30	710.15	712.89	637.22	627.22	83.23	Overburden	Downgradient[4]	NA
GWC-45	5/17/2007	1504539.38	2071956.71	698.41	701.53	643.98	633.98	64.73	Overburden	Downgradient[4]	NA
GWC-45R	5/22/2007	1504538.68	2071945.39	699.00	702.02	583.56	573.56	125.74	Bedrock	Downgradient[4]	NA
GWC-46R	8/15/2014	1504522.23	2072184.47	687.94	690.49	641.84	631.84	56.50	Bedrock	Downgradient[4]	NA
GWC-47	4/24/2014	1504543.69	2072481.34	687.44	690.86	630.44	620.44	67.33	Overburden	Downgradient[4]	NA
GWC-47R	4/24/2014	1504539.25	2072467.10	687.71	691.13	616.91	606.91	81.20	Bedrock	Downgradient[4]	NA
GWC-48	6/8/2011	1504490.63	2072851.71	686.20	688.33	642.70	632.70	54.00	Overburden	Downgradient[4]	NA
GWC-49Z	3/1/2016	1504238.30	2072896.49	706.12	709.11	626.92	616.92	89.50	Overburden	Downgradient[4]	0.30[7]
GWC-49R	4/17/2014	1504246.02	2072918.76	706.24	709.56	585.54	575.54	131.10	Bedrock	Downgradient[4]	NA
Cells 3 & 4, 5 & 6, and 7 & 8											
GWC-16R	12/13/2011	1505877.86	2072607.38	727.77	730.59	643.07	633.07	95.00	Bedrock	Downgradient[4]	NA
GWC-17R	12/8/2011	1506069.29	2072829.29	730.02	733.37	650.82	640.82	89.50	Bedrock	Downgradient[4]	NA
GWC-18	6/6/2011	1506306.70	2072929.28	718.92	721.88	651.22	642.22	77.00	Overburden	Downgradient[4]	NA
GWC-18R	6/2/2011	1506301.39	2072929.47	718.97	721.76	591.77	581.77	137.50	Bedrock	Downgradient[4]	NA
GWC-19R	6/7/2011	1506395.96	2073158.36	723.13	726.31	589.43	579.43	144.00	Bedrock	Downgradient[4]	NA
GWC-20R	6/9/2011	1506602.14	2073486.53	717.63	720.59	643.63	633.63	84.30	Bedrock	Downgradient[4]	NA
GWC-21R	12/16/2011	1506695.89	2073784.42	720.45	723.07	641.25	631.25	89.50	Bedrock	Downgradient[4]	NA
GWC-22R	6/14/2011	1506717.93	2074105.65	712.54	715.41	605.84	595.84	117.00	Bedrock	Downgradient[4]	NA
GWC-23R	6/28/2011	1506701.61	2074446.53	688.02	690.94	651.32	641.32	47.00	Bedrock	Downgradient[4]	NA
GWC-24R	6/21/2011	1506694.13	2074806.11	673.76	676.57	647.06	637.06	37.00	Bedrock	Downgradient[4]	NA
GWC-25	10/30/2025	1506432.72	2075063.86	673.83	676.52	643.58	633.58	40.65	Overburden	Downgradient[4]	3.1[10]
GWC-25R	6/21/2011	1506494.89	2075088.90	673.59	676.42	586.89	576.89	97.00	Bedrock	Downgradient[4]	240[9]
GWC-26	4/20/2023	1506231.66	2075314.34	673.15	676.28	644.45	634.45	39.10	Overburden	Downgradient[4]	NA
GWC-27	4/23/2023	1506039.67	2075488.36	673.21	675.85	641.01	631.01	42.50	Overburden	Downgradient[4]	11[9]
GWC-27R	5/5/2023	1506022.31	2075508.50	673.29	676.17	594.99	584.99	88.70	Bedrock	Downgradient[4]	1.0[9]
GWC-28	4/22/2023	1505801.71	2075741.93	672.82	675.30	638.52	628.52	44.70	Overburden	Downgradient[4]	0.078[9]
GWC-29	5/1/2023	1505509.84	2075871.18	676.13	679.29	628.33	618.33	58.20	Overburden	Downgradient[4]	20[9]
GWC-29R	5/15/2023	1505485.90	2075868.31	676.22	679.12	580.22	570.22	106.00	Bedrock	Downgradient[4]	NA
GWC-30	4/25/2024	1505206.17	2075851.47	681.86	685.00	643.86	633.86	48.00	Overburden	Downgradient[4]	0.57[9]
GWC-31	5/8/2023	1504927.59	2075816.91	680.20	683.13	623.40	613.40	67.20	Overburden	Downgradient[4]	110[9]
GWC-31R	5/4/2023	1504953.36	2075819.55	680.18	683.09	584.18	574.18	106.50	Bedrock	Downgradient[4]	420[9]
GWC-31S	8/27/2025	1504948.63	2075780.69	680.51	683.01	650.00	640.00	40.90	Overburden	Downgradient[4]	6.8[10]
GWC-32	5/9/2023	1504607.45	2075753.72	688.93	692.18	640.33	630.33	59.00	Overburden	Downgradient[4]	0.079[9]

Table A1
Summary of Well Installation Dates, Coordinates, Elevation Screen Interval, and Purpose
Georgia Power Company - Plant Bowen
Landfill Cells 1-10
Bartow County, GA

Well Name	Installation Date	Northing (feet, NAD83)[1]	Easting (feet, NAD83)[1]	Ground Surface Elevation (feet, NAVD88)[2]	Top of Casing Elevation (feet, NAVD88)[2]	Top of Screen Elevation (feet,NAVD88)[3]	Bottom of Screen Elevation (feet, NAVD88)[3]	Total Well Depth on Construction Log (feet below land surface)	Lithology Screened	Hydraulic Location and Purpose	Mean Horizontal Hydraulic Conductivity (feet per day)[6]
GWC-33	4/23/2023	1504340.99	2075103.67	672.57	675.48	618.57	608.57	64.50	Overburden	Downgradient[5]	NA
GWC-33R	5/18/2023	1504344.03	2075078.25	672.13	675.20	572.43	562.43	109.70	Bedrock	Downgradient[4]	NA
GWC-34	5/22/2023	1504387.10	2074401.03	670.19	673.25	614.89	604.89	65.40	Overburden	Downgradient[4]	9.4[9]
GWC-34R	5/21/2023	1504398.26	2074378.34	670.24	672.95	582.24	572.24	98.50	Bedrock	Downgradient[4]	1.7[9]
GWC-35	4/21/2023	1504694.22	2074045.15	693.83	696.66	637.83	627.83	66.00	Overburden	Downgradient[4]	NA
GWC-36A	3/18/2022	1505026.95	2073357.46	680.63	683.75	588.80	578.80	102.16	Overburden	Downgradient[4]	NA
GWC-36RA	7/2/2021	1505060.13	2073365.45	682.26	685.20	583.26	573.26	109.40	Bedrock	Downgradient[4]	NA
GWC-37	9/11/2013	1505345.45	2073069.32	700.44	703.72	606.24	596.24	104.50	Overburden	Downgradient[4]	NA
GWC-38	6/13/2011	1505501.33	2072831.77	713.32	716.24	658.62	648.62	65.00	Overburden	Downgradient[4]	NA
GWC-44	6/9/2011	1504436.66	2071414.30	710.15	712.89	637.22	627.22	83.23	Overburden	Downgradient[4]	NA
GWC-45	5/17/2007	1504539.38	2071956.71	698.41	701.53	643.98	633.98	64.73	Overburden	Downgradient[4]	NA
GWC-45R	5/22/2007	1504538.68	2071945.39	699.00	702.02	583.56	573.56	125.74	Bedrock	Downgradient[4]	NA
GWC-46R	8/15/2014	1504522.23	2072184.47	687.94	690.49	641.84	631.84	56.50	Bedrock	Downgradient[4]	NA
GWC-47	4/24/2014	1504543.69	2072481.34	687.44	690.86	630.44	620.44	67.33	Overburden	Downgradient[4]	NA
GWC-47R	4/24/2014	1504539.25	2072467.10	687.71	691.13	616.91	606.91	81.20	Bedrock	Downgradient[4]	NA
GWC-48	6/8/2011	1504490.63	2072851.71	686.20	688.33	642.70	632.70	54.00	Overburden	Downgradient[4]	NA
GWC-49Z	3/1/2016	1504238.30	2072896.49	706.12	709.11	626.92	616.92	89.50	Overburden	Downgradient[4]	0.31[7]
GWC-49R	4/17/2014	1504246.02	2072918.76	706.24	709.56	585.54	575.54	131.10	Bedrock	Downgradient[4]	NA
GWC-57	5/17/2023	1504324.30	2074803.90	672.06	675.07	604.06	594.06	78.00	Overburden	Downgradient[4]	NA
GWC-58	8/27/2025	1504081.03	2075608.12	670.71	673.28	630.34	620.34	50.80	Overburden	Downgradient[4]	3.7[10]

Notes:
(1) NAD83 indicates feet (ft) referenced to the North American Datum of 1983.
(2) NAVD88 indicates feet (ft) in elevation referenced to the North American Vertical Datum 1988.
(3) Screen elevations calculated using depth below land surface and ground surface elevations from the March 2021 re-survey.
(4) Monitoring wells are measured for water levels and sampled for groundwater quality.
(5) Water Level Piezometers measured for water level only.
(6) Horizontal Hydraulic Conductivity evaluated using slug test methodology.
(7) Slug tests were conducted in 2015 and 2016.
(8) Slug tests were conducted in 2017.
(9) Slug tests were conducted on January 17 and 18, 2024.
(10) Slug tests were conducted in November 2025.
NA indicates data not available



Notes
1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Landfill Boundaries, Site Boundary, and Monitoring Well locations provided by Southern Company Services and Wood Environment & Infrastructure Solutions
3. Plant imagery provided by client. Supplemental Background: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Legend

- Detection Monitoring Well (Overburden)
- Water Level Piezometer (Overburden)
- Detection Monitoring Well (Bedrock)
- Water Level Piezometer (Bedrock)
- Approximate Site Boundary
- Landfill Cell Boundary (Approximate)
- Ephemeral Spring Location

0 700 1400 Feet
(At original document size of 11x17)
1:8,400

N

Stantec

Georgia Power

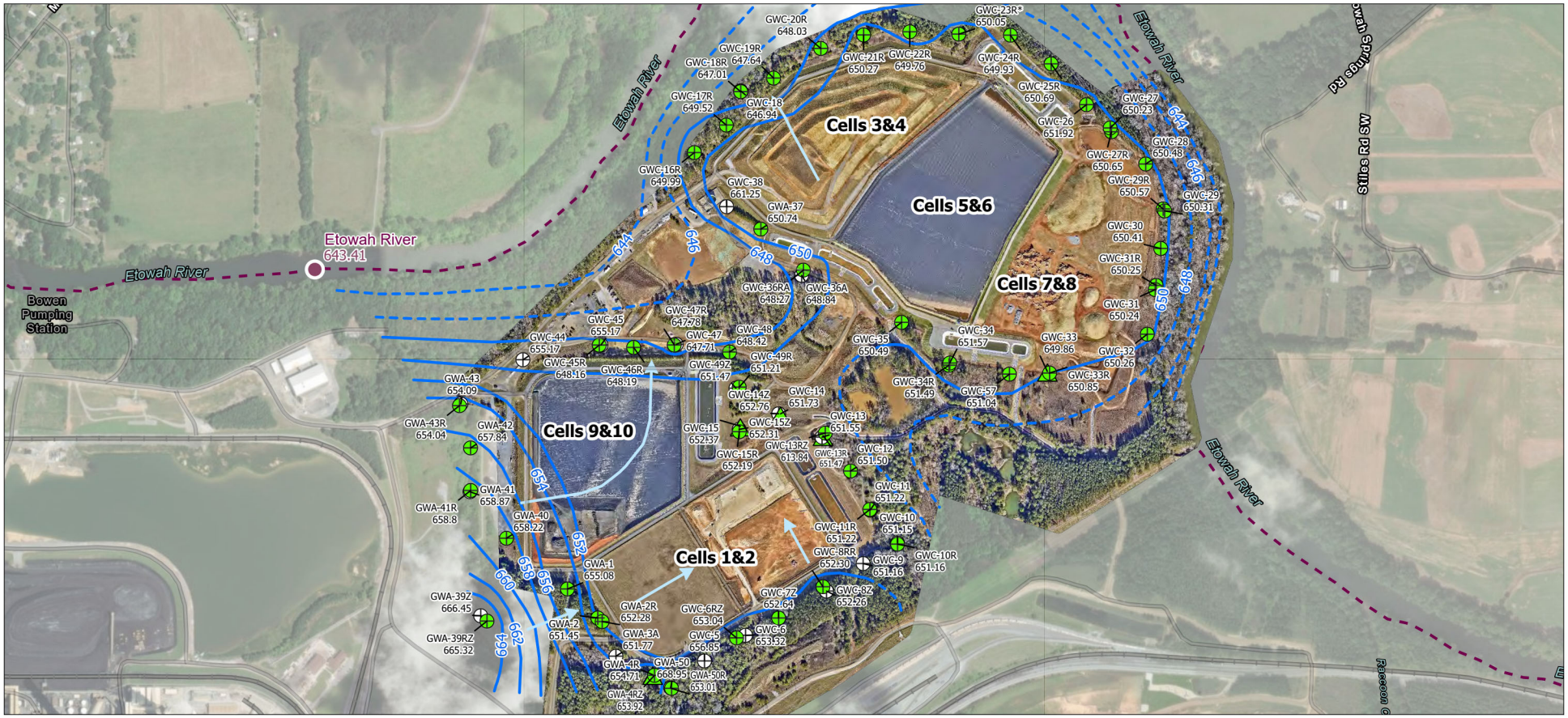
Project Location
Euharlee, Georgia

Prepared by CA on 4/20/2026
TR by MP on 4/20/2026
IR by MD on 4/20/2026

Client/Project
172678190
Georgia Power
Groundwater Monitoring Plan - Rev 2

Figure No.
A1

Title
Monitoring Well Network



Notes

1. Coordinate System: NAD 1983 StatePlane Georgia West FIPS 1002 Feet
2. Data Sources: Landfill Boundaries, Site Boundary, Monitoring Well, Flow Arrow, and Contour locations provided by Southern Company Services and Wood Environment & Infrastructure Solutions
3. Plant imagery provided by client. Supplemental Background: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Legend

- Detection Monitoring Well
- Water Level Piezometer
- Detection Monitoring Well Not Used for Contouring
- Interpreted Groundwater Flow Direction
- Potentiometric Surface Contours August 2025 (feet (ft) NAVD88)
- Inferred Potentiometric Surface Contours August 2025
- Surface Water Elevation at Gaging Location (feet (ft) NAVD88)
- Approximate Site Boundary
- Landfill Cell Boundary (Approximate)

668.54 Groundwater Elevation (ft NAVD88)

0 700 1,400 Feet

(At original document size of 11x17)
1:8,400

N

KATIE T. ROSS
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 1776

Stantec

Georgia Power

Project Location
Euharlee, Georgia

Prepared by CA on 4/20/2026
TR by MP on 4/20/2026
IR by MD on 4/20/2026

Client/Project
172678190

Georgia Power
Groundwater Monitoring Plan - Rev 2

Figure No.
A2

Title
Potentiometric Surface - August 2025

ATTACHMENT A1

WELL CONSTRUCTION AND BORING LOGS

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved

Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:19:17 -04'00'

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:32:40 -04'00'

ATTACHMENT A1

WELL CONSTRUCTION AND BORING LOGS

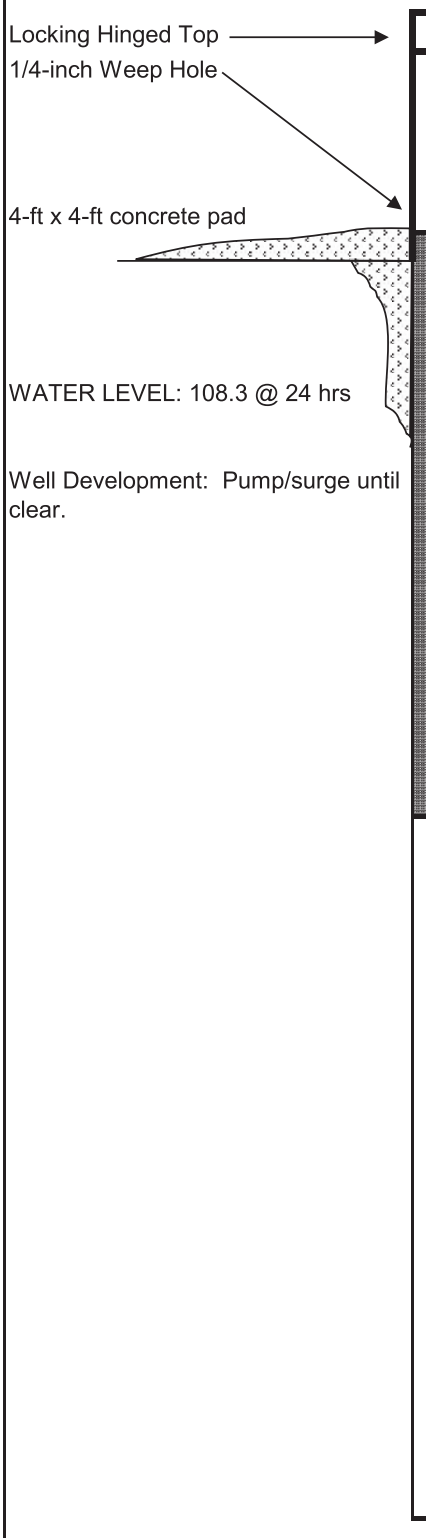
LANDFILL CELLS 1 & 2

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: B. Filipovich	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: J. Lippert	DRILLING METHODS: HSA	GWA-1
DATE CONSTRUCTED: 4/12/2007 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.90	741.76
2" Threaded Riser Cap		
GROUND SURFACE	0.00	738.86
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 21 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	134.50	604.36
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets, 5-gal buckets; bentonite chips, 10 bags AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	136.50	602.36
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 9 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	137.73	601.13
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	147.73	591.13
BOTTOM OF CASING	147.90	590.96

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-1
Sheet 1 of 5

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 149' | SURF.ELEV.: 738.86
LOCATION: Cells 1 & 2 | COORDINATES N: 1502842.29 | E: 2071724.15
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 30 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 105.5 | ELEV.: 633.36 | TIME AFTER COMP.: | DATE TAKEN: 4/11/2007
TYPE GROUT: | QUANTITY: | MIX: . | DRILLING START DATE: 4/4/2007
DRILLER: B. Filipovich | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 4/11/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	738.86								
1									
2									
3									
4		Stiff, light brown, silty CLAY with trace organics and limestone pebbles, dry	S-1	3.5-5	4-5-6	11		90	
5	733.86								
6									
7									
8									
9		Very stiff, reddish brown and gray mottled CLAY, low plasticity, with limestone pebbles and chert fragments, slightly moist	S-2	8.5-10	6-8-11	19		100	
10	728.86								
11									
12									
13									
14		Very stiff, reddish brown, sandy SILT with chert fragments, slightly moist	S-3	13.5-15	7-10-13	23		100	
15	723.86								
16									
17									
18									
19		Same as above	S-4	18.5-20	9-11-16	27		90	
20	718.86								
21									
22									
23									
24									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-1
Sheet 2 of 5

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 149' | SURF.ELEV.: 738.86

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	713.86	Very stiff, red with light brown and gray CLAY, high plasticity, some chert fragments, moist	S-5	23.5-25	8-10-14	24		100	
26									
27									
28									
29									
30	708.86	Same as above	S-6	28.5-30	6-8-10	18		100	
31									
32									
33									
34									
35	703.86	Same as above, stiff with chert pebbles	S-7	33.5-35	4-6-8	14		100	
36									
37									
38									
39									
40	698.86	Same as above, very moist, blocky structure	S-8	38.5-40	3-4-5	9		100	
41									
42									
43									
44									
45	693.86	Stiff, yellowish brown silty CLAY with chert, sand, and small pebbles, moist	S-9	43.5-45	3-4-5	9		100	
46									
47									
48									
49									
50	688.86	Same as above, very stiff with large limestone gravel, some manganese oxide nodules	S-10	48.5-50	6-8-9	17		100	
51									
52									
53									
54									
55	683.86	Same as above with mottled gray	S-11	53.5-55	11-13-11	24		90	
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-1
Sheet 3 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **149'** SURF.ELEV. 738.86

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	678.86	Stiff, light brown and reddish brown CLAY, high plasticity with quartz pebbles, moist	S-12	58.5-60	4-5-7	12		90	
61									
62									
63									
64									
65	673.86	Same as above, very moist	S-13	63.5-65	4-5-7	12		100	
66									
67									
68									
69									
70	668.86	Same as above	S-14	68.5-70	4-6-8	14		100	
71									
72									
73									
74									
75	663.86	Very stiff, light brown, sandy CLAY with chert fragments, moist	S-15	73.5-75	4-7-10	17		100	
76									
77									
78									
79									
80	658.86	Same as above, stiff	S-16	78.5-80	5-6-8	14		100	
81									
82									
83									
84									
85	653.86	Chert seam from approximately 84.5-85.5	S-17	83.5-85	5-27-47	74		100	
86									
87									
88									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-1
Sheet 4 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **149'** SURF.ELEV. 738.86

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	648.86	Same as above, very stiff	S-18	88.5-90	6-8-10	18		100	
91									
92									
93									
94									
95	643.86	Same as above, stiff with highly weathered quartz pebbles, very moist	S-19	93.5-95	4-5-7	12		100	
96									
97									
98									
99									
100	638.86	Same as above	S-20	98.5-100	4-4-6	10		100	
101									
102									
103									
104									
105	633.86	Same as above, with very highly weathered dolomite gravel	S-21	103.5-105	4-5-7	12		100	
106									
107									
108									
109									
110	628.86	Same as above	S-22	108.5-110	6-4-6	10		100	
111									
112									
113									
114									
115	623.86	Same as above	S-23	113.5-115	2-4-5	9		100	
116									
117									
118									
119									
120	618.86	Same as above, firm	S-24	118.5-120	2-2-4	6		90	

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-1

Sheet 5 of 5

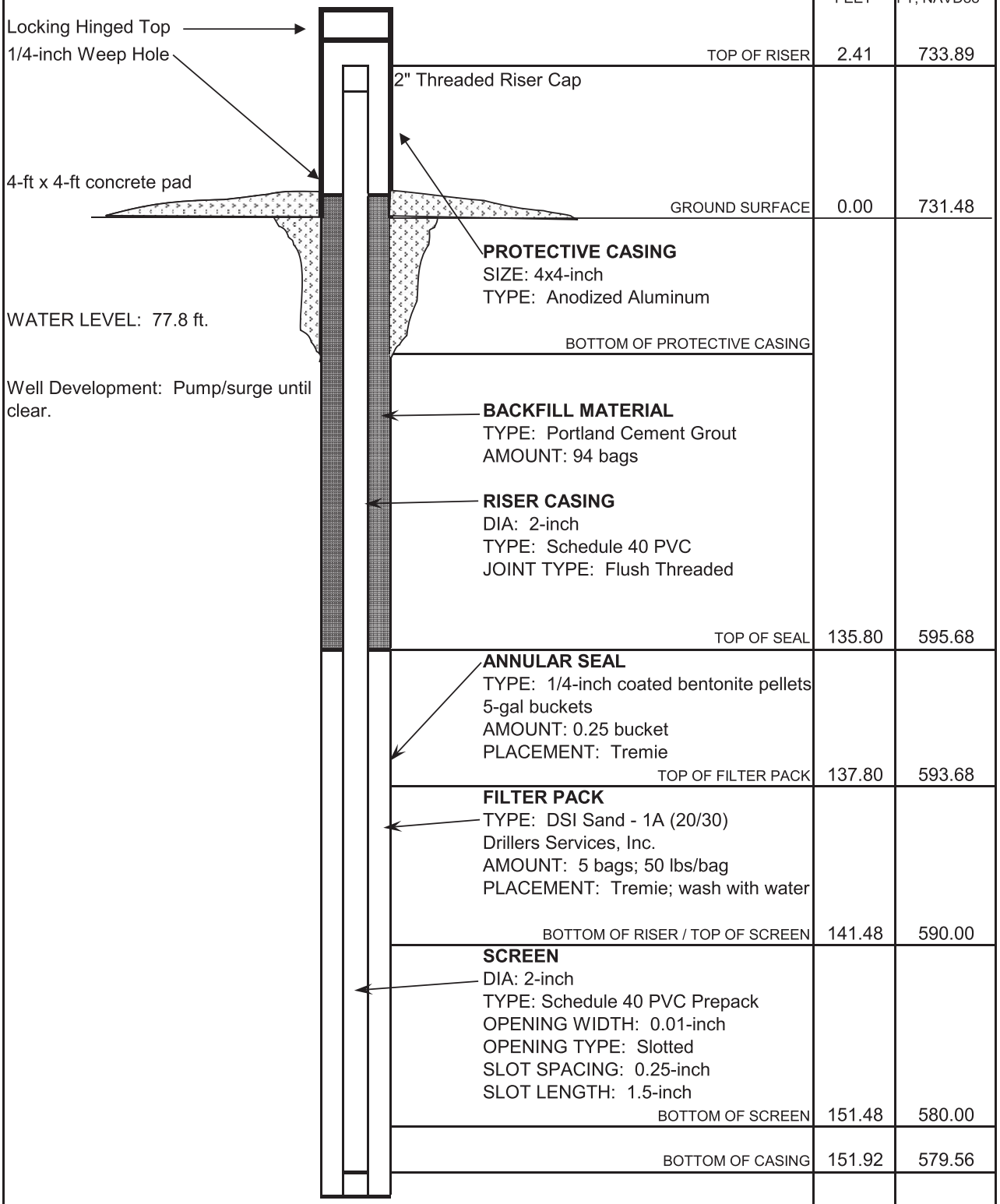
SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **149'** SURF.ELEV. 738.86

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121									
122									
123									
124									
125	613.86	Firm, light brown, sandy CLAY with yellowish brown SILT and chert gravel, wet	S-25	123.5-125	2-3-5	8		100	
126									
127									
128									
129									
130	608.86	Hard, light brown sandy CLAY and abundant highly weathered dolomite, wet, parent rock structure visible in soil	S-26	128.5-130	8-27-4	31		90	
131									
132									
133									
134									
135	603.86	Same as above, very soft, few chert fragments, less structured	S-27	133.5-135	WOH	0		100	
136									
137									
138									
139									
140	598.86	Same as above, firm, some chert gravel	S-28	138.5-140	2-3-3	6		100	
141									
142									
143									
144									
145	593.86	Same as above, stiff	S-29	143.5-145	2-2-12	14		100	
146									
147									
148									
149		Very hard, weathered DOLOMITE, highly fractured	S-30	148.5-150	50/2-x-x	>50		90	
150	588.86	Bottom of boring							
151									
152									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: S. Denty	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: K. Hobbs	DRILLING METHODS: H S A	GWA-2
DATE CONSTRUCTED: 4/4/2007 - 9:00 am		



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	2.41	733.89
GROUND SURFACE	0.00	731.48
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 94 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	135.80	595.68
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	137.80	593.68
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	141.48	590.00
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	151.48	580.00
BOTTOM OF CASING	151.92	579.56

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2
Sheet 1 of 5

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **151** | SURF.ELEV.: 731.48
LOCATION: Cells 1 & 2 | COORDINATES N: 1502640.55 | E: 2071935.13
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-75
DRILLING METHOD: HSA | NO. SAMPLES: 13 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 3/29/2007
DRILLER: S. Denty | RECORDER: K. Hobbs | APPROVED: | DRILLING COMP. DATE: 4/3/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	731.48								
5	726.48	Stiff, dark brown/red SILT with some sand, slightly moist	S-1	4.5-6	3-6-8	14		100	
10	721.48	Dark brown/red sandy SILT with pebbles up to 4 cm, most pebbles 3-4 mm, areas of tan sand	S-2	9.5-11	9-10-14	24		100	
15	716.48	Same as above	S-3	14.5-16	5-8-13	21		90	
20	711.48	Stiff, dark reddish brown sandy SILT with quartz sand grains up to 2 mm	S-4	19.5-21	4-9-11	20		90	

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2
Sheet 2 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **151** SURF.ELEV. 731.48

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	706.48	Stiff, dark reddish brown SILT with sand and pebbles up to 20 mm in diameter, dry	S-5	24.5-25	3-5-8	13		100	
26									
27									
28									
29									
30	701.48	Same as above	S-6	29.5-31	5-7-11	18		100	
31									
32									
33									
34									
35	696.48	Dark reddish brown sandy pebbly SILT, approximately 10% pebbles, slightly moist, but still crumbly	S-7	34.5-36	5-10-15	25		60	
36									
37									
38									
39									
40	691.48	Dark reddish brown sandy SILT with pebbles up to 30 mm in diameter, approximately 20% pebbles, slightly moist	S-8	39.5-41	4-6-10	16		80	
41									
42									
43									
44									
45	686.48	Dark brown/red pebbly SILT, approximately 50% pebbles, areas of light brown silt, pebbles up to 20 mm in diameter	S-9	44.5-46	5-9-11	20		60	
46									
47									
48									
49									
50	681.48	Mottled light brown, red/brown, and white silty CLAY saprolite, high plasticity, slightly moist, no pebbles	S-10	49.5-51	4-10-7	17		75	
51									
52									
53									
54									
55	676.48	Highly weathered white, tan, and brown SAPROLITE, some bedding features still visible, uniform silt grain size, slightly moist	S-11	54.5-56	9-11-37	48		50	
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2
Sheet 3 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **151** SURF.ELEV. 731.48

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	671.48	Firm, light brown, tan, and white silty SAPROLITE, mottled, moist	S-12	59.5-61	6-7-9	16			
61									
62									
63									
64									
65	666.48	Same as above, wet	S-13	64.5-66	5-6-7	13			
66									
67									
68									
69									
70	661.48	Same as above	S-14	69.5-71	3-4-7	11			
71									
72									
73									
74									
75	656.48	Same as above	S-15	74.5-76	5-6-12	18			
76									
77									
78									
79									
80	651.48	White decomposed boulder	S-16	79.5-81	2-21-45	66			
81									
82									
83									
84									
85	646.48	Firm, Brown to white CLAY with silt	S-17	84.5-86	4-5-11	16			
86									
87									
88									

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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. GWA-2

Sheet 4 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **151** JRF.ELEV. 731.48

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	641.48	Same as above	S-18	89.5-91	2-7-8	15			
91									
92									
93									
94									
95	636.48	Same as above	S-19	94.5-96	29-15-8	23			
96									
97									
98									
99									
100	631.48	Firm, brown to white CLAY with sand and silt	S-20	99.5-101	2-5-8	13			
101									
102									
103									
104									
105	626.48	Same as above	S-21	104.5-106	1-3-5	8			
106									
107									
108									
109									
110	621.48	Same as above	S-22	109.5-111	2-3-8	11			
111									
112									
113									
114									
115	616.48	Same as above	S-23	114.5-116	2-3-5	8			
116									
117									
118									
119									
120	611.48	Firm, brown CLAY with rock fragments	S-24	119.5-121	1-2-2	4			

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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. GWA-2

Sheet 5 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **151** JRF.ELEV. 731.48

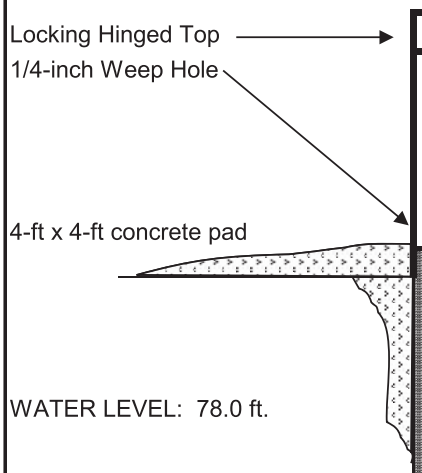
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121									
122									
123									
124									
125	606.48	Soft, brown SILT, loose, with rock fragments	S-25	124.5-126	WOR	0			
126									
127									
128									
129									
130	601.48	Same as above	S-26	129.5-131	WOR	0			
131									
132									
133									
134									
135	596.48	Same as above	S-27	134.5-136	WOR	0			
136									
137									
138									
139									
140	591.48	Same as above	S-28	139.5-141	1-0-0	0			
141									
142									
143									
144									
145	586.48								
146		Rods dropped from 146-150.6							
147									
148									
149									
150	581.48								
151		Top of Rock Bottom of boring							
152									

Form GS9901 7-26-2004

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Milam	NAME
LOCATION: Cells 1&2	RIG TYPE: CME550	
LOGGER: J. Lippert	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWA-2R
DATE CONSTRUCTED: 8/3/2007 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.17	734.83
2" Threaded Riser Cap		
GROUND SURFACE	0.00	732.66
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 32 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	81.50	651.16
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	88.50	644.16
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 4 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	95.13	637.53
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	105.13	627.53
BOTTOM OF CASING	106.03	626.63

HOLE DIA: 7.5"

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2R
Sheet 1 of 4

SITE	Plant Bowen Dry Gypsum Storage Facility			HOLE DEPTH	103'	SURF.ELEV.	732.66
LOCATION	Cells 1 & 2			COORDINATES N	1502615.38	E	2071965.52
ANGLE	0	BEARING	0	CONTRACTOR	SCS	DRILL NO.	CME-550
DRILLING METHOD	HSA/HQ Rock core with water			NO. SAMPLES	15	NO. U.D. SAMPLES	0
CASING SIZE		LENGTH	78	CORE SIZE	HQ	TOTAL % REC.	87.2
WATER TABLE DEPTH	78	ELEV.	654.66	TIME AFTER COMP.	15 hrs	DATE TAKEN	8/2/2007
TYPE GROUT		QUANTITY		MIX		DRILLING START DATE	7/31/2007
DRILLER	S. Milam	RECORDER	J. Lippert	APPROVED		DRILLING COMP. DATE	8/2/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	732.66								
5	727.66	Stiff brownish red sandy CLAY with silt, moist, residuum	S-1	4.5-6	2 - 4 - 5	9			
10	722.66	Same as above, very stiff with micaceous subrounded gravel	S-2	9.5-11	5 - 9 - 11	20			
15	717.66	Same as above	S-3	14.5-16	4 - 10 - 10	20			
20	712.66	Same as above	S-4	19.5-21	4 - 9 - 10	19			

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2R
Sheet 2 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 103' | SURF.ELEV.: 732.66

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	707.66	Very stiff brownish yellow with yellowish white SILT, moist, some cementation in yellowish white silt inclusions	S-5	24.5-26	8 - 8 - 12	20			
26									
27									
28									
29									
30	702.66	Same as above, some very fine sand grains in matrix	S-6	29.5-31	2 - 18 - 10	28			
31									
32									
33									
34									
35	697.66	Stiff brownish yellow SILT, wet, very homogeneous	S-7	34.5-36	4 - 5 - 5	10			
36									
37									
38									
39									
40	692.66	Hard brownish yellow and white SILT with highly weathered and friable chert gravel, wet	S-8	39.5-41	5 - 14 - 21	35			
41									
42									
43									
44									
45	687.66	Firm brownish yellow, yellowish white, and dark brown SILT, moist, elastic in dark brown inclusions	S-9	45.5-46	3 - 3 - 3	6			
46									
47									
48									
49									
50	682.66	Very stiff yellowish brown SILT with chert gravel, moist	S-10	49.5-51	4 - 13 - 13	26			
51									
52									
53									
54									
55	677.66	Same as above, very hard with abundant chert gravel	S-11	54.5-56	50/4	R			
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2R

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **103'** SURF.ELEV. 732.66

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	672.66	Stiff brownish yellow, yellowish white, and dark brown SILT, moist, elastic where dark brown	S-12	59.5-61	3 - 4 -5	9			
61									
62									
63									
64									
65	667.66	Same as above, very stiff with rounded gravel, some black stained inclusions	S-13	64.5-66	4 - 14 - 15	29			
66									
67									
68									
69									
70	662.66	Hard yellowish brown sandy SILT, wet	S-14	69.5-71	8 - 14 - 16	30			
71									
72									
73									
74									
75	657.66	Same as above, very hard	S-15	74.5-76	50/4 - X - X	R			
76									
77									
78		Auger refusal at 78.0							
79		DOLOMITE, slightly to moderately weathered, hard, aphanitic, slightly fractured		78-83			5.0/2.3	46	
80	652.66	79.2-80.7: Cavity, mud-filled							
81									
82		81.0-81.5: Cavity, mud-filled					Lost Circulation		
83		Partial void 81.7 - 82.2							
84				83-88			5.0/4.3	86	
85	647.66								
86									
87									
88									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-2R
Sheet 4 of 4

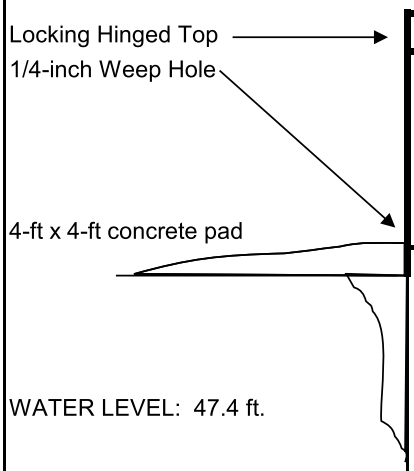
SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **103'** SURF.ELEV. 732.66

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		Unweathered, moderately to slightly fractured		88-93			5.0/4.8	96	
90	642.66								
91		High angle (~70° - 75°) healed fractures							
92									
93									
94				93-98			5.0/5.2	104	
95	637.66								
96									
97		Split along high angle joint							
98									
99				98-103			5.0/5.2	104	
100	632.66								
101									
102									
103		Thin cherty seam at 102.5							
104		Bottom of boring							
105	627.66								
106									
107									
108									
109									
110	622.66								
111									
112									
113									
114	618.66								
115	617.66								
116									
117									
118									
119									
120	612.66								

Monitoring Well was abandoned on February 19, 2021

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: S. Denty	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: J. Lippert	DRILLING METHODS: HSA	GWA-3
DATE CONSTRUCTED: 4/11/2007 - 16:00		



Well Development: Pump/surge until clear.

HOLE DIA: 8"

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.55	732.47
2" Threaded Riser Cap		
GROUND SURFACE	0.00	729.92
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 50 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	80.30	649.62
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	83.30	646.62
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3.2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	85.06	644.86
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	95.06	634.86
BOTTOM OF CASING	95.36	634.56

Monitoring Well was abandoned on February 19, 2021

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-3
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **95.7** | SURF.ELEV.: 729.92
LOCATION: Cells 1 & 2 | COORDINATES N: 2072067.9 | E: 1502387.58
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-75
DRILLING METHOD: HSA | NO. SAMPLES: 19 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 47.4 | ELEV.: 682.52 | TIME AFTER COMP.: 17 hrs | DATE TAKEN: 4/11/2007
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 4/9/2007
DRILLER: S. Denty | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 4/11/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	729.92								
1	728.92								
2	727.92								
3	726.92								
4	725.92								
5	724.92	Hard, dark brownish red sandy CLAY with chert pebbles and gravel, slightly moist	S-1	4.5-6	4-16-23	39		100	
6	723.92								
7	722.92								
8	721.92								
9	720.92								
10	719.92	Same as above, very stiff, light brown and dark brownish red	S-2	9.5-11	4-8-12	20		75	
11	718.92								
12	717.92								
13	716.92								
14	715.92								
15	714.92	Stiff, brownish red, light brown, and grayish white mottled CLAY, high plasticity, moist	S-3	14.5-16	3-5-8	13		90	
16	713.92								
17	712.92								
18	711.92								
19	710.92								
20	709.92	Stiff, white kaolinitic CLAY, moist, some reddish brown banding	S-4	19.5-21	3-4-5	9		100	
21	708.92								
22	707.92								
23	706.92								
24	705.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.7** SURF.ELEV. 729.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	704.92	Same as above, very stiff, brownish yellow, white, and light red mottled	S-5	24.5-26	2-5-11	16		100	
26	703.92								
27	702.92								
28	701.92								
29	700.92								
30	699.92	Same as above, white and brownish yellow	S-6	29.5-31	4-8-18	26		100	
31	698.92								
32	697.92								
33	696.92								
34	695.92								
35	694.92	Very stiff, brown sandy CLAY with abundant chert fragments, moist	S-7	34.5-36	4-7-14	21		90	
36	693.92								
37	692.92								
38	691.92								
39	690.92								
40	689.92	Same as above, hard	S-8	39.5-41	4-25-19	44		100	
41	688.92								
42	687.92								
43	686.92								
44	685.92								
45	684.92	Very stiff, light yellowish brown silty CLAY with very highly weathered chert fragments, very moist	S-9	44.5-46	6-9-10	19		100	
46	683.92								
47	682.92								
48	681.92								
49	680.92								
50	679.92	Same as above, very hard, abundant (about 40 to 50%) highly weathered chert fragments, wet	S-10	49.5-51	9-19-39	58		100	
51	678.92								
52	677.92								
53	676.92								
54	675.92								
55	674.92	Very stiff, yellowish brown silty CLAY, few chert fragments, wet, some layering visible	S-11	54.5-56	8-8-13	21		100	
56	673.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-3
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.7** SURF.ELEV. 729.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	672.92								
58	671.92								
59	670.92								
60	669.92	Very hard, white DOLOMITE, very highly weathered, wet	S-12	59.5-61	9-32-23	55		100	
61	668.92								
62	667.92								
63	666.92								
64	665.92								
65	664.92	Very stiff, yellowish brown silty CLAY, wet, saprolitic structure in parts	S-13	64.5-66	5-8-12	20		100	
66	663.92								
67	662.92								
68	661.92								
69	660.92								
70	659.92	Same as above, stiff with highly weathered quartz pebbles	S-14	69.5-71	3-6-9	15		100	
71	658.92						Allowed hole to sit 20 minutes, water at 57 feet		
72	657.92								
73	656.92	72.9-74.0: Wet drill through chert boulder							
74	655.92								
75	654.92	Very stiff, yellowish brown sandy clayey SILT with abundant chert fragments, wet	S-15	74.5-76	6-8-9	17		50	
76	653.92								
77	652.92								
78	651.92								
79	650.92								
80	649.92	Same as above, stiff	S-16	79.5-81	6-5-5	10		100	
81	648.92								
82	647.92								
83	646.92								
84	645.92								
85	644.92	Same as above, hard abundant chert and highly weathered dolomite fragments around 86'	S-17	84.5-86	6-9-28	37			
86	643.92								
87	642.92								
88	641.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.7** SURF.ELEV. 729.92

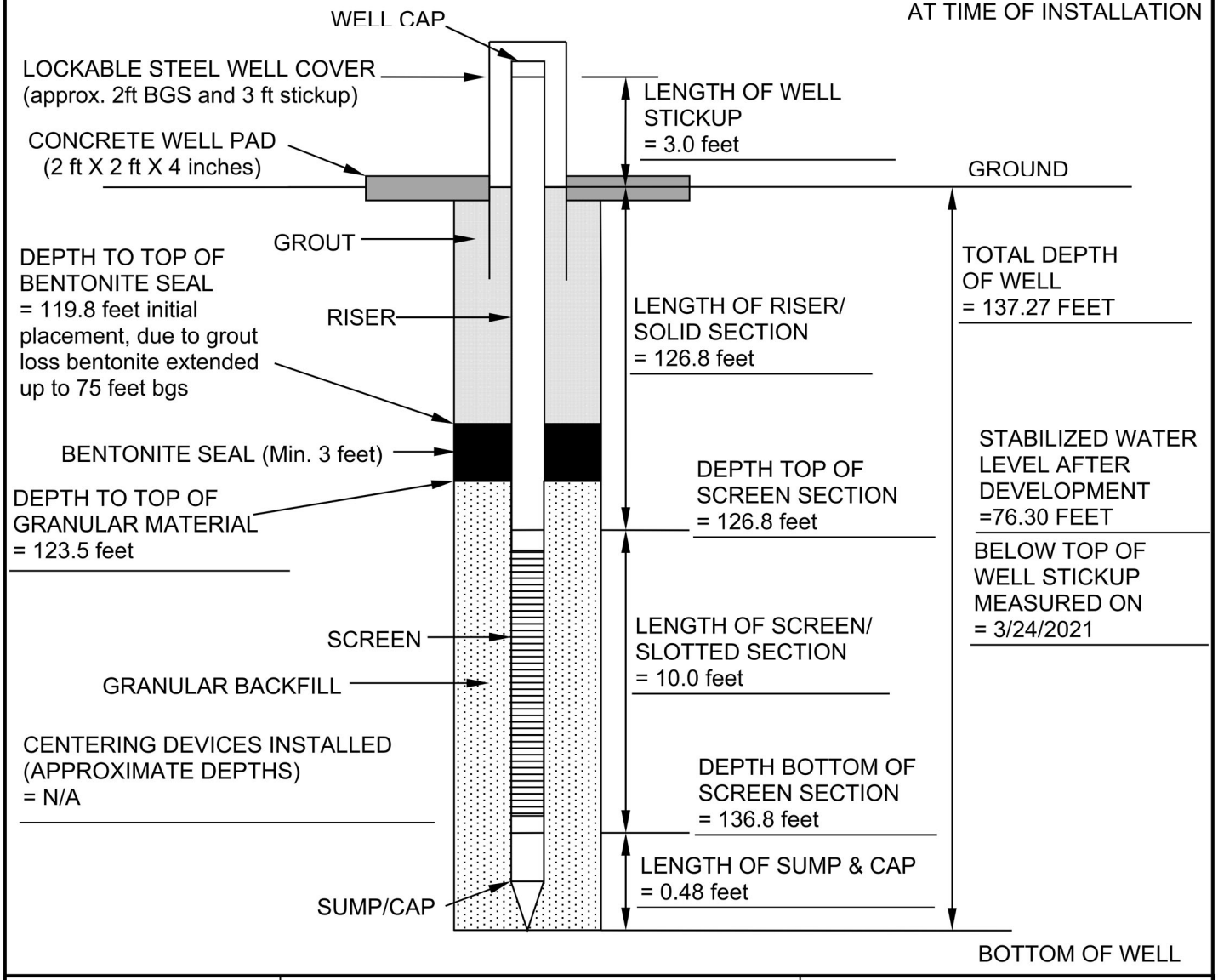
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89	640.92								
90	639.92	Same as above, very hard, abundant chert and highly weathered dolomite throughout sample, relict structure visible in soil matrix	S-18	89.5-91	15-50-15	65		50	
91	638.92								
92	637.92								
93	636.92								
94	635.92								
95	634.92	Same as above, stiff	S-19	94.5-96	9-7-6	13		50	
96	633.92								
97	632.92	Bottom of boring							
98	631.92								
99	630.92								
100	629.92								
101	628.92								
102	627.92								
103	626.92								
104	625.92								
105	624.92								
106	623.92								
107	622.92								
108	621.92								
109	620.92								
110	619.92								
111	618.92								
112	617.92								
113	616.92								
114	615.92								
115	614.92								
116	613.92								
117	612.92								
118	611.92								
119	610.92								
120	609.92								

WELL INSTALLATION RECORD

JOB NAME	**Plant Bowen Cells 1 & 2**	PROJECT NO.	**6122-16-0287**
WELL NUMBER	**GWA-3A**	INSTALLATION DATE	**3/16/2021**
LOCATION*	**NORTH: 1502374.48 EAST: 2072061.21**	GROUND ELEV:	**728.68 feet NAVD88**
WOOD FIELD REPRESENTATIVE	**A. Shoredits**	DRILLER/ CONTRACTOR	**Cascade**
GRANULAR BACKFILL MATERIAL	**#1 Silica Filter Sand**	DRILLING TECHNIQUE	**Rotosonic**
SCREEN MATERIAL	**2-inch I.D. Flush Joint Slotted PVC (Sch. 40)**	BOREHOLE DIAMETER	**± 6 inch**
SLOT SIZE	**0.010-inch Machine Cut**	REFERENCE POINT** ELEVATION*	**731.68 ft NAVD88**
RISER MATERIAL	**2-inch I.D. Flush joint Solid PVC (Sch. 40)**	LOCK TYPE/KEY CODE	**Master**

* Preliminary-Final location/elevation to be determined by As-Built Survey
** Reference point is notch cut in the top of PVC casing

NOTE: NOT TO SCALE, ALL DEPTHS RECORDED ARE RELATIVE TO EXISTING GROUND SURFACE AT TIME OF INSTALLATION



wood.

Notes:
Sand – 6.5 bags of #1 fine sand for well sump, prepack & screen interval
Bentonite – 1 bag 3/8" chips for well sump; 1 bucket 1/2" uncoated pellets for plug; 8 bags of chips added to plug; 2 bags of chips to above pad
Grout – 13.5 bags of bentonite mix with ~350 gals water

Review: RNQ Date: 4/13/2021

GWA-3A BORING LOG

PROJECT NUMBER 6122160287.2101
PROJECT NAME Plant Bowen
CLIENT Georgia Power
ADDRESS 317 Covered Bridge Rd SW
LOCATION Gypsum Landfill Cells 1 & 2

DRILLING COMPANY Cascade Drilling
DRILLER D. Myles
RIG TYPE/ METHOD TSI CC150/ SONIC
CASING DIA. 6-in Outer/ 4-in Inner
BORING DEPTH 139.5 ft

COORDINATES N 1502374.48, E 2072061.21
COORD SYS Ga State Plane West (NAD 83)
COMPLETION Stick-up w/ protective casing
SURFACE ELEVATION 728.68 ft amsl
WELL TOC 731.68 ft amsl

COMMENTS Start drilling 2/17/2021 and drilling completed 2/18/2021. Well construction completed on 3/16/2021 with installation of well cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY R. Quinn

Depth (ft)	Samples	% Recovery	Sample Run	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-10		1		Backfill: Clayey SAND, brown/ orange, med. dense, moist, fine gravel, fragments of plastic sheeting	SC		728
2								726
4								724
6								722
8								720
10	10-20		2		CLAY, red, v. stiff, low plasticity, dry SAND seam 10-10.1 ft, light brown, med. dense. moist	CL	Bentonite plug	718
12								716
14								714
16					Clayey SILT, red/ yellow, med. dense, dry, coarse gravel, rounded to sub-rounded quartz, relic laminated texture, variable clay content throughout Sandy seam 30-30.7 ft, green/ tan	ML-SC		712
18								710
20	20-30		3					708
22								706
24								704
26								702
28								700
30	30-40		4					698
32								696
34							Bentonite grout mix	694
36					Silty CLAY, orange/ white/ yellow/ tan/ red, v. stiff, med. plasticity, moist, trace coarse gravel throughout, sub-rounded quartz, relic saprolite texture White carbonate seam 36.9-37.1 ft & 43.5 ft Coarse gravel seam @ 40.1 ft, 41.5 ft	CL		692
38								690
40	40-50		5					688
42								686
44								684
46					Clayey SILT, red, dense, dry, coarse gravel, rounded to sub-rounded quartz	ML-SC		682
48								680

produced by ESlog.ESdat.net on 13 Apr 2021

wood.

GWA-3A BORING LOG

Depth (ft)	Samples	% Recovery	Sample Run	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
50								678
	50-60		6		Silty CLAY, orange/ white/ yellow, stiff, med. and high plasticity, dry, sub-rounded fine quartz gravel Wht carbonate clay 52.8-53.3 ft, coarse angular carbonate gravel inclusions 50-53.3 ft	CL-CH		
52								676
					CLAY with silt, red/ orange/ yellow, stiff, med. plasticity, dry, rounded to sub-rounded gravel	CL		
54								674
					CLAY, red/ orange/ white/ yellow/ tan, v. stiff, high plasticity, dry, relic saprolite texture/ laminations, rounded to sub-rounded gravel	CH		
56								672
58					No sample			670
60								668
	60-70		7		CLAY with sand, brown/ white/ red, stiff, med. plasticity, moist, white chert gravel inclusions (fine,sub-angular), relic saprolite structure/ laminations	CL-SC		
62							Bentonite grout mix	666
						ML		
64					SILT w/ clay, white, med. dense, (non-plastic), dry, chalky, dolomitic	CL-CH		664
66					Silty CLAY, brown/ white/ red/ yellow, stiff, high plasticity, moist, relic saprolite structure			662
					No sample			
68								660
70								658
	70-80		8		SILT with clay, yellow, med. dense, (non-plastic), dry Wht chalky dolomitic 71.1-71.5 ft	ML		
72					Clayey SILT, white/ red/ yellow, med. dense, (slight plasticity), dry to moist Chert lens @ 81.2 ft	ML-CL		656
74								654
76								652
78								650
80								648
	80-90		9					
82								646
84					SILT with clay, white, med. dense, (non-plastic), dry, chalky, dolomitic Chert lens 85.3-86 ft	ML		644
86						ML-CL		642
					Clayey SILT, yellow/ white/ red, med. dense, (slight plasticity), moist, chert lens @ 86.8 ft	ML		
88					SILT with clay, white, med. dense, (non-plastic), dry, trace chalky dolomite	ML-CL		640
90					Clayey SILT, yellow/ white/ red, med. dense, (slight plasticity), moist, white fine gravel inclusions	ML-SC		638
	90-100		10		Clayey SILT, tan/ white, med. dense to dense, (med. plasticity), moist, variable clay content, chert lenses throughout Dark brown chert lens @ 90-90.3 ft Solid chert cobble @ 91.6-91.9 ft		Bentonite plug	
92								636
94								634
96								632
98					Coarse gravel, sub-angular chert in interval of 100-110 ft			630
100								628
	100-110		11					
102								626
104								624
106								622
108								620

produced by ESlog.ESdat.net on 13 Apr 2021

GWA-3A BORING LOG

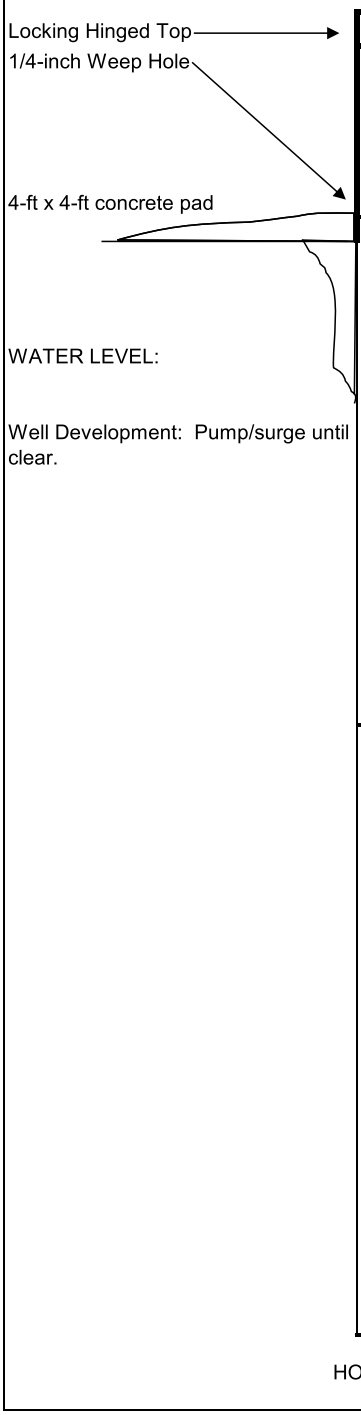
Depth (ft)	Samples	% Recovery	Sample Run	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
110								618
112	110-120		12		No sample from 110-130 ft Thin resistant layer (rock) encountered and broken through @ ~125 ft			616
114								614
116							Bentonite plug	612
118								610
120	120-130		13					608
122								606
124								604
126								602
128								600
130	130-140		14		Clayey SILT, yellow/ brown, loose, (low plasticity), wet, coarse angular gravel inclusions, sub-angular quartz, angular	ML-SC	Sand pack	598
132					Silty SAND with clay, dark grey/ tan/ dark brown, v. dense, moist, gravelly, weathered and fractured rock (tan/grey sand mixed with coarse chert gravel)	SM-SC		596
134					Competent carbonate/ dolomite rock			594
136					Silty SAND with clay (same as 133-135 ft), dark grey/ tan/ yellow, v. dense, moist, gravelly	SM-SC		592
138								590
140					Drilling terminated @ 139.5 ft due to carbonate rock encountered at 135 ft Well set at 137.3 feet below ground surface Screened interval: 126.8-136.8 ft Bentonite pellets placed from 75 -123.5 ft due to loss of grout. Well completed with a stickup protective cover and bollards.			588
142								586
144								584
146								582
148								580
150								578
152								576
154								574
156								572
158								570
160								568
162								566
164								564
166								562
168								560

produced by ESlog.ESdat.net on 13 Apr 2021

Monitoring Well was abandoned on March 15, 2022

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: L. Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWA-4
DATE CONSTRUCTED: 3/14/2007 - 16:00		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.51	743.47
2" Threaded Riser Cap		
GROUND SURFACE	0.00	740.96
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 59 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	53.90	687.06
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	56.90	684.06
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	59.49	681.47
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	69.49	671.47
BOTTOM OF CASING	69.79	671.17

Monitoring Well was abandoned on March 15, 2022

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4
Sheet 1 of 3

SITE	Plant Bowen Dry Gypsum Storage Facility			HOLE DEPTH	68.6'	SURF.ELEV.	740.96
LOCATION	Cells 1 & 2			COORDINATES N	2072318.41	E	1502239.16
ANGLE	0	BEARING	0	CONTRACTOR	SCS	DRILL NO.	CME-75
DRILLING METHOD	HSA/HQ Rock core with water			NO. SAMPLES	9	NO. U.D. SAMPLES	0
CASING SIZE	4.25" ID & 8.5" OD	LENGTH	5'	CORE SIZE	HQ	TOTAL % REC.	
WATER TABLE DEPTH	66.5	ELEV.	674.46	TIME AFTER COMP.		DATE TAKEN	3/14/2007
TYPE GROUT	Portland Cement	QUANTITY		MIX		DRILLING START DATE	3/7/2007
DRILLER	S. Denty	RECORDER	L. Millet	APPROVED		DRILLING COMP. DATE	3/14/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	740.96								
1	739.96								
2	738.96								
3	737.96								
4	736.96								
5	735.96	Light tan clayey SILT, dry, heavy dark red mottling	S-1	4.5-6	5-10-16	26		80	
6	734.96								
7	733.96								
8	732.96								
9	731.96								
10	730.96	Light gray to white silty CLAY, dry, heavy dark red mottling, 3" limestone lense at bottom, white, dry	S-2	9.5-11	6-24-50/3	R		60	
11	729.96								
12	728.96								
13	727.96								
14	726.96								
15	725.96	Light tan and light gray clayey SILT, dry, heavy red mottling, limestone pebbles	S-3	14.5-16	4-5-8	13		80	
16	724.96								
17	723.96								
18	722.96								
19	721.96								
20	720.96	Light orange and tan silty CLAY, dry, with limestone pebbles, white	S-4	19.5-21	4-7-9	16			
21	719.96								
22	718.96								
23	717.96								
24	716.96								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4
Sheet 2 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **68.6'** SURF.ELEV. 740.96

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	715.96	Same as above	S-5	24.5-26	6-15-25	40			
26	714.96								
27	713.96								
28	712.96	26.5: encountered rock, approximately 1.5' thick							
29	711.96								
30	710.96	Same as above, with chert	S-6	29.5-31	13-7-8	15		50	
31	709.96								
32	708.96								
33	707.96								
34	706.96								
35	705.96	Light orange silty CLAY, moist, with small chert pebbles	S-7	34.5-36	7-12-13	25		20	
36	704.96								
37	703.96								
38	702.96								
39	701.96								
40	700.96	Orange and brown clayey SILT, dry, with sand, chert pebbles and cobbles	S-8	39.5-41	12-17-21	38		50	
41	699.96								
42	698.96								
43	697.96								
44	696.96								
45	695.96	Tan and orange silty CLAY, light brown mottling, chert pebbles and cobbles	S-9	44.5-46	19-47-25	72		15	
46	694.96								
47	693.96								
48	692.96	47.5: Top of rock, begin coring		47.5-57.5			10.0/10.0		
49	691.96	Light gray DOLOSTONE, small secondary fractures filled with white mineralization							
50	690.96	50: fracture, no obvious water movement							
51	689.96								
52	688.96	51.7: fracture with clay rinds, soil buildup							
53	687.96								
54	686.96								
55	685.96								
56	684.96								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4

Sheet 3 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **68.6'** SURF.ELEV. 740.96

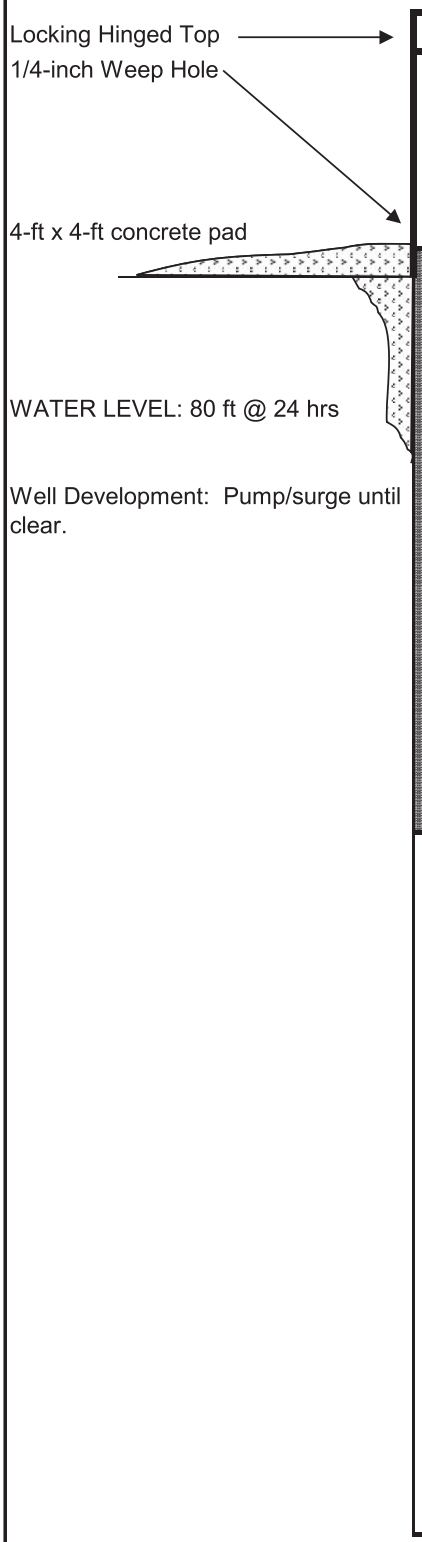
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	683.96			57.6-66.1			8.6/8.6		
58	682.96	57.5: fracture with extensive chemical weathering							
59	681.96								
60	680.96								
61	679.96								
62	678.96								
63	677.96								
64	676.96	63.9: fracture with weathering, clay rinds							
65	675.96								
66	674.96								
67	673.96	66.1-69.5: cavity with minimum 1.5' soil fill (orange silty CLAY, plastic, with carbonate, large sand/small pebbles)							
68	672.96								
69	671.96	Bottom of boring							
70	670.96								
71	669.96								
72	668.96								
73	667.96								
74	666.96								
75	665.96								
76	664.96								
77	663.96								
78	662.96								
79	661.96								
80	660.96								
81	659.96								
82	658.96								
83	657.96								
84	656.96								
85	655.96								
86	654.96								
87	653.96								
88	652.96								

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: L. Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWA-4R
DATE CONSTRUCTED: 3/13/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.58	743.23
2" Threaded Riser Cap		
GROUND SURFACE	0.00	740.65
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 44 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	78.00	662.65
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	80.00	660.65
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	83.05	657.60
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	93.05	647.60
BOTTOM OF CASING	93.17	647.48

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4R
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **92.5'** | SURF.ELEV.: 740.65
LOCATION: Cells 1 & 2 | COORDINATES N: 1502246.31 | E: 2072317.15
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-75
DRILLING METHOD: HSA/HQ Rock core with water | NO. SAMPLES: 11 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 3/6/2007
DRILLER: S. Denty | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 3/13/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	740.65								
5	735.65	Orange, red, tan, and light gray clayey SILT, dry	S-1	4.5-6	8-11-13	24		80	
10	730.65	Red clayey SILT, dry, with 3" limestone lense at bottom, white, dry	S-2	9.5-11	9-32-34	68		85	
15	725.65	Light tan and orange silty CLAY, dry, occasional dark red mottling	S-3	14.5-16	6-11-17	28		85	
20	720.65	Light tan silty CLAY, dry, with carbonate rubble, fine dark red mottling	S-4	19.5-21	7-12-23	35			

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4R
Sheet 2 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 92.5' | SURF.ELEV.: 740.65

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	715.65	Light orange silty CLAY, dry, occasional dolostone pebbles	S-5	24.5-26	3-6-17	23			
26									
27		26.3': drilled through 6" to 8" of rock							
28									
29									
30	710.65	Light orange silty CLAY, moist, occasional light gray and black mottling, occasional dolostone pebbles	S-6	29.5-31	9-9-9	18		50	
31									
3									
33									
34									
35	705.65	Same as above, large dolostone cobble stuck in bottom of spoon	S-7	34.5-36	10-11-9	20		15	
36									
37									
38									
39									
40	700.65	Light orange silty CLAY, moist, occasional light gray and black mottling, small carbonate shards	S-8	39.5-41	7-7-9	16		50	
41									
42									
43		41.6' - 44.0': rock ledge, about 2.5' thick							
44									
45	695.65	Light orange silty CLAY, dry, black mottling, degraded carbonate pebbles	S-9	44.5-46	8-8-8	16		75	
46									
47									
48									
49									
50	690.65	Brown clayey SILT, moist, occasional black mottling, carbonate pebbles and sand throughout	S-10	49.5-51	2-4-4	8		20	
51									
52									
53									
54		Same as above	S-11	53.5-56	50/2	R		5	
55	685.65	54.0' Top of rock		54-57.5			3.5/2.9	83	
56		54.0: Light gray DOLOSTONE, some secondary mineralization in minor fractures							

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4R
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **92.5'** SURF.ELEV. 740.65

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57		56.7': Indication of cavity top, core is incomplete around, some sand mixed in DOLOMITE, some small clay rinds							
58				57.5-67.5			10/5.4	54	
59		58.6' - 59.4': Top of open cavity							
60	680.65	60.0: Pitted DOLOSTONE, thicker clay rinds with some iron staining in fractures							
61									
62									
63									
64									
65	675.65	64.2' - 65.7': Cavity, appears to be some soil deposition at bottom, possible chert about 2" thick							
66									
67		65.7' - 67.2': Gray DOLOMITE, secondary crystalization in minor fractures							
68				67.5-77.5			10/9.9	99	
69									
70	670.65								
71									
72									
73									
74									
75	665.65								
76									
77									
78				77.5-87.5			10/8.6	86	
79		78.0' - 79.3': Cavity, bottom of cavity is heavily weathered (2") DOLOSTONE, tan/orange then gray							
80	660.65	dolostone as above							
81									
82		79.3' - 84.4': Gray DOLOSTONE, same as above							
83									
84									
85	655.65								
86		85.7': Fracture with iron oxide staining and light clay rind							
87									
88									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-4R

Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **92.5'** SURF.ELEV. 740.65

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89				87.5-92.5			5.0/5.0	100	
90	650.65	85.7' - 92.5': Light gray DOLOSTONE, same as above, no evidence of water in occasional fractures							
91									
92									
93		92.5: Bottom of boring							
94									
95	645.65								
96									
97									
98									
99									
100	640.65								
101									
102									
103									
104									
105	635.65								
106									
107									
108									
109									
110	630.65								
111									
112									
113									
114									
115	625.65								
116									
117									
118									
119									
120	620.65								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **740.04**
Top of PVC Casing Elevation (feet, NAVD88): **742.84**

BORING GWA-4RZ
PAGE 1 OF 3
6122160287

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DATE STARTED 10/25/2016 **COMPLETED** 10/28/2016 **SURF. ELEV.** 740.04' NAVD88 **COORDINATES:** N:1502238.85 E:2072329.55
CONTRACTOR Cascade **EQUIPMENT** PS T-150 **METHOD**
DRILLED BY Tommy and Rodger **LOGGED BY** D. Morris* **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 117 ft bgs **GROUND WATER DEPTH: DURING** **COMP.** 90 ft bgs **DELAYED** 88 ft.;7 days
NOTES Near GWA-4R, *Sample Logged by geologist employed by Amec Foster Wheeler

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION (ELEV.)	Natural Gamma (44.25 / 88.5 / 132.75)	HCL REACTION (Weak / Moderate / Strong)	WELL DATA (ELEV. (DEPTH))
0		- SILT (ML), orange, tan and red (2.5 YR 6/4), loose, dry			Completion: Protective casing set in concrete pad; 2-foot square concrete pad
15		725.1 - silty CLAY (CL), orange, tan and red (2.5 YR 6/4)			Annular Fill: Aquaguard Grout Mixture
25		714.1 - same as above, (5 YR 8/2), chert nodules, dry - same as above, (7.5 YR 8/6), without chert nodules, dry			
40		702.1 - clayey SILT (ML), mottled light tan and black, chert nodules, dry			

SIMPLE GEO W/ WELL AND GAMMA - ESEE2012DATABASE.GDT - 1/6/17 11:12 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen

LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.
		(Cont.)	
45			
50		- same as above	
55			
60			
65		- same as above, dolomite gravel present	
70		- same as above, increasing gravel, saturated	
75			
80			660.1
		- Top of competent dolomitic bedrock, gray, saturated	
85			

Natural Gamma: 44.25 | 88.5 | 132.75

HCL REACTION: Weak | Moderate | Strong

WELL DATA

Completion:
Protective casing set in concrete pad; 2-foot square concrete pad
ELEV. (DEPTH)

(CONTINUED)

Annular Fill:
Aquaguard Grout Mixture

665.0
(75.0)

Annular Seal:
3/8" bentonite chips

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-4RZ
PAGE 3 OF 3
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	Natural Gamma 44.25 88.5 132.75	HCL REACTION Weak Moderate Strong	WELL DATA
						Completion: Protective casing set in concrete pad; 2-foot square concrete pad
						ELEV. (DEPTH)
		(CONTINUED)				
		(Cont.)				Annular Seal: 3/8" bentonite chips
90		- same as above, possible horizontal fractures				
95						
100		- same as above				640.0 (100.0)
						Annular Seal: 3/8" bentonite pellets (non-coated)
105						635.0 (105.0)
						Filter: silica filter sand
						633.0 (107.0)
						Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; pre-pack
110		- same as above, vertical fractures present				
115						
			623.0			
		Bottom of borehole at 117.0 feet.				
120						
125						
130						
135						

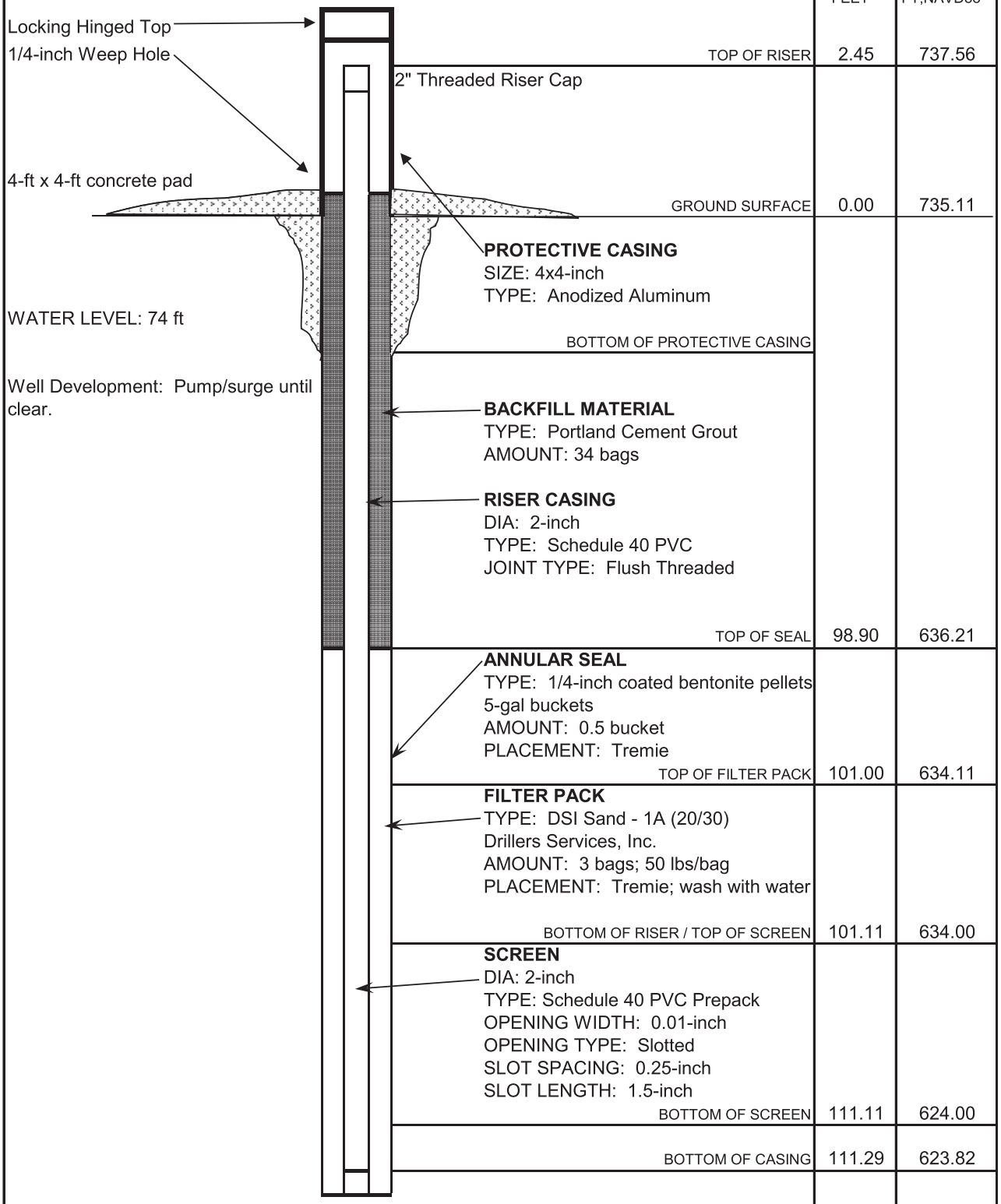
SIMPLE GEO W/ WELL AND GAMMA - ESEE2012DATABASE.GDT - 1/6/17 11:12 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: J. Lippert	DRILLING METHODS: HSA	GWC-5
DATE CONSTRUCTED: 4/18/2006 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.45	737.56
2" Threaded Riser Cap		
GROUND SURFACE	0.00	735.11
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 34 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	98.90	636.21
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	101.00	634.11
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	101.11	634.00
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	111.11	624.00
BOTTOM OF CASING	111.29	623.82

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-5
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **114.2'** | SURF.ELEV.: 735.11
LOCATION: Cells 1 & 2 | COORDINATES N: 1502341.56 | E: 2072677.44
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA/HQ Rock core with water | NO. SAMPLES: 22 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 74 | ELEV.: 661.11 | TIME AFTER COMP.: 20 hrs | DATE TAKEN: 4/19/2007
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 4/12/2007
DRILLER: S. Denty | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 4/18/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	735.11								
5	730.11	Very stiff, dark reddish brown sandy CLAY, slightly moist	S-1	4.5-6	6-8-11	19		100	
10	725.11	Same as above	S-2	9.5-11	5-13-15	28		100	
15	720.11	Same as above with black and light brown mottled with reddish brown	S-3	14.5-16	4-8-12	20		100	
20	715.11	Same as above	S-4	19.5-21	4-11-15	26		100	

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-5
Sheet 2 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **114.2'** SURF.ELEV. 735.11

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	710.11	Same as above with chert pebbles in matrix, some chert lenses	S-5	24.5-26	3-7-22	29		100	
26									
27									
28									
29									
30	705.11	Hard, brown, red, light brown and black mottled sandy gravelly CLAY with iron stained dolomite fragments and chert pebbles, slightly moist	S-6	29.5-31	8-14-18	32		100	
31									
32									
33									
34									
35	700.11	Very stiff, brownish red CLAY, high plasticity, with trace dolomite pebbles, moist	S-7	34.5-36	7-7-11	18		100	
36									
37									
38									
39									
40	695.11	Very stiff, brown and reddish brown sandy CLAY with abundant chert pebbles, some grayish white silt lenses, moist	S-8	39.5-41	3-8-21	29		100	
41									
42									
43									
44									
45	690.11	Very stiff, brown silty CLAY with some sandy lenses, moist	S-9	44.5-46	8-9-10	19		100	
46									
47									
48									
49									
50	685.11	Same as above, brown and reddish brown, wet	S-10	49.5-51	3-7-5	12		100	
51									
52									
53									
54									
55	680.11	Chert lense	S-11	54.5-56	50/5	R		75	
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-5
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **114.2'** SURF.ELEV. 735.11

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	675.11		S-12	59.5-61	5-4-3	7		0	
61									
62									
63									
64									
65	670.11	Hard, light brown and white clayey SILT, clay content in light brown matrix, very moist	S-13	64.5-66	12-13-22	35		100	
66									
67									
68									
69									
70	665.11	Same as above, white silt more abundant	S-14	69.5-71	16-25-17	42		100	
71									
72									
73									
74									
75	660.11	Hard, highly weathered and fractured DOLOMITE, wet	S-15	74.5-76	18-33-14	47		100	
76									
77									
78		77.6: Rock seam							
79									
80	655.11	Hard, brown interbedded coarse SAND and silty CLAY, wet	S-16	79.5-81	30-13-23	36		75	
81									
82									
83									
84									
85	650.11	Very stiff, brown sandy CLAY with chert fragments ranging from coarse sand to gravel, wet	S-17	84.5-86	19-13-12	25			
86									
87									
88									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-5
Sheet 4 of 4

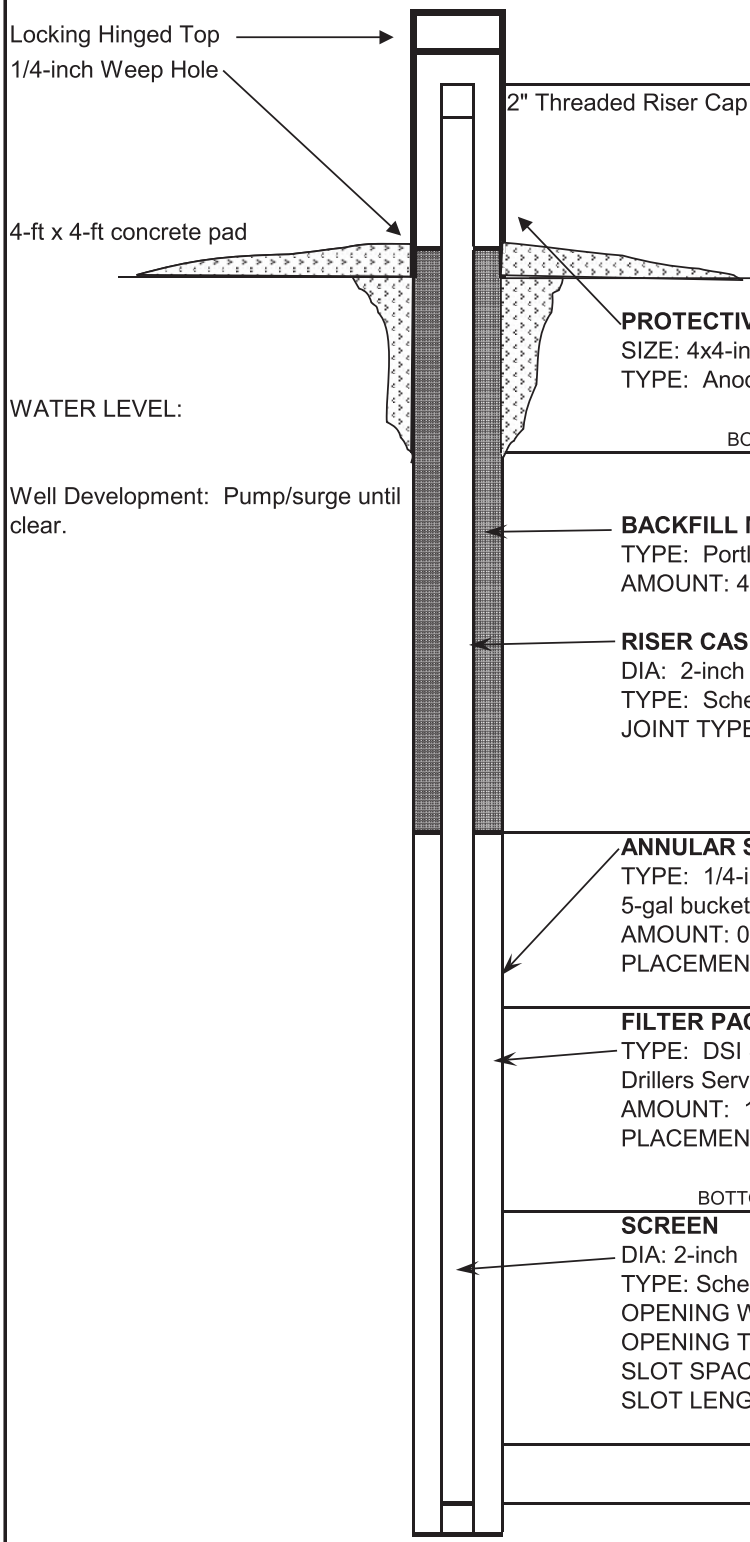
SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **114.2'** SURF.ELEV. 735.11

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	645.11	Same as above, hard with highly weathered dolomitic sand	S-18	89.5-91	14-25-19	44		50	
91									
92									
93									
94									
95	640.11	Hard, highly weathered DOLOMITE, highly fractured, grain size ranging from coarse sand to large gravel, some clay seams, wet	S-19	94.5-96	21-13-21	34		25	
96									
97									
98									
99									
100	635.11		S-20	99.5-101	17-5-7	12		0	
101									
102									
103									
104									
105	630.11	Very stiff, light brown silty CLAY with white silt lenses, wet	S-21	104.5-106	10-7-10	17		90	
106									
107									
108									
109									
110	625.11	Hard, white silty SAND, dolomitic, very fine to medium grained, wet	S-22	109.5-111	10-14-16	30		75	
111									
112									
113									
114		Top of rock							
115	620.11	Bottom of boring							
116									
117									
118									
119									
120	615.11								

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: S. Denty	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: K. Hobbs	DRILLING METHODS: HSA	GWC-6
DATE CONSTRUCTED: 5/1/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.67	728.64
2" Threaded Riser Cap		
GROUND SURFACE	0.00	725.97
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 40 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	88.80	637.17
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.75 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	94.30	631.67
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 12 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	97.62	628.35
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	107.62	618.35
BOTTOM OF CASING	107.53	618.44

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-6
Sheet 1 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 109.3 | SURF.ELEV.: 725.97
LOCATION: Cells 1 & 2 | COORDINATES N: 1502520.08 | E: 2072962.89
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 21 | NO. U.D. SAMPLES:
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/1/2007
DRILLER: S. Denty | RECORDER: K. Hobbs | APPROVED: | DRILLING COMP. DATE: 5/1/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	725.97								
5	720.97	Very stiff, red sandy SILT, crumbly, some quartz pebbles	S-1	4.5-6	5-8-12	20			
10	715.97	Very stiff, red silty gravelly CLAY, dry, crumbly, with dolomite fragments	S-2	9.5-11	4-6-15	21			
15	710.97	Stiff, red-brown to light brown sandy SILT, dry, crumbly, with clay seams & some weathered dolomite fragments	S-3	14.5-16	3-5-7	12			
20	705.97	Stiff, light brown SILT, moist, 1.5" thick white dolomite lense	S-4	19.5-21	5-7-6	13			

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-6
Sheet 2 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 109.3 | SURF.ELEV.: 725.97

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	700.97	Very stiff, light brown SILT, slightly moist	S-5	24.5-26	3-10-8	18			
26									
27									
28									
29									
30	695.97	Very stiff, sandy SILT, moist, banded light brown, brown, and red brown	S-6	29.5-31.0	3-8-11	19			
31									
32									
33									
34									
35	690.97	Very stiff, light brown sandy SILT, moist, some white dolomite fragments	S-7	34.5-36	6-7-13	20			
36									
37									
38									
39									
40	685.97	Same as above, wet, some quartz fragments	S-8	39.5-41	7-8-10	18			
41									
42									
43									
44									
45	680.97	Hard, white SILT, wet, with layers of light brown weathered dolomite	S-9	44.5-46	4-9-38	47			
46									
47									
48									
49									
50	675.97	Hard, white gravelly SILT, wet, some bands of light brown, quartz fragments	S-10	49.5-51	19-39-19	58			
51									
52									
53									
54									
55	670.97	Stiff, light brown sandy gravelly SILT, wet, fragments of weathered dolomite, veins of mostly pure sand	S-11	54.5-56	6-6-8	14			
56									

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-6
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **109.3** SURF.ELEV. 725.97

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	665.97	Stiff, light brown sandy SILT, wet, some dolomite fragments	S-12	59.5-61	8-7-8	15			
61									
62									
63									
64									
65	660.97	Stiff, light brown SILT, wet, with gravel	S-13	64.5-66	4-6-8	14			
66									
67									
68									
69									
70	655.97	Stiff, light brown gravelly SILT, one band of quartz	S-14	69.5-71	7-5-7	12			
71									
72									
73									
74									
75	650.97	Stiff, light brown SILT, wet, some banding and quartz fragments	S-15	74.5-76	6-10-10	20			
76									
77									
78									
79									
80	645.97	Stiff, light brown SILT, wet, with black/gray chert, banding, chert and quartz fragments	S-16	79.5-81	5-6-9	15			
81									
82									
83									
84									
85	640.97	Very stiff, light brown to reddish brown sandy SILT, wet, with chert fragments	S-17	84.5-86	8-3-24	27			
86									
87									
88									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-6
Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **109.3** SURF.ELEV. 725.97

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	635.97	Medium stiff, light brown clayey SILT, wet, red mottling, some chert fragments	S-18	89.5-91	2-3-3	6			
91									
92									
93									
94									
95	630.97	Soft, light brown silty CLAY, saturated, with some sandy bands	S-19	94.5-96	2-2-2	4			
96									
97									
98									
99									
100	625.97	Soft, light brown silty CLAY, saturated, with few rock fragments	S-20	99.5-101	0-1-2	3			
101									
102									
103									
104									
105	620.97	Light brown clayey sandy SILT, with rock fragments chert, and dolomite	S-21	104.5-106	1-1-15	16			
106									
107									
108									
109		Top of rock							
110	615.97	Bottom of boring							
111									
112									
113									
114									
115	610.97								
116									
117									
118									
119									
120	605.97								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **728.66**
Top of PVC Casing Elevation (feet, NAVD88): **731.91**

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

WELL: GWC-6RZ
PAGE 1 OF 3
841443

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DATE STARTED 4/22/2015 **COMPLETED** 4/28/2015 **SURF. ELEV.** 728.66 **COORDINATES:** N:1502502.00 E:2072900.50
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 110 ft. **GROUND WATER DEPTH: DURING** 48.5 ft. **COMP.** 71.7 ft. **DELAYED** 73.9 ft. after 100 hrs.
NOTES TOC Elevation 731.91, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
			ELEV. (DEPTH)	
			Surface Seal: Concrete	
			725.2 (3.5)	
720.7		5		
		10		
715.7		15		
		20	**Well: 2" OD PVC (SCH 40)**	
			Annular Fill: Portland Cement-Bentonite Grout (24 - 47lbs bags PC, 2.5 - 50lbs bags Gel, 135 gal. Water)	
		25		
701.7				
		30		
695.7				
		35		
690.7				

(Continued Next Page)

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	ELEV. (DEPTH)	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad		
			(CONTINUED)		
685.7		40			
		45			
680.7		50			
675.7		55	Annular Fill: Portland Cement-Bentonite Grout (24 - 47lbs bags PC, 2.5 - 50lbs bags Gel, 135 gal. Water)		
670.7		60			
665.7		65			
		70		661.2 (67.5)	
		75	Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (93.1'-76.0')) and Baroid Hole Plug 3/8 Chips (4 - 50lbs bags (76.0'-67.5'))		
650.7		80			
645.7					

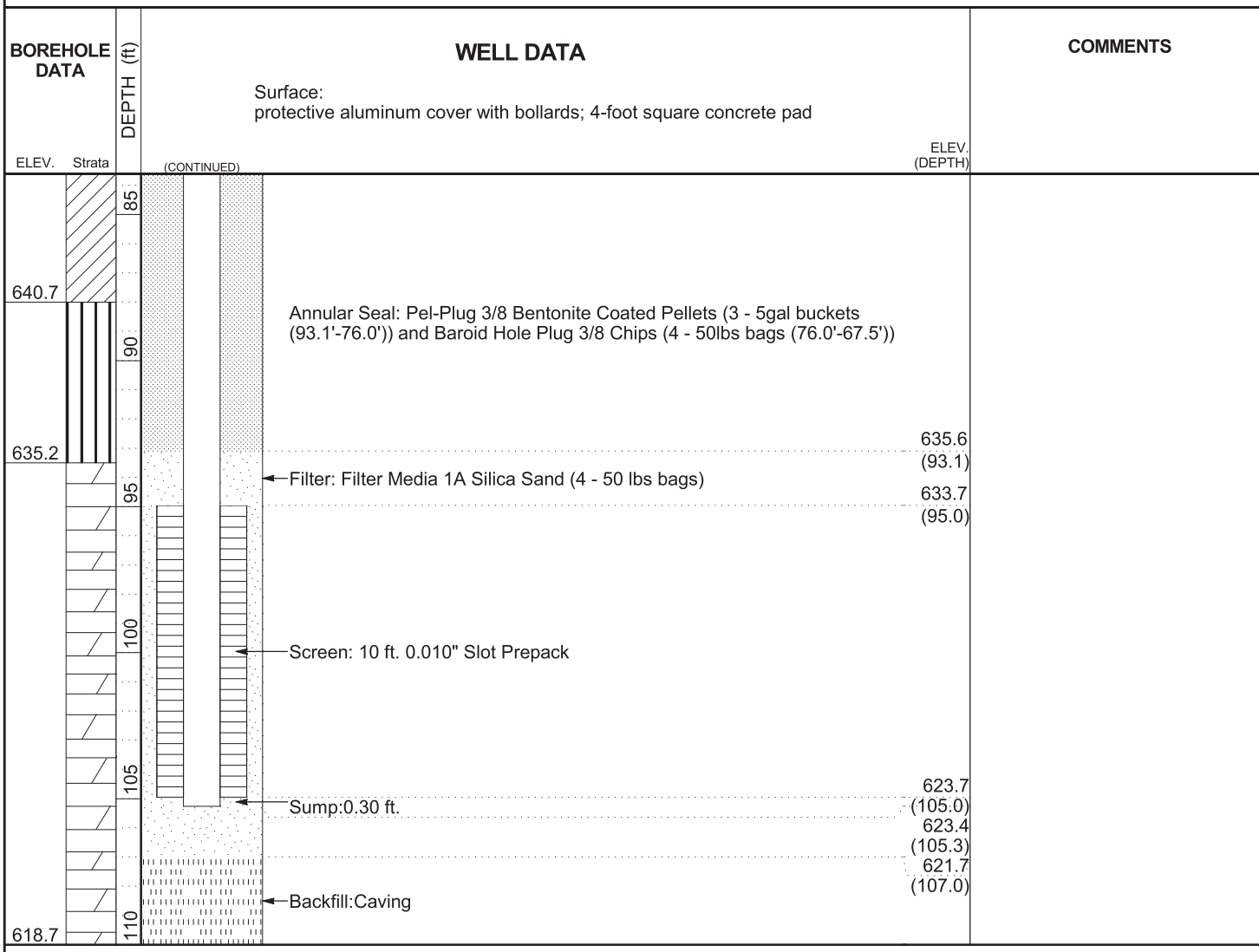
(Continued Next Page)

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA



Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **728.66**
Top of PVC Casing Elevation (feet, NAVD88): **731.91**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-6RZ
PAGE 1 OF 3
841443

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DATE STARTED 4/22/2015 **COMPLETED** 4/28/2015 **SURF. ELEV.** 728.66 **COORDINATES:** N:34.128150 E:-84.905832
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 110 ft. **GROUND WATER DEPTH: DURING** 48.5 ft. **COMP.** 71.7 ft. **DELAYED** 73.9 ft. after 100 hrs.
NOTES TOC Elevation 732.91, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
5		**Elastic Silt (MH)** - dark red (10R 3/6) fill dry, very stiff, low plastic, clayey, some white to light gray brittle/friable dolomite fragments			SPT N=28bpf(@3ft.) 10/12/16
10		**Lean Clay (CL)** - trace mottling dark red (10R 3/6) and dark brown (7.5YR 3/4) residuum dry, very stiff, low to medium plastic, trace organics and rock fragments			SPT N=27bpf(@8ft.) 8/13/14
15		**Elastic Silt (MH)** - mottled red / moderate reddish brown (10R 4/6) and brownish yellow / dark yellowish orange (10YR 6/6) residuum dry, very stiff, clayey silt, abundant light gray to white, angular to subangular, medium to very coarse dolomite fragments, trace interbedded clay layers			SPT N=26bpf(@13ft.) 7/12/14
20		- mottled red / moderate reddish brown (10R 4/6), strong brown (7.5YR 4/6) and yellow (10YR 7/6) residuum moist, stiff, low plastic, clayey silt, decrease in rock fragments			SPT N=11bpf(@18ft.) 3/5/6
25		- mottled yellow (10YR 7/8) and red (2.5YR 4/6) residuum moist, very stiff, low plastic, clayey silt with interbedded zones of increased clay, abundant medium to coarse, angular light gray dolomite fragments, trace light gray clay streaks			SPT N=16bpf(@23ft.) 3/7/9
30		**Lean Clay (CL)** - mottled yellow (10YR 7/8) and red (2.5YR 4/6) residuum moist, stiff, low to medium plastic, trace angular to subangular, coarse to very coarse dolomite and chert fragments			SPT N=9bpf(@28ft.) 3/4/5
35		**Elastic Silt (MH)** - mottled yellowish red (5YR 5/8) and yellow (10YR 8/8) residuum moist, stiff, low plastic, interbedded zones of red CL and yellow ML			SPT N=10bpf(@33ft.) 3/5/5

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
40		**Lean Clay (CL)** - mottled red (2.5YR 4/6) and reddish brown / moderate brown (5YR 4/4) residuum moist, stiff, low to medium plastic, trace angular, coarse to very coarse dolomite fragments			SPT N=13bpf(@38ft.) 3/6/7
45		**Silty Clay (CL-ML)** - trace mottling white / pinkish gray (5YR 8/1), red / moderate reddish brown (10R 4/6) and reddish yellow (7.5YR 7/8) residuum moist, very stiff, non to medium plastic, silt grading to silty clay, non plastic light gray silt, low to medium plastic red clay, trace light gray and angular to subangular, brittle/friable, medium to coarse dolomite fragments			SPT N=19bpf(@43ft.) 12/12/7
50		**Sandy Lean Clay (CL)** - yellow (10YR 7/8) residuum wet, medium stiff, low to medium plastic, interbedded zones of fine silty sand, cohesive, can roll 4-6mm, no visible rock fragments			SPT N=7bpf(@48ft.) 1/2/5
55		**Elastic Silt (MH)** - mottled very dark brown / dusky yellowish brown (10YR 2/2) and very light gray (N8) residuum wet, very stiff, low plastic, abundant light gray to light brown, medium to very coarse angular chert fragments			SPT N=28bpf(@53ft.) 28/14/14
60		**Silty Clay (CL-ML)** - mottled yellowish brown / moderate yellowish brown (10YR 5/4) and yellow (10YR 7/8) residuum wet, stiff, low to medium plastic, trace medium rock fragments			SPT N=9bpf(@58ft.) 2/3/6
65		**Lean Clay (CL)** - mottled reddish yellow (7.5YR 6/8), yellow / pale yellowish orange (10YR 8/6) and red (2.5YR 5/6) residuum wet, very stiff, low to medium plastic, silty, trace light gray to white, medium to coarse, angular to subangular dolomite fragments			SPT N=17bpf(@63ft.) 4/8/9
70		- mottled brownish yellow (10YR 6/8), white (10YR 8/1) and red (2.5YR 5/8) residuum wet, very stiff, low to medium plastic, trace subangular to subrounded, medium to coarse dolomite fragments and white to light gray chert fragments			SPT N=25bpf(@68ft.) 4/10/15
75		- mottled reddish yellow (7.5YR 6/6), reddish yellow (7.5YR 7/8) and red (2.5YR 5/8) residuum wet, medium stiff, low to medium plastic, trace coarse angular to subangular chert fragments and dolomite fragments			SPT N=8bpf(@73ft.) 1/4/4
80		**Silt (ML)** - mottled yellowish red (5YR 5/8) and yellow (10YR 7/8) residuum wet, very stiff, trace interbedded clay and rock fragments			SPT N=25bpf(@78ft.) 4/15/10
					SPT N=23bpf(@83ft.)

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
85		- trace mottling strong brown (7.5YR 5/6) and pale yellow (2.5Y 7/4) residuum wet, very stiff, low to medium plastic, some bluish gray to brown, angular to subangular, coarse to cobble sized chert fragments, trace light gray, angular, brittle/friable, coarse to very coarse dolomite fragments and interbedded zones of ML silt **Lean Clay (CL)** *(Con't)*			10/10/13
90		**Silt (MH)** - brownish yellow / dark yellowish orange (10YR 6/6) and yellow (10YR 7/6) residuum wet, very stiff, non to low plastic, cohesive, can roll 6mm but cannot support roll, trace light gray to bluish gray, angular, coarse chert and dolomite fragments			SPT N=28bpf(@88ft.) 10/12/16
95		**Dolostone** - light gray (N7) and bluish gray (10B 5/1) very fine to fine grain, hard, slightly to moderately weathered, massive, trace medium grains visible, limited 1-2" core pieces recovered, mostly fragments recovered, trace chert near top of section, some low to high angle fractures visible, partial healing with calcite fracture fill, visible calcite fill 1-2mm thick, trace orangish mud staining near top decreasing with depth			NOTE: degree of fracture unknown due to sonic drilling method, no intact core pieces recovered making fracture orientation difficult to determine.
100		- Dolostone: bluish gray (10B 5/1) and light gray (N7) very fine to fine grain, hard, massive, trace medium grains visible, moderate to high angled fractures, trace low angled fractures visible, trace orangish mud staining near bottom of recovered section, calcite fracture fill visible, no identifiable healing			
105					driller noted a very weak zone (possible void or heavily fractured zone) @ approx. 107-110', no recovery, hole caved from 110-107', filter sand was placed on bottom above the caved zone from 105-107'.
110					

Bottom of borehole at 110.0 feet.

115	120	125

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **709.70**
Top of PVC Casing Elevation (feet, NAVD88): **713.04**

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

WELL: GWC-7 Z
PAGE 1 OF 3
GPC633179

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 5/12/2016 **COMPLETED** 5/19/2016 **SURF. ELEV.** 709.70 **COORDINATES:** N:1502640.13 E:2073193.22
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY J. Asua **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 127.5 ft. **GROUND WATER DEPTHDURING** 75 ft. **COMP.** 55 ft. **DELAYED** 55 ft. after 24 hrs.
NOTES

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	ELEV. (DEPTH)	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad		
			Surface Seal: Concrete	707.7 (2.0)	
		5			
		10			
		15	**Well: 2" OD PVC (SCH 40)**		
		20	Annular Fill: Bentonite Grout (3 - 50lbs bags Aquagaurd, 80 gal. water)		
683.7		25			
		30			
		35			
		40			

(Continued Next Page)

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
		45		
		50	Annular Fill: Bentonite Grout (3 - 50lbs bags Aquagaurd, 80 gal. water)	
657.7				
655.7		55		
			ELEV. (DEPTH) 654.7 (55.0)	
		60		
		65		
		70	Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (1 - 5gal bucket (101.0'-99.0') and Baroid Hole Plug 3/8 Chips (11.5 - 50lbs bags (99.0'-55.0')	
		75		
		80		
		85		

(Continued Next Page)

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	ELEV. (DEPTH)	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad		
			(CONTINUED)		
619.7		90			
		95	Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (1 - 5gal bucket (101.0'-99.0') and Baroid Hole Plug 3/8 Chips (11.5 - 50lbs bags (99.0'-55.0')		
		100		608.7 (101.0)	
			Filter: Filter Media 20/40 Silica Sand (9 - 50 lbs bags, 116.0'-103.0') then 30/40 Silica Sand (0.5 bag, 103.0-101.0.0')	606.0 (103.7)	
603.7		105			
		110	Screen: 10 ft. 0.010" Slot Prepack		
		115	Sump:0.30 ft.	596.0 (113.7) 595.7 (114.0) 593.7 (116.0)	
		120			
			Backfill:Baroid Hole Plug, 3/8" chips, 127.5'-116.0', (3-50lbs bags)		
		125			
582.2					

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **709.70**
Top of PVC Casing Elevation (feet, NAVD88): **713.04**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-7 Z
PAGE 1 OF 3
GPC633179

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 5/12/2016 **COMPLETED** 5/19/2016 **SURF. ELEV.** 709.70 **COORDINATES:** N:1502640.13 E:2073193.22
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY J. Asua **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 127.5 ft. **GROUND WATER DEPTHDURING** 75 ft. **COMP.** 55 ft. **DELAYED** 55 ft. after 24 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		Sandy Silt (ML)				
		- dark yellowish brown (10YR 4/6) dry				
		- dark grayish brown / dark yellowish brown (10YR 4/2)				
5		- light brownish gray / pale yellowish brown (10YR 6/2)				
		- mottled strong brown (7.5YR 4/6) and light gray (2.5Y 7/2) dry				
10						
15						
		- mottled strong brown (7.5YR 5/6) and red (2.5YR 4/6) dry to damp, increased sand content than above				
20						
25		- damp				
		Sandy Lean Clay (CL)				
		- dark red (2.5YR 3/6) damp, with fine angular gravel				
		- medium				
30						
35						
		- mottled red (2.5YR 4/6), pale brown (10YR 6/3) and white (2.5YR 8/1) hard				
40						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
45		**Sandy Lean Clay (CL)***(Con't)* - mottled pale yellow (5Y 8/2), pinkish gray / grayish orange pink (5YR 7/2) and yellowish red / light brown (5YR 5/6) damp, hard, with fine angular gravel				
50		- increased gravel content than above, weathered chert				
		Well-graded Sandy Gravel (GW) - light gray (5YR 7/1) coarse chert gravel				
55		**Sandy Fat Clay (CH)** - mottled yellowish brown (10YR 5/6) and red (2.5YR 5/8) moist, high - pale yellow (2.5Y 8/3) moist, fine to coarse weathered chert gravel - mottled yellow (10YR 7/6), red (2.5YR 5/8) and reddish yellow (7.5YR 6/6)				
60						
65		- mottled brownish yellow / dark yellowish orange (10YR 6/6), white (10YR 8/1) and red (2.5YR 5/8) fine to coarse chert gravel (sub-rounded and angular)				
70						
75		- light gray (10YR 7/1) angular chert gravel - red (2.5YR 5/8), brownish yellow (10YR 6/8) and white (10YR 8/1) wet, high, fine angular gravel, light gray chert cobbles				
80						
85		- increased sand content than above				

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
90		**Sandy Fat Clay (CH)***(Con't)*				
		Elastic Silt (MH)				
		- mottled brownish yellow (10YR 6/8) and red (2.5YR 4/6) wet, high				
		- red (2.5YR 4/6) medium stiff, medium, with dark gray chert cobbles				
95						
		- mottled brownish yellow (10YR 6/8) and red (2.5YR 4/6) high, with sand and fine gravel				
100						
		- mottled red (2.5YR 4/6), white (2.5YR 8/1) and pale brown (10YR 6/3)				
105		- yellowish brown (10YR 5/8) soft				
		Clayey Sand (SC)				
		- dark yellowish brown (10YR 4/6) with fine to coarse chert gravel				
110						
115						
120						
		- chert gravel and sand				
125						
		Bottom of borehole at 127.5 feet.				
130						
135						

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **698.68**
Top of PVC Casing Elevation (feet, NAVD88): **702.09**

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

WELL: GWC-8Z
PAGE 1 OF 2
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DATE STARTED 4/17/2015 **COMPLETED** 4/28/2015 **SURF. ELEV.** 698.68 **COORDINATES:** N:1502827.67 E:2073526.15
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 73.31 ft. **GROUND WATER DEPTH: DURING** 53 ft. **COMP.** 50.5 ft. **DELAYED** 44.12 ft. after 100 hrs.
NOTES TOC Elevation 702.09, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Core

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad	
			Surface Seal: Concrete	
			ELEV. (DEPTH) 696.2 (2.5)	
690.7		5		
		10		
685.7			**Well: 2" OD PVC (SCH 40)**	
		15		
		20	Annular Fill: Portland Cement-Bentonite Grout (8 - 47lbs bags PC, 0.5 - 50lbs bags Gel, 45 gal. Water)	
675.7				
		25		
670.7				
		30		
665.7				
		35		

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SOUTHERN COMPANY

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

RECORD OF WELL CONSTRUCTION

WELL: GWC-8Z

841443

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

BOREHOLE DATA ELEV.	Strata	DEPTH (ft)	WELL DATA	ELEV. (DEPTH)	COMMENTS
			Surface: protective aluminum cover with bollards; 4-foot square concrete pad		
			(CONTINUED)		
		40	Annular Fill: Portland Cement-Bentonite Grout (8 - 47lbs bags PC, 0.5 - 50lbs bags Gel, 45 gal. Water)		
655.7					
		45		653.7 (45.0)	
650.7					
		50	Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (61.0'-48.0')) and Baroid Hole Plug 3/8 Chips (2 - 50lbs bags (48.0'-45.0'))		
		55			
640.7					
		60		637.7 (61.0)	
			Filter: Filter Media 1A Silica Sand (6 - 50 lbs bags)		
635.7				635.7 (63.0)	
		65			
			Screen: 10 ft. 0.010" Slot Prepack		
		70			
625.7				625.7	
			Sump:0.30 ft.		

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **698.68**
Top of PVC Casing Elevation (feet, NAVD88): **702.09**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-8Z
PAGE 1 OF 2
841443

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DATE STARTED 4/17/2015 **COMPLETED** 4/28/2015 **SURF. ELEV.** 698.68 **COORDINATES:** N:1502827.67 E:2073526.15
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 73.31 ft. **GROUND WATER DEPTH: DURING** 53 ft. **COMP.** 50.5 ft. **DELAYED** 44.12 ft. after 100 hrs.
NOTES TOC Elevation 702.09, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Core

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
5		**Elastic Silt (MH)** - trace mottling reddish yellow (5YR 6/8) and strong brown (7.5YR 5/8) residuum dry, hard, clayey, trace medium sized subangular to subrounded rock fragments			SPT N=34bpf(@3ft.) 9/14/20
10		**Silt (ML)** - trace mottling strong brown (7.5YR 5/8) and light yellowish brown (10YR 6/4) residuum dry, very stiff, trace clay and medium to coarse, angular to subangular rock fragments			SPT N=25bpf(@8ft.) 4/10/15
15		**Elastic Silt (MH)** - mottled red (2.5YR 5/8), reddish yellow (7.5YR 6/8) and light gray (7.5YR 7/1) residuum dry, hard, clayey, trace medium to coarse, hard to brittle, angular to subangular rock fragments			SPT N=31bpf(@13ft.) 11/12/19
20		- mottled light red (2.5YR 6/8), reddish yellow (7.5YR 6/8) and light gray (10YR 7/1) residuum moist, very stiff, non to low plastic, clayey with interbedded layers of gray CL lean clay, trace subrounded coarse chert fragments			SPT N=19bpf(@18ft.) 5/9/10
25		**Silty Clay (CL-ML)** - mottled reddish yellow (7.5YR 6/6), light gray (7.5YR 7/1) and red (10R 4/8) residuum moist, very stiff, low plastic, interbedded layers of CL, medium to coarse hard to brittle angular to subangular dolomite fragments, trace very coarse angular chert fragments			SPT N=17bpf(@23ft.) 4/6/11
30		**Lean Clay (CL)** - mottled red (2.5YR 5/8), light red (2.5YR 6/6) and light reddish gray (2.5YR 7/1) residuum moist, very stiff, low to medium plastic, trace coarse to very coarse, rounded to subrounded white chert fragments			SPT N=28bpf(@28ft.) 9/14/14
35		**Elastic Silt (MH)** - mottled reddish yellow (7.5YR 6/8), red (2.5YR 5/8) and light reddish gray (2.5YR 7/1) residuum moist, hard, non to low plastic, clayey, coarse to very coarse, angular to rounded chert fragments			SPT N=35bpf(@33ft.) 15/16/19

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

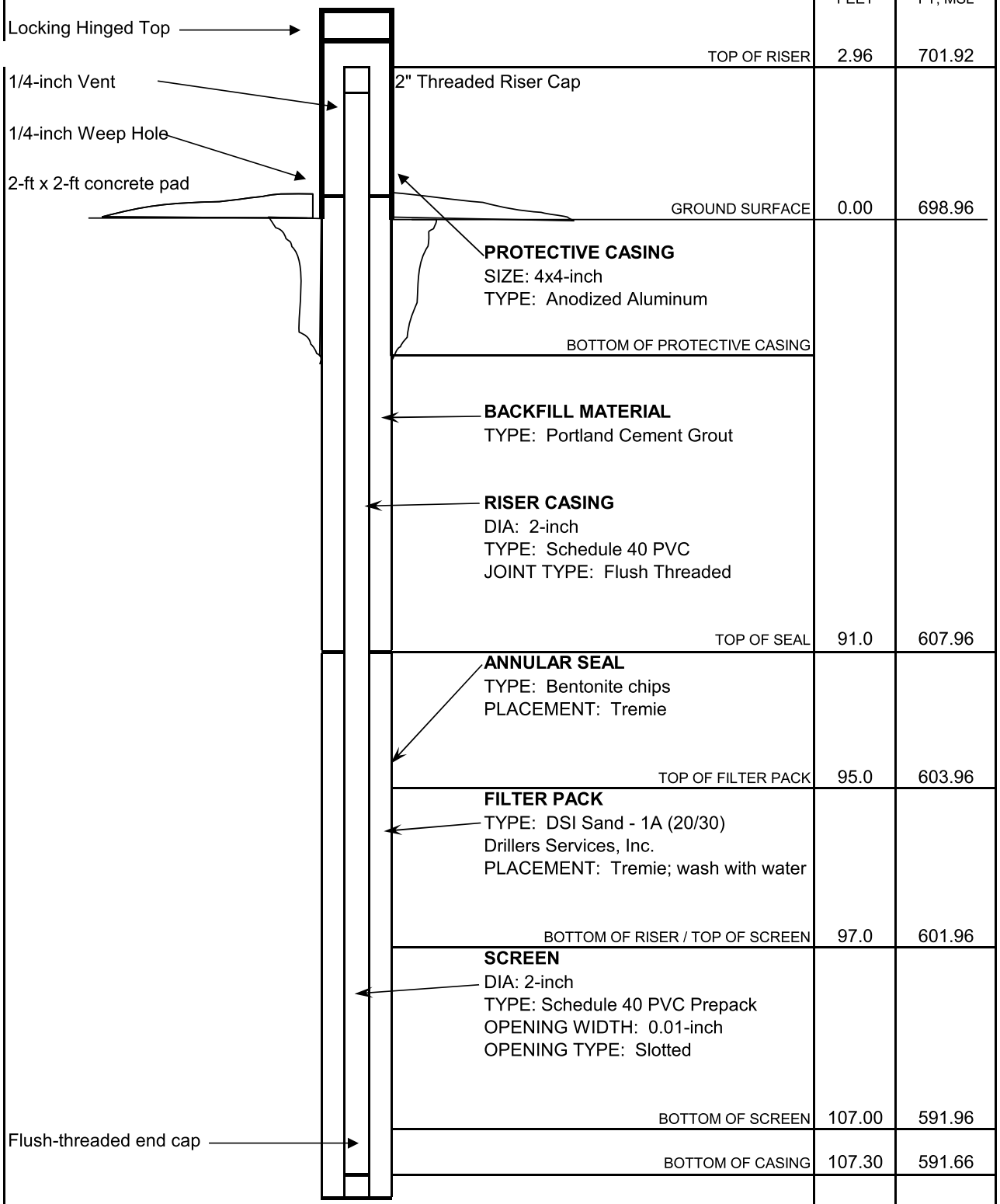
SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 1 & 2 Replacement Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
40		**Elastic Silt (MH)** *(Con't)* - mottled yellow / pale yellowish orange (10YR 8/6) and reddish yellow (7.5YR 6/6) residuum moist, very stiff, non to low plastic, coarse to very coarse, subangular to subrounded chert fragments			SPT N=16bpf(@38ft.) 6/7/9
45		**Silt (ML)** - yellow (10YR 7/8) residuum moist, very stiff, trace subrounded to subangular, coarse to very coarse dolomite and chert fragments			SPT N=17bpf(@43ft.) 4/7/10
50		**Elastic Silt (MH)** - reddish yellow (7.5YR 6/8) and light red (2.5YR 6/6) residuum moist, stiff, non to low plastic, medium to cobble sized, angular to subangular chert and dolomite fragments			SPT N=12bpf(@48ft.) 4/5/7
55		- reddish yellow (7.5YR 6/8) residuum wet, stiff, non to low plastic, abundant medium to coarse dolomite fragments			SPT N=11bpf(@53ft.) 4/6/5
60		**Sandy Silt (ML)** - reddish yellow (7.5YR 6/8) residuum wet, very soft, cannot roll, cohesive, trace clay			SPT N=0bpf(@58ft.) WOH
65		**Elastic Silt (MH)** - strong brown (7.5YR 5/8) residuum wet, very stiff, low plastic, clayey with interbedded CL, cohesive, trace coarse to very coarse, subangular to subrounded chert and dolomite fragments			SPT N=21bpf(@63ft.) 5/10/11
70		- strong brown (7.5YR 5/8) residuum wet, very soft, low plastic, clayey, cohesive, trace medium to coarse rock fragments			SPT N=0bpf(@68ft.) WOH
75		Bottom of borehole at 73.3 feet.			
80					

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	SCS	WELL NAME
		DRILLER:		
LOCATION:	Cells 1 and 2	RIG TYPE:		
LOGGER:		DRILLING METHODS:		GWC-8RR
DATE CONSTRUCT	6/27/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.96	701.92
GROUND SURFACE	0.00	698.96
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	91.0	607.96
TOP OF FILTER PACK	95.0	603.96
BOTTOM OF RISER / TOP OF SCREEN	97.0	601.96
BOTTOM OF SCREEN	107.00	591.96
BOTTOM OF CASING	107.30	591.66

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-8RR
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: 107 | SURF.ELEV.: 698.96
LOCATION: Cells 1 & 2 | COORDINATES N: 1502857.71 | E: 2073501.74
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: Rotosonic | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: 0
CASING SIZE: 8" | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 46.02 | ELEV.: 655.9 | TIME AFTER COMP.: 24 hour | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 6/27/2011
DRILLER: Boart | RECORDER: C. Sellers | APPROVED: | DRILLING COMP. DATE: 6/27/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	701.92								
1		CLAY, Sandy; brownish red; fine grained sand							
2									
3									
4									
5	696.92								
6		CLAY, Silty; yellowish red; traces of chert gravel							
7									
8									
9									
10	691.92								
11									
12									
13									
14									
15	686.92								
16									
17									
18									
19									
20	681.92								
21									
22									
23									
24	677.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-8RR

Sheet 2 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **107** SURF.ELEV. 701.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	676.92								
26		CLAY, Silty; yellowish red; traces chert gravel							
27									
28									
29									
30	671.92								
31									
32									
33									
34		CLAY, Sandy; yellow; with chert							
35	666.92								
36									
37									
38									
39									
40	661.92	SAA							
41									
42									
43									
44									
45	656.92								
46									
47									
48									
49		SAA							
50	651.92								
51									
52									
53									
54									
55	646.92								
56	645.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-8RR
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **107** SURF.ELEV. 701.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	644.92								
58									
59									
60	641.92	Silt; yellow; wet							
61									
62									
63									
64									
65	636.92	SILT; yellow; sandy with chert gravel							
66									
67									
68									
69		SAA with increasing gravel content							
70	631.92								
71									
72									
73									
74									
75	626.92								
76									
77									
78									
79									
80	621.92								
81									
82									
83									
84		Top of rock at 84'							
85	616.92	Dolostone; blue grey; iron stained fractures							
86									
87									
88	613.92								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-8RR

Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **107** SURF.ELEV. 701.92

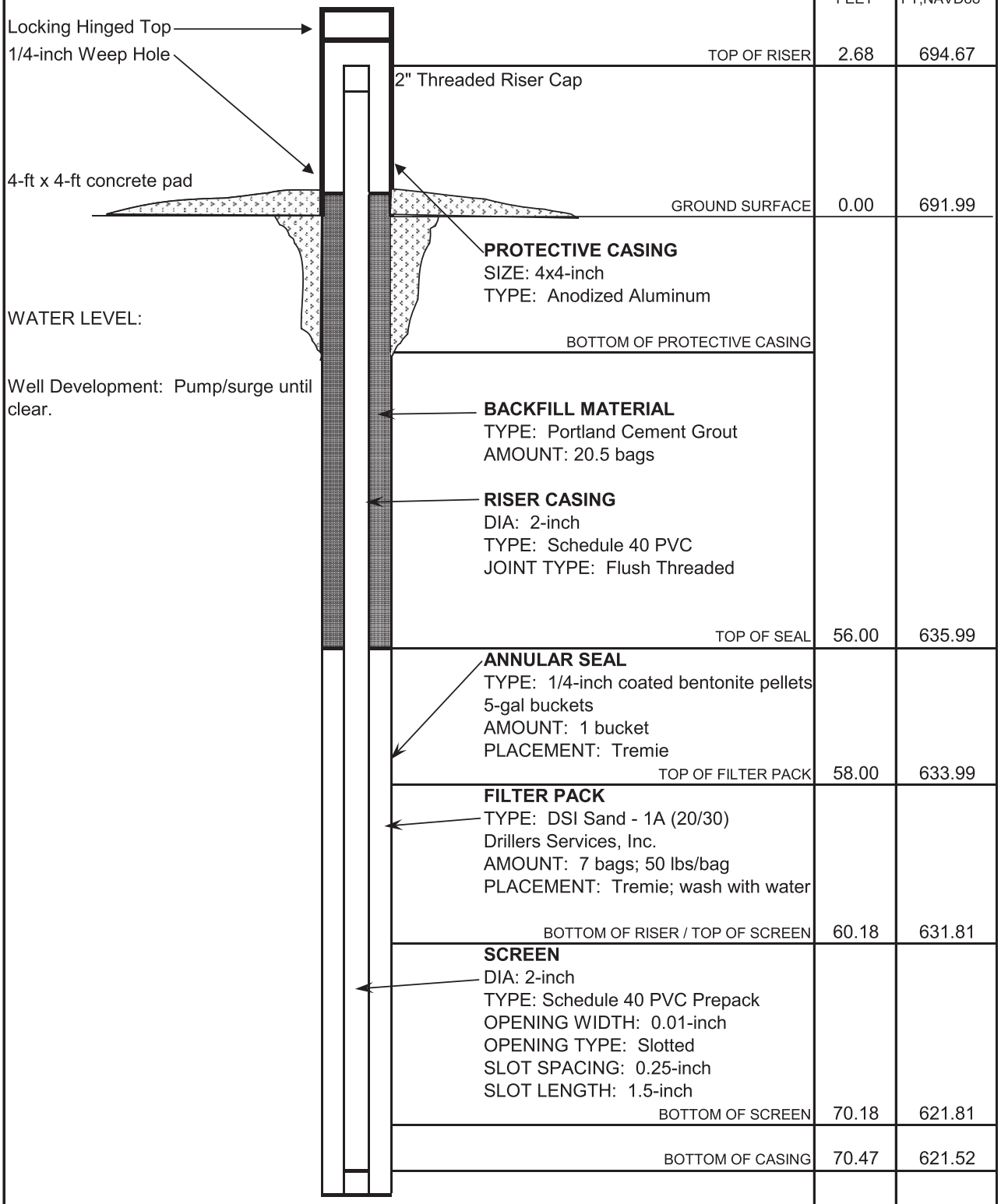
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	611.92								
91		SAA							
92									
93									
94									
95	606.92								
96									
97									
98									
99									
100	601.92								
101									
102									
103									
104									
105	596.92								
106									
107	594.92								
108		BOH @ 107'							
109									
110	591.92								
111									
112									
113									
114									
115	586.92								
116									
117									
118									
119									
120	581.92								

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: B. Filipovich	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: K. Hobbs	DRILLING METHODS: HSA	GWC-9
DATE CONSTRUCTED: 8/16/2006 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.68	694.67
GROUND SURFACE	0.00	691.99
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	56.00	635.99
TOP OF FILTER PACK	58.00	633.99
BOTTOM OF RISER / TOP OF SCREEN	60.18	631.81
BOTTOM OF SCREEN	70.18	621.81
BOTTOM OF CASING	70.47	621.52

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-9
Sheet 1 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 70' | SURF.ELEV.: 691.99
LOCATION: Cells 1 & 2 | COORDINATES N: 1503018.96 | E: 2073781.05
ANGLE: | BEARING: | CONTRACTOR: SCS | DRILL NO.: CME-550
DRILLING METHOD: HSA | NO. SAMPLES: 14 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 8/16/2006
DRILLER: B. Filipovich | RECORDER: A. Grissom | APPROVED: | DRILLING COMP. DATE: 8/16/2006

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	691.99								
1									
2									
3									
4		Hard, dark reddish brown sandy CLAY, dry, with large chert fragments	S-1	3.5-5	10-14-18	32			
5	686.99								
6									
7									
8									
9		Same as above	S-2	8.5-10	2-5-9	14			
10	681.99								
11									
12									
13									
14		Same as above	S-3	13.5-15	5-10-13	23			
15	676.99								
16									
17									
18									
19		Stiff, yellowish orange silty CLAY, fairly dry, with few small rock fragments	S-4	18.5-20	4-4-5	9			
20	671.99								
21									
22									
23									
24									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-9
Sheet 2 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **70'** SURF.ELEV. 691.99

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	666.99	Same as above, with many large chert fragments	S-5	23.5-25	4-7-6	13			
26									
27									
28									
29		Same as above, with small amount of chert	S-6	28.5-30	2-3-4	7			
30	661.99								
31									
32									
33									
34		Same as above, with small amount of chert	S-7	33.5-35	4-3-5	8			
35	656.99								
36									
37									
38									
39		Soft, yellowish orange to light brown slightly sandy silty CLAY, moist, with trace of chert	S-8	38.5-40	WOH-2-2	4			
40	651.99								
41									
42									
43									
44		Same as above	S-9	43.5-45	WOH-1-1	2			
45	646.99								
46									
47									
48									
49		Firm, light brown sandy CLAY, fairly dry, with a few chert fragments	S-10	48.5-50	1-2-3	5			
50	641.99								
51									
52									
53									
54		Soft, yellowish orange slightly sandy CLAY, slightly moist, with trace of chert	S-11	53.5-55	1-2-2	4			
55	636.99								
55									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-9
Sheet 3 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **70'** SURF.ELEV. 691.99

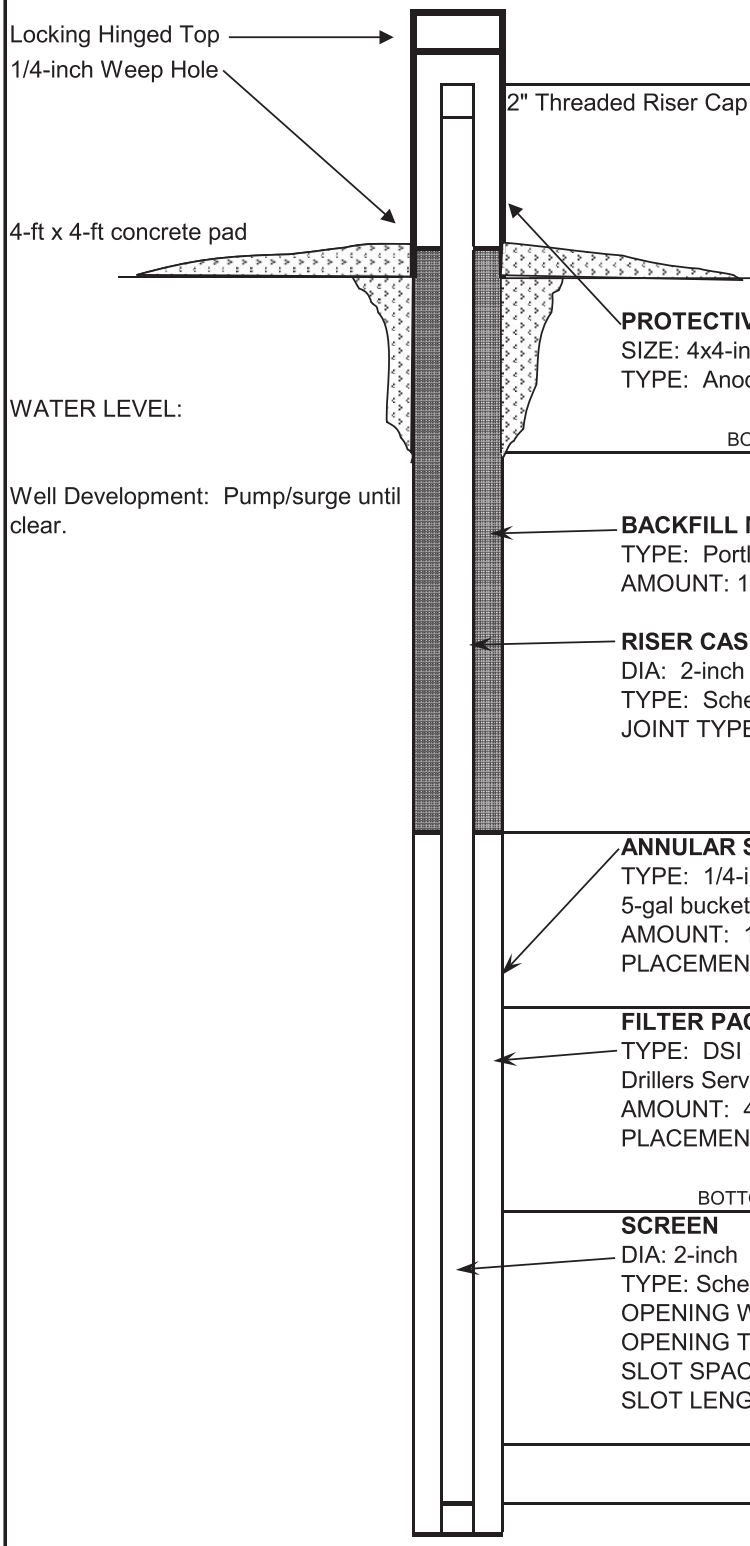
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59		Very soft, yellowish orange sandy CLAY, with trace of pebbles	S-12	58.5-60	WOR	0			
60	631.99								
61									
62									
63									
64		Same as above, with many rock fragments	S-13	63.5-65	1-1-1	2			
65	626.99								
66									
67									
68									
69		Same as above	S-14	68.5-70	50/2	R			
70	621.99	Top of rock							
71		Bottom of boring							
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: B. Filipovich	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: S. Bearce	DRILLING METHODS: HSA	GWC-10
DATE CONSTRUCTED: 9/6/2006 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.98	687.87
GROUND SURFACE	0.00	684.89
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 19.5 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	54.00	630.89
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	56.00	628.89
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 4 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	58.19	626.70
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	68.19	616.70
BOTTOM OF CASING	68.33	616.56

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10
Sheet 1 of 3

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: 65 | SURF.ELEV.: 684.89
LOCATION: Cells 1 & 2 | COORDINATES N: 1503162.7 | E: 2074019.96
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.:
DRILLING METHOD: HSA | NO. SAMPLES: 13 | NO. U.D. SAMPLES: 0
CASING SIZE: 4.25" ID | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 8/24/2006
DRILLER: B. Filipovich | RECORDER: M. Hughes | APPROVED: | DRILLING COMP. DATE: 8/24/2006

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	684.89								
1									
2									
3									
4		Red CLAY, with medium to large quartz pebbles	S-1	4-5.5	5-11-18	29			
5	679.89								
6									
7									
8									
9		Same as above	S-2	9-10.5	6-10-11	21			
10	674.89								
11									
12									
13									
14		Same as above	S-3	14-15.5	5-11-13	24			
15	669.89								
16									
17									
18									
19									
20	664.89	Same as above	S-4	19-20.5	5-15-11	26			
21									
22									
23									
24									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10
Sheet 2 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 65 | SURF.ELEV.: 684.89

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	659.89	Orange and light tan CLAY with chert and rock fragments	S-5	24-25.5	5-6-6	12			
26									
27									
28									
29									
30	654.89	Same as above	S-6	29-30.5	7-5-5	10			
31									
32									
33									
34									
35	649.89	Same as above	S-7	34-35.5	11-8-5	13			
36									
37									
38									
39									
40	644.89	Same as above	S-8	39-40.5	4-4-4	8			
41									
42									
43									
44									
45	639.89	Same as above	S-9	44-45.5	3-4-7	11			
46									
47									
48									
49									
50	634.89	Brown CLAY with large and small rock fragments	S-10	49-50.5	3-4-6	10			
51									
52									
53									
54									
55	629.89	Orange and reddish brown CLAY with rock fragments and trace sand	S-11	54-55.5	WOH-2-0	2			
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10
Sheet 3 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **65** SURF.ELEV. 684.89

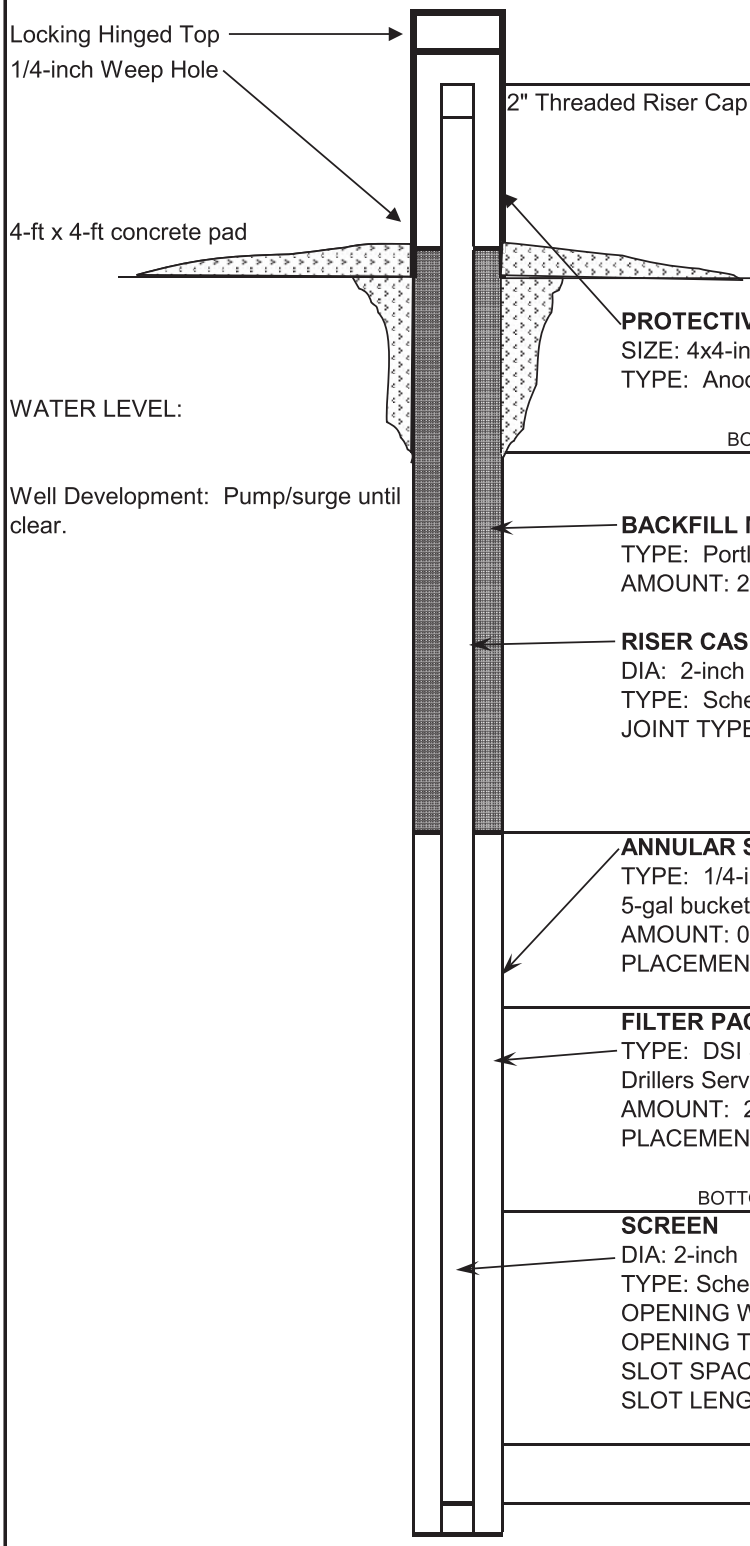
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	624.89	Brown and orange CLAY with rock fragments, trace sand	S-12	59-60.5	1-2-11	13			
61									
62									
63									
64									
65	619.89	No recovery	S-13	64-35.5	WOH	0			
66		Bottom of boring							
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: L. Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-10R
DATE CONSTRUCTED: 5/15/07 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.62	687.95
2" Threaded Riser Cap		
GROUND SURFACE	0.00	685.33
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 28 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	80.20	605.13
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	85.00	600.33
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	85.50	599.83
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	95.50	589.83
BOTTOM OF CASING	95.18	590.15

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10R
Sheet 1 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 97.8 | SURF.ELEV.: 685.33
LOCATION: Cells 1 & 2 | COORDINATES N: 1503154.01 | E: 2074020.44
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA/HQ Core with water | NO. SAMPLES: 14 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 34' | ELEV.: 651.33 | TIME AFTER COMP.: 12h | DATE TAKEN: 5/15/2007
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/14/2007
DRILLER: S. Denty | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 5/14/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	685.33								
5	680.33	Dark red silty CLAY, dry, hard, occasional carbonate	S-	4.5-6	6-8-12				
10	675.33	Same as above with carbonate pebbles	S-2	9.5-11	8-10-13	23			
15	670.33	Dark orange silty CLAY, dry, hard, carbonate sand and cobbles	S-3	14.5-16	10-13-42	55			
20	665.33	Same as above	S-4	19.5-21	9-7-8	15			

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10R

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **97.8** SURF.ELEV. 685.33

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	660.33	Orange silty CLAY, dry, firm, carbonate sand and pebbles	S-5	24.5-26	6-9-12	21			
26									
27									
28									
29									
30	655.33	Same as above	S-6	29.5-31	12-18-4	22			
31									
32									
33									
34									
35	650.33	Same as above	S-7	34.5-36	8-8-10	18			
36									
37									
38									
39									
40	645.33	Orange silty CLAY, dry, firm, occasional dark red mottling, occasional carbonate sand	S-8	39.5-40	2-3-5	8			
41									
42									
43									
44									
45	640.33	Orange silty CLAY, damp, firm, occasional black mottling, carbonate pebbles	S-9	44.5-46	5-5-8	13			
46									
47									
48									
49									
50	635.33	Orange and dark brown silty CLAY, damp, soft, occasional black mottling, carbonate sand and pebbles	S-10	49.5-51	2-2-3	5			
51									
52									
53									
54									
55	630.33	Same as above	S-11	54.5-56	4-5-6	11			
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10R
Sheet 3 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 97.8 | SURF.ELEV.: 685.33

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	625.33	Orange silty CLAY, moist, firm, light to heavy black mottling, carbonate sand and pebbles	S-12	59.5-61	4-6-7	13			
61									
62									
63									
64									
65	620.33	Orange and light gray CLAY, saturated, firm (gray) and soft (orange), occasional dark brown mottling,	S-13	64.5-66	10-20-12	32			
66									
67									
68									
69									
70	615.33	Light orange and medium brown silty CLAY, saturated, soft, carbonate pebbles and sand	S-14	69.5-71	2-10-6	16			
71									
72									
73	612.33	73.1 - Top of rock							
74									
75	610.33								
76									
77									
78		Dark gray DOLOSTONE, shaley		77.6-82.6			5.0/4.7		
79									
80	605.33	80.8- Fracture with iron staining							
81									
82									
83	602.33	Dark gray DOLOSTONE, shaley		82.6-87.6			5.0/5.0		
84									
85	600.33	85.2- Fracture with minimal clay rind							
86									
87									
88									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-10R
Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **97.8** SURF.ELEV. 685.33

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		88.6- Fracture over shale lense							
90	595.33	90.4-91.4 Open space with soil and clay rind							
91									
92				87.6-92.6			5.0/4.0		
93									
94									
95	590.33								
96	589.33	Shaley DOLOMITE/DOLOSTONE		92.6-97.6			5.0/5.0		
97									
98	587.33	Bottom of boring							
99									
100	585.33								
101									
102									
103									
104									
105	580.33								
106									
107									
108									
109									
110	575.33								
111									
112									
113									
114									
115	570.33								
116									
117									
118									
119									
120	565.33								

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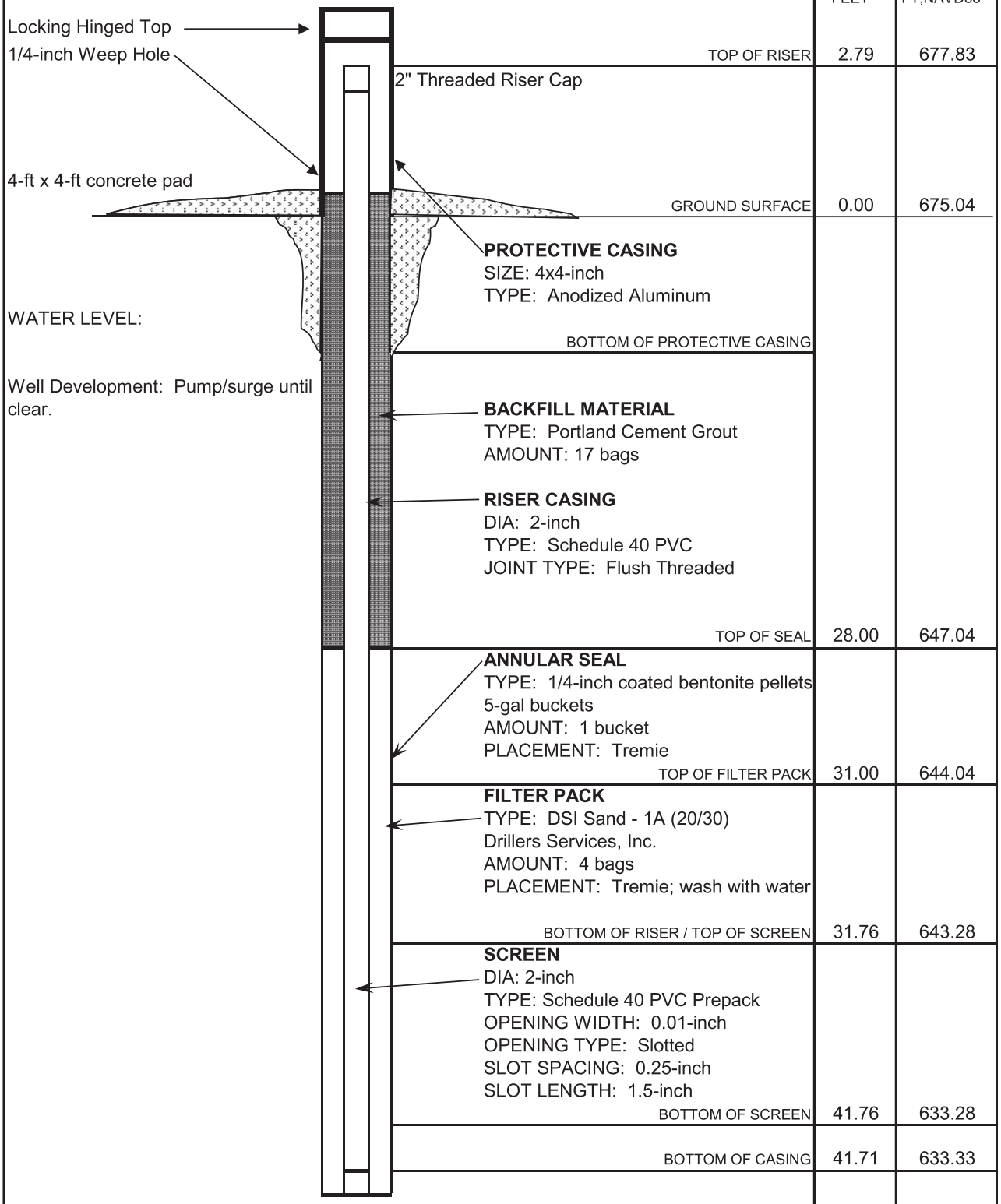
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: S. Milam	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: Wayne Wang	DRILLING METHODS: HSA	GWC-11
DATE CONSTRUCTED: 6/1/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.79	677.83
GROUND SURFACE	0.00	675.04
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	28.00	647.04
TOP OF FILTER PACK	31.00	644.04
BOTTOM OF RISER / TOP OF SCREEN	31.76	643.28
BOTTOM OF SCREEN	41.76	633.28
BOTTOM OF CASING	41.71	633.33

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-11
Sheet 1 of 2

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 46' | SURF.ELEV.: 677.83
LOCATION: Cells 1 & 2 | COORDINATES N: 1503390.4 | E: 2073829.95
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-550
DRILLING METHOD: HSA | NO. SAMPLES: 9 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 6/1/2007
DRILLER: S. Milam | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 6/1/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	677.83								
5	672.83	Very stiff, light brown, gray, and reddish brown, silty CLAY with chert fragments, slightly moist	S-1	4.5-6.0	5-8-9	17			
10	667.83	Same as above.	S-2	9.5-11.0	4-10-15	25			
15	662.83	Very stiff, light reddish brown, sandy CLAY with chert gravel, slightly moist	S-3	14.5-16.0	7-12-12	24			
20	657.83	Stiff, light reddish brown, silty CLAY (CL) with chert gravel, moist	S-4	19.5-21.0	2-4-7	11			

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-11
Sheet 2 of 2

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 46' | SURF.ELEV.: 677.83

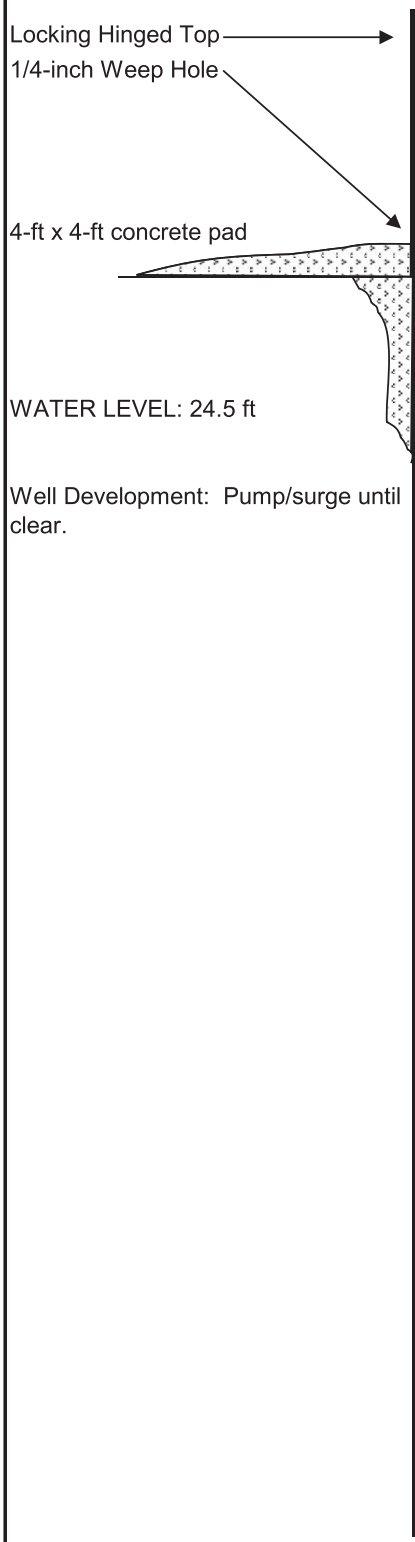
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	652.83	Same as above, light brown	S-5	24.5-26.0	3-4-5	9			
26									
27									
28									
29									
30	647.83	Same as above, firm, very moist	S-6	29.5-31.0	2-4-3	7			
31									
32									
33									
34									
35	642.83	Firm, light brown and gray, plastic CLAY, some dolomite pebbles, very moist	S-7	34.5-36.0	2-2-3	5			
36									
37									
38									
39									
40	637.83	Very soft, light brown, sandy CLAY, wet	S-8	39.5-41.0	WOR	0			
41									
42									
43									
44									
45	632.83	Same as above, very hard, with angular dolomite fragments	S-9	44.5-46.0	50/1-x-x	R			
46									
47		Bottom of boring @ 46'							
48									
49									
50	627.83								
51									
52									
53									
54									
55	622.83								
56									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: J. Lippert	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-11R
DATE CONSTRUCTED: 5/31/07 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	1.75	677.73
2" Threaded Riser Cap		
GROUND SURFACE	0.00	675.98
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 21 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	65.20	610.78
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	68.20	607.78
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	67.90	608.08
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	77.90	598.08
BOTTOM OF CASING	78.85	597.13

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-11R
Sheet 1 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 83.1 | SURF.ELEV.: 677.73
LOCATION: Cells 1 & 2 | COORDINATES N: 1503395.25 | E: 2073828.03
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 8 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/30/2007
DRILLER: S. Denty | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 5/31/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	677.73								
1									
2									
3									
4		Very stiff light brown silty CLAY with chert fragments, slightly moist	S-1	4.5-6	7-12-14	26			
5	672.73								
6									
7									
8									
9									
10	667.73	Same as above, hard, light brown & red	S-2	9.5-11.0	8-12-26	36			
11									
12									
13									
14		Same as above, very stiff, light grey & brownish red, moist moist	S-3	14.5-16.0	8-12-15	27			
15	662.73								
16									
17									
18									
19		Same as above, light brown	S-4	19.5-21.0	8-8-8	16			
20	657.73								
21									
22									
23									
24									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-11R
Sheet 2 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **83.1** SURF.ELEV. 677.73

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	652.73	Same as above, stiff, very moist	S-5	24.5-26.0	4-5-6	11			
26									
27									
28									
29		Same as above.	S-6	29.5-31.0	3-4-6	10			
30	647.73								
31									
32									
33									
34		Same as above.	S-7	34.5-36.0	2-3-6	9			
35	642.73								
36									
37									
38									
39	638.73	Dolomite gravel	S-8	39.5-41.0	36-50/1-X	R			
40	637.73	Start coring @ 40.1							
41	636.73	DOLOMITE, very hard, fresh, some Fe staining		40.1-48.1			8.0/2.2	28	28
42	635.73	41.6-47.1: Mud filled cavity							
43									
44									
45	632.73								
46									
47									
48		DOLOMITE, highly weathered joints							
49		48.1-51.4: Cavity		48.1-53.1			5.0/1.3	27	12
50	627.73								
51									
52		DOLOMITE, very hard, fresh, grey							
53									
54				53.1-58.1			5.0/5.0	100	100
55	622.73								
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-11R
Sheet 3 of 3

SITE Plant Bowen Dry Gypsum Storage Facility TOTAL DEPTH 83.1 SURF.ELEV. 677.73

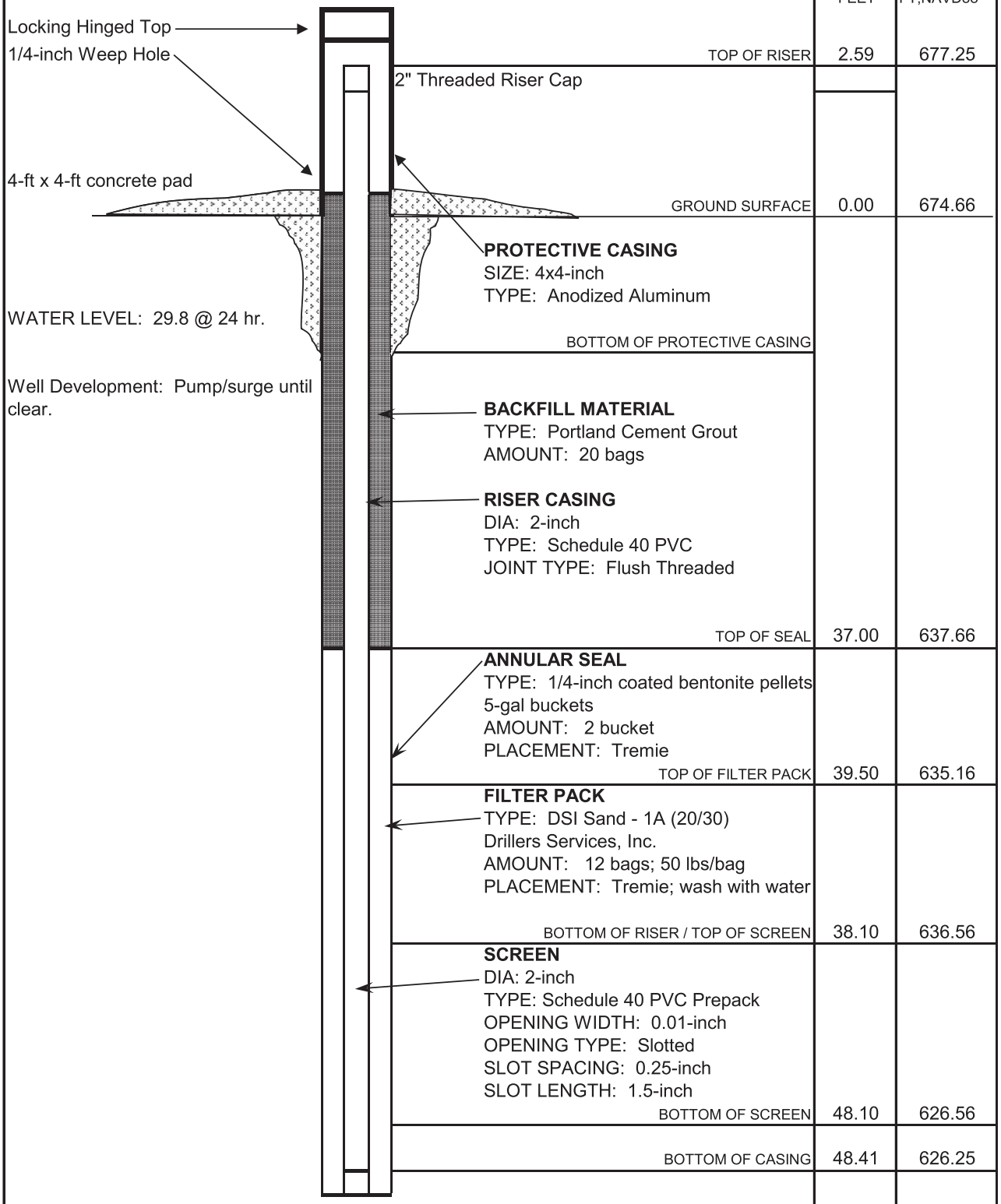
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57		56.5: Chemically weathered joint							
58									
59				58.1-63.1			5.0/4.0	98	98
60	617.73								
61									
62									
63									
64				63.1-68.1			5.0/5.0	100	100
65	612.73								
66									
67									
68									
69				68.1-73.1			5.0/2.1	42	33
70	607.73	69.4-72.4: Cavity							
71									
72									
73		DOLOMITE							
74		73.1-74.7: Cavity		73.1-78.1			5.0/1.1	22	7
75	602.73	Very highly weathered top of rock							
76		75.8: Chemically weathered joint							
77									
78									
79				78.1-83.1			5.0/4.8	95	92
80	597.73	79.5: Slightly weathered joint							
81									
82									
83									
84		83.1: Bottom of boring							
85	592.73								
86									
87									
88									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Milam	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: J. Lippert	DRILLING METHODS: HSA	GWC-12
DATE CONSTRUCTED: 6/4/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.59	677.25
GROUND SURFACE	0.00	674.66
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	37.00	637.66
TOP OF FILTER PACK	39.50	635.16
BOTTOM OF RISER / TOP OF SCREEN	38.10	636.56
BOTTOM OF SCREEN	48.10	626.56
BOTTOM OF CASING	48.41	626.25

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-12
Sheet 1 of 2

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 51' | SURF.ELEV.: 674.66
LOCATION: Cells 1 & 2 | COORDINATES N: 1503662.54 | E: 2073693.63
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-550
DRILLING METHOD: HSA | NO. SAMPLES: 10 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 6/4/2007
DRILLER: S. Milam | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 6/4/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	674.66								
5	669.66	Stiff, gray and light brown, silty CLAY, moist	S-1	4.5-6.0	3-6-6	12			
10	664.66	Same as above, firm	S-2	9.5-11.0	3-4-4	8			
15	659.66	Same as above, some sand	S-3	14.5-16.0	3-3-5	8			
20	654.66	Same as above, some rounded chert pebbles	S-4	19.5-21.0	1-2-2	4			

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-12
Sheet 2 of 2

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 51' | SURF.ELEV.: 674.66

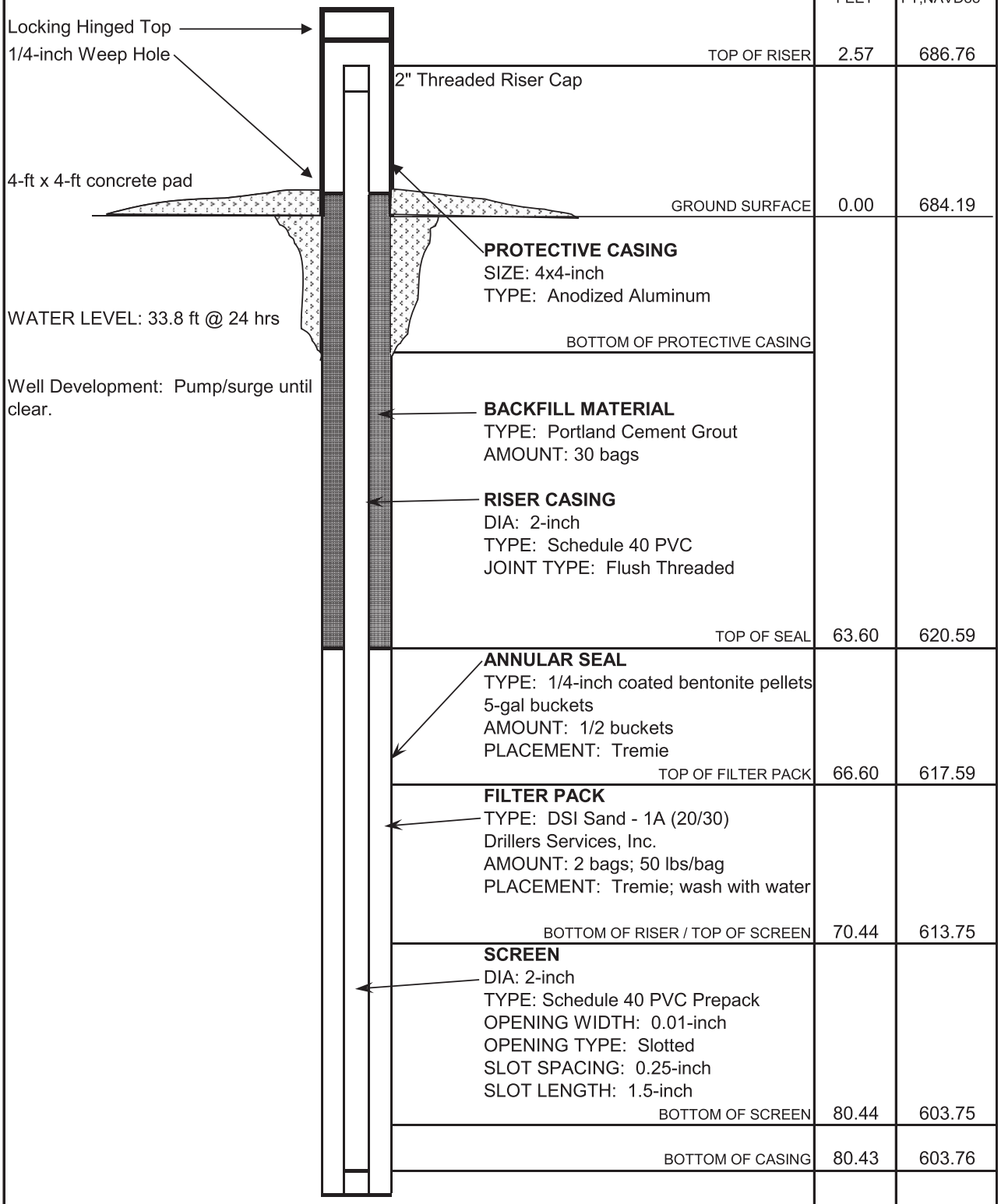
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	649.66	Same as above	S-5	24.5-26.0	2-3-4	7			
26									
27									
28									
29									
30	644.66	Same as above, soft, very moist	S-6	29.5-31.0	1-2-2	4			
31									
32									
33									
34									
35	639.66	Same as above	S-7	34.5-36.0	1-1-2	3			
36									
37									
38									
39									
40	634.66	Same as above, firm, some dark brown mottling and angular chert fragments	S-8	39.5-41.0	2-2-3	5			
41									
42									
43									
44									
45	629.66	Same as above, dark brown with abundant organics	S-9	44.5-46.0	2-2-4	6			
46									
47									
48									
49									
50	624.66	Very hard, light brown and gray, sandy SILT with abundant chert fragments, wet	S-10	49.5-51.0	2-50/2-X	R			
51									
52		51.0: Bottom of boring							
53									
54									
55	619.66								
56									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Milam	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: Wayne Wang	DRILLING METHODS: HSA	GWC-13
DATE CONSTRUCTED: 5/31/07 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.57	686.76
2" Threaded Riser Cap		
GROUND SURFACE	0.00	684.19
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 30 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	63.60	620.59
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1/2 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	66.60	617.59
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	70.44	613.75
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	80.44	603.75
BOTTOM OF CASING	80.43	603.76

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13
Sheet 1 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 61' | SURF.ELEV.: 684.19
LOCATION: Cells 1 & 2 | COORDINATES N: 1503898.17 | E: 2073495.16
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-550
DRILLING METHOD: HSA | NO. SAMPLES: 12 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/31/2007
DRILLER: S. Milam | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 5/31/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	684.19								
5	679.19	Very stiff, reddish brown, sandy silty CLAY, slightly moist	S-1	4.5-6.0	8-13-16	29			
10	674.19	Very stiff, reddish brown, sandy clayey SILT with rounded chert gravel, slightly moist	S-2	9.5-11.0	8-11-13	24			
15	669.19	Firm, light reddish brown, SILTY SAND, some clay, moist	S-3	14.5-16.0	4-9-9	18			
20	664.19	Chert gravel	S-4	19.5-21.0	8-13-16	29			

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13
Sheet 2 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **61'** SURF.ELEV. 684.19

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	659.19	Very stiff, light grayish brown, sandy CLAY, moist	S-5	24.5-26.0	13-7-16	23			
26									
27									
28									
29									
30	654.19	Same as above, stiff, light reddish brown, some chert fragr very moist	S-6	29.5-31.0	WOH-4-6	10			
31									
32									
33									
34									
35	649.19	Same as above	S-7	34.5-36.0	2-5-5	10			
36									
37									
38									
39									
40	644.19	Firm, light brown and light gray, sandy SILT, wet	S-8	39.5-41.0	3-4-4	8			
41									
42									
43									
44									
45	639.19	Same as above, stiff, some black sand interbeds	S-9	44.5-46.0	2-4-5	9			
46									
47									
48									
49									
50	634.19	Same as above, firm, some chert gravel	S-10	49.5-51.0	3-5-3	8			
51									
52									
53									
54									
55	629.19	Same as above	S-11	54.5-56.0	2-3-2	5			
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13
Sheet 3 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **61'** SURF.ELEV. 684.19

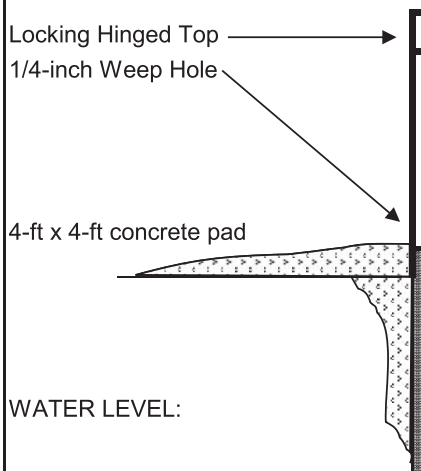
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	624.19	Same as above, very soft	S-12	59.5-61.0	WOR	0			
61									
62		61.0: Bottom of boring							
63									
64									
65	619.19								
66									
67									
68									
69									
70	614.19								
71									
72									
73									
74									
75	609.19								
76									
77									
78									
79									
80	604.19								
81									
82									
83									
84									
85	599.19								
86									
87									
88									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: S. Denty	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: J. Lippert	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-13R
DATE CONSTRUCTED: 6/5/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.80	685.97
2" Threaded Riser Cap		
GROUND SURFACE	0.0	683.17
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 40 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	84.90	598.27
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.5 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	88.90	594.27
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	89.00	594.17
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	99.00	584.17
BOTTOM OF CASING	99.10	584.07

HOLE DIA: 8"

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13R
Sheet 1 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 102.1' | SURF.ELEV.: 683.93
LOCATION: Cells 1 & 2 | COORDINATES N: 1503908.53 | E: 2073501.95
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME-75
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 16 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE:
DRILLER: S. Denty | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 6/5/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	683.93								
5	678.93	Very stiff, dark red, sandy CLAY, some rounded pebbles, very moist	S-1	4.5-6.0	8-12-14	26			
10	673.93	Same as above, brownish red and light brown, slightly moist	S-2	9.5-11.0	9-12-16	28			
15	668.93	Very firm, light brown, SILTY SAND with chert fragments, moist	S-3	14.5-16.0	9-10-11	21			
20	663.93	Same as above, dense, abundant chert fragments	S-4	19.5-21.0	10-20-19	39			

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13R
Sheet 2 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 102.1' | SURF.ELEV.: 683.93

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	658.93	Same as above, very stiff, light brown and brownish red, very moist	S-5	24.5-26.0	19-17-10	27			
26									
27									
28									
29									
30	653.93	Stiff, light brown and grayish white, silty CLAY with rounded chert pebbles, very moist	S-6	29.5-31.0	8-6-5	11			
31									
32									
33									
34									
35	648.93	Stiff, light brown, sandy clayey SILT, wet	S-7	34.5-36.0	3-5-4	9			
36									
37									
38									
39									
40	643.93	Same as above, some rock fragments	S-8	39.5-41.0	12-5-6	11			
41									
42									
43									
44									
45	638.93	Same as above, firm	S-9	44.5-46.0	2-3-2	5			
46									
47									
48									
49									
50	633.93	Same as above, light grayish brown	S-10	49.5-51.0	3-3-5	8			
51									
52									
53									
54									
55	628.93	Same as above, very soft, light grayish brown and reddish brown	S-11	54.5-56.0	1-0-1	1			
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13R
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **102.1'** SURF.ELEV. 683.93

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	623.93	Same as above, soft	S-12	59.5-61.0	2-2-2	4			
61									
62									
63									
64									
65	618.93	Same as above	S-13	64.5-66.0	1-1-1	2			
66									
67									
68									
69									
70	613.93	No recovery	S-14	69.5-71.0	WOR	0			
71									
72									
73									
74									
75	608.93	No recovery	S-15	74.5-76.0	WOR	0			
76									
77									
78									
79									
80	603.93	No recovery	S-16	79.5-81.0	WOR	0			
81									
82									
83		82.1: Top of rock DOLOMITE, very hard, fresh, gray, excellent rock quality		82.1-87.1			5.0/4.8	97	97
84									
85	598.93								
86									
87							lost water		
88		87.0-87.8: Cavity		87.1-92.1			5.0/4.5	90	90

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-13R
Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **102.1'** SURF.ELEV. 683.93

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		Dolomite							
90	593.93								
91									
92									
93		Same as above		92.1-97.1			5.0/5.0	100	100
94									
95	588.93								
96									
97									
98		Same as above		97.1-102.1			5.0/5.0	100	100
99									
100	583.93								
101									
102									
103		102.1: Bottom of boring							
104									
105	578.93								
106									
107									
108									
109									
110	573.93								
111									
112									
113									
114									
115	568.93								
116									
117									
118									
119									
120	563.93								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **681.71**
Top of PVC Casing Elevation (feet, NAVD88): **684.60**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-13RZ
PAGE 1 OF 3
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DATE STARTED 10/31/2016 **COMPLETED** 11/2/2016 **SURF. ELEV.**681.71' NAVD88 **COORDINATES:** N:1503926.70 E:2073517.44
CONTRACTOR Cascade **EQUIPMENT** PS T-150 **METHOD**
DRILLED BY Tommy and Rodger **LOGGED BY** D. Morris * **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 102 ft bgs **GROUND WATER DEPTH: DURING** **COMP.** 50 ft bgs **DELAYED** 51 ft.;2 days
NOTES Near GWC-13R, *Sample Logged by geologist employed by Amec Foster Wheeler

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		- sandy SILT (ML), reddish brown (3 YR 4/6), dry				Completion: Protective casing set in concrete pad; 2-foot square concrete pad Annular Fill: Aquaguard Grout Mixture
5						
10						
		- same as above, (5 YR 5/6)				
15						
20						
		- same as above, (5 YR 5/6)				
25			656.7			
		- CLAY (CH), brown (10 YR 6/8), high plasticity, moist				ELEV. (DEPTH) 655.7 (26.0) Annular Seal: 3/8" bentonite chips
30						
35						
40						

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen

LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(Cont.)				Completion: Protective casing set in concrete pad; 2-foot square concrete pad
		- same as above, (10 YR 6/8), chert nodules				(CONTINUED)
45						Annular Seal: 3/8" bentonite chips
50		- same as above, (10 YR 6/8), increasing chert and gravel, moist			▼ ▼	
55						
60						
65						
70		- same as above, hard drilling				
75						
80			601.7			
		- competent DOLOMITE, gray				
						ELEV. (DEPTH) 597.7 (84.0)
85						Annular Seal: 3/8" bentonite pellets (non-coated)

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-13RZ
PAGE 3 OF 3
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(Cont.)				Completion: Protective casing set in concrete pad; 2-foot square concrete pad (CONTINUED) ELEV. (DEPTH) 592.7 (89.0)
90		- same as above				Filter: silica filter sand 589.7 (92.0)
95						**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack
100		- same as above	579.7			
		Bottom of borehole at 102.0 feet.				
105						
110						
115						
120						
125						
130						
135						

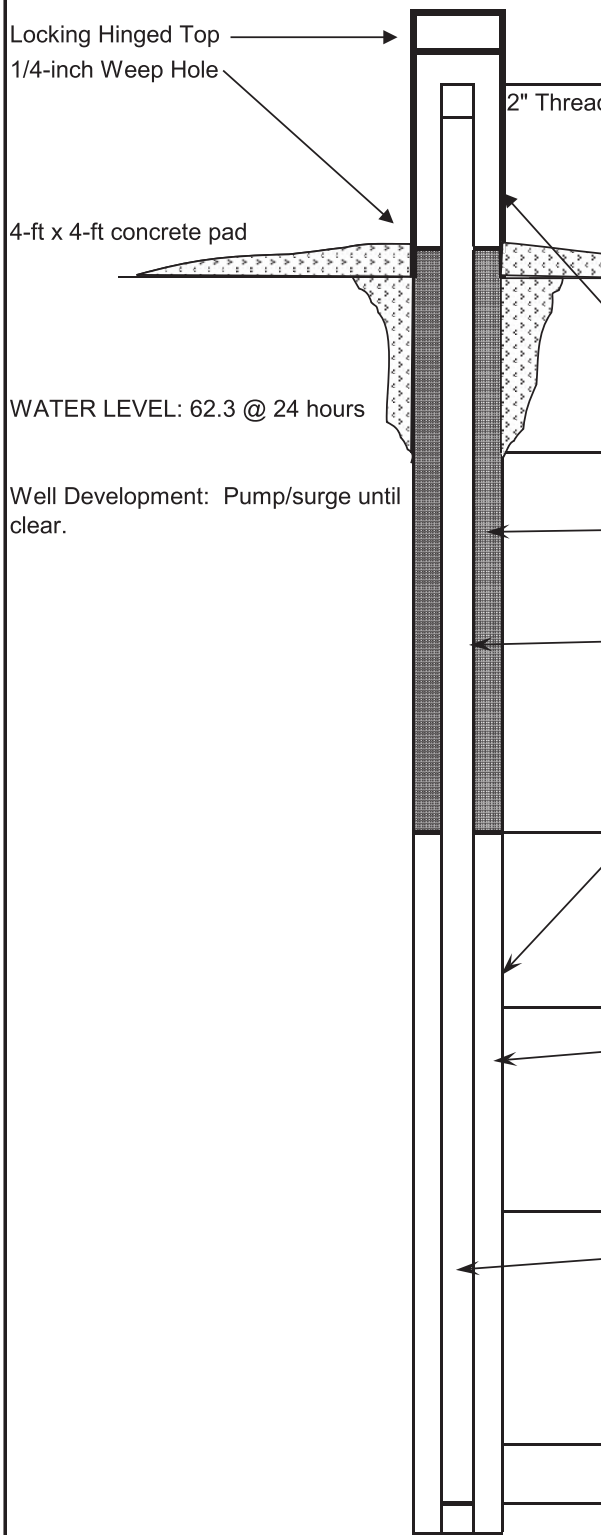
SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: Ranger	WELL
Storage Facility	DRILLER: Ranger	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: Wayne Wang	DRILLING METHODS: HSA	GWC-14
DATE CONSTRUCTED: 8/22/2007 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.77	686.81
2" Threaded Riser Cap		
GROUND SURFACE	0.00	684.04
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 50 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	63.00	621.04
ANNULAR SEAL TYPE: bentonite chips 5-gal bags AMOUNT: 1 bag PLACEMENT: Tremie		
TOP OF FILTER PACK	65.00	619.04
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	67.74	616.30
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	77.74	606.30
BOTTOM OF CASING	78.01	606.03

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-14
Sheet 1 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 80.5 | SURF.ELEV.: 684.04
LOCATION: Cells 1 & 2 | COORDINATES N: 1504059.92 | E: 2073205.96
ANGLE: 0 | BEARING: 0 | CONTRACTOR: Ranger | DRILL NO.: CME 550
DRILLING METHOD: HSA | NO. SAMPLES: 16 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 8/22/2007
DRILLER: Ranger | RECORDER: K. Hobbs | APPROVED: | DRILLING COMP. DATE: 8/22/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	684.04								
5	679.04	Light brown sandy SILT, dry with some pebbles	S-1	4-5.5	4-4-9	13			
10	674.04	White, tan, light brown SILT, dry, with rock flakes and pockets of sand	S-2	9-10.5	5-9-14	23			
15	669.04	Dark brown sandy SILT, dry, with dolomite fragments	S-3	14-15.5	6-14-19	33			
20	664.04	White to light brown SILT, moist, with few quartz fragments	S-4	19-20.5	2-4-7	11			

Form GS9901 7-26-2004

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-14

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **80.5** SURF.ELEV. 683.56

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	658.56	White to light brown SILT, wet	S-5	24-25.5	2-2-3	5			
26	657.56								
27	656.56								
28	655.56								
29	654.56								
30	653.56	Light brown sandy SILT, moist, with rock fragments	S-6	29-30.5	4-3-5	8			
31	652.56								
32	651.56								
33	650.56								
34	649.56								
35	648.56	Light brown gravelly sandy SILT, wet, with quartz and dolomite fragments	S-7	34-35.5	2-6-8	14			
36	647.56								
37	646.56								
38	645.56								
39	644.56								
40	643.56	Same as above	S-8	39-40.5	1-5-11	16			
41	642.56								
42	641.56								
43	640.56								
44	639.56								
45	638.56	Same as above	S-9	45.5	5-7	12			
46	637.56								
47	636.56								
48	635.56								
49	634.56								
50	633.56	Light brown SILT, wet, with rock fragments	S-10	49-50.5	4-5-9	14			
51	632.56								
52	631.56								
53	630.56								
54	629.56								
55	628.56	Same as above	S-11	54-55.5	6-7-11	18			
56	627.56								

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-14

Sheet 3 of 3

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **80.5** SURF.ELEV. 683.56

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	626.56								
58	625.56								
59	624.56								
60	623.56	Light brown SILT, with some weathered rock fragments	S-12	59-60.5	4-5-7	12			
61	622.56								
62	621.56								
63	620.56								
64	619.56								
65	618.56	Same as above	S-13	64-65.5	4-2-2	4			
66	617.56								
67	616.56								
68	615.56								
69	614.56								
70	613.56	Light brown silty CLAY, wet, very soft	S-14	69-70.5	1-2-4	6			
71	612.56								
72	611.56								
73	610.56								
74	609.56								
75	608.56	Mottled light/dark brown/gray SILT, wet, with few rock fragments	S-15	74-75.5	6-7-7	14			
76	607.56								
77	606.56								
78	605.56								
79	604.56								
80	603.56	Same as above	S-16	79-80.5	5-7-9	16			
81	602.56	80.5: Bottom of boring							
82	601.56								
83	600.56								
84	599.56								
85	598.56								
86	597.56								
87	596.56								
88	595.56								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **684.34**
Top of PVC Casing Elevation (feet, NAVDl88): **687.28**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-14Z
PAGE 1 OF 2
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DATE STARTED 11/2/2016 **COMPLETED** 11/3/2016 **SURF. ELEV.**684.34' NAVD88 **COORDINATES:** N:1504060.77 E:2073193.66
CONTRACTOR Cascade **EQUIPMENT** PS T-150 **METHOD**
DRILLED BY Tommy and Rodger **LOGGED BY** D. Morris * **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 73 ft bgs **GROUND WATER DEPTH: DURING** **COMP.** 57 ft bgs **DELAYED** 34 ft.;1 days
NOTES Near GWC-14, *Sample Logged by geologist employed by Amec Foster Wheeler

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		- SILT (ML), brown (7.5 YR 4/4), dry				Completion: Protective casing set in concrete pad; 2-foot square concrete pad
5						Annular Fill: Aquaguard Grout Mixture
			677.3			
		- CLAY (CL), red, brown and white (7.5 YR 5/3 - 8/1), tight, low plasticity, dry				
10			674.3			
		- CLAY (CL) with chert lenses, gray (7.5 YR 8/6), tight, medium stiff, low plasticity, dry				
15						
			667.3			
		- SILT (ML), light gray (7.5 YR 5/0), medium stiff, moist				
20						
			663.3			
		- SILT (ML), beige (7.5 YR 8/6), medium stiff, moist				
25						
						656.8 (27.5)
						Annular Seal: 3/8" bentonite chips
30						
					▼	
35						
			647.3			
		- SILT (ML), brown (7.5 YR 5/8), medium stiff, white nodules, moist				
40						

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

(Continued Next Page)

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **684.34**
Top of PVC Casing Elevation (feet, NAVDl88): **687.28**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-14Z
PAGE 2 OF 2
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
45		*(Cont.)*				(CONTINUED) Completion: Protective casing set in concrete pad; 2-foot square concrete pad
						Annular Seal: 3/8" bentonite chips
		- CLAY (CL), brown (7.5 YR 5/8), moderate plasticity, moist	639.3			
50						
55						
		- same as above, black and white layering, wet			▽	628.3 (56.0)
						Annular Seal: 3/8" bentonite pellets (non-coated)
60						
		- same as above, wet				623.3 (61.0)
						Filter: silica filter sand 621.3 (63.0)
65						**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack
70			614.3			
		- same as above, wet				
		- Top of Rock @ 73.0 feet	611.3			
		Bottom of borehole at 73.0 feet.				
75						
80						
85						

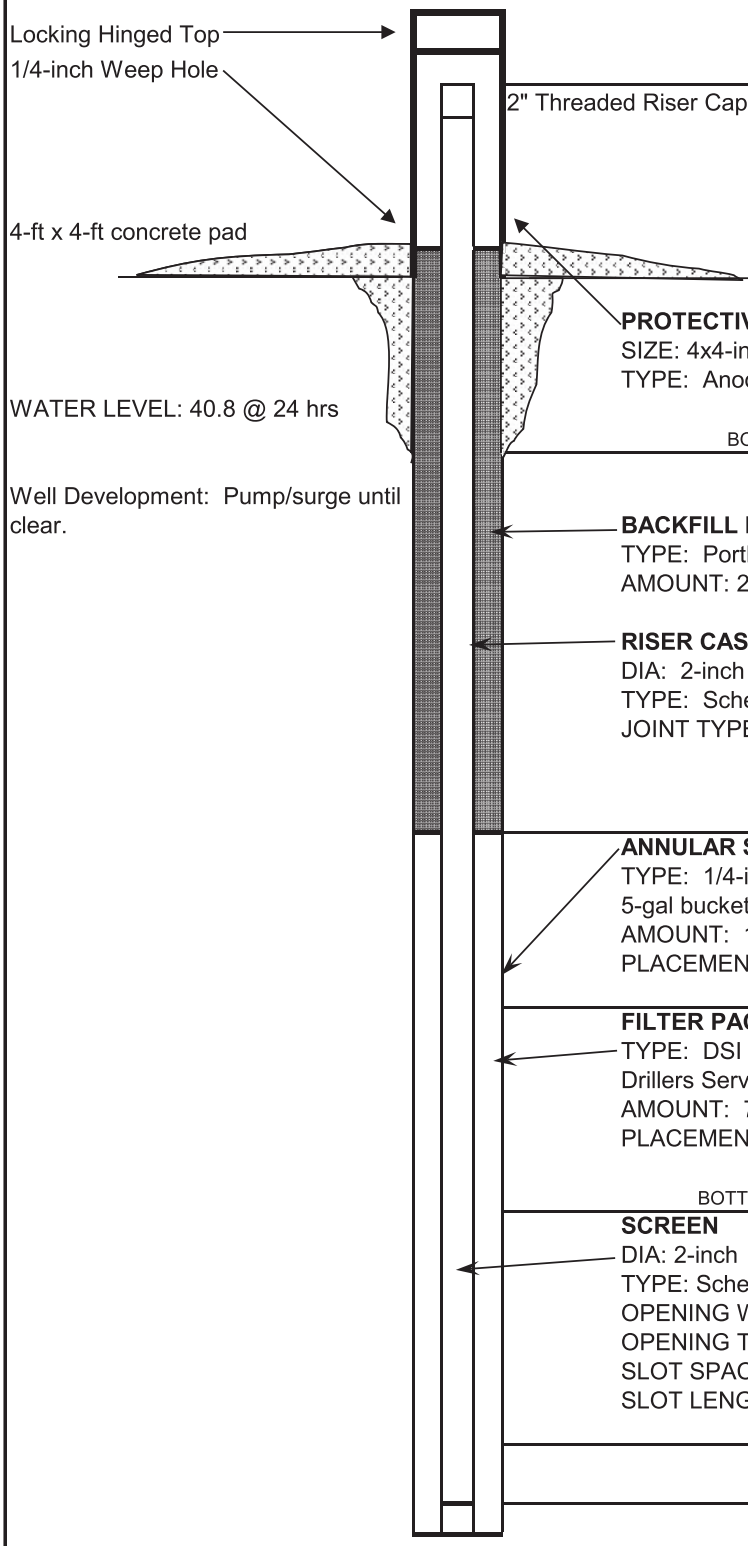
SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Milam	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: Wayne Wang	DRILLING METHODS: HSA	GWC-15
DATE CONSTRUCTED:6/1/07 - 16:00		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.44	695.19
2" Threaded Riser Cap		
GROUND SURFACE	0.00	692.75
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 20 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	53.60	639.15
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1.75 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	56.60	636.15
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 7 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	57.01	635.74
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	67.01	625.74
BOTTOM OF CASING	67.11	625.64

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15
Sheet 1 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | HOLE DEPTH: 70 | SURF.ELEV.: 692.75
LOCATION: Cells 1 & 2 | COORDINATES N: 1503943.59 | E: 2072927.52
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 550
DRILLING METHOD: HSA | NO. SAMPLES: 13 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/30/2007
DRILLER: S. Milam | RECORDER: J. Lippert | APPROVED: | DRILLING COMP. DATE: 5/30/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	692.75								
5	687.75	Firm, reddish brown, silty sandy CLAY, moist	S-1	4.5-6.0	4-3-3	6			
10	682.75	Same as above, very stiff, reddish brown and light brown	S-2	9.5-11.0	3-10-8	18			
15	677.75	Stiff, reddish brown and light yellowish gray banded, clayey SILT, moist	S-3	14.5-16.0	4-6-8	14			
20	672.75	Same as above, firm, predominantly yellowish gray	S-4	19.5-21.0	4-4-4	8			

Form GS9901 7-26-2004

SOUTHERN COMPANY
Energy to Serve Your World

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15
Sheet 2 of 3

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 70 | SURF.ELEV.: 692.75

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	667.75	Firm, reddish brown and yellowish brown, silty CLAY, moist	S-5	24.5-26.0	3-3-4	7			
26									
27									
28									
29									
30	662.75	Firm, yellowish brown, clayey SILT, very moist	S-6	29.5-31.0	2-3-5	8			
31									
32									
33									
34									
35	657.75	Same as above, soft	S-7	34.5-36.0	2-2-2	4			
36									
37									
38									
39									
40	652.75	Same as above, very stiff, with chert gravel, wet	S-8	39.5-41.0	4-8-8	16			
41									
42									
43									
44									
45	647.75	Same as above, very hard	S-9	44.5-46.0	4-5-50/2	>100			
46									
47									
48									
49									
50	642.75	No recovery	S-10	49.5-51.0	3-3-2	5			
51									
52									
53									
54									
55	637.75	Firm, brown, sandy SILT, wet	S-11	54.5-56.0	8-5-3	8			
56									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15
Sheet 3 of 3

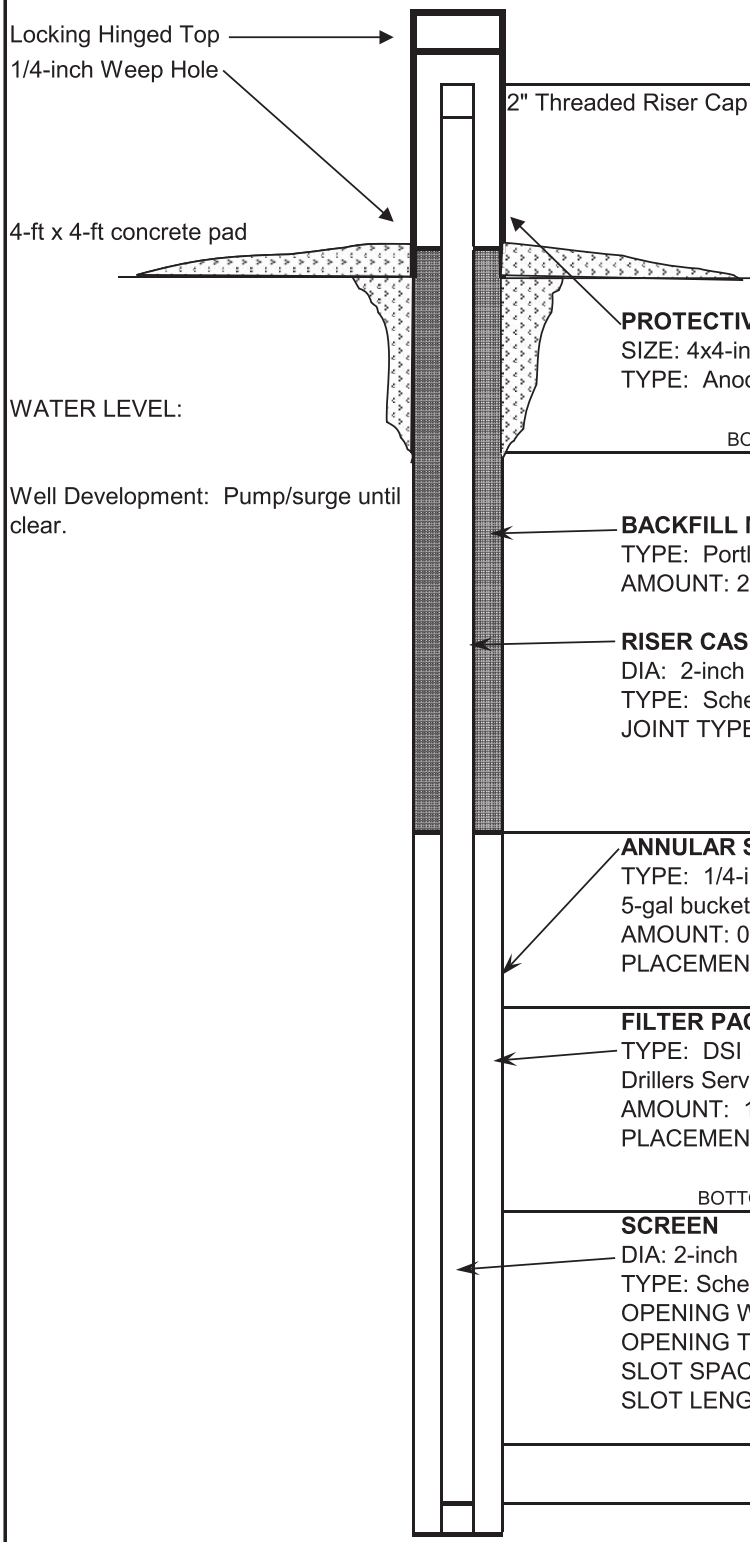
SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **70** SURF.ELEV. 692.75

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59									
60	632.75	Same as above, light brown and brown	S-12	59.5-61.0	1-3-2	5			
61									
62									
63									
64									
65	627.75	Same as above	S-13	64.5-66.0	0-0-2	2			
66									
67									
68									
69									
70	622.75								
71		70.0: Bottom of boring							
72									
73									
74									
75	617.75								
76									
77									
78									
79									
80	612.75								
81									
82									
83									
84									
85	607.75								
86									
87									
88									

Log Updated with revised survey certified March 23, 2021.
Elevations are in feet NAVD88.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: K. Hobbs	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-15R
DATE CONSTRUCTED: 5/24/2007 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.74	696.13
2" Threaded Riser Cap		
GROUND SURFACE	0.00	693.39
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 21 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	79.20	614.19
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	81.20	612.19
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 1.5 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	82.14	611.25
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	92.14	601.25
BOTTOM OF CASING	92.36	601.03

Log Updated with revised survey certified March 23, 2021. Coordinates are NAD83. Elevations are in feet NAVD88.

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15R
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **95.5** | SURF.ELEV.: 693.39
LOCATION: Cells 1 & 2 | COORDINATES N: 1503936.17 | E: 2072919.39
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 14 | NO. U.D. SAMPLES:
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/23/2007
DRILLER: S. Denty | RECORDER: K. Hobbs | APPROVED: | DRILLING COMP. DATE: 5/24/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	693.39								
1									
2									
3		Light brown sandy SILT, slightly moist quartz sands	S-1	3.5-5	2-3-4	7		40	
4									
5	688.39								
6									
7									
8		Same as above w/ mottling	S-2	8.5-11.0	4-7-14	21		100	
9									
10	683.39								
11									
12									
13									
14		Mottled light brown clayey SILT w/ layers of light tan silty clay, slightly moist. Few sand grains.	S-3	14.5-16.0	3-6-8	14		100	
15	678.39								
16									
17									
18									
19		Mottled light brown clayey SILT w/ tan & red brown	S-4	19.5-21.0	3-5-7	12			
20	673.39								
21									
22									
23									
24									

Form GS9901 7-26-2004

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15R

Sheet 2 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.5** SURF.ELEV. 693.39

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	668.39	Mottled light brown, tan, white, red brown clayey SILT, slightly moist. Some small 1cm weathered fragments	S-5	24.5-26.0	2-3-6	9		100	
26									
27									
28									
29		SAA	S-6	29.5-31.0	15-5-5	10		100	
30	663.39								
31									
32									
33									
34		Medium stiff light brown sandy gravelly SILT. Approxiate 50% rock fragments, up to 2 mm diameter.	S-7	34.5-36.0	1-2-4	6		100	
35	658.39	Very moist							
36									
37									
38									
39		Soft light brown SILT w/ some small pebbles, wet	S-8	39.5-41.0	2-1-3	4		100	
40	653.39								
41									
42									
43									
44		Soft light brown SILT, very homogenous, wet	S-9	44.5-46	1-1-2	3		100	
45	648.39								
46									
47									
48									
49		Soft, wet light brown SILT w/ small pebbles, saturated	S-10	49.5-51	1-2-2	4		100	
50	643.39								
51									
52									
53									
54		Very soft, saturated, light brown SILT, few pebbles	S-11	54.5-56	WOR	0			
55	638.39								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15R
Sheet 3 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.5** SURF.ELEV. 693.39

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58									
59		Very soft light brown SILT w/thin bands of tan/white sand, saturated	S-12	59.5-61	W.O.R	0		100	
60	633.39								
61									
62									
63									
64		Very soft, saturated light brown SILT w/ some sand layers less than 2 cm thick, few rock fragments	S-13	64.5-66	1-1-1	2		100	
65	628.39								
66									
67									
68									
69									
70	623.39	Very stiff light brown SILT, saturated w/ a 2" layer of weathered dolomite. Some red & black banding in the silt.	S-14	69.5-71	6-12-5	17		100	
71									
72		71.1: Top of rock, start coring							
73									
74		Chert rich DOLOMITE w/ stylolites		74.5-77.9			3.4/3.4	100	
75	618.39								
76									
77		Grey DOLOMITE w/thin shale interbeds		77.9-82.9			5.0/5.0	100	
78									
79									
80	613.39								
81									
82		Grey DOLOMITE w/ some calcite filled fractures		82.9-88.5			6.0/6.0	100	
83									
84									
85	608.39								
86									
87									
88									

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-15R
Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **95.5** SURF.ELEV. 693.39

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		Grey DOLOSTONE w/ very small calcite filled fractures		88.5-95.5			7.0/7.0	100	
90	603.39								
91									
92									
93									
94									
95	598.39								
96		95.5: Bottom of boring							
97									
98									
99									
100	593.39								
101									
102									
103									
104									
105	588.39								
106									
107									
108									
109									
110	583.39								
111									
112									
113									
114									
115	578.39								
116									
117									
118									
119									
120	573.39								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **693.28**
Top of PVC Casing Elevation (feet, NAVDl88): **695.92**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-15Z
PAGE 1 OF 2
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DATE STARTED 10/28/2016 **COMPLETED** 10/31/2016 **SURF. ELEV.**693.28' NAVD88 **COORDINATES:** N:1503952.26 E:2072918.71
CONTRACTOR Cascade **EQUIPMENT** PS T-150 **METHOD**
DRILLED BY Tommy and Rodger **LOGGED BY** D. Morris* **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 72 ft bgs **GROUND WATER DEPTH: DURING** **COMP.** 45 ft bgs **DELAYED** 42 ft.;4 days
NOTES Near GWA-15, *Sample Logged by geologist employed by Amec Foster Wheeler

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		- SILT (ML), red orange (5 YR 5/8), dry				Completion: Protective casing set in concrete pad; 2-foot square concrete pad Annular Fill: Aquaguard Grout Mixture
5			688.3			
		- clayey SILT (ML), dark red (5 YR 4/6), dry				
			686.3			
		- SILT (ML), interbedded red, black and orange (5 YR 8/8), dry				
10						
15						
20		- same as above, (7.5 YR 5/8), with chert lenses from 23-27', dry				
25						
			665.3			
30		- CLAY (CL) with chert nodules, tan and white (10 YR 7/6), moderate plasticity, moist				
						660.3 (33.0) Annular Seal: 3/8" bentonite chips
35						
40			653.3			

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-15Z
PAGE 2 OF 2
6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

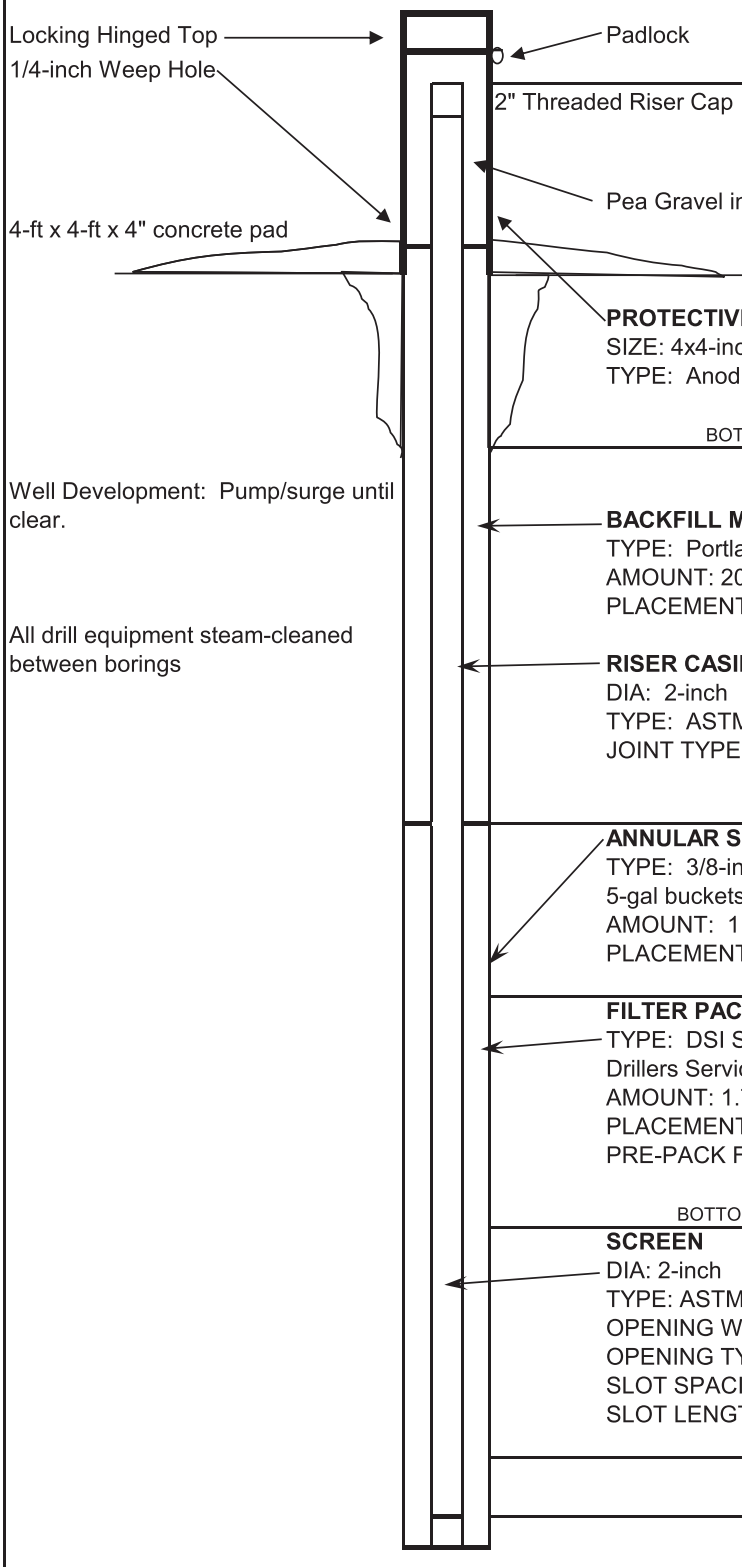
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
45		- sandy CLAY (CH), tan, white and black (10 YR 7/6), high plasticity	648.3		▼	(CONTINUED) Completion: Protective casing set in concrete pad; 2-foot square concrete pad Annular Seal: 3/8" bentonite chips
		- clayey SAND (SC), tan, white and black (10 YR 7/6), moist	646.3		▽	
50		- CLAY (CH), tan (10 YR 7/6), high plasticity, saturated				
55		- same as above, saturated				639.3 (54.0) Annular Seal: 3/8" bentonite pellets (non-coated)
60			633.3			634.3 (59.0) Filter: silica filter sand
65		- same as above, saturated	628.3			631.3 (62.0) **Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack
70		- same as above, saturated				
		- Top of rock @ 72.0 feet	621.3			
		Bottom of borehole at 72.0 feet.				
75						
80						
85						

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **728.74**
Top of PVC Casing Elevation (feet, NAVD88): **731.21**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS	WELL NAME
LOCATION: Cells 1&2	DRILLER: D. Willis	
LOGGER: L. Millet	RIG TYPE: CME 550	GWA-50
DATE CONSTRUCTED: 6/4/2008 - 8:00 am	DRILLING METHODS: HSA/HQ Rock core with water	



	DEPTH FEET	ELEVATION FT,NAVD88
Padlock		
TOP OF RISER	2.47	731.21
2" Threaded Riser Cap		
Pea Gravel in annular space		
GROUND SURFACE	0.00	728.74
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 20 bags @ 1.3 cf/bag = 26 cf PLACEMENT: Tremie		
RISER CASING DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	78.00	650.74
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	81.50	647.24
FILTER PACK TYPE: DSI Sand - 1A (20/30 grain size) Drillers Services, Inc. AMOUNT: 1.75 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water PRE-PACK FILTER SAND: DSI - 1A		
BOTTOM OF RISER / TOP OF SCREEN	84.03	644.71
SCREEN DIA: 2-inch TYPE: ASTM-NSF Sch 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	94.03	634.71
BOTTOM OF CASING	94.33	634.41

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **728.74**
Top of PVC Casing Elevation (feet, NAVD88): **731.21**

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50
Sheet 1 of 4

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **93.5** | SURF.ELEV.: 728.74
LOCATION: Cells 1 & 2 | COORDINATES N: 1502154.80 | E: 2072442.13
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 550
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 15 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 62.5 | ELEV.: 666.24 | TIME AFTER COMP.: 15 hours | DATE TAKEN: 6/4/2008
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/28/2008
DRILLER: D. Willis | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 6/2/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	728.74								
5	723.74	Dark red CLAY, dry, stiff, with light gray mottling	S-1	4.5-6	4-7-10	17			
10	718.74	Dark red CLAY, dry, stiff, occassional pockets of light orange silt, occassional coarse sand grains	S-2	9.5-11	5-10-14	24			
15	713.74	Dark red CLAY, dry, stiff, with orange and white pebbles	S-3	14.5-16	6-8-8	16			
20	708.74	Orange and dark red silty CLAY, dry, stiff, occassional pebbles	S-4	19.5-21	7-8-11	19			
24	704.74								

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SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50
Sheet 2 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 93.5 | SURF.ELEV.: 728.74

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	703.74	Light tan and white silty CLAY, dry, stiff, with occassional pebbles	S-5	24.5-26	6-8-9	17			
26									
27									
28									
29									
30	698.74	Dark red and white silty CLAY, dry, crumbly, occassional tan mottling	S-6	29.5-31	6-12-13	25			
31									
32									
33									
34									
35	693.74	Light tan and orange silty CLAY, moist, with occassional pebbles	S-7	34.5-36	7-7-11	18			
36									
37									
38									
39									
40	688.74	Same as above	S-8	39.5-41	4-4-4	8			
41									
42									
43									
44									
45	683.74	Tan and light brown clayey SILT, moist, some white mottling, occassional coarse sand grains	S-9	44.5-46	5-10-10	20			
46									
47									
48									
49									
50	678.74	Orange and brown clayey SILT, moist, firm, occassional dark brown mottling, degraded white cobbles	S-10	49.5-51	3-4-5	9			
51									
52									
53									
54									
55	673.74	Orange SILT, moist, softer, degraded and intact gravel and cobbles	S-11	54.5-56	6-9-10	19			
56	672.74								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50
Sheet 3 of 4

SITE: Plant Bowen Dry Gypsum Storage Facility | TOTAL DEPTH: 93.5 | SURF.ELEV.: 728.74

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	671.74								
58									
59									
60	668.74	Same as above, with chert	S-12	59.5-61	3-4-5	9			
61									
62									
63									
64									
65	663.74	Same as above	S-13	64.5-66	5-8-12	20			
66									
67									
68									
69									
70	658.74	Orange clayey SILT, saturated, soft, with dark red,	S-14	69.5-71	9-12-12	24			
71		white, and dark brown mottling, carbonate and chert cobbles and gravel							
72									
73									
74									
75	653.74	Chert cobble in bottom of spoon	S-15	74.5-76	50/1	R			
76									
77									
78		Auger refusal - 78.2							
79									
80	648.74	Tan and orange chert and carbonate, with fractures,		78.5-88.5			1.7/10.0		
81		fractures filled with sand and clay, iron staining, rock is fossiliferous and pitted							
82									
83									
84									
85	643.74								
86									
87									
88	640.74								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50

Sheet 4 of 4

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **93.5** SURF.ELEV. 728.74

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89	639.74	Same as above		88.5-93.5			0.8/5.0		
90	638.74								
91									
92									
93	633.74								
		93.5 Bottom of boring							

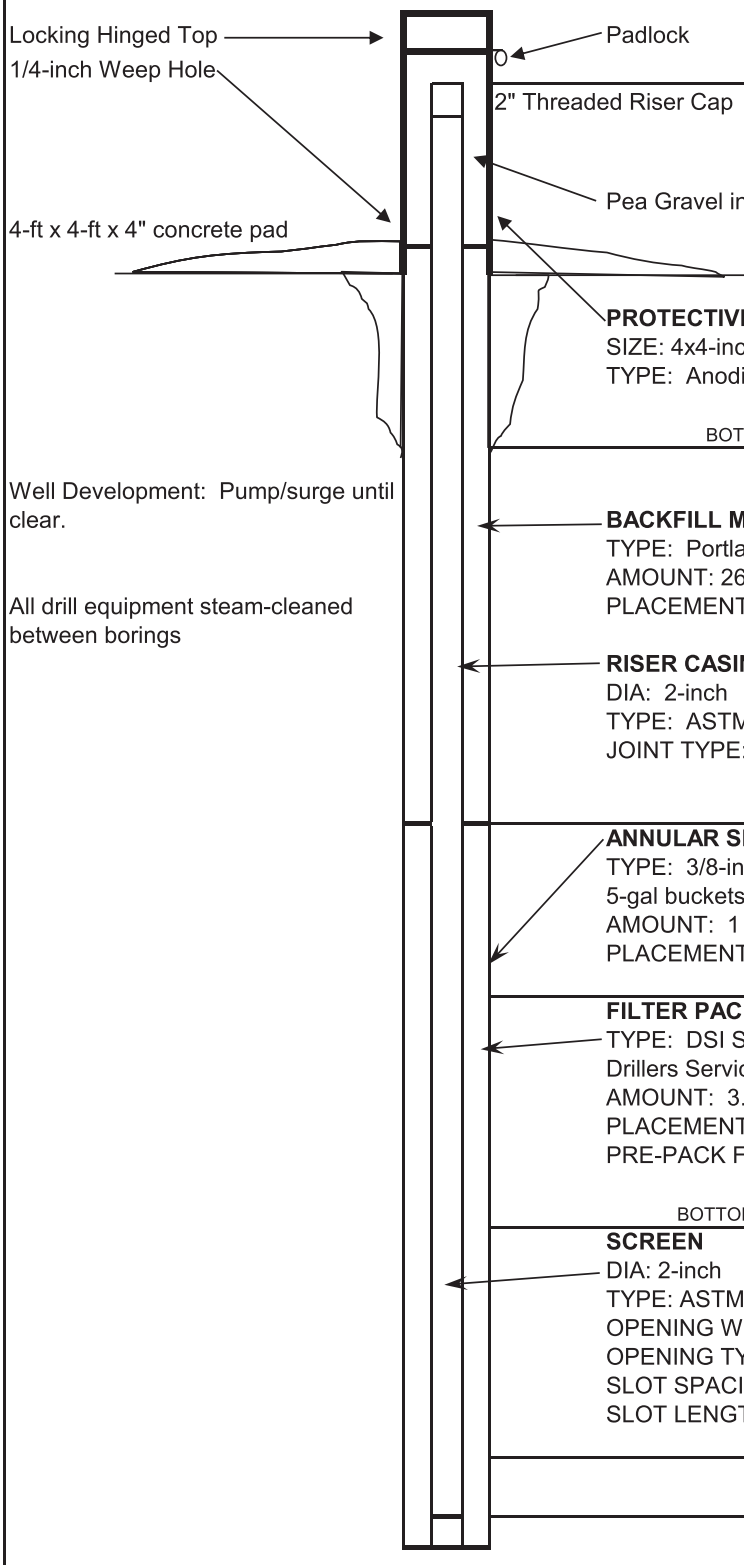
Form GS9901 7-26-2004

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **727.87**
Top of PVC Casing Elevation (feet, NAVD88): **730.37**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: D. Willis	WELL NAME
LOCATION: Cells 1&2	RIG TYPE: CME 550	
LOGGER: L. Millet	DRILLING METHODS: HSA/HQ Rock core with water	GWA-50R
DATE CONSTRUCTED: 6/10/2008 - 9:00 am		



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.50	730.37
GROUND SURFACE	0.00	727.87
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 26 bags @ 1.3 cf/bag = 34 cf PLACEMENT: Tremie		
RISER CASING DIA: 2-inch TYPE: ASTM-NSF Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	118.00	609.87
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 1 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	120.00	607.87
FILTER PACK TYPE: DSI Sand - 1A (20/30 grain size) Drillers Services, Inc. AMOUNT: 3.5 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water PRE-PACK FILTER SAND: DSI - 1A		
BOTTOM OF RISER / TOP OF SCREEN	128.18	599.69
SCREEN DIA: 2-inch TYPE: ASTM-NSF Sch 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	138.18	589.69
BOTTOM OF CASING	138.48	589.39

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **727.87**
Top of PVC Casing Elevation (feet, NAVD88): **730.37**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50R
Sheet 1 of 5

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **142.9** | SURF.ELEV.: 727.87
LOCATION: Cells 1 & 2 | COORDINATES N: 1502150.85 | E: 2072448.35
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 550
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 18 | NO. U.D. SAMPLES: 0
CASING SIZE: 7.5" OD | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 6/4/2008
DRILLER: D. Willis | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 6/5/2008

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	727.87								
1									
2									
3									
4		Red silty CLAY, dry, hard, with gravel, occassional tan mottling	S-1	4.5-6	10-14-22	36			
5	722.87								
6									
7									
8									
9									
10	717.87	Dark red silty CLAY, dry, hard, with gravel, orange and tan mottling	S-2	9.5-11	8-14-20	34			
11									
12									
13									
14									
15	712.87	Dark red clayey SILT, dry, hard, with gravel carbonate pebbles	S-3	14.5-16	8-13-16	29			
16									
17									
18									
19									
20	707.87	Dark red silty CLAY, dry, hard, with gravel and brown mottling	S-4	19.5-21	7-12-16	28			
21									
22									
23									
24	703.87								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50R
Sheet 2 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **142.9** SURF.ELEV. 727.87

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	702.87	Orange and white silty CLAY, moist, hard, with sand and gravel	S-5	24.5-26	10-8-10	18			
26									
27									
28									
29									
30	697.87	Pink and white silty CLAY, moist, firm, with degraded carbonate pebbles	S-6	29.5-31	15-16-13	29			
31									
32									
33									
34									
35	692.87	Pink and tan clayey SILT, dry, with trace sand, degraded carbonate cobbles	S-7	34.5-36	6-21-21	42			
36									
37									
38									
39									
40	687.87	Orange and white silty CLAY, dry, firm, with pebbles and gravel	S-8	39.5-41	6-25-14	39			
41									
42									
43									
44									
45	682.87	Tan and white silty CLAY, moist, plastic, some dark orange mottling	S-9	44.5-46	5-5-3	8			
46									
47									
48									
49									
50	677.87	Same as above	S-10	49.5-51	4-5-11	16			
51									
52									
53									
54									
55	672.87	Tan and orange silty CLAY, moist, plastic, occassional white mottling, cobbles	S-11	54.5-56	7-8-3	11			
56	671.87								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50R
Sheet 3 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **142.9** SURF.ELEV. 727.87

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	670.87								
58									
59									
60	667.87	Light orange and tan silty CLAY, moist, plastic, occassional white mottling, gravel	S-12	59.5-61	6-9-7	16			
61									
62									
63									
64									
65	662.87	Tan and orange clayey SILT, moist, plastic, with chert sand and pebbles	S-13	64.5-66	3-7-9	16			
66									
67									
68									
69									
70	657.87	Orange clayey SILT, moist, firm, occassional black mottling	S-14	69.5-71	3-5-8	13			
71									
72									
73									
74									
75	652.87	Orange clayey SILT, moist, firm, with chert and carbonate pebbles, saturated last 3"	S-15	74.5-76	4-7-16	23			
76									
77									
78									
79									
80	647.87	White and light tan clayey SILT, moist, firm, orange and brown mottling	S-16	79.5-81	4-6-7	13			
81									
82									
83									
84									
85	642.87	Light tan silty CLAY, moist, firm, with chert and carbonate gravel	S-17	84.5-86	7-7-24	31			
86									
87									
88	639.87								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50R
Sheet 4 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **142.9** SURF.ELEV. 727.87

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89	638.87								
90	637.87	Tan clayey SILT, moist, firm, with chert gravel	S-18	89.5-91	4-4-10	14			
91									
92		Auger refusal - 92.0							
93									
94		No recovery		92-97			0.0/5.0		
95	632.87								
96									
97		White fossiliferous carbonate gravel and cobbles,		97-107			0.2/10.0		
98		gray chert with pink veining and non-directional fractures							
99									
100	627.87								
101									
102									
103									
104									
105	622.87								
106									
107		Tan carbonate as above		107-117			1.5/10.0		
108									
109									
110	617.87								
111									
112									
113									
114									
115	612.87								
116									
117		Same as above							
118				117-127			1.3/10.0		
119									
120	607.87								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-50R
Sheet 5 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **142.9** SURF.ELEV. 727.87

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121	606.87								
122									
123									
124									
125	602.87								
126									
127		Same as above		127-137			1.4/10.0		
128									
129									
130	597.87								
131									
132									
133									
134									
135	592.87								
136									
137		Same as above		137-142.9			1.5/6.7		
138									
140	587.87								
141									
142									
143	682.87								
144		142.9 - Bottom of boring							
145									
146									
147									
148									
149									
150									
151									
152									
153									

ATTACHMENT A1

WELL CONSTRUCTION AND BORING LOGS

LANDFILL CELLS 3 & 4

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved

Solid Waste Management Program

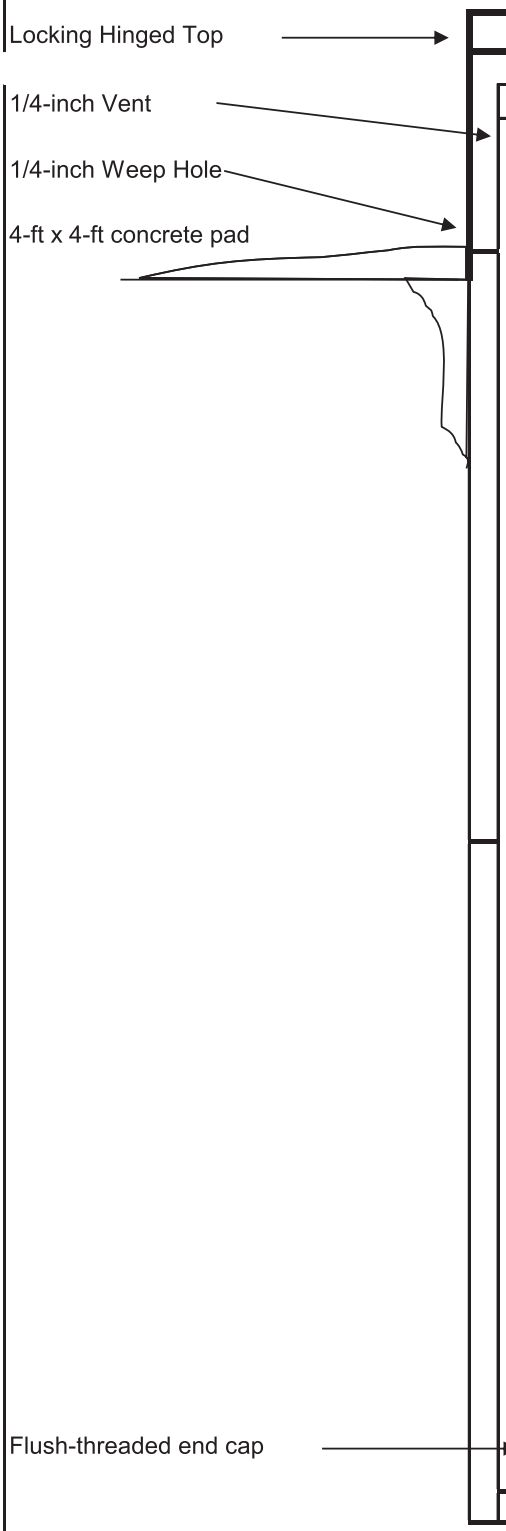
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:17:00 -04'00'

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **727.77**
Top of PVC Casing Elevation (feet, NAVD88): **730.59**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	SCS Civil Field Services	WELL NAME
		DRILLER:	Milam	
LOCATION:	Cells 3 and 4	RIG TYPE:	CME 550	
LOGGER:	D. Brooks	DRILLING METHODS:	Hollow stem/ HQ rock core	GWC-16R
DATE CONSTRUCTED:	12/13/2011			



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	2.82	730.59
2" Threaded Riser Cap		
GROUND SURFACE	0.00	727.77
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 135 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	70.00	657.77
ANNULAR SEAL TYPE: 50 lbs bentonite chips AMOUNT: 2.5 bags PLACEMENT: Tremie, Wash with water		
TOP OF FILTER PACK	82.90	644.87
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	84.70	643.07
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	94.70	633.07
BOTTOM OF CASING	95.00	632.77

HOLE DIA: 6.25"/4.25"

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **727.77**
Top of PVC Casing Elevation (feet, NAVD88): **730.59**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-16R
Sheet 1 of 4

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	95'	SURF.ELEV.	727.77
LOCATION	Cells 3 and 4	COORDINATES	N 1505877.86		E 2072607.38		
ANGLE	90	BEARING	NA	CONTRACTOR	SCS CFS	DRILL NO.	NA
DRILLING METHOD	Hollow Stem/ HQ Rock Core	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6.25"	LENGTH	57'	CORE SIZE	4.25"	TOTAL % REC.	NA
WATER TABLE DEPTH	72'	ELEV.	656'	TIME AFTER COMP.	1 hour	DATE TAKEN	12/13/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	12/9/2011
DRILLER	S. Milam	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	12/13/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	727.77	SAND, Silty; brown; dry; very fine to fine grained							
1									
2		SAND, Clayey; red; dry; fine grained with chert fragments							
3									
4									
5	722.77								
6									
7									
8		SAA with pieces of limestone							
9									
10	717.77								
11		CLAY, Sandy; orange; damp; contains fine grained sand and chert fragments							
12									
13									
14									
15	712.77								
16									
17									
18		CLAY, Silty, Sandy; damp; red; fine grained with chert fragments							
19									
20	707.77								
21									
22		SAND, Silty; damp; reddish yellow; very fine to fine grained							
23									
24		CLAY, Sandy; reddish yellow; damp; very fine to fine grained							

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-16R
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **95'** SURF.ELEV. 727.77

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	702.77	CLAY, Sandy; reddish yellow; damp; very fine to fine grained with pieces of chert							
26									
27									
28									
29									
30	697.77								
31									
32									
33		CLAY, Silty, with Sand; orange; damp; very fine to fine grained with pieces of chert and blue grey dolomite							
34									
35	692.77								
36									
37									
38									
39									
40	687.77								
41									
42									
43									
44									
45	682.77								
46									
47									
48									
49									
50	677.77	SAA with less sand							
51									
52									
53									
54									
55	672.77								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-16R
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **95'** SURF.ELEV. 727.77

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57		Auger refusal at 57' bgs					6 inch steel casing to 57' bgs		
58		Dolomite; blue grey; hard; slightly weathered							
59									
60	667.77								
61									
62									
63		Clay filled void from 59' to 66.4'							
64									
65	662.77								
66									
67		Dolomite; blue grey; hard; slightly weathered							
68									
69									
70	657.77	Clay filled void from 67.1' to 74.4'							
71									
72									
73									
74									
75	652.77								
76									
77		Dolomite; blue grey; hard; slightly weathered; contains multiple small horizontal iron stained fractures							
78									
79									
80	647.77								
81									
82									
83									
84									
85	642.77								
86		Dolomite; blue grey; hard; slighlty weathered							
87									
88									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-16R
Sheet 4 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **95'** SURF.ELEV. 727.77

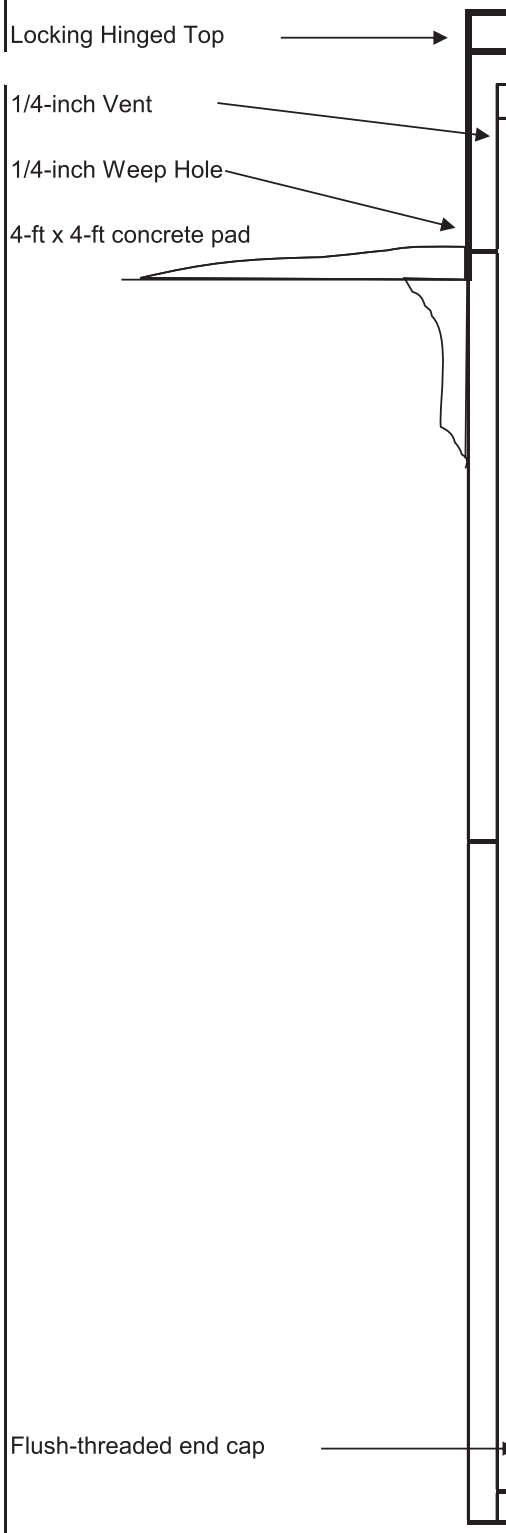
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	637.77								
91									
92		Dolomite; blue grey; hard; slightly weathered; multiple horizontal fractures show iron staining and some solutioning along fracture faces							
93									
94									
95	632.77								
96		BOH @ 95' bgs							
97									
98									
99									
100	627.77								
101									
102									
103									
104									
105	622.77								
106									
107									
108									
109									
110	617.77								
111									
112									
113									
114									
115	612.77								
116									
117									
118									
119									
120	607.77								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **730.02**
Top of PVC Casing Elevation (feet, NAVDl88): **733.37**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	SCS Civil Field Services	WELL NAME
		DRILLER:	Milam	
LOCATION:	Cells 3 and 4	RIG TYPE:	CME 550	
LOGGER:	D. Brooks	DRILLING METHODS:	Hollow stem/ HQ rock core	GWC-17R
DATE CONSTRUCTED:	12/8/2011			



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	3.35	733.37
2" Threaded Riser Cap		
GROUND SURFACE	0.00	730.02
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 120 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	64.00	666.02
ANNULAR SEAL TYPE: 50 lbs bentonite chips AMOUNT: 2.5 bags PLACEMENT: Tremie, Wash with water		
TOP OF FILTER PACK	77.50	652.52
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 2.5 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	79.20	650.82
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	89.20	640.82
BOTTOM OF CASING	89.50	640.52

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **730.02**
Top of PVC Casing Elevation (feet, NAVDl88): **733.37**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-17R
Sheet 1 of 4

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 89.5' bgs | SURF.ELEV.: 730.02
LOCATION: Cells 3 and 4 | COORDINATES N: 1506069.29 | E: 2072829.29
ANGLE: 90 | BEARING: NA | CONTRACTOR: SCS CFS | DRILL NO.: NA
DRILLING METHOD: Hollow Stem/ HQ Rock Core | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: 6.25" | LENGTH: 30.7' | CORE SIZE: 4.25" | TOTAL % REC.: NA
WATER TABLE DEPTH: 70' | ELEV.: 660' | TIME AFTER COMP.: 1 hour | DATE TAKEN: 12/8/2011
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 11/21/2011
DRILLER: S. Milam | RECORDER: S. Bearce | APPROVED: D. Brooks | DRILLING COMP. DATE: 12/8/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	730.02	SAND, Silty; brown; dry; very fine to fine grained with white chert fragments							
1									
2									
3									
4									
5	725.02	CLAY, sandy; yellowish brown; dry; fine grained sand sand with chert fragments							
6									
7									
8									
9									
10	720.02								
11									
12									
13									
14									
15	715.02								
16									
17									
18		CLAY; yellowish brown; moist; soft; slightly plastic							
19									
20	710.02								
21									
22									
23									
24	706.02								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-17R
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5'** SURF.ELEV. 730.02

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	705.02	SAA							
26		3" bed of white chert, HCl-							
27									
28									
29		CLAY; yellowish brown; moist; soft; slightly plastic							
30	700.02						6 inch steel casing to 30.7' bgs		
31		Auger refusal at 30.7' bgs							
32									
33		DOLOMITE; blue grey; micritic; small near vertical fracture							
34		with iron stained faces							
35	695.02								
36									
37									
38									
39									
40	690.02								
41									
42									
43									
44									
45	685.02								
46									
47									
48		DOLOMITE; blue grey; hard; fresh; some small horizontal fractures with iron staining							
49									
50	680.02								
51									
52									
53									
54									
55	675.02								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-17R
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5'** SURF.ELEV. 730.02

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	673.02								
58		DOLOMITE; blue grey; hard; fresh							
59									
60	670.02								
61									
62									
63									
64									
65	665.02								
66									
67									
68									
69									
70	660.02	SAA							
71									
72									
73									
74									
75	655.02								
76									
77									
78		DOLOMITE; blue grey; hard; fresh; some horizontal fractures with iron staining; some solutioning along faces							
79									
80	650.02								
81									
82									
83									
84									
85	645.02								
86									
87									
88	642.02								

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-17R
Sheet 4 of 4

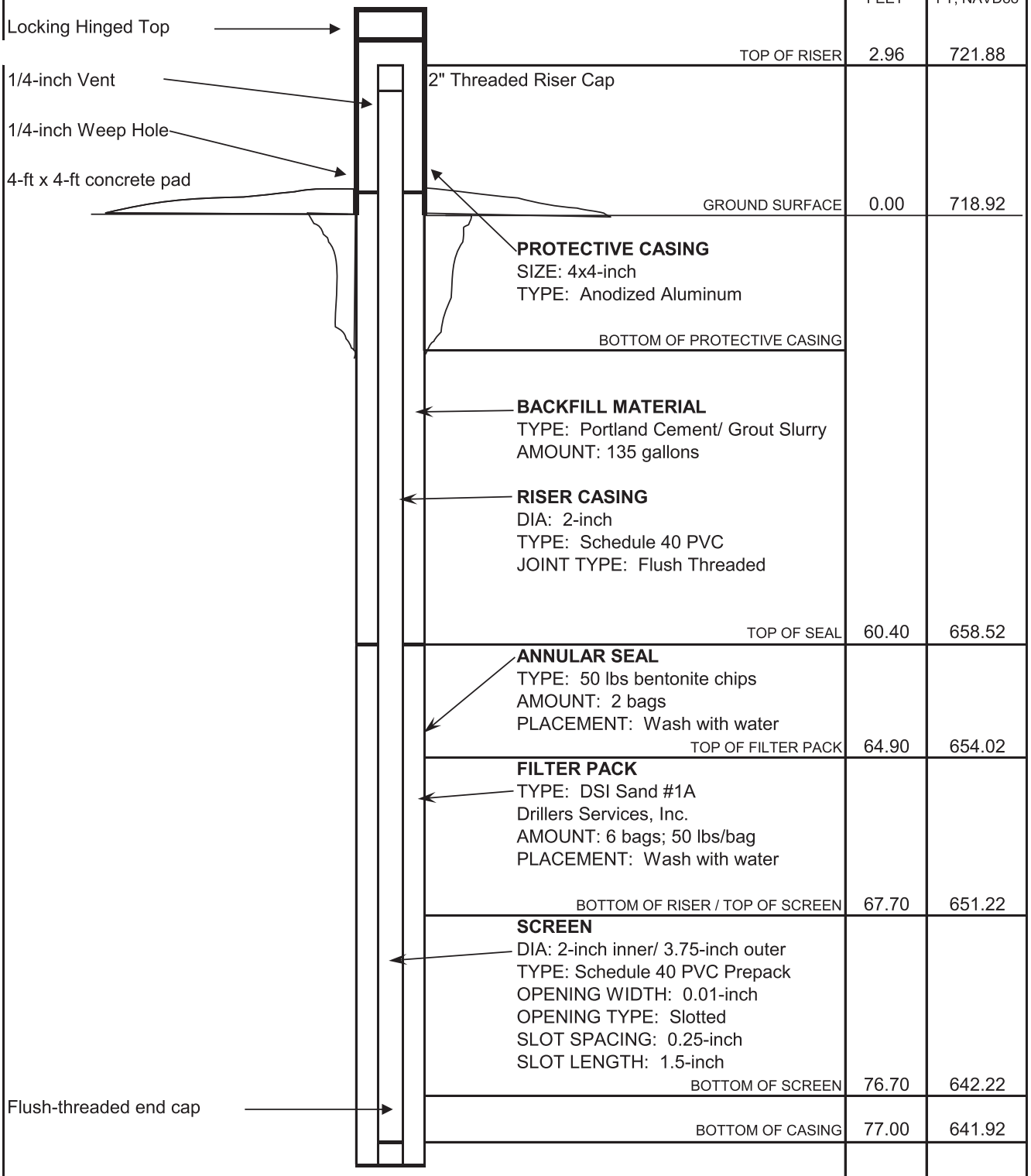
SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5** SURF.ELEV. 730.02

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		DOLOMITE; blue grey; hard; fresh; some horizontal fractures with iron staining; some solutioning along faces							
90	640.02								
91		BOH @ 89.5' bgs							
92									
93									
94									
95	635.02								
96									
97									
98									
99									
100	630.02								
101									
102									
103									
104									
105	625.02								
106									
107									
108									
109									
110	620.02								
111									
112									
113									
114									
115	615.02								
116									
117									
118									
119									
120	610.02								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **718.92**
Top of PVC Casing Elevation (feet, NAVD88): **721.88**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	GWC-18
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	
DATE CONSTRUCTED:	6/6/2011			



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	2.96	721.88
GROUND SURFACE	0.00	718.92
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	60.40	658.52
TOP OF FILTER PACK	64.90	654.02
BOTTOM OF RISER / TOP OF SCREEN	67.70	651.22
BOTTOM OF SCREEN	76.70	642.22
BOTTOM OF CASING	77.00	641.92

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **718.92**
Top of PVC Casing Elevation (feet, NAVD88): **721.88**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18
Sheet 1 of 3

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	77	SURF.ELEV.	718.92
LOCATION	Cells 3 and 4	COORDINATES	N 1506306.70		E 2072929.28		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	4"	TOTAL % REC.	NA
WATER TABLE DEPTH	71.3'	ELEV.	647.62	TIME AFTER COMP.	1 hour	DATE TAKEN	6/6/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/6/2011
DRILLER	Boart	RECORDER	C. Sellers	APPROVED	D. Brooks	DRILLING COMP. DATE	6/6/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	718.92								
1		Top Soil							
2									
3		CLAY, sandy; red; dry; very fine							
4									
5	713.92	SILT; white; very fine							
6									
7		SAND; silty; reddish brown							
8									
9									
10	708.92	CLAY; sandy; red; dry; fine							
11									
12									
13									
14		SAND; silty; yellow; damp							
15	703.92								
16									
17		SAA; yellow-brown; dry							
18		CHERT; gravel; black							
19		SAND; silty; brownish yellow; moist							
20	698.92								
21									
22									
23									
24	694.92								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18
Sheet 2 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **77.0'** SURF.ELEV. 718.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	693.92	CLAY; reddish brown; wet							
26									
27									
28									
29									
30	688.92	SAND; silty; yellow-brown; very fine; moist; had some red and brown mixed throughout							
31									
32									
33									
34									
35	683.92	SAA; with black banding; moist							
36									
37									
38									
39									
40	678.92								
41									
42		SAA							
43									
44									
45	673.92								
46									
47									
48									
49									
50	668.92	SAA; chert gravel							
51									
52									
53									
54									
55	663.92	SAND; silty; dolostone gravel							
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18
Sheet 3 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **77.0'** SURF.ELEV. 718.92

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	661.92						6 inch steel casing to 57' bgs		
58		Chert gravel; wet							
59									
60	658.92								
61									
62									
63									
64									
65	653.92								
66									
67									
68									
69									
70	648.92								
71									
72		Gravel; chert and dolostone; silty sand; yellowish brown; saturated							
73									
74									
75	643.92								
76									
77									
78		BOH @ 77.0' bgs							
79									
80	638.92								
81									
82									
83									
84									
85	633.92								
86									
87									
88	630.92								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **718.97**
Top of PVC Casing Elevation (feet, NAVD88): **721.76**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-18R
DATE CONSTRUCTED	6/2/2011			

	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.80	721.76
2" Threaded Riser Cap		
GROUND SURFACE	0.00	718.97
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 180 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	84.00	634.97
ANNULAR SEAL TYPE: 50 lbs bentonite chips AMOUNT: 11 bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	127.00	591.97
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5 bags; 50 lbs/bag PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	127.20	591.77
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	137.20	581.77
BOTTOM OF CASING	137.50	581.47

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **718.97**
Top of PVC Casing Elevation (feet, NAVD88): **721.76**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18R
Sheet 1 of 5

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 137.5 | SURF.ELEV.: 718.97
LOCATION: Cells 3 and 4 | COORDINATES N: 1506301.39 | E: 2072929.47
ANGLE: 90 | BEARING: NA | CONTRACTOR: Boart Longyear | DRILL NO.: NA
DRILLING METHOD: Rotosonic | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: 6" | LENGTH: NA | CORE SIZE: 6" | TOTAL % REC.: NA
WATER TABLE DEPTH: 71.4' | ELEV.: 647.57 | TIME AFTER COMP.: 1 hour | DATE TAKEN: 6/2/2011
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 6/2/2011
DRILLER: Boart | RECORDER: C. Sellers | APPROVED: D. Brooks | DRILLING COMP. DATE: 6/2/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	718.97								
1		Top Soil							
2									
3		CLAY, sandy; red; dry; very fine							
4									
5	713.97	SILT; white; very fine							
6									
7		SAND; silty; reddish brown							
8									
9									
10	708.97	CLAY; sandy; red; dry; fine							
11									
12									
13									
14		SAND; silty; yellow; damp							
15	703.97								
16									
17		SAA; yellow-brown; dry							
18		CHERT; gravel; black							
19		SAND; silty; brownish yellow; moist							
20	698.97								
21									
22									
23									
24	694.97								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18R
Sheet 2 of 5

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **137.5'** SURF.ELEV. 718.97

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	693.97	CLAY; reddish brown; wet							
26									
27									
28									
29									
30	688.97	SAND; silty; yellow-brown; very fine; moist; had some red and brown mixed throughout							
31									
32									
33									
34									
35	683.97	SAA; with black banding; moist							
36									
37									
38									
39									
40	678.97								
41									
42		SAA							
43									
44									
45	673.97								
46									
47									
48									
49									
50	668.97	SAA; chert gravel							
51									
52									
53									
54									
55	663.97	SAND; silty; dolostone gravel							
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18R
Sheet 3 of 5

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **137.5'** SURF.ELEV. 718.97

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	661.97								
58		SAA; wet							
59									
60	658.97								
61									
62									
63									
64		Chert Gravel; black; with dry cobbles							
65	653.97	SAND; silty; yellowish brown; damp							
66									
67		SAND; silty; yellowish white; dry							
68									
69									
70	648.97	SILT; sandy; brownish yellow; with dolostone gravel							
71									
72									
73									
74									
75	643.97								
76									
77									
78									
79									
80	638.97								
81									
82									
83									
84									
85	633.97								
86		Dolostone; blue gray; slightly weathered							
87									
88	630.97								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-18R
Sheet 5 of 5

SITE **Plant Bowen CCB Disposal Facility** TOTAL DEPTH **137.5** SURF.ELEV. 718.97

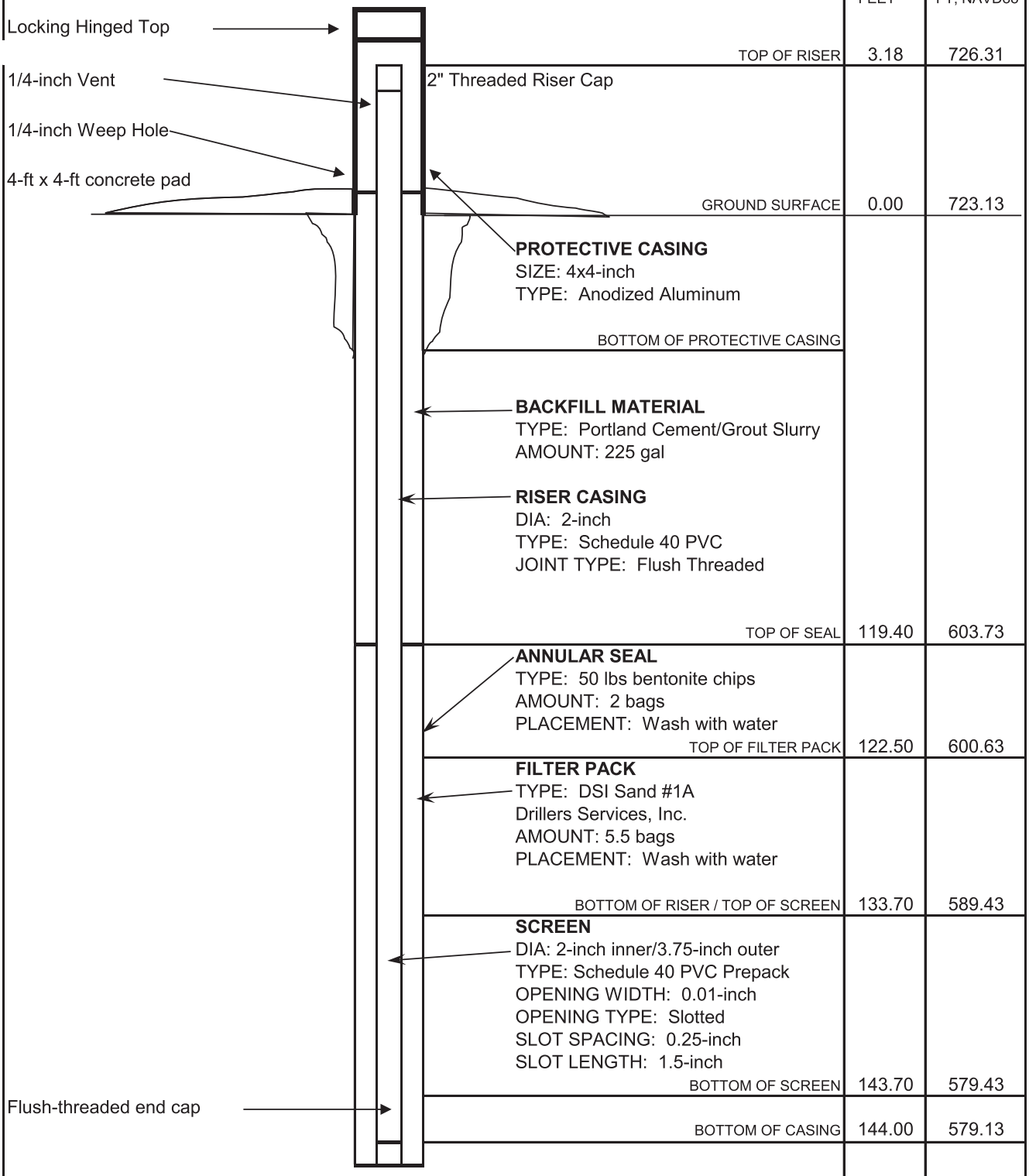
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121	597.97								
122									
123									
124									
125	593.97								
126									
127									
128									
129									
130	588.97								
131		Dolostone; blue gray; slightly weathered							
132									
133		Dolostone; heavily fractured, gravel sized fragments							
134									
135	583.97								
136									
137									
138		BOH @ 137.5' bgs							
139									
140	578.97								
141									
142									
143									
144									
145	573.97								
146									
147									
148									
149									
150	568.97								
151									
152	566.97								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **723.13**
Top of PVC Casing Elevation (feet, NAVDl88): **726.31**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE: Rotosonic		
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-19R
DATE CONSTRUCTED:	6/7/2011			



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	3.18	726.31
GROUND SURFACE	0.00	723.13
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	119.40	603.73
TOP OF FILTER PACK	122.50	600.63
BOTTOM OF RISER / TOP OF SCREEN	133.70	589.43
BOTTOM OF SCREEN	143.70	579.43
BOTTOM OF CASING	144.00	579.13

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **723.13**
Top of PVC Casing Elevation (feet, NAVDl88): **726.31**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-19R
Sheet 1 of 5

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	144.0'	SURF.ELEV.	723.13
LOCATION	Cells 3 and 4	COORDINATES	N 1506395.96		E 2073158.36		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Roto Sonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	4"	TOTAL % REC.	NA
WATER TABLE DEPTH	75.25'	ELEV.	647.88	TIME AFTER COMP.	1 hour	DATE TAKEN	6/8/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/7/2011
DRILLER	Boart	RECORDER	C. Sellers	APPROVED	D. Brooks	DRILLING COMP. DATE	6/8/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	723.13								
1		Top Soil							
2									
3		CLAY; brownish red; dry							
4									
5	718.13	Chert; white; weathered; dry							
6									
7									
8									
9		CLAY; sandy; light brown; trace chert gravel							
10	713.13								
11									
12									
13									
14		SAA; yellowish orange							
15	708.13								
16									
17									
18		CLAY; silty; light brown; damp							
19									
20	703.13								
21									
22		SAND; silty; fine-grained; chert gravel; throughout;							
23		yellowish orange to light brown							
24	699.13								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-19R
Sheet 2 of 5

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **144'** SURF.ELEV. 723.13

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	698.13								
26									
27									
28									
29		SAND; silty; light brown; fine-grained; damp							
30	693.13								
31									
32									
33									
34		CLAY; silty; yellowish orange; chert gravel; damp							
35	688.13	trace sand @ 35'							
36									
37									
38									
39									
40	683.13								
41									
42		SAA; saturated							
43									
44									
45	678.13								
46									
47									
48									
49									
50	673.13								
51									
52		Chert; very fractured							
53									
54									
55	668.13	CLAY; silty; yellowish orange; some chert gravel; damp							
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-19R
Sheet 3 of 5

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **144'** SURF.ELEV. 723.13

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	666.13								
58									
59									
60	663.13								
61		SAND; silty; coarse chert gravel; saturated							
62									
63									
64									
65	658.13	sand; silty; light tan; very fine-grained							
66									
67									
68									
69									
70	653.13								
71		No recovery; evidence of sand							
72									
73									
74									
75	648.13								
76									
77	646.13								
78									
79		Dolostone; blue gray; fractured							
80	643.13								
81									
82									
83									
84	639.13	Void; no recovery							
85									
86		Dolostone and chert gravel; heavily fractured							
87									
88	635.13								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-19R
Sheet 4 of 5

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **144'** SURF.ELEV. 723.13

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	633.13	SAA							
91									
92		Void; no recovery							
93									
94									
95	628.13								
96									
97		Dolostone; chert gravel; fractured							
98									
99									
100	623.13								
101									
102									
103									
104		Void; mud filled							
105	618.13								
106									
107									
108									
109		Dolostone; blue gray; heavily fractured							
110	613.13								
111									
112									
113		Void; mud filled							
114									
115	608.13								
116		Dolostone; blue gray; heavily fractured							
117									
118									
119									
120	603.13								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-19R
Sheet 5 of 5

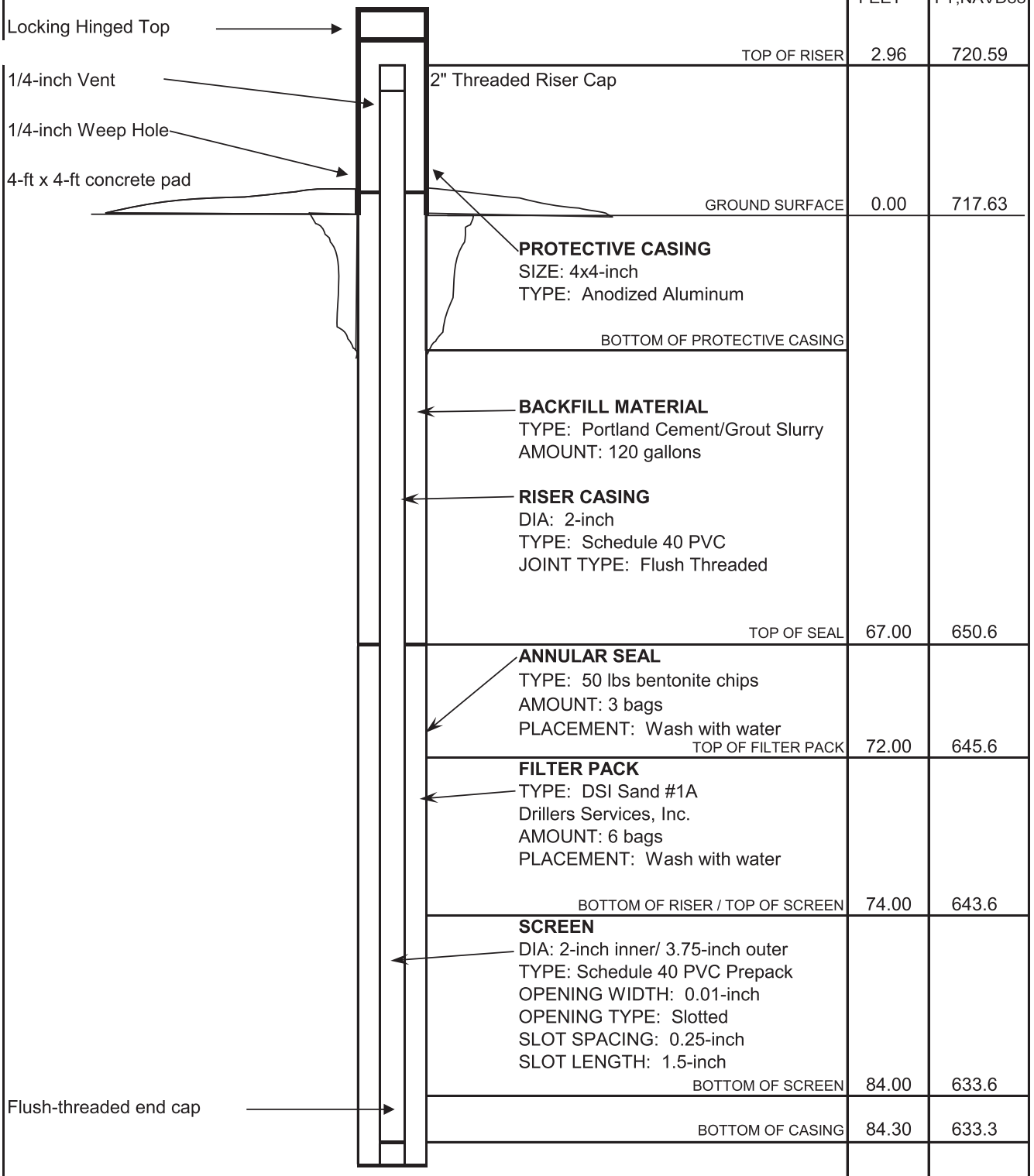
SITE **Plant Bowen CCB Disposal Facility** TOTAL DEPTH **144.0'** SURF.ELEV. 723.13

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121	602.13								
122		Dolostone; blue gray; heavily fractured							
123									
124									
125	598.13								
126									
127		Void; gravel filled							
128									
129									
130	593.13								
131									
132									
133									
134									
135	588.13	Dolostone; blue gray; heavily fractured							
136									
137									
138									
139									
140	583.13								
141									
142									
143									
144		BOH @ 144' bgs							
145	578.13								
146									
147									
148									
149									
150	573.13								
151									
152	571.13								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **717.63**
Top of PVC Casing Elevation (feet, NAVDl88): **720.59**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	GWC-20R
LOGGER:	Sellers/Dyer	DRILLING METHODS:	Rotosonic	
DATE CONSTRUCTED:	6/9/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.96	720.59
2" Threaded Riser Cap		
GROUND SURFACE	0.00	717.63
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 120 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	67.00	650.6
ANNULAR SEAL TYPE: 50 lbs bentonite chips AMOUNT: 3 bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	72.00	645.6
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	74.00	643.6
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	84.00	633.6
BOTTOM OF CASING	84.30	633.3

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **717.63**
Top of PVC Casing Elevation (feet, NAVDl88): **720.59**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-20R
Sheet 1 of 3

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 100.0' | SURF.ELEV.: 717.63
LOCATION: Cells 3 and 4 | COORDINATES N: 1506602.14 | E: 2073486.53
ANGLE: 90 | BEARING: NA | CONTRACTOR: Boart Longyear | DRILL NO.: NA
DRILLING METHOD: Rotosonic | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: 6" | LENGTH: NA | CORE SIZE: 6" | TOTAL % REC.: NA
WATER TABLE DEPTH: 84.3' | ELEV.: 633.33 | TIME AFTER COMP.: 1 hour | DATE TAKEN: 6/8/2011
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 6/8/2011
DRILLER: Boart | RECORDER: Sellers/Dyer | APPROVED: D. Brooks | DRILLING COMP. DATE: 6/8/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	717.63								
1		Top Soil							
2									
3									
4		CLAY; sandy; light brown; med-grained;							
5	712.63								
6									
7									
8									
9		SAA							
10	707.63								
11									
12									
13									
14									
15	702.63	SAA							
16									
17									
18									
19									
20	697.63	CLAY; silty; yellowish orange							
21									
22									
23									
24	693.63								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-20R
Sheet 2 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **100.0'** SURF.ELEV. 717.63

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	692.63	SILT; sandy; trace clays; med-grained sand; yellowish orange							
26									
27									
28		SILT; sandy; chert gravel throughout; yellow; damp							
29									
30	687.63								
31									
32									
33									
34									
35	682.63								
36									
37									
38									
39									
40	677.63								
41									
42		SILT; clayey; 20% chert gravel; some med-grained sand							
43									
44									
45	672.63								
46									
47									
48									
49		Dolostone @ 47.5'; blue gray; red staining; very fractured							
50	667.63								
51									
52									
53		Void @ 52' to 67'							
54									
55	662.63								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-20R
Sheet 3 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **100.0'** SURF.ELEV. 717.63

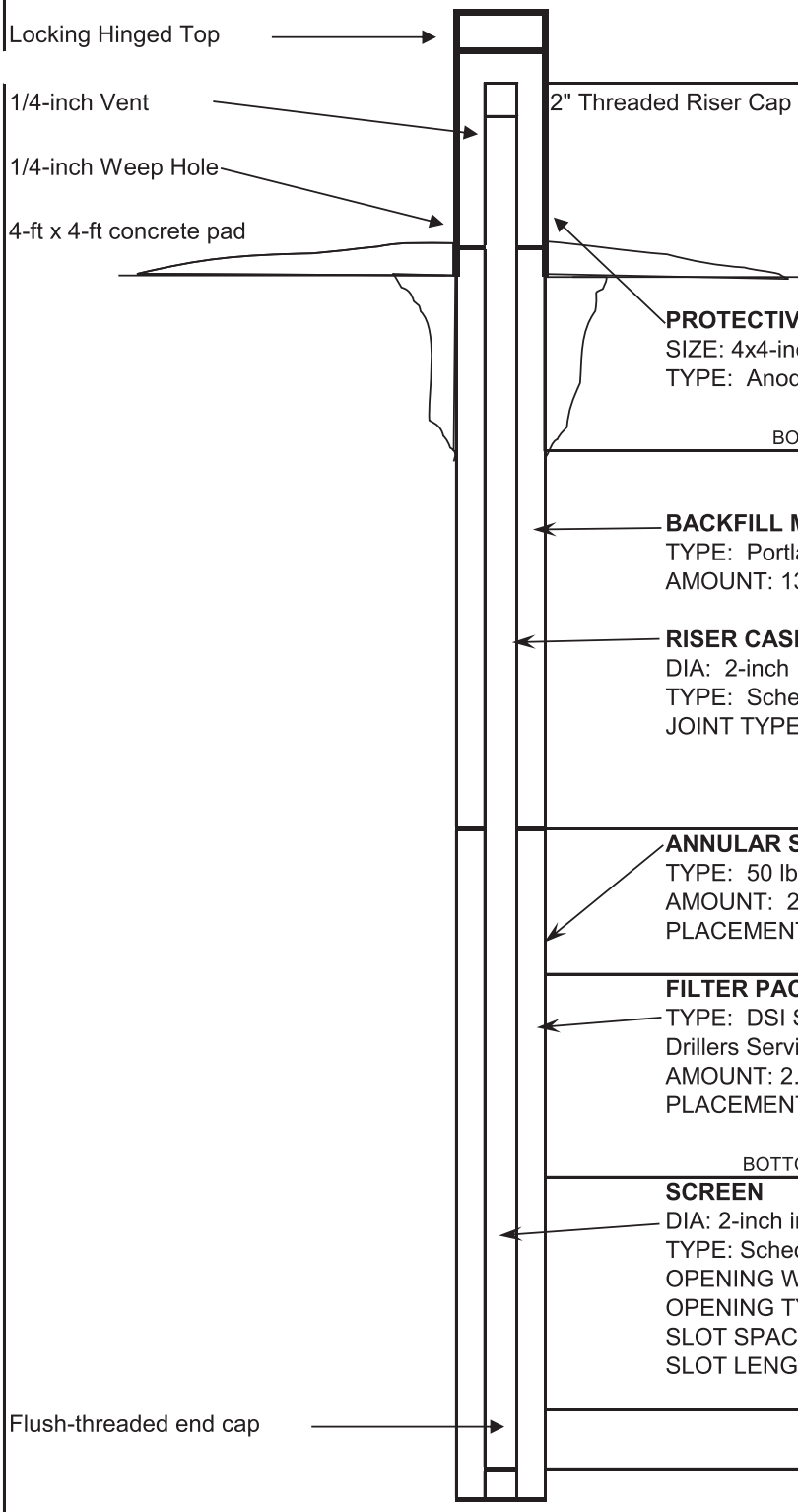
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	660.63								
58									
59									
60	657.63								
61		Void							
62									
63									
64									
65	652.63								
66									
67									
68									
69									
70	647.63								
71									
72									
73									
74		Dolomicrite; fine-grained; gray; contains prevalent calcine veining in a unimodal direction; sparse oxidation staining; weakly laminated in some individual samples							
75	642.63								
76									
77									
78									
79									
80	637.63								
81									
82									
83									
84									
85	632.63	BOH @ 84.3' bgs							
86									
87									
88	629.63								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **720.45**
Top of PVC Casing Elevation (feet, NAVDl88): **723.07**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	SCS Civil Field Services	WELL NAME
		DRILLER:	Milam	
LOCATION:	Cells 3 and 4	RIG TYPE:	CME 550	
LOGGER:	D. Brooks	DRILLING METHODS:	Hollow stem/ HQ rock core	GWC-21R
DATE CONSTRUCTED:	12/16/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.62	723.07
2" Threaded Riser Cap		
GROUND SURFACE	0.00	720.45
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 135 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	64.00	656.45
ANNULAR SEAL TYPE: 50 lbs bentonite chips AMOUNT: 2.5 bags PLACEMENT: Tremie, Wash with water		
TOP OF FILTER PACK	77.40	643.05
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 2.5 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	79.20	641.25
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	89.20	631.25
BOTTOM OF CASING	89.50	630.95

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **720.45**
Top of PVC Casing Elevation (feet, NAVDl88): **723.07**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21R
Sheet 1 of 4

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	89.5	SURF.ELEV.	720.45
LOCATION	Cells 3 and 4		COORDINATES N	1506695.89	E	2073784.42	
ANGLE	90	BEARING	NA	CONTRACTOR	SCS CFS	DRILL NO.	NA
DRILLING METHOD	Hollow Stem/ HQ Rock Core		NO. SAMPLES	Continuous	NO. U.D. SAMPLES	NA	
CASING SIZE	6.25"	LENGTH	49'	CORE SIZE	4.25"	TOTAL % REC.	NA
WATER TABLE DEPTH	56.55'	ELEV.	663.9	TIME AFTER COMP.	1 hour	DATE TAKEN	12/16/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	12/15/2011
DRILLER	Milam	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	12/16/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	720.45								
1		Top Soil							
2									
3									
4									
5	715.45	CLAY; sandy; light brown							
6									
7									
8									
9									
10	710.45								
11									
12		SILT; clayey with trace sand and chert gravel; light brown							
13									
14									
15	705.45								
16									
17		SILT; clayey; light brown							
18									
19									
20	700.45								
21		SAA; with chert gravel throughout							
22									
23									
24	696.45								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21R
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5** SURF.ELEV. 720.45

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	695.45	SAA							
26									
27									
28		SILT; clayey; yellowish orange							
29									
30	690.45								
31									
32									
33									
34									
35	685.45								
36									
37									
38									
39									
40	680.45								
41									
42									
43									
44									
45	675.45								
46		SAA; 10% sand							
47									
48									
49									
50	670.45								
51									
52									
53									
54									
55	665.45								
56		Dolostone; blue gray; no fractures							

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21R
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5** SURF.ELEV. 720.45

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	663.45								
58									
59									
60	660.45								
61									
62		Dolostone; blue gray; fractured; slight red staining							
63									
64									
65	655.45								
66									
67									
68									
69									
70	650.45								
71									
72									
73									
74									
75	645.45								
76									
77									
78									
79									
80	640.45								
81		SAA							
82									
83									
84									
85	635.45								
86									
87									
88	632.45								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-21R

Sheet 4 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **89.5** SURF.ELEV. 720.45

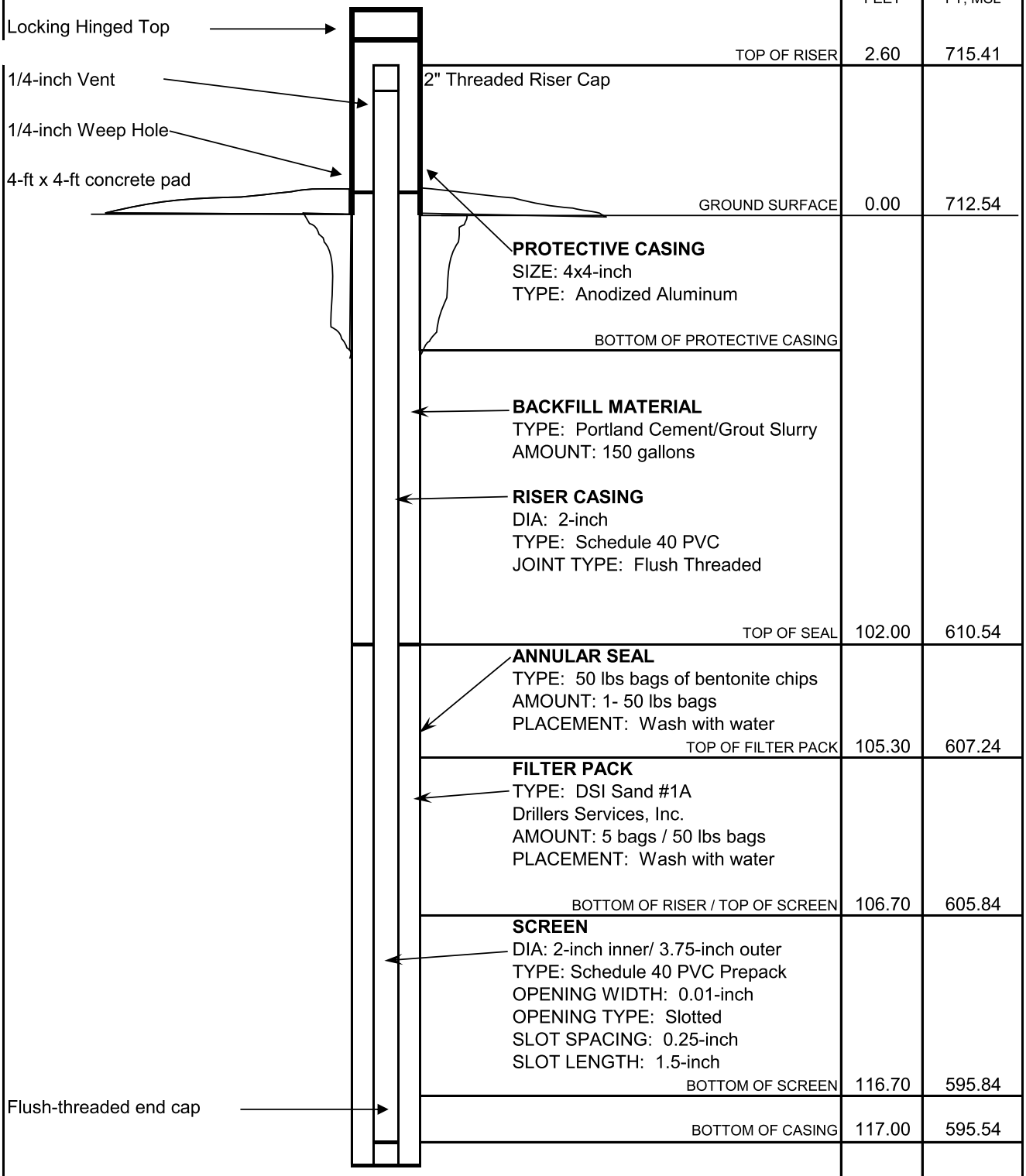
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		SAA							
90	630.45	BOH @ 89.5 bgs							
91									
92									
93									
94									
95	625.45								
96									
97									
98									
99									
100	620.45								
101									
102									
103									
104									
105	615.45								
106									
107									
108									
109									
110	610.45								
111									
112									
113									
114									
115	605.45								
116									
117									
118									
119									
120	600.45								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **712.54**
Top of PVC Casing Elevation (feet, NAVDl88): **715.41**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-22R
DATE CONSTRUCTED:	6/14/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.60	715.41
GROUND SURFACE	0.00	712.54
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 150 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	102.00	610.54
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 1- 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	105.30	607.24
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	106.70	605.84
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	116.70	595.84
BOTTOM OF CASING	117.00	595.54

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **712.54**
Top of PVC Casing Elevation (feet, NAVDl88): **715.41**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-22R
Sheet 1 of 4

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	117'	SURF.ELEV.	712.54
LOCATION	Cells 3 and 4	COORDINATES	N	1506717.93	E	2074105.65	
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	6"	TOTAL % REC.	NA
WATER TABLE DEPTH	68'	ELEV.	644.5	TIME AFTER COMP.	1 hour	DATE TAKEN	6/14/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/13/2011
DRILLER	Boart	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	6/14/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	712.54	SAND, Silty; brick red; dry; fine grained							
1									
2									
3									
4									
5	707.54								
6									
7									
8									
9		SAND, Clayey; brick red; dry; fine grained with white chert fragments							
10	702.54								
11									
12									
13									
14									
15	697.54								
16									
17									
18		CLAY, Sandy; red and reddish yellow; damp; fine grained sand; low plasticity							
19									
20	692.54								
21									
22									
23									
24	688.54								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-22R
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **117'** SURF.ELEV. 712.54

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	687.54	CLAY, Sandy; red and reddish yellow; damp; fine grained sand; low plasticity							
26									
27									
28									
29									
30	682.54								
31									
32									
33									
34									
35	677.54								
36									
37									
38									
39		SAA except fine to medium sand; moist							
40	672.54								
41									
42									
43									
44									
45	667.54								
46									
47									
48									
49		SAND, Silty; tan; moist; medium grained sand with pieces of highly solutioned limestone							
50	662.54								
51									
52									
53									
54									
55	657.54	CLAY, Sandy; tan; moist; fine to medium grained sand; no plasticity							
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-22R
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **117'** SURF.ELEV. 712.54

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	655.54						6 inch steel casing to 57' bgs		
58		1' bed of white chert							
59									
60	652.54								
61		Mud filled void from 58' to 69'							
62									
63									
64									
65	647.54								
66									
67									
68									
69									
70	642.54	DOLOMITE; blue grey; hard; slightly weathered							
71									
72									
73		Void with no recovery from 70' to 85'							
74									
75	637.54								
76									
77									
78									
79									
80	632.54								
81									
82									
83									
84									
85	627.54								
86		DOLOMITE; blue grey; hard; slightly weathered							
87									
88	624.54								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-22R
Sheet 4 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **117'** SURF.ELEV. 712.54

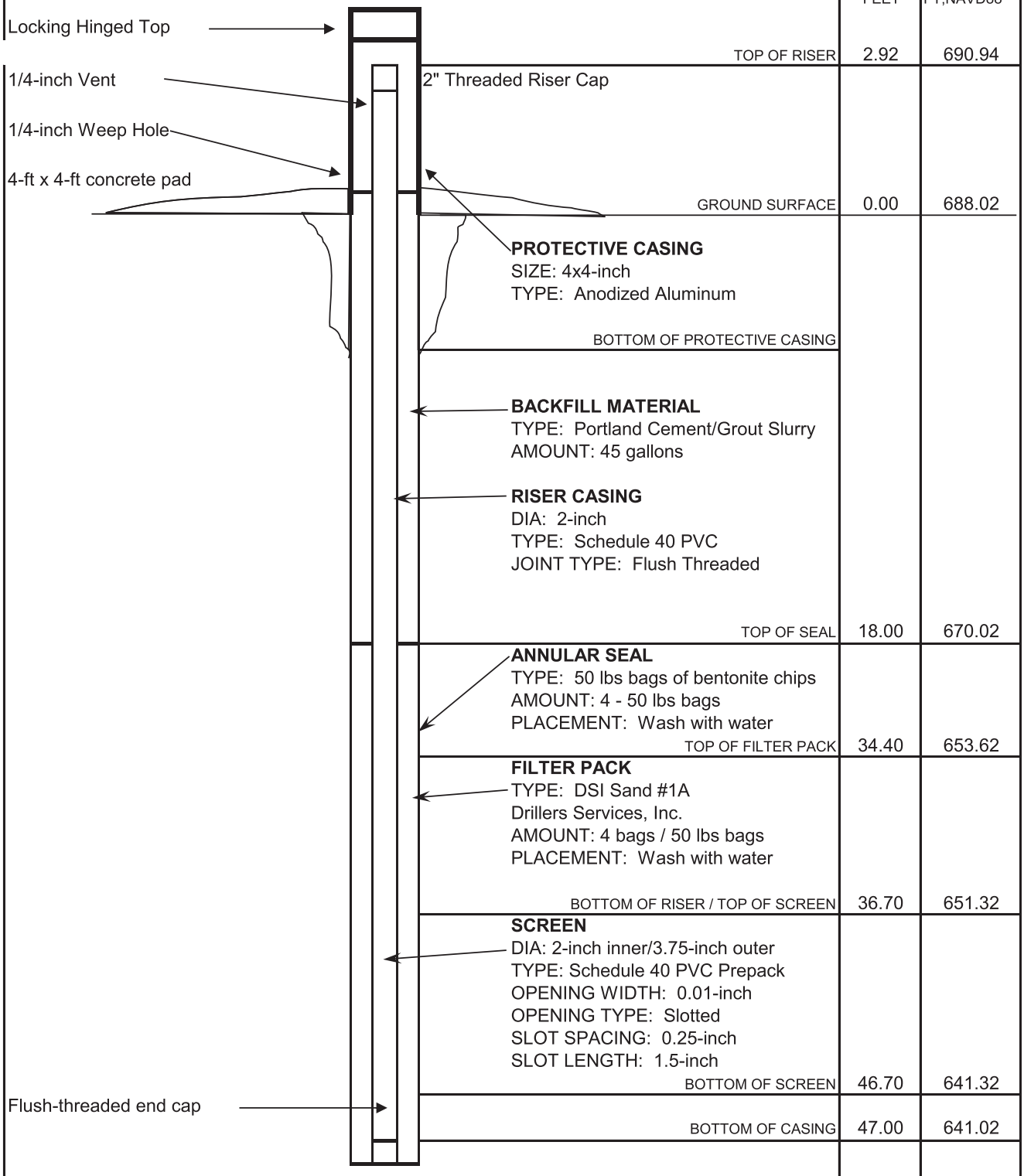
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	622.54								
91									
92		Void with no recovery from 88' to 103.5'							
93									
94									
95	617.54								
96									
97									
98									
99									
100	612.54								
101									
102									
103									
104									
105	607.54	DOLOSTONE; blue grey; hard; slightly weathered; contains purple chert inclusions							
106									
107									
108		DOLOMITE; blue grey; hard; slighlty weathered; horizontal fractures with iron staining along faces							
109									
110	602.54								
111									
112									
113									
114									
115	597.54								
116									
117									
118		BOH @ 117' bgs							
119									
120	592.54								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **688.02**
Top of PVC Casing Elevation (feet, NAVDl88): **690.94**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-23R
DATE CONSTRUCTED:	6/28/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.92	690.94
GROUND SURFACE	0.00	688.02
BOTTOM OF PROTECTIVE CASING		
TOP OF SEAL	18.00	670.02
TOP OF FILTER PACK	34.40	653.62
BOTTOM OF RISER / TOP OF SCREEN	36.70	651.32
BOTTOM OF SCREEN	46.70	641.32
BOTTOM OF CASING	47.00	641.02

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **688.02**
Top of PVC Casing Elevation (feet, NAVDl88): **690.94**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-23R
Sheet 1 of 2

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 47.0' | SURF.ELEV.: 688.02
LOCATION: Cells 3 and 4 | COORDINATES N: 1506701.61 | E: 2074446.53
ANGLE: 90 | BEARING: NA | CONTRACTOR: Boart Longyear | DRILL NO.: NA
DRILLING METHOD: Rotosonic | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: 6" | LENGTH: NA | CORE SIZE: 4" | TOTAL % REC.: NA
WATER TABLE DEPTH: 33.35' | ELEV.: 654.67 | TIME AFTER COMP.: 1 hour | DATE TAKEN: 6/28/2011
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 6/28/2011
DRILLER: Boart | RECORDER: C. Sellers | APPROVED: D. Brooks | DRILLING COMP. DATE: 6/28/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	688.02								
1		Top Soil							
2									
3									
4									
5	683.02	CLAY; silty;reddish brown							
6									
7		Chert; white; dry							
8									
9		SILT; clayey; brown; trace chert gravel							
10	678.02								
11									
12									
13									
14									
15	673.02								
16									
17		dolostone; some chert; dry							
18									
19									
20	668.02								
21									
22		CLAY; silty; reddish brown; chert gravel throughout							
23									
24	664.02								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-23R
Sheet 2 of 2

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **47.0'** SURF.ELEV. 688.02

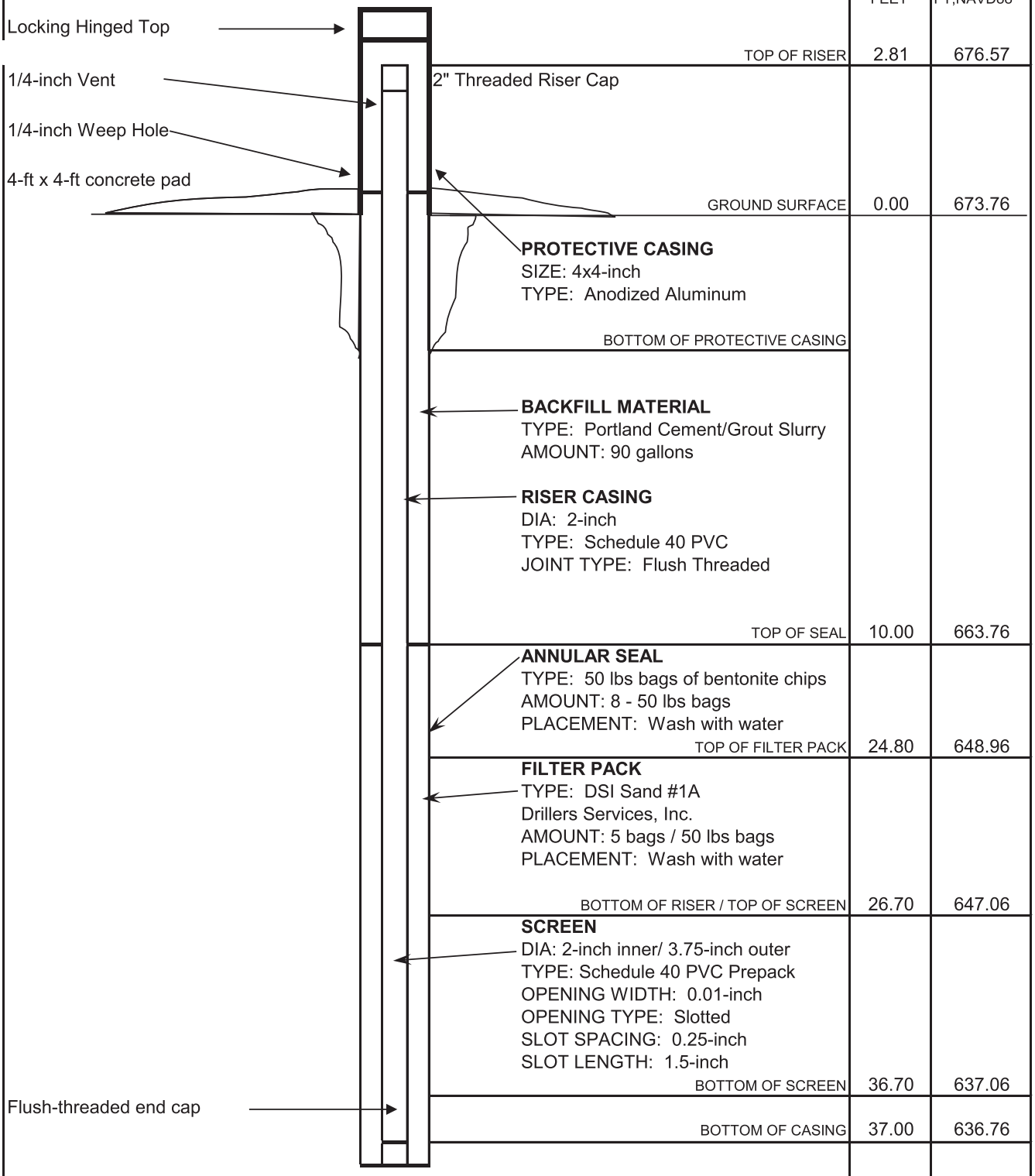
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	663.02								
26									
27									
28									
29									
30	658.02								
31									
32		Dolostone; blue gray; very little fractrures red staining at 28'							
33									
34									
35	653.02								
36									
37									
38									
39		SAA							
40	648.02								
41									
42									
43	645.02								
44									
45	643.02	Dolostone; blue gray; very fractured; red staining							
46									
47									
48		BOH @ 47.0' bgs							
49									
50	638.02								
51									
52									
53									
54									
55	633.02								
56									

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **673.76**
Top of PVC Casing Elevation (feet, NAVDl88): **676.57**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE: Rototsonic		
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-24R
DATE CONSTRUCTED:	6/21/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.81	676.57
2" Threaded Riser Cap		
GROUND SURFACE	0.00	673.76
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 90 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	10.00	663.76
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 8 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	24.80	648.96
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	26.70	647.06
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	36.70	637.06
BOTTOM OF CASING	37.00	636.76

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **673.76**
Top of PVC Casing Elevation (feet, NAVDl88): **676.57**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-24R
Sheet 1 of 2

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 37.0' | SURF.ELEV.: 673.76
LOCATION: Cells 3 and 4 | COORDINATES N: 1506694.13 | E: 2074806.11
ANGLE: 90 | BEARING: NA | CONTRACTOR: Boart Longyear | DRILL NO.: NA
DRILLING METHOD: Rotosonic | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: 6" | LENGTH: NA | CORE SIZE: 4" | TOTAL % REC.: NA
WATER TABLE DEPTH: 23.24' | ELEV.: 650.52 | TIME AFTER COMP.: 1 hour | DATE TAKEN: 6/21/2011
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 6/20/2011
DRILLER: Boart | RECORDER: C. Sellers | APPROVED: D. Brooks | DRILLING COMP. DATE: 6/21/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	673.76								
1		Top Soil							
2									
3		SAND; silty; brownish red; very fine grained							
4									
5	668.76								
6		SAND; silty; red; more silt; 10% clay							
7									
8									
9		SAA							
10	663.76								
11									
12		Dolostone; blue gray; dry							
13									
14									
15	658.76	Chert gravel; with silty clay; trace dolostone pieces							
16									
17									
18									
19									
20	653.76	Dolostone; blue gray; very fracture; minimal staining							
21									
22									
23									
24	649.76								

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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. GWC-24R

Sheet 2 of 2

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **37.0'** SURF.ELEV. 673.76

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Standard Penetration Test Blows	Standard Penetration Test N	Comments	% Rec	RQD
25	648.76								
26									
27									
28									
29									
30	643.76								
31									
32	641.76	Dolostone and Chert gravel; red staining on the dolostone							
33									
34									
35	638.76								
36									
37									
38		BOH @ 37.0' bgs							
39									
40	633.76								
41									
42									
43									
44									
45	628.76								
46									
47									
48									
49									
50	623.76								
51									
52									
53									
54									
55	618.76								
56									

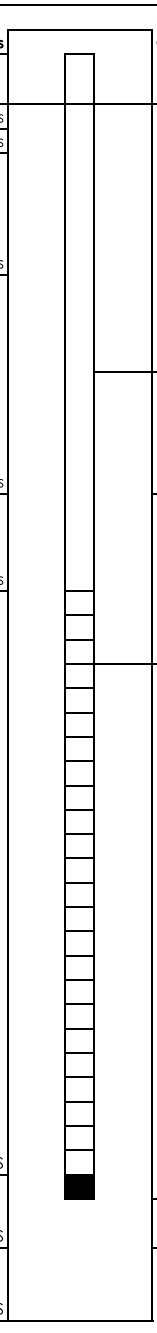
Well Installation Field Log

Project Name:	BOW Groundwater Investigation		Date Started:	10/29/2025	Date Completed: 10/30/2025
Borehole/Well No:	GWC-25		Northing (ft):	1506432.72	Easting (ft): 2075063.86
Plant Name:	Plant Bowen	BOW	Latitude:	34.13899083	Longitude: -84.89877526
Plant Address:	317 Covered Bridge Road, Euharlee GA 30120		Location Datum:	NAD83	Elevation Datum: NAVD88
Project & Task Number:	175569450	1.2	Concrete Pad Elevation*:	673.83	Stickup (ft, ags): 2.69
Goals/Task:	Groundwater Investigation		Native Ground Elevation	673.69	Borehole Depth (ft, bgs): 40.7
Drilling Company:	Cascade		Borehole Diameter (in):	6	Well Depth (ft, bgs): 40.65
Drilling Equipment/Rig Type:	TSI 150cc Track-Mounted Compact Crawler Sonic		Well Casing Diameter (in):	2	Screen length (ft): 10.0
Drilling Method:	4' X 6' Rotary Sonic		Top of Casing elev (ft):	676.52	Total Depth TOC (ft): 43.34
Sampling Method:	4 in Core Barrel		DTW at Completion (ft, bgs):	7.81	
Prepared By:	Devon Abuan				
FTL/Designee Review By:	Andrew Stevens				

Depth (feet)

673.83' AMSL

Well Construction



Materials Inventory

Stick up: 2.69 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing
Top: 2.69 ft, ags Bottom: 40.65 ft, bgs

Screen Type: U-Pack

Screen Slot Size: 0.010"

Screen
Top: 30.25 ft, bgs Bottom: 40.25 ft, bgs

Sump/end cap
Top: 40.25 ft, bgs Bottom: 40.65 ft, bgs

Grout Quantity: 70 gallons

Grout Type: Aquaguard

Grout
Top: 2.0 ft, bgs Bottom: 22.2 ft, bgs

Density
Initial: NA lbs/gal Return: NA lbs/gal

Bentonite Type: 3/8" PDS TR30 pellets

Bentonite Seal
Top: 22.2 ft, bgs Bottom: 26.7 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): 20/40 Mesh (Global #7)

Filter Pack:
Top: 26.7 ft, bgs Bottom: 40.7 ft, bgs

Notes:

*Concrete Pad is referenced as ground surface

SUBSURFACE LOG

Client Borehole ID: SCS
Stantec Boring No.: **GWC-25**
Client: Southern Company Services: Georgia Power
Boring Location: N 1506432.72, E 2075063.86
Project Number: 175569450
Surface Elevation: 673.69 ft*
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 10/28/25
Completed: 10/30/25
Project Location: Plant Bowen
Depth to Water: 22.0 ft
Date/Time: 10/28/25
Inspector: D. Abuan
Logger: D. Abuan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: Geoprobe 4x6 Rotary Sonic
Driller: Cascade Drilling Services
Overburden Drilling and Sampling Tools (Type and Size): telescoping 4" core barrel w/ 6" outer casing
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): Vertical

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	673.69	Top of Hole						
0		CLAYEY SAND, SC, red, fine, non-plastic, dry, poorly graded		RS1	0.0 - 10.0	10.0	N/A	Trace clay decreases w/ depth
8.5	665.2	WELL GRADED SAND, SP, yellowish red to yellowish brown, fine, non-plastic, dry, poorly graded						
10.0	663.7	POORLY GRADED SAND, SP, dark yellowish brown, fine, non-plastic, moist, poorly graded, trace mica.						Increase in water content
12.3	661.4	CLAYEY SAND, SC, dark yellowish brown to light yellowish brown, fine, non-plastic, moist to dry, poorly graded, micaceous.						Dark mineral spots (possible redox), trace clays decrease w/ depth, grades to sand

SUBSURFACE LOG

Client Borehole ID: SCS
Client: Southern Company Services: Georgia Power
Project Number: 175569450
Stantec Boring No.: **GWC-25**
Boring Location: N 1506432.72, E 2075063.86
Surface Elevation: 673.69 ft* Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
				RS2	10.0 - 20.0	10.0	N/A	
16.1	657.6	POORLY GRADED SAND, SP, strong brown to light yellowish brown, fine, non-plastic, dry to moist, poorly graded						
18.2	655.5							
19.1	654.6	GRAVELLY POORLY GRADED SAND TRACE GRAVEL, SP, strong brown, medium to coarse, non-plastic, moist, poorly graded, trace well rounded pebbles.						
20.0	653.7	SANDY POORLY GRADED GRAVEL, GP, reddish black and yellowish red, medium to coarse, non-plastic, moist, poorly graded, quartz pebbles to cobbles.						
		No recovery						Depth to Water 22.02' bgs
23.1	650.6							No Recovery
24.1	649.6	SANDY POORLY GRADED GRAVEL, GP, brown and dark brown, medium to coarse, non-plastic, moist, poorly graded, quartz pebbles to cobbles.						
		CLAYEY SILT TRACE SAND, ML, brownish yellow, wet, poorly graded, highly weathered dolostone, angular fragments of parent rock.		RS3	20.0 - 30.0	7.0	N/A	
26.0	647.7							Gravel lense, very dark gray
27.0	646.7	POORLY GRADED GRAVEL, GP, light yellowish brown to light gray, coarse, non-plastic, moist to wet, poorly graded, subangular quartz gravel cobbles and weathered dolostone mix.						Shelby tube 27.0'-29.0', no recovery
		No recovery						
								Shelby tube 29.0'-31.0', no recovery
								No Recovery

SUBSURFACE LOG

Client Borehole ID: SCS
Client: Southern Company Services: Georgia Power
Project Number: 175569450
Stantec Boring No.: **GWC-25**
Boring Location: N 1506432.72, E 2075063.86
Surface Elevation: 673.69 ft*
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
34		No recovery *(Continued)*		RS4	30.0 - 40.7	9.6	N/A	Shelby tube 34.0'-36.0', no recovery
35								
36.0	637.7							No Recovery
36		POORLY GRADED GRAVEL, GP, light gray and pale brown, coarse, non-plastic, wet, poorly graded, angular to subangular chert and dolostone pebbles to cobbles, with weathered dolostone.						
37								
38								
39								
39.6	634.1							
40		No recovery						No Recovery
40.7	633.0							

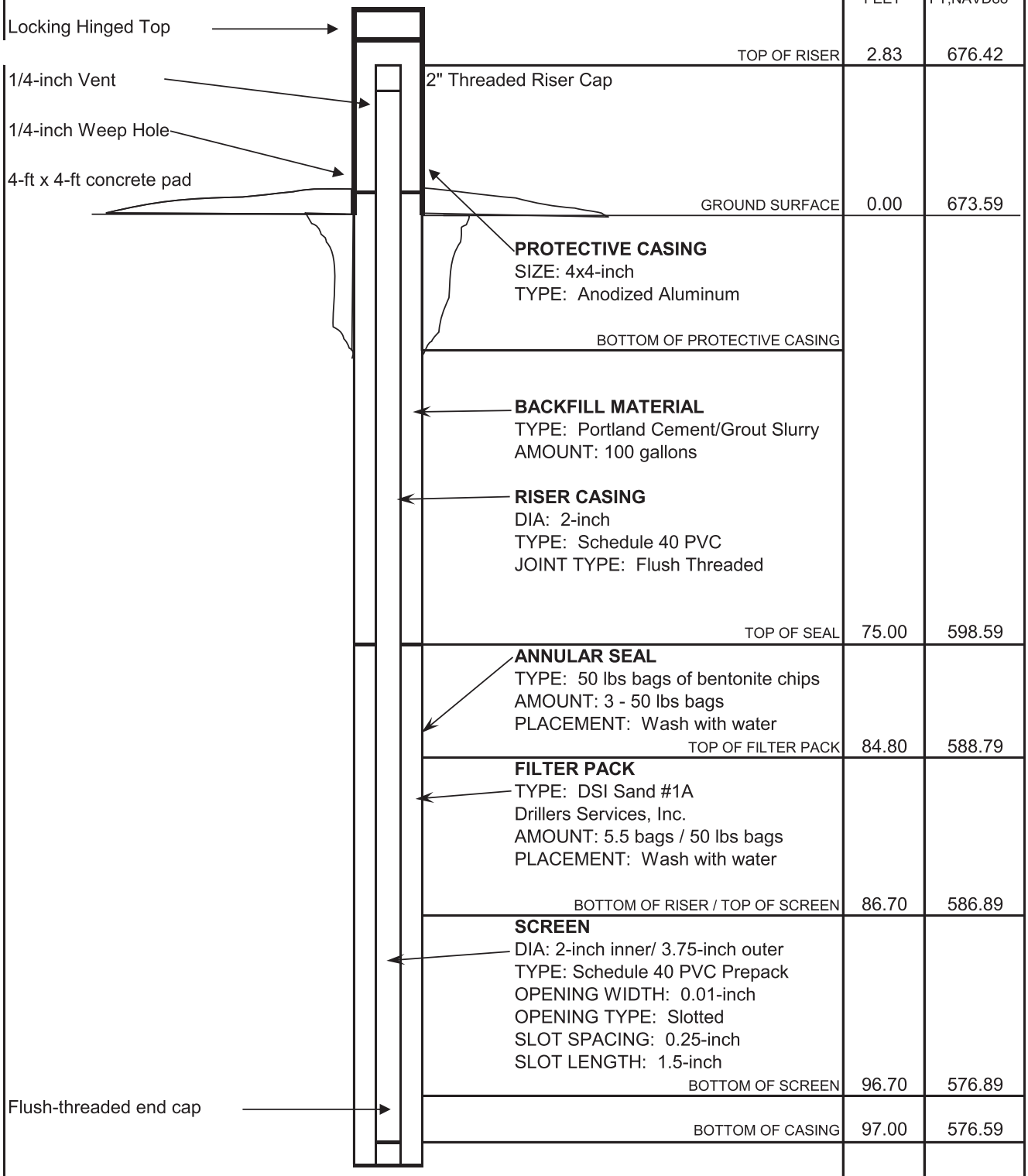
No Refusal /
Bottom of Hole at 40.7 Ft.
*All recorded depths on the boring logs and the provided surface elevations are referenced to the native ground surface

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **673.59**
Top of PVC Casing Elevation (feet, NAVD88): **676.42**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	C. Sellers	DRILLING METHODS:	Rotosonic	GWC-25R
DATE CONSTRUCTED:	6/21/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.83	676.42
2" Threaded Riser Cap		
GROUND SURFACE	0.00	673.59
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 100 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	75.00	598.59
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 3 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	84.80	588.79
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5.5 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	86.70	586.89
SCREEN DIA: 2-inch inner/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	96.70	576.89
BOTTOM OF CASING	97.00	576.59

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **673.59**
Top of PVC Casing Elevation (feet, NAVD88): **676.42**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-25R
Sheet 1 of 4

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	97.0'	SURF.ELEV.	673.59
LOCATION	Cells 3 and 4	COORDINATES	N 1506494.89		E 2075088.9		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	4"	TOTAL % REC.	NA
WATER TABLE DEPTH	22.62'	ELEV.	650.97	TIME AFTER COMP.	1 hour	DATE TAKEN	6/21/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/21/2011
DRILLER	Boart	RECORDER	C. Sellers	APPROVED	D. Brooks	DRILLING COMP. DATE	6/21/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	673.59								
1		Top Soil							
2									
3									
4									
5	668.59	SILT; clayey; light brown; trace sand; fine; dry							
6									
7									
8									
9									
10	663.59								
11									
12		SILT; trace sand; very micacous; yellowish orange							
13									
14									
15	658.59								
16		Chert gravel; well rounded							
17		SILT; sandy; medium grained sand; some chert gravel; light brown							
18									
19		SAND;with chert gravel; brownish yellow; medium grained; wet							
20	653.59								
21									
22									
23									
24	649.59								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-25R
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **97.0'** SURF.ELEV. 673.59

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	648.59								
26		Dolostone and chert gravel mixed							
27									
28									
29									
30	643.59								
31		Dolostone; cherty; blue gray; heavy red staining; very fractured;							
32									
33									
34									
35	638.59								
36									
37									
38									
39									
40	633.59								
41									
42		SAA							
43									
44									
45	628.59								
46									
47									
48									
49									
50	623.59								
51									
52		SAA							
53									
54									
55	618.59								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-25R
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **97.0'** SURF.ELEV. 673.59

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	616.59								
58									
59									
60	613.59								
61									
62									
63		SAA							
64									
65	608.59								
66									
67									
68									
69									
70	603.59								
71									
72		VOID; clay filled with dolostone gravel and trace sand							
73									
74									
75	598.59								
76									
77	596.59	Dolostone; blue gray							
78									
79									
80	593.59								
81									
82		Dolostone; blue gray; very fracture; heavy red staining							
83		Clay filled void from 83' to 84'							
84									
85	588.59								
86									
87									
88	585.59								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-25R
Sheet 4 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **97.0'** SURF.ELEV. 673.59

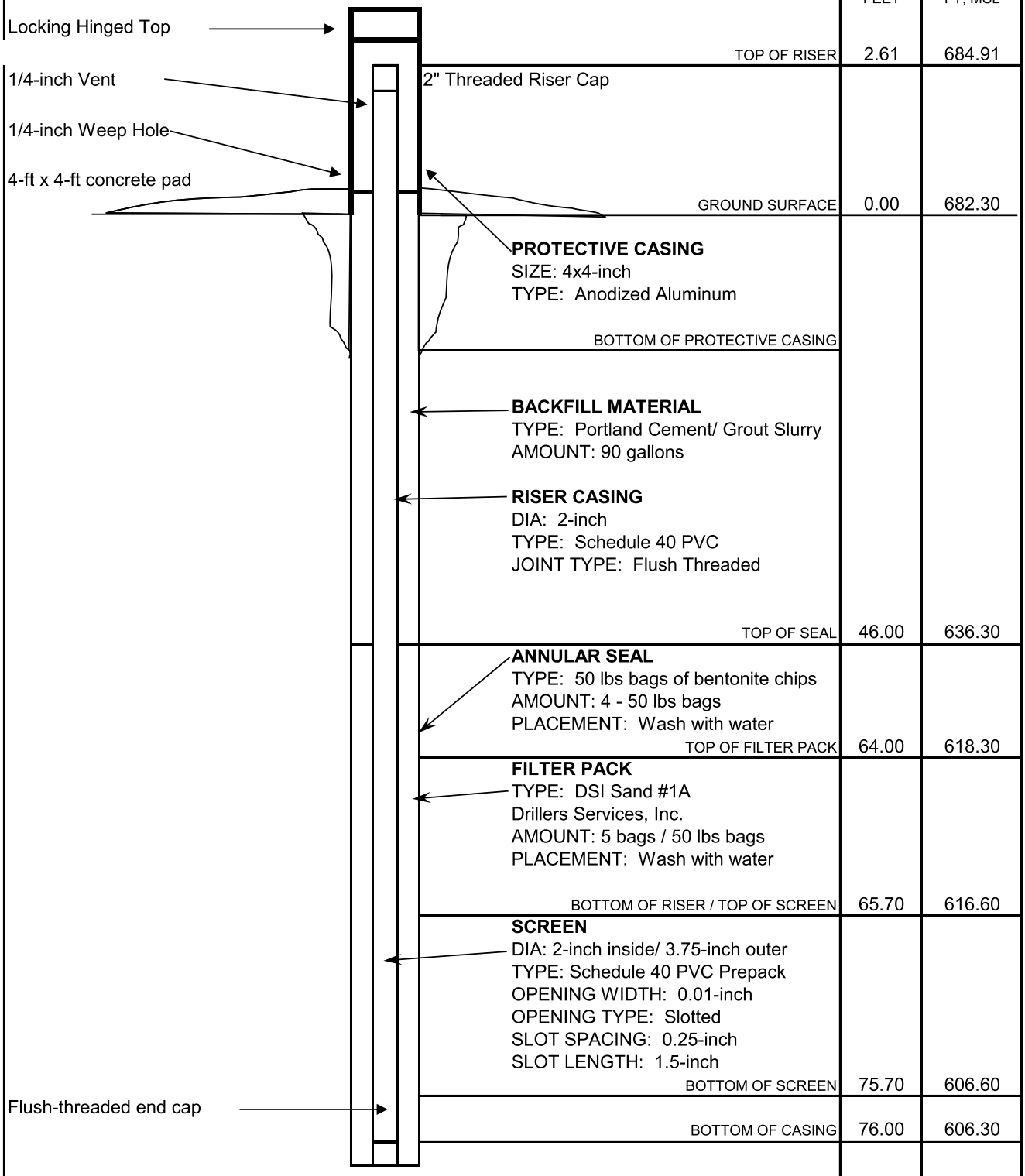
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89									
90	583.59								
91									
92		Dolostone; blue gray; heavy red staining; with coarse angular sand							
93									
94									
95	578.59								
96									
97									
98	575.59	BOH @ 97' bgs							
99									
100	573.59								
101									
102									
103									
104									
105	568.59								
106									
107									
108									
109									
110	563.59								
111									
112									
113									
114									
115	558.59								
116									
117									
118									
119									
120	553.59								

Monitoring Well was abandoned on March 16, 2022

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	D. Brooks	DRILLING METHODS:	Rotosonic	GWA-36
DATE CONSTRUCTED:	6/15/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.61	684.91
2" Threaded Riser Cap		
GROUND SURFACE	0.00	682.30
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/ Grout Slurry AMOUNT: 90 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	46.00	636.30
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 4 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	64.00	618.30
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	65.70	616.60
SCREEN DIA: 2-inch inside/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	75.70	606.60
BOTTOM OF CASING	76.00	606.30

Monitoring Well was abandoned on March 16, 2022

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36
Sheet 1 of 3

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	76'	SURF.ELEV.	682.3
LOCATION	Cells 3 and 4	COORDINATES	N 1505057.05		E 2073383.57		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	6"	TOTAL % REC.	NA
WATER TABLE DEPTH	31.8	ELEV.	650.5	TIME AFTER COMP.	1 hour	DATE TAKEN	6/16/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/16/2011
DRILLER	Boart	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	6/16/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	682.30	SAND, Silty; brick red; dry; fine grained							
1	681.30								
2	680.30								
3	679.30								
4	678.30								
5	677.30								
6	676.30	CLAY, Sandy; reddish yellow; damp; very fine to fine grained sand with grey chert fragments; low plasticity							
7	675.30								
8	674.30								
9	673.30								
10	672.30								
11	671.30								
12	670.30								
13	669.30								
14	668.30								
15	667.30								
16	666.30	SAND, Silty; pale yellow; damp; very fine grained							
17	665.30								
18	664.30								
19	663.30								
20	662.30								
21	661.30								
22	660.30								
23	659.30	CLAY, Silty; orange and white; low plasticity							
24	658.30								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36
Sheet 2 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **76'** SURF.ELEV. 682.3

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Standard Penetration Test Blows	Standard Penetration Test N	Comments	% Rec	RQD
25	657.30	CLAY, Silty; orange and white; low plasticity							
26	656.30								
27	655.30								
28	654.30								
29	653.30								
30	652.30								
31	651.30								
32	650.30								
33	649.30								
34	648.30								
35	647.30								
36	646.30								
37	645.30								
38	644.30								
39	643.30								
40	642.30								
41	641.30	SAND, Clayey; brown and orange; moist; fine grained sand with pieces of weakly cemented sandstone							
42	640.30								
43	639.30								
44	638.30								
45	637.30	CLAY, Sandy; orange and brown; moist; fine grained sand with pieces of chert and dolomite							
46	636.30								
47	635.30								
48	634.30								
49	633.30								
50	632.30								
51	631.30								
52	630.30								
53	629.30								
54	628.30								
55	627.30								
56	626.30								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36
Sheet 3 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **76'** SURF.ELEV. 682.3

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	625.30	CLAY, Sandy; orange and brown; moist; fine grained sand with pieces of chert and dolomite							
58	624.30								
59	623.30								
60	622.30								
61	621.30								
62	620.30								
63	619.30								
64	618.30								
65	617.30								
66	616.30								
67	615.30								
68	614.30								
69	613.30								
70	612.30								
71	611.30								
72	610.30								
73	609.30								
74	608.30								
75	607.30								
76	606.30								
77	605.30	BOH @76' bgs							
78	604.30								
79	603.30								
80	602.30								
81	601.30								
82	600.30								
83	599.30								
84	598.30								
85	597.30								
86	596.30								
87	595.30								
88	594.30								

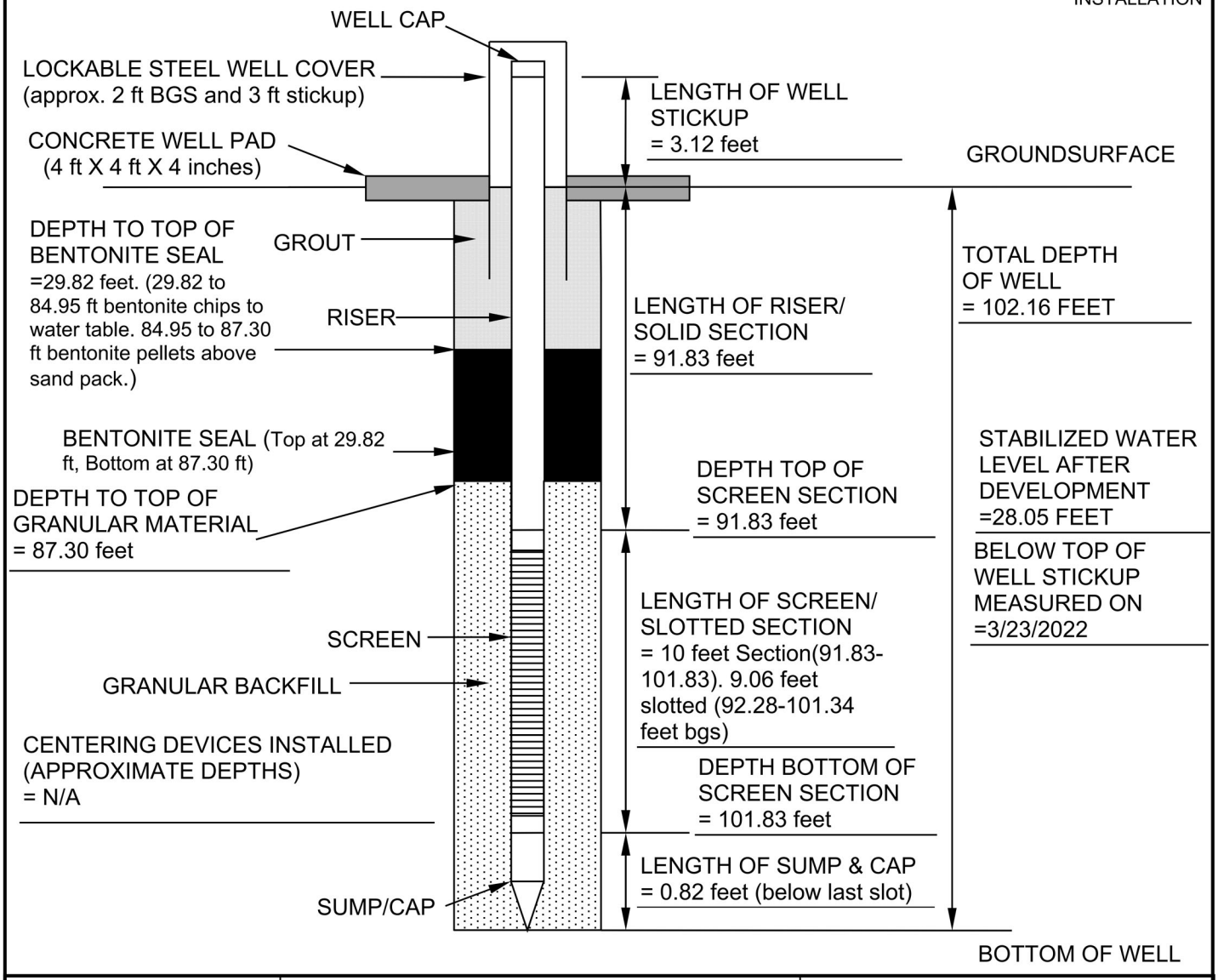
Well ID updated to GWC-36A for Rev. 1 of 2024 Groundwater Monitoring Plan

WELL INSTALLATION RECORD

JOB NAME	**Plant Bowen Cells 3 & 4**	PROJECT NO.	**6122-16-0287**
WELL NUMBER	**GWC-36A**	INSTALLATION DATE	**3/18/2022**
LOCATION*	**NORTH: 1505026.95 EAST: 2073357.46**	GROUND ELEV:	**680.63 feet NAVD88**
WOOD FIELD REPRESENTATIVE	**T. Parker**	DRILLER/ CONTRACTOR	**C. Franklin/Cascade**
GRANULAR BACKFILL MATERIAL	**20/40 mesh Silica Filter Sand**	DRILLING TECHNIQUE	**Rotosonic**
SCREEN MATERIAL	**2-inch I.D. Flush Joint Slotted PVC (Sch. 40)**	BOREHOLE DIAMETER	**± 6 inch**
SLOT SIZE	**0.010-inch Machine Cut**	REFERENCE POINT** ELEVATION*	**683.75 ft NAVD88**
RISER MATERIAL	**2-inch I.D. Flush joint Solid PVC (Sch. 40)**	LOCK TYPE/KEY CODE	**Master**

* Preliminary-Final location/elevation to be determined by As-Built Survey
** Reference point is notch cut in the top of PVC casing

NOTE: NOT TO SCALE, ALL DEPTHS RECORDED ARE RELATIVE TO EXISTING GROUND SURFACE AT TIME OF INSTALLATION



wood.

Notes:
Sand –6.5 bags of 20/40 mesh sand for prepack & screen interval
Bentonite – 3 buckets 3/8" uncoated pellets for bentonite seal above the sand filter pack; 7 bags of 3/8" chips added to bring level up to water table
Grout – 2 bags of Aqua-guard® bentonite/grout mix with ~40 gals water

Review: RNQ Date: 3/27/2022

Well Installation Record

GWA-36A

GWC-36A BORING LOG

PROJECT NUMBER 6122160287
PROJECT NAME Plant Bowen
CLIENT Georgia Power
ADDRESS 317 Covered Bridge Rd., Euharlee GA
LOCATION Cells 3 & 4

DRILLING COMPANY Cascade Drilling
DRILLER Cory Franklin
RIG TYPE/METHOD Terrasonic CC150/SONIC
CASING DIA. 2-in I.D. PVC
BORING DEPTH 102.9 ft

COORDINATES N 1505026.95, E 2073357.46
COORD SYS Ga State Plane West (NAD 83)
COMPLETION Stick-up w/ protective casing
GROUND SURFACE ELEV. 680.63 ft NAVD 88
WELL TOC ELEVATION 683.75 ft NAVD 88

COMMENTS Start drilling on 3/16/2022 and complete drilling on 3/16/2022. Well construction completed on 3/18/2022 with installation of well cover and concrete pad. Well surveyed on 3/22/2022.

LOGGED BY T. Parker
CHECKED BY R. Quinn

Depth (ft)	Samples	Sample Run (Recovery)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
0	0-10	#1 (96%)		Fine grain silty CLAY, moist, mottled light brown/yellow/orange. Low to med. plasticity with white weathered limestone fragments (<3%), 1 to 5 mm, subangular to subrounded.	CL		680
2							678
4							676
6							674
8							672
10	10-20	#2 (76%)		Fine grained silty CLAY, mottled light brown at top, transitioning to mottled orange/red silty clay at 12.1 ft to 14.3 ft and then back to mottled light yellow/orange silty clay, stiffening in lower 1 ft. Low plasticity. ~5% limestone/chert fragments and rocks, 2 to 60 mm.	CL		670
12							668
14						Bentonite grout mix	666
16							664
18							662
20	20-30	#3 (100%)		Fine silty CLAY, mottled light brown to yellow/orange with some light tan and red/orange and more clayey (28 ft - 30 ft). ~5% weathered limestone (white) fragments and rocks, 2-20 mm, subrounded.	CL		660
22							658
24							656
26							654
28							652
30	30-35	#4 (100%)		Fine silty mottled CLAY, higher moisture content with high plasticity and 25-35% weathered limestone and chert, 2-80 mm. Cobble at 35 ft.	CL	Bentonite seal (chips 29.82-84.95 ft, pellets 84.95-87.30 ft, both prior to hydration).	650
32							648
34							646

GWC-36A BORING LOG

Depth (ft)	Samples	Sample Run (Recovery)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
36	35-40	#4 (100%)		Fine silty mottled CLAY, higher moisture content with high plasticity and 25-35% weathered limestone and chert, 2-80 mm. Cobble at 35 ft.	CL		644
38							642
40	40-50	#5 (100%)		Gravelly, silty CLAY, mottled light brown and yellow, medium stiff, slight plasticity, ~50% fine gravel/gravel/cobble mix of weathered limestone and chert up to 140 mm (at 45.5 ft). Moisture increased and core is wet from 49 ft to 50 ft.	CL		640
42							638
44							636
46							634
48							632
50	50-60	#6 (20%)		Gravelly fine silty CLAY, wet, yellow/white/tan, soft with ~50% fine gravel/ gravel/cobble. No plasticity. Angular limestone/chert fragments throughout, fine to coarse angular chert gravel and angular to subrounded cobble up to 140 mm. Poor recovery (2 ft out of a 10 ft run).	CL		630
52							628
54							626
56						Bentonite seal (chips 29.82-84.95 ft, prior to hydration, pellets 84.95-87.30 ft, prior to hydration). Top of bentonite seal at 27.00 ft after hydration.	624
58							622
60	60-70	#7 (80%)		Gravelly fine silty CLAY, upper 4 ft mottled yellow/orange/white, 4 to 8 ft brown/orange/white. Upper 2 ft of recovered core very wet, 2 to 8 ft recovered core is moist. ~50% fine gravel/gravel mix of weathered limestone, dolomite and chert.	CL		620
62							618
64							616
66							614
68							612
70	70-80	#8 (98%)		Gravelly fine silty CLAY, mottled yellow/light to dark brown. Very soft, high plasticity. 50% gravel and cobbles up to 110 mm. Angular dark grey/black chert 70-80 ft. Manganese lens at 79.5 ft of recovered core. Upper 1 ft very wet then moist then wet at about 77 - 78 ft.	CL		610
72							608
74							606
76							604

produced by ESlog.ESdat.net on 14 Apr 2022

GWC-36A BORING LOG

Depth (ft)	Samples	Sample Run (Recovery)	Graphic Log	Material Description	USCS	Well Diagram	Elevation (ft)
78							602
80	80-90	#9 (0%)		No recovery.			600
82							598
84							596
86							594
88							592
90	90-100	#10 (10%)		Gravelly SILT yellow/light brown, wet with >50% mix of fine gravel and gravel up to 60 mm, composed of angular chert, minor quartz, and dolomite. Bedrock at 100.5 ft	ML-GM		590
92							588
94							586
96							584
98							582
100	100-102.9	#11 (34%)		100.0 - 100.5 ft Gravelly SILT. 100.5 - 102.9 ft Dolomite, light gray, no fines.	Rock		580
102							578
104				Boring terminated at 102.9 feet in bedrock			576
106							574
108							572
110							570
112							568
114							566
116							564
118							562

Bentonite seal (chips 29.82-84.95 ft, prior to hydration, pellets 84.95-87.30 ft, prior to hydration). Top of bentonite seal at 27.00 ft after hydration.

Sand filter pack and pre-pack screen

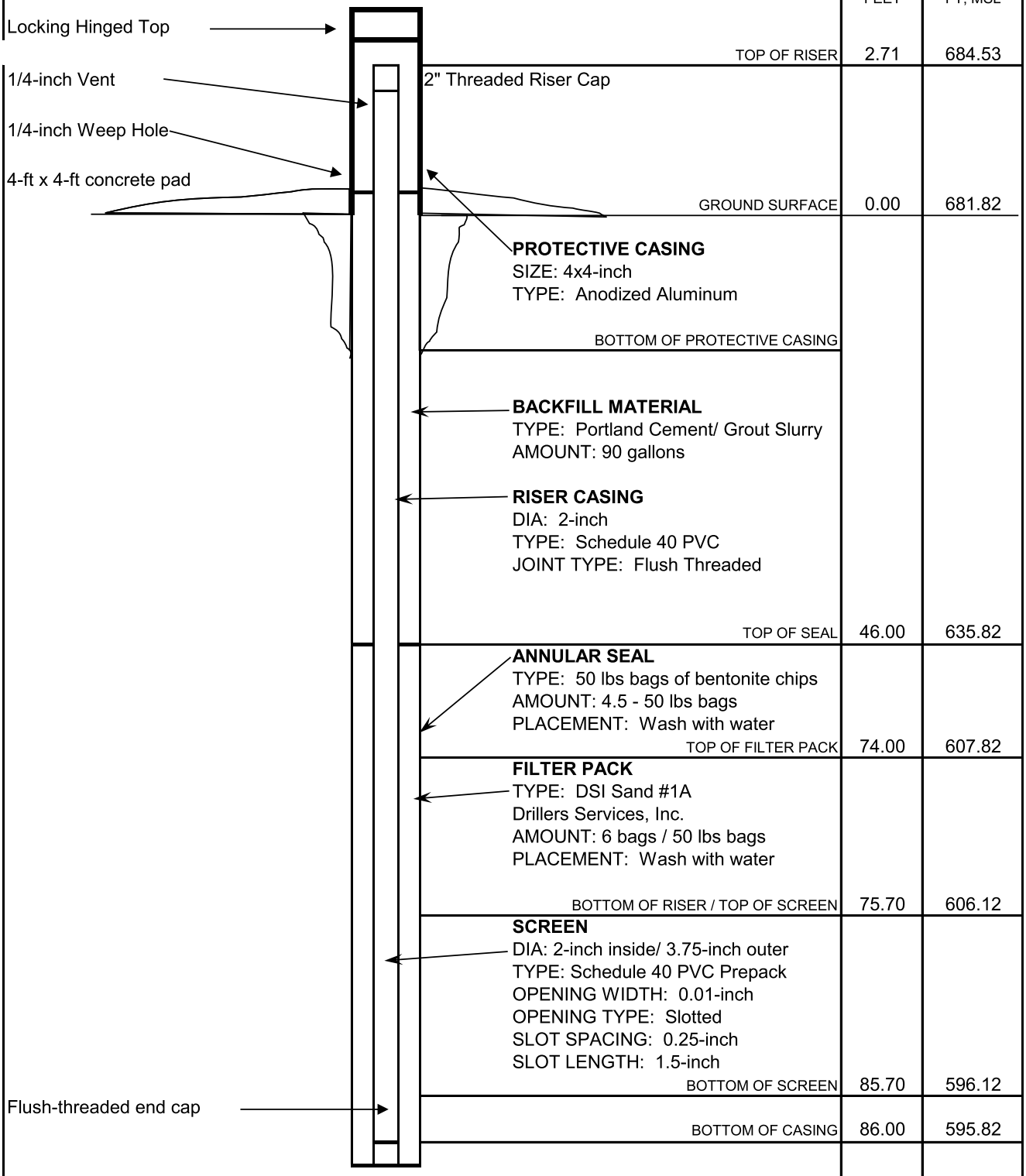
produced by ESlog.ESdat.net on 14 Apr 2022

Monitoring Well was abandoned on July 1, 2021

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	
LOGGER:	D. Brooks	DRILLING METHODS:	Rotosonic	GWA-36R
DATE CONSTRUCTED:	6/15/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.71	684.53
2" Threaded Riser Cap		
GROUND SURFACE	0.00	681.82
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/ Grout Slurry AMOUNT: 90 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	46.00	635.82
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 4.5 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	74.00	607.82
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 6 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	75.70	606.12
SCREEN DIA: 2-inch inside/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	85.70	596.12
BOTTOM OF CASING	86.00	595.82

Monitoring Well was abandoned on July 1, 2021

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36R
Sheet 1 of 3

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	86'	SURF.ELEV.	681.82
LOCATION	Cells 3 and 4	COORDINATES	N 1505050.78		E 2073384.01		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	4"	TOTAL % REC.	NA
WATER TABLE DEPTH	32	ELEV.	649.82	TIME AFTER COMP.	1 hour	DATE TAKEN	6/15/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/14/2011
DRILLER	Boart	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	6/15/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	681.82	SAND, Silty; brown; dry; fine grained							
1	680.82								
2	679.82								
3	678.82	SAA except yellowish red							
4	677.82								
5	676.82								
6	675.82								
7	674.82	CLAY, Sandy; reddish and pale yellow; damp; very fine to fine grained sand with grey chert fragments; low plasticity							
8	673.82								
9	672.82								
10	671.82								
11	670.82								
12	669.82								
13	668.82								
14	667.82								
15	666.82								
16	665.82								
17	664.82								
18	663.82	SAND, Silty; pale yellow and white; damp; very fine grained							
19	662.82								
20	661.82								
21	660.82								
22	659.82								
23	658.82	CLAY, Silty; orange and white; low plasticity							
24	657.82								

Form GS9901 8-19-2008

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36R
Sheet 2 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **86'** SURF.ELEV. 681.82

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	656.82	CLAY, Silty; orange and white; low plasticity							
26	655.82								
27	654.82								
28	653.82								
29	652.82								
30	651.82								
31	650.82	No Recovery 26' to 36'							
32	649.82								
33	648.82								
34	647.82								
35	646.82								
36	645.82								
37	644.82								
38	643.82	CLAY, Sandy; strong brown, white, and orange; damp very fine to fine grained with pieces of grey chert							
39	642.82								
40	641.82								
41	640.82	SAND, Clayey; brown and orange; moist; fine grained sand with pieces of weakly cemented sandstone							
42	639.82								
43	638.82								
44	637.82								
45	636.82	CLAY, Sandy; orange, white, and brown; moist; fine fine grained sand with pieces of chert and dolomite							
46	635.82								
47	634.82								
48	633.82								
49	632.82								
50	631.82								
51	630.82								
52	629.82								
53	628.82								
54	627.82								
55	626.82								
56	625.82								

Monitoring Well was abandoned on July 1, 2021

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWA-36R
Sheet 3 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **86'** SURF.ELEV. 681.82

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	624.82	1' bed of dolomitic gravel							
58	623.82								
59	622.82	CLAY, Sandy; orange and brown; moist; fine grained sand with pieces of chert and dolomite							
60	621.82								
61	620.82								
62	619.82								
63	618.82								
64	617.82								
65	616.82								
66	615.82								
67	614.82								
68	613.82								
69	612.82								
70	611.82								
71	610.82								
72	609.82								
73	608.82	DOLOMITE; blue grey; hard; slightly weathered; some horizontal fractures with sand infilling							
74	607.82								
75	606.82								
76	605.82								
77	604.82								
78	603.82								
79	602.82								
80	601.82								
81	600.82								
82	599.82								
83	598.82								
84	597.82								
85	596.82								
86	595.82								
87	594.82	BOH @ 86' bgs							
88	593.82								

Form GS9901 8-19-2008

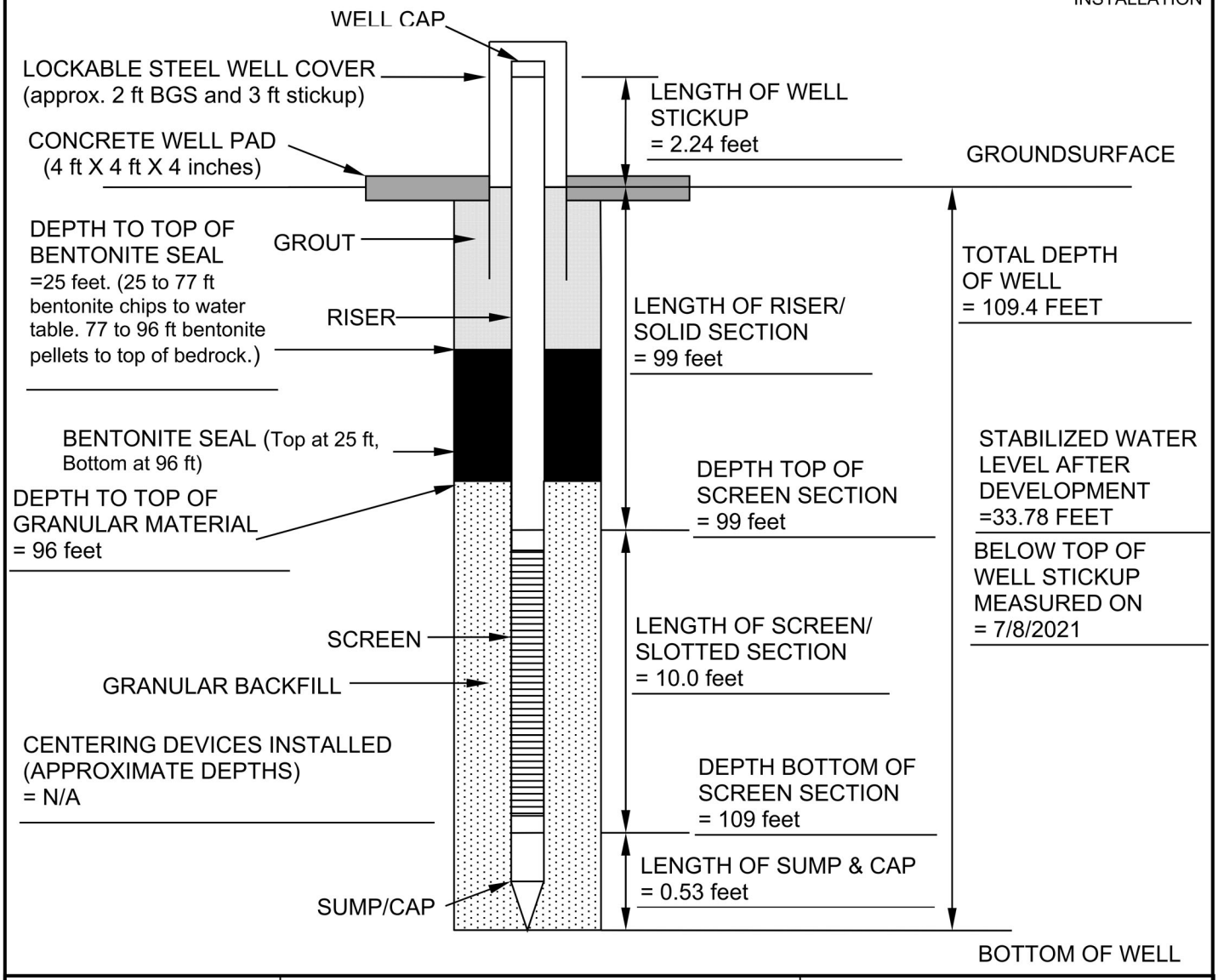
Well ID updated to GWC-36RA for Rev 1 of 2024 Groundwater Monitoring Plan

WELL INSTALLATION RECORD

JOB NAME	**Plant Bowen Cells 3 & 4**	PROJECT NO.	**6122-16-0287**
WELL NUMBER	**GWC-36RA**	INSTALLATION DATE	**7/2/2021**
LOCATION*	**NORTH: 1505060.13 EAST: 2073365.45**	GROUND ELEV:	**682.26 feet NAVD88**
WOOD FIELD REPRESENTATIVE	**A. Shoredits**	DRILLER/ CONTRACTOR	**Cascade**
GRANULAR BACKFILL MATERIAL	**#1 Silica Filter Sand**	DRILLING TECHNIQUE	**Rotosonic**
SCREEN MATERIAL	**2-inch I.D. Flush Joint Slotted PVC (Sch. 40)**	BOREHOLE DIAMETER	**± 6 inch**
SLOT SIZE	**0.010-inch Machine Cut**	REFERENCE POINT** ELEVATION*	**685.20 ft NAVD88**
RISER MATERIAL	**2-inch I.D. Flush joint Solid PVC (Sch. 40)**	LOCK TYPE/KEY CODE	**Master**

* Preliminary-Final location/elevation to be determined by As-Built Survey
** Reference point is notch cut in the top of PVC casing

NOTE: NOT TO SCALE, ALL DEPTHS RECORDED ARE RELATIVE TO EXISTING GROUND SURFACE AT TIME OF INSTALLATION



wood.

Notes:
Sand – 2.3 bags of #1 sand for prepack & screen interval
Bentonite – 5 buckets 3/8" coated and uncoated pellets for bedrock plug; 7 bags of 3/8" chips added to above groundwater elevation
Grout – 2 bags of bentonite mix with ~50 gals water

Review: RNQ Date: 8/12/2021

Well Installation Record

GWA-36RA

GWC-36RA

PROJECT NUMBER 6122160287
PROJECT NAME Plant Bowen
CLIENT Georgia Power
ADDRESS 317 Covered Bridge Rd., Euharlee GA
LOCATION Cells 3 & 4

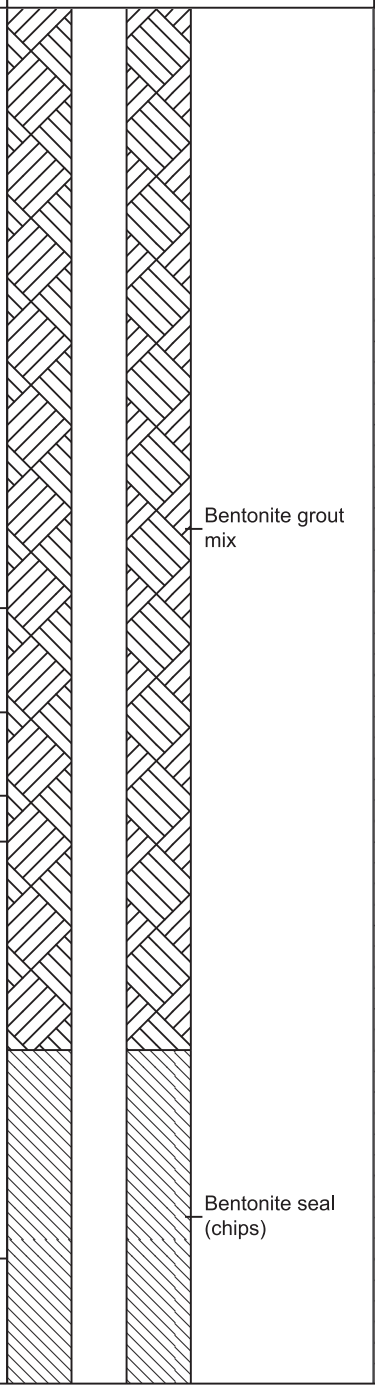
DRILLING COMPANY Cascade Drilling
DRILLER C. Franklin
RIG TYPE/ METHOD TSI CC150/ SONIC
CASING DIA. 2-in I.D. PVC
BORING DEPTH 109.5 ft

COORDINATES N 1505060.13, E 2073365.45
COORD SYS Ga State Plane West (NAD 83)
COMPLETION Stick-up w/ protective casing
SURFACE ELEVATION 682.26 ft NAVD 88
WELL TOC 685.20 ft NAVD 88

COMMENTS Start drilling on 6/29/2021 and complete drilling on 6/30/2021. Well construction completed on 7/2/2021 with installation of well cover and concrete pad.

LOGGED BY A. Shoredits
CHECKED BY J. Quinn

Depth (ft)	Samples	Sample Run (Recovery)	Material Description	USCS	Elevation (ft)
0	0-10	#1 (0%)	Air knife utility clearance No sample	-	682
2					680
4					678
6					676
8					674
10	10-20	#2 (56%)	No sample		672
12					670
14			Gravelly silty SAND with clay, red/grey/black, loose, dry, coarse angular chert	SW-SC	668
16					666
18			Gravelly silty SAND, tan/grey, very loose, dry	SM	664
20			CLAY with silts, yellow/umber/orange, medium stiff, slight plasticity, dry, some fine gravel	CL	662
22	20-30	#3 (100%)	CLAY, yellow/white/tan, soft, high plasticity, moist, chert fragments throughout, fine to coarse angular gravel 21 ft cobble sized rounded chert	CH	660
24					658
26					656
28					654
30	30-40	#4 (0%)	No recovery Drill casings did not appear to drop during drilling. Very soft clays and gravel are estimated to be present at 30-40 feet and were not retained in the sampling casing.	-	652
32					650



produced by ESlog.ESdat.net on 18 Aug 2021

GWC-36RA BORING LOG

Depth (ft)	Samples	Sample Run (Recovery)	Material Description	USCS	Elevation (ft)
34					648
36					646
38					644
40	40-50	#5 (100%)	CLAY with gravels, fine to coarse grained, yellow/black/red, very soft, high plasticity, wet, angular dark grey/black chert throughout	CH	642
42					640
44					638
46			CLAY, yellow/tan, soft, high plasticity, moist, trace quartz gravel		636
48			Sandy CLAY, purple/brown/red/brown, very stiff, low plasticity, moist, coarse to fine quartz gravel throughout, sub-angular to sub-rounded, some fine sand	CL	634
50			Silty CLAY, yellow/black, stiff, medium plasticity, moist, trace fine quartz gravel throughout, sub-angular	CH	632
	50-60	#6 (100%)	Gravelly SAND, fine to coarse grained, grey/brown, loose, wet	SW	
			Silty SAND, fine grained, yellow/tan/brown, loose, moist, relic decomposed sandstone texture with oxidation	SM-SP	
52			Gravelly CLAY, dark brown/yellow, very soft, low plasticity, fine to coarse angular quartz gravel	CL-GC	630
54					628
56			CLAY with gravels, brown/tan/orange, soft to medium stiff, medium to high plasticity, moist, coarse sub-rounded quartz and sandstone gravel	CH-CL	626
58					624
60	60-70	#7 (100%)	Silty CLAY, yellow, medium stiff, medium plasticity, moist, sub-rounded quartz cobble and angular dark grey chert cobble	CL	622
62			Sandy CLAY and gravel, brown/tan/yellow, soft, low to medium plasticity, moist to wet, fine to coarse sub-rounded quartz gravel and rounded cobbles	CL-SW	620
64					618
66					616
68					614
70	70-80	#8 (80%)			612
72					610

Well Diagram: Bentonite seal (chips)

GWC-36RA

BORING LOG

Depth (ft)	Samples	Sample Run (Recovery)	Material Description	USCS	Elevation (ft)
74					608
76					606
78			Dolomite, dark grey, moist (acid test confirmation)	-	604
80	80-85	#9 (100%)			602
82			Decomposed dolomite with sub-rounded quartz gravel inclusions and cobbles, wet 83.2-85 ft interstitial sandy clay		600
84					598
86	85-90	#10 (20%)			596
88					594
90			Dolomite, dark grey, wet, no visible decomposition		592
92	90-98	#11 (38%)	95-95.3 ft brown surface staining 96.8 ft sub-rounded quartz gravel inclusion		590
94					588
96					586
98	98-108	#12 (100%)	Clayey GRAVEL, grey/orange, loose, moist to wet, angular gravel with orange sticky clay matrix/cement	GC-SC	584
100			Sandy CLAY, orange/yellow/grey, very soft, medium plasticity, moist, fine grained sands	CL-SC	582
102			Dolomite, fractured with interstitial clays, grey/brown/tan, moist	-	580
104			103.7-104 ft silty sand, brown 105-105.6 dry rock lens		578
106					576
108					574
110			Boring terminated at 109.5 feet in bedrock		572
112					570

Well Diagram: Bentonite seal (chips); Bentonite seal (pellets); Sand filter pack and pre-pack screen

produced by ESlog.ESdat.net on 18 Aug 2021

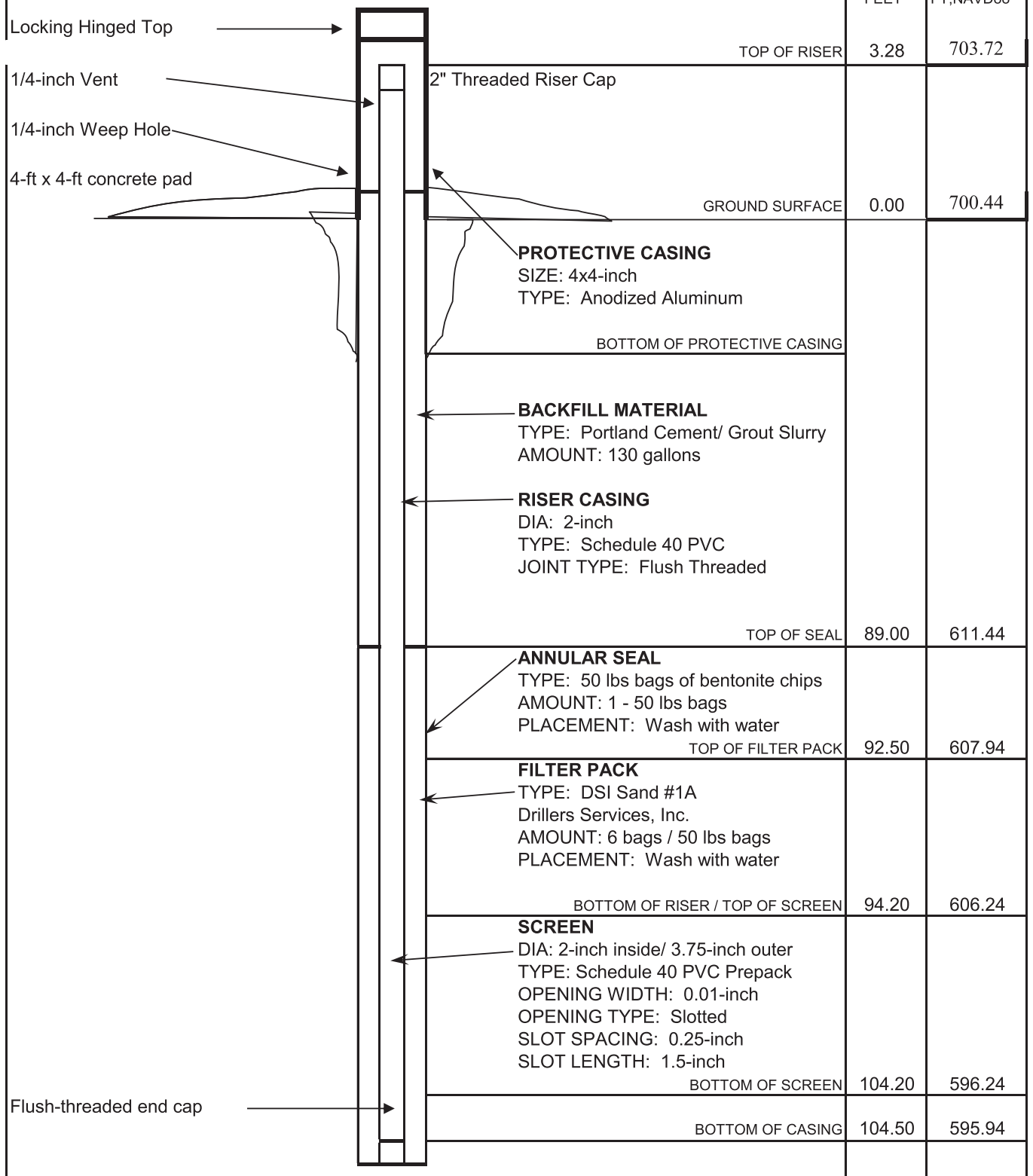
Well ID updated to GWC-37 for Rev 1 2024 Groundwater Monitoring Plan

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **700.44**
Top of PVC Casing Elevation (feet, NAVDl88): **703.72**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	SCS CFS	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	CME 550	GWC-37
LOGGER:	D. Brooks	DRILLING METHODS:	Hollow Stem Auger	
DATE CONSTRUCTED:	9/11/2013			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	3.28	703.72
2" Threaded Riser Cap		
GROUND SURFACE	0.00	700.44
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/ Grout Slurry AMOUNT: 130 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	89.00	611.44
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 1 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	92.50	607.94
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 6 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	94.20	606.24
SCREEN DIA: 2-inch inside/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	104.20	596.24
BOTTOM OF CASING	104.50	595.94

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **700.44**
Top of PVC Casing Elevation (feet, NAVDl88): **703.72**

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-37
Sheet 1 of 4

SITE: **Plant Bowen CCB Disposal Facility** | HOLE DEPTH: 104.5' | SURF.ELEV.: 700.44
LOCATION: Cells 3 and 4 | COORDINATES N: 1505345.45 | E: 2073069.32
ANGLE: 90 | BEARING: NA | CONTRACTOR: SCS Field Services | DRILL NO.: NA
DRILLING METHOD: Hollow Stem Auger | NO. SAMPLES: Continuous | NO. U.D. SAMPLES: NA
CASING SIZE: NA | LENGTH: NA | CORE SIZE: 4" | TOTAL % REC.: NA
WATER TABLE DEPTH: 45' | ELEV.: 655.44 | TIME AFTER COMP.: 1 hour | DATE TAKEN: 9/11/2013
TYPE GROUT: NA | QUANTITY: NA | MIX: NA | DRILLING START DATE: 9/9/2013
DRILLER: Denty | RECORDER: D. Brooks | APPROVED: D. Brooks | DRILLING COMP. DATE: 9/11/2013

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	700.44	SAND, Silty; reddish brown; dry; very fine to fine grained sand							
1									
2		SAA except red; fine grained							
3									
4									
5	695.44	SAND, Clayey; brick red; damp; very fine to fine grained							
6									
7									
8									
9									
10	690.44	SAA except red and yellow							
11									
12									
13									
14									
15	685.42								
16									
17									
18									
19									
20	680.44	SAND, Silty; yellow and white; damp; fine to medium grained with white chert fragments							
21									
22	678.44								
23									
24	676.44								

Form GS9901 8-19-2008

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-37
Sheet 2 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **104.5** SURF.ELEV. 700.44

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Standard Penetration Test Blows	Standard Penetration Test N	Comments	% Rec	RQD
25	675.44	CLAY, Sandy; yellow and white; damp; very fine to fine grained sand with small grey chert fragments							
26									
27									
28									
29									
30	670.44								
31									
32									
33									
34									
35	665.44								
36									
37									
38									
39									
40	660.44								
41		SAA with grey chert increasing in content and size; moist							
42									
43									
44									
45	655.44								
46									
47									
48									
49		SAND, Clayey; yellow and white; moist; fine to medium grained							
50	650.44								
51		CLAY, Sandy with Silt; pale yellow; moist; very fine to fine grained sand with white chert fragments							
52									
53									
54									
55	645.44								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-37
Sheet 3 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **104.5** SURF.ELEV. 700.44

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57									
58		CLAY, Sandy with Silt; pale yellow; moist; very fine to fine grained sand with white chert fragments							
59									
60	640.44								
61									
62									
63									
64									
65	635.44								
66									
67									
68									
69									
70	630.44								
71									
72									
73		SAA except mottled pale yellow, yellow, and brown							
74									
75	625.44								
76									
77									
78									
79									
80	620.44								
81									
82									
83									
84									
85	615.44								
86									
87		CLAY, Sandy; brownish yellow; wet; very soft; fine grained sand							
88	612.44								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-37
Sheet 4 of 4

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **104.5** SURF.ELEV. 700.44

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89		CLAY, Sandy; brownish yellow; wet; very soft; fine grained sand							
90	610.44								
91		SAND, Clayey; yellow and brown; wet; fine grained with fragments of grey chert							
92									
93		CLAY, Sandy; yellow and brown; wet; fine to medium grained sand with chert and dolomite cobbles							
94									
95	605.44								
96									
97									
98									
99		SAND, Clayey; yellow and brown; wet; fine grained with fragments of grey chert							
100	600.44								
101									
102									
103									
104		DOLOMITE; blue grey; hard; slightly weathered; fractured with iron staining							
105	595.44	BOH @ 104.5' bgs							
106									
107									
108									
109									
110	590.44								
111									
112									
113									
114									
115	585.44								
116									
117									
118									
119									
120	580.44								

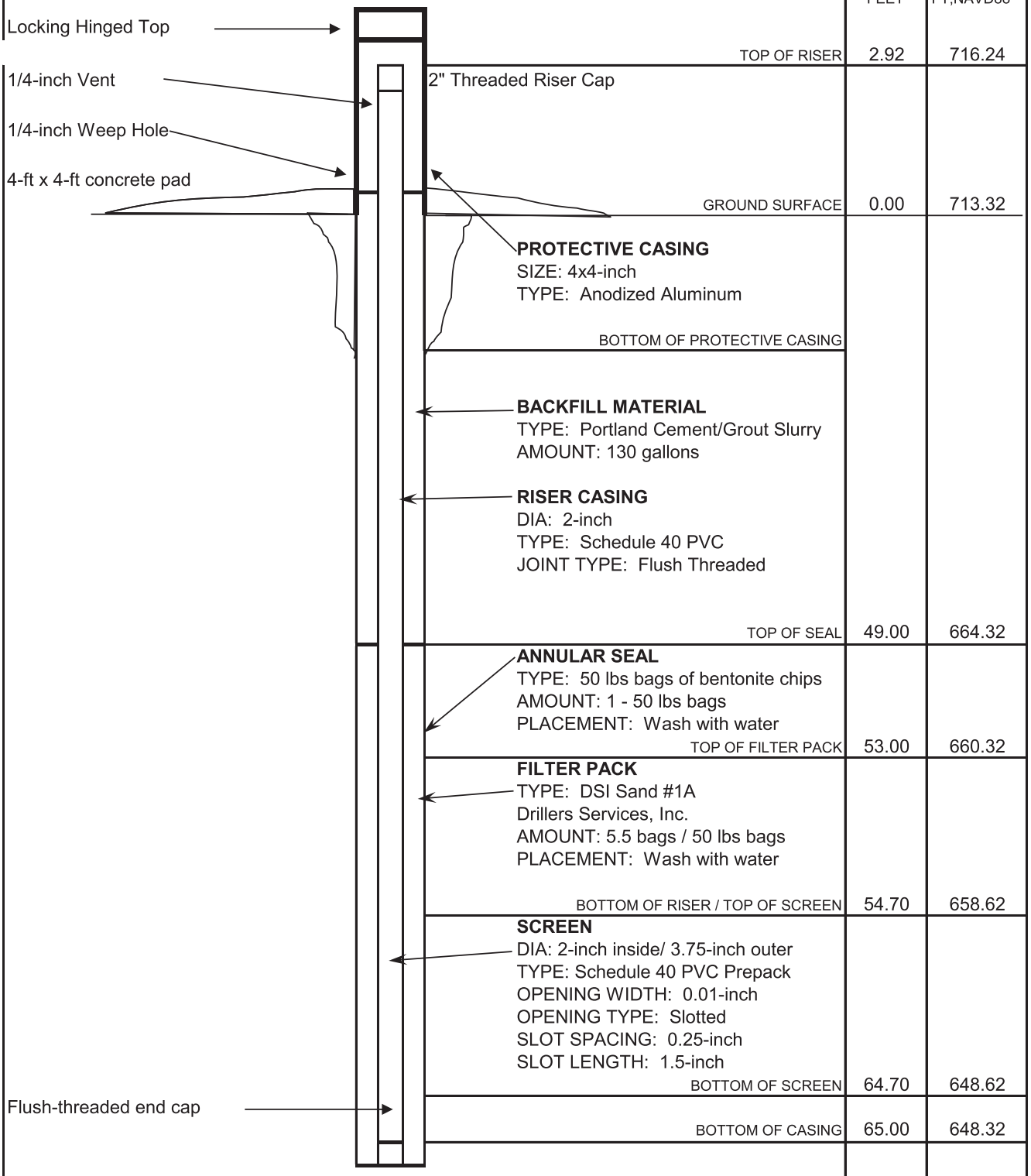
Well ID updated to GWC-38 for Rev. 1 2024 Groundwater Monitoring Plan

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **713.32**
Top of PVC Casing Elevation (feet, NAVDI88): **716.24**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:	Boart Longyear	WELL
LOCATION:	Cells 3 and 4	RIG TYPE:	Rotosonic	GWC-38
LOGGER:	D. Brooks	DRILLING METHODS:	Rotosonic	
DATE CONSTRUCTED:	6/13/2011			



	DEPTH FEET	ELEVATION FT,NAVD88
TOP OF RISER	2.92	716.24
2" Threaded Riser Cap		
GROUND SURFACE	0.00	713.32
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/Grout Slurry AMOUNT: 130 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	49.00	664.32
ANNULAR SEAL TYPE: 50 lbs bags of bentonite chips AMOUNT: 1 - 50 lbs bags PLACEMENT: Wash with water		
TOP OF FILTER PACK	53.00	660.32
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. AMOUNT: 5.5 bags / 50 lbs bags PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	54.70	658.62
SCREEN DIA: 2-inch inside/ 3.75-inch outer TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	64.70	648.62
BOTTOM OF CASING	65.00	648.32

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **713.32**
Top of PVC Casing Elevation (feet, NAVDl88): **716.24**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-38
Sheet 1 of 3

SITE	Plant Bowen CCB Disposal Facility			HOLE DEPTH	76'	SURF.ELEV.	713.32
LOCATION	Cells 3 and 4	COORDINATES	N 1505501.33		E 2072831.77		
ANGLE	90	BEARING	NA	CONTRACTOR	Boart Longyear	DRILL NO.	NA
DRILLING METHOD	Rotosonic	NO. SAMPLES	Continuous			NO. U.D. SAMPLES	NA
CASING SIZE	6"	LENGTH	NA	CORE SIZE	4"	TOTAL % REC.	NA
WATER TABLE DEPTH	45.15'	ELEV.	668.17	TIME AFTER COMP.	1 hour	DATE TAKEN	6/13/2011
TYPE GROUT	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	6/13/2011
DRILLER	Boart	RECORDER	D. Brooks	APPROVED	D. Brooks	DRILLING COMP. DATE	6/13/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	713.32	SAND, Silty; red and yellowish red; dry; very fine to fine grained							
1									
2									
3									
4									
5	708.32								
6									
7									
8									
9		SAA except damp							
10	703.32								
11									
12									
13									
14									
15	698.32	CLAY, Silty; white to pale yellow; damp; no plasticity							
16									
17									
18		CLAY, Sandy, Sitly; mottled pale yellow and brown; damp; no plasticity							
19									
20	693.32								
21									
22									
23									
24	689.32								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-38
Sheet 2 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **76'** SURF.ELEV. 713.32

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Standard Penetration Test Blows	Standard Penetration Test N	Comments	% Rec	RQD
25	688.32	CLAY, Sandy, Sitly; mottled pale yellow and brown; damp; no plasticity; contained 1' bed of white chert at 25.5 to 26.5 feet							
26									
27									
28									
29									
30	683.32	CLAY, Silty, Sandy; reddish yellow, strong brown, and and black; moist; fine to medium grained sand with pieces of weakly cemented sandstone							
31									
32									
33									
34									
35	678.32								
36									
37									
38									
39									
40	673.32								
41									
42									
43									
44									
45	668.32								
46									
47									
48		SAA							
49									
50	663.32								
51									
52									
53									
54									
55	658.32								
56									

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-38
Sheet 3 of 3

SITE **Plant Bowen CCB Disposal Facility Cells 3 and 4** TOTAL DEPTH **76'** SURF.ELEV. 713.32

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	656.32								
58		CLAY, Silty, Sandy; reddish yellow, strong brown, and and black; moist; fine to medium grained sand with pieces of weakly cemented sandstone							
59									
60	653.32								
61									
62									
63									
64									
65	648.32								
66									
67									
68		SAA with lenses of water bearing purple chert/ gravel							
69									
70	643.32								
71									
72									
73									
74									
75	638.32								
76									
77		BOH @76' bgs							
78									
79									
80	633.32								
81									
82									
83									
84									
85	628.32								
86									
87									
88	625.32								

Monitoring Well was abandoned on December 13, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **705.81**
Top of PVC Casing Elevation (feet, NAVDl88): **708.58**

BORING GWA-51R Z
PAGE 1 OF 2
GPC633179

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/18/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 705.81 **COORDINATES:** N 1505310.36 E 2073781.34
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 92 ft. **GROUND WATER DEPTHDURING** 45 ft. **COMP.** 50.4 ft. **DELAYED** 41.2 ft. after 72 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		Silt (ML)				Completion: protective aluminum cover with bollards; 4-foot square concrete pad
		- mottled red (2.5YR 4/8) and yellow / pale yellowish orange (10YR 8/6) dry, with sand and clay				Surface Seal: Concrete
		- some gravel seams				
5						
		- mottled red / moderate reddish brown (10R 4/6) and brownish yellow (10YR 6/8) dry, soft, low plasticity				
10		- medium stiff				
		- brownish yellow (10YR 6/8)				Annular Fill: Portland Cement-Bentonite Grout (4 - 94lbs bags PC, 1 - 50lbs bags Gel, 45 gal. Water)
15						
		- mottled yellow (10YR 7/8) and black (10YR 2/1) dry, medium stiff, few seams of fine-gravel and white sand				
20						
25		- very damp				
		- mottled yellow (10YR 7/6) and black (10YR 2/1) medium stiff, with white coarse-sand and weathered gravel				
30						
		- with coarse gravel				Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (78.5'-75.0')) and Baroid Hole Plug 3/8 Chips (15 - 50lbs bags (75.0'-22.0'))
35		- wet				
		Elastic Silt (MH)				
40		- dark yellowish brown (10YR 4/4), yellow (10YR 7/6) and black (10YR 2/1) wet, medium stiff				
		▼				
45		▽ - saturated, with sand and coarse gravel (non-carbonate)				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-51R Z
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		Elastic Silt (MH) *(Con't)*				Completion: protective aluminum cover with bollards; 4-foot square concrete pad
		Clayey Gravel (GC)				(CONTINUED)
50		- reddish yellow (7.5YR 6/6) wet				
		- some cobbles, pulverized rock				
		Dolostone				
55		- grayish brown (2.5Y 5/2) and gray (10YR 5/1) hard				
		- medium dark gray (N4) and dark greenish gray (5GY 4/1) fine grain, hard, not to slightly weathered on fractures weathered, slightly fractured, carbonate, thin fractures healed with calcite				
60						
						Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (78.5'-75.0')) and Baroid Hole Plug 3/8 Chips (15 - 50lbs bags (75.0'-22.0'))
65						
		- dark gray (N3) fine grain, hard, not to slightly weathered, medium to thick bedded, slight to moderately fractured, vertical and cross-cutting thin fractures, calcite healed fractures				
70						
75						
		- dark gray (N3) and black (N1) fine grain, hard, not to slightly weathered, medium to thick bedded, slight to moderately fractured, low carbonate reaction, fractures healed with calcite, fractures up to 2 inch, cross-cutting, brown-yellow water staining on fractures				Filter: Filter Media 20/40 Silica Sand (4 - 50 lbs bags)
80						
85						**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack
		- thick to massive bedded				
90						Sump:0.299999999999997 ft. Backfill:Filter Media 20/40 Silica Sand (0.25 - 50 lbs bags (92.0'-91.0')) Cave-in to 92 ft.
		Bottom of borehole at 92.0 feet.				
95						

Monitoring Well was abandoned on December 13, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **705.81**
Top of PVC Casing Elevation (feet, NAVDl88): **708.58**

BORING GWA-51R Z
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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/18/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 705.81 **COORDINATES:** N 1505310.36 E 2073781.34
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 92 ft. **GROUND WATER DEPTHDURING** 45 ft. **COMP.** 50.4 ft. **DELAYED** 41.2 ft. after 72 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
		Silt (ML)			(Recovery=100% between 0 and 7ft.)	
		- mottled red (2.5YR 4/8) and yellow / pale yellowish orange (10YR 8/6) dry, with sand and clay				
		- some gravel seams				
5						
		- mottled red / moderate reddish brown (10R 4/6) and brownish yellow (10YR 6/8) dry, soft, low plasticity			(Recovery=95% between 7 and 17ft.)	
		- medium stiff				
10						
		- brownish yellow (10YR 6/8)				
15						
		- mottled yellow (10YR 7/8) and black (10YR 2/1) dry, medium stiff, few seams of fine-gravel and white sand			(Recovery=100% between 17 and 27ft.)	
20						
25		- very damp				
		- mottled yellow (10YR 7/6) and black (10YR 2/1) medium stiff, with white coarse-sand and weathered gravel			(Recovery=90% between 27 and 37ft.)	
30						
		- with coarse gravel				
35						
		- wet				
		Elastic Silt (MH)			(Recovery=60% between 37 and 47ft.)	
40		- dark yellowish brown (10YR 4/4), yellow (10YR 7/6) and black (10YR 2/1) wet, medium stiff				
		▼				
45		▽ - saturated, with sand and coarse gravel (non-carbonate)				

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
50		**Elastic Silt (MH)** *(Con't)*			*(Con't)*	
		Clayey Gravel (GC) - reddish yellow (7.5YR 6/6) wet			(Recovery=60% between 47 and 57ft.)	
		- some cobbles, pulverized rock				
55		**Dolostone** - grayish brown (2.5Y 5/2) and gray (10YR 5/1) hard				
60		- medium dark gray (N4) and dark greenish gray (5GY 4/1) fine grain, hard, not to slightly weathered on fractures weathered, slightly fractured, carbonate, thin fractures healed with calcite			(Recovery=30% between 57 and 67ft.)	
65						
70		- dark gray (N3) fine grain, hard, not to slightly weathered, medium to thick bedded, slight to moderately fractured, vertical and cross-cutting thin fractures, calcite healed fractures			(Recovery=100% between 67 and 77ft.)	
75						
80		- dark gray (N3) and black (N1) fine grain, hard, not to slightly weathered, medium to thick bedded, slight to moderately fractured, low carbonate reaction, fractures healed with calcite, fractures up to 2 inch, cross-cutting, brown-yellow water staining on fractures			(Recovery=100% between 77 and 87ft.)	
85						
90		- thick to massive bedded			(Recovery=60% between 87 and 92ft.)	
		Bottom of borehole at 92.0 feet.				
95						

Monitoring Well was abandoned on December 2, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **706.56**
Top of PVC Casing Elevation (feet, NAVDl88): **709.77**

WELL: GWA-52
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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 4/7/2015 **COMPLETED** 4/21/2015 **SURF. ELEV.** 706.56 **COORDINATES:** N 1505459.85 E 2073876.0
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 80.96 ft. **GROUND WATER DEPTH: DURING** 67 ft. **COMP.** 55.75 ft. **DELAYED** 56.79 ft. after 100 hrs.
NOTES TOC Elevation 709.77, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
		706.56	Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
		703.56	← Surface Seal: Concrete	
5				
10				
15				
20			Annular Fill: Portland Cement-Bentonite Grout (16 - 47lbs bags PC, 1 - 50lbs bags Gel, 100 gal. Water)	
25				
30			←	
35				
40				

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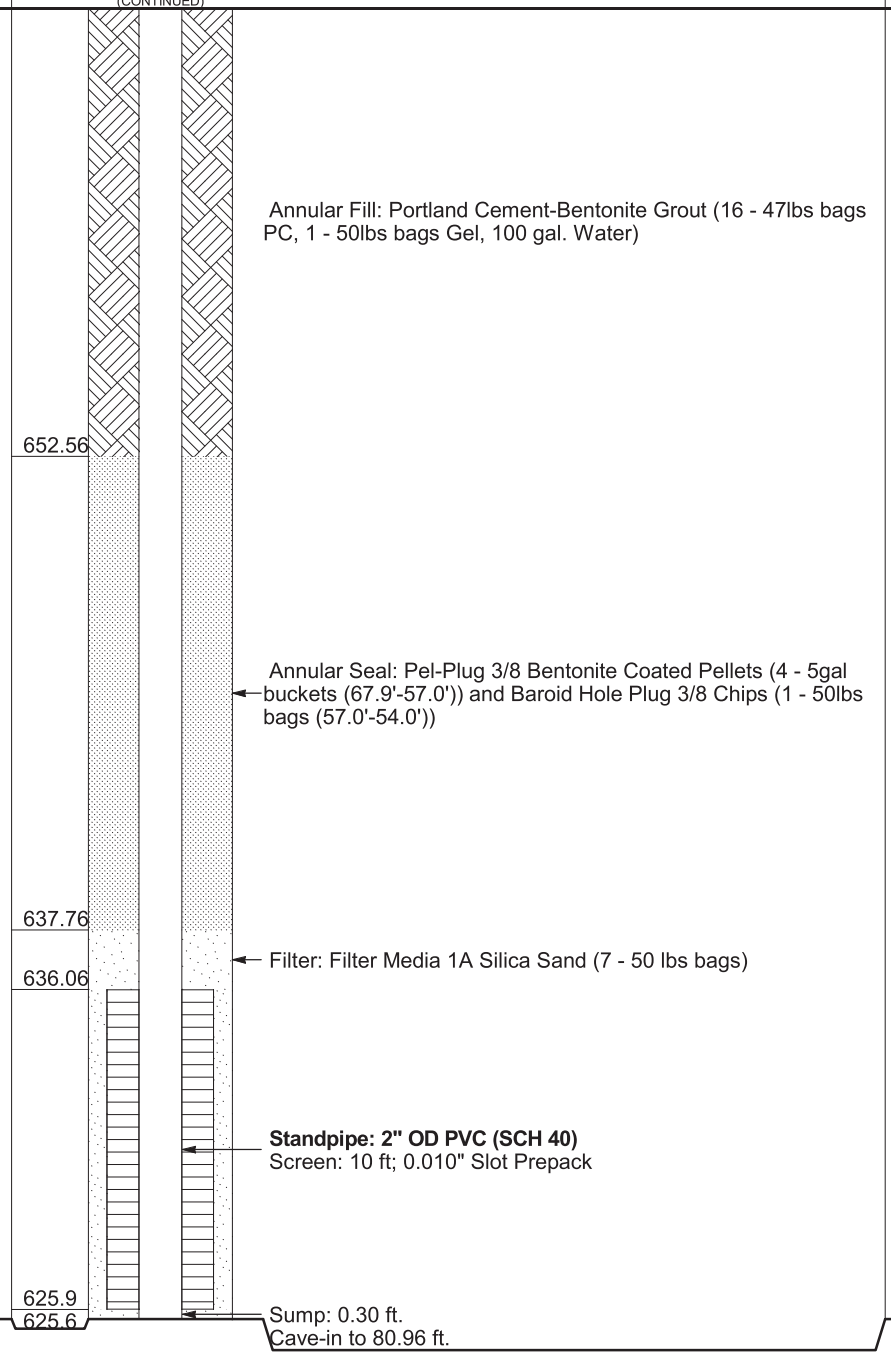
SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
45				
50				
		652.56		
55				
60				
65				
		637.76		
70				
		636.06		
75				
80				
		625.9		
		625.6		
85				



Monitoring Well was abandoned on December 2, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **706.56**
Top of PVC Casing Elevation (feet, NAVDl88): **709.77**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-52
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 4/7/2015 **COMPLETED** 4/21/2015 **SURF. ELEV.** 706.56 **COORDINATES:** N 1505459.85 E 2073876.0
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 80.96 ft. **GROUND WATER DEPTH: DURING** 67 ft. **COMP.** 55.75 ft. **DELAYED** 56.79 ft. after 100 hrs.
NOTES TOC Elevation 709.77, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
5		**Silt (ML)** - trace mottling red / moderate reddish brown (10R 4/6) and brown (7.5YR 5/4) fill moist, very stiff, interbedded clayey zones, trace coarse to cobble/subrounded to rounded rock fragments			Soil density gauged by thumb penetration	
10		**Elastic Silt (MH)** - mottled red (2.5YR 4/6) and brown (7.5YR 5/3) residuum moist, stiff to very stiff, low plastic, alternating interbedded zones of CL, trace coarse to very coarse/rounded to subrounded rock fragments				
15						
20		**Silt (ML)** - dusky red / dark reddish brown (10R 3/4) residuum moist, very stiff, trace medium to coarse rock fragments - mottled dusky red (10R 3/3), red (10R 4/8) and light reddish brown / light brown (5YR 6/4) residuum moist, very stiff, trace medium to coarse/angular to subangular rock fragments				
25						
30		**Elastic Silt (MH)** - mottled dark red (10R 3/6), red (10R 5/6) and light brown (7.5YR 6/4) residuum moist, very stiff to hard, low plastic, clayey silt with trace zones of interbedded CL				
35		**Lean Clay (CL)** - mottled dark red (10R 3/6) and reddish yellow (7.5YR 6/6) residuum moist, very stiff, low to medium plastic, some white to light gray with orangish brown stained/angular to subrounded/brittle to friable to hard dolomite fragments				
40						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
45		**Lean Clay (CL)** *(Con't)*				
		- mottled reddish yellow (7.5YR 6/6) and red / moderate reddish brown (10R 4/6) residuum moist, stiff to very stiff, medium plastic, trace coarse to very coarse/rounded to subangular rock fragments				
50						
		Silt (ML)				
		- brownish yellow / dark yellowish orange (10YR 6/6), very pale brown / very pale orange (10YR 8/2) and light red (2.5YR 6/6) residuum moist, stiff to very stiff, interbedded clay lenses, abundant light gray to white to light brown/coarse to very coarse/subrounded to angular dolomite and chert fragments				
55						
60						
		- mottled reddish brown (5YR 4/3) and reddish brown (2.5YR 4/3) residuum wet, very stiff, trace very coarse/angular to subangular chert and dolomite fragments				
65						
		- trace mottled brownish yellow (10YR 6/8) and red (10R 5/8) residuum wet, medium stiff to stiff, trace interbedded clay, zone of fine to medium grained 5YR 6/8 reddish yellow SM @ approx. 70.5-71'				
70						
		Lean Clay (CL)				
		- red (10R 4/8) residuum wet, soft, low to medium plastic, some interbedded CH, trace zones of light gray angular dolomite fragments				
75						
80		**Dolomite with Chert fragments**				
		Bottom of borehole at 81.0 feet.				
85						

Monitoring Well was abandoned on December 14, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.61**
Top of PVC Casing Elevation (feet, NAVDl88): **710.99**

WELL: GWA-53
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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/26/2015 **COMPLETED** 4/10/2015 **SURF. ELEV.** 707.61 **COORDINATES:** N 1505695.52 E 2074038.90
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 117.85 ft. **GROUND WATER DEPTH: DURING** 53.5 ft. **COMP.** 56 ft. **DELAYED** 59.15 ft. after 100 hrs.
NOTES TOC Elevation 710.99, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	NOTES
		707.61		
			← Surface Seal: Concrete	
		704.61		
5				
10				
15			Annular Fill: Portland Cement-Bentonite Grout (39 - 47lbs bags PC, 3 - 50lbs bags Gel, 255 gal. Water)	
20				
25				
30			←	

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
35				
40			Annular Fill: Portland Cement-Bentonite Grout (39 - 47lbs bags PC, 3 - 50lbs bags Gel, 255 gal. Water)	
45				
50				
55		652.61		
60			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (105.5'-94.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (94.0'-55.0'))	
65				

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
70				
75				
80				
85			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (105.5'-94.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (94.0'-55.0'))	
90				
95				
100				
105		602.61	Filter: Filter Media 1A Silica Sand (4.5 - 50 lbs bags)	

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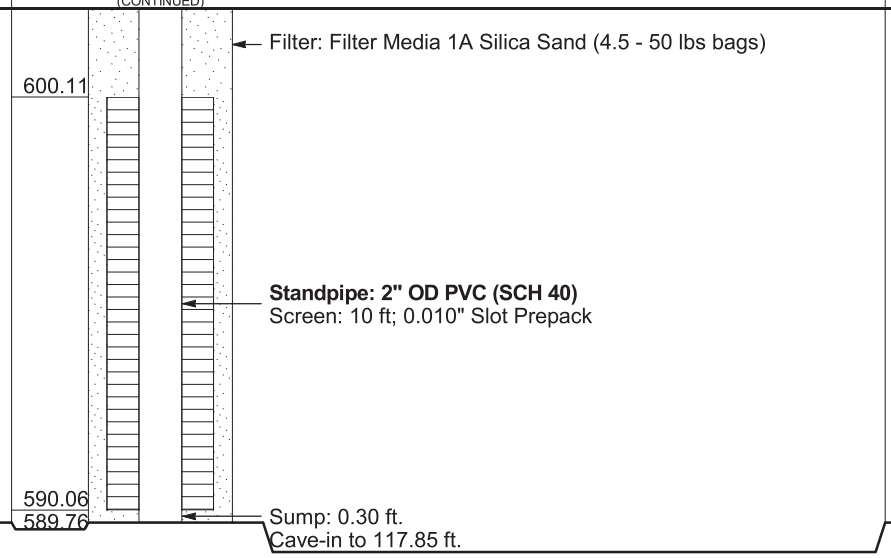
SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
		600.11	← Filter: Filter Media 1A Silica Sand (4.5 - 50 lbs bags)	
110			**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack	
115		590.06 589.76	Sump: 0.30 ft. Cave-in to 117.85 ft.	
120				
125				
130				
135				
140				



Monitoring Well was abandoned on December 14, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.61**
Top of PVC Casing Elevation (feet, NAVDl88): **710.99**

BORING GWA-53
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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/26/2015 **COMPLETED** 4/10/2015 **SURF. ELEV.** 707.61 **COORDINATES:** N 1505695.52 E 2074038.90
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 117.85 ft. **GROUND WATER DEPTH: DURING** 53.5 ft. **COMP.** 56 ft. **DELAYED** 59.15 ft. after 100 hrs.
NOTES TOC Elevation 710.99, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
5		**Silt (ML)** - mottled red (10R 4/8) and yellowish red (5YR 5/8) fill dry, hard, some light gray to white/angular to subangular dolomite fragments			SPT N=42bpf(@3ft.) 12/18/24	
10		- mottled red (10R 4/8) and yellowish red (5YR 5/8) fill dry, hard, trace white/medium to coarse/angular dolomite fragments			SPT N=32bpf(@8ft.) 7/15/17	
15		- mottled yellowish red (5YR 5/8) and red (10R 4/8) residuum dry, very stiff, abundant white with orangish staining/coarse/angular to subangular dolomite fragments			SPT N=21bpf(@13ft.) 8/9/12	
20		**Elastic Silt (MH)** - mottled brownish yellow (10YR 6/8) and red (2.5YR 4/8) residuum dry, very stiff, low plastic, abundant coarse/angular to subangular/very brittle to friable dolomite fragments, trace light gray interbedded clay lenses			SPT N=19bpf(@18ft.) 6/9/10	
25		- mottled brownish yellow (10YR 6/8) and red / moderate reddish brown (10R 4/6) residuum moist, very stiff, low plastic, trace light gray angular dolomite and chert fragments			SPT N=20bpf(@23ft.) 6/6/14	
30		**Silt (ML)** - trace mottling reddish yellow (7.5YR 7/8), reddish yellow (7.5YR 7/8) and brownish yellow (10YR 6/8) residuum moist, stiff, trace clay and rock fragments			SPT N=11bpf(@28ft.) 3/5/6	

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		Silt (ML) *(Con't)*				
35		**Elastic Silt (MH)** - trace mottling strong brown (7.5YR 5/8) and reddish yellow (7.5YR 7/8) residuum moist, very stiff, low plastic, abundant light gray/angular dolomite and dark bluish gray to brown chert fragments			SPT N=27bpf(@33ft.) 20/18/9	
40		- mottled strong brown (7.5YR 5/8) and red / moderate reddish brown (10R 4/6) residuum moist, stiff, low plastic, trace dark gray to light gray/coarse/subangular chert and dolomite fragments			SPT N=13bpf(@38ft.) 10/4/9	
45		**Silt (ML)** - mottled brown (7.5YR 4/4) and reddish yellow (7.5YR 6/6) residuum moist, stiff, abundant medium to coarse/subrounded dolomite fragments, trace dark gray/coarse/subangular to subrounded chert fragments			SPT N=14bpf(@43ft.) 8/6/8	
50		- reddish yellow (7.5YR 6/8) residuum moist, stiff, dark brown angular chert fragments, trace clay			SPT N=13bpf(@48ft.) 4/7/6	
55		▽ **Elastic Silt (MH)** - mottled strong brown (7.5YR 5/8) and reddish yellow (7.5YR 7/8) residuum wet, very stiff, low plastic, subangular to subrounded chert and dolomite fragments			SPT N=19bpf(@53ft.) 7/8/11	
60		▼ - yellowish red (5YR 5/8) residuum wet, soft, low plastic, cohesive, trace rock fragments			SPT N=2bpf(@58ft.) 1/1/1	
65		**Lean Clay (CL)** - yellowish red (5YR 5/8) residuum wet, very soft, low to medium plastic, trace rock fragments			SPT N=0bpf(@63ft.) WOH	

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
70		**Lean Clay (CL)** *(Con't)* - yellowish red / light brown (5YR 5/6) wet, very soft, low plastic to medium plastic, cohesive, abundant dark brown chert fragments			SPT N=0bpf(@68ft.) WOH	
75		**Dolostone** - light gray (N7) and light bluish gray (10B 7/1) very fine to fine grain, medium hard to hard, slightly to moderately weathered, massive, moderate- to high-angle fractures visible, moderate to partial healing, trace total and no healing visible, staining visible within fractures from approx. 71-72', core pieces stained from approx. 72-77.5', trace calcite fracture fill visible, trace dark brown interbedded chert			Degree of fracturing and fracture orientation unknown due to sonic drilling method	
80		**VOID - possible solution cavity (77.5-100')** - approx. 8' of mud and rock fragments recovered, thin chert/dolomite ledge @ approx. 89-90'				
85						
90						
95						
100		**Dolostone** - bluish gray (10B 5/1) very fine to fine grain, hard, not to slightly weathered, massive, moderate- to high-angle fractures visible, trace low-angle fractures, moderate to full healing, no visible staining within healed fractures, trace staining visible from approx. 106-108', no to few open fractures visible, calcite fracture fill visible approx. 1-2mm in thickness				
105						

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SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-53
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
110		**Dolostone** *(Con't)* - Dolostone: light gray (N7) and bluish gray (10B 5/1) very fine to fine grain, medium hard to hard, slightly to moderately weathered, massive, moderate- to high-angle fractures visible, trace vertical (fully healed) fractures, moderate to partial healing with some fully healed with calcite fracture fill, trace orangish to yellowish-brown staining within partially healed fractures (108-112'), trace core pieces recovered from approx. 108-112' indicating more competent rock, less competent/more fractured rock from approx. 112-117', mostly fragments recovered				
115						
		Bottom of borehole at 117.9 feet.				
120						
125						
130						
135						
140						

Monitoring Well was abandoned on December 14, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **708.38**
Top of PVC Casing Elevation (feet, NAVDl88): **711.58**

WELL: GWA-53R
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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/30/2015 **COMPLETED** 4/10/2015 **SURF. ELEV.** 708.38 **COORDINATES:** N 1505689.06 E 2074032.00
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 165.44 ft. **GROUND WATER DEPTH: DURING** 55 ft. **COMP.** 63.4 ft. **DELAYED** 59.81 ft. after 100 hrs.
NOTES TOC Elevation 711.58, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	NOTES
0		708.38		
			Surface Seal: Concrete	
		705.38		
5				
10				
15			Annular Fill: Portland Cement-Bentonite Grout (28 - 47lbs bags PC, 2 - 50lbs bags Gel, 120 gal. Water)	
20				
25				
30				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
35				
40			Annular Fill: Portland Cement-Bentonite Grout (28 - 47lbs bags PC, 2 - 50lbs bags Gel, 120 gal. Water)	
45				
50				
		656.38		
55				
60			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (153.0'-140.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (140.0'-52.0'))	
65				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
70				
75				
80				
85			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (153.0'-140.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (140.0'-52.0'))	
90				
95				
100				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
105				
110				
115				
120			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (153.0'-140.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (140.0'-52.0'))	
125				
130				
135				

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
140				
145			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (3 - 5gal buckets (153.0'-140.0')) and Baroid Hole Plug 3/8 Chips (13 - 50lbs bags (140.0'-52.0'))	
150				
		555.38		
		554.38	← Filter: Filter Media 1A Silica Sand (5 - 50 lbs bags)	
155				
160			**Standpipe: 2" OD PVC (SCH 40)** Screen: 11 ft; 0.010" Slot Prepack	
165		543.24		
		542.94	Sump: 0.30 ft. Cave-in to 165.44 ft.	
170				

Monitoring Well was abandoned on December 14, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **708.38**
Top of PVC Casing Elevation (feet, NAVDl88): **711.58**

BORING GWA-53R
PAGE 1 OF 5
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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/30/2015 **COMPLETED** 4/10/2015 **SURF. ELEV.** 708.38 **COORDINATES:** N 1505689.06 E 2074032.00
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 165.44 ft. **GROUND WATER DEPTH: DURING** 55 ft. **COMP.** 63.4 ft. **DELAYED** 59.81 ft. after 100 hrs.
NOTES TOC Elevation 711.58, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		Elastic Silt (MH) - dusky red (10R 3/3) fill dry, very stiff, trace organics and medium to coarse/subangular to subrounded rock fragments			Soil density gauged by thumb penetration	
5		**Silt (ML)** - red / moderate reddish brown (10R 4/6) and red (10R 5/8) residuum dry, very stiff, zone of brittle to friable light gray rock fragments @ approx. 6-7', trace clay - mottled yellowish red (5YR 5/8) and brownish yellow / dark yellowish orange (10YR 6/6) residuum dry, very stiff, medium to coarse/angular to subangular dolomite fragments, trace clay				
10						
		Elastic Silt (MH) - mottled strong brown (7.5YR 5/8) and red (10R 5/8) residuum dry, very stiff to hard, low plastic, interbedded sandy CL, zone of decreased clay to silt and rock fragments @ approx. 13-14' , abundant very coarse/subangular/light gray dolomite fragments				
15						
		- mottled reddish yellow (7.5YR 6/6) and red / moderate reddish brown (10R 4/6) residuum dry, very stiff, low plastic, abundant light gray to white/very coarse to cobble/angular to subangular dolomite fragments, light gray to brown chert fragments				
20						
25						
		Silt (ML) - mottled strong brown (7.5YR 5/6), pink (7.5YR 7/4) and red (2.5YR 5/8) residuum moist, stiff, interbedded zones of ML, abundant light gray to white/medium to coarse dolomite and chert fragments, rubble zone of very coarse to cobble size @ approx. 35-36'				
30						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
35		**Silt (ML)** *(Con't)*				
		- trace mottling strong brown (7.5YR 5/6) and red (2.5YR 4/8) residuum moist, stiff, decrease in rock fragments from above, light gray/coarse to very coarse/angular to subangular dolomite fragments, trace chert fragments				
40						
45		- trace mottling strong brown (7.5YR 5/6) and red (10R 5/8) residuum moist to wet, stiff, abundant coarse/angular to subangular dolomite and chert fragments, rock lens/ledge of dolomite with trace chert @ approx. 54-55' with coarse to large cobble size pieces recovered, trace interbedded clay lenses				
50						
55		**Lean Clay (CL)**				
		- reddish brown (2.5YR 4/3) residuum wet, soft, low to medium plastic, cohesive, trace coarse/angular to subangular dolomite and chert fragments, limited recovery				
60						
65						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		Lean Clay (CL) *(Con't)*				
		- No Recovery (67-77')				
70						
75						
		Silt (ML) - reddish yellow (5YR 6/8) residuum wet, soft, mud-filled void, limited recovery, abundant coarse to very coarse dolomite and chert fragments, cohesive				
80						
85						
90						
		Dolostone			Limited Recovery	
		VOID - possible solution cavity (91-95')				
95						
		Dolostone with interbedded Chert - light gray (N7) and bluish gray (10B 5/1) very fine to fine grain, medium hard, moderately weathered, massive, trace apparent high-angle fractures, partial healing, some calcite fracture fill visible, some light brown to orangish-brown mud staining, dark gray to dark brown chert, chert decreasing with depth			Degree of fracturing and fracture orientation unknown due to sonic drilling method, no intact core pieces recovered	
100						
		VOID - possible solution cavity (100-104')				

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		VOID - possible solution cavity (100-104') *(Con't)*				
105		**Dolostone** - light gray (N7) and bluish gray (10B 5/1) very fine to fine grain, medium hard, moderately weathered, massive, trace moderate- to high-angle fractures from core pieces recovered, no visible evidence of healing (no visible fracture fill), zone of moderately healed fractures and pitting @ approx. 106', heavily stained mud @ approx. 108-110'			Few intact core pieces recovered	
110		**VOID - possible solution cavity (110-117')** - mud and rock fragment-filled void, rock fragments range from cobble to coarse to very coarse with depth				
115						
120		**Dolostone** - light gray (N7) and bluish gray (10B 5/1) very fine to fine grain, medium hard, moderately weathered, trace fragments show low- to high-angle fractures, moderately to not healed fractures, calcite fracture fill visible, trace fully healed fractures visible, where sonic broke up the rock trace calcite crystallization is visible, visible light brown to orangish brown mud staining on some fragments			Limited Recovery	
		VOID - possible solution cavity (122-125') - no recovery				
125		**Dolostone** - light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to fine grain, medium hard, moderately weathered, mud coating rock fragments from approx. 129-130'			Limited Recovery	
130		**VOID - possible solution cavity (130-143')** - mud and rock fragment filled void				
135						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
140		**VOID - possible solution cavity (130-143')** *(Con't)*				
145		**Dolostone** - light gray (N7) and light bluish gray (10B 7/1) very fine to fine grain, medium hard, slightly to moderately weathered, massive, apparent low-angle to horizontal fractures with no to partial healing, trace vertical to high-angle fractures that show apparent moderate to full healing, trace brown staining within some partially healed fractures			No intact recovery	
150		**VOID - possible solution cavity (147-153')** - no recovery				
155		**Dolostone with trace interbedded Chert nodules** - light gray (N7) and bluish gray (10B 5/1) very fine to medium grain, massive, mostly small pieces and fragments recovered, trace samples show fracture orientation, low- to high-angle fractures, no to moderate healing, trace fully healed fractures, calcite fracture fill visible, dark brown to red staining visible within some fractures, small 1-2mm thick fill, zone of thick 6-8mm thick moderately to fully healed fractures with large calcite crystals visible @ approx. 164'			No intact recovery	
160						
165						
		Bottom of borehole at 165.4 feet.				
170						

Monitoring Well was abandoned on December 2, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **701.23**
Top of PVC Casing Elevation (feet, NAVDl88): **704.23**

WELL: GWA-54
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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/25/2015 **COMPLETED** 4/14/2015 **SURF. ELEV.** 701.23 **COORDINATES:** N 1505853.39 E 2074286.28
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 73.17 ft. **GROUND WATER DEPTH: DURING** 58 ft. **COMP.** 55 ft. **DELAYED** 51.05 ft. after 100 hrs.
NOTES TOC Elevation 704.23, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	NOTES
		701.23	← Surface Seal: Concrete	
		698.23		
5				
10				
15				
20			Annular Fill: Portland Cement-Bentonite Grout (20 - 47lbs bags PC, 2.25 - 50lbs bags Gel, 120 gal. Water)	
25				
30			←	
35				

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	WELL DATA ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
40				
45			Annular Fill: Portland Cement-Bentonite Grout (20 - 47lbs bags PC, 2.25 - 50lbs bags Gel, 120 gal. Water)	
50		647.23		
55			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (2 - 5gal buckets (60.9'-54.0'))	
60		640.23		
		638.23	Filter: Filter Media 1A Silica Sand (8 - 50 lbs bags)	
65				
			Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack	
70				
		628.36		
		628.06	Sump: 0.30 ft. Cave-in to 73.17 ft.	
75				
80				

Monitoring Well was abandoned on December 2, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **701.23**
Top of PVC Casing Elevation (feet, NAVDl88): **704.23**

BORING GWA-54
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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/25/2015 **COMPLETED** 4/14/2015 **SURF. ELEV.** 701.23 **COORDINATES:** N 1505853.39 E 2074286.28
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 73.17 ft. **GROUND WATER DEPTH: DURING** 58 ft. **COMP.** 55 ft. **DELAYED** 51.05 ft. after 100 hrs.
NOTES TOC Elevation 704.23, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
0		**Silt (ML)** - red / moderate reddish brown (10R 4/6) fill moist, hard, trace organics and interbedded clay lenses			Soil density gauged by thumb penetration	
5		- dark red (10R 3/6) and dusky red / dark reddish brown (10R 3/4) residuum moist, very stiff, white to light gray/medium to coarse/angular rock fragments, trace clay				
10		- mottled red (10R 5/8) and reddish yellow (5YR 7/8) residuum moist, very stiff, white to light gray/coarse to cobble/angular to subangular dolomite fragments, amount and size of rock fragments increases with depth, trace interbedded clay lenses				
15						
20		**Elastic Silt (MH)** - mottled reddish yellow (5YR 6/8) and red (10R 4/8) residuum dry, very stiff, low plastic, abundant light gray to white/angular to subrounded rock fragments, clay content increasing with depth				
25						
30		- trace mottling strong brown (7.5YR 5/6) and red (10R 5/8) residuum moist, stiff to very stiff, low plastic, interbedded CL, decrease in amount of dolomite fragments, increase in size of dolomite fragments, trace dark gray angular chert fragments				
35						

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SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-54
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ECS37738

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
40		**Elastic Silt (MH)** *(Con't)* - strong brown (7.5YR 5/6) residuum moist, very stiff, low plastic, interbedded CL, light gray/cobble/angular to subangular dolomite and chert fragments				
45						
50		**Sandy Lean Clay (CL)** - trace mottling red (2.5YR 5/8), red (10R 4/8) and light brown (7.5YR 6/4) residuum moist to wet, stiff, medium to high plastic, interbedded pockets of very fine grained non plastic silt (7.5YR 6/4) and trace interbedded CH, coarse to cobble/angular to rounded abundant dolomite and trace chert fragments				
55						
60		- yellowish red (5YR 4/6) residuum wet, stiff, medium plastic, abundant medium to coarse/angular dolomite and chert fragments, soft zone with slight decrease in clay @ approx. 61-62' , trace interbedded CH				
65						
70		- yellowish red (5YR 4/6) residuum wet, soft to very soft, medium plastic, coarse to cobble size chert fragments, thin zone of light gray to medium gray silty sand (>1' thick) @ approx. 72.5'				
75		Bottom of borehole at 73.2 feet.				
80						

Monitoring Well was abandoned on December 6, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **693.43**
Top of PVC Casing Elevation (feet, NAVDl88): **696.72**

WELL: GWA-55
PAGE 1 OF 3
ECS37738

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/18/2015 **COMPLETED** 4/15/2015 **SURF. ELEV.** 693.43 **COORDINATES:** N 1506034.69 E 2074507.04
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 62.42 ft. **GROUND WATER DEPTH: DURING** 40.5 ft. **COMP.** 42.8 ft. **DELAYED** 43.59 ft. after 100 hrs.
NOTES TOC Elevation 696.72, Sonic Drilling - 6"OD Casing, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
		693.43	Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
		691.43	Surface Seal: Concrete	
5				
10				
15			Annular Fill: Portland Cement-Bentonite Grout (26 - 47lbs bags PC, 2.5 - 50lbs bags Gel, 150 gal. Water)	
20				
25				

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
30				
35			Annular Fill: Portland Cement-Bentonite Grout (26 - 47lbs bags PC, 2.5 - 50lbs bags Gel, 150 gal. Water)	
40				
		650.43		
45				
			← Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (4 - 5gal buckets (50.4'-43.0'))	
50		642.93		
			← Filter: Filter Media 1A Silica Sand (5 - 50 lbs bags)	
		641.43		
			Standpipe: 2" OD PVC (SCH 40) Screen: 10 ft; 0.010" Slot Prepack	
55				

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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
60		632.31 631.01	**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack Sump: 0.30 ft. Cave-in to 62.42 ft.	
65				
70				
75				
80				
85				

Monitoring Well was abandoned on December 6, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **693.43**
Top of PVC Casing Elevation (feet, NAVDl88): **696.72**

BORING GWA-55
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ECS37738

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/18/2015 **COMPLETED** 4/15/2015 **SURF. ELEV.** 693.43 **COORDINATES:** N 1506034.69 E 2074507.04
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 62.42 ft. **GROUND WATER DEPTH: DURING** 40.5 ft. **COMP.** 42.8 ft. **DELAYED** 43.59 ft. after 100 hrs.
NOTES TOC Elevation 696.72, Sonic Drilling - 6"OD Casing, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
0		**Silt (ML)** - mottled red / moderate reddish brown (10R 4/6) and dark reddish gray (10R 3/1) fill dry, hard, trace organics, clay, and medium to coarse/angular to subangular rock fragments				
5		- dusky red / dark reddish brown (10R 3/4) and weak red (10R 4/4) residuum dry, very stiff, increase in rock fragments with depth, white to light gray with brown staining/angular to subangular dolomite fragments, trace interbedded CL				
		- increase in size of rock fragments, very coarse to cobble size				
10		- mottled red (10R 4/8) and reddish yellow (5YR 6/8) residuum dry, very stiff, abundant white to pinkish white/coarse to very coarse/angular to subangular dolomite fragments				
15						
20		**Elastic Silt (MH)** - trace mottling strong brown (7.5YR 5/8) and red (2.5YR 4/8) residuum dry, very stiff, low plastic, red mottling decreasing with depth, zones of mostly weathered rock fragments @ approx. 21' and 23.5' , abundant white to light gray/angular to subangular dolomite fragments				
25						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
30		**Elastic Silt (MH)** *(Con't)* - mottled dark reddish brown (2.5YR 3/4) and yellowish red (5YR 5/8) residuum moist, very stiff, low plastic, interbedded CL lenses, decrease in dolomite fragments, increase in light to dark brown/angular chert fragments				
35		**Lean Clay (CL)** - yellowish red (5YR 4/6) residuum moist, very stiff, low to medium plastic, interbedded silt lenses, dark to light brown/angular chert fragments, trace dolomite fragments, zone of interbedded 10YR 8/8 yellow silt @ approx. 36-36.5'				
40						
45		- mottled reddish brown / moderate brown (5YR 4/4) and dark reddish brown (2.5YR 3/4) residuum wet, stiff, medium plastic, dark brown angular chert fragments, trace interbedded CH and coarse subangular dolomite fragments				
50		**Dolostone with trace chert** - light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to medium grain, medium hard, moderately weathered, massive, visible fully healed fractures with calcite fracture fill, high-angle (vertical) fractures with trace low-angle fractures, some samples show bisecting healed fractures, fractures range from 1-2mm to few 4-6mm, some partially healed fractures observed **VOID - possible solution cavity (48'-52')**			Degree of fracturing and fracture orientation unknown due to sonic drilling method, no intact core pieces recovered	
55		**Dolostone** - light gray (N7) and light bluish gray (10B 7/1) very fine to fine grain, medium hard, moderately to highly weathered, moderate- to high-angle fractures, partial to full healing visible, calcite fracture fill visible, healed fractures range from 1-2mm to 3-4mm thick, trace very coarse calcite crystals visible @ 53' within heavily fractured zone, driller				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
60		noted a thin open section @ 58-58.5' **Dolostone** *(Con't)*				
		Bottom of borehole at 62.4 feet.				
65						
70						
75						
80						
85						

Monitoring Well was abandoned on December 6, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **693.28**
Top of PVC Casing Elevation (feet, NAVDl88): **696.53**

WELL: GWA-55R
PAGE 1 OF 3
ECS37738

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/11/2015 **COMPLETED** 4/15/2015 **SURF. ELEV.** 693.28 **COORDINATES:** N 1506034.69 E 2074507.04
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 102.83 ft. **GROUND WATER DEPTH: DURING** 38.5 ft. **COMP.** 41.55 ft. **DELAYED** 43.47 ft. after 100 hrs.
NOTES TOC Elevation 696.53, Sonic Drilling - 6"OD Casing, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
		693.28	Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
		691.28	← Surface Seal: Concrete	
5				
10				
15				
20			Annular Fill: Portland Cement-Bentonite Grout (40 - 47lbs bags PC, 4.5 - 50lbs bags Gel, 205 gal. Water)	
25			←	
30				
35				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
40			Annular Fill: Portland Cement-Bentonite Grout (40 - 47lbs bags PC, 4.5 - 50lbs bags Gel, 205 gal. Water)	
45		646.78		
50				
55				
60				
65			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (7 - 5gal buckets (91.0'-78.0')) and Baroid Hole Plug 3/8 Chips (14 - 50lbs bags (78.0'-46.5'))	
70			←	
75				
80				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
85			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (7 - 5gal buckets (91.0'-78.0')) and Baroid Hole Plug 3/8 Chips (14 - 50lbs bags (78.0'-46.5'))	
90		601.78		
		600.78	← Filter: Filter Media 1A Silica Sand (8.75 - 50 lbs bags)	
95			**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack	
100		590.85		
		590.45	Sump: 0.30 ft. Cave-in to 102.83 ft.	
105				
110				
115				
120				
125				

Monitoring Well was abandoned on December 6, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **693.28**
Top of PVC Casing Elevation (feet, NAVDl88): **696.53**

BORING GWA-55R
PAGE 1 OF 3
ECS37738

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 3/11/2015 **COMPLETED** 4/15/2015 **SURF. ELEV.** 693.28 **COORDINATES:** N 1506034.69 E 2074507.04
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic; SPT
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 102.83 ft. **GROUND WATER DEPTH: DURING** 38.5 ft. **COMP.** 41.55 ft. **DELAYED** 43.47 ft. after 100 hrs.
NOTES TOC Elevation 696.53, Sonic Drilling - 6"OD Casing, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
		Silt (ML)				
5		- red / moderate reddish brown (10R 4/6) residuum moist, very stiff, trace clay and subrounded coarse sand			SPT N=26bpf(@3ft.) 6/10/16	
10		- mottled red (10R 5/8) and reddish yellow (5YR 6/8) residuum dry, hard, trace clay and subrounded coarse sand			SPT N=34bpf(@8ft.) 8/14/20	
15		- mottled strong brown (7.5YR 5/8), light gray (10YR 7/1) and red (10R 5/6) residuum dry, hard, increase in clay content within mottled zones, trace white to light gray/angular rock fragments			SPT N=33bpf(@13ft.) 10/14/19	
20		- mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/8) residuum dry, hard, light gray angular chert fragments			SPT N=41bpf(@18ft.) 12/24/17	
25		**Elastic Silt (MH)** - mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/8) residuum moist, very stiff, low plastic, light gray with yellowish staining/angular rock fragments			SPT N=24bpf(@23ft.) 7/10/14	
30		- mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/8) residuum moist, very stiff, low plastic, light gray/coarse/angular to subangular chert and dolomite fragments			SPT N=24bpf(@28ft.) 7/9/15	
35		**Lean Clay (CL)** - mottled reddish yellow (5YR 6/8) and red (10R 5/8) residuum moist, very stiff, low to medium plastic, gray angular to subrounded chert fragments			SPT N=22bpf(@33ft.) 4/13/9	

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS
40		**Lean Clay (CL)** *(Con't)* - yellowish red (5YR 5/8) residuum wet, very stiff, low to medium plastic, trace chert fragments			SPT N=16bpf(@38ft.) 5/7/9
45		**Fat Clay (CH)** - yellowish red (5YR 5/8) residuum wet, very stiff, medium to high plastic, trace light gray rock fragments			SPT N=17bpf(@43ft.) 7/9/8
50		**Dolostone** - light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to fine grain, medium hard, slightly to moderately weathered, some visible high-angle fractures with calcite fracture fill, full healing, trace chert			Degree of fracturing and fracture orientation unknown due to sonic drilling method, no intact core pieces recovered
55		**VOID - possible solution cavity (53'-58')** - some orangish mud with rock fragments recovered from void			
60		**Chert with Dolostone** - bluish black (10B 2.5/1), dark brown (10YR 3/3) and light bluish gray (10B 7/1) very fine to fine grain, medium hard, moderately to highly weathered			
		VOID - possible solution cavity (61'-63')			
65		**Chert with Dolostone** - trace fully healed fractures, calcite fracture fill, very limited recovery, some orangish mud staining visible			
		VOID - possible solution cavity (66'-78')			
70					
75					
80		**Dolostone with Chert** - light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to fine grain, medium hard, not to moderately weathered, visible fully healed fractures, calcite fracture fill, moderate- to high- angle			

Natural Gamma: 55 | 110 | 165

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
85		fractures visible near bottom, bluish black to dark reddish brown chert, trace orangish staining within some healed fractures **Dolostone with Chert** *(Con't)*				
		VOID - possible solution cavity (85'-86')				
90		**Dolostone with Chert** - light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to fine grain, medium hard, slightly weathered, trace to some visible fully healed calcite filled fractures, low- to high-angle fractures visible on larger core pieces recovered, trace chert, no visible staining			Driller did not note any voids any voids within section 88'-103', but suggested open fractures due to the core barrel slipping 4"-6" in zones	
95						
100		- only fragments recovered				
		Bottom of borehole at 102.8 feet.				
105						
110						
115						
120						
125						

Monitoring Well was abandoned on December 4, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **689.14**
Top of PVC Casing Elevation (feet, NAVDl88): **692.17**

WELL: GWA-56
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SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 4/14/2015 **COMPLETED** 4/16/2015 **SURF. ELEV.** 689.14 **COORDINATES:** N 1506128.38 E 2074633.08
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 82.96 ft. **GROUND WATER DEPTH: DURING** 43 ft. **COMP.** 38.8 ft. **DELAYED** 39.02 ft. after 100 hrs.
NOTES TOC Elevation 692.17, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
		689.14	Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			← Surface Seal: Concrete	
		685.14		
5				
10				
15			Annular Fill: Portland Cement-Bentonite Grout (12 - 47lbs bags PC, 1 - 50lbs bags Gel, 65 gal. Water)	
20			←	
25				
30				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
35		654.14	Annular Fill: Portland Cement-Bentonite Grout (12 - 47lbs bags PC, 1 - 50lbs bags Gel, 65 gal. Water)	
40				
45				
50			Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (5 - 5gal buckets (69.8'-60.0')) and Baroid Hole Plug 3/8 Chips (10 - 50lbs bags (60.0'-35.0'))	
55				
60				
65				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF WELL CONSTRUCTION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GROUNDWATER OBSERVATIONS	ELEVATION	WELL DATA	NOTES
			Completion: Protective aluminum cover with bollards; 4-foot square concrete pad	
			(CONTINUED)	
70		618.14	Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (5 - 5gal buckets (69.8'-60.0')) and Baroid Hole Plug 3/8 Chips (10 - 50lbs bags (60.0'-35.0'))	
		616.14	← Filter: Filter Media 1A Silica Sand (4 - 50 lbs bags)	
75			**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack	
80		606.48		
		606.18	Sump: 0.30 ft. Cave-in to 82.96 ft.	
85				
90				
95				
100				

Monitoring Well was abandoned on December 4, 2022

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **689.14**
Top of PVC Casing Elevation (feet, NAVDl88): **692.17**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-56
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DATE STARTED 4/14/2015 **COMPLETED** 4/16/2015 **SURF. ELEV.** 689.14 **COORDINATES:** N 1506128.38 E 2074633.08
CONTRACTOR Cascade Drilling **EQUIPMENT** 7868 **METHOD** Sonic
DRILLED BY J. Sigler **LOGGED BY** B. Smelser **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 82.96 ft. **GROUND WATER DEPTH: DURING** 43 ft. **COMP.** 38.8 ft. **DELAYED** 39.02 ft. after 100 hrs.
NOTES TOC Elevation 692.17, Sonic Drilling - 7"OD Casing in Overburden, 6"OD Casing in Rock, 4"OD Core Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		Silty Clay (CL-ML) - dusky red / dark reddish brown (10R 3/4) fill dry, very stiff to hard, low plastic			Soil density gauged by thumb penetration	
5		**Silt (ML)** - dusky red / dark reddish brown (10R 3/4) fill dry, very stiff, trace interbedded clay lenses and medium to coarse/subangular to subrounded/brittle to friable dolomite fragments				
10		- trace mottling red (10R 5/6) and light brown (7.5YR 6/4) residuum dry, very stiff, white with reddish staining/medium to very coarse/angular to subangular dolomite fragments, trace chert fragments				
15						
20		**Elastic Silt (MH)** - mottled red (10R 4/8), yellowish red (5YR 5/8) and light gray (10YR 7/1) residuum moist, very stiff to stiff, low plastic, white to light gray interbedded ML, light gray clayey zones have increased plasticity, trace light gray to white angular dolomite and chert fragments				
25						
30		**Gravelly Lean Clay (CL)** - trace mottling yellowish red (5YR 5/8) and red (2.5YR 4/8) residuum moist, very stiff to stiff, low to medium plastic, abundant gray to dark brown/medium cobble/angular to subangular chert fragments, trace dolomite fragments				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
35		**Gravelly Lean Clay (CL)** *(Con't)*				
40						
45		**Sandy Lean Clay (CL)** - red (2.5YR 5/8) and reddish yellow (7.5YR 6/6) residuum wet, medium stiff to soft, low to medium plastic, trace very coarse to cobble size angular chert fragments				
		Chert (ledge)			Limited Recovery	
50		**VOID - possible solution cavity (48'-68')** - mud filled void, no recovery				
55						
60						
65						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen Cells 3 & 4 Wells
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
		VOID - possible solution cavity (48'-68') *(Con't)*				
70		**Dolostone with abundant interbedded Chert** - light gray (N7), light bluish gray (10B 7/1) and bluish gray (10B 5/1) very fine to fine grain, hard to medium hard, moderately to slightly weathered, massive, moderate- to high-angle fractures visible with trace low-angle fractures, partial to full healing with calcite fracture fill, trace reddish-brown to brown staining within some fractures, calcite fracture fill ranges from <1mm to few 5-6mm thick, zone of dark gray to dark brown chert @ approx. 73-74' , 3 core pieces >6" recovered			Degree of fracturing and fracture orientation unknown due to sonic drilling method, no intact core pieces recovered, limited recovery	
75						
		- Dolostone: light gray (N7) and light bluish gray (10B 7/1) very fine to fine grain, hard, moderately to slightly weathered, massive, low- to high-angle fractures visible, partial to full healing with calcite fracture fill, approx. 1-2 mm thick fracture fill, some high-angle and trace vertical fractures with no visible calcite fill, trace reddish-brown staining within some fractures, trace chert @ approx. 82', one 1' core piece recovered				
80						
		Bottom of borehole at 83.0 feet.				
85						
90						
95						
100						

ATTACHMENT A1

WELL CONSTRUCTION AND BORING LOGS

LANDFILL CELLS 5 & 6 AND 7 & 8

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved

Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:33:05 -04'00'

Well Installation Field Log

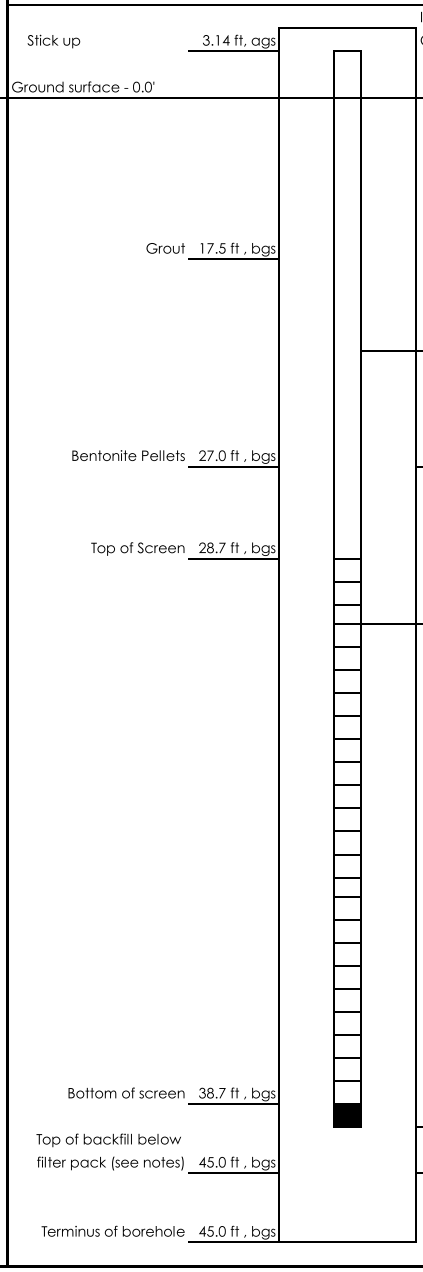
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/18/2023	Date Completed:	4/20/2023
Borehole/Well No:	GWC-26	Northing (ft):	1506231.7	Easting (ft):	2075314.3
Plant Name:	Plant Bowen	Latitude:	N34.138443	Longitude:	W84.897943
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	673.15	Stickup (ft, ags):	3.14
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	45.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	39.1
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	676.28	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	20.47		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.14 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.14 ft, ags Bottom: 39.1 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 28.7 ft, bgs Bottom: 38.7 ft, bgs

Sump/end cap Top: 38.7 ft, bgs Bottom: 39.1 ft, bgs

Grout Quantity: 60 gallons

Grout Type: Aquaguard

Grout Top: 0.0 ft, bgs Bottom: 17.5 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 17.5 ft, bgs Bottom: 27.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 27.0 ft, bgs Bottom: 45.0 ft, bgs

Notes:

4 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
2 50 lb bucket Pel Plug 3/8" coated bentonite pellets
1 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-26**
Client: Georgia Power Company
Boring Location: Lat. 34.138443, Long. -84.897943
Project Number: 175569450
Surface Elevation: 673.15 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/18/23
Completed: 4/18/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 18.8 ft
Date/Time: 4/19/23 19:46
Inspector: A. Stevens
Logger: A. Stevens
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	673.2	Top of Hole						
0		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), medium plasticity, firm, dry, no odor, no staining		RS01E	0.0 - 10.0	4.0	N/A	
11.5	661.7							
		SILTY LEAN CLAY LITTLE GRAVEL, CL, 5YR 5/4 (reddish brown) to 5YR 4/6 (yellowish red), medium plasticity, firm, dry, no odor, no staining, Subrounded gravel fragments						
14.5	658.7							
		POORLY GRADED SAND SOME GRAVEL, GP, 5YR 5/8 (yellowish red), medium to coarse, loose, moist, no odor, no staining, weak cementation, poorly graded		RS02E	10.0 - 20.0	6.0	N/A	
20.0	653.2							
		Missing soil, rock hit at 26 ft bgs		RS03E	20.0 - 30.0	2.0	N/A	
26.0	647.2							
		Dolomite (90%) With Quartzite (10%) Dolomite, light blue gray, moist, iron oxide staining, Munsell color 5B 7/1						

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-26**
Boring Location Lat. 34.138443, Long. -84.897943
Surface Elevation 673.15 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
30		Dolomite (90%) With Quartzite (10%)						
31								
32		Dolomite, light blue gray, moist, iron oxide staining, Munsell color 5B 7/1 *(Continued)*						
33								
34								
35				RS04E	30.0 - 40.0	6.5	N/A	
36								
37	37.0							
	636.2							
38	38.0	Dolomite, hard, slightly weathered, moist, iron oxide staining, Chert and dolomite						
	635.2							
39		Dolomite, light blue gray, moist, iron oxide staining, Munsell color 5B 7/1 and N7						
40								
41								
42				RS05E	40.0 - 45.0	3.5	N/A	
43								
44								
45	45.0							
	628.2							

No Refusal /
Bottom of Hole at 45.0 Ft.

Top of Rock = 26.0 Ft.
Top of Rock Elevation = 647.2 Ft.

Well Installation Field Log

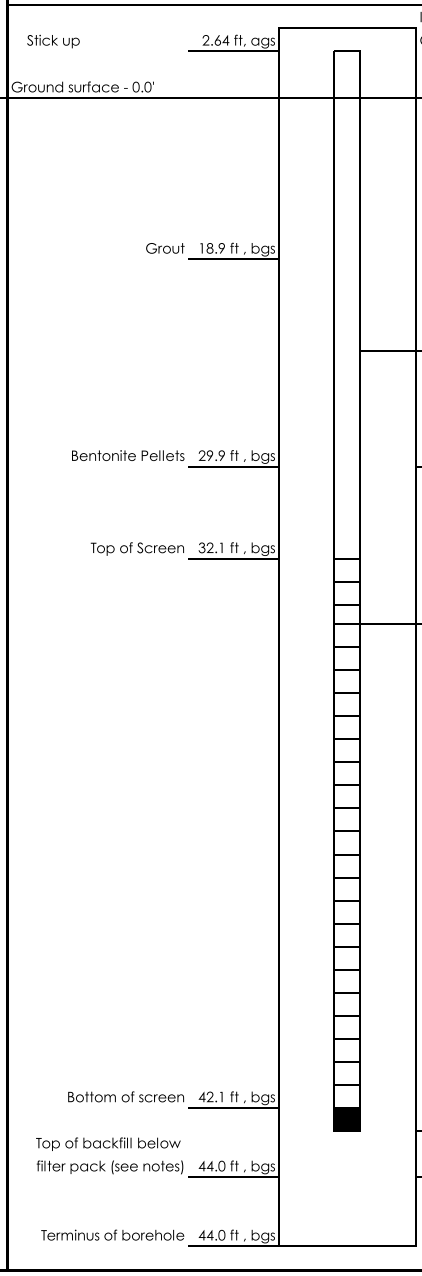
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/21/2023	Date Completed:	4/23/2023
Borehole/Well No:	GWC-27	Northing (ft):	1506039.7	Easting (ft):	2075488.4
Plant Name:	Plant Bowen	Latitude:	N34.137919	Longitude:	W84.897363
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	673.21	Stickup (ft, ags):	2.64
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	44.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	42.5
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	675.852	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	20.63		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.64 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 2.64 ft, ags Bottom: 42.5 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 32.1 ft, bgs Bottom: 42.1 ft, bgs

Sump/end cap Top: 42.1 ft, bgs Bottom: 42.5 ft, bgs

Grout Quantity: 40 gallons

Grout Type: Aquaguard

Grout Top: 0.0 ft, bgs Bottom: 18.9 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 18.9 ft, bgs Bottom: 29.9 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 29.9 ft, bgs Bottom: 44.0 ft, bgs

Notes:

4 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
1 50 lb bucket Pel Plug 3/8" coated bentonite pellets
2 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-27**
Client: Georgia Power Company
Boring Location: Lat. 34.137919, Long. -84.897363
Project Number: 175569450
Surface Elevation: 673.21 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/21/23
Completed: 4/21/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 19.2 ft
Date/Time: 4/21/23 19:47
Inspector: A. Stevens
Logger: A. Stevens
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft²	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	673.2	Top of Hole						
0 – 12.0	673.2 – 661.2	SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), low to medium plasticity, firm to soft, dry, no odor, no staining, Courser grained sediments more prevalent the deeper in the layer (fining upward)		RS01E	0.0 - 10.0	10.0	N/A	
12.0 – 14.0	661.2 – 659.2	SILTY LEAN CLAY, CL, 5YR 5/4 (reddish brown) to 5YR 4/6 (yellowish red), non to low plasticity, very soft, dry, no odor, no staining, Subrounded gravel fragments						
14.0 – 15.5	659.2 – 657.7	SILTY LEAN CLAY, CL, 5YR 5/4 (reddish brown) to 5YR 4/6 (yellowish red), medium plasticity, firm, moist, no odor, no staining, Subrounded gravel fragments		RS02E	10.0 - 20.0	7.0	N/A	
15.5 – 20.0	657.7 – 653.2	POORLY GRADED SAND SOME GRAVEL, GP, 5YR 5/8 (yellowish red), medium to coarse, medium plasticity, loose, moist, no odor, no staining, weak cementation, poorly graded						
20.0 – 25.0	653.2 – 648.2	POORLY GRADED SAND WITH GRAVEL, GP, 5YR 5/8 (yellowish red), medium to coarse, medium plasticity, loose, wet, no odor, no staining, weak cementation, poorly graded, Chert, dolomite and quartzite pebbles		RS03E	20.0 - 25.0	3.0	N/A	

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-27**
Client Georgia Power Company
Boring Location Lat. 34.137919, Long. -84.897363
Project Number 175569450
Surface Elevation 673.21 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft[2]	Elevation								
25			Dolomite, light blue gray, moist, Munsell color 5B 7/1						
26									
27									
28					RS04E	25.0 - 30.0	1.5	N/A	
29									
30									
31	31.0	642.2							
32			2 voids both roughly 8 inches thick, dolomite fragments found at top of run						two fractures between 31-34 ft
33									
34	34.0	639.2							
35			Dolomite, light blue gray, moist, Munsell color 5B 7/1		RS05E	30.0 - 40.0	3.0	N/A	
36									
37	37.0	636.2							void from 37-38
38	38.0	635.2	Void						
39			Dolomite (70%) With Limestone (30%)						
40	40.0	633.2	Dolomite, light blue gray to light gray, microcrystalline, very hard, Munsell color 5B 7/1 to N7						no recovery
41									
42			No recovery		RS06E	40.0 - 44.0	0.0	N/A	
43									
44	44.0	629.2							

No Refusal /
Bottom of Hole at 44.0 Ft.

Top of Rock = 25.0 Ft.
Top of Rock Elevation = 648.2 Ft.

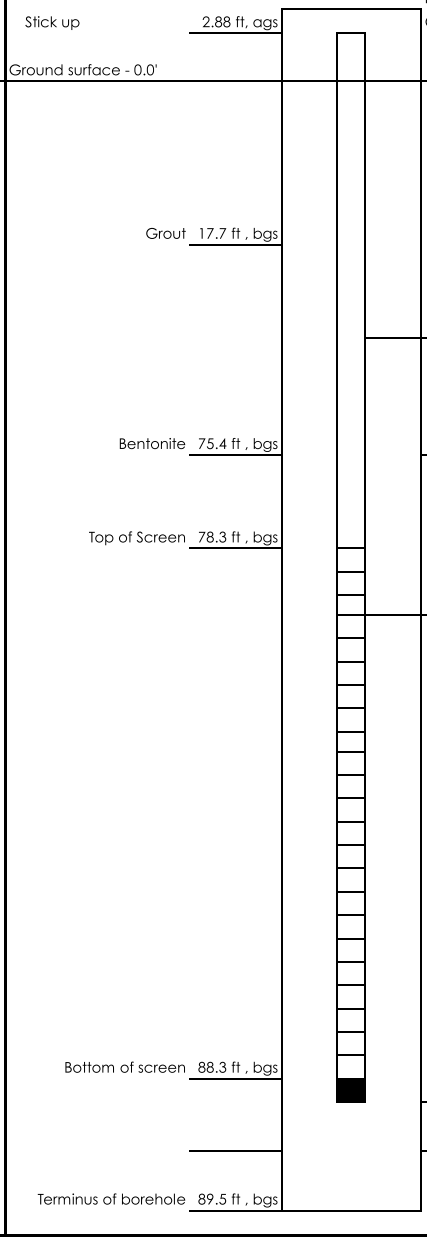
Well Installation Field Log

Project Name:	Plant Bowen Well Installation	Date Started:	5/2/2023	Date Completed:	5/5/2023
Borehole/Well No:	GWC-27R	Northing (ft):	1506022.3	Easting (ft):	2075508.5
Plant Name:	Plant Bowen	Latitude:	N34.137872	Longitude:	W84.897296
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	673.29	Stickup (ft, ags):	2.88
Goals/Task:	Groundwater Investigation	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	89.5
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	88.7
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	676.17	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	19.09		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Josh Massey				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.88 ft, ags

Casing Type (steel or PVC, schedule 40 or 80):
Schedule 40 PVC

Casing
Top: 2.88 ft, ags Bottom: 78.3 ft, bgs

Screen Type:
U-pack

Screen Slot Size:
0.010"

Screen
Top: 78.3 ft, bgs Bottom: 88.3 ft, bgs

Sump/end cap
Top: 88.3 ft, bgs Bottom: 88.7 ft, bgs

Grout Quantity:
60 gallons

Grout Type:
Aquaguard

Grout
Top: 0.3 ft, bgs Bottom: 17.7 ft, bgs

Density
Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type:
Pellets and Holeplug

Bentonite Seal
Top: 17.7 ft, bgs Bottom: 75.4 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products GP #1

Filter Pack:
Top: 75.4 ft, bgs Bottom: 89.5 ft, bgs

Notes:
4 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~2.0 ft^3
- Estimated dry filter pack volume ~ 2.5 ft^3
12 (50 lb) bags Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-27R**
Client: Georgia Power Company
Boring Location: Lat. 34.137872, Long. -84.897296
Project Number: 175569450
Surface Elevation: 673.29 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/2/23
Completed: 5/3/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 19.1 ft
Date/Time: 5/3/23 08:45
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Myer
Approved By: C. Sutherland

Lithology Depth Ft[2]	Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	673.3		Top of Hole						
			SILTY LEAN CLAY, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), low to medium plasticity, soft to firm, dry		RS01E	0.0 - 10.0	10.0	N/A	
8.0	665.3		CLAYEY SILT WITH SAND, ML, 7.5YR 5/6 (strong brown) to 5YR 4/6 (yellowish red), low plasticity, dry, Interbedded layers with yellow brown fine sand; trace subrounded gravel						
13.0	660.3		CLAYEY SILTY SAND, ML, 10YR 6/6 (brownish yellow) with 7.5YR 6/6 (reddish yellow), fine to medium, dry to moist, Laminated, poorly graded, Tan medium plastic clay; trace subrounded gravel		RS02E	10.0 - 20.0	10.0	N/A	
18.0	655.3		SANDY WELL GRADED GRAVEL, GW, 5YR 5/8 (yellowish red), fine to coarse, very loose, moist, well graded						
20.0	653.3								

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-27R**
Client: Georgia Power Company
Boring Location: Lat. 34.137872, Long. -84.897296
Project Number: 175569450
Surface Elevation: 673.29 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
21.0	652.3	Dolomite, light gray to light blue, finely crystalline, moderately hard, massive bedded, slightly weathered to moderately weathered, iron oxide staining, Munsell 5B 7/1; small voids noted						void from 21 to 30
		Void						
				RS03E	20.0 - 30.0	2.0	N/A	
30.0	643.3							
31.0	642.3	Dolomite, light gray to light blue, finely crystalline, moderately hard, massive bedded, slightly weathered to moderately weathered, iron oxide staining, Munsell 5B 7/1; small voids noted						void from 31 to 33, 35 to 37, 38 to 39
33.0	640.3	Void						
		Dolomite, light gray to light blue, finely crystalline, moderately hard, massive bedded, Munsell 5B 7/1, fracture filling						
35.0	638.3			RS04E	30.0 - 40.0	2.5	N/A	
		Void						
37.0	636.3							
38.0	635.3	Dolomite, light gray to light blue, finely crystalline, hard, massive bedded, slightly weathered, Munsell 5B 7/1; fracture filling						
39.0	634.3	Void						
		Dolomite, light gray, finely crystalline, hard, iron oxide staining, Munsell 5B 7/1; occasional maroon chert fragments and cherty dolostone						

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-27R**
Client Georgia Power Company
Boring Location Lat. 34.137872, Long. -84.897296
Project Number 175569450
Surface Elevation 673.29 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft[2]	Elevation								
45			Dolomite, light gray, finely crystalline, hard, iron oxide staining, Munsell 5B 7/1; occasional maroon chert fragments and cherty dolostone *(Continued)*		RS05E	40.0 - 50.0	9.0	N/A	
46									
47									
48									
49									
50	50.0	623.3							
50			Dolomite, light gray, finely crystalline, hard to very hard, Munsell 5B 7/1; occasional maroon chert fragments and cherty dolostone, fracture fill						iron oxide staining at end of run 5
51									
52									
53									
54									
55					RS06E	50.0 - 60.0	9.5	N/A	
56									
57									
58									
59									
60									
61									
62									
63									
64									
65					RS07E	60.0 - 70.0	6.0	N/A	
66									
67									
68									
69									
70									

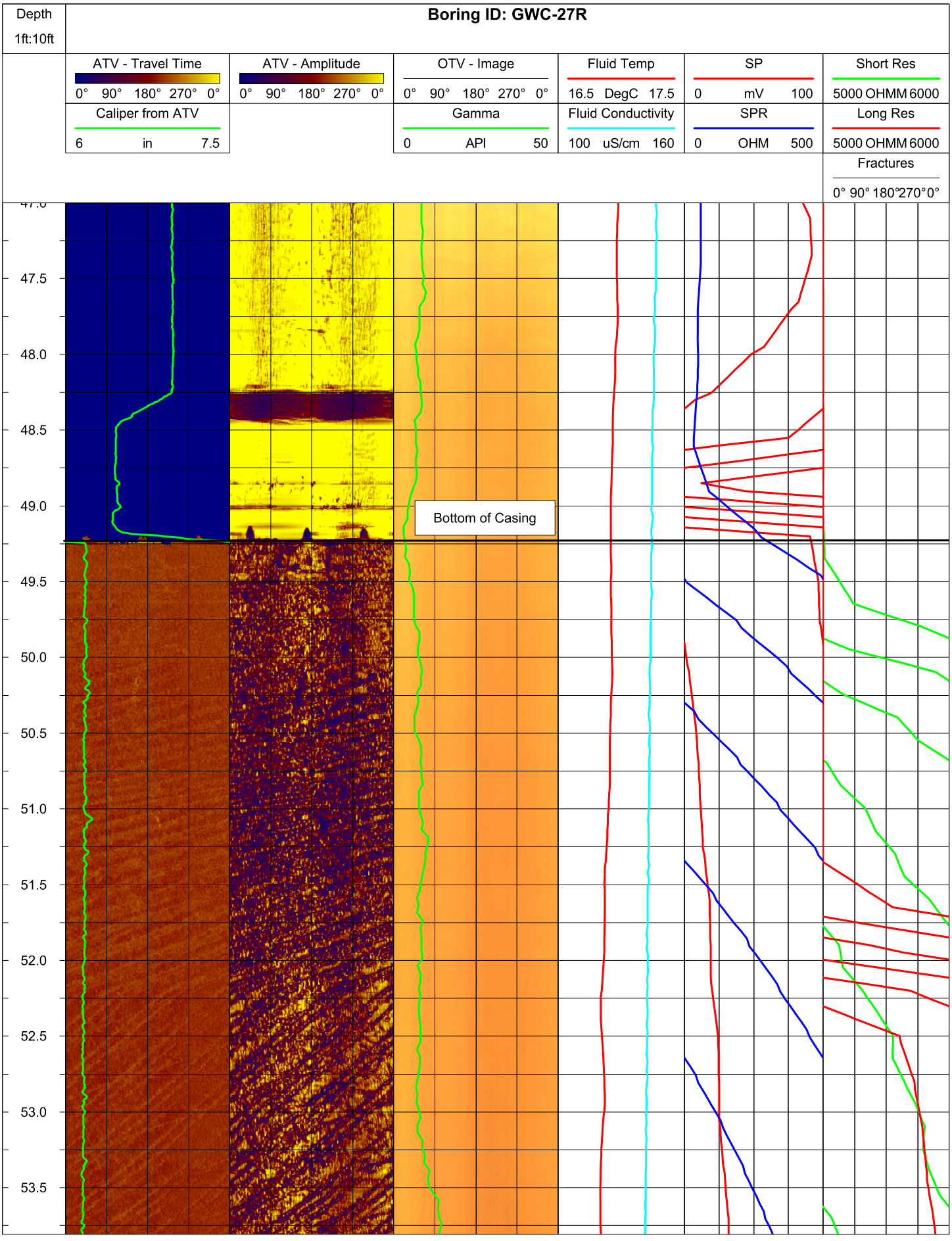
SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-27R**
Client Georgia Power Company
Boring Location Lat. 34.137872, Long. -84.897296
Project Number 175569450
Surface Elevation 673.29 ft
Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
70		Dolomite, light gray, finely crystalline, hard to very hard, Munsell 5B 7/1; occasional maroon chert fragments and cherty dolostone, fracture fill *(Continued)*						chert, slow drilling
71								
72								
73								
74								
75				RS08E	70.0 - 80.0	8.0	N/A	
76								
77								
78								
79	79.0	594.3						Iron staining
80		Dolomite, light gray, finely crystalline, hard to very hard, iron oxide staining, Munsell 5B 7/1; trace cherty dolostone						
81								
82								
83								
84								
85				RS09E	80.0 - 90.0	9.0	N/A	
86								
87								
88								
89								
90	90.0	583.3						

No Refusal /
Bottom of Hole at 90.0 Ft.

Top of Rock = 20.0 Ft.
Top of Rock Elevation = 653.3 Ft.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ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
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Fluid Temp
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SP
0 mV 100
Short Res
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Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
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47.5
48.0
48.5
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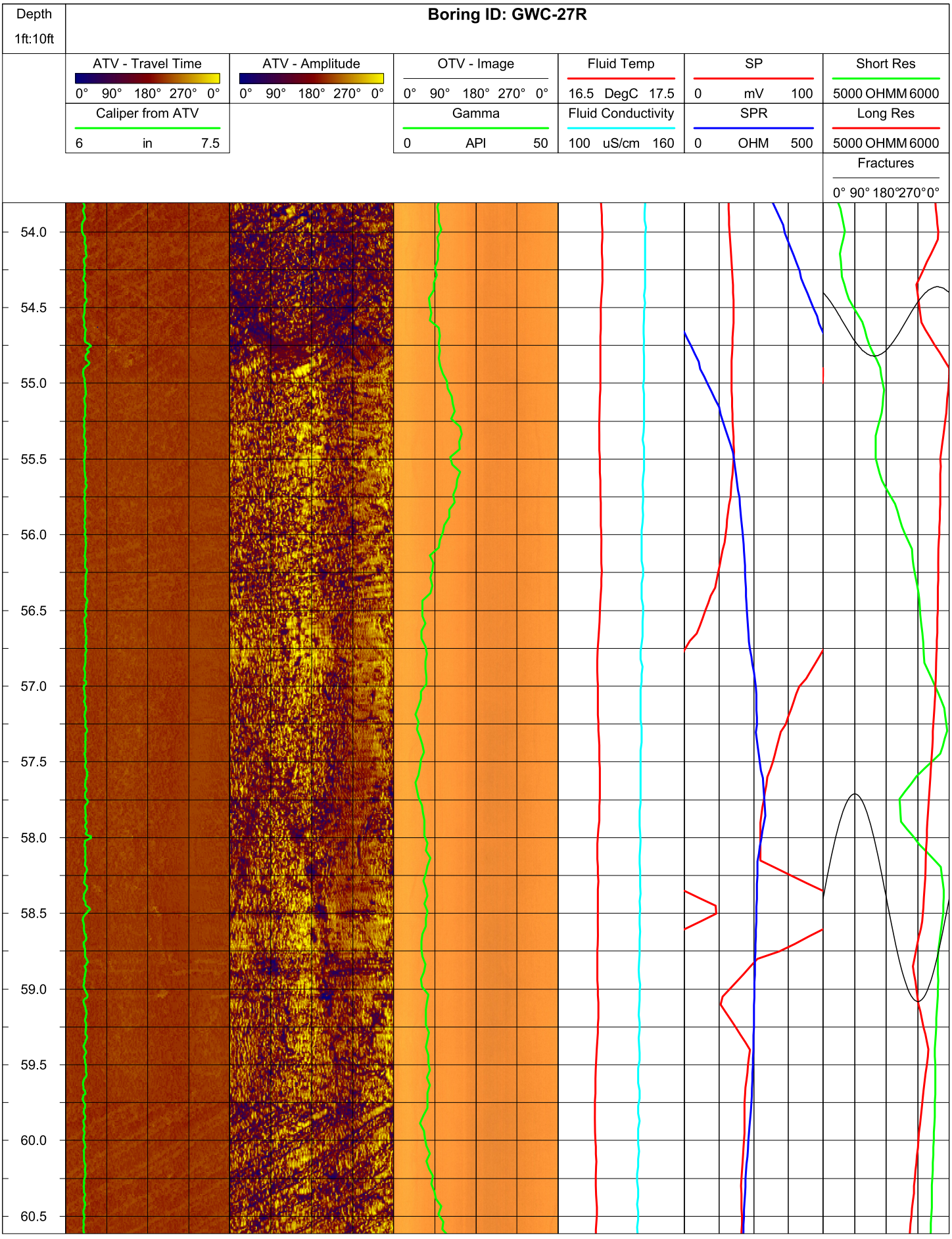
50.5
51.0
51.5
52.0
52.5
53.0
53.5
Bottom of Casing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OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
54.0
54.5
55.0
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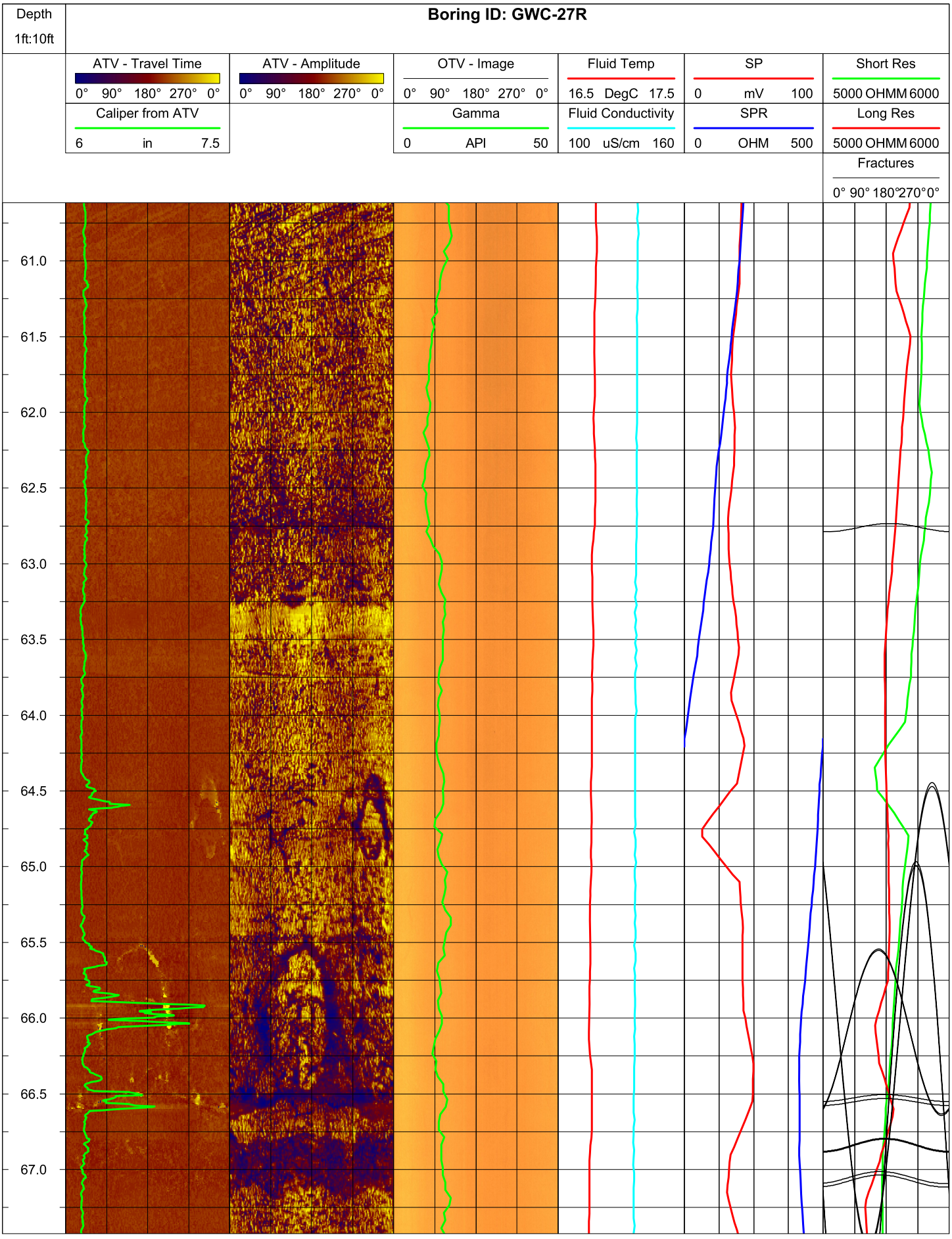
60.5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ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
61.0
61.5
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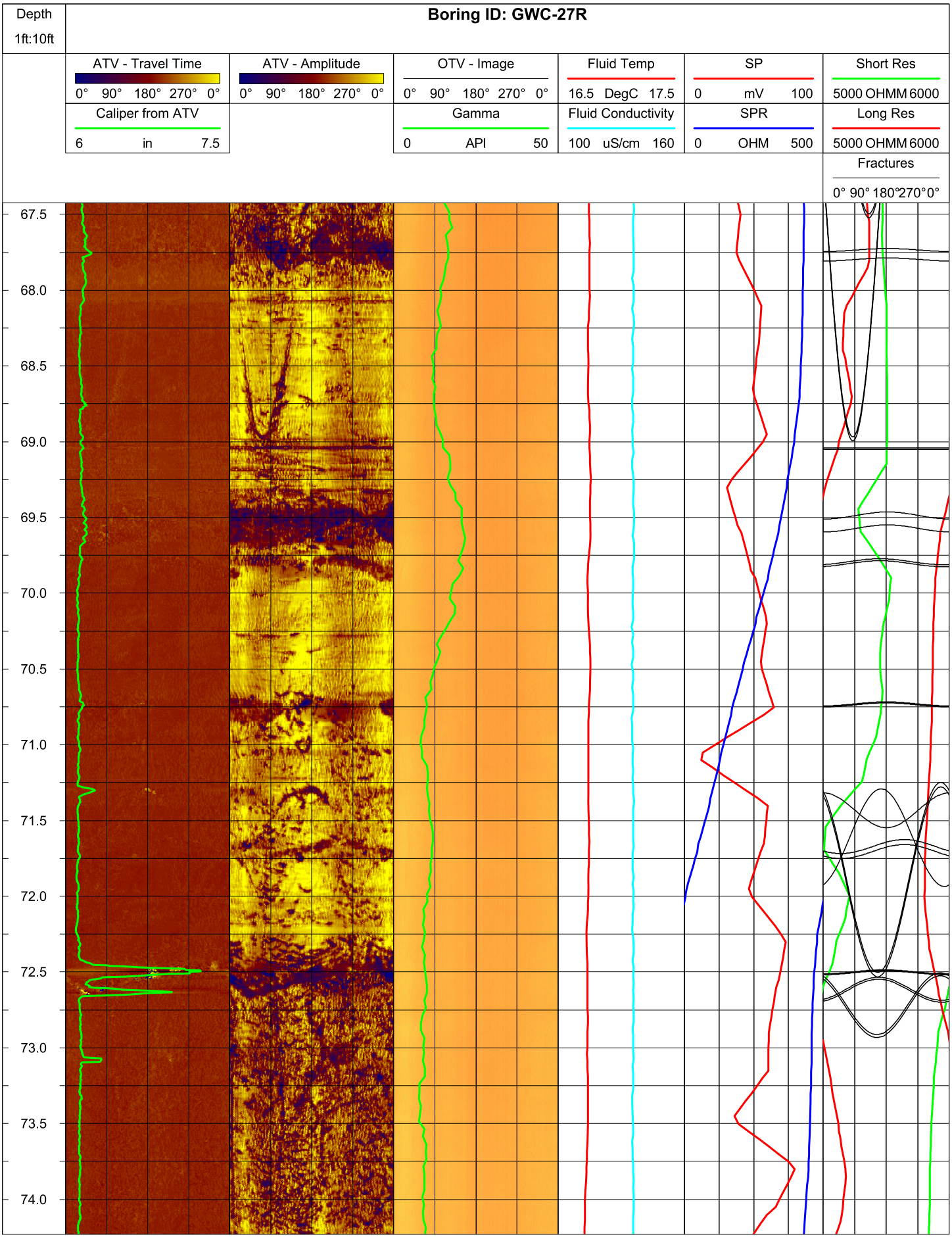
67.0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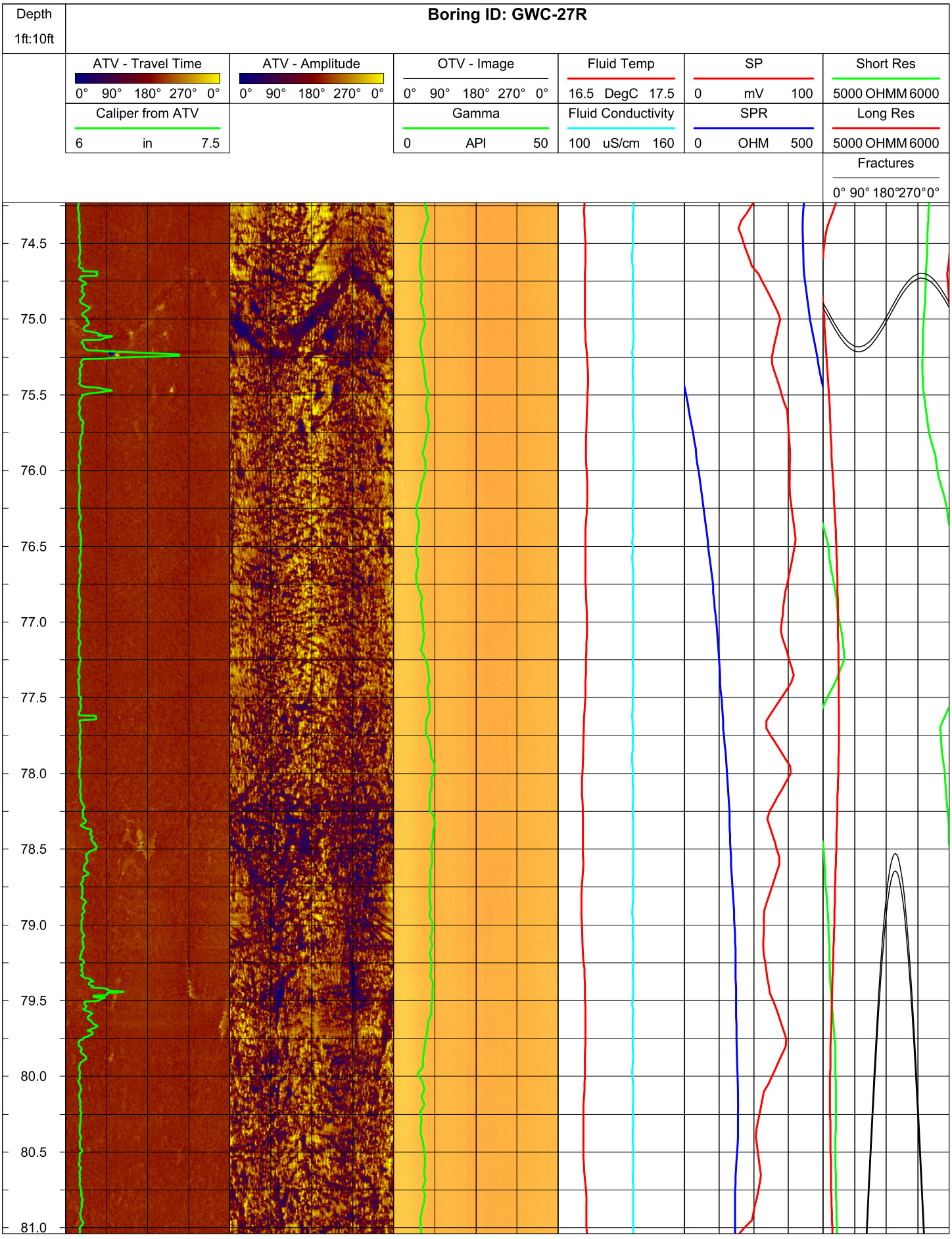
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
67.5
68.0
68.5
69.0
69.5
70.0
70.5
71.0
71.5
72.0
72.5
73.0
73.5
74.0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ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
74.5
75.0
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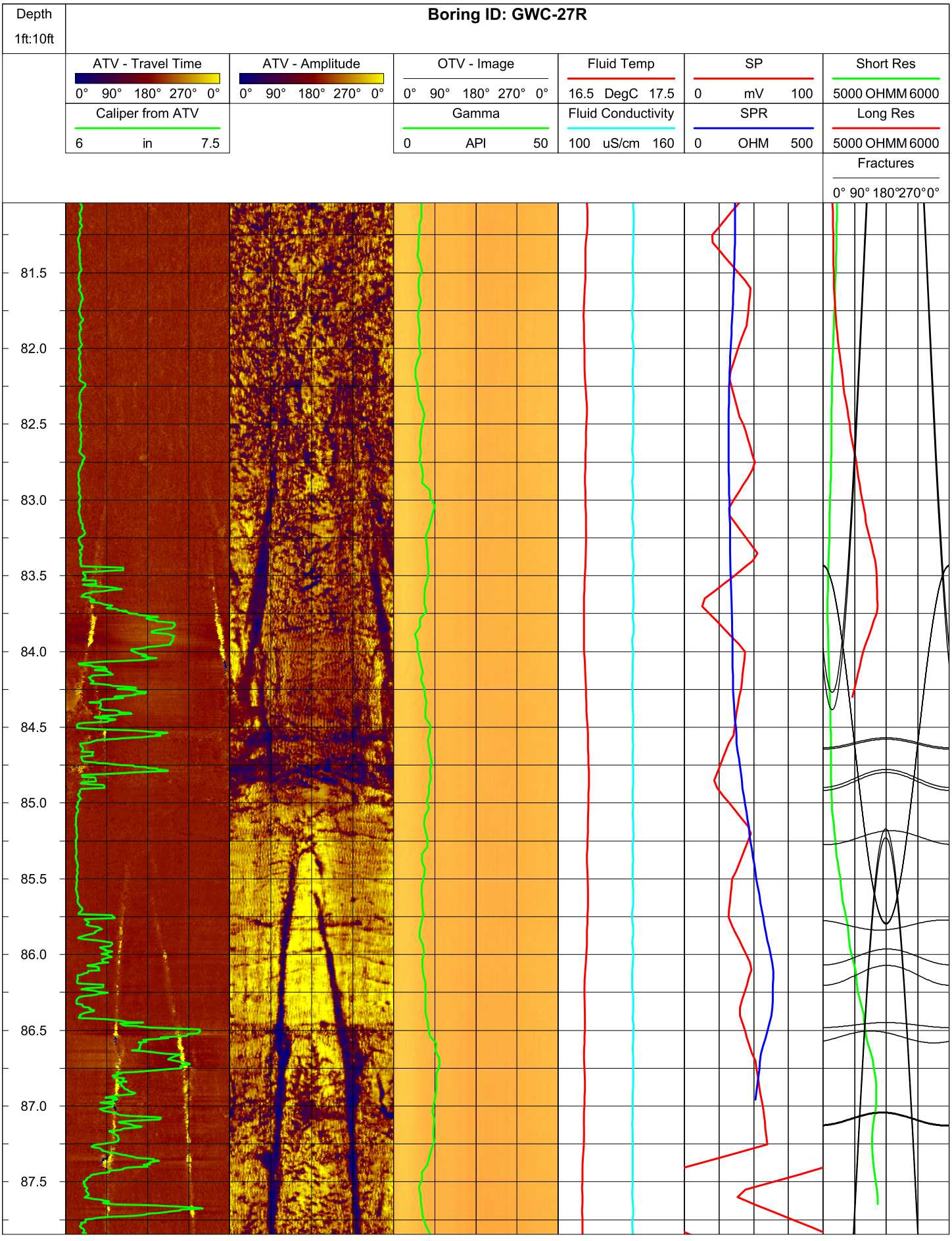
81.0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ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
81.5
82.0
82.5
83.0
83.5
84.0
84.5
85.0
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86.0
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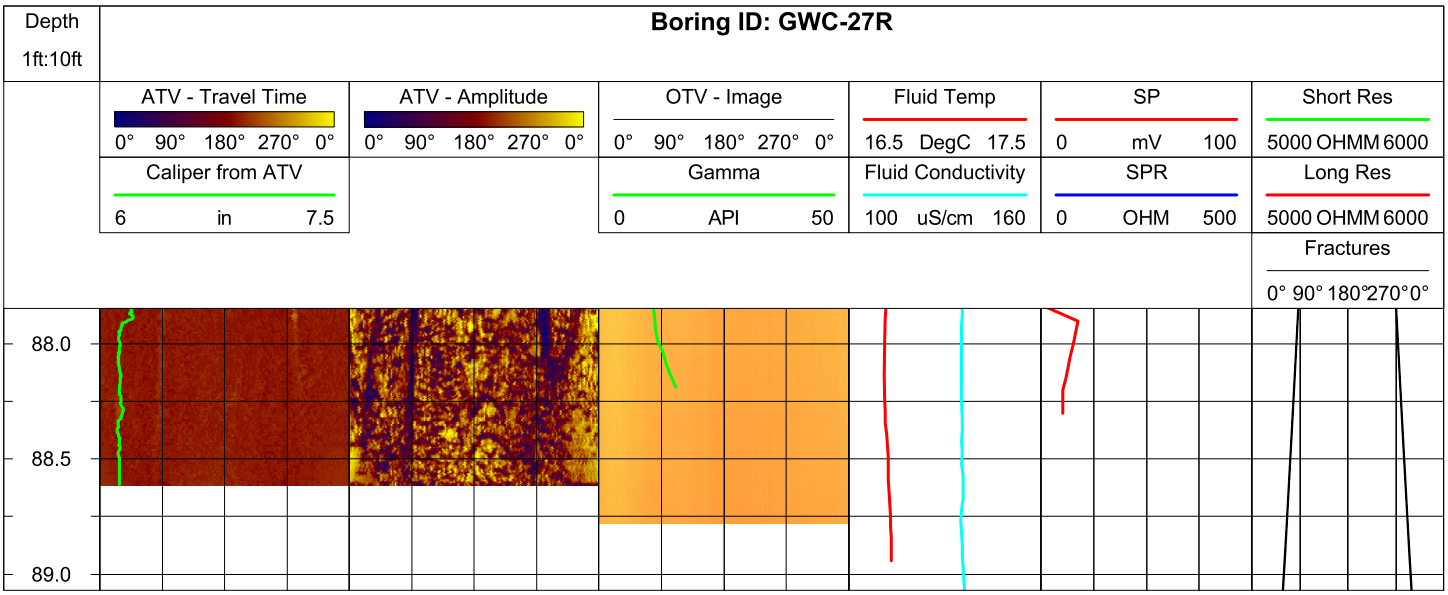
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ATV - Travel Time
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ATV - Amplitude
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OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17.5
SP
0 mV 100
Short Res
5000 OHMM 6000
Caliper from ATV
6 in 7.5
Gamma
0 API 50
Fluid Conductivity
100 uS/cm 160
SPR
0 OHM 500
Long Res
5000 OHMM 6000
Fractures
0° 90° 180° 270° 0°
88.0
88.5
89.0

Well Installation Field Log

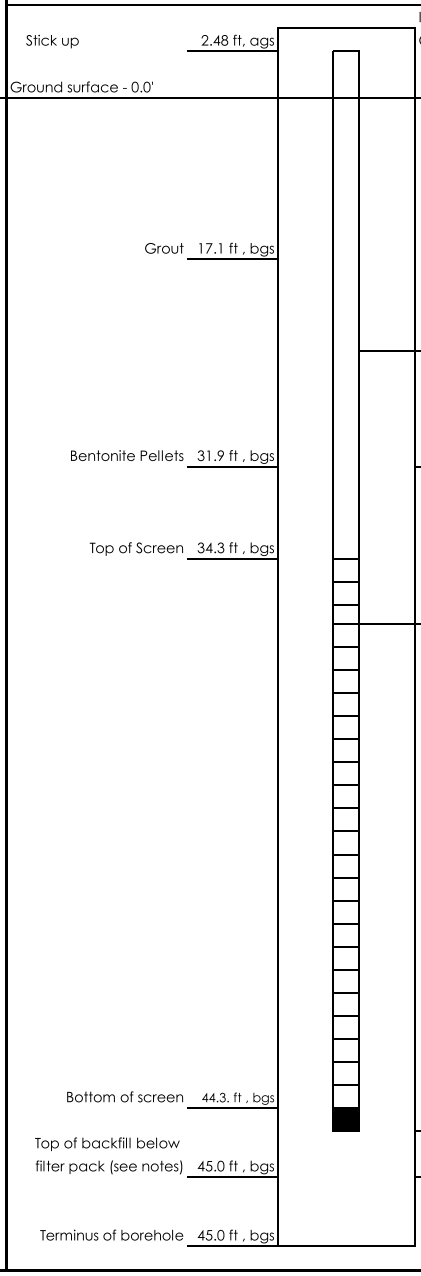
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/20/2023	Date Completed:	4/22/2023
Borehole/Well No:	GWC-28	Northing (ft):	1505801.7	Easting (ft):	2075741.9
Plant Name:	Plant Bowen	Latitude:	N34.137270	Longitude:	W84.896520
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	672.82	Stickup (ft, ags):	2.48
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	45.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	44.7
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	675.30	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	19.3		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.48 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 2.48 ft, ags Bottom: 34.3 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 34.3 ft, bgs Bottom: 44.3 ft, bgs

Sump/end cap Top: 44.3 ft, bgs Bottom: 44.7 ft, bgs

Grout Quantity: 60 gallons

Grout Type: Aquaguard

Grout Top: 0.0 ft, bgs Bottom: 17.1 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 17.1 ft, bgs Bottom: 31.9 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products Silica GP #1 pack

Filter Pack: Top: 31.9 ft, bgs Bottom: 45.0 ft, bgs

Notes:

3.5 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
1 50 lb bucket Pel Plug 3/8" coated bentonite pellets
2 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-28**
Client: Georgia Power Company
Boring Location: Lat. 34.137270, Long. -84.896520
Project Number: 175569450
Surface Elevation: 672.82 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/19/23
Completed: 4/19/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 19.2 ft
Date/Time: 4/20/23 19:47
Inspector: A. Stevens
Logger: A. Stevens
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	672.8	Top of Hole						
0		LEAN CLAY, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), medium to high plasticity, firm, dry, no odor, no staining		RS01E	0.0 - 10.0	5.5	N/A	
8.7	664.1							
9		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), non to low plasticity, firm, dry, no odor, no staining						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-28**
Client: Georgia Power Company
Boring Location: Lat. 34.137270, Long. -84.896520
Project Number: 175569450
Surface Elevation: 672.82 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown) to 5YR 4/6 (yellowish red), non to low plasticity, firm, dry, no odor, no staining *(Continued)*						
14.5	658.3							
14.9	657.9	Dolomite, light blue gray, moist, Mundell color 5B 7/1		RS02E	10.0 - 20.0	7.5	N/A	
		POORLY GRADED SAND SOME GRAVEL, GP, 5YR 5/8 (yellowish red), medium to coarse, medium plasticity, loose, moist, no odor, no staining, weak cementation, poorly graded						
20.0	652.8	Dolomite (50%) With Quartzite (50%) Dolomite, light blue gray with pale yellow orange, very coarsely crystalline, moderately hard, slightly weathered, damp, no odor, iron oxide staining, Rounded quartzite pebbles with iron staining 23-25 feet, Munsell color 5B 7/1 to 10YR 8/6						
24.0	648.8	Quartzite, Quarzite filled void						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-28**
Client: Georgia Power Company
Boring Location: Lat. 34.137270, Long. -84.896520
Project Number: 175569450
Surface Elevation: 672.82 ft
Elevation Datum: NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft[2]	Elevation								
25			Quartzite, Quarzite filled void *(Continued)*		RS03E	20.0 - 30.0	6.0	N/A	
26.0	646.8								
26			Dolomite, light blue gray, moist, Munsell color 5B 7/1						
27.0	645.8								
27			light blue gray, moist, Void 27-28 ft, Munsell color 5B 7/1						
28.0	644.8								
28			Dolomite, light blue gray, microcrystalline, soft, slightly weathered, damp, Munsell color 5B 7/1, iron staining and calcite veins 30-35 feet						
29									
30									
31									
32					RS04E	30.0 - 35.0	2.0	N/A	
33									
34									
35									
36									
37					RS05E	35.0 - 40.0	3.0	N/A	
38.0	634.8								
38									

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-28**
Boring Location Lat. 34.137270, Long. -84.896520
Surface Elevation 672.82 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
39		Dolomite (70%) With Limestone (30%) Dolomite, light blue gray to light gray, microcrystalline, very hard, Munsell color N7 to 5B 7/1 *(Continued)*						
40.0	632.8							
40		Dolomite (50%) With Quartzite (50%) Dolomite, light blue gray with pale brown, very coarsely crystalline, moderately hard, slightly weathered, damp, no odor, iron oxide staining, Rounded quartzite pebbles with iron staining 40-42 feet. Dolomite Munsell color (5B 7/1) quartzite color (10YR 8/2)						
41								
42								
				RS06E	40.0 - 45.0	2.5	N/A	
43								
44								
45.0	627.8							

No Refusal /
Bottom of Hole at 45.0 Ft.

Top of Rock = 20.0 Ft.
Top of Rock Elevation = 652.8 Ft.

Well Installation Field Log

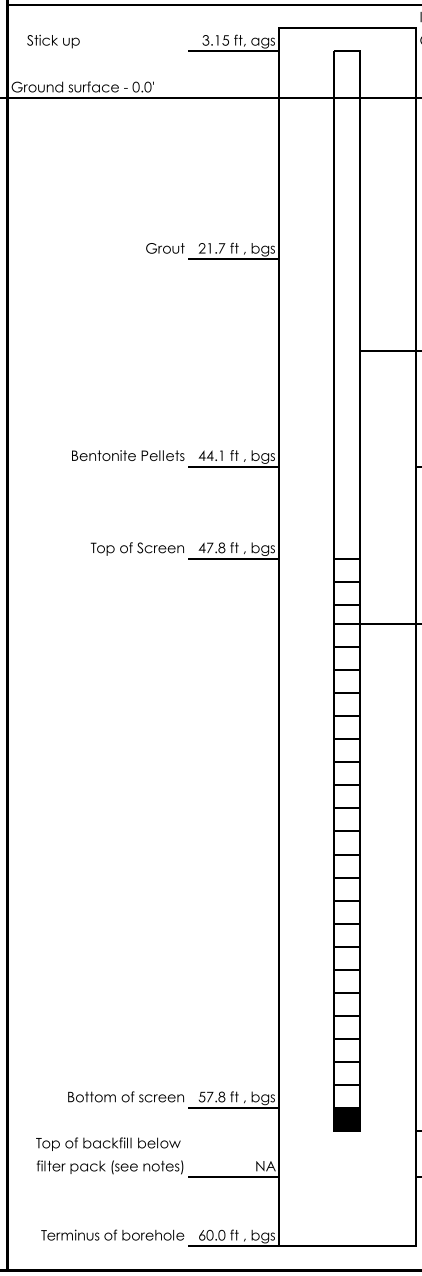
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/24/2023	Date Completed:	5/1/2023
Borehole/Well No:	GWC-29	Northing (ft):	1505509.8	Easting (ft):	2075871.2
Plant Name:	Plant Bowen	Latitude:	N34.136471	Longitude:	W84.896086
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	676.13	Stickup (ft, ags):	3.15
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	60.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	58.2
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	679.29	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	24.01		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.15 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.15 ft, ags Bottom: 58.2 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 47.8 ft, bgs Bottom: 57.8 ft, bgs

Sump/end cap Top: 57.8 ft, bgs Bottom: 58.2 ft, bgs

Grout Quantity: 100 gallons

Grout Type: Aquaguard

Grout Top: 0.3 ft, bgs Bottom: 21.7 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 21.7 ft, bgs Bottom: 44.1 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products Silica GP #1 pack

Filter Pack: Top: 44.1 ft, bgs Bottom: 60.0 ft, bgs

Notes:

27 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
17 50 lb bucket Pel Plug 3/8" coated bentonite pellets
1 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: NA
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-29**
Client: Georgia Power Company
Boring Location: Lat. 34.136471, Long. -84.896086
Project Number: 175569450
Surface Elevation: 676.13 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/23/23
Completed: 4/24/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 22.3 ft
Date/Time: 4/24/23 11:28
Inspector: A. Stevens
Logger: A. Stevens
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	676.1	Top of Hole						
0.5	675.6	LEAN CLAY, OL/OH, 5YR 4/4 (reddish brown) to 10YR 2/2 (very dark brown), medium to high plasticity, dry, no odor, no staining						
		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown), non to low plasticity, firm to soft, dry, no odor, no staining		RS01E	0.0 - 10.0	10.0	N/A	
6.0	670.1	FAT CLAY TRACE SILT, CH, 10R 4/8 (red), high plasticity, firm, dry						
				RS02E	10.0 - 20.0	10.0	N/A	
17.0	659.1	SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/4 (reddish brown), non to low plasticity, firm to soft, dry, no odor, no staining						
19.0	657.1							
20.0	656.1	FAT CLAY TRACE SILT, CH, 10R 4/8 (red), high plasticity, firm, dry						soft zone til 24 feet
		Soft zone 20-24, lost run near to of rock at 33 ft bgs						
				RS03E	20.0 - 30.0	0.0	N/A	

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Georgia Power Company
Project Number: 175569450

Stantec Boring No.: **GWC-29**
Boring Location: Lat. 34.136471, Long. -84.896086
Surface Elevation: 676.13 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		Soft zone 20-24, lost run near to of rock at 33 ft bgs *(Continued)*						
33.0	643.1	No recovery, fractured zone and/or voids from 33-41 feet bgs. Weight of sample barrel core dropped from 40-41 feet after the 30-40 RS04 run.		RS04E	30.0 - 40.0	0.0	N/A	voids/fractures from 33-41
41.0	635.1	Rock but no recovery						
46.0	630.1	Void		RS05E	40.0 - 55.0	0.0	N/A	
55.0	621.1	Dolomite, light blue gray, finely crystalline to microcrystalline, very hard, calcareous, Munsell color: 5B 7/1		RS06E	55.0 - 60.0	0.5	N/A	
60.0	616.1	No Refusal / Bottom of Hole at 60.0 Ft.						

Top of Rock = 33.0 Ft.
Top of Rock Elevation = 643.1 Ft.

STANTEC 1755.STD 175569450_BORING_LOGS (1).GPJ BC 1755.STD.DATAT R0.GDT 7/24/23

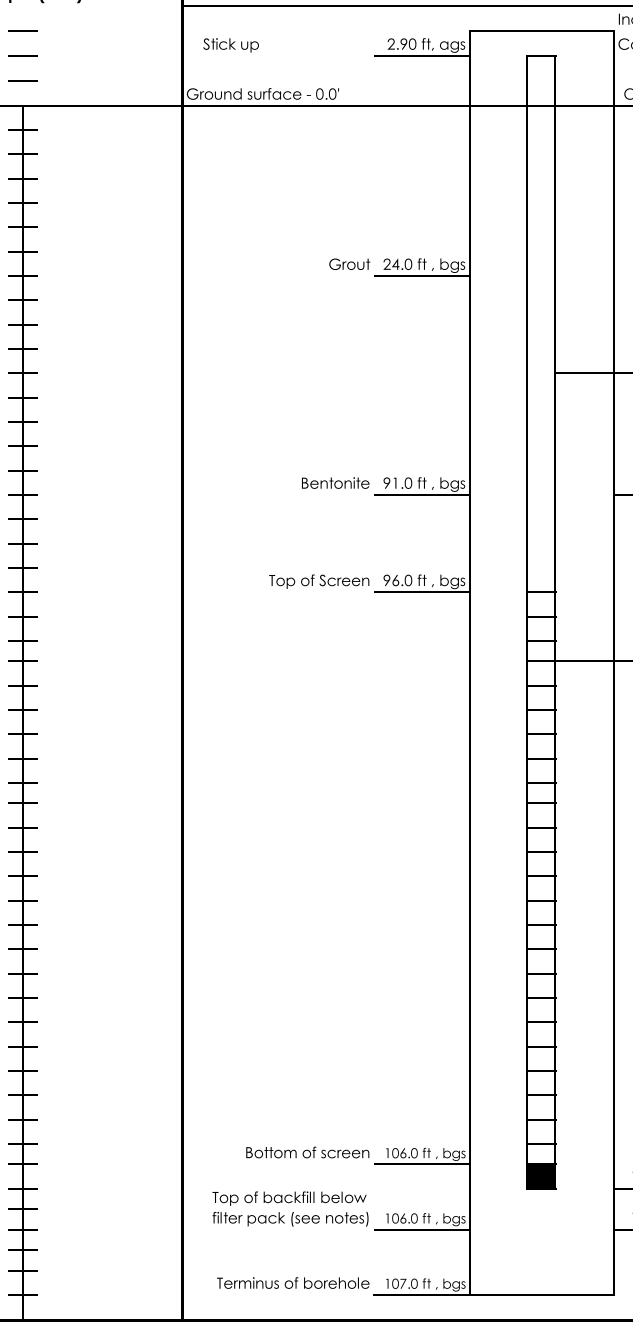
Well Installation Field Log

Project Name:	Plant Bowen Well Installation	Date Started:	5/4/23	Date Completed:	5/15/23
Borehole/Well No:	GWC-29R	Northing (ft):	1505485.9	Easting (ft):	2075868.3
Plant Name:	Plant Bowen	Latitude:	N34.136405	Longitude:	W84.896094
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	676.22	Stickup (ft, ags):	2.90
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	107.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	106.0
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	679.12	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	25.79		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.90 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing
Top: 2.90 ft, ags Bottom: 96.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen
Top: 96.0 ft, bgs Bottom: 106.0 ft, bgs

Sump/end cap
Top: 106.0 ft, bgs Bottom: 106.5 ft, bgs

Grout Quantity: 99 gallons

Grout Type: Aquaguard

Grout
Top: 4.0 ft, bgs Bottom: 24.0 ft, bgs

Density
Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal
Top: 86.0 ft, bgs Bottom: 91.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack:
Top: 91.0 ft, bgs Bottom: 106.0 ft, bgs

Notes:
4.5 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
13 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-29R**
Client: Georgia Power Company
Boring Location: Lat. 34.136405, Long. -84.896094
Project Number: 175569450
Surface Elevation: 676.22 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/4/23
Completed: 5/8/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 25.8 ft
Date/Time: 5/9/23 09:34
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	676.2	Top of Hole						
		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 4/6 (yellowish red), low plasticity, firm, moist		RS01E	0.0 - 7.0	4.5	N/A	
12.2	664.0			RS02E	7.0 - 17.0	10.0	N/A	
		SILTY POORLY GRADED SAND LITTLE CLAY, SM, 5YR 6/6 (reddish yellow), medium dense						
21.5	654.7			RS03E	17.0 - 27.0	9.3	N/A	
23.5	652.7	WELL GRADED GRAVEL WITH SILT WITH SAND, GM, 5YR 5/8 (yellowish red), fine to coarse, Graveo ((pebble to cobble,rounded, quartzite and other), with fine to coarse sand, silt, little clay.						
		Dolomite, pale gray, microcrystalline, soft, highly weathered, dry						
29.0	647.2			RS04E	27.0 - 33.0	2.5	N/A	
		Dolomite, light gray, microcrystalline, hard, slightly weathered, wet, iron oxide staining						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-29R**
Client: Georgia Power Company
Boring Location: Lat. 34.136405, Long. -84.896094
Project Number: 175569450
Surface Elevation: 676.22 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		Dolomite, light gray, microcrystalline, hard, slightly weathered, wet, iron oxide staining *(Continued)*		RS05E	33.0 - 37.0	3.5	N/A	
36.6	639.6							
		Dolomite, light gray, microcrystalline, hard, thin, slightly weathered, wet, iron oxide staining, With intercalated chert		RS06E	37.0 - 47.0	6.2	N/A	
50.0	626.2							
		Dolomite, gray, microcrystalline, hard, medium bedded to massive bedded, slightly weathered, wet, iron oxide staining, Occasional iron oxide staining.		RS07E	47.0 - 57.0	5.7	N/A	
				RS08E	57.0 - 67.0	6.2	N/A	
68.5	607.7							
		Dolomite, gray, microcrystalline, very hard, slightly weathered, wet, horizontal, Chert intercalations, fractures 2" to 8" vertical spacing, some calcite and dolomite filled veins. Clay filled void 78.5-79'.		RS09E	67.0 - 77.0	10.0	N/A	

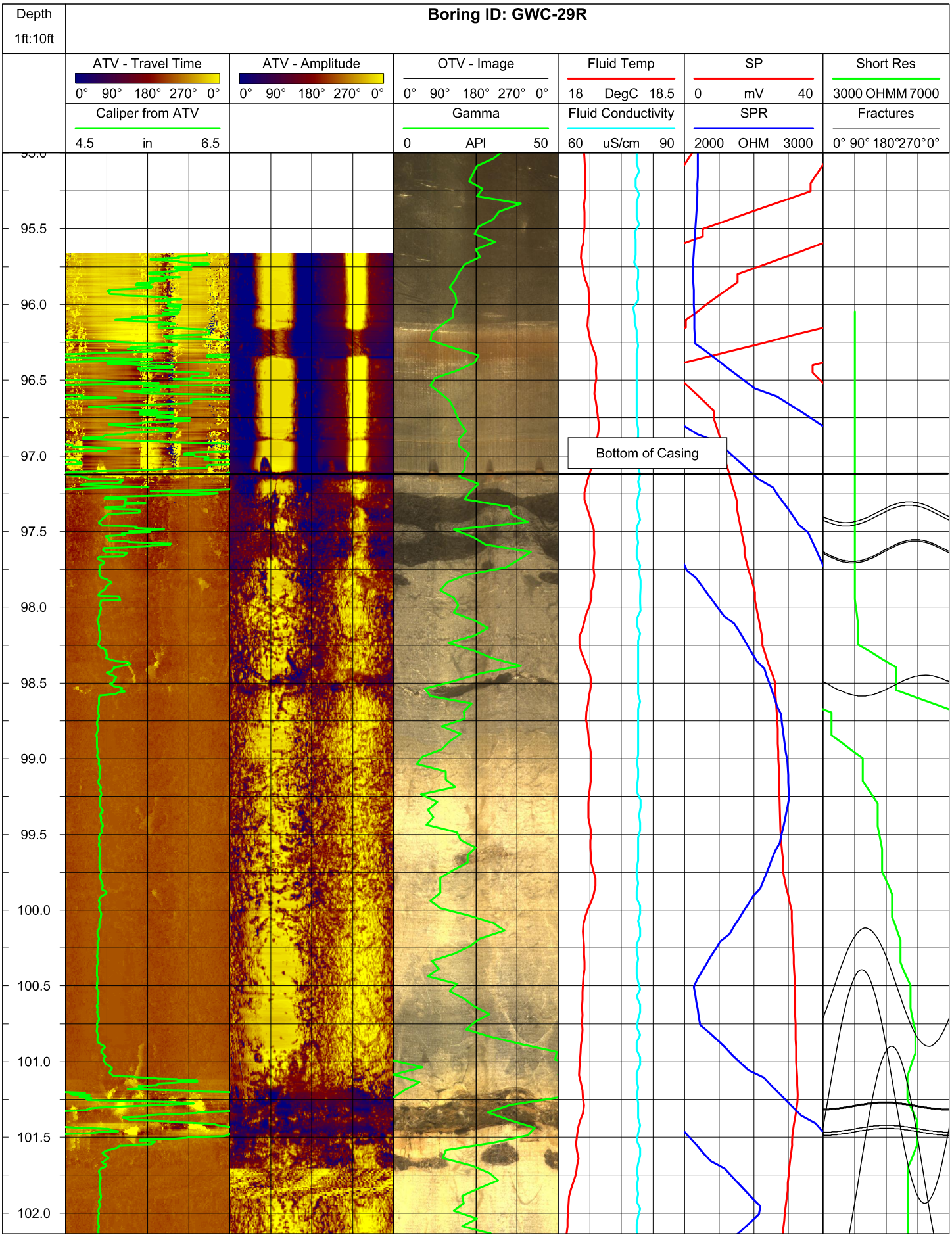
STANTEC 1755 STD 175569450_BORING_LOGS (1).GPJ BC 1755 STD DATAT R0.GDT 7/24/23

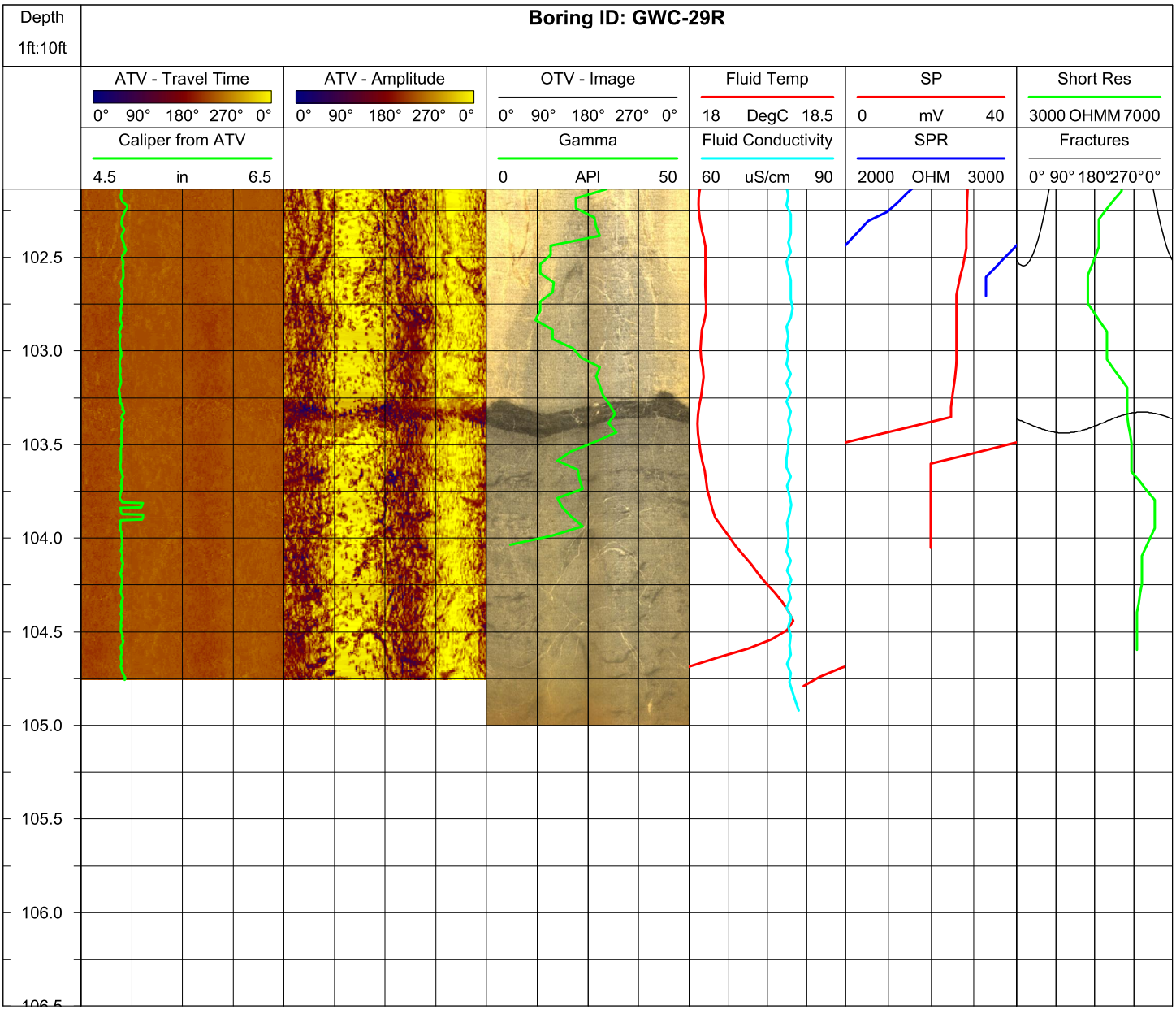
SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-29R**
Client Georgia Power Company
Boring Location Lat. 34.136405, Long. -84.896094
Project Number 175569450
Surface Elevation 676.22 ft
Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft Run Ft	Rec. Ft Rec. Ft	Blows/PSI Rec. %	Remarks
77		Dolomite, gray, microcrystalline, very hard, slightly weathered, wet, horizontal, Chert intercalations, fractures 2" to 8" vertical spacing, some calcite and dolomite filled veins. Clay filled void 78.5-79'. *(Continued)*						
78								
79								
80								
81								
82				RS10E	77.0 - 87.0	4.6	N/A	
83	83.0							
83	593.2	Dolomite, light gray, microcrystalline, hard, thin, slightly weathered, wet, iron oxide staining, pyritic, Iron oxide staining along fractures and occasional pyrite.						
84								
85								
86								
87								
88	88.5							
88	587.7	Dolomite, light gray, microcrystalline, very hard, medium bedded, slightly weathered, wet, With chert		RS11E	87.0 - 92.0	5.0	N/A	
89								
90								
91	91.5							
91	584.7							
92	92.0							
92	584.2	Dolomite, light gray, microcrystalline, hard, thin bedded, iron oxide staining, Iron oxide staining along apparent fractures						
93								
94								
95		Dolomite, light gray to gray, microcrystalline, very hard, thin bedded to medium bedded, slightly weathered, wet, With chert		RS12E	92.0 - 97.0	0.0	N/A	
96								
97								
98								
99								
100								
101	101.3							
101	574.9	Dolomite, light gray, microcrystalline, hard, thin bedded, wet, iron oxide staining, Iron oxide staining 101-104 and 106-107'		RS13E	97.0 - 107.0	8.0	N/A	
102								
103								
104								
105								
106								
107	107.0							
107	569.2	No Refusal / Bottom of Hole at 107.0 Ft.						

Top of Rock = 23.5 Ft.
Top of Rock Elevation = 652.7 Ft.


Depth
1ft:10ft
Boring ID: GWC-29R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
18 DegC 18.5
SP
0 mV 40
Short Res
3000 OHMM 7000
Caliper from ATV
4.5 in 6.5
Gamma
0 API 50
Fluid Conductivity
60 uS/cm 90
SPR
2000 OHM 3000
Fractures
0° 90° 180° 270° 0°
95.5
96.0
96.5
97.0
97.5
98.0
98.5
99.0
99.5
100.0
100.5
101.0
101.5
102.0
Bottom of Casing


Depth
1ft:10ft
Boring ID: GWC-29R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
18 DegC 18.5
SP
0 mV 40
Short Res
3000 OHMM 7000
Caliper from ATV
4.5 in 6.5
Gamma
0 API 50
Fluid Conductivity
60 uS/cm 90
SPR
2000 OHM 3000
Fractures
0° 90° 180° 270° 0°
102.5
103.0
103.5
104.0
104.5
105.0
105.5
106.0

Well Installation Field Log

Project Name:	Plant Bowen Well Installation	Date Started:	4/24/23	Date Completed:	4/25/23
Borehole/Well No:	GWC-30	Northing (ft):	1505206.2	Easting (ft):	2075851.5
Plant Name:	Plant Bowen	Latitude:	N34.135636	Longitude:	W84.896143
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	681.86	Stickup (ft, ags):	3.15
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	50.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	48.0
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	685.00	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	29.38		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction

Stick up 3.10 ft, ags — Inch Diameter Protective Cover with Locking Lid

Ground surface - 0.0' — Outer casing

Grout 23.0 ft , bgs

2 inch casing

Bentonite 34.5 ft , bgs — 34.5 ft, bgs Filter pack

Top of Screen 38.0 ft , bgs

0.010" Slot screen

Bottom of screen 48.0 ft , bgs — 48.5 ft , bgs Sump/end cap

Top of backfill below filter pack (see notes) 50.0 ft , bgs — 50.0 ft , bgs Base of filter pack

Terminus of borehole 50.0 ft , bgs

Materials Inventory

Stick up: 3.10 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.10 ft, ags Bottom: 38.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 38.0 ft, bgs Bottom: 48.0 ft, bgs

Sump/end cap Top: 48.0 ft, bgs Bottom: 48.5 ft, bgs

Grout Quantity: 60 gallons

Grout Type: Aquaguard

Grout Top: 0.1 ft, bgs Bottom: 23.0 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 23.0 ft, bgs Bottom: 34.5 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 34.5 ft, bgs Bottom: 50.0 ft, bgs

Notes:

Five (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
Two bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-30**
Client: Georgia Power Company
Boring Location: Lat. 34.135636, Long. -84.896143
Project Number: 175569450
Surface Elevation: 681.86 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/24/23
Completed: 4/25/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 29.4 ft
Date/Time: 4/25/23
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	681.9	Top of Hole						
0		SILTY LEAN CLAY WITH SAND, CL, 5YR 3/4 (dark reddish brown), low plasticity, firm, wet		RS01E	0.0 - 7.0	7.0	N/A	
5.0	676.9	SANDY LEAN CLAY WITH SILT, CL, 5YR 5/8 (yellowish red), low plasticity, firm, moist		RS02E	7.0 - 17.0	10.0	N/A	
15.5	666.4	CLAYEY SILTY SAND, SM, 5YR 5/6 (yellowish red), fine, medium dense, moist						

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-30**
Boring Location Lat. 34.135636, Long. -84.896143
Surface Elevation 681.86 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
18–22		CLAYEY SILTY SAND, SM, 5YR 5/6 (yellowish red), fine, medium dense, moist *(Continued)*		RS03E	17.0 - 27.0	9.0	N/A	
23.0	658.9							
23–26		SILTY POORLY GRADED SAND WITH CLAY WITH GRAVEL, SM, 10YR 4/4 (dark yellowish brown), fine, loose, wet, Pebble to cobble size chert gravel						
26.5	655.4							
27–31		Dolomite, light gray, microcrystalline, hard, slightly weathered, wet, iron oxide staining						
32.0	649.9			RS04E	27.0 - 37.0	8.5	N/A	
32–37		Dolomite, gray, microcrystalline, hard, slightly weathered						
38.0	643.9							
38–40		Dolomite, gray, microcrystalline, hard, slightly weathered, wet						

STANTEC 1755.STD 175569450_BORING_LOGS (1).GPJ BC 1755.STD DATAT R0.GDT 7/24/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-30**
Boring Location Lat. 34.135636, Long. -84.896143
Surface Elevation 681.86 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
41		Dolomite, gray, microcrystalline, hard, slightly weathered, wet *(Continued)*						
42				RS05E	37.0 - 47.0	10.0	N/A	
43								
44								
45								
46	635.9							
46.0		Dolomite, gray, microcrystalline, hard, slightly weathered, wet, iron oxide staining						
47								
48				RS06E	47.0 - 50.0	1.0	N/A	
49								
50								
50.0	631.9							

No Refusal /
Bottom of Hole at 50.0 Ft.

Top of Rock = 26.5 Ft.
Top of Rock Elevation = 655.4 Ft.

Well Installation Field Log

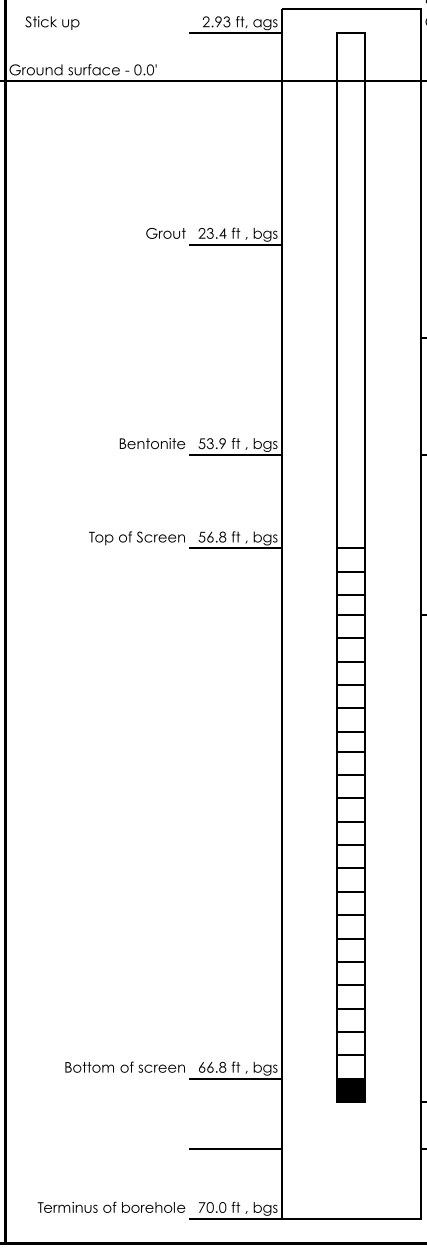
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/6/2023	Date Completed:	5/8/2023
Borehole/Well No:	GWC-31	Northing (ft):	1504927.6	Easting (ft):	2075816.9
Plant Name:	Plant Bowen	Latitude:	N34.134870	Longitude:	W84.896251
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	680.20	Stickup (ft, ags):	2.93
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	70.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	67.2
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	683.13	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	27.75		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Josh Massey				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.93 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing
Top: 2.93 ft, ags Bottom: 56.8 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen
Top: 56.8 ft, bgs Bottom: 66.8 ft, bgs

Sump/end cap
Top: 66.8 ft, bgs Bottom: 67.2 ft, bgs

Grout Quantity: 33 gallons

Grout Type: Aquaguard

Grout
Top: 0.5 ft, bgs Bottom: 23.4 ft, bgs

Density
Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal
Top: 23.4 ft, bgs Bottom: 53.9 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products GP #1

Filter Pack:
Top: 53.9 ft, bgs Bottom: 70.0 ft, bgs

Notes:
5 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~2.5 ft3
11 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-31**
Client: Georgia Power Company
Boring Location: Lat. 34.134870, Long. -84.896251
Project Number: 175569450
Surface Elevation: 680.20 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/5/23
Completed: 5/6/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 27.8 ft
Date/Time: 5/7/23 12:50
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Myer
Approved By: C. Sutherland

Lithology Depth Ft²	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.2	Top of Hole						
0		Topsoil						
2.0	678.2	SILTY LEAN CLAY, CL, 2.5YR 4/4 (reddish brown) to 10R 4/4 (weak red), low plasticity, soft to firm, moist, Homogeneous		RS01E	0.0 - 9.0	6.0	N/A	
14.0	666.2	SILTY LEAN CLAY, CL-ML, 5YR 4/6 (yellowish red), low plasticity, firm, moist		RS02E	9.0 - 20.0	11.0	N/A	
18.0	662.2	CLAYEY SILTY SAND WITH GRAVEL, SM, 10YR 6/8 (brownish yellow) with 5YR 5/8 (yellowish red), very fine, loose to medium dense, moist, iron oxide staining, Manganese nodules, mottling						
25.0	655.2	SANDY WELL GRADED GRAVEL WITH SILT, GW, 2.5Y 7/4 (pale brown) to 10YR 5/6 (yellowish brown), fine to coarse, medium dense, moist, gap graded, Quartzite gravel; brown coarse sand zone with angular dolostone gravel at 29 to 30 feet bgs.		RS03E	20.0 - 30.0	9.0	N/A	
30.0	650.2	SILTY WELL GRADED GRAVEL, GW-GM, 10YR 6/8 (brownish yellow), fine to coarse, loose, moist to wet, gap graded, Residuum containing subrounded quartzite pebbles and cherty dolomite fragments						soft zone at 34 to 40

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Georgia Power Company
Project Number: 175569450

Stantec Boring No.: **GWC-31**
Boring Location: Lat. 34.134870, Long. -84.896251
Surface Elevation: 680.20 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		SILTY WELL GRADED GRAVEL, GW-GM, 10YR 6/8 (brownish yellow), fine to coarse, loose, moist to wet, gap graded, Residuum containing subrounded quartzite pebbles and cherty dolomite fragments *(Continued)*		RS04E	30.0 - 40.0	6.0	N/A	
40.0	640.2	Void						void 40-50
				RS05E	40.0 - 50.0	0.0	N/A	
50.0	630.2	WELL GRADED GRAVEL WITH CLAY, GC, 10YR 6/8 (brownish yellow) with 5YR 6/8 (reddish yellow), fine to coarse, very loose to medium dense, wet, well graded						
54.0	626.2							
55.0	625.2	Dolomite, dark gray with light white, finely crystalline to microcrystalline, hard, massive bedded, slightly weathered, Munsell N3; abundant fracture filling, recrystallization; pyrite replacement nodules		RS06E	50.0 - 60.0	4.0	N/A	void 55 to 59
59.0	621.2	Void						
		Dolomite, dark gray with light white, finely crystalline to microcrystalline, hard, thin to massive bedded, Munsell N3 ; thin bedding at 60 feet bgs; abundant fracture filling, recrystallization; pyrite replacement nodules		RS07E	60.0 - 70.0	7.0	N/A	
70.0	610.2							

No Refusal /
Bottom of Hole at 70.0 Ft.

Top of Rock = 54.0 Ft.
Top of Rock Elevation = 626.2 Ft.

Well Installation Field Log

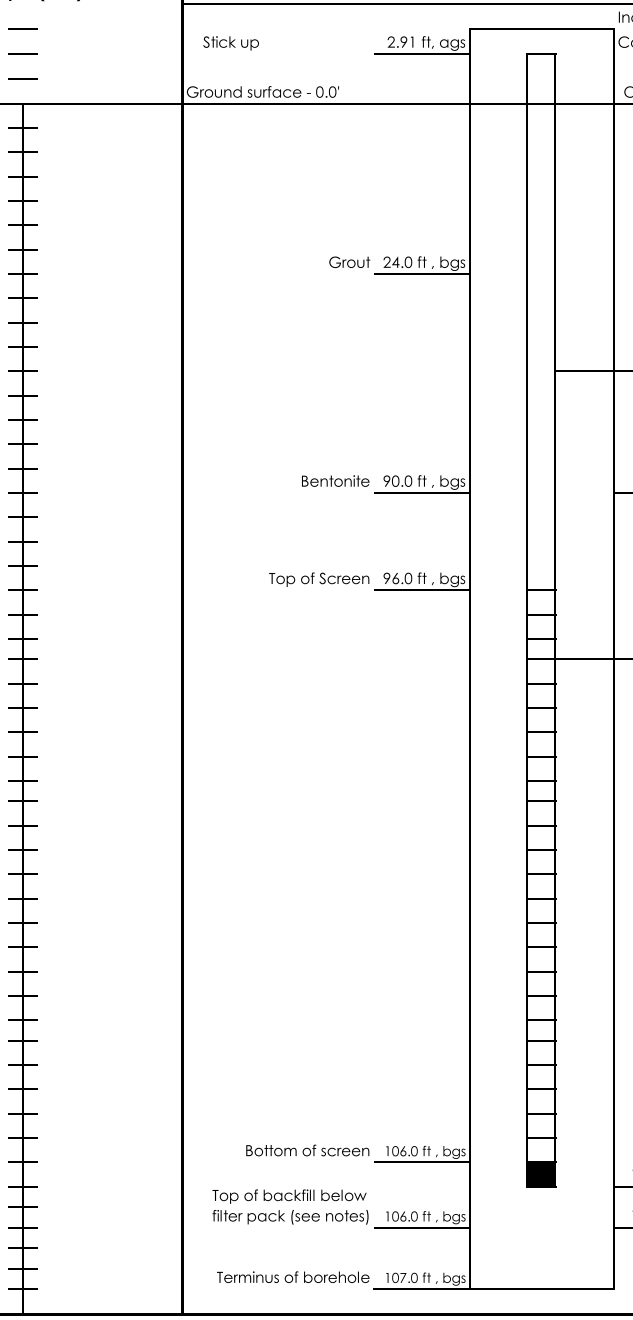
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/25/23	Date Completed:	5/4/23
Borehole/Well No:	GWC-31R	Northing (ft):	1504953.4	Easting (ft):	2075819.5
Plant Name:	Plant Bowen	Latitude:	N34.134941	Longitude:	W84.896243
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	680.18	Stickup (ft, ags):	2.91
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	107.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	106.5
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	683.09	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	27.31		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.91 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing — Top: 2.91 ft, ags Bottom: 96.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen — Top: 96.0 ft, bgs Bottom: 106.0 ft, bgs

Sump/end cap — Top: 106.0 ft, bgs Bottom: 106.5 ft, bgs

Grout Quantity: 75 gallons

Grout Type: Aquaguard

Grout — Top: 2.0 ft, bgs Bottom: 24.0 ft, bgs

Density — Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal — Top: 24.0 ft, bgs Bottom: 90.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 90.0 ft, bgs Bottom: 106.0 ft, bgs

Notes:

20 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
24 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-31R**
Client: Georgia Power Company
Boring Location: Lat. 34.134941, Long. -84.896243
Project Number: 175569450
Surface Elevation: 680.18 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/25/23
Completed: 5/3/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 27.3 ft
Date/Time: 5/1/23 15:15
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: 23.2 ft
Date/Time: 5/15/23 15:15
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.2	Top of Hole						
		SILTY LEAN CLAY LITTLE SAND, CL, 10R 3/4 (dusky red), low plasticity, firm, moist						
3.0	677.2							
		SILTY LEAN CLAY LITTLE SAND, CL, 10R 4/6 (red), low plasticity, firm, moist		RS01E	0.0 - 7.0	7.0	N/A	
				RS02E	7.0 - 17.0	10.0	N/A	
13.0	667.2							
		SILTY POORLY GRADED SAND WITH CLAY, SM, 10R 4/6 (red), fine, medium dense, moist, no staining						
18.0	662.2							
		SANDY WELL GRADED GRAVEL WITH SILT WITH CLAY, GM, 10R 4/6 (red), very fine to coarse, loose, moist						
20.0	660.2							

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-31R**
Client: Georgia Power Company
Boring Location: Lat. 34.134941, Long. -84.896243
Project Number: 175569450
Surface Elevation: 680.18 ft
Elevation Datum: NAVD88

Lithology			Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	
Depth Ft[2]	Elevation	Description	Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	Remarks
20		SILTY POORLY GRADED SAND WITH CLAY TRACE GRAVEL, SM, 5YR 5/6 (yellowish red), fine, medium dense, moist, 30 to 38' no recovery, soft drilling, possibly gravelly, silty sand.						
21								
22				RS03E	17.0 - 27.0	10.0	N/A	
23 ▼								
24								
25								
26								
27 ▽								
28								
29								
30								30 - 38 no recovery, soft zone immedietly above top of bedrock. Possibly gravelly, silty, sand, wet.
31								
32				RS04E	27.0 - 37.0	3.0	N/A	
33								
34								
35								
36								
37								
38	38.0 642.2							
39		Dolomite, hard, No Recovery - based on drilling, believed to be hard, dolomite, wet.						
40	40.0 640.2							
41		Void						
42				RS05E	37.0 - 47.0	0.0	N/A	
43								
44								
45								

STANTEC 1755 STD 175569450_BORING_LOGS (1).GPJ BC 1755 STD DATAT R0.GDT 7/24/23

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-31R**
Client Georgia Power Company
Boring Location Lat. 34.134941, Long. -84.896243
Project Number 175569450
Surface Elevation 680.18 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft[2]	Elevation								
47.0	633.2		Void *(Continued)*						
48.5	631.7		Dolomite, light gray, microcrystalline, hard, massive bedded, slightly weathered, wet, Calcite vein fillings, fractured. Munsell color N7.		RS06E	47.0 - 50.0	3.0	N/A	
50.0	630.2		Dolomite, light gray, microcrystalline, hard, massive bedded, moderately weathered, wet, With clay filled voids. Soft reddish brown clay 2.5 YR 5/4, littlevsilt, wet, high plasticity. Munsell color N8.						
58.0	622.2		Dolomite, gray, microcrystalline, very hard, massive bedded, slightly weathered, wet, Calcite vein fillings. Munsell color N7.		RS07E	50.0 - 58.0	2.6	N/A	
68.0	612.2		Dolomite, light gray and dark gray, microcrystalline, thin bedded, iron oxide staining, inclined, Appears brecciated; occasional small (1/8" diameter) vugs, some filled with dolomite. Munsell color N3.		RS08E	58.0 - 67.0	2.5	N/A	
			Void						

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-31R**
Client Georgia Power Company
Boring Location Lat. 34.134941, Long. -84.896243
Project Number 175569450
Surface Elevation 680.18 ft
Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		Void *(Continued)*		RS09E	67.0 - 77.0	0.0	N/A	
77.0	603.2	Dolomite, light gray, microcrystalline, hard, thin bedded to medium bedded, slightly weathered, wet, Some calcite veins approximately 1/16" to 1/2" thick. Iron oxide staining along fractures 94' to 96' bgs. Munsell color N7.		RS10E	77.0 - 87.0	4.0	N/A	
				RS11E	87.0 - 97.0	5.0	N/A	

SUBSURFACE LOG

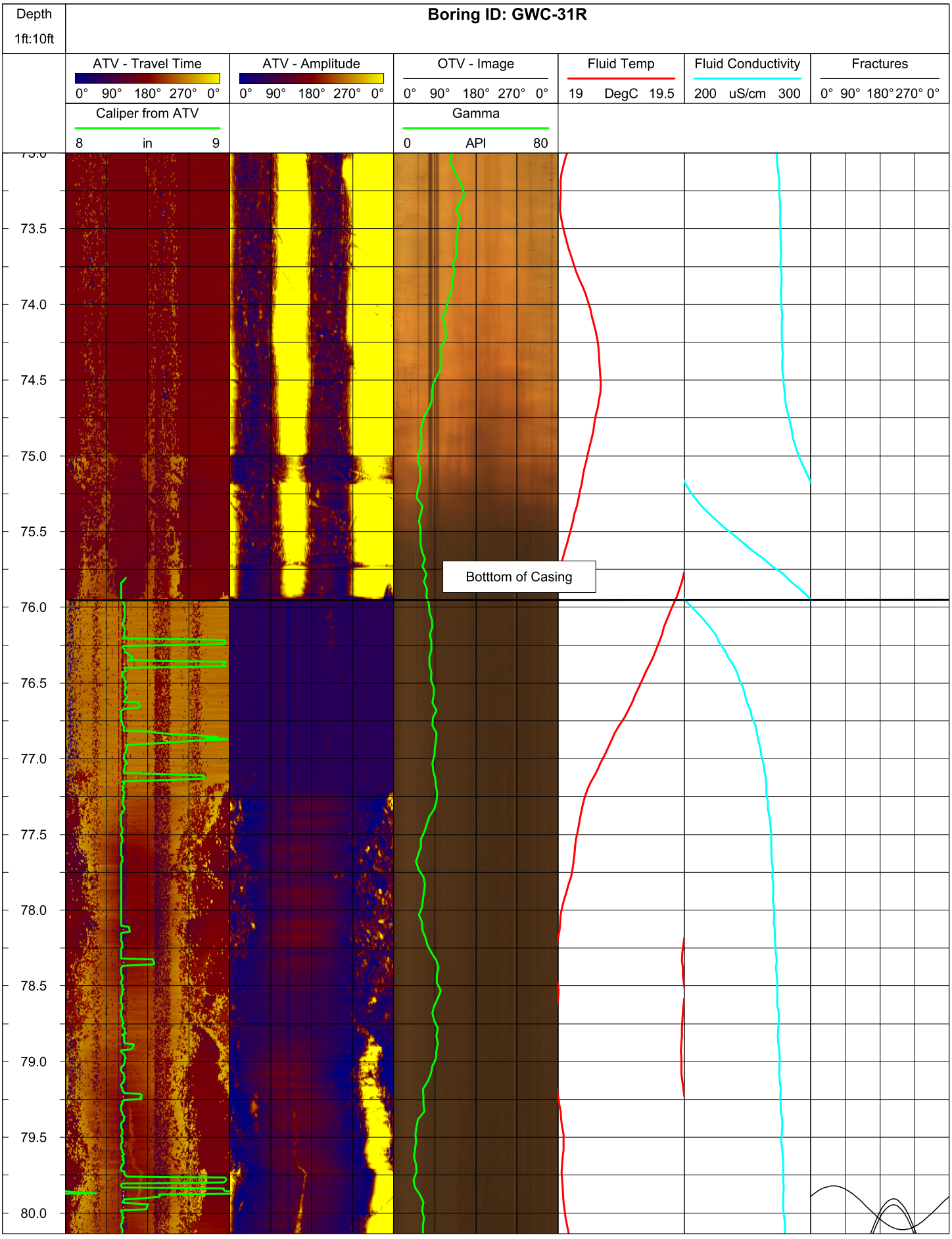
Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-31R**
Boring Location Lat. 34.134941, Long. -84.896243
Surface Elevation 680.18 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
97.0	583.2	Dolomite, light gray, microcrystalline, hard, thin bedded, moderately weathered, wet, iron oxide staining, Rounded quartzite and subrounded agate/chert pebbles. Munsell color N7		RS12E	97.0 - 107.0	3.0	N/A	
103.0	577.2	Void						
106.0	574.2	Dolomite, light gray, microcrystalline, hard, thin, moderately weathered, wet, iron oxide staining, Munsell color N7						
107.0	573.2							

No Refusal /
Bottom of Hole at 107.0 Ft.

Top of Rock = 38.0 Ft.
Top of Rock Elevation = 642.2 Ft.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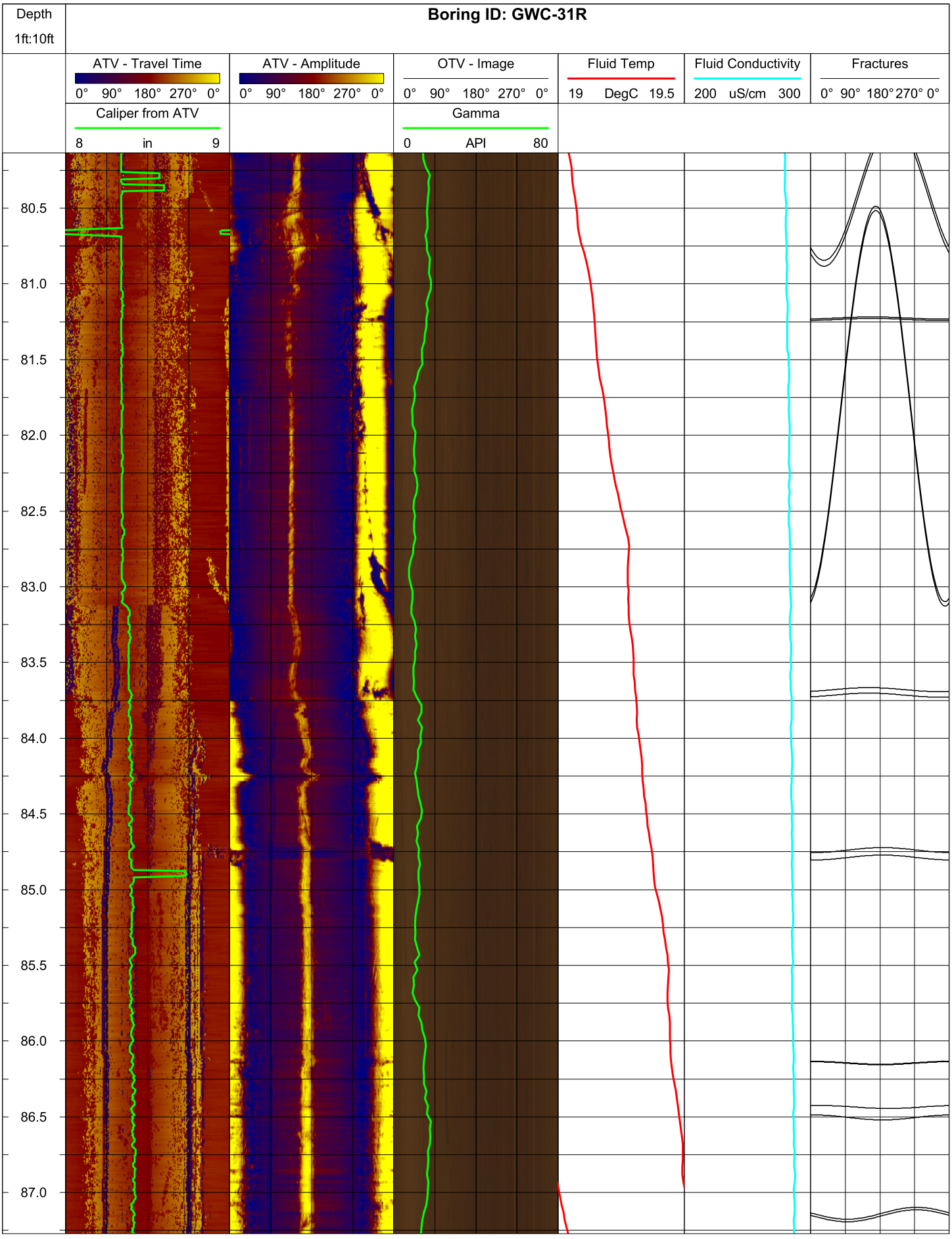
1ft:10ft
Boring ID: GWC-31R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
19 DegC 19.5
Fluid Conductivity
200 uS/cm 300
Fractures
0° 90° 180° 270° 0°
Caliper from ATV
8 in 9
Gamma
0 API 80
73.5
74.0
74.5
75.0
75.5
Botttom of Casing
76.0
76.5
77.0
77.5
78.0
78.5
79.0
79.5
80.0


Depth
1ft:10ft
Boring ID: GWC-31R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
19 DegC 19.5
Fluid Conductivity
200 uS/cm 300
Fractures
0° 90° 180° 270° 0°
Caliper from ATV
8 in 9
Gamma
0 API 80
80.5
81.0
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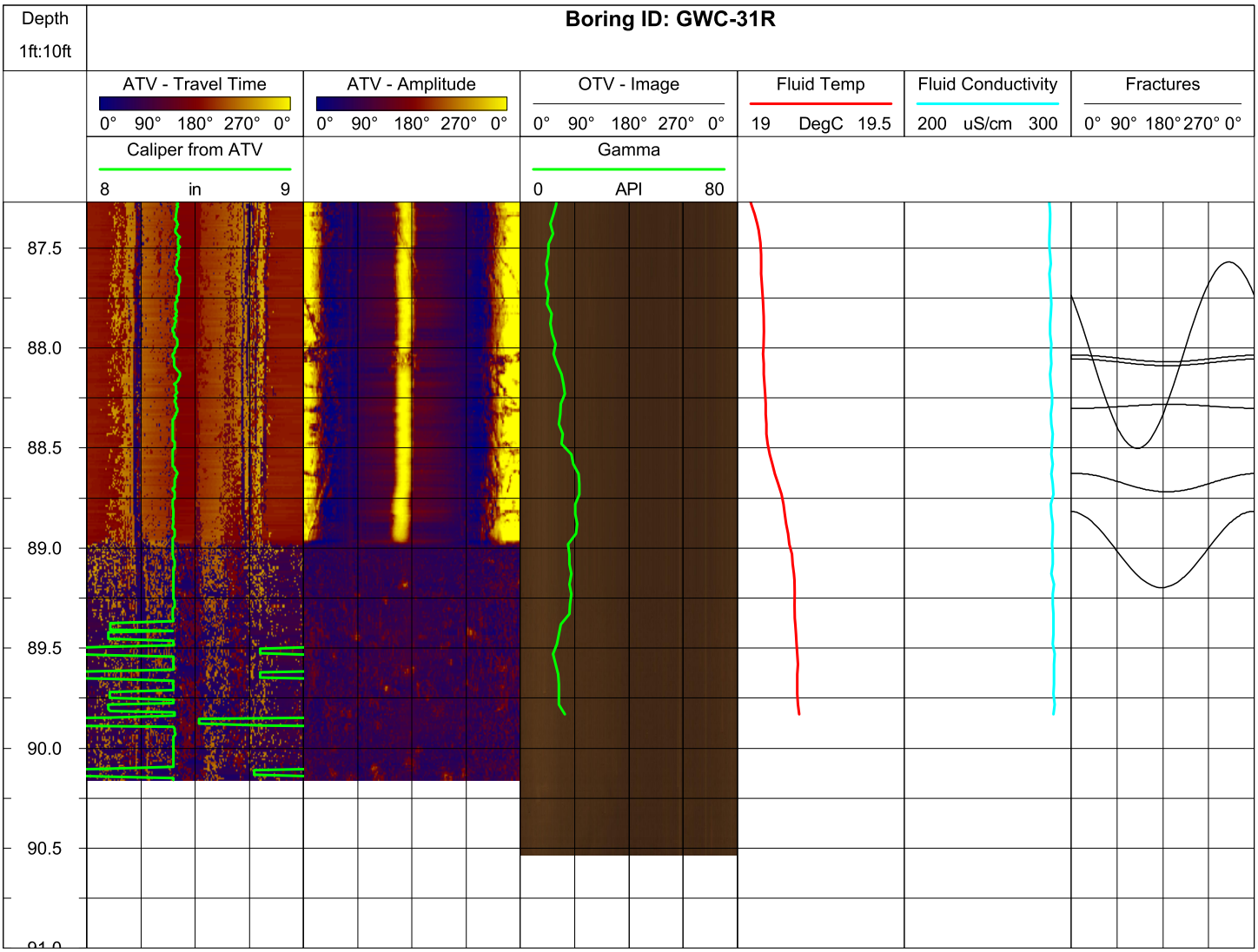
86.0
86.5
87.0


Depth
1ft:10ft
Boring ID: GWC-31R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
19 DegC 19.5
Fluid Conductivity
200 uS/cm 300
Fractures
0° 90° 180° 270° 0°
Caliper from ATV
8 in 9
Gamma
0 API 80
87.5
88.0
88.5
89.0
89.5
90.0
90.5

Well Installation Field Log

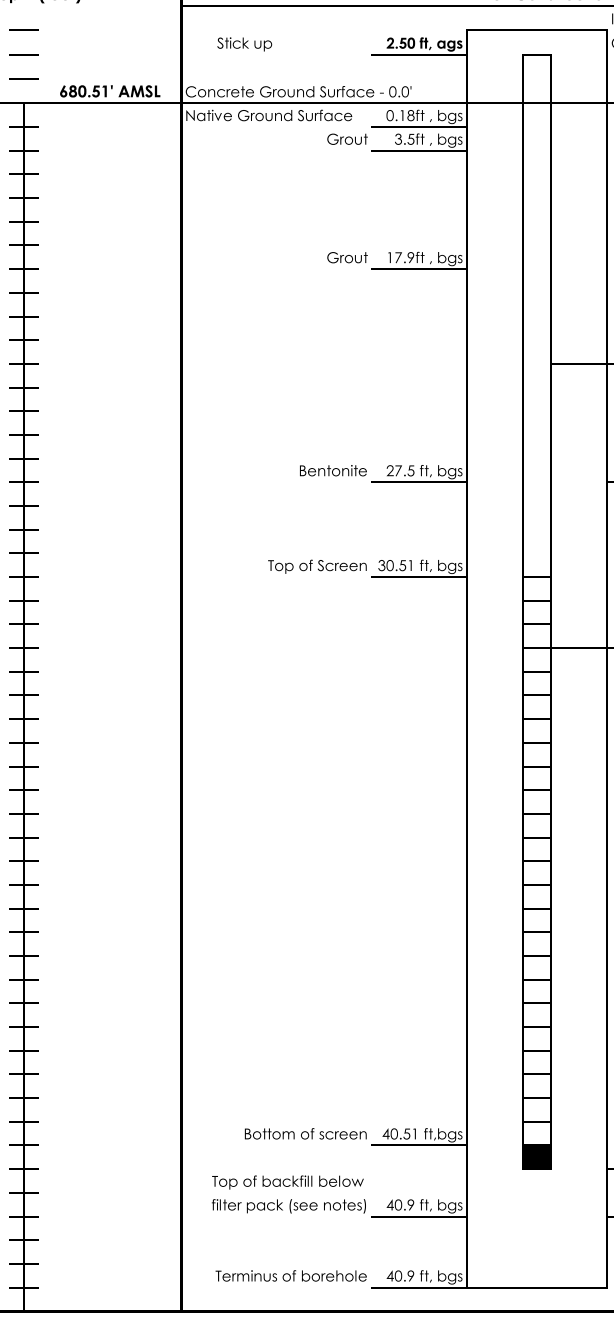
Stantec

Project Name:	BOW Groundwater Investigation	Date Started:	8/21/2025	Date Completed:	8/27/2025
Borehole/Well No:	GWC-31S	Northing (ft):	1504948.63	Easting (ft):	2075780.69
Plant Name:	Plant Bowen BOW	Latitude:	34.13492686	Longitude:	-84.89637129
Plant Address:	317 Covered Bridge Road, Euharlee GA 30120	Location Datum:	NAD83	Elevation Datum:	NAVD88
Project & Task Number:	175569450 1.2	Concrete Pad Elevation*:	680.51	Stickup (ft, ags):	2.50
Goals/Task:	Groundwater Investigation	Native Ground Elevation	680.33	Borehole Depth (ft, bgs):	40.91
Drilling Company:	Cascade	Borehole Diameter (in):	2	Well Depth (ft, bgs):	40.9
Drilling Equipment/Rig Type:	TSI 150cc Track-Mounted Compact Crawler Sonic	Well Casing Diameter (in):	6	Screen length (ft):	10
Drilling Method:	4' X 6' Rotary Sonic	Top of Casing elev (ft):	683.01	Total Depth TOC (ft):	43.41
Sampling Method:	4 in Core Barrel	DTW at Completion (ft, bgs):	30.00		
Prepared By:	Devon Abuan				
FTL/Designee Review By:	Andrew Stevens				

Depth (feet)

680.51' AMSL

Well Construction



Materials Inventory

Stick up: 2.50 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 2.50 ft, ags Bottom: 40.91 ft, bgs

Screen Type: U-Pack

Screen Slot Size: 0.010"

Screen Top: 30.51 ft, bgs Bottom: 40.51 ft, bgs

Sump/end cap Top: 40.51 ft, bgs Bottom: 40.91 ft, bgs

Grout Quantity: 48 gallons

Grout Type: Aquaguard

Grout Top: 3.5 ft, bgs Bottom: 17.9 ft, bgs

Density Initial: NA lbs/gal Return: NA lbs/gal

Bentonite Type: 3/8" PDS TR30 pellets

Bentonite Seal Top: 17.9 ft, bgs Bottom: 27.5 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): 20/40 Mesh (Global #7)

Filter Pack: Top: 27.5 ft, bgs Bottom: 40.9 ft, bgs

Notes:
Bentonite chips added to 17.9 ft BGS to prevent grout loss

*Concrete Pad is referenced as ground surface

SUBSURFACE LOG

Client Borehole ID: SCS
Stantec Boring No.: **GWC-31S**
Client: Southern Company Services: Georgia Power
Boring Location: N 1504948.63, E 2075780.69
Project Number: 175569450
Surface Elevation: 680.33 ft* Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 8/21/25 Completed: 8/25/25
Project Location: Plant Bowen
Depth to Water: 30.0 ft Date/Time: 8/25/25
Inspector: D. Abuan Logger: D. Abuan
Depth to Water: N/A Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: Geoprobe 4x6 Rotary Sonic Driller: Cascade Drilling Services
Overburden Drilling and Sampling Tools (Type and Size): telescoping 4" core barrel w/ 6" outer casing
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A Weight: N/A Drop: N/A Efficiency: N/A
Borehole Azimuth: N/A (Vertical) Borehole Inclination (from Vertical): Vertical

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	680.33	Top of Hole						
1.0	679.3	Topsoil						
3.5	676.8	SILT TRACE CLAY, ML, strong brown to red brown, fine, non-plastic, dry						
9.0	671.3	SILTY LEAN CLAY, CL-ML, red, fine, low plasticity, dry		RS1	0.0 - 10.0	9.0	N/A	spots of dark minerals increased moisture w/ depth Breaks in finer layers ~2 offset geotech boring, Shelby Tube pushed 8.0'-10.0' bgs
10.0	670.3	No recovery						No Recovery
11.5	668.8	SILTY LEAN CLAY, CL-ML, dark red, fine, low plasticity, dry						~2 offset geotech boring, Shelby Tube pushed 11.0'-13.0' bgs increase in moisture
13.0	667.3	SILTY LEAN CLAY, CL-ML, dusky red, fine, medium plasticity, moist						
15.5	664.8	SILTY LEAN CLAY, CL-ML, dark red to red brown, fine, mica present		RS2	10.0 - 20.0	9.0	N/A	
16.2	664.1	POORLY GRADED GRAVEL, GP, white, subangular dolostone						
19.0	661.3	SILTY LEAN CLAY, CL-ML, red, fine, mica present						tree roots
20.0	660.3	No recovery						No Recovery

SUBSURFACE LOG

Client Borehole ID: SCS
Client: Southern Company Services: Georgia Power
Project Number: 175569450

Stantec Boring No.: **GWC-31S**
Boring Location: N 1504948.63, E 2075780.69
Surface Elevation: 680.33 ft* Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
21.5	658.8	SILTY LEAN CLAY, CL-ML, yellowish red, fine, moist to wet, increased clay content						poor recovery, increased clay content, ~2 offset geotech boring, Shelby Tube pushed 20.0'-22.0' bgs
23.0	657.3	SILTY LEAN CLAY WITH SAND, CL-ML, yellowish red to red, fine to medium, non-plastic, moist, subangular gravel present						
24.0	656.3	POORLY GRADED GRAVEL, GP, strong brown, moist, Subangular chert and dolostone gravel						
		No recovery		RS3	20.0 - 30.0	4.0	N/A	No Recovery
30.0	650.3							Depth to Water 30.0' bgs
30.5	649.8	POORLY GRADED GRAVEL, GP, strong brown, moist, subangular gravel						No resistance or vibration necessary, barrel falls from 30.5' to ~ 38.0' bgs
		No recovery						
				RS4	30.0 - 40.9	2.0	N/A	No Recovery
38.0	642.3							~2 offset geotech boring, Shelby Tube pushed 36.0'-38.0' bgs
39.5	640.8	SILTY LEAN CLAY, CL-ML, strong brown, fine, non-plastic, moist						
40.9	639.4	No recovery						No Recovery

No Refusal /
Bottom of Hole at 40.9 Ft.
*All recorded depths on the boring logs and the provided surface elevations are referenced to the native ground surface

Well Installation Field Log

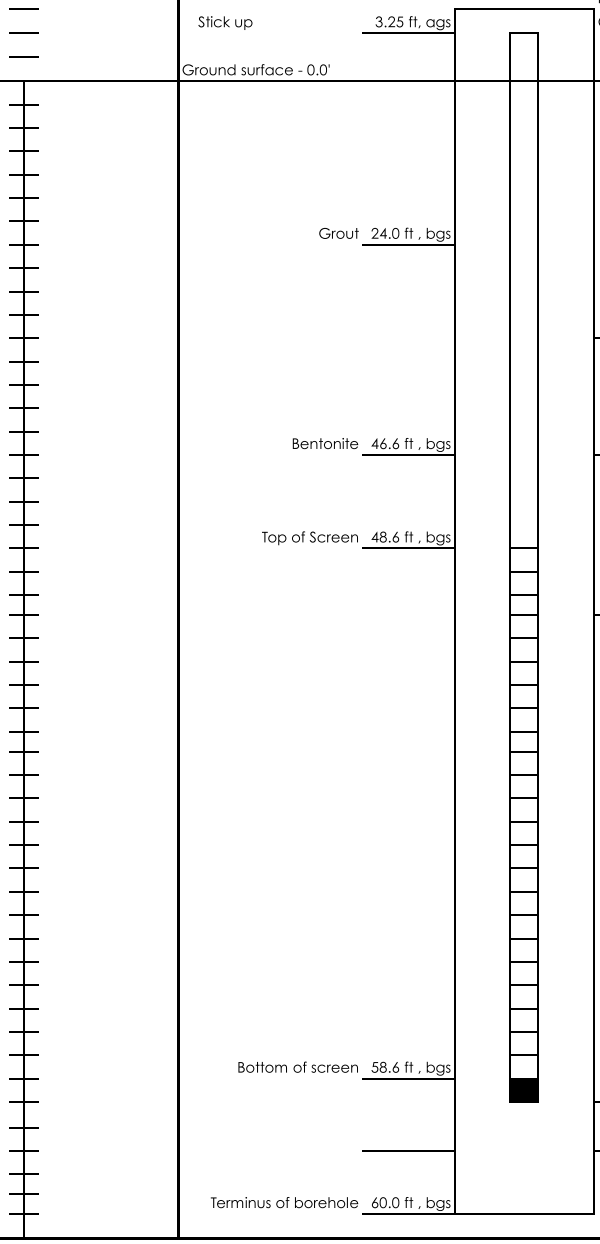
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/7/2023	Date Completed:	5/9/2023
Borehole/Well No:	GWC-32	Northing (ft):	1504607.5	Easting (ft):	2075753.7
Plant Name:	Plant Bowen	Latitude:	N34.133989	Longitude:	W84.896452
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	688.93	Stickup (ft, ags):	3.25
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	60.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	59.0
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	692.18	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	36.05		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Josh Massey				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.25 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.25 ft, ags Bottom: 56.8 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 48.6 ft, bgs Bottom: 58.6 ft, bgs

Sump/end cap Top: 58.6 ft, bgs Bottom: 59.0 ft, bgs

Grout Quantity: 40 gallons

Grout Type: Aquaguard

Grout Top: 0.0 ft, bgs Bottom: 24.0 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 46.6 ft, bgs Bottom: 24.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 46.6 ft, bgs Bottom: 60.0 ft, bgs

Notes:

4 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~2.0 ft^3

8 bags (50 lb) Hole Plug bentonite chips, 3/8"

Backfill below sand pack: n/a

* Grout mixed to manufacturers recommendations

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-32**
Client: Georgia Power Company
Boring Location: Lat. 34.133989, Long. -84.896452
Project Number: 175569450
Surface Elevation: 688.93 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/7/23
Completed: 5/8/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 36.1 ft
Date/Time: 5/9/23 13:06
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Myer
Approved By: C. Sutherland

Lithology Depth Ft[2]	Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	688.9		Top of Hole						
1.0	687.9		Topsoil						
8.0	680.9		LEAN CLAY, CL, 10R 3/4 (dusky red), low to medium plasticity, firm, dry		RS01E	0.0 - 10.0	4.0	N/A	
12.0	676.9		GRAVELLY LEAN CLAY, CL, 2.5YR 4/4 (reddish brown) with 10YR 7/8 (yellow), low plasticity, firm, dry to moist, Basal quartzite, subrounded gravel						
14.0	674.9		GRAVELLY LEAN CLAY WITH SAND, SC, 2.5YR 4/4 (reddish brown) to 10YR 7/8 (yellow), very fine to coarse, medium dense, dry to moist, iron oxide staining, Lensed, gap graded, Abundant black heavy mineral replacement nodules						
			SILTY WELL GRADED GRAVEL WITH CLAY, GM, 10YR 6/8 (brownish yellow) to 5YR 5/8 (yellowish red), very fine to coarse, medium dense to dense, moist, iron oxide staining, Lensed, well graded, Quartzite and chert gravel		RS02E	10.0 - 20.0	9.5	N/A	

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-32**
Client: Georgia Power Company
Boring Location: Lat. 34.133989, Long. -84.896452
Project Number: 175569450
Surface Elevation: 688.93 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
20		SILTY WELL GRADED GRAVEL WITH CLAY, GM, 10YR 6/8 (brownish yellow) to 5YR 5/8 (yellowish red), very fine to coarse, medium dense to dense, moist, iron oxide staining, Lensed, well graded, Quartzite and chert gravel *(Continued)*						
24.0	664.9	SILTY FAT CLAY SOME GRAVEL, CH, 2.5Y 7/4 (pale brown) with 2.5Y 7/1 (light gray), medium to high plasticity, firm to hard, moist, Blocky, Weathered cherty dolomite, mottled		RS03E	20.0 - 30.0	9.0	N/A	
27.0	661.9	CLAYEY SILTY SAND LITTLE GRAVEL, SM, 10YR 3/6 (dark yellowish brown) to 2.5Y 8/3 (pale brown), fine to medium, medium dense, moist, iron oxide staining, Lensed, moderately graded, Sand to clay interbedding, mottled						
30.0	658.9	SILTY FAT CLAY WITH SAND, CH, 10YR 6/8 (brownish yellow) with 2.5Y 7/4 (pale brown), medium plasticity, hard, iron oxide staining, Lensed, Pale tan mottling, interbedded fine sand from weathered dolomite, subangular cherty dolomite gravel		RS04E	30.0 - 34.0	3.0	N/A	
33.0	655.9	SANDY WELL GRADED GRAVEL WITH CLAY WITH SILT, GW-GM, 10YR 4/6 (dark yellowish brown) with 5Y 6/1 (gray), very fine to coarse, loose, moist, iron oxide staining, Lensed, weak cementation, gap graded, Residuum transitioning to partially weathered top of rock contact						iron staining, possible fracture zone
34.0	654.9	Dolomite (90%) With Quartzite (10%) Dolomite, dark gray with pale white, finely crystalline to very finely crystalline, hard, massive bedded, slightly weathered to moderately weathered, iron oxide staining, Quartzite gravel at 34 to 35 feet bgs		RS05E	34.0 - 40.0	5.0	N/A	
42.0	646.9	Void						void
45.0	643.9							

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-32**
Client Georgia Power Company
Boring Location Lat. 34.133989, Long. -84.896452
Project Number 175569450
Surface Elevation 688.93 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
Depth Ft[2]	Elevation								
45			Dolomite, dark gray to light gray, finely crystalline to very finely crystalline, hard, massive bedded to thin bedded, iron oxide staining, Calcite and dolomite fracture fill, veins, some thin beds		RS06E	40.0 - 50.0	5.0	N/A	
46									
47									
48									
49									
50									
51									
52									
53									
54									
55					RS07E	50.0 - 60.0	8.0	N/A	
56									
57									healed fractures with iron staining
58									
59									
60	60.0	628.9							

No Refusal /
Bottom of Hole at 60.0 Ft.

Top of Rock = 34.0 Ft.
Top of Rock Elevation = 654.9 Ft.

Log ID updated from GWA-33 to GWC-33 for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

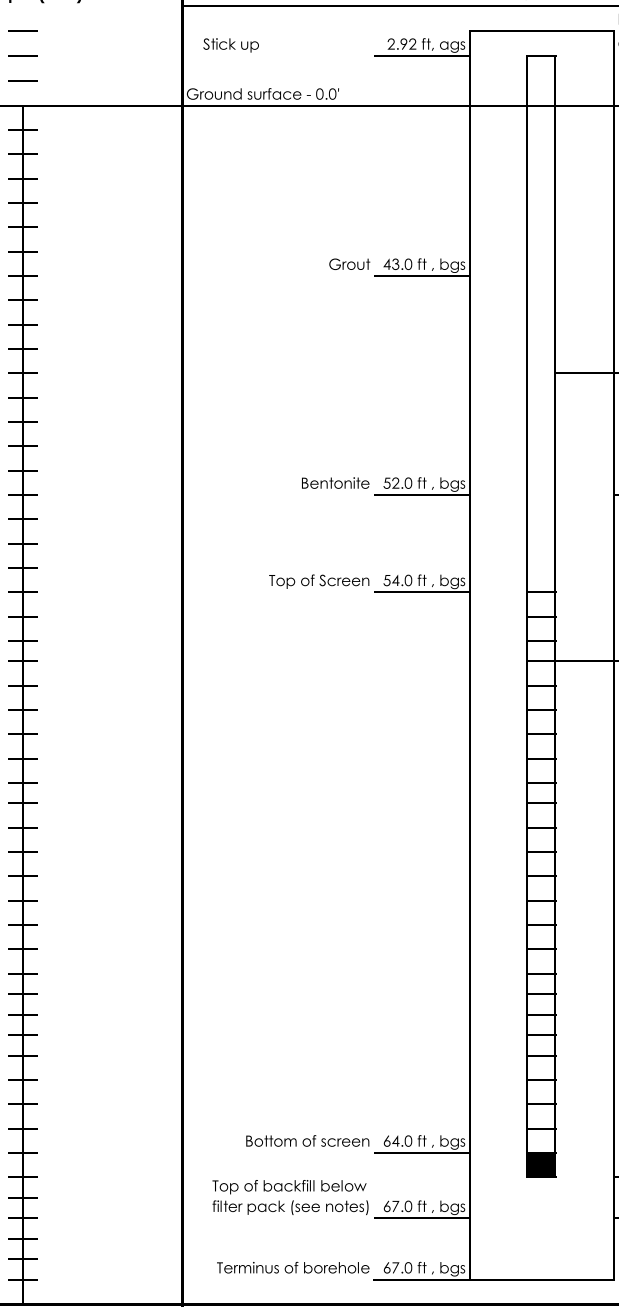
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/22/23	Date Completed:	4/23/23
Borehole/Well No:	GWC-33	Northing (ft):	1504341.0	Easting (ft):	2075103.7
Plant Name:	Plant Bowen	Latitude:	N34.133244	Longitude:	W84.898594
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	672.57	Stickup (ft, ags):	2.92
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	67.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	64.0
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	675.48	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	19.23		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.92 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing
Top: 2.92 ft, ags Bottom: 54.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen
Top: 54.0 ft, bgs Bottom: 64.0 ft, bgs

Sump/end cap
Top: 64.0 ft, bgs Bottom: 64.5 ft, bgs

Grout Quantity: 40 gallons

Grout Type: Aquaguard

Grout
Top: 2.0 ft, bgs Bottom: 43.0 ft, bgs

Density
Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal
Top: 43.0 ft, bgs Bottom: 52.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack:
Top: 52.0 ft, bgs Bottom: 67.0 ft, bgs

Notes:

5.5 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
Three bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

Log ID updated from GWA-33 to GWC-33 for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-33**
Client: Georgia Power Company
Boring Location: Lat. 34.133244, Long. -84.898594
Project Number: 175569450
Surface Elevation: 672.57 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/22/23
Completed: 4/24/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 19.2 ft
Date/Time: 4/23/23 17:00
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	672.6	Top of Hole						
		SILTY LEAN CLAY, CL, 2.5YR 4/6 (red), low to medium plasticity, firm, moist						
3.2	669.4							
		SILTY FAT CLAY, CH, 10YR 5/1 (gray), high plasticity, very hard, dry		RS01E	0.0 - 7.0	7.0	N/A	
9.5	663.1							
		SILTY POORLY GRADED SAND WITH CLAY, SM, 2.5YR 6/4 (light reddish brown), fine, medium dense, moist		RS02E	7.0 - 17.0	10.0	N/A	
13.0	659.6							
14.0	658.6	SANDY WELL GRADED GRAVEL WITH SILT, GM, 2.5YR 6/4 (light reddish brown), fine, loose, moist						
		SILTY POORLY GRADED SAND WITH CLAY, SM, 5YR 5/8 (yellowish red) and 10YR 5/1 (gray), fine, medium dense, moist						
20.5	652.1							
		SILTY LEAN CLAY SOME SAND, CL, 7.5YR 6/8 (reddish yellow) and 10YR 5/1 (gray), low plasticity, firm, moist, With trace to little chert		RS03E	17.0 - 27.0	10.0	N/A	

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-33**
Client: Georgia Power Company
Boring Location: Lat. 34.133244, Long. -84.898594
Project Number: 175569450
Surface Elevation: 672.57 ft
Elevation Datum: NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft[2]	Elevation								
			SILTY LEAN CLAY SOME SAND, CL, 7.5YR 6/8 (reddish yellow) and 10YR 5/1 (gray), low plasticity, firm, moist, With trace to little chert *(Continued)*		RS04E	27.0 - 37.0	10.0	N/A	
37.0	635.6		CLAYEY POORLY GRADED SAND WITH SILT WITH GRAVEL, SM, 10YR 4/4 (dark yellowish brown), fine, loose, wet, Pebble to cobble, surrounded, Quartzite gravel		RS05E	37.0 - 47.0	4.5	N/A	
46.0	626.6		Dolomite, light gray, hard, slightly weathered, wet, Munsell color N7						
50.0	622.6		Void 50 to 54 feet		RS06E	47.0 - 57.0	5.0	N/A	
54.0	618.6		Dolomite, light gray, hard, slightly weathered, wet, iron oxide staining, Zone with void 57 to 65 feet. Munsell color N7.						

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-33**
Client Georgia Power Company
Boring Location Lat. 34.133244, Long. -84.898594
Project Number 175569450
Surface Elevation 672.57 ft
Elevation Datum NAVD88

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft[2]	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
57			Dolomite, light gray, hard, slightly weathered, wet, iron oxide staining, Zone with void 57 to 65 feet. Munsell color N7. *(Continued)*						
58									
59									
60									
61									
62					RS07E	57.0 - 67.0	4.0	N/A	
63									
64									
65									
66									
67	67.0	605.6							

No Refusal /
Bottom of Hole at 67.0 Ft.

Top of Rock = 46.0 Ft.
Top of Rock Elevation = 626.6 Ft.

Log ID updated from GWA-33R to GWC-33R for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

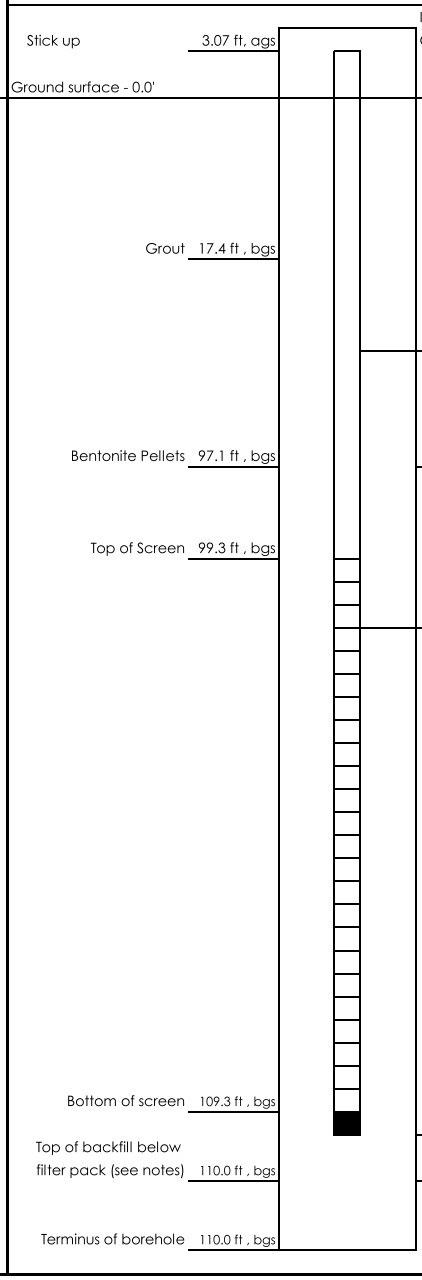
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/16/2023	Date Completed:	5/18/2023
Borehole/Well No:	GWC-33R	Northing (ft):	1504344.0	Easting (ft):	2075078.2
Plant Name:	Plant Bowen	Latitude:	N34.133252	Longitude:	W84.898678
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	AD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	672.13	Stickup (ft, ags):	3.07
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	110.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	109.7
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	675.20	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	20.21		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.07 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.07 ft, ags Bottom: 109.7 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 99.3 ft, bgs Bottom: 109.3 ft, bgs

Sump/end cap Top: 109.3 ft, bgs Bottom: 109.7 ft, bgs

Grout Quantity: 30 gallons

Grout Type: Aquaguard

Grout Top: 0.0 ft, bgs Bottom: 17.4 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 17.4 ft, bgs Bottom: 97.1 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 97.1 ft, bgs Bottom: 110.0 ft, bgs

Notes:

8 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
1 50 lb bucket Pel Plug 3/8" coated bentonite pellets
23 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

Stantec

Log ID updated from GWA-33R to GWC-33R for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-33R**
Client: Georgia Power Company
Boring Location: Lat. 34.133252, Long. -84.898678
Project Number: 175569450
Surface Elevation: 672.13 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/9/23
Completed: 5/10/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 20.2 ft
Date/Time: 5/16/23 08:50
Inspector: J. Massey
Logger: J. Massey
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: A. Stevens
Approved By: C. Sutherland

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	672.1	Top of Hole						
		SILTY LEAN CLAY, CL, 2.5YR 4/4 (reddish brown), low to medium plasticity, soft to firm, dry to moist, no staining						
2.0	670.1							
		FAT CLAY, CH, 10YR 5/6 (yellowish brown) with 2.5YR 4/6 (red), medium to high plasticity, hard, dry, iron oxide staining, Stratified, Mottled						
5.0	667.1			RS01E	0.0 - 10.0	9.0	N/A	
		SILTY WELL GRADED GRAVEL WITH CLAY, GW-GC, 10YR 5/4 (yellowish brown) with 2.5YR 4/6 (red), fine to coarse, medium dense, dry to moist, iron oxide staining, Fissured, subrounded to subangular, moderately graded, Quartzite gravel						
7.0	665.1							
		SANDY FAT CLAY WITH SILT, SC, 2.5Y 7/2 (light gray) with 2.5YR 4/6 (red), very fine to fine, medium plasticity, dense, dry, Stratified, poorly graded, Mottled lenses of fine sand						
10.0	662.1							
		GRAVELLY SILT WITH CLAY, ML, 2.5Y 8/2 (pale brown) with 10YR 6/8 (brownish yellow), low plasticity, firm to hard, moist, iron oxide staining, Fissured, Chert gravel						
13.0	659.1							
		CLAYEY SILTY GRAVEL, GM, 2.5YR 6/4 (light reddish brown), fine to coarse, loose, moist, iron oxide staining						
14.0	658.1							
		GRAVELLY SILT WITH CLAY, CL-ML, 2.5Y 8/2 (pale brown) with 10YR 6/8 (brownish yellow), low to medium plasticity, firm, moist, iron oxide staining, Stratified, Mottled		RS02E	10.0 - 20.0	10.0	N/A	
17.0	655.1							
		SILTY LEAN CLAY SOME GRAVEL, CL, 10YR 7/8 (yellow), low plasticity, soft to firm, moist, Cherty dolomite gravel, trace white silty clay						

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-33R**
Client Georgia Power Company
Boring Location Lat. 34.133252, Long. -84.898678
Project Number 175569450
Surface Elevation 672.13 ft
Elevation Datum NAVD88

Lithology			Description	Overburden:	Sample	Depth Ft	Rec. Ft	Blows/PSI	Remarks
Depth Ft[2]	Elevation			Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
20			SILTY LEAN CLAY SOME GRAVEL, CL, 10YR 7/8 (yellow), low plasticity, soft to firm, moist, Cherty dolomite gravel, trace white silty clay *(Continued)*						
21									
22									
23									
24									
25					RS03E	20.0 - 30.0	10.0	N/A	
26									
27									
28									
29									
30									
31									
32									
33									
34	34.0	638.1	GRAVELLY SILT WITH CLAY, SM, 10YR 4/4 (dark yellowish brown) with 2.5Y 3/2 (very dark grayish brown), fine, loose, moist to wet, Fissured, Manganese staining with mottling; partially weathered dolomite and chert gravel						
35					RS04E	30.0 - 40.0	10.0	N/A	
36									
37									
38									
39									
40									
41	41.0	631.1	Void						void from 41 to 49
42									
43									
44									
45									

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-33R**
Client: Georgia Power Company
Boring Location: Lat. 34.133252, Long. -84.898678
Project Number: 175569450
Surface Elevation: 672.13 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		Void *(Continued)*		RS05E	40.0 - 50.0	2.0	N/A	
49.0	623.1							soft zone to 53 feet
50.0	622.1	CLAYEY WELL GRADED GRAVEL WITH SILT SOME SAND, GW, 10YR 6/6 (brownish yellow), fine to coarse, loose, wet, Fissured, well graded, Pale white mottled reduced iron zones; partially weathered chert and dolomite gravel with vugs						
51.0	621.1							
53.0	619.1	CLAYEY SILTY SAND, SM, 10YR 5/6 (yellowish brown) with 2.5Y 8/1 (white), fine to medium, very loose, wet, iron oxide staining, Lensed, moderately graded						
		CLAYEY WELL GRADED GRAVEL WITH SILT SOME SAND, GW, 10YR 6/6 (brownish yellow), fine to coarse, loose, wet, Fissured, gap graded, Partially weathered dolomite gravel at 52 to 53 feet bgs		RS06E	50.0 - 60.0	4.0	N/A	
59.0	613.1	Void						
63.0	609.1	Dolomite, light gray with dark orange, finely crystalline, moderately hard to hard, massive bedded, highly weathered to slightly weathered, iron oxide staining, Munsell color N7, iron staining with small vugs						
64.0	608.1	Void						
66.0	606.1	Dolomite, light gray, hard, slightly weathered, iron oxide staining, Munsell color N7, some very small, tight calcite fracture fills		RS07E	60.0 - 70.0	4.5	N/A	
69.0	603.1	Void						

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-33R**
Boring Location Lat. 34.133252, Long. -84.898678
Surface Elevation 672.13 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
71.5	600.6	Dolomite, light gray with dark orange, finely crystalline, hard, massive bedded, Munsell color N7, some chert interbedding and tight fracture fill *(Continued)*						
		Void						
				RS08E	70.0 - 80.0	0.5	N/A	
80.0	592.1							in filled void
81.0	591.1	Dolomite, Munsell color N7						
		Void						
				RS09E	80.0 - 90.0	0.0	N/A	

STANTEC 1755 STD 175569450_BORING_LOGS (1).GPJ BC 1755 STD DATAT R0.GDT 7/24/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-33R**
Boring Location Lat. 34.133252, Long. -84.898678
Surface Elevation 672.13 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
95		Void *(Continued)*		RS10E	90.0 - 100.0	1.0	N/A	
96								
97								
98	574.1							
98.0		Dolomite, light gray with dark orange, finely crystalline, hard, massive bedded to thin, iron oxide staining, Munsell color N7 to N4, some thin interbedding, wider calcite and dolomite fracture fill						
99								
100								
101								
102								
103								
104								
105	567.1			RS11E	100.0 - 110.0	4.0	N/A	
105.0		Void						
106								
107								
108	564.1							
108.0		Dolomite (80%) With Sandstone (20%) Dolomite, light gray light yellow gray, fine grained to medium grained, hard, medium bedded, iron oxide staining, calcareous, Munsell color N7 to N4 with RP2/2, cherty dolomite with sandstone and/or quartzite						
109								
110	562.1							
110.0		No Refusal / Bottom of Hole at 110.0 Ft. Top of Rock = 53.0 Ft. Top of Rock Elevation = 619.1 Ft.						

Log ID updated from GWA-34 to GWC-34 for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

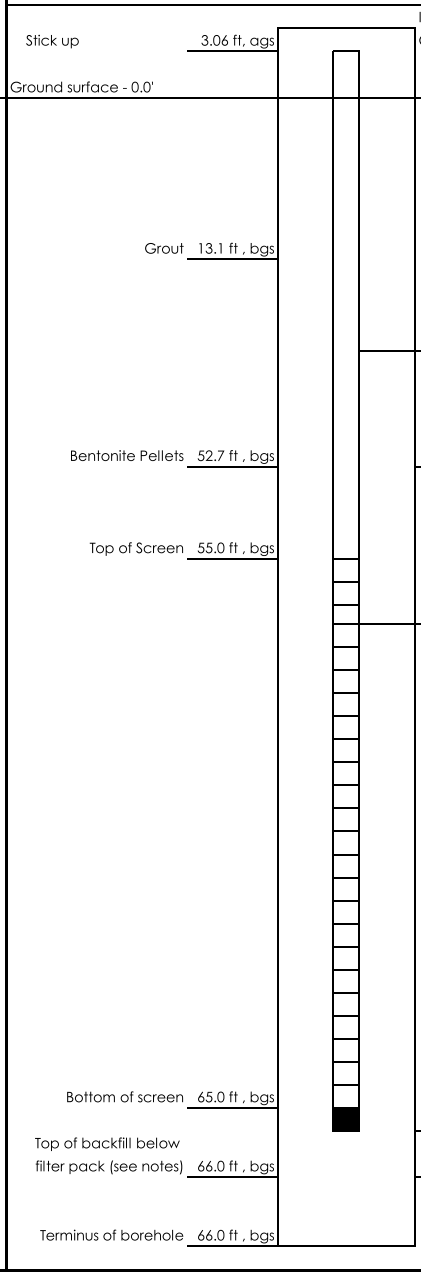
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/18/2023	Date Completed:	5/22/2023
Borehole/Well No:	GWC-34	Northing (ft):	1504387.1	Easting (ft):	2074401.3
Plant Name:	Plant Bowen	Latitude:	N34.133357	Longitude:	-81.900917
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	670.19	Stickup (ft, ags):	3.06
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6	Borehole Depth (ft, bgs):	66.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	65.4
Drilling Equipment/Rig Type:	TSi 150CC	Top of Casing elev (ft):	673.25	Screen length (ft):	10.0
Drilling Method:	4"x 6" Rotary Sonic	DTW at Completion (ft, bgs):	17.2		
Sampling Method:	4 inch Core Barrel				
Prepared By:	Andrew Stevens				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.06 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 3.06 ft, ags Bottom: 65.4 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 55.0 ft, bgs Bottom: 65.0 ft, bgs

Sump/end cap Top: 65.0 ft, bgs Bottom: 65.4 ft, bgs

Grout Quantity: 30 gallons

Grout Type: Aquaguard

Grout Top: 0.3 ft, bgs Bottom: 13.1 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal
Top pel: 49.5 ft, bgs Bottom pel: 52.7 ft, bgs
Top chip: 13.1 ft, bgs Bottom chips: 49.5 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products Silica GP #1 pack

Filter Pack: Top: 52.7 ft, bgs Bottom: 66.0 ft, bgs

Notes:
5 (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
13 50 lb bucket Pel Plug 3/8" coated bentonite pellets
1 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

Stantec

Log ID updated from GWA-34 to GWC-34 for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-34**
Client: Georgia Power Company
Boring Location: Lat. 34.133357, Long. -84.900917
Project Number: 175569450
Surface Elevation: 670.19 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/18/23
Completed: 5/18/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 17.2 ft
Date/Time: 5/18/23 08:49
Inspector: A. Stevens
Logger: A. Stevens
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Terrasonic Compact Crawler
Driller: B. Griffis
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft²	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	670.2	Top of Hole						
0		SILTY LEAN CLAY SOME GRAVEL, CL, 10YR 6/2 (light brownish gray) to 10YR 8/3 (very pale brown), non to low plasticity, soft, dry, no odor, no staining, Gravel fragments are subrounded						
2.0	668.2							
2		WELL GRADED SAND WITH SILT SOME GRAVEL, SW-SC, 10YR 8/4 (very pale brown) to 10YR 8/2 (very pale brown), fine to coarse, loose, dry						
4.0	666.2							
4				RS01E	0.0 - 10.0	8.0	N/A	
5.5	664.7	ELASTIC SILT WITH CLAY, MH/CL, 10YR 8/1 (white), low to medium plasticity, firm						
6		SILTY LEAN CLAY SOME GRAVEL, CL, 10YR 6/2 (light brownish gray) to 10YR 8/3 (very pale brown), non to low plasticity, soft, dry, no odor, no staining, Gravel fragments are subrounded						
10.0	660.2							
10		SILTY LEAN CLAY, MH/CL, 10YR 6/1 (gray), low to medium plasticity, firm, dry						
12.5	657.7							
12		SILTY LEAN CLAY, MH/CL, 10YR 8/1 (white), low to medium plasticity, firm, moist						
15.5	654.7			RS02E	10.0 - 20.0	10.0	N/A	
15		GRAVELLY WELL GRADED SAND, GP, 10YR 6/1 (gray), medium to coarse, loose, wet, well graded						
17.0	653.2							
17		SILTY LEAN CLAY, MH/CL, 10YR 8/1 (white), low to medium plasticity, firm, wet						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-34**
Client: Georgia Power Company
Boring Location: Lat. 34.133357, Long. -84.900917
Project Number: 175569450
Surface Elevation: 670.19 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		SILTY LEAN CLAY, MH/CL, 10YR 8/1 (white), low to medium plasticity, firm, wet *(Continued)*		RS03E	20.0 - 30.0	10.0	N/A	
27.0	643.2	SILTY LEAN CLAY LITTLE GRAVEL, MH/CL, 10YR 8/1 (white) to 10YR 6/4 (light yellowish brown), low to medium plasticity, firm, wet, Angular dolostone fragments						
31.5	638.7	SILTY FAT CLAY LITTLE GRAVEL, CH, 10YR 7/6 (yellow), medium to high plasticity, soft to hard, wet, Angular dolostone gravel		RS04E	30.0 - 40.0	10.0	N/A	
40.0	630.2	No recovery, no void. Potential sandy/gravel layer		RS05E	40.0 - 50.0	0.0	N/A	
50.0	620.2	SANDY FAT CLAY SOME GRAVEL, CH, 10YR 5/6 (yellowish brown), medium to high plasticity, firm to hard, wet, Angular dolostone gravel						
52.0	618.2	FAT CLAY, CH, 10YR 5/4 (yellowish brown), high plasticity, hard, moist						
53.5	616.7	GRAVELLY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) with 10YR 8/1 (white), non to low plasticity, soft to firm, wet, no odor, no staining, Angular mudstone fragments.		RS06E	50.0 - 60.0	8.0	N/A	

SUBSURFACE LOG

Client Borehole ID: N/A
Client: Georgia Power Company
Project Number: 175569450

Stantec Boring No.: **GWC-34**
Boring Location: Lat. 34.133357, Long. -84.900917
Surface Elevation: 670.19 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
57		GRAVELLY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) with 10YR 8/1 (white), non to low plasticity, soft to firm, wet, no odor, no staining, Angular mudstone fragments. *(Continued)*						
58								
59.0	611.2							
59		Dolomite, light gray, finely crystalline, hard, thin bedded, iron oxide staining, Munsell color N7						
60								
61.0	609.2							
61		Void and thin dolostone beds/gravel filled void						
62								
63				RS07E	60.0 - 66.0	3.0	N/A	
64								
65.0	605.2							
65								
66.0	604.2	Dolomite, light gray, finely crystalline, hard, thin bedded, iron oxide staining, Munsell color N7						
66								

No Refusal /
Bottom of Hole at 66.0 Ft.

Top of Rock = 59.0 Ft.
Top of Rock Elevation = 611.2 Ft.

Log ID updated from GWA-34R to GWC-34R for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

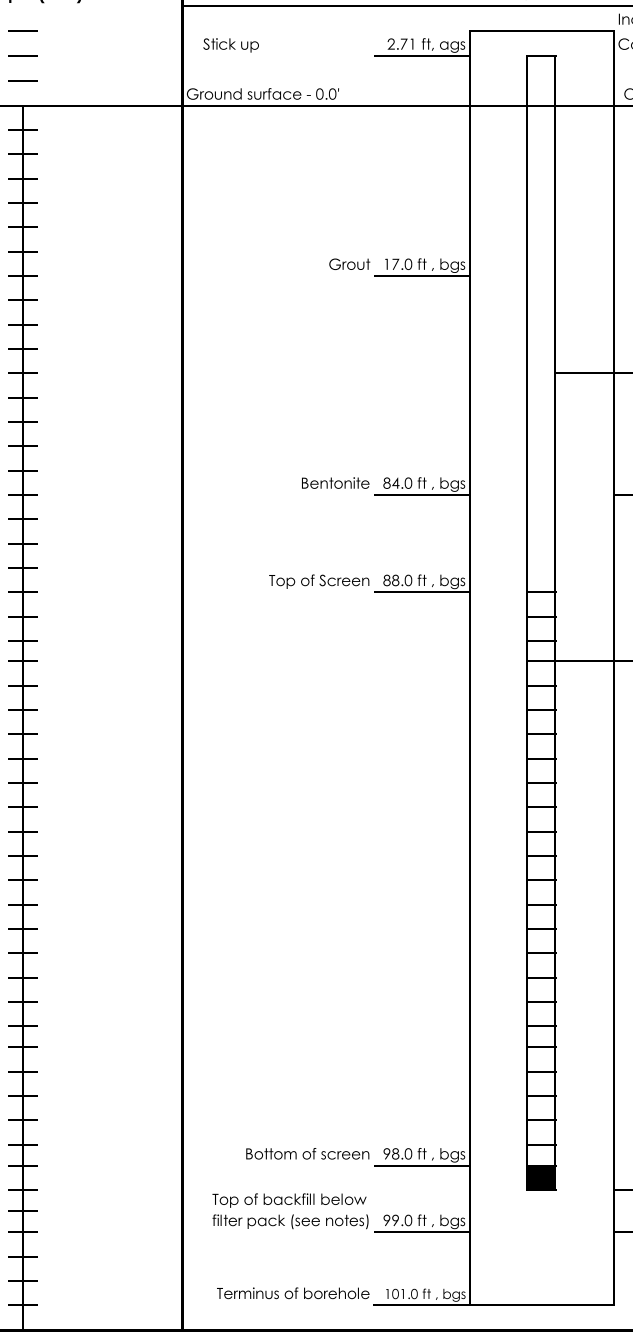
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/19/23	Date Completed:	5/21/23
Borehole/Well No:	GWC-34R	Northing (ft):	1504398.3	Easting (ft):	2074378.3
Plant Name:	Plant Bowen	Latitude:	N34.133387	Longitude:	W84.900992
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	670.24	Stickup (ft, ags):	2.71
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	101.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	98.5
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	672.95	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	16.61		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.71 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 2.71 ft, ags Bottom: 88.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen Top: 88.0 ft, bgs Bottom: 98.0 ft, bgs

Sump/end cap Top: 98.0 ft, bgs Bottom: 98.5 ft, bgs

Grout Quantity: 20.0 gallons

Grout Type: Aquaguard

Grout Near Surface Top: 2.0 ft, bgs Bottom: 17.0 ft, bgs

Density Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal Top: 17.0 ft, bgs Bottom: 84.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 84.0 ft, bgs Bottom: 99.0 ft, bgs

Notes:

Seven (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
12 bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

Stantec

Log ID updated from GWA-34R to GWC-34R for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-34R**
Client: Georgia Power Company
Boring Location: Lat. 34.133387, Long. 84.900992
Project Number: 175569450
Surface Elevation: 670.24 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/19/23
Completed: 5/19/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 16.6 ft
Date/Time: 5/20/23 08:26
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	670.2	Top of Hole						
0		SILTY LEAN CLAY LITTLE GRAVEL, CL, 5YR 5/2 (reddish gray), low plasticity, firm, moist, With little quartzite gravel (rounded, pebble to cobble).						
2.5	667.7	FAT CLAY, CH, 5YR 5/2 (reddish gray) with 5YR 7/6 (reddish yellow), high plasticity, firm, moist		RS01E	0.0 - 7.0	7.0	N/A	
12.1	658.1	SILTY LEAN CLAY LITTLE GRAVEL, CL, 7.5YR 7/1 (light gray), low plasticity, firm, moist, With little angular chert and dolomite gravel (pebble size)		RS02E	7.0 - 17.0	7.0	N/A	

SUBSURFACE LOG

Client Borehole ID N/A
Stantec Boring No. **GWC-34R**
Client Georgia Power Company
Boring Location Lat. 34.133387, Long. 84.900992
Project Number 175569450
Surface Elevation 670.24 ft
Elevation Datum NAVD88

Lithology			Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
Depth Ft[2]	Elevation								
15									
16			SILTY LEAN CLAY LITTLE GRAVEL, CL, 7.5YR 7/1 (light gray), low plasticity, firm, moist, With little angular chert and dolomite gravel (pebble size) *(Continued)*						
17									
18									
19									
20									
21									
22	22.2	648.0			RS03E	17.0 - 27.0	7.0	N/A	
23			SANDY WELL GRADED GRAVEL WITH SILT, GW, 7.5YR 7/1 (light gray), very fine to coarse, loose, wet, Angular, pebble to cobble, chert and dolomite.						
24									
25									
26									
27									
28									
29									
30									
31									
32					RS04E	27.0 - 37.0	2.3	N/A	
33									

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-34R**
Client: Georgia Power Company
Boring Location: Lat. 34.133387, Long. 84.900992
Project Number: 175569450
Surface Elevation: 670.24 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
34		SANDY WELL GRADED GRAVEL WITH SILT, GW, 7.5YR 7/1 (light gray), very fine to coarse, loose, wet, Angular, pebble to cobble, chert and dolomite. *(Continued)*						
35								
36								
37	37.0 633.2							
37		SANDY LEAN CLAY LITTLE GRAVEL, CL, 7.5YR 7/1 (light gray) and 5YR 7/6 (reddish yellow), low plasticity, soft, wet, With little angular chert pebbles.						
38								
39								
40								
41								
42				RS05E	37.0 - 47.0	10.0	N/A	
43	43.0 627.2							
43		CLAYEY POORLY GRADED SAND WITH SILT LITTLE GRAVEL, SM, 7.5YR 7/6 (reddish yellow), fine, loose, wet, With little angular, chert and dolomite gravel (pebble size).						
44								
45								
46								
47								
48								
49								
50								
51								
52								

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-34R**
Boring Location Lat. 34.133387, Long. 84.900992
Surface Elevation 670.24 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
53		CLAYEY POORLY GRADED SAND WITH SILT LITTLE GRAVEL, SM, 7.5YR 7/6 (reddish yellow), fine, loose, wet, With little angular, chert and dolomite gravel (pebble size). *(Continued)*						
54								
55								
56								
57				RS06E	47.0 - 67.0	2.2	N/A	
58								
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69	69.0	601.2						
70		Dolomite, gray, microcrystalline, hard, thin to medium bedded, slightly weathered, wet, iron oxide staining, 45° bedding angle						
71								

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-34R**
Client: Georgia Power Company
Boring Location: Lat. 34.133387, Long. 84.900992
Project Number: 175569450
Surface Elevation: 670.24 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
72		Dolomite, gray, microcrystalline, hard, thin to medium bedded, slightly weathered, wet, iron oxide staining, 45° bedding angle *(Continued)*		RS07E	67.0 - 77.0	3.1	N/A	
73								
74								
75	595.2							
75.0		Void						
76								
77								
78	592.2							
78.0		Dolomite, light gray, microcrystalline, moderately hard, thin, moderately weathered, wet, iron oxide staining, Interbedded with chert						
79								
80								
81								
82				RS08E	77.0 - 87.0	3.1	N/A	
83								
84								
85								
86								
86.5	583.7							
87		Dolomite, light gray, microcrystalline, hard, moderately weathered, wet, iron oxide staining, With small (<1 ft) clayey gravel filled void approximately 92-96', 98-101.						
88								
89								
90								

SUBSURFACE LOG

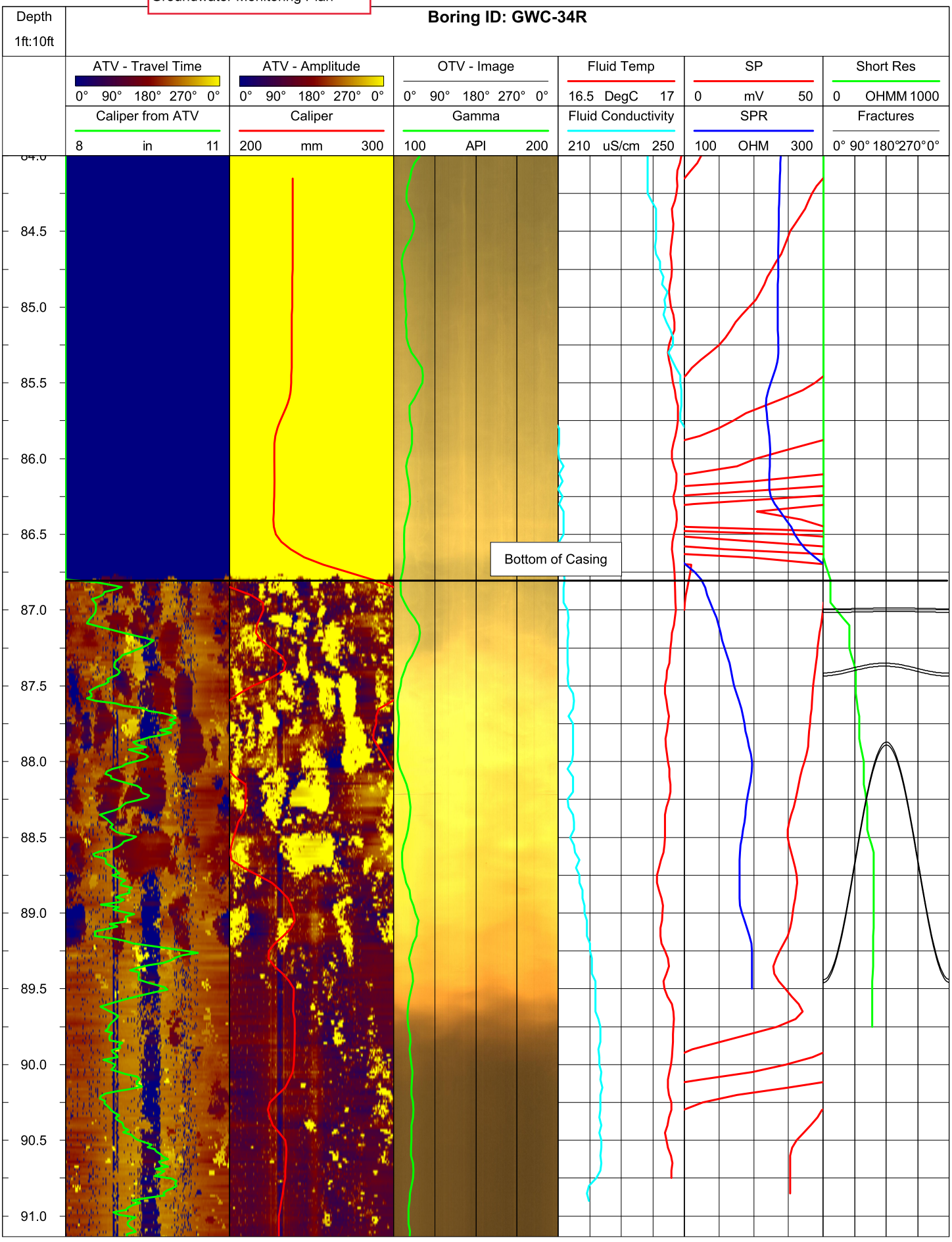
Client Borehole ID N/A
Stantec Boring No. **GWC-34R**
Client Georgia Power Company
Boring Location Lat. 34.133387, Long. 84.900992
Project Number 175569450
Surface Elevation 670.24 ft
Elevation Datum NAVD88

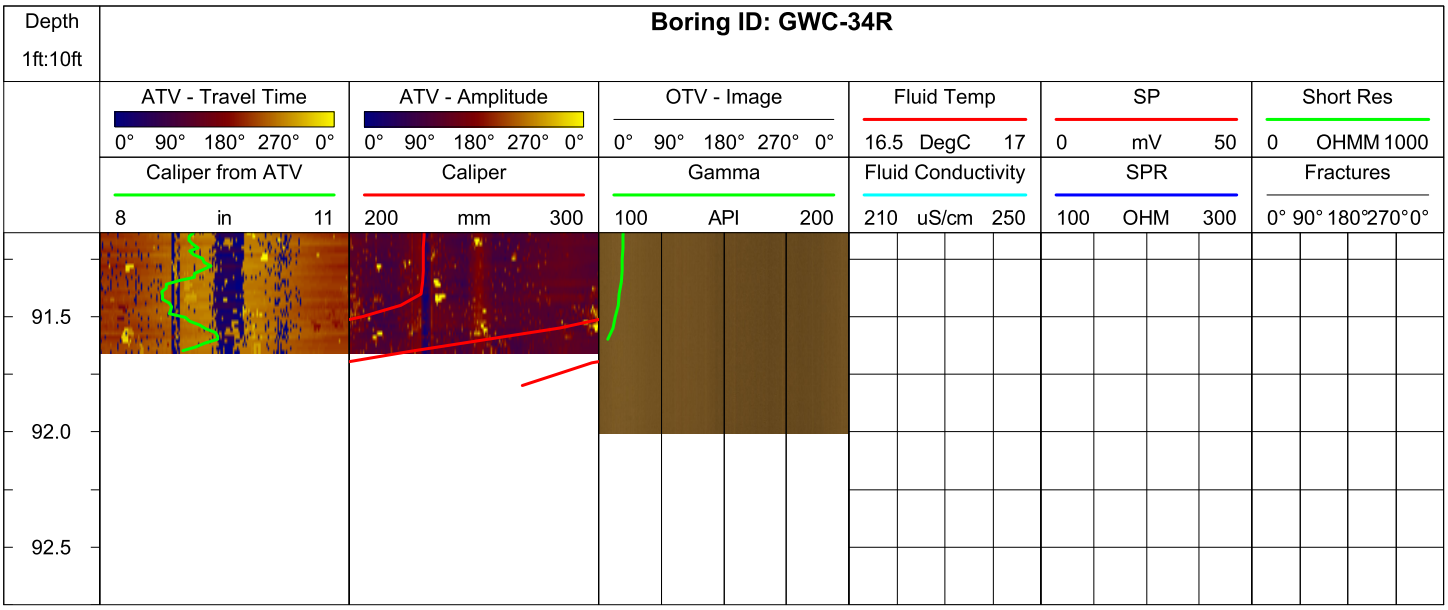
Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
90		Dolomite, light gray, microcrystalline, hard, moderately weathered, wet, iron oxide staining, With small (<1 ft) clayey gravel filled void approximately 92-96', 98-101. *(Continued)*						
91								
92				RS09E	87.0 - 97.0	4.0	N/A	
93								
94								
95								
96								
97								
98								
99				RS10E	97.0 - 101.0	1.7	N/A	
100								
101	101.0	569.2						

No Refusal /
Bottom of Hole at 101.0 Ft.

Top of Rock = 69.0 Ft.
Top of Rock Elevation = 601.2 Ft.

Log ID updated from GWA-34R to GWC-34R for Rev. 1 2024 of the Groundwater Monitoring Plan




Depth
1ft:10ft
Boring ID: GWC-34R
ATV - Travel Time
0° 90° 180° 270° 0°
ATV - Amplitude
0° 90° 180° 270° 0°
OTV - Image
0° 90° 180° 270° 0°
Fluid Temp
16.5 DegC 17
SP
0 mV 50
Short Res
0 OHMM 1000
Caliper from ATV
8 in 11
Caliper
200 mm 300
Gamma
100 API 200
Fluid Conductivity
210 uS/cm 250
SPR
100 OHM 300
Fractures
0° 90° 180° 270° 0°
91.5
92.0
92.5

Log ID updated from GWA-35 to GWC-35 for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

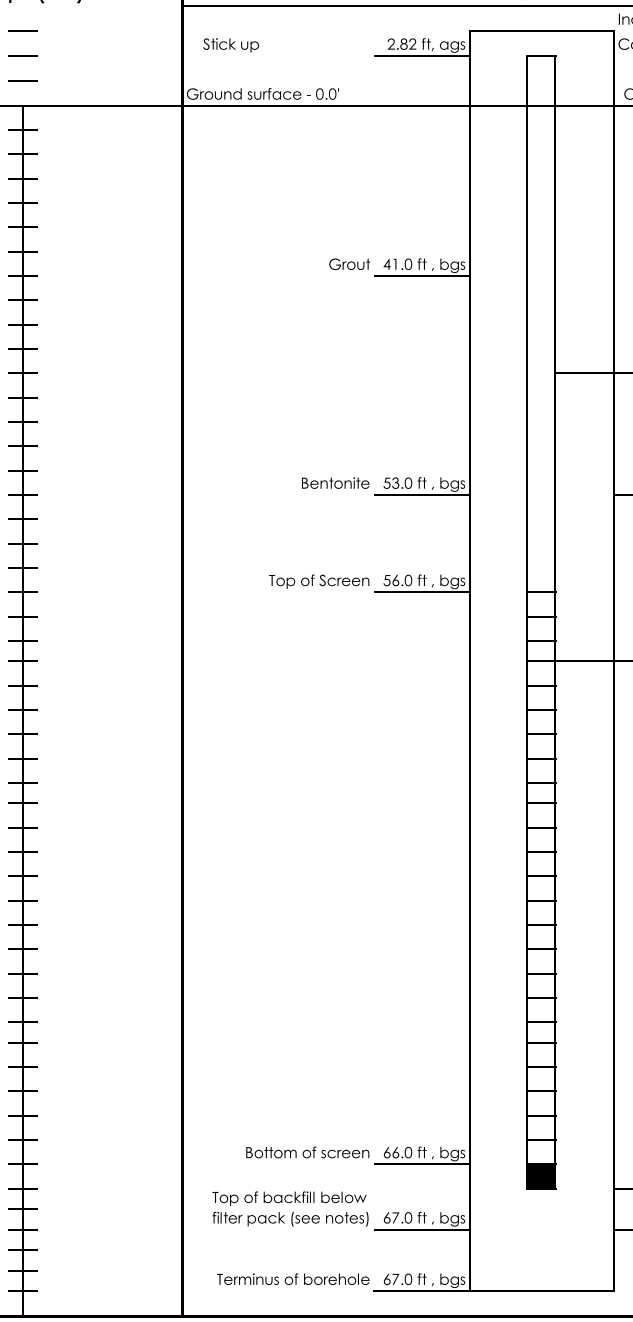
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	4/20/23	Date Completed:	4/21/23
Borehole/Well No:	GWC-35	Northing (ft):	1504694.2	Easting (ft):	2074045.1
Plant Name:	Plant Bowen	Latitude:	N34.134194	Longitude:	W84.902100
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	693.83	Stickup (ft, ags):	2.82
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	67.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	66.0
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	696.66	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	38.86		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 2.82 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing
Top: 2.82 ft, ags Bottom: 56.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen
Top: 56.0 ft, bgs Bottom: 66.0 ft, bgs

Sump/end cap
Top: 66.5 ft, bgs Bottom: 67.0 ft, bgs

Grout Quantity: 160 gallons

Grout Type: Aquaguard

Grout
Top: 2.0 ft, bgs Bottom: 41.0 ft, bgs

Density
Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal
Top: 41.0 ft, bgs Bottom: 53.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size):
Southern Products Silica GP #1 pack

Filter Pack:
Top: 53.0 ft, bgs Bottom: 67.0 ft, bgs

Notes:
Five (50 lb) bags Southern Products Silica GP #1 pack
- Estimated dry filter pack volume ~ 2.5 ft^3
One 50 lb bucket Pel Plug 3/8" coated bentonite pellets
Five bags (50 lb) Hole Plug bentonite chips, 3/8"
Backfill below sand pack: n/a
* Grout mixed to manufacturers recommendations

Log ID updated from GWA-35 to GWC-35 for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-35**
Client: Georgia Power Company
Boring Location: Lat. 34.134194, Long. -84.902100
Project Number: 175569450
Surface Elevation: 693.83 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 4/20/23
Completed: 4/20/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 38.8 ft
Date/Time: 4/21/23 09:30
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: 39.1 ft
Date/Time: 4/21/23 05:10
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	693.8	Top of Hole						
0		Overburden Silty clay						
2.0	691.8	SILTY LEAN CLAY, CL, 2.5YR 4/6 (red), low plasticity, soft to firm, dry		RS01E	0.0 - 7.5	7.5	N/A	
10.0	683.8	SILTY LEAN CLAY LITTLE GRAVEL, CL, 5YR 4/4 (reddish brown) with 10YR 8/1 (white), low to medium plasticity, soft, dry, weathered chert, white mottling		RS02E	7.5 - 17.5	10.0	N/A	

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-35**
Client: Georgia Power Company
Boring Location: Lat. 34.134194, Long. -84.902100
Project Number: 175569450
Surface Elevation: 693.83 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
15		SILTY LEAN CLAY LITTLE GRAVEL, CL, 5YR 4/4 (reddish brown) with 10YR 8/1 (white), low to medium plasticity, soft, dry, weathered chert, white mottling *(Continued)*						
16								
17								
17.0	676.8	SILTY SAND LITTLE CLAY, SM, 7.5YR 6/8 (reddish yellow) with 2.5Y 8/2 (pale brown), fine, loose, dry to moist, Lensed, poorly graded, Mottled						
18								
19								
20								
21								
22				RS03E	17.5 - 27.5	10.0	N/A	
23								
24								
25								
26								
27								
28								
29								
29.5	664.3	SILTY SAND SOME CLAY, SM, 10YR 4/4 (dark yellowish brown), fine, loose to dense, moist, Lensed, poorly graded						
30								
31								
31.5	662.3	SILTY SAND LITTLE CLAY, SM, 7.5YR 6/8 (reddish yellow) with 2.5Y 8/2 (pale brown), fine, loose, dry, Lensed, poorly graded, Mottled		RS04E	27.5 - 37.5	10.0	N/A	
32								
33								

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-35**
Client: Georgia Power Company
Boring Location: Lat. 34.134194, Long. -84.902100
Project Number: 175569450
Surface Elevation: 693.83 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
34		SILTY SAND LITTLE CLAY, SM, 7.5YR 6/8 (reddish yellow) with 2.5Y 8/2 (pale brown), fine, loose, dry, Lensed, poorly graded, Mottled *(Continued)*						
35								
36								
37								lost sample recovery from 37 to 43 feet bgs
38								
39 ▽								
40								
41				RS05E	37.5 - 44.0	1.0	N/A	
42								
43	650.8							
43.0		LEAN CLAY, CL, 2.5Y 6/2 (light brownish gray), medium plasticity, firm, moist to wet						
44.0	649.8							
44		Dolomite, light gray, hard, slightly weathered, N7, dolomite fracture fill						
45								
46				RS06E	44.0 - 47.5	3.5	N/A	
47								
48								
49								
50								
51								
52								

STANTEC 1755.STD 175569450_BORING_LOGS (1).GPJ BC 1755.STD DATAT R0.GDT 7/24/23

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-35**
Boring Location Lat. 34.134194, Long. -84.902100
Surface Elevation 693.83 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
53		Dolomite, light gray, hard, slightly weathered, N7, dolomite fracture fill *(Continued)*		RS07E	47.5 - 57.5	10.0	N/A	
54								
55								
56								
57								
58								
59								
60								
61								Fracture zone
62				RS08E	57.5 - 67.0	9.0	N/A	
63								
64								
65								
66								
67	67.0							
	626.8	No Refusal / Bottom of Hole at 67.0 Ft.						

Top of Rock = 44.0 Ft.
Top of Rock Elevation = 649.8 Ft.

Log ID updated from GWA-57 to GWC-57 for Rev. 1 2024 of the Groundwater Monitoring Plan

Well Installation Field Log

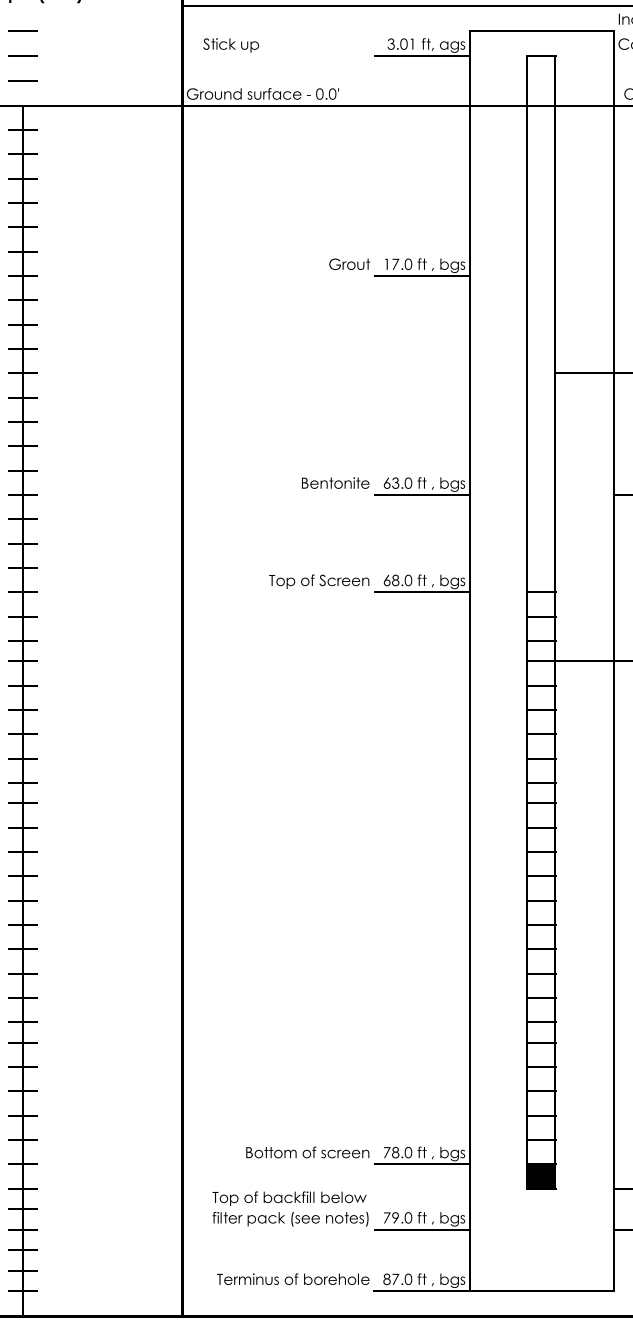
Stantec

Project Name:	Plant Bowen Well Installation	Date Started:	5/16/23	Date Completed:	5/18/23
Borehole/Well No:	GWC-57	Northing (ft):	1504324.3	Easting (ft):	2074803.9
Plant Name:	Plant Bowen	Latitude:	N34.133192	Longitude:	W84.899584
Plant Address:	317 Covered Bridge Rd, Euharlee, GA 30120	Location Datum:	NAD83	Elevation Datum:	NAD83
Project & Task Number:	175569450 1.2	Surface/ Ground Elevation:	672.06	Stickup (ft, ags):	3.01
Goals/Task:	Landfill Expansion	Borehole Diameter (in):	6.25	Borehole Depth (ft, bgs):	87.0
Drilling Company:	Cascade Drilling	Well Casing Diameter (in):	2	Well Depth (ft, bgs):	78.0
Drilling Equipment/Rig Type:	LS600	Top of Casing elev (ft):	675.07	Screen length (ft):	10.0
Drilling Method:	Rotary Sonic	DTW at Completion (ft, bgs):	13.65		
Sampling Method:	4 inch Core Barrel				
Prepared By:	G. Robertson				
Review By:	Cassidy Sutherland				

***Not to Scale**

Depth (feet)

Well Construction



Materials Inventory

Stick up: 3.01 ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing — Top: 3.01 ft, ags Bottom: 68.0 ft, bgs

Screen Type: U-pack

Screen Slot Size: 0.010"

Screen — Top: 68.0 ft, bgs Bottom: 78.0 ft, bgs

Sump/end cap — Top: 78.0 ft, bgs Bottom: 78.5 ft, bgs

Grout Quantity: 15 gallons

Grout Type: Aquaguard

Grout — Top: 0.0 ft, bgs Bottom: 17.0 ft, bgs

Density — Initial: n/a* lbs/gal Return: n/a* lbs/gal

Bentonite Type: Pellets and Holeplug

Bentonite Seal — Top: 17.0 ft, bgs Bottom: 63.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): Southern Products Silica GP #1 pack

Filter Pack: Top: 59.0 ft, bgs Bottom: 63.0 ft, bgs

Notes: Cave in 79' - 87'

14 (50 lb) bags Southern Products Silica GP #1 pack

- Estimated dry filter pack volume ~ 2.5 ft^3

One 50 lb bucket Pel Plug 3/8" coated bentonite pellets

12 bags (50 lb) Hole Plug bentonite chips, 3/8"

Backfill below sand pack: n/a

* Grout mixed to manufacturers recommendations

Log ID updated from GWA-57 to GWC-57 for Rev. 1 2024 of the Groundwater Monitoring Plan

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-57**
Client: Georgia Power Company
Boring Location: Lat. 34.133192, Long. -84.899584
Project Number: 175569450
Surface Elevation: 672.06 ft
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 5/16/23
Completed: 5/18/23
Project Location: Bartow Co, Euharlee, Georgia
Depth to Water: 13.7 ft
Date/Time: 5/17/23 08:02
Inspector: G. Robertson
Logger: G. Robertson
Depth to Water: 17.8 ft
Date/Time: 5/18/23 10:02
Drilling Contractor: Cascade (Subcontractor)
Drill Rig: Prosonic SR120
Driller: M. Herron
Overburden Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Rock Drilling and Sampling Tools (Type and Size): 4" X 6" Rotary Sonic
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Reviewed By: J. Massey
Approved By: C. Sutherland

Lithology Depth Ft[2]	Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	672.1	Top of Hole						
0		SILTY LEAN CLAY TRACE SAND, CL, 5YR 5/8 (yellowish red), low plasticity, firm, moist						
3.8	668.3			RS01E	0.0 - 7.0	7.0	N/A	
4		FAT CLAY, CH, 5YR 6/1 (gray) and 5YR 5/4 (reddish brown), high plasticity, hard, dry, Mottled, trace muscovite.						
9.2	662.9							
10		SILTY WELL GRADED GRAVEL WITH CLAY TRACE SAND, GC, 5YR 6/1 (gray) and 5YR 5/4 (reddish brown), fine to coarse, loose, well graded, Rounded quartzite pebble to cobble.						
12.5	659.6			RS02E	7.0 - 17.0	10.0	N/A	
13		SILTY LEAN CLAY LITTLE SAND, CL, 5YR 6/1 (gray) and 7.5YR 6/8 (reddish yellow), low to medium plasticity, soft to firm, moist, Trace fine sand,						
18.0	654.1							
19		SILTY LEAN CLAY TRACE GRAVEL, CL, 5YR 6/1 (gray) and 5YR 5/4 (reddish brown), low to medium plasticity, firm, moist, Trace angular chert pebbles.						
27.0	645.1							
28		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 7/6 (yellow), low to medium plasticity, soft to firm, moist, Trace angular chert pebbles,						

SUBSURFACE LOG

Client Borehole ID: N/A
Stantec Boring No.: **GWC-57**
Client: Georgia Power Company
Boring Location: Lat. 34.133192, Long. -84.899584
Project Number: 175569450
Surface Elevation: 672.06 ft
Elevation Datum: NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 7/6 (yellow), low to medium plasticity, soft to firm, moist, Trace angular chert pebbles, *(Continued)*		RS03E	17.0 - 47.0	23.0	N/A	
37.0	635.1	WELL GRADED GRAVEL WITH SILT WITH SAND, GM, 10YR 6/6 (brownish yellow), fine to coarse, loose, wet, Angular chert pebbles.						
44.0	628.1	SILTY LEAN CLAY, CL, 10YR 7/2 (light gray), low plasticity, firm to soft, wet						
52.0	620.1	Dolomite, light gray to dark gray, microcrystalline, hard, thin to massive bedded, moderately weathered, wet, iron oxide staining, Munsell color N6 to N4		RS04E	47.0 - 57.0	2.0	N/A	
57.0	615.1	POORLY GRADED SAND WITH SILT LITTLE GRAVEL, SM, 5YR 6/6 (reddish yellow) and 5YR 7/1 (light gray), fine to medium, Little rounded dolomite and clay stone gravel,pebble to cobble size.		RS05E	57.0 - 67.0	6.0	N/A	
68.0	604.1	Dolomite, light gray, microcrystalline, hard, thin to medium bedded, moderately weathered, wet, iron oxide staining, Munsell color N7						
72.0	600.1							

SUBSURFACE LOG

Client Borehole ID N/A
Client Georgia Power Company
Project Number 175569450

Stantec Boring No. **GWC-57**
Boring Location Lat. 34.133192, Long. -84.899584
Surface Elevation 672.06 ft Elevation Datum NAVD88

Lithology Depth Ft[2]	Lithology Elevation	Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
72		Void		RS06E	67.0 - 87.0	5.8	N/A	
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83	589.1							
83.0		Dolomite, dark gray, microcrystalline, hard, medium bedded, wet, Munsell color N4						
84								
85								
86								
87								
87.0	585.1							

No Refusal /
Bottom of Hole at 87.0 Ft.

Top of Rock = 68.0 Ft.
Top of Rock Elevation = 604.1 Ft.

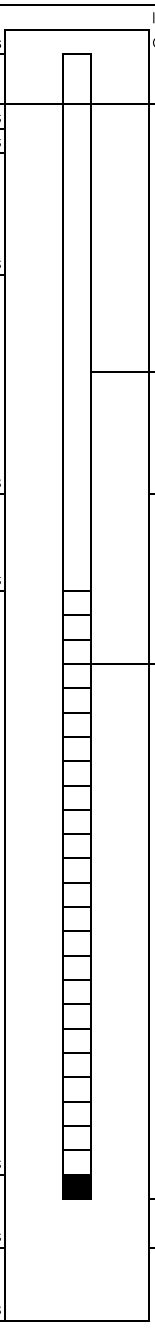
Well Installation Field Log

Stantec

Project Name:	BOW Groundwater Investigation	Date Started:	8/19/2025	Date Completed:	8/27/2025
Borehole/Well No:	GWC-58	Northing (ft):	1504081.03	Easting (ft):	2075608.12
Plant Name:	Plant Bowen BOW	Latitude:	34.13899083	Longitude:	-84.89877526
Plant Address:	317 Covered Bridge Road, Euharlee GA 30120	Location Datum:	NAD83	Elevation Datum:	NAVD88
Project & Task Number:	175569450 1.2	Concrete Pad Elevation*:	670.71	Stickup (ft, ags):	2.57
Goals/Task:	Groundwater Investigation	Native Ground Elevation	670.36	Borehole Depth (ft, bgs):	50.77
Drilling Company:	Cascade	Borehole Diameter (in):	6	Well Depth (ft, bgs):	50.8
Drilling Equipment/Rig Type:	TSI 150cc Track-Mounted Compact Crawler Sonic	Well Casing Diameter (in):	2	Screen length (ft):	10
Drilling Method:	4' X 6' Rotary Sonic	Top of Casing elev (ft):	673.28	Total Depth TOC (ft):	53.34
Sampling Method:	4 in Core Barrel	DTW at Completion (ft, bgs):	20.20		
Prepared By:	Devon Abuan				
FTL/Designee Review By:	Andrew Stevens				

Depth (feet)

Well Construction



Materials Inventory

Stick up: **2.57** ft, ags

Casing Type (steel or PVC, schedule 40 or 80): Schedule 40 PVC

Casing Top: 2.57 ft, ags Bottom: 50.77 ft, bgs

Screen Type: U-Pack

Screen Slot Size: 0.010"

Screen Top: 40.37 ft, bgs Bottom: 50.37 ft, bgs

Sump/end cap Top: 50.37 ft, bgs Bottom: 50.77 ft, bgs

Grout Quantity: 60 gallons

Grout Type: Aquaguard

Grout Top: 3.0 ft, bgs Bottom: 19.4 ft, bgs

Density Initial: NA lbs/gal Return: NA lbs/gal

Bentonite Type: 3/8" PDS TR30 pellets

Bentonite Seal Top: 19.4 ft, bgs Bottom: 38.0 ft, bgs

Filter Pack - Pre-pack and Annular Space
Type (manufacturer, size): 20/40 Mesh (Global #7)

Filter Pack: Top: 38.0 ft, bgs Bottom: 50.8 ft, bgs

Notes:
Bentonite chips added to 19.4 ft bgs

*Concrete Pad is referenced as ground surface

SUBSURFACE LOG

Client Borehole ID: SCS
Stantec Boring No.: **GWC-58**
Client: Southern Company Services: Georgia Power
Boring Location: N 1504081.03, E 2075608.12
Project Number: 175569450
Surface Elevation: 670.36 ft*
Elevation Datum: NAVD88
Project Name: Plant Bowen Landfill Expansion
Date Started: 8/19/25
Completed: 8/21/25
Project Location: Plant Bowen
Depth to Water: 20.3 ft
Date/Time: 8/20/25
Inspector: D. Abuan
Logger: D. Abuan
Depth to Water: N/A
Date/Time: N/A
Drilling Contractor: Stantec Consulting Services Inc.
Drill Rig: Geoprobe 4x6 Rotary Sonic
Driller: Cascade Drilling Services
Overburden Drilling and Sampling Tools (Type and Size): telescoping 4" core barrel w/ 6" outer casing
Rock Drilling and Sampling Tools (Type and Size): N/A
Sampler Hammer Type: N/A
Weight: N/A
Drop: N/A
Efficiency: N/A
Borehole Azimuth: N/A (Vertical)
Borehole Inclination (from Vertical): Vertical

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. Ft	Blows/PSI / Rec. %	Remarks
0.0	670.36	Top of Hole						
		Fill						
1.0	669.4	SILT TRACE CLAY, ML, strong brown, fine to medium, low plasticity, dry						
2.9	667.5							
3.1	667.3	Native topsoil						
		SILT TRACE CLAY, ML, brown to strong brown, fine, low plasticity, moist to dry, micaceous		RS1	0.0 - 10.0	10.0	N/A	Increased moisture
								~2 offset geotech boring, Shelby Tube pushed 8.0'-10.0' bgs
								~2 offset geotech boring, Shelby Tube pushed 12.0'-14.0' bgs
13.0	657.4	SILTY POORLY GRADED SAND TRACE CLAY, SP-SM, strong brown, fine, low plasticity, dry		RS2	10.0 - 20.0	9.0	N/A	
19.2	651.2							

SUBSURFACE LOG

Client Borehole ID: SCS
Client: Southern Company Services: Georgia Power
Project Number: 175569450

Stantec Boring No.: **GWC-58**
Boring Location: N 1504081.03, E 2075608.12
Surface Elevation: 670.36 ft* Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation	Description	Overburden: / Rock Core:	Sample	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
		POORLY GRADED SAND WITH SILT WITH SILT, SP-SM, gray, fine to medium, non-plastic, dry *(Continued)*						Depth to Water 20.3' bgs
21.2	649.2	POORLY GRADED SAND, SP, gray, fine to medium, non-plastic, moist, well rounded gravel						~2 offset geotech boring, Shelby Tube pushed 20.0'-22.0' bgs
24.0	646.4	No recovery		RS3	20.0 - 30.0	7.0	N/A	Wash out No Recovery
26.0	644.4	WELL GRADED GRAVEL WITH SAND, GWS, gray, non-plastic, dolomite or sandstone subrounded gravel						
28.0	642.4	LEAN CLAY WITH GRAVEL, CLG, gray, high plasticity, moist to wet, angular to subangular gravel						
31.0	639.4	WELL GRADED GRAVEL WITH SAND, GWS, gray, coarse, non-plastic, highly weathered sandstone						
33.5	636.9	WELL GRADED GRAVEL WITH CLAY, GW-GC, gray, moist to wet, weathered subangular dolostone		RS4	30.0 - 40.0	10.0	N/A	Floater rock
40.0	630.4	No recovery						No Recovery

SUBSURFACE LOG

Client Borehole ID: SCS
Client: Southern Company Services: Georgia Power
Project Number: 175569450

Stantec Boring No.: **GWC-58**
Boring Location: N 1504081.03, E 2075608.12
Surface Elevation: 670.36 ft*
Elevation Datum: NAVD88

Lithology Depth Ft	Lithology Elevation		Description	Overburden: / Rock Core:	Sample / RQD %	Depth Ft / Run Ft	Rec. Ft / Rec. %	Blows/PSI	Remarks
45			No recovery *(Continued)*		RS5	40.0 - 50.8	0.0	N/A	No Recovery
46									
47									
48									
49									
50									
50.8	619.6								

No Refusal /
Bottom of Hole at 50.8 Ft.
*All recorded depths on the boring logs and the provided surface elevations are referenced to the native ground surface

ATTACHMENT A1

WELL CONSTRUCTION AND BORING LOGS

LANDFILL CELLS 9 & 10

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **731.80**
Top of PVC Casing Elevation (feet, NAVD88): **735.15**

BORING GWA-39 Z
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GPC633179

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/26/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 731.80' NAVD88 **COORDINATES:** N:1502655.66 E:2071120.65
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 115 ft. **GROUND WATER DEPTHDURING** 58 ft. **COMP.** 55.9 ft. **DELAYED** 55.5 ft. after 96 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		Sandy Lean Clay (CL) - and red (2.5YR 4/6) dry, stiff				Completion: protective aluminum cover with bollards; 4-foot square concrete pad Surface Seal: Concrete
5		**Sandy Silt (ML)** - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
		Well-graded Gravelly Sand (SW) - and pinkish gray / grayish orange pink (5YR 7/2) pulverized rock/gravel				
10		**Sandy Silt (ML)** - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
		Dolostone (COBBLES AND BOULDERS) - dolostone boulders				
		Sandy Silt (ML) - brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				Annular Fill: Portland Cement-Bentonite Grout (4 - 94lbs bags PC, 1 - 50lbs bags Gel, 45 gal. Water)
15		**Dolostone (COBBLES AND BOULDERS)** - dolostone boulders				
		Sandy Silt (ML) - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
20		**Sandy Lean Clay (CL)** - mottled pale yellow (2.5Y 8/2) and brownish yellow / dark yellowish orange (10YR 6/6) dry, medium stiff, medium plasticity				
25		- with dolostone cobbles and gravel (pulverized rock)				
30		- pale yellow (5Y 8/2) and yellow (2.5Y 7/6) dry, medium stiff, medium plasticity				Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (101.5'-98.0')) and Baroid Hole Plug 3/8 Chips (19 - 50lbs bags (98.0'-25.0'))
35		- with dolostone cobbles and gravel (pulverized rock)				
40		- pale yellow (2.5Y 8/2) and white (N9) dry, medium plasticity				

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
45		**Sandy Lean Clay (CL)***(Con't)* - interbedded with 6 inch clayey-sand lense				Completion: protective aluminum cover with bollards; 4-foot square concrete pad (CONTINUED)
50		**Sandy Fat Clay (CH)** - and brownish yellow (10YR 6/8) very damp, soft				
55		- with gravel				
60		**Well-graded Gravelly Sand (SW)** - white (10YR 8/1) and brownish yellow (10YR 6/8) wet - saturated, gravel lense				
65		**Sandy Elastic Silt (MH)** - and light brownish gray / pale yellowish brown (10YR 6/2) soft, medium to high plasticity - with gravel				←Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (101.5'-98.0')) and Baroid Hole Plug 3/8 Chips (19 - 50lbs bags (98.0'-25.0'))
70		**Elastic Silt (MH)** - very pale brown / very pale orange (10YR 8/2) and light yellowish brown (10YR 6/4) very damp, soft, medium plasticity				
75		**Fat Clay (CH)** - pale brown (10YR 6/3) and yellowish brown (10YR 5/6) very damp, medium stiff, medium plasticity - with gravel				
80		**Sandy Elastic Silt (MH)** - pale brown (10YR 6/3) and yellowish brown (10YR 5/6) damp, medium stiff, medium plasticity, with gravel				
85						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
90		**Sandy Elastic Silt (MH)***(Con't)* - and yellowish brown (10YR 5/6) wet, medium to high plasticity, with gravel - saturated, very soft				(CONTINUED) Completion: protective aluminum cover with bollards; 4-foot square concrete pad
95		- and light gray (10YR 7/1)				Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (101.5'-98.0')) and Baroid Hole Plug 3/8 Chips (19 - 50lbs bags (98.0'-25.0'))
100		- very dark brown / dusky yellowish brown (10YR 2/2), yellowish brown (10YR 5/6) and light gray (10YR 7/1) wet, soft - with gravel				
105						Filter: Filter Media 20/40 Silica Sand (4 - 50 lbs bags)
110		- dark gray (10YR 4/1) and brownish yellow / dark yellowish orange (10YR 6/6) saturated				**Standpipe:** **2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack
115		- with gravel - top of competent rock at 115 ft.				Sump:0.299999999999997 ft. Cave-in to 115 ft.
120		Bottom of borehole at 115.0 feet.				
125						
130						
135						

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **731.80**
Top of PVC Casing Elevation (feet, NAVD88): **735.15**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-39 Z
PAGE 1 OF 3
GPC633179

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/26/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 731.80' NAVD88 **COORDINATES:** N:1502655.66 E:2071120.65
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 115 ft. **GROUND WATER DEPTHDURING** 58 ft. **COMP.** 55.9 ft. **DELAYED** 55.5 ft. after 96 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
		Sandy Lean Clay (CL) - and red (2.5YR 4/6) dry, stiff			(Recovery=100% between 0 and 7ft.)	
5		**Sandy Silt (ML)** - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
		Well-graded Gravelly Sand (SW) - and pinkish gray / grayish orange pink (5YR 7/2) pulverized rock/gravel			(Recovery=95% between 7 and 17ft.)	
10		**Sandy Silt (ML)** - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
		Dolostone (COBBLES AND BOULDERS) - dolostone boulders				
		Sandy Silt (ML) - brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel				
15		**Dolostone (COBBLES AND BOULDERS)** - dolostone boulders				
		Sandy Silt (ML) - mottled brownish yellow (10YR 6/8), red (2.5YR 4/6) and very pale brown / very pale orange (10YR 8/2) dry, stiff, some gravel			(Recovery=95% between 17 and 27ft.)	
20		**Sandy Lean Clay (CL)** - mottled pale yellow (2.5Y 8/2) and brownish yellow / dark yellowish orange (10YR 6/6) dry, medium stiff, medium plasticity				
25		- with dolostone cobbles and gravel (pulverized rock)				
					(Recovery=95% between 27 and 37ft.)	
30		- pale yellow (5Y 8/2) and yellow (2.5Y 7/6) dry, medium stiff, medium plasticity				
35		- with dolostone cobbles and gravel (pulverized rock)				
					(Recovery=100% between 37 and 47ft.)	
40		- pale yellow (2.5Y 8/2) and white (N9) dry, medium plasticity				

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
45		**Sandy Lean Clay (CL)***(Con't)* - interbedded with 6 inch clayey-sand lense			*(Con't)*	
50		**Sandy Fat Clay (CH)** - and brownish yellow (10YR 6/8) very damp, soft			(Recovery=100% between 47 and 57ft.)	
55		- with gravel				
60		**Well-graded Gravelly Sand (SW)** - white (10YR 8/1) and brownish yellow (10YR 6/8) wet - saturated, gravel lense			(Recovery=100% between 57 and 67ft.)	
65		**Sandy Elastic Silt (MH)** - and light brownish gray / pale yellowish brown (10YR 6/2) soft, medium to high plasticity - with gravel				
70		**Elastic Silt (MH)** - very pale brown / very pale orange (10YR 8/2) and light yellowish brown (10YR 6/4) very damp, soft, medium plasticity			(Recovery=100% between 67 and 77ft.)	
75		**Fat Clay (CH)** - pale brown (10YR 6/3) and yellowish brown (10YR 5/6) very damp, medium stiff, medium plasticity - with gravel				
80		**Sandy Elastic Silt (MH)** - pale brown (10YR 6/3) and yellowish brown (10YR 5/6) damp, medium stiff, medium plasticity, with gravel			(Recovery=100% between 77 and 87ft.)	
85					(Recovery=85% between 87	

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells

LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 – 110 – 165)
90		**Sandy Elastic Silt (MH)***(Con't)* - and yellowish brown (10YR 5/6) wet, medium to high plasticity, with gravel - saturated, very soft			and 97ft.) *(Con't)*	
95		- and light gray (10YR 7/1)			(Recovery=80% between 97 and 107ft.)	
100		- very dark brown / dusky yellowish brown (10YR 2/2), yellowish brown (10YR 5/6) and light gray (10YR 7/1) wet, soft - with gravel				
105						
110		- dark gray (10YR 4/1) and brownish yellow / dark yellowish orange (10YR 6/6) saturated			(Recovery=62% between 107 and 115ft.)	
115		- with gravel - top of competent rock at 115 ft.				
		Bottom of borehole at 115.0 feet.				
120						
125						
130						
135						

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **729.57**
Top of PVC Casing Elevation (feet, NAVD88): **732.62**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-39RZ
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6122160287

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DATE STARTED 11/3/2016 **COMPLETED** 11/4/2016 **SURF. ELEV.** 729.57 ft NAVD88 **COORDINATES:** N:1502618.73 E:2071164.20
CONTRACTOR Cascade **EQUIPMENT** PS T-150 **METHOD**
DRILLED BY Tommy and Rodger **LOGGED BY** D. Morris* **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 137 ft bgs **GROUND WATER DEPTH: DURING** **COMP.** 96 ft bgs **DELAYED** 73.22 ft.;26 days
NOTES *Sample Logged by geologist employed by Amec Foster Wheeler

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		- SILT (ML), red and beige (5 YR 8/2 - 5/8), stiff, dry				Completion: Protective casing set in concrete pad; 2-foot square concrete pad Annular Fill: Aquaguard Grout Mixture
5						
10		- same as above, stiff, dry				
15						
20		- same as above, stiff, dry				
25			704.6			
		- CLAY (CL), white and gray (5 YR 8/1 - 8/2), low plasticity, slightly moist				
30						
35						
			693.6			
		- SILT (ML), light orange (5 YR 7/8), stiff, moist	692.6			
		- CLAY (CL), light brown, moist				
40						

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SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen
LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(Cont.)				(CONTINUED) Completion: Protective casing set in concrete pad; 2-foot square concrete pad
45						Annular Fill: Aquaguard Grout Mixture
50		- same as above, light brown to white (5 YR 8/1 - 6/6), low plasticity, chert nodules and lenses, moist				
55						
60		- same as above, (5 YR 8/1), moist				ELEV. (DEPTH) 667.6 (62.0)
65						Annular Seal: 3/8" bentonite chips
70		- same as above, orangish brown (5 YR 6/6), very moist				
75		- sandy CLAY (CL), orangish brown (5 YR 6/6), black layering	654.6		▼	
80						
85						
		- NO RECOVERY	642.6			

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen

LOCATION Cartersville, GA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(Cont.)	640.6			(CONTINUED)
90		- sandy CLAY (CL), orangish brown (7.5 YR 5/6), gravel, stiff, very moist	638.6			Completion: Protective casing set in concrete pad; 2-foot square concrete pad
		- CLAY with gravel (CL), whte (7.5 YR 8/1), stiff, saturated			▽	Annular Seal: 3/8" bentonite chips
95						
			630.6			
100		- competent DOLOMITE, gray, wet				
105		- same as above				
110		- same as above				
115						
120		- same as above, white siliceous veins				610.6 (119.0) Annular Seal: 3/8" bentonite pellets (non-coated)
125						605.6 (124.0) Filter: silica filter sand
						602.6 (127.0) **Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack
130		- same as above, white siliceous veins				
135						

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 1/6/17 11:11 - C:\USERS\MACKENZIE.FIOCA\DESKTOP\PLANT BOWEN_SOUTHERN COMPANY.GPJ

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Plant Bowen

LOCATION Cartersville, GA

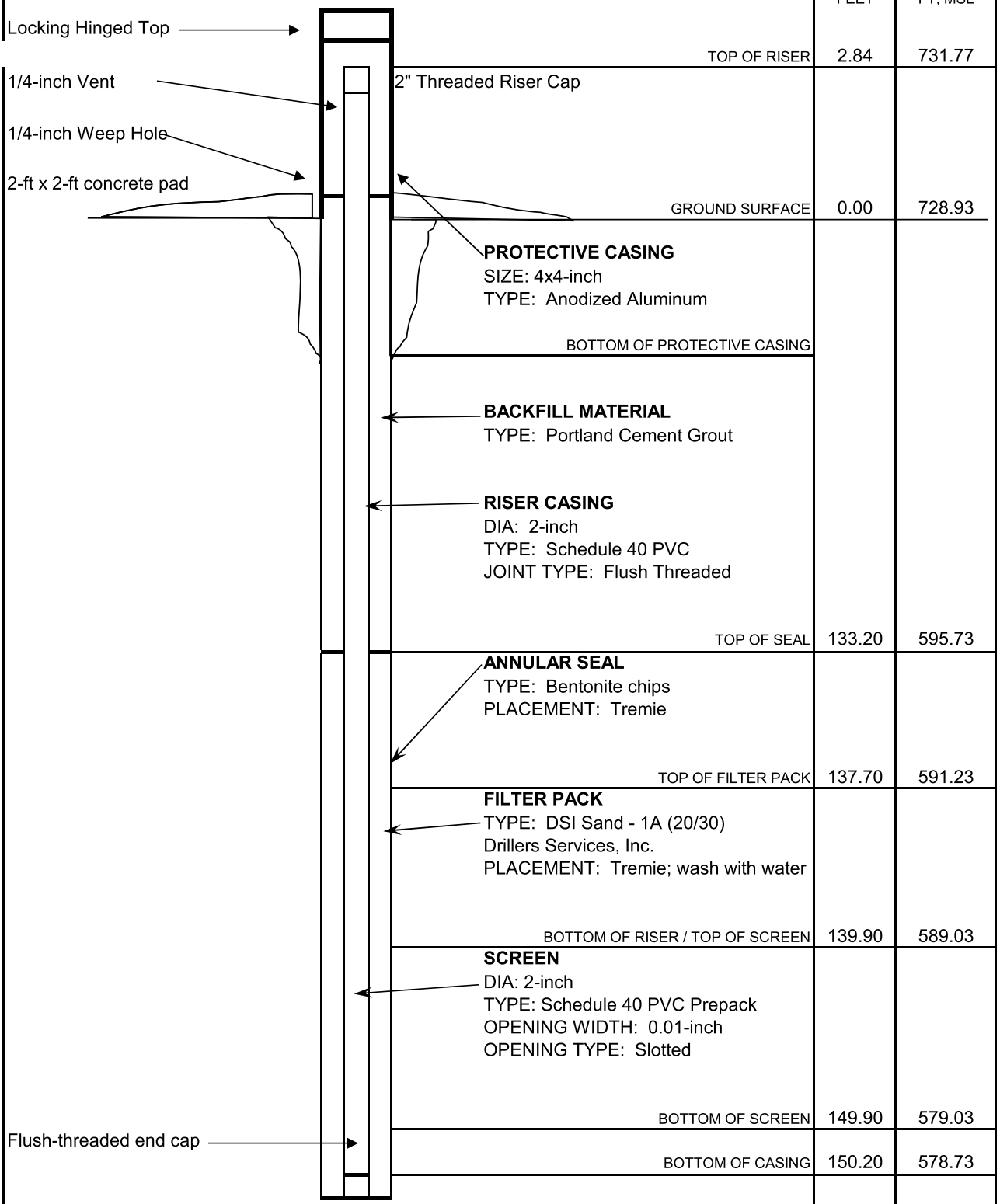
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEV.	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(Cont.)	592.6			Completion: Protective casing set in concrete pad; 2-foot square concrete pad (CONTINUED)
		Bottom of borehole at 137.0 feet.				

ELEV. (DEPTH)

140
145
150
155
160
165
170
175
180

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	CCB Disposal	DRILLING CO.:	Boart Longyear	WELL NAME
		DRILLER:	Boart	
LOCATION:	Cells 9 and 10	RIG TYPE:	Rotosonic	
LOGGER:	D Brooks	DRILLING METHODS:	RotoSonic	GWA-40
DATE CONSTRUCT	6/7/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.84	731.77
2" Threaded Riser Cap		
GROUND SURFACE	0.00	728.93
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	133.20	595.73
ANNULAR SEAL TYPE: Bentonite chips PLACEMENT: Tremie		
TOP OF FILTER PACK	137.70	591.23
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	139.90	589.03
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted		
BOTTOM OF SCREEN	149.90	579.03
BOTTOM OF CASING	150.20	578.73

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **728.93**
Top of PVC Casing Elevation (feet, NAVDl88): **731.77**

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED _____ **COMPLETED** _____ **SURF. ELEV.** 728.93 **COORDINATES:** N:1503195.09 E:2071299.94
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** G. Dyer **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 153 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Gravelly Sand; mottled white, gray, tan and brown; sand estimated to be 55%, gravel at 45% and silts and clays at 10%; gravel is subrounded quartz, chert and calcite; probably flood deposits; weakly cemented to cemented						
10		- SAA; less mottling of color, more red-brown; dry; fragments more subangular	716					
15		- Sandy Silt; red-brown, few subangular fragments of quartz, chert and dolomite; dry	709					
20		- Zone of white, clayey silt	708					
		- Sandy Silt; red-brown, few subangular fragments of quartz, chert and dolomite; dry	707					
25		- Clayey silt; mostly white but veins of brown-red mud cut through silt layers; Slightly damp; shows pressure/dissolution features	703					
30		- mottled tan, white and brown Gravelly Sand with prevalent fines; gravels are very large and angular quartz; slightly damp	698					
35		- Clayey Silt; white to brown-tan and orange with interbedded layers of fine sand; few gravels (dolomitic and subangular); slightly damp, medium to high plasticity; very strong/hard	693					
40		- Gravelly Clay; tan and orange, contains sands less than 10%, low plasticity clay, gravel is subangular and cherty						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)	688					
		- Clayey Silt; white, gray, tan and orange; clay is low plasticity; gravel is angular chert; sand less than 5%						
45								
		- Silty clay with gravel, tan and orange, clay is low plasticity, damp						
50								
55								
		- Clayey silt to Silty Clay; tan and white, moist, low plasticity, few gravel sized fragments, moist						
60			667					
		- Gravelly silt to Gravelly clayey silt; tan, white and gray; pressure solution features, banding and flow paths; wet, low plasticity						
65			660					
70		- Clayey Silt and Silty Clay with few dolomitic gravels; tan, gray and white; very damp; low plasticity						
75			653					
		- Gravelly Sand; mottled tan, orange, gray and white; dry	651					
		- Clayey Silt to Silty Clay with slight gravel content; tan and white; banding present; sand content increases with depth						
80								
85								
		- Clayey Silt to Silty Clay; tan to white with some						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
90		manganese staining (black); damp; medium to low plasticity; infrequent gravel beds *(con't)*						
95								
100								
105			623					
110		- Gravelly sand and sandy gravel; tan, gray and white; wet						
115								
120								
125								
130								

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells

LOCATION Plant Bowen

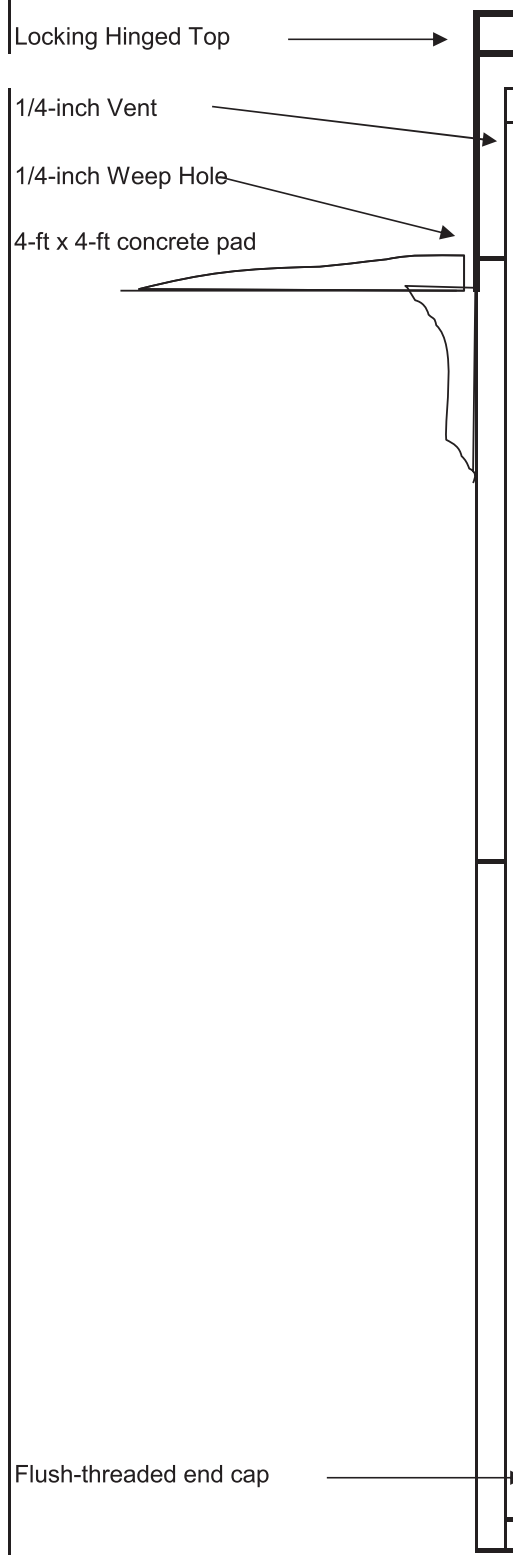
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
135		*(con't)*						
140								
145								
150			576					Top of Rock: Bottom of Boring.
		Bottom of borehole at 153.0 feet.						
155								
160								
165								
170								
175								
180								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **738.91**
Top of PVC Casing Elevation (feet, NAVDl88): **742.35**

WELL CONSTRUCTION LOG

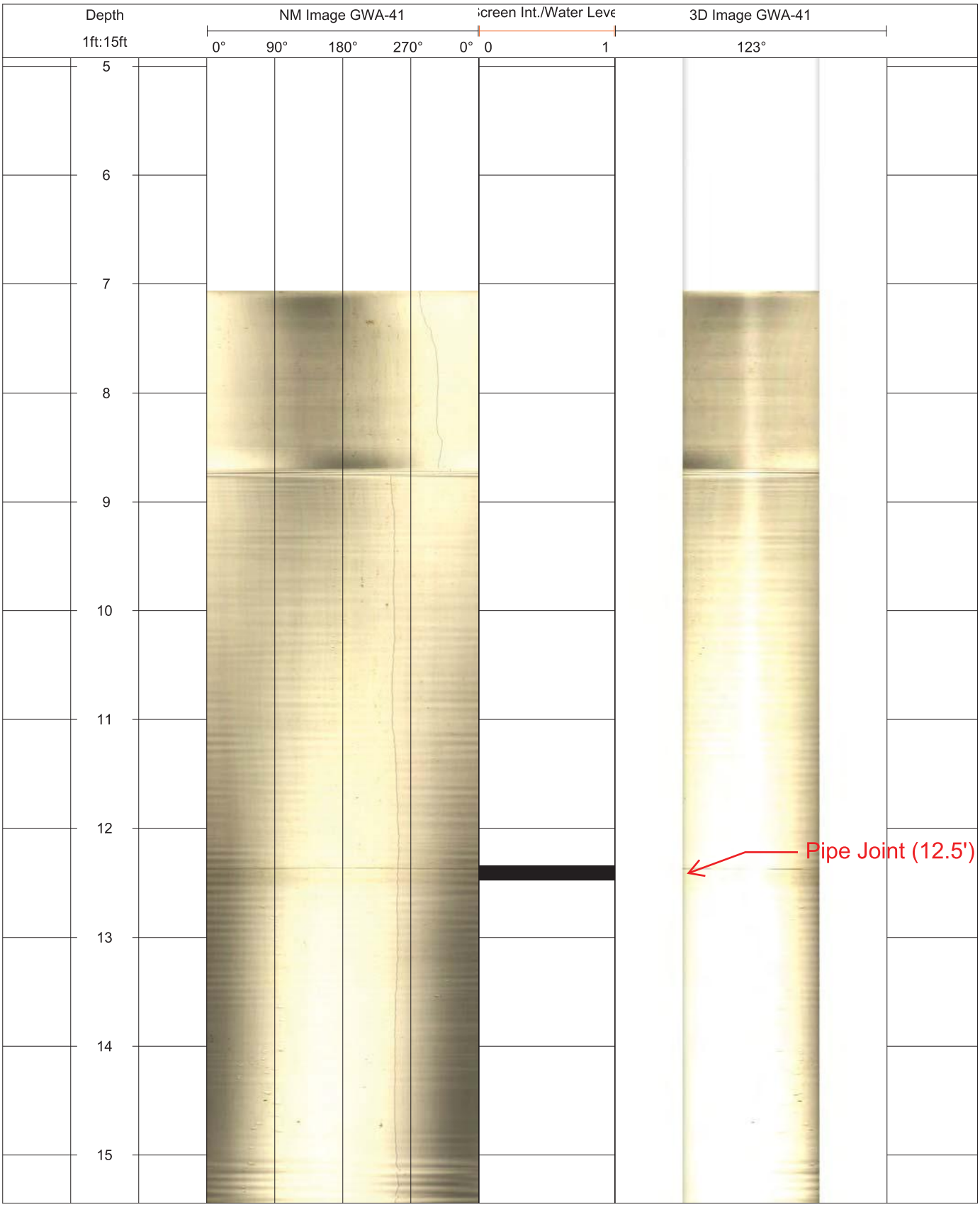
Southern Company Generation

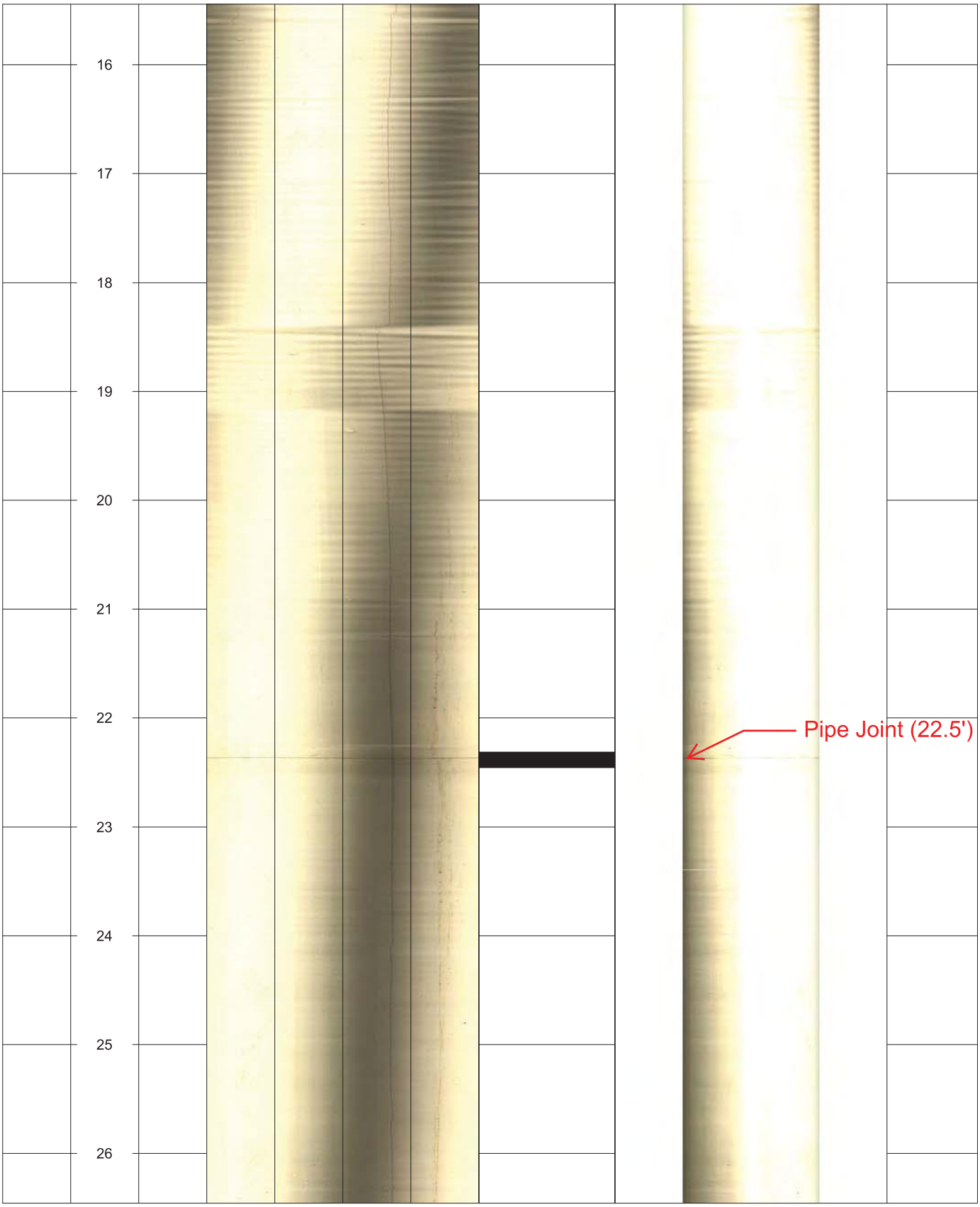
PROJECT:	Plant Bowen CCB	DRILLING CO.: Boart Longyear (estimated)	WELL
LOCATION:	Cells 9 and 10	RIG TYPE Roto Sonic (estimated)	GWA-41
LOGGER:		DRILLING METHODS: Roto Sonic (estimated)	
DATE CONSTRUCTED:	6/6/2011		

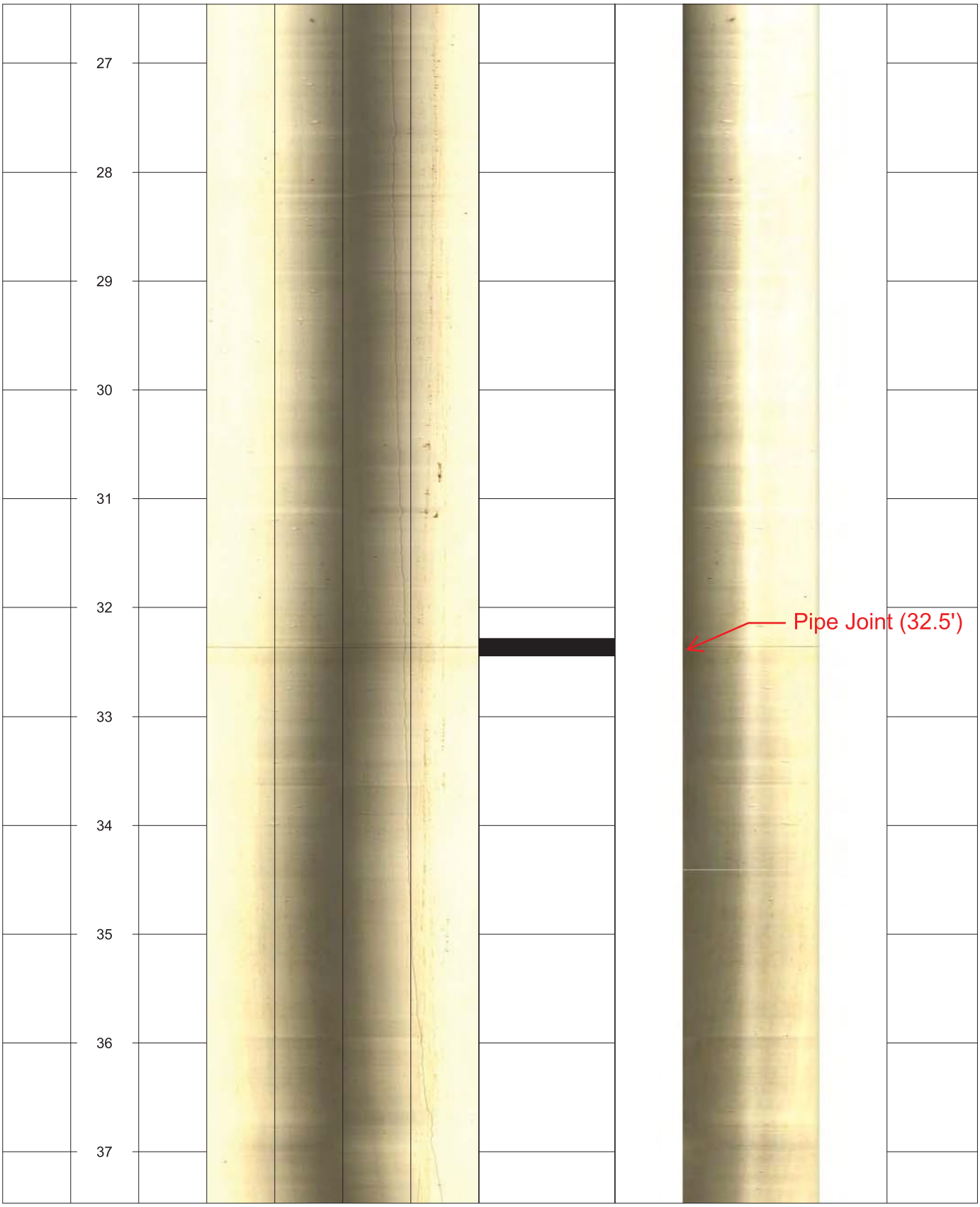


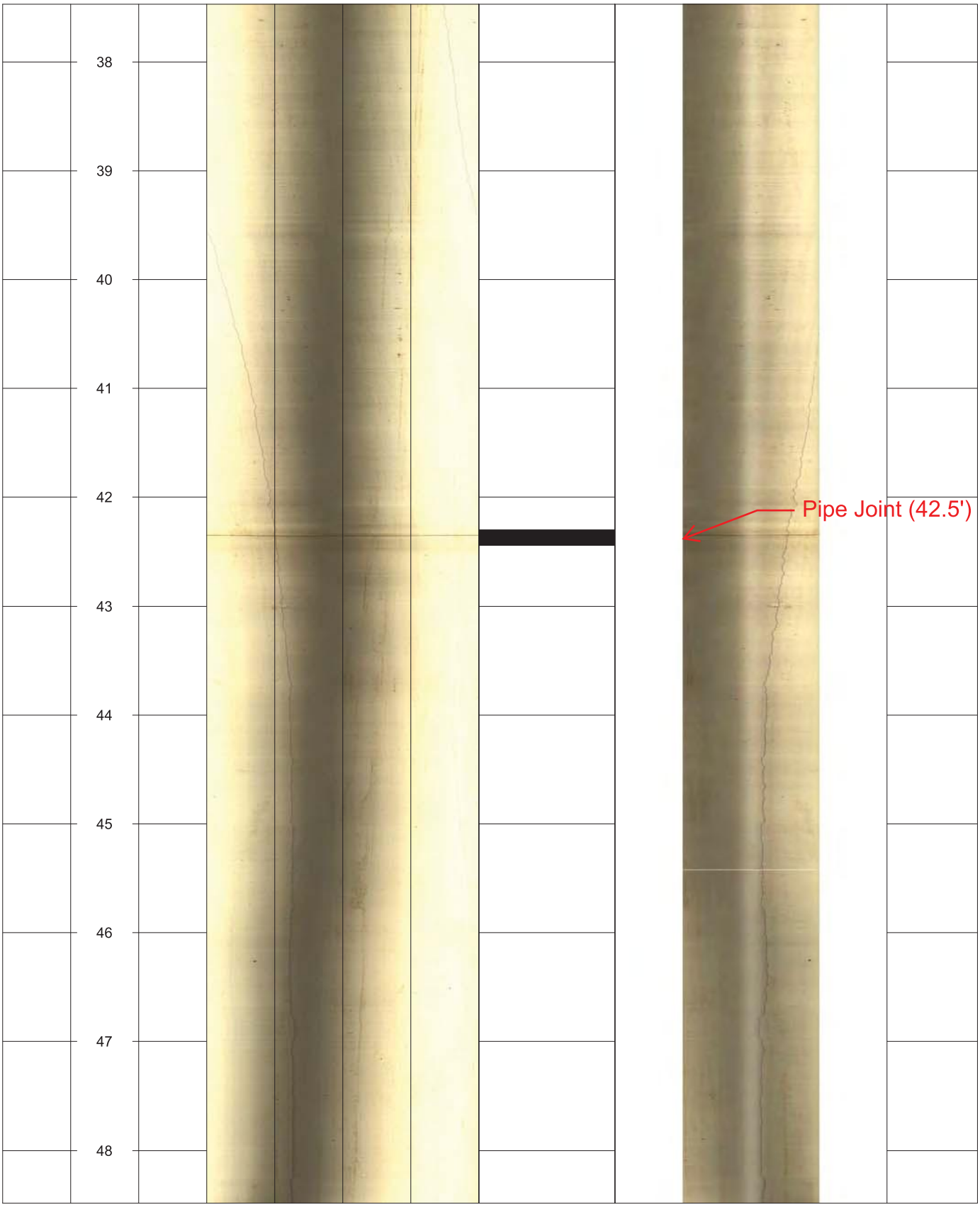
	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.44	742.35
2" Threaded Riser Cap		
GROUND SURFACE	0.00	738.91
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement/ Grout Slurry		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL		
ANNULAR SEAL TYPE: Bentonite chips PLACEMENT: Wash with water		
TOP OF FILTER PACK		
FILTER PACK TYPE: DSI Sand #1A Drillers Services, Inc. PLACEMENT: Wash with water		
BOTTOM OF RISER / TOP OF SCREEN	92.50	646.41
SCREEN DIA: 2-inch i TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted		
BOTTOM OF SCREEN	102.50	636.41
BOTTOM OF CASING	102.54	636.37

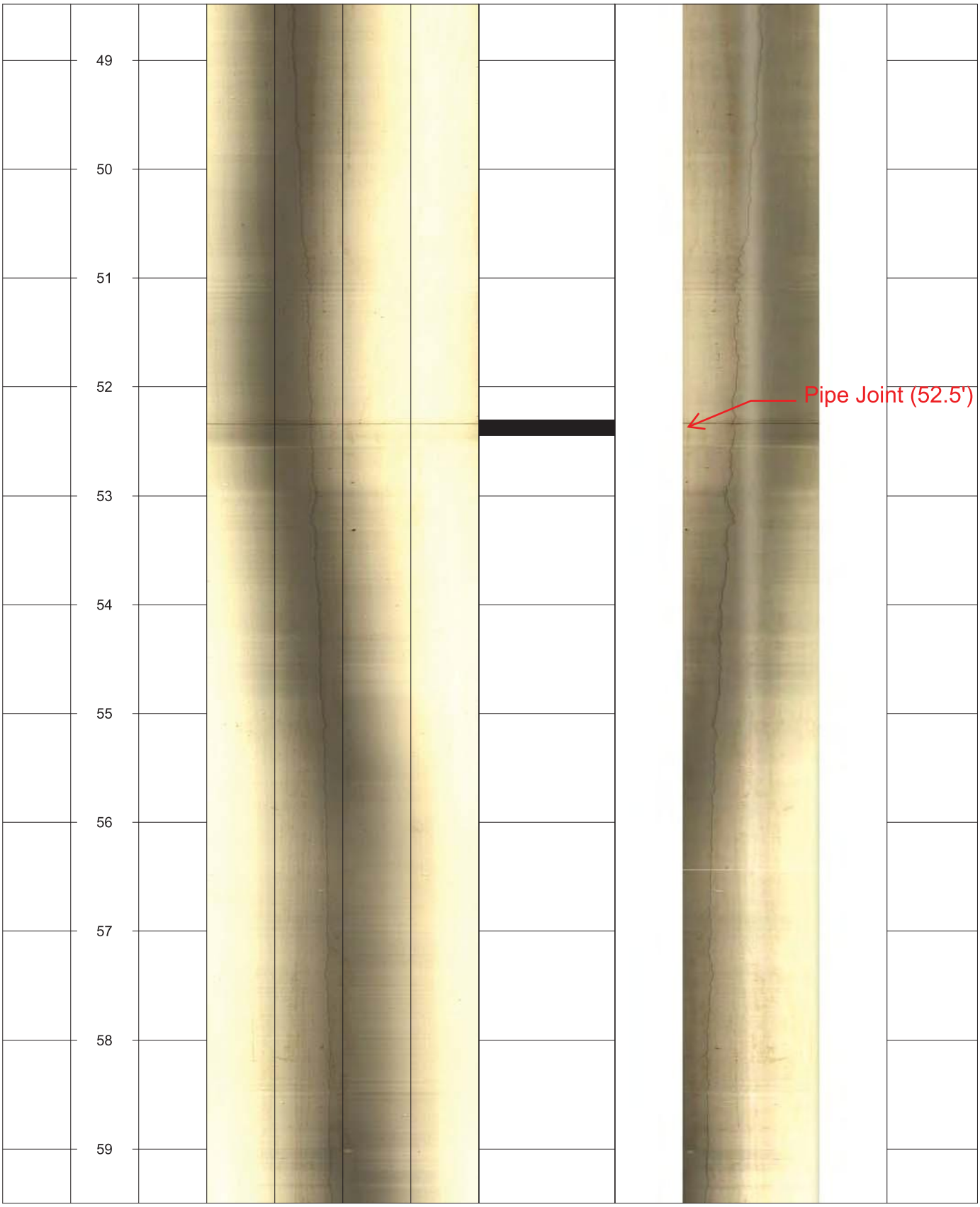
PLANT BOWEN
Optical Teleview
Magnetic North and 3D Image
GWA-41

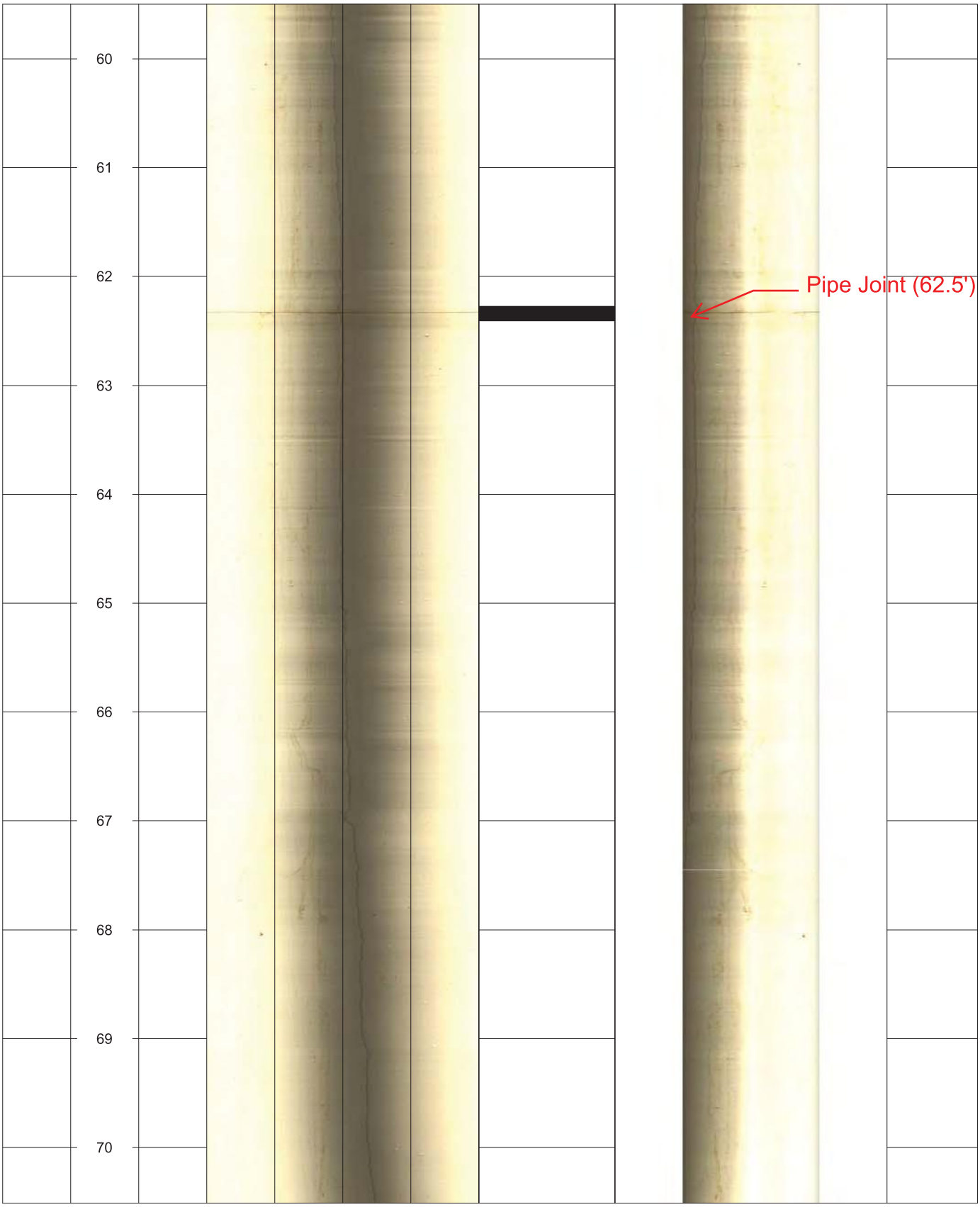


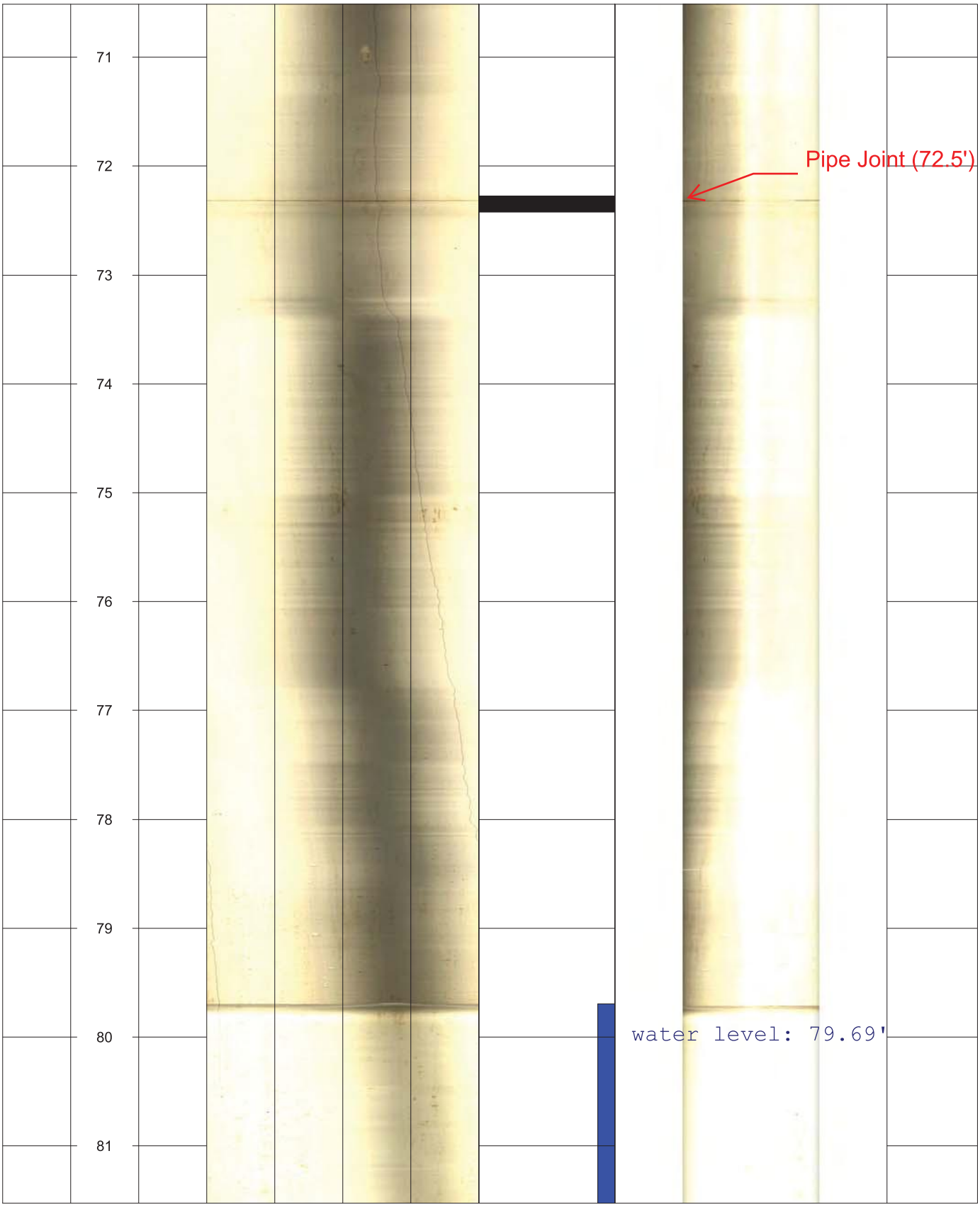

16
17
18
19
20
21
22
23
24
25
26
Pipe Joint (22.5')

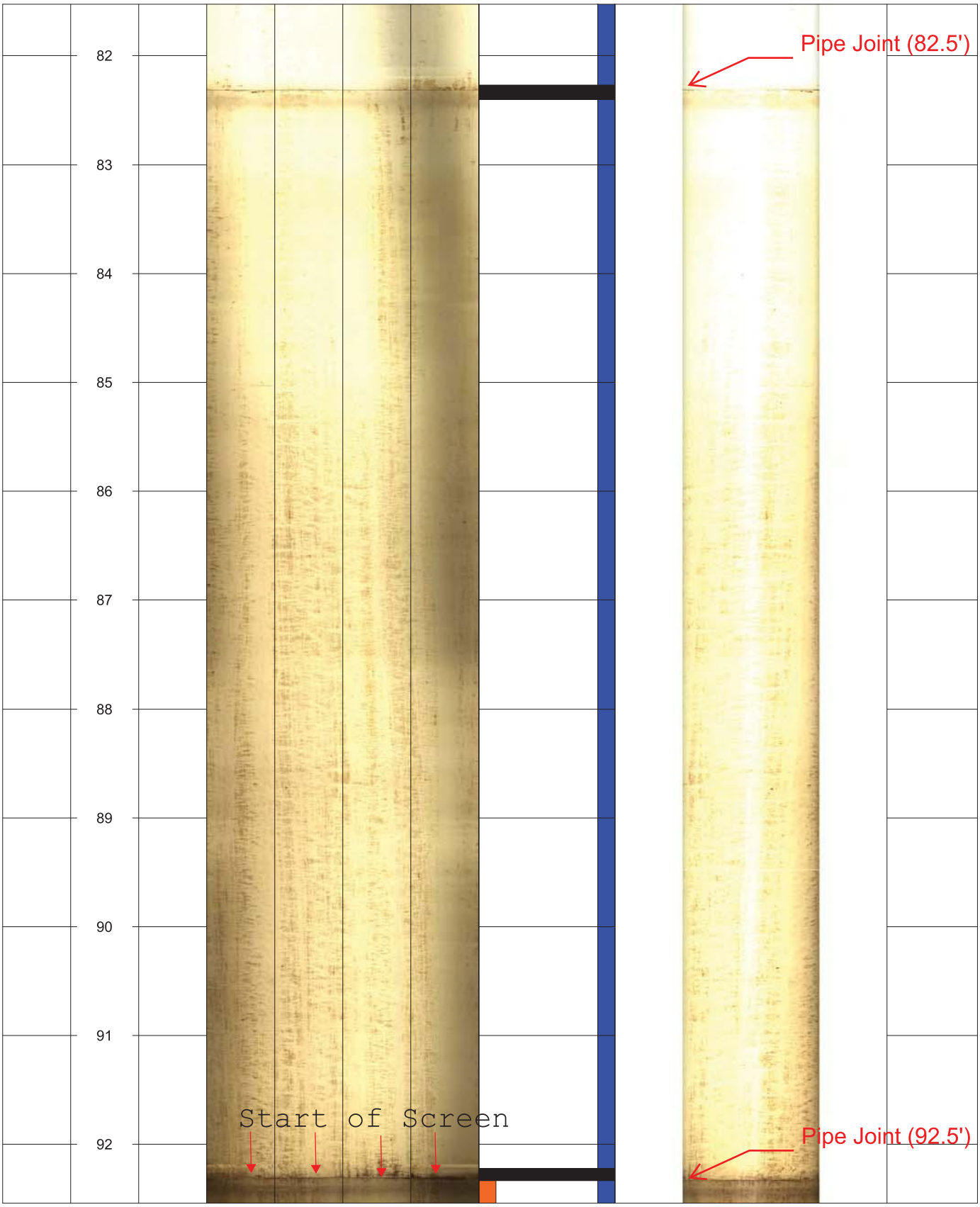

27
28
29
30
31
32
33
34
35
36
37
Pipe Joint (32.5')

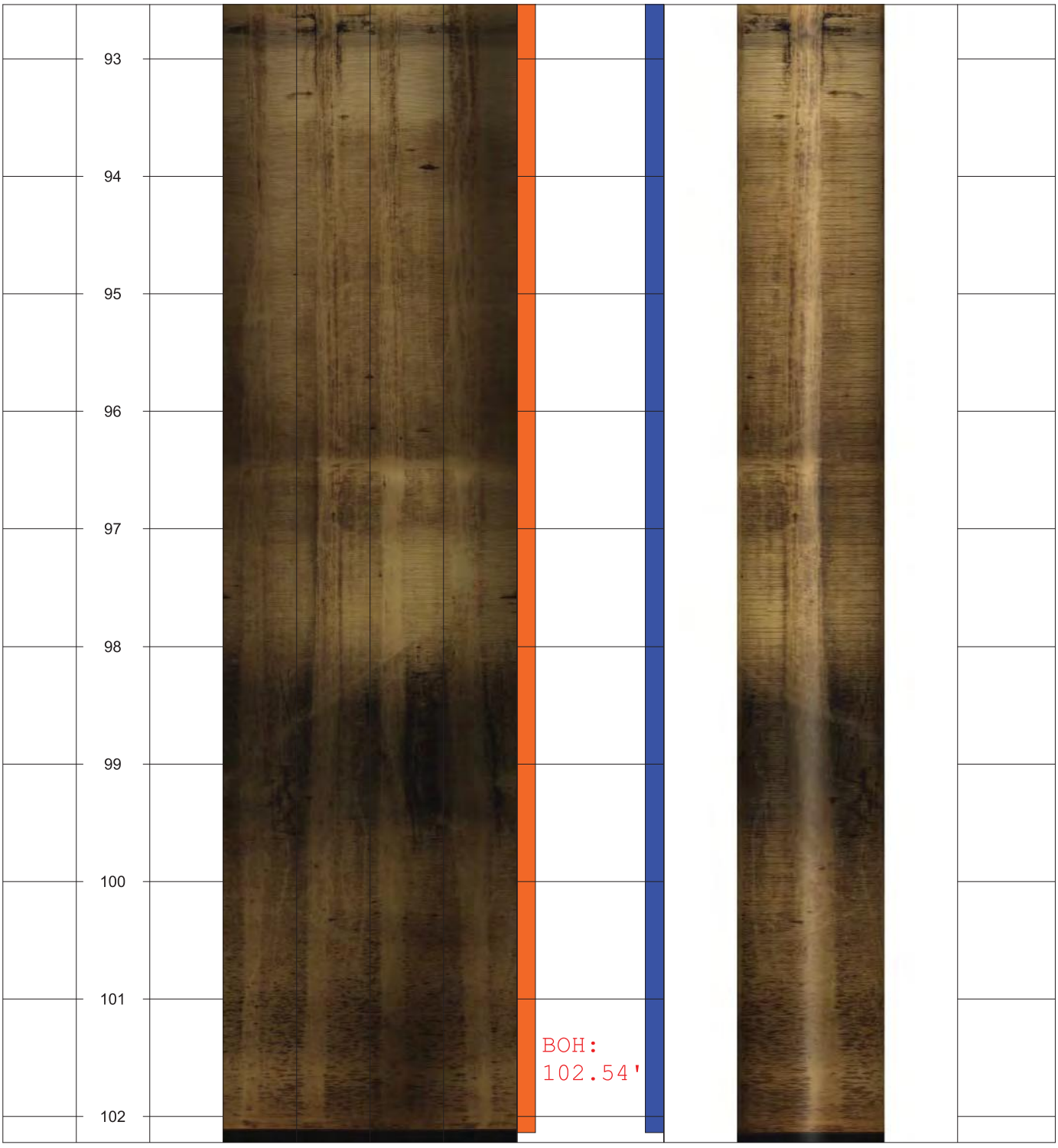

38
39
40
41
42
43
44
45
46
47
48
Pipe Joint (42.5')

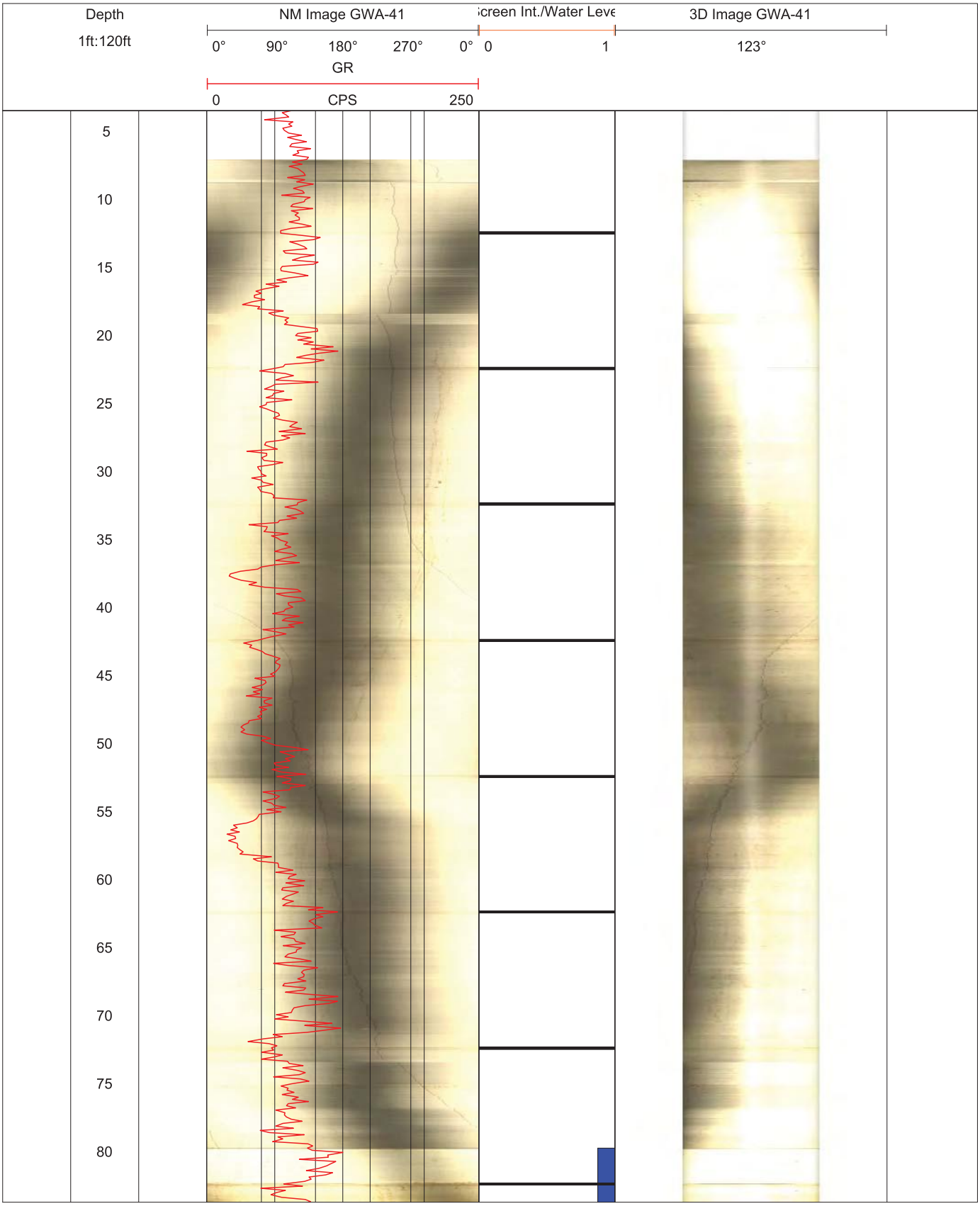

49
50
51
52
53
54
55
56
57
58
59
Pipe Joint (52.5')

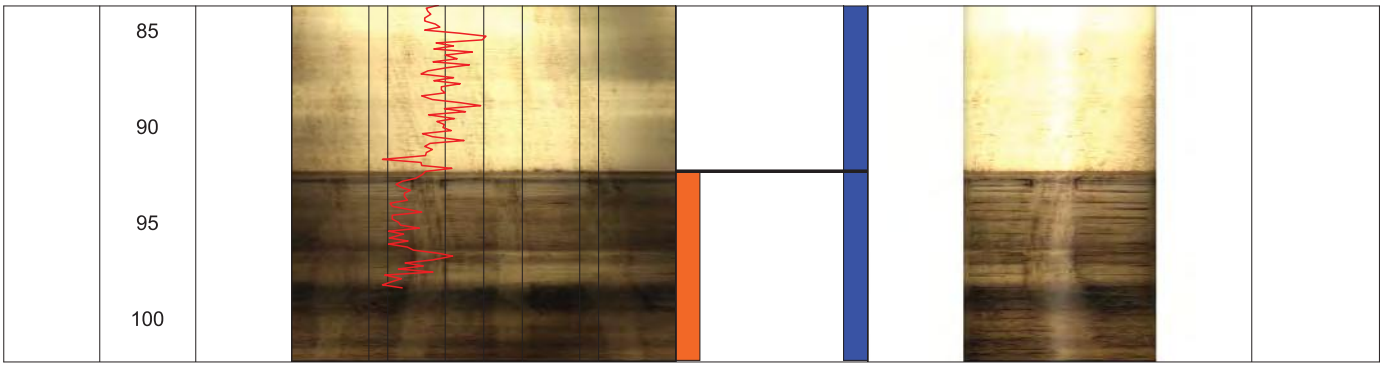

60
61
62
63
64
65
66
67
68
69
70
Pipe Joint (62.5')


71
72
73
74
75
76
77
78
79
80
81
Pipe Joint (72.5')
water level: 79.69'


82
83
84
85
86
87
88
89
90
91
92
Pipe Joint (82.5')
Start of Screen
Pipe Joint (92.5')


93
94
95
96
97
98
99
100
101
102
BOH:
102.54'


Depth
1ft:120ft
NM Image GWA-41
0°
90°
180°
270°
0°
GR
0
CPS
250
creen Int./Water Leve
0
1
3D Image GWA-41
123°
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80


85
90
95
100

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **738.91**
Top of PVC Casing Elevation (feet, NAVDl88): **742.35**

BORING GWA-41

LOG OF TEST BORING

SOUTHERN COMPANY

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 6/6/2011 **COMPLETED** 6/6/2011 **SURF. ELEV.** 738.91' NAVD88 **COORDINATES:** N:1503519.02 E:2071046.18
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** G. Dyer **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 85 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Sandy Clay; gray to brown; damp; low plasticity	736					
5		- Silty sand with some clay; gray; dry; material is competent and clumped	733					
		- Clayey Silty Sandy; mottled gray, brown and tan; dry; root structures and organic material	731					
10		- Gravelly Sand; tan and brown; moist to wet; clay present; moisture decreasing with depth; fines increasing with depth	726					
15		- SAA						
20								
25			713					
30		- Clayey Sand; tan to brown with large subangular clasts of chert; dry; clay increasing with depth; hard; low plasticity; fragments become smaller with depth						
35			703					
		- Fine to medium sand; tan; wet	701					
40		- Clayey Sand; brown to tan with prevalent chert and dolomitic clasts; damp						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)						
			696.4					
45		- SAA						
			693					
50		- Sandy Clay; tan (some brown) with few chert and dolomitic fragments; clay is hard and of low plasticity; slightly moist						
55			683					
60		- Clayey Sand to Sandy Clay; clay increasing with depth; brown to tan; sand is medium grained to coarse, small subangular to few subrounded chert and dolomitic clasts, very damp						
65			673					
70		- Clayey Silty Sand; tan; very moist; coarse grained; few chert and dolomitic fragments (subangular); moisture content increasing with depth						
75			663					
80		- Gravelly Sand; tan; medium and coarse grained; wet; gravels are subangular; high yield zone from 76'-85'						
85			654					
		Bottom of borehole at 85.0 feet.						Bottom of Hole.

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **737.95**
Top of PVC Casing Elevation (feet, NAVDl88): **743.08**

WELL CONSTRUCTION LOG — Southern Company Generation

				WELL NAME
PROJECT:	CCB Disposal	DRILLING	Boart Longyear	
		DRILLER:	Boart	
LOCATION:	Bowen	RIG TYPE:	RotoSonic	
LOGGER:	K. Lewis	DRILLING METHODS:	RotoSonic	GWA-41R
DATE CONSTRUCTED: 6/1/2011				

NOT APPLICABLE:
Locking Hinged Top

1/4-inch Vent
1/4-inch Weep Hole
2-ft x 2-ft concrete pad

Flush-threaded end cap

HOLE DIA: 6"

	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	5.13	743.08
2" Threaded Riser Cap		
GROUND SURFACE	0.00	737.95
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminium		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement AMOUNT:		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	95.06	642.89
ANNULAR SEAL TYPE: Hole Plug 3/8" Bentonite Pellets AMOUNT: 2 bags PLACEMENT: Free fall		
TOP OF FILTER PACK	100.56	637.39
FILTER PACK TYPE: DSI Sand - 2A (20/30) AMOUNT: 7 bags PLACEMENT Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	102.76	635.19
SCREEN DIA: 2-inch 10ft U-Pack TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH:		
BOTTOM OF SCREEN	112.76	625.19
BOTTOM OF CASING	113.06	624.89

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **737.95**
Top of PVC Casing Elevation (feet, NAVDl88): **743.08**

BORING GWA-41R

LOG OF TEST BORING

SOUTHERN COMPANY

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 6/1/2011 **COMPLETED** 6/1/2011 **SURF. ELEV.** 737.95' NAVD88 **COORDINATES:** N:1503527.39 E:2071050.84
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** K. Byrd **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 116 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Silty sand; top soil; reddish yellow; dry; very fine grained						
		- SAA except gray	736					
		- Clayey Sand; gray; damp; very fine to fine grained; clay content increasing with depth	734.5					
5		- Sandy Clay with chert fragments; brown; damp; very fine to fine grained						
		- Sandy Clay with quartz pebbles; brown; damp; very fine grained; medium plasticity						
10								
		- SAA except in reddish in color						
15								
			719					
20		- Clayey Sand with quartz pebbles; orange reddish (brown); damp; very fine to fine grained						
			715.5					
25		- Sandy clay with quartz pebbles decreasing in size; brown; fine grained						
		- SAA with chert pieces						
30								
		- Sandy clay with quartz and chert pieces; brownish yellow; moist; fine-grained						
35		- Sandy Clay with small quartz pebbles and large carbonate chunks; light brown; moist; very fine grained						
			701					
		- Silty clay with small quartz fragments; light brown; moist; very fine grained						
40		- SAA with added chert pieces						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)						
		- SAA with increasing chert size fragments; sand content increasing as well						
			694					
45		- Clayey sand with weathered carbonate and chert pieces; mottled yellowish very pale brown; damp, fine to medium grained						
			691					
		- Sandy clay with small chert pieces, very pale brown/yellowish brown; moist; very fine to fine grained						
50								
		- SAA with weathered carbonates, sand content increasing						
			685					
		- Clayey Sand, weathered carbonates and large pieces of smokey quartz; mottled yellow, brown, and white; damp; very fine to fine grained						
55		- Clayey sand with large pieces of cherty quartz; yellowish brown, damp, very fine to fine grained						
60								
65								
70								
75		- SAA except for very fine grained with yellow lenses of silty clay						
80								
85		- SAA except fine grained to medium grained, wet						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
90		*(con't)* - 0.5 feet lense of mottled purple, dark gray pieces of siltstone	646.5					
95		- Dolostone	642					
		- Cavity	639					
100		- Dolostone, 0.5 feet of recovery and small amount of gravel, wet, driller indictaed no cavity--drilled like gravel filled cavity						
105								
110		- Dolostone--red staining						
115			622					
		Bottom of borehole at 116.0 feet.						Bottom of hole, set well.
120								
125								
130								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **734.45**
Top of PVC Casing Elevation (feet, NAVDl88): **738.05**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	CCB Disposal	DRILLING C	Boart Longyear	WELL NAME
		DRILLER:	Boart	
LOCATION:	Bowen	RIG TYPE:	RotoSonic	
LOGGER:	G. Dyer	DRILLING METHODS:	RotoSonic	GWA-42
DATE CONSTRUCTED: 6/1/2011				

		DEPTH FEET	ELEVATION FT, NAVD88
NOT APPLICABLE: Locking Hinged Top	TOP OF RISER	3.60	738.05
1/4-inch Vent	2" Threaded Riser Cap		
1/4-inch Weep Hole			
2-ft x 2-ft concrete pad	GROUND SURFACE	0.00	734.45
	PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminium		
	BOTTOM OF PROTECTIVE CASING		
	BACKFILL MATERIAL TYPE: Portland Cement AMOUNT:		
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE Flush Threaded		
	TOP OF SEAL	64.56	669.89
	ANNULAR SEAL TYPE: Hole Plug 3/8" Bentonite Pellets AMOUNT: 2 bags PLACEMENT: Free fall		
	TOP OF FILTER PACK	69.56	664.89
	FILTER PACK TYPE: DSI Sand - 2A (20/30) AMOUNT: 7 bags PLACEMEN Tremie; wash with water		
	BOTTOM OF RISER / TOP OF SCREEN	71.76	662.69
	SCREEN DIA: 2-inch 10ft U-Pack TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH:		
	BOTTOM OF SCREEN	81.76	652.69
Flush-threaded end cap	BOTTOM OF CASING	82.06	652.39
HOLE DIA: 6"			

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **734.45**
Top of PVC Casing Elevation (feet, NAVDl88): **738.05**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWA-42
PAGE 1 OF 3

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED _____ **COMPLETED** _____ **SURF. ELEV.** 734.45' NAVD88 **COORDINATES:** N:1503823.34 E:2071049.95
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** G. Dyer **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 85 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** 55 ft. **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		- Sand with gravel; brown; root material gavel; consists of chert and dolomite (subangular)	733					
5		- Silty sand; tan, orange and white; with angular chert fragments; dry; black weathering bands	728.5					
10		- Silty clay with highly weathered chert and dolomite clasts; light tan, gray and white; low plasticity; dry						
15		- Silty clay with angular to subangular chert clasts; mottled tan, orange and gray; dry; low plasticity						
20		- Silty clay with weathered chert and dolomite clasts; orange and white; damp; low plasticity	714.5					
25		- Clay with angular chert fragments with black weathering surfaces; mottled orange, tan and white; low plasticity; damp - Clay; streaked tan and white; moist; medium to low plasticity	708					
30		- Sandy, silty clay with few angular chert and dolmite fragments; orange; low plasticity; damp and hard						
35			699.5					
		- Silty Sand; white to gray; sand is carbonate						
40		- Clayey silty sand with small carbonate fragments; dry						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)	693.5					
		- Gravelly sand with some fines; slightly damp gravels are dolomitic in nature	690.5					
45		- Clayey silty sand; orange and tan; hard; slightly damp; few dolomitic fragments	688.5					
		- Clayey sand; orange and tan; hard; few chert and dolostone fragments						
50								
		- SAA: less hard						
55		- SAA: harder						
60								
65		- Moist Zone from 64 to 66 feet						
70								
75								
80								
85		- SAA: tan and brown						
			648.5					
		- Lost sample						

(Continued Next Page)

LOG OF TEST BORING

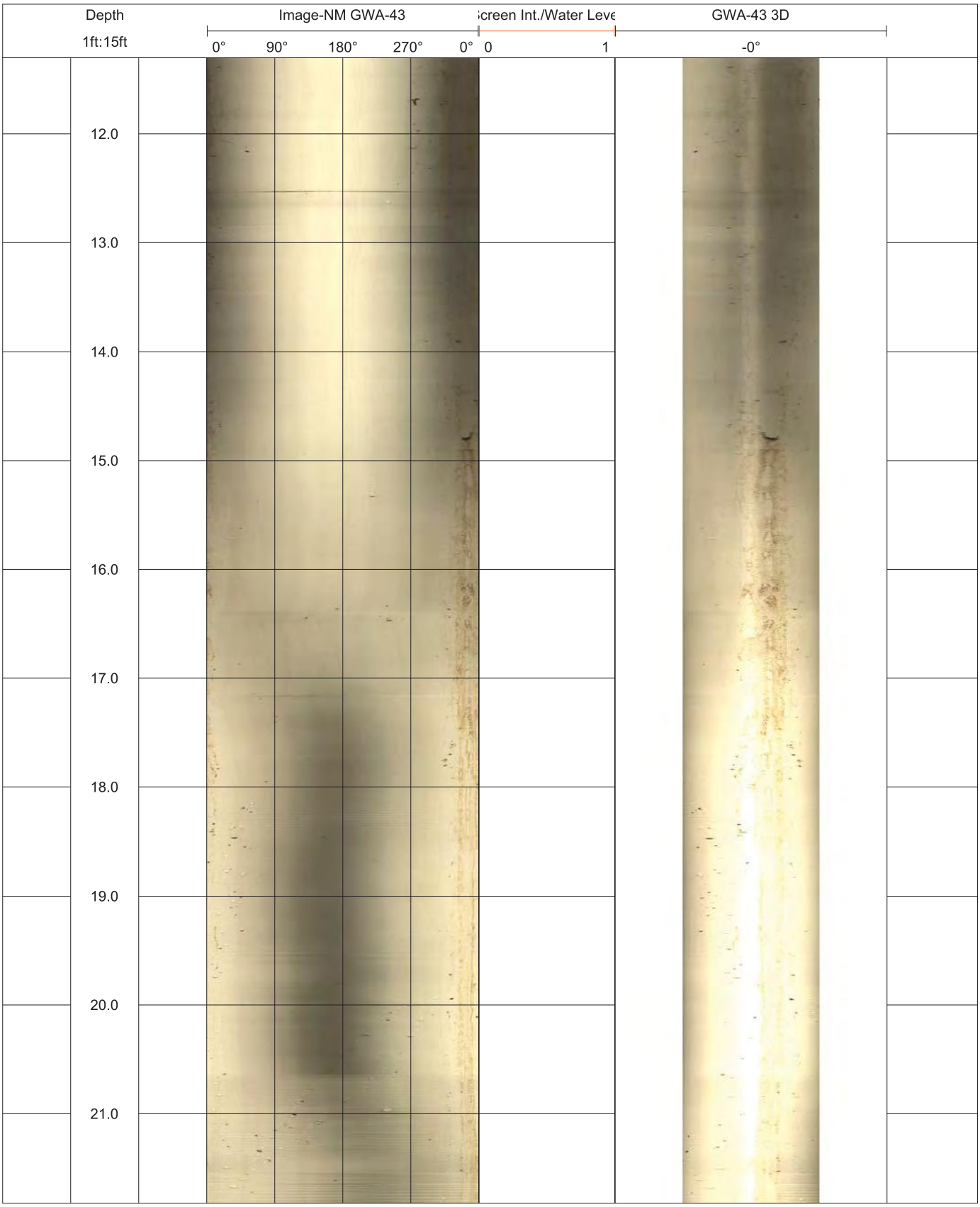
SOUTHERN COMPANY

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells

LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)						
90								
			642.5					
		- Clayey Silty Sane with few gravel sized fragments; orange and tan						
95								
100		- SAA: more gravel and moist to very moist						Bottom of Well Set (102 feet).
105								
			628.5					
		- Silty clay; orange; damp; medium to low plasticity; hard						
			626.5					
		- Weathered dolostone; gray with some sand and silt; dry						
110								
115								
			618.5					
		Bottom of borehole at 85.0 feet.						Bottom of hole.
120								
125								
130								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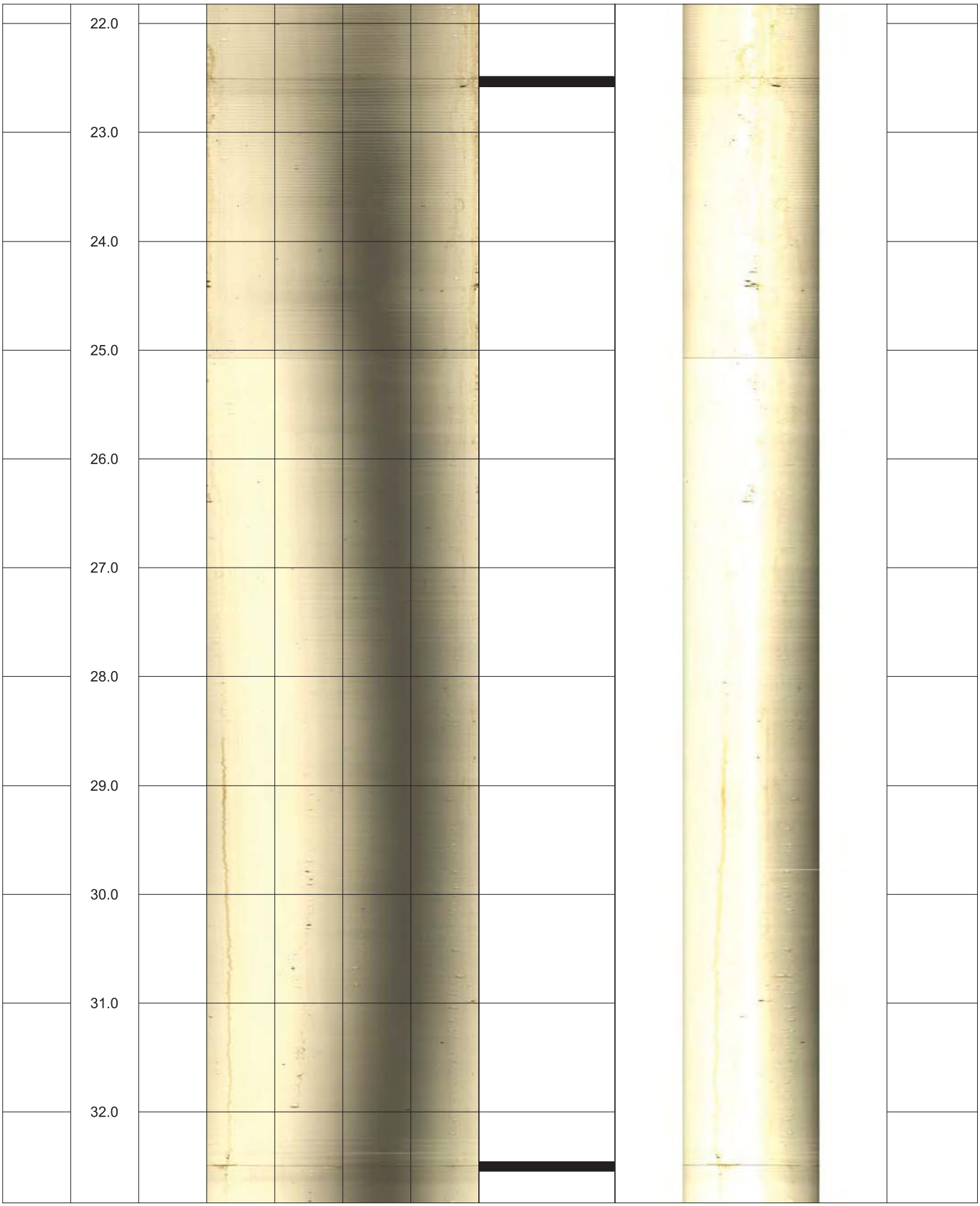
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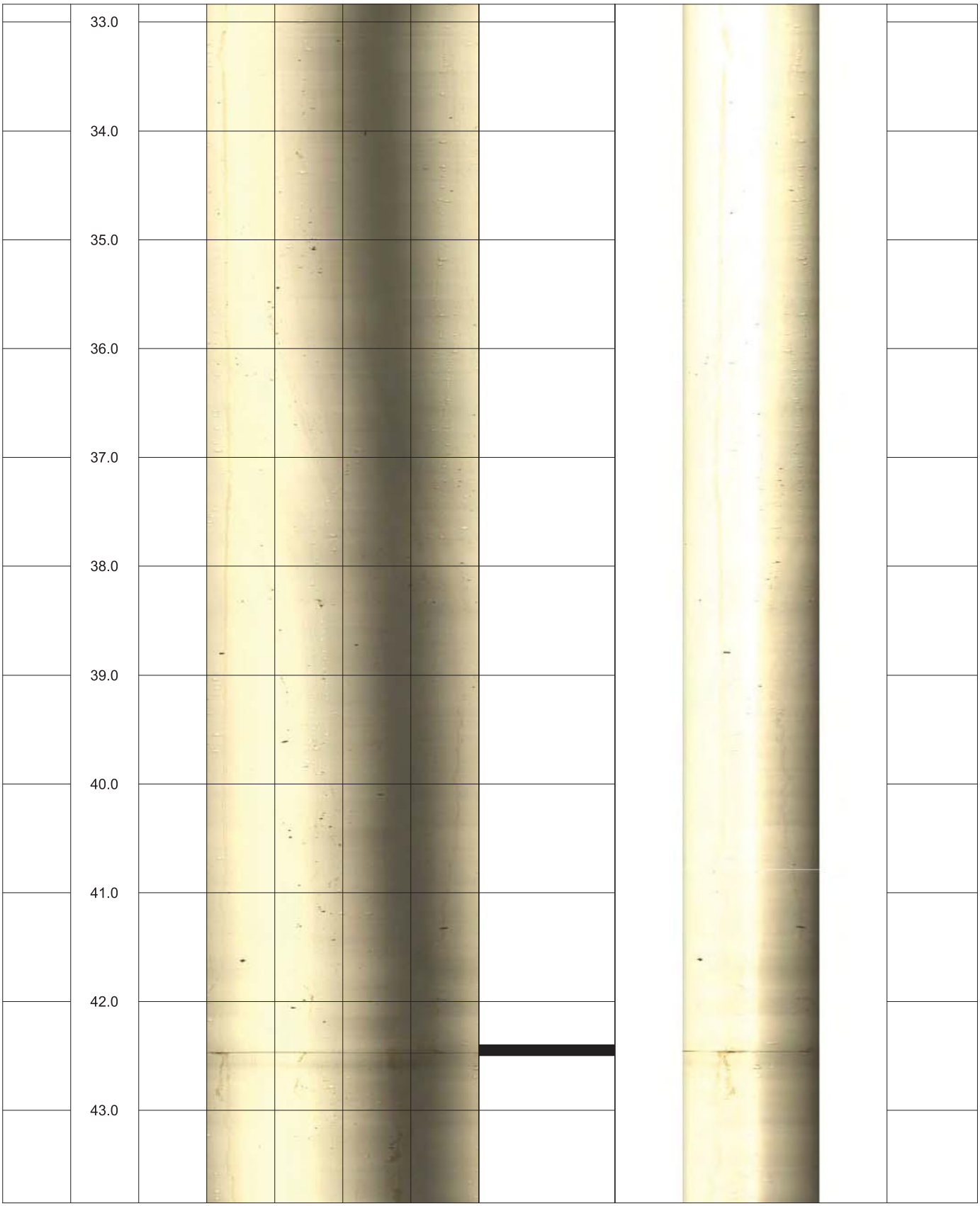
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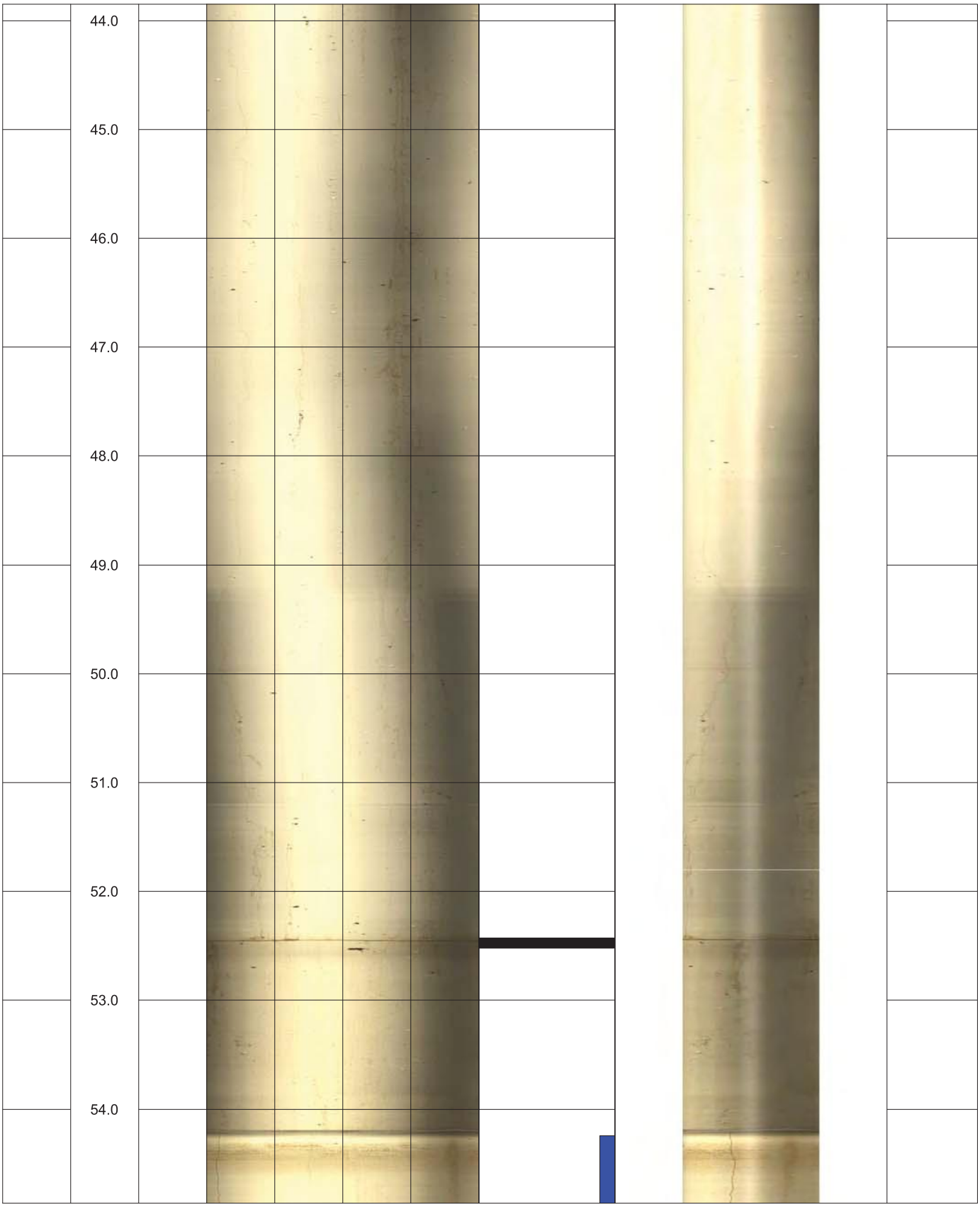
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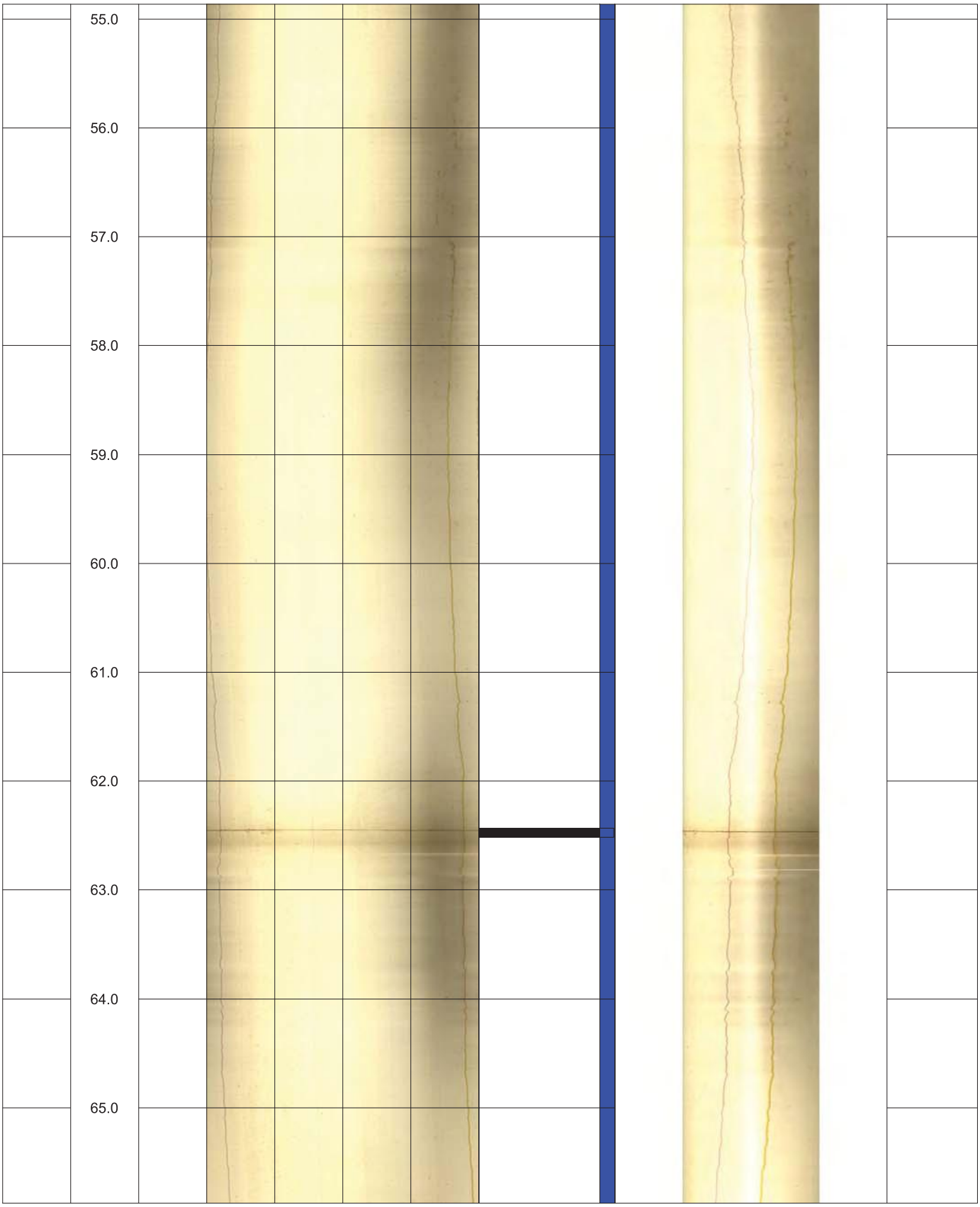
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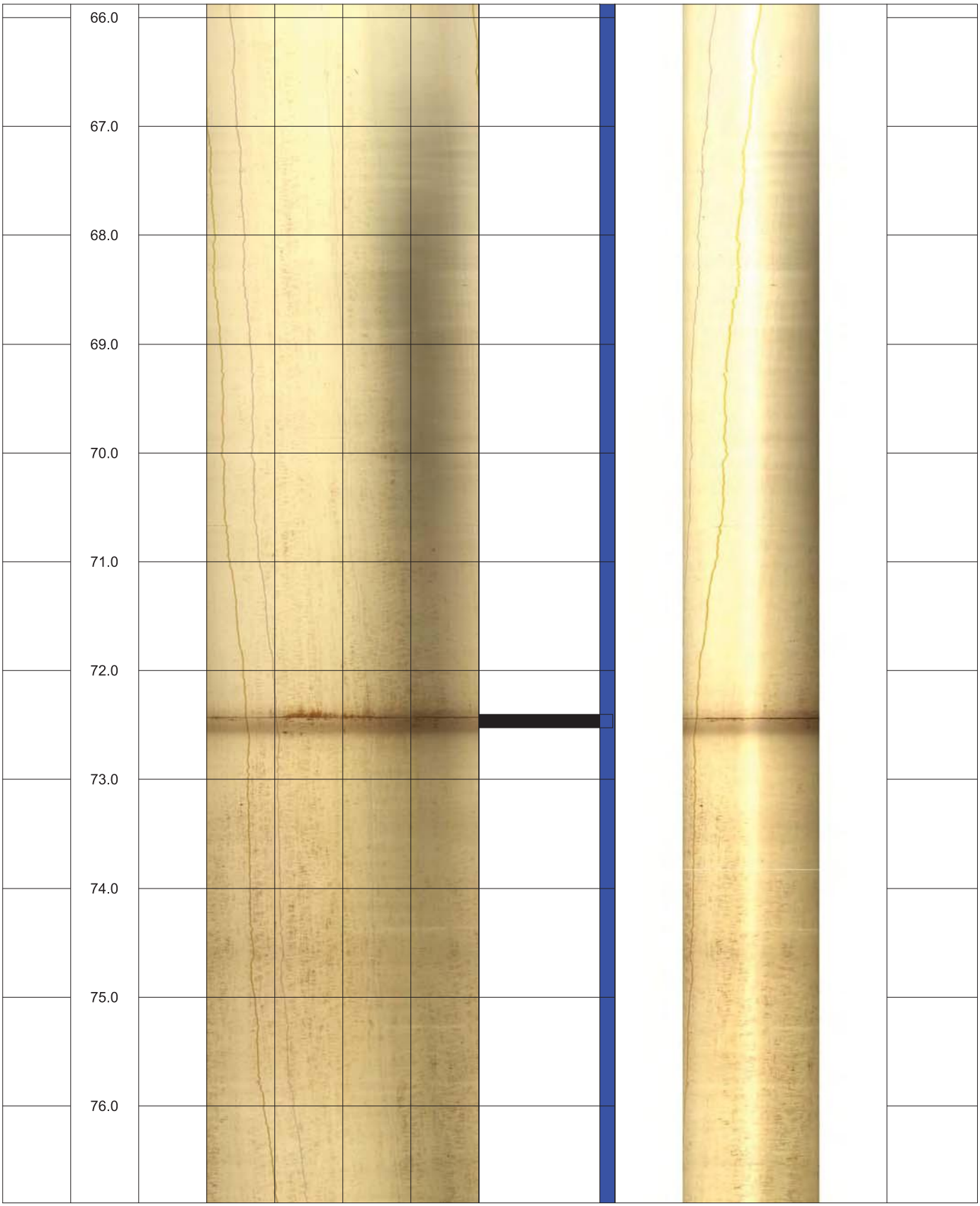
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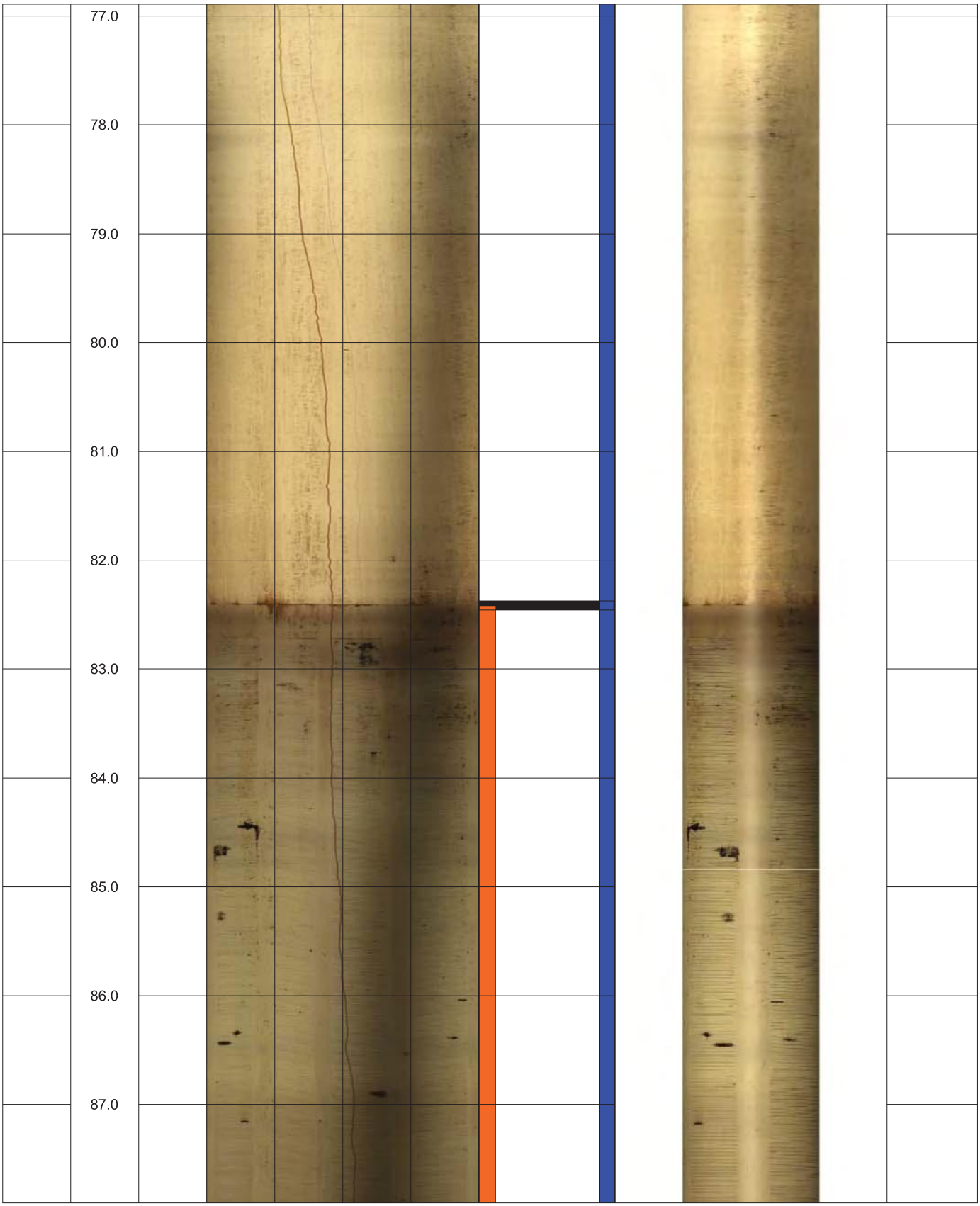
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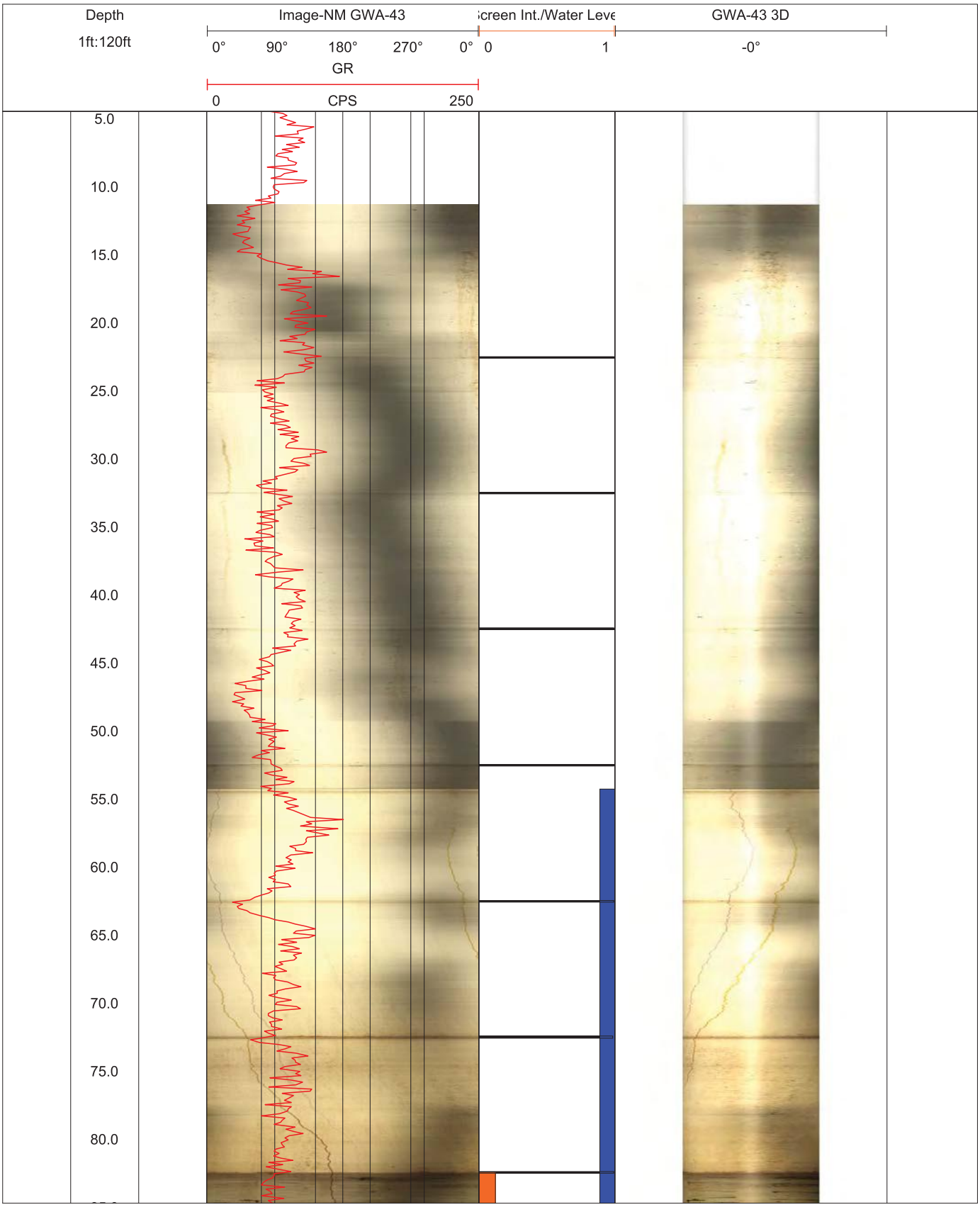
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180°
270°
0°
0
1
-0°
GR
0
CPS
250
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
65.0
70.0
75.0
80.0

	85.0 90.0							

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.61**
Top of PVC Casing Elevation (feet, NAVDl88): **710.94**

WELL CONSTRUCTION LOG

Southern Company Generation

				WELL NAME
PROJECT:	CCB Disposal	DRILLING	Boart Longyear	
		DRILLER:	Boart	
LOCATION:	Bowen	RIG TYPE:	RotoSonic	
LOGGER:	G. Dyer	DRILLING METHODS:	RotoSonic	GWA-43
DATE CONSTRUCTED: 5/25/2011				

	DEPTH FEET	ELEVATION FT, NAVD88
NOT APPLICABLE: Locking Hinged Top		
TOP OF RISER	3.33	710.94
1/4-inch Vent 1/4-inch Weep Hole 2-ft x 2-ft concrete pad 2" Threaded Riser Cap		
GROUND SURFACE	0.00	707.61
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminium		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement AMOUNT:		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	75.90	631.71
ANNULAR SEAL TYPE: Hole Plug 3/8" Bentonite Pellets AMOUNT: 3.25 bags PLACEMENT: Free fall		
TOP OF FILTER PACK	77.90	629.71
FILTER PACK TYPE: DSI Sand - 2A (20/30) AMOUNT: 2 bags PLACEMENT Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	79.90	627.71
SCREEN DIA: 2-inch 10ft U-Pack TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH:		
BOTTOM OF SCREEN	89.90	617.71
Flush-threaded end cap		
BOTTOM OF CASING	90.20	617.41

HOLE DIA: 6"

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.61**
Top of PVC Casing Elevation (feet, NAVD88): **710.94**

BORING GWA-43

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 5/25/2011 **COMPLETED** 5/25/2011 **SURF. ELEV.** 707.61' NAVD88 **COORDINATES:** N:1504129.20 E:2070982.44
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** G. Dyer **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 92.5 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
5		- Clayey Silty Sand; Brown; with few subangular, crystalline calcite clasts; upper 1' contains organics; damp - Silty Sand; Brown-red; with prevalent subrounded to subangular dolomite and calcite clasts, dolomite is more highly weathered, damp	701.6					
10		- Gravelly Sand; Red to brown; Gravels are composed of subangular to subrounded dolomite, calcite and sparse chert; damp						
15		- Less Gravel						
20		- Sand is more coarse	684.6					
25		- Sandy Gravel with clay; red; compositional banding or lamination; bleaching zone or relict sedimentary structure slightly intact; moist; gravel is dolomite and calcite; subangular to subrounded	681.1					
30		- Silty Clay with pebble sized chert and calcite/dolmite clasts; yellow-red; damp	675.6					
35		- Clay; yellow-red, mottled to white due to weathering of chert and carbonate material; low plasticity; damp						
40								

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		(con't)						
		- Sandy clay with prevalent zones of weathered chert; mottled tan, white and yellow--chert is white; moist						
45								
		- Sandy clay to clayey sand with prevalent subrounded to subangular fragments and chert and calcite; mottled tan, white and yellow; damp						
50								
55								
60		- SAA: higher moisture content, larger dolomite, chert and calcite fragments; soil contains non-parallel banding (black)						
65								
		- SAA: more silt						
			639.1					
70		- Sandy gravel with some silts; mottled tan, orange and white; wet; gravel is subangular chert and dolomite						
			633.6					
75		- Silty Clay; tan and orange; low plasticity; damp						
		- Silty clay; tan and orange; low plasticity; damp						
80								
85			622.6					
		- Gravelly, sandy clay; brown and tan; moist; gravels are composed of weathered chert and						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
90		dolomite *(con't)*	615.6					
		Bottom of borehole at 92.0 feet.						Bottom of hole.
95								
100								
105								
110								
115								
120								
125								
130								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.80**
Top of PVC Casing Elevation (feet, NAVD88): **711.19**

WELL CONSTRUCTION LOG — Southern Company Generation

				WELL NAME
PROJECT:	CCB Disposal	DRILLING	Boart Longyear	GWA-43R
		DRILLER:	Boart	
LOCATION:	Bowen	RIG TYPE:	RotoSonic	
LOGGER:	D. Brooks	DRILLING METHODS:	RotoSonic	
DATE CONSTRUCTED: 5/24/2011				

NOT APPLICABLE:
Locking Hinged Top

1/4-inch Vent
1/4-inch Weep Hole
2-ft x 2-ft concrete pad

Flush-threaded end cap

HOLE DIA: 6"

	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	3.39	711.19
2" Threaded Riser Cap		
GROUND SURFACE	0.00	707.80
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminium		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement AMOUNT:		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	62.20	645.60
ANNULAR SEAL TYPE: Hole Plug 3/8" Bentonite Pellets AMOUNT: 2 bags PLACEMENT: Free fall		
TOP OF FILTER PACK	111.70	596.10
FILTER PACK TYPE: DSI Sand - 2A (20/30) AMOUNT: 7 bags PLACEMENT Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	113.70	594.10
SCREEN DIA: 2-inch 10ft U-Pack TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH:		
BOTTOM OF SCREEN	123.70	584.10
BOTTOM OF CASING	124.20	583.60

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **707.80**
Top of PVC Casing Elevation (feet, NAVD88): **711.19**

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 5/24/2011 **COMPLETED** 5/25/2011 **SURF. ELEV.** 707.80' NAVD88 **COORDINATES:** N:1504117.39 E:2070973.14
CONTRACTOR Boart Longyear **EQUIPMENT** _____ **METHOD** Rotosonic
DRILLED BY _____ **LOGGED BY** D. Brooks **CHECKED BY** _____ **ANGLE** _____ **BEARING** _____
BORING DEPTH 127 ft. **GROUND WATER DEPTH: DURING** _____ **COMP.** _____ **DELAYED** _____
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM) - brown, dry, fine grain, Top Soil	706.3					
		Clayey Sand (SC) - red, damp, fine grain, with chert fragments	699.8					
5								
		Silty Sand (SM) - red, damp, fine to medium grain, with pieces of chert and carbonate	694.8					
10								
		Silt (ML) - reddish yellow, damp, saprolite; highly weathered carbonate	692.8					
15		**Lean Clay (CL)** - mottled red and reddish yellow, damp, red sandy clay with lenses of reddish yellow silt	688.8					
		Clayey Sand (SC) - red, damp, fine to medium grain, with quartz and chert fragments	685.8					
20		**Lean Clay (CL)** - mottled orange and red, moist, contains pieces of highly weathered carbonate; becoming more yellow-orange with depth						
25		- CL: mottled yellow-orange and white and red, moist, very fine grain, with sand; lenses of weathered carbonate						
30		- SAA with lenses of carbonate increasing in prominence	670.8					
35		**Silt (ML)** - mottled yellow-orange and reddish orange, with sand and weathered chert	667.8					
40								

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
		Silty Sand (SM) - mottled black, orange, red and white, fine to medium grain, with chert fragments	663.8					
45		**Lean Clay (CL)** - yellow-orange, damp, low plasticity						
50			656.8					
		Clayey Sand (SC) - mottled orange and yellow, red and black, moist, fine to medium grain, with chert	653.8					
55		**Lean Clay (CL)** - reddish yellow, moist, no to low plasticity, with sand - black, tan and reddish yellow						
60		- light brown						
			643.8					
65		**Clayey Sand (SC)** - black, red, and brown, damp, fine to medium grain, with chert	641.8					
		- Dolostone	640.8					
		- Cavity						
70								
75								
80								
85								

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

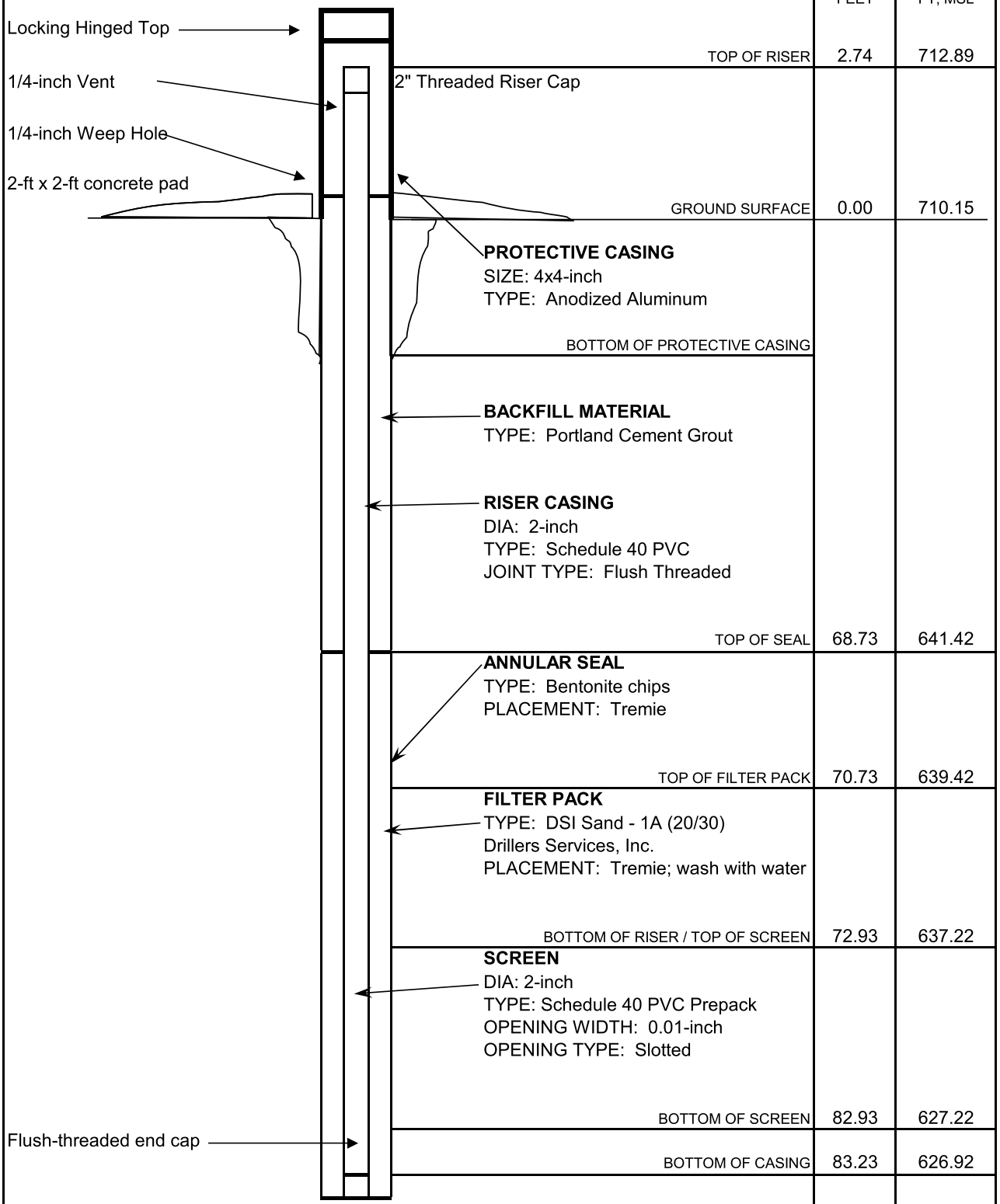
SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	COMMENTS
90		*(con't)*						
95								
100			605.8					
		- Dolostone						
105			602.8					
		- Cavity						
			600.8					
		- Dolostone						
110								
115								
120								
125								
			581.8					
		Bottom of borehole at 127.0 feet.						Bottom of Hole.
130								

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	CCB Disposal	DRILLING CO.:	Boart Longyear	WELL NAME
		DRILLER:	Boart	
LOCATION:	Cells 9 and 10	RIG TYPE:	Rotosonic	
LOGGER:	D Brooks	DRILLING METHODS:	RotoSonic	GWC-44
DATE CONSTRUCT	6/9/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.74	712.89
2" Threaded Riser Cap		
GROUND SURFACE	0.00	710.15
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	68.73	641.42
ANNULAR SEAL TYPE: Bentonite chips PLACEMENT: Tremie		
TOP OF FILTER PACK	70.73	639.42
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	72.93	637.22
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted		
BOTTOM OF SCREEN	82.93	627.22
BOTTOM OF CASING	83.23	626.92

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **710.15**
Top of PVC Casing Elevation (feet, NAVDl88): **712.89**

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **GWC-44**
Sheet 1 of 4

SITE: **Plant Bowen** | HOLE DEPTH: 86 | SURFELEV: 710.15' NAVD88
LOCATION: Landfill Cells 9 &10 | COORDINATES: 1504436.66 | 2071414.30
ANGLE: | BEARING: | CONTRACTOR: Boart | DRILL NO.:
DRILLING METHOD: Rotosonic | NO. SAMPLES: | NO. U.D. SAMPLES:
CASING SIZE: 2" | LENGTH: 10' | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: 58.55' | ELEV.: 654.34 | TIME AFTER COMP.: | DATE TAKEN: 8/25/2014
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 6/9/2011
DRILLER: | RECORDER: Dyer / Abraham | APPROVED: | DRILLING COMP. DATE: 6/9/2011

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	710.15								
1		**SILTY SAND (0 - 8 FT)** Red to reddish-brown, moderately-cemented silty sand with minor angular gravels; damp.							
2									
3									
4									
5	705.15								
6									
7									
8									
9									
10	700.15								
11									
12									
13									
14									
15	695.15								
16									
17		**SANDY SILT (8 -18 FT)** Mottled white to reddisn brown silty sand to sandy silt, rare gravels; contains angular to sub-angular nodular **chert; poorly cemented; slighlty damp.**							
18									
19									
20	690.15								
21									
22									
23		**CLAYEY SILT (18 - 24 FT)** Tan-yellow to white clayey silt with rare gravels; predominanty silty hardened soil with no structure; slighlty damp.							
24	686.15								

Form GS9901 7-26-2004

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **GWC-44**

SITE **Plant Bowen** TOTAL DEPTH **86** SURF.ELEV. 710.15' NAVD88

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	685.15								
26									
27									
28									
29									
30	680.15								
31									
32									
33									
34									
35	675.15								
36									
37									
38									
39									
40	670.15								
41									
42									
43									
44									
45	665.15								
46									
47									
48									
49									
50	660.15								
51									
52									
53									
54		**CLAYEY SILT (24 - 56 FT)** Tan-yellow to white, silty clay to clayey silt; clay varies from 15 to 30%; minor gravel.							
55	655.15								

SOUTHERN COMPANY
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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. **GWC-44**

Sheet 3 of 4

SITE **Plant Bowen** TOTAL DEPTH **86** SURF.ELEV. 710.15' NAVD88

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
56	654.15								
57									
58									
59									
60	650.15								
61									
62									
63									
64									
65	645.15								
66									
67		**SILTY CLAY (56 - 67 FT)** Tan silty clay to low-plasticity clay; few dolomitic fragments; very damp.							
68									
69									
70	640.15								
71									
72									
73									
74		**SILT (67 - 74 FT)** Tan to light yellow silt with minor sand; gravel absent; moist to wet.							
75	635.15								
76		**SANDY GRAVEL** Tan yellow, low plasticity, sandy gravel with some clay; moist to wet.							
77									
78									
79	631.15								

SOUTHERN COMPANY
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DRILLING LOG

GEOLOGICAL SERVICES

Hole No. **GWC-44**

Sheet 4 of 4

SITE **Plant Bowen** TOTAL DEPTH **86** SURF.ELEV. 710.15' NAVD88

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
80	630.15								
81									
82									
83									
84									
		SANDY GRAVEL (74 - 86 FT)							
85	625.15	Tan yellow, low plasticity, sandy gravel with some clay; wet.							
86	624.15	BOTTOM AT 86-FT							

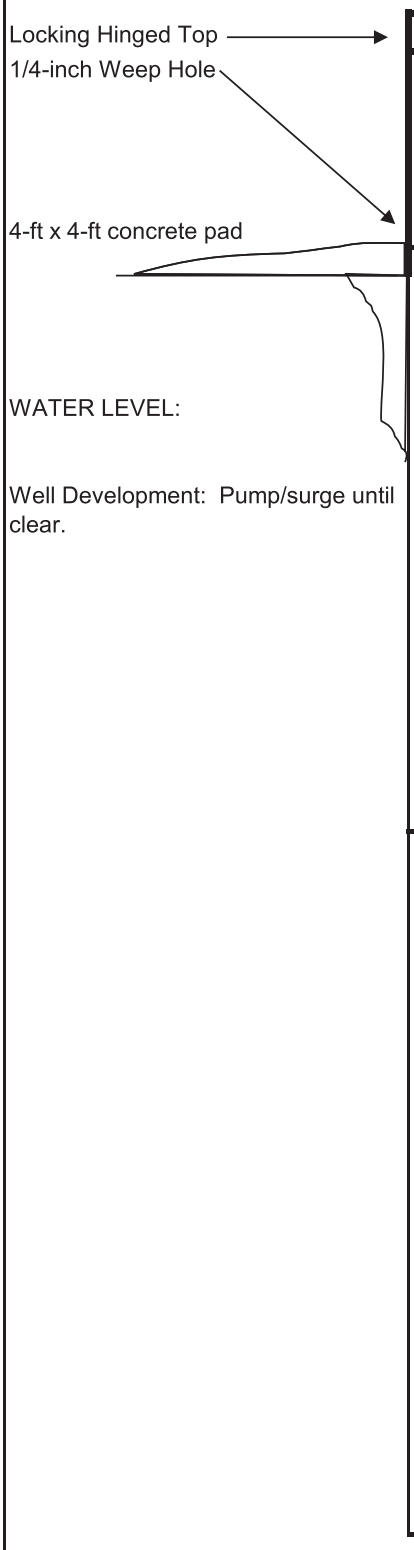
Form GS9901 7-26-2004

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **698.41**
Top of PVC Casing Elevation (feet, NAVDl88): **701.53**

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: L. Millet	DRILLING METHODS: HSA	GWC-45
DATE CONSTRUCTED: 5/17/07 - 9:00 am		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.12	701.53
2" Threaded Riser Cap		
GROUND SURFACE	0.00	698.41
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 20 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	49.40	649.01
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets 5-gal buckets AMOUNT: 1.75 buckets PLACEMENT: Tremie		
TOP OF FILTER PACK	51.40	647.01
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	54.43	643.98
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	64.43	633.98
BOTTOM OF CASING	64.73	633.68

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **698.41**
Top of PVC Casing Elevation (feet, NAVDl88): **701.53**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45
Sheet 1 of 3

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **64.3** | SURF.ELEV.: 698.41
LOCATION: Cells 1 & 2 | COORDINATES N: 1504539.38 | E: 2071956.71
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA | NO. SAMPLES: 13 | NO. U.D. SAMPLES: 0
CASING SIZE: 4/4 ID 7" OD | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/16/2007
DRILLER: S. Denty | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 5/16/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	698.41								
5	693.41	Red silty CLAY, dry, firm, occasional pebbles	S-1	4.5-6	3-5-7	12		75	
9		Red silty CLAY, dry, firm, some tan mottling, occasional pebbles and coarse sand grains	S-2	9.5-11.0	4-5-6	11		100	
10	688.41								
14		Same as above	S-3	14.5-16.0	11-16-20	36		100	
15	683.41								
20	678.41	Red CLAY, dry, firm, w/ silt, carbonate sand, pebbles, and gravel, occasional orange mottling	S-4	19.5-21.0	6-12-11	13		100	
24	674.41								

Form GS9901 7-26-2004

SOUTHERN COMPANY
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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **64.3** SURF.ELEV. 698.41

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	673.41	Red & yellow orange CLAY, dry to damp, firm, carbonate pebbles and sand	S-5	24.5-26.0	3-4-4	8		90	
26									
27									
28									
29		Tan orange & dark red CLAY, dry, mottled firm, small carbonate pebbles	S-6	29.5-31.0	2-3-6	9		95	
30	668.41								
31									
32									
33									
34		Orange & tan silty CLAY, dry, firm to slightly plastic occasional small carbonate pebbles, coarse sand	S-7	34.5-36.0	3-3-6	9		100	
35	663.41								
36									
37									
38									
39		Orange & light tan CLAY, dry, slightly plastic, small carbonate pebbles, coarse sand	S-8	39.5-41.0	2-3-5	8		100	
40	658.41								
41									
42									
43									
44		Light tan & tan silty CLAY, moist, moderately soft, orange & black mottles, few pebbles and sand	S-9	44.5-46	2-2-3	5		100	
45	653.41								
46									
47									
48									
49		Tan silty CLAY, moist, moderately soft, dark red and black mottles, pebbles and gravel	S-10	49.5-51	5-2-5	7		80	
50	648.41								
51									
52									
53									
54		Tan silty CLAY, saturated, soft, many chert pebbles, carbonate sand	S-11	54.5-56	11-19-19	38		50	
55	643.41								
56	642.41								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45

Sheet 3 of 3

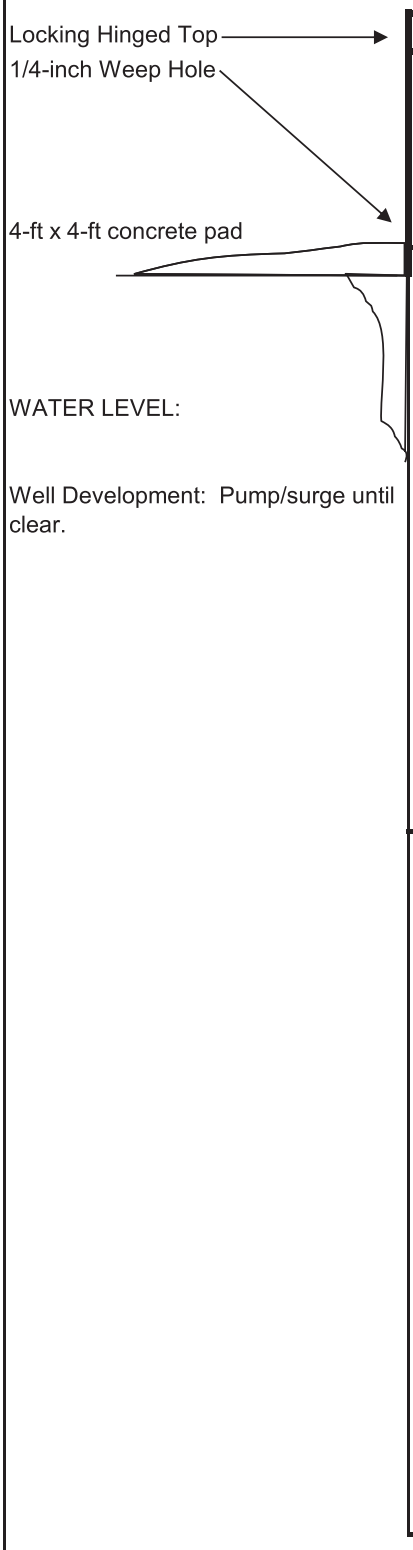
SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **64.3** SURF.ELEV. 698.41

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	641.41								
58									
59		Tan clayey SILT, moist, moderately soft, sand pockets	S-12	59.5-61	4-5-7	12		100	
60	638.41								
61									
62									
63									
64									
65	633.41	Top of rock 64.3: Bottom of boring							
66									
67									
68									
69									
70	628.41								
71									
72									
73									
74									
75	623.41								
76									
77									
78									
79									
80	618.41								
81									
82									
83									
84									
85	613.41								
86									
87									
88	610.41								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **699.00**
Top of PVC Casing Elevation (feet, NAVDl88): **702.02**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT: Plant Bowen Dry Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: S. Denty	NAME
LOCATION: Cells 1&2	RIG TYPE: CME 75	
LOGGER: K. Hobbs	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-45R
DATE CONSTRUCTED: 5/22/07 - 9:00 am		



	DEPTH FEET	ELEVATION FT, NAVD88
TOP OF RISER	3.02	702.02
2" Threaded Riser Cap		
GROUND SURFACE	0.00	699.00
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 33 bags		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	110.40	588.60
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets, 5-gal buckets AMOUNT: 0.25 bucket PLACEMENT: Tremie		
TOP OF FILTER PACK	112.40	586.60
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	115.44	583.56
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	125.44	573.56
BOTTOM OF CASING	125.74	573.26

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **699.00**
Top of PVC Casing Elevation (feet, NAVDl88): **702.02**

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45R
Sheet 1 of 5

SITE: **Plant Bowen Dry Gypsum Storage Facility** | HOLE DEPTH: **129.2** | SURF.ELEV.: 699.00
LOCATION: Cells 1 & 2 | COORDINATES N: 1504538.68 | E: 2071945.39
ANGLE: 0 | BEARING: 0 | CONTRACTOR: SCS | DRILL NO.: CME 75
DRILLING METHOD: HSA/HQ rock core with water | NO. SAMPLES: 17 | NO. U.D. SAMPLES: 0
CASING SIZE: | LENGTH: | CORE SIZE: | TOTAL % REC.:
WATER TABLE DEPTH: | ELEV.: | TIME AFTER COMP.: | DATE TAKEN:
TYPE GROUT: | QUANTITY: | MIX: | DRILLING START DATE: 5/17/2007
DRILLER: S. Denty | RECORDER: L. Millet | APPROVED: | DRILLING COMP. DATE: 5/17/2007

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	699.00								
1									
2									
3									
4		Red silty CLAY, dry, firm, tan mottling, small pebbles and occasional roots	S-1	4.5-6	3-3-4	7		100	
5	694.00								
6									
7									
8									
9		Red silty CLAY, dry, firm, some coarse sand grains	S-2	9.5-11.0	4-4-6	10		100	
10	689.00								
11									
12									
13									
14		Red silty CLAY, dry, firm, small to medium chert & carbonate pebbles	S-3	14.5-16.0	5-6-9	15		100	
15	684.00								
16									
17									
18									
19		Red CLAY, dry, hard, some silt, occasional carbonate pebbles	S-4	19.5-21.0	6-11-17	28		100	
20	679.00								
21									
22									
23									
24	675.00								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45R
Sheet 2 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **129.2** SURF.ELEV. 699.00

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	674.00	Dark red & tan silty CLAY, dry, firm, occasional chert pebbles	S-5	24.5-26.0	5-7-11	18		100	
26									
27									
28									
29		Brown and orange silty CLAY, dry, firm, degraded carbonated pebbles and cobbles	S-6	29.5-31.0	5-7-12	19		100	
30	669.00								
31									
32									
33									
34		Tan silty CLAY, moist, firm, small degraded carbonate pebbles and coarse sand	S-7	34.5-36.0	3-4-5	9		100	
35	664.00								
36									
37									
38									
39		Orangish tan CLAY, moist, firm, chert and carbonate sand and pebbles, black and light brown mottling	S-8	39.5-41.0	5-5-7	12		100	
40	659.00								
41									
42									
43									
44		Orange and light tan CLAY, dry, firm, black mottling, occasional carbonate pebbles, some silt.	S-9	44.5-46	5-7-9	16		100	
45	654.00								
46									
47									
48									
49			S-10	49.5-51	2-3-4	7		100	
50	649.00	Tan clayey SILT, moist, moderately firm to moderately soft, black and dark red mottling							
51									
52									
53									
54		Tan clayey SILT, moist, moderately soft, degraded carbonate cobbles, black mottling , some sand	S-11	54.5-56	8-7-8	15		100	
55	644.00								
56	643.00								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45R

Sheet 3 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **129.2** SURF.ELEV. 699.46

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
57	642.00								
58									
59		Tan clayey SILT, w/ sand, saturated, soft, carbonate cobble in bottom of spoon	S-12	59.5-61	8-50-1	R		50	
60	639.00	60.8: Core through 8" boulder							
61									
62									
63									
64		Tan silty SAND, saturated, loose, medium-coarse grained w/ pebbles and gravel	S-13	64.5-66	3-1-4	5		50	
65	634.00								
66									
67									
68									
69									
70	629.00	Tan clayey SILT, saturated, soft, some black & orange mottling	S-14	69.5-71	2-3-4	7		10	
71									
72									
73									
74									
75	624.00								
76		No recovery	S-15	74.5-76	3-3-4	7		0	
77									
78									
79									
80	619.00								
81		Tan silty CLAY, soft, saturated	S-16	79.5-81	3-3-4	7		30	
82									
83									
84									
85	614.00								
86		Same as above	S-17	84.5-86	9-11-12	23		5	
87									
88	611.00								

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45R
Sheet 4 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **129.2** SURF.ELEV. 699.00

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
89	610.00								
90									
91									
92									
93									
94									
95	604.00	95.1: Start coring							
96		Grey DOLOSTONE, some banding. Some fine fractures filled w/ white mineralization.							
97		96.7-102.2: Cavity							
98									
99									
100	599.00								
101									
102									
103		102.5-105.1: Cavity							
104									
105	594.00								
106									
107		Same as above							
108									
109									
110	589.00								
111									
112									
113									
114									
115	584.00								
116									
117									
118									
119									
120	579.00	119.5-122.5: Cavity							

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DRILLING LOG
GEOLOGICAL SERVICES

Hole No. GWC-45R
Sheet 5 of 5

SITE **Plant Bowen Dry Gypsum Storage Facility** TOTAL DEPTH **129.2** SURF.ELEV. 699.46

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
121	578.00								
122									
123									
124									
125	574.00	124.1-129.2: Cavity							
126									
127									
128									
129									
130	569.00	129.2: Bottom of boring							
131									
132									
133									
134									
135	564.00								
136									
137									
138									
140	559.00								
141									
142									
143									
144									
145	554.00								
146									
147									
148									
149									
150	549.00								
151									
152									
153	546.00								

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **687.94**
Top of PVC Casing Elevation (feet, NAVDl88): **690.49**

BORING GWC-46 R
PAGE 1 OF 1
GPC353387

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Monitoring Wells, Cell No. 9
LOCATION Plant Bowen

DATE STARTED 8/14/2014 **COMPLETED** 8/15/2014 **SURF. ELEV.** 687.94' NAVD88 **COORDINATES:** N:1504522.23; E:2072184.47
CONTRACTOR Cascade **EQUIPMENT** **METHOD** Rotosonic
DRILLED BY D. Wilcox **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
BORING DEPTH 56.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED** 32 ft. after 24 hrs.
NOTES

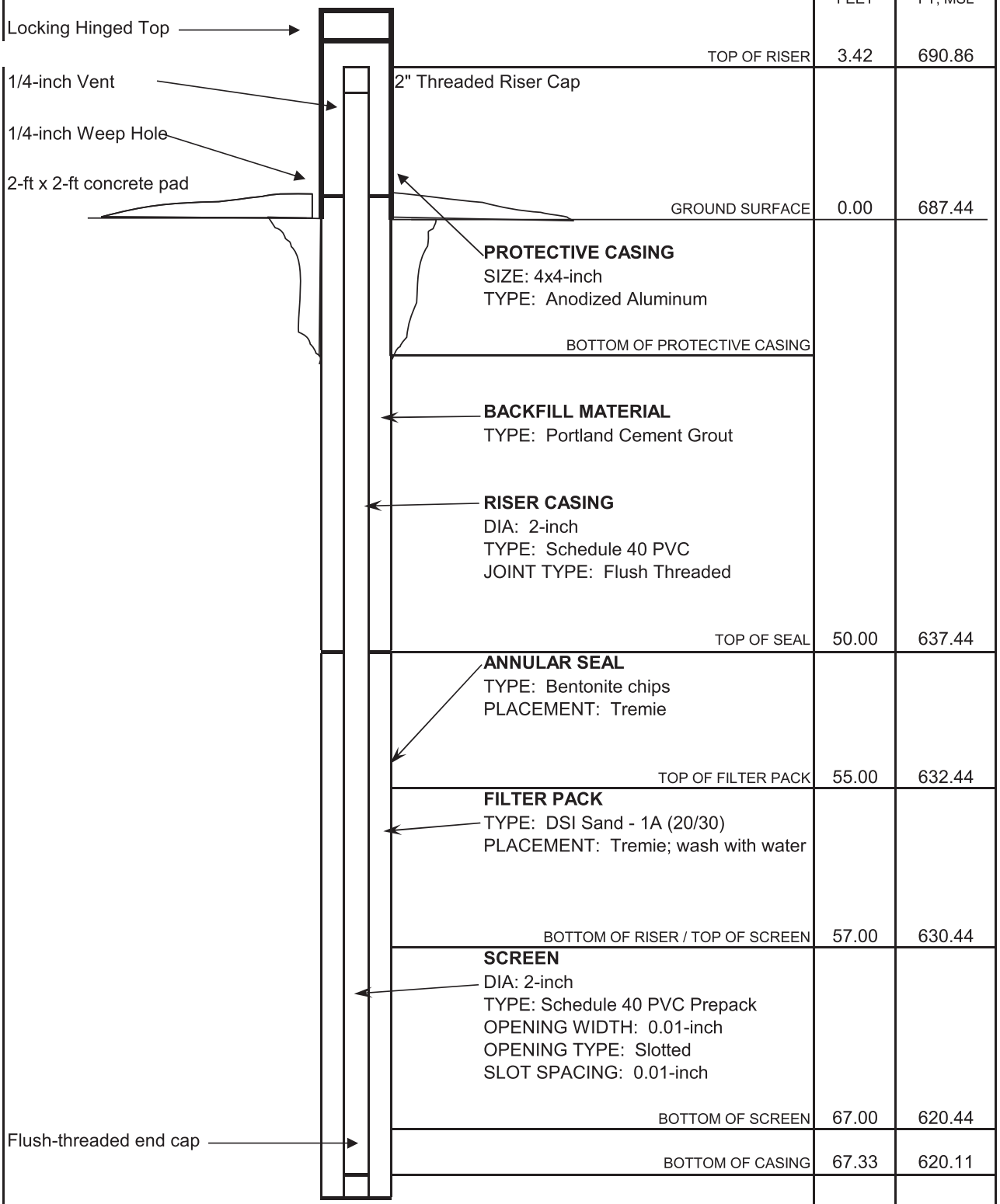
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		(CL) - CLAY (CL), wet, red-yellow to yellow			Completion: protective aluminum cover with bollards; 2-foot square concrete pad Surface Seal: concrete
		(CH) - CLAY (CH), yellow with red mottles - gravelly CLAY (CH), wet, yellow with red and black mottling			
10					
		- gravelly CLAY (CH), wet, brown-yellow with black mottling, cobbles, lesser gravel downward - ----some gravel			Annular Fill: cement-bentonite grout
20					
		- gravelly CLAY (CH), wet, yellow-red, cobbles			
		(COBBLES AND BOULDERS) - DOLOSTONE boulder, cobbles, pulverized rock, dry, white			
30		**(CH)** - gravelly CLAY (CH), wet, red-yellow and gray, cobbles			
		(COBBLES AND BOULDERS) - DOLOSTONE, cobbles, pulverized rock, dry, white and light gray			
40		- DOLOSTONE, light gray and dark gray, some iron staining, no HCl reaction, thin calcite veins			Annular Seal: bentonite pellets Filter: silica filter sand
		- DOLOSTONE, light gray and gray, iron staining, no to low HCl reaction, calcite veins			
50					**Standpipe:** **2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack
		Bottom of borehole at 56.5 feet.			Sump:0.4 ft.
60					

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 8/22/14 08:30 - \\ALTRCFP01\X2WSHAUG$\DESKTOP\BOWEN\BOWEN RPLACEMENT WELL GWC 46R.GPJ

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **687.44**
Top of PVC Casing Elevation (feet, NAVDl88): **690.86**

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	Plant Bowen CCB	DRILLING CO.:TriState (estimated)	WELL NAME
		DRILLER:	
LOCATION:	Cells 9 and 10	RIG TYPE HSA (estimated)	GWC-47
LOGGER:		DRILLING METHODS: Auger (estimated)	
DATE CONSTRUCT	4/23/2014		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.42	690.86
2" Threaded Riser Cap		
GROUND SURFACE	0.00	687.44
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	50.00	637.44
ANNULAR SEAL TYPE: Bentonite chips PLACEMENT: Tremie		
TOP OF FILTER PACK	55.00	632.44
FILTER PACK TYPE: DSI Sand - 1A (20/30) PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	57.00	630.44
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.01-inch		
BOTTOM OF SCREEN	67.00	620.44
BOTTOM OF CASING	67.33	620.11

GWC-47 BORING LOG

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **687.44**
Top of PVC Casing Elevation (feet, NAVDl88): **690.86**

PROJECT NUMBER 6122160287.2101
PROJECT NAME Plant Bowen
CLIENT Georgia Power
ADDRESS 317 Covered Bridge Rd SW
LOCATION Gypsum Landfill Cells 1 & 2

DRILLING COMPANY N/A
DRILLER N/A
RIG TYPE/ METHOD N/A
CASING DIA. N/A
BORING DEPTH N/A

COORDINATES N 1504543.69, E 072481.34
COORD SYS Ga State Plane West (NAD 83)
COMPLETION Stick-up w/ protective casing
SURFACE ELEVATION 687.44 ft amsl
WELL TOC 690.86 ft amsl

COMMENTS Lithologic descriptions are those recorded for the installation of neighboring well GWC-47R (previously GWC-46R) drilled on 4/22/2014 and completed on 4/24/2104.

LOGGED BY N/A
CHECKED BY A. Shoredits & R. Quinn

Depth (ft)	Graphic Log	Material Description	USCS	Elevation (ft)
		Silty CLAY, orange w h red and yellow mo ng, medium stiff, mo st, res duum & partially weathered rock fragments	L-ML	698
4				696
6				694
8				692
10				690
12		SILT with clay, orange/ yellow with red/ brown/ orange/ yellow mottling, medium stiff, moist, residuum Partially weathered rock fragments 15-25 ft Trace sand 20-35 ft	ML	688
14				686
16				684
18				682
20				680
22				678
24				676
26				674
28				672
30				670
32				668
34				666
36		Silty CLAY, orange with red and yellow mottling, stiff, wet, sands present	CL-ML	664
38				662
40				660
42		SILT with clay, orange with red/ brown/ yellow/ light grey mottling, going from very soft to stiff with increasing depth, moist, residuum & partially weathered rock fragments, trace sand throughout	ML	658
44				656
46				654
48				652
				650

GWC-47 BORING LOG

Depth (ft)	Graphic Log	Material Description	USCS	Elevation (ft)
50				648
52				646
54				644
56		Chert lens, grey unweathered	N/A	
58		No sample		642
60				640
62		Sandy CLAY, orange with red mottling, very soft, moist, silt laminations	CL-SC	638
64				636
66		Dolomite, grey, hard, slightly to moderately weathered, slightly to moderately decomposed with increasing depth, slightly fractured		634
68				632
70		Boring terminated @ 68.0 ft		630
72				628
74				626
76				624
78				622
80				620
82				618
84				616
86				614
88				612
90				610
92				608
94				606
96				604
98				602
100				600
102				598
104				596
106				594
108				592

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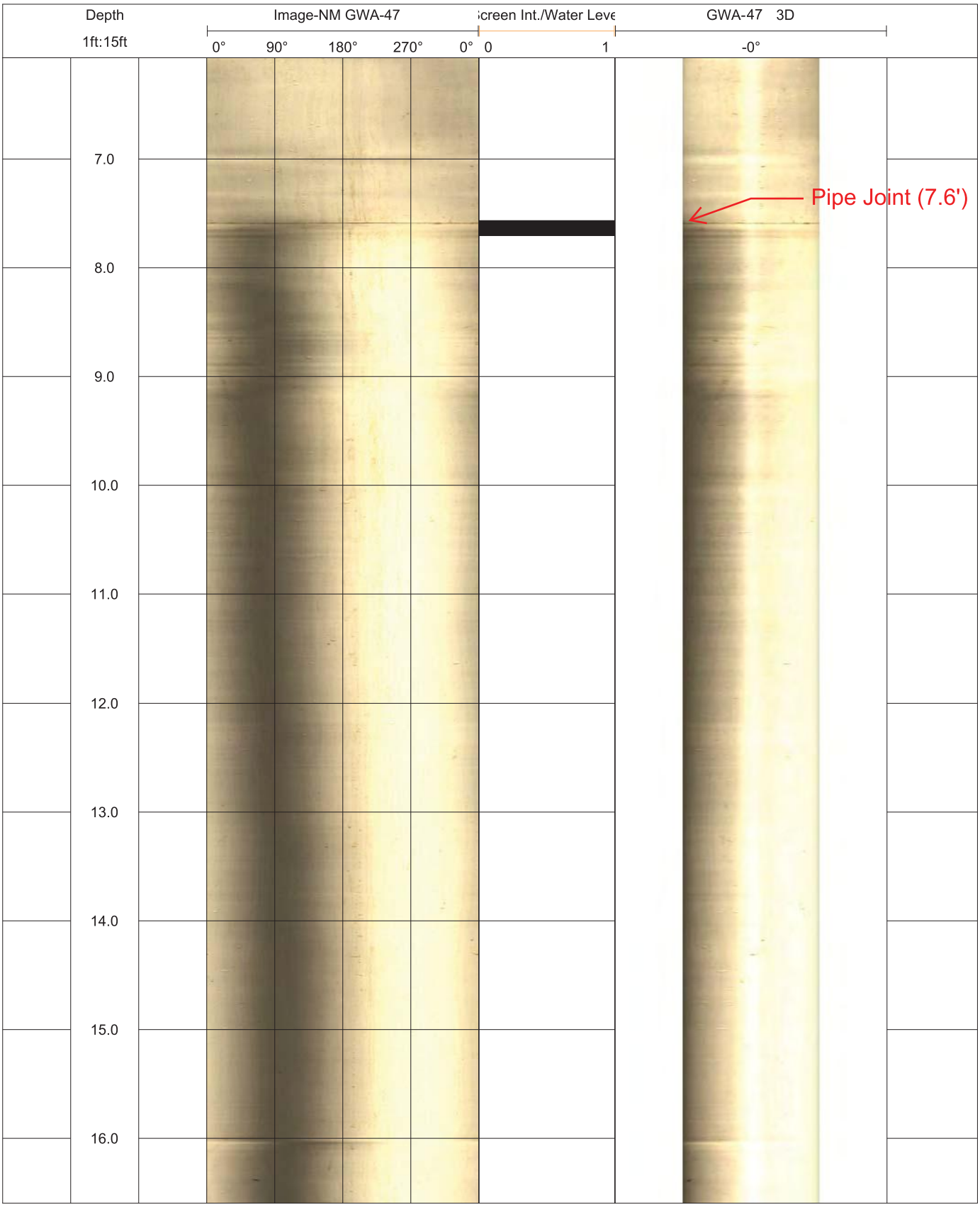
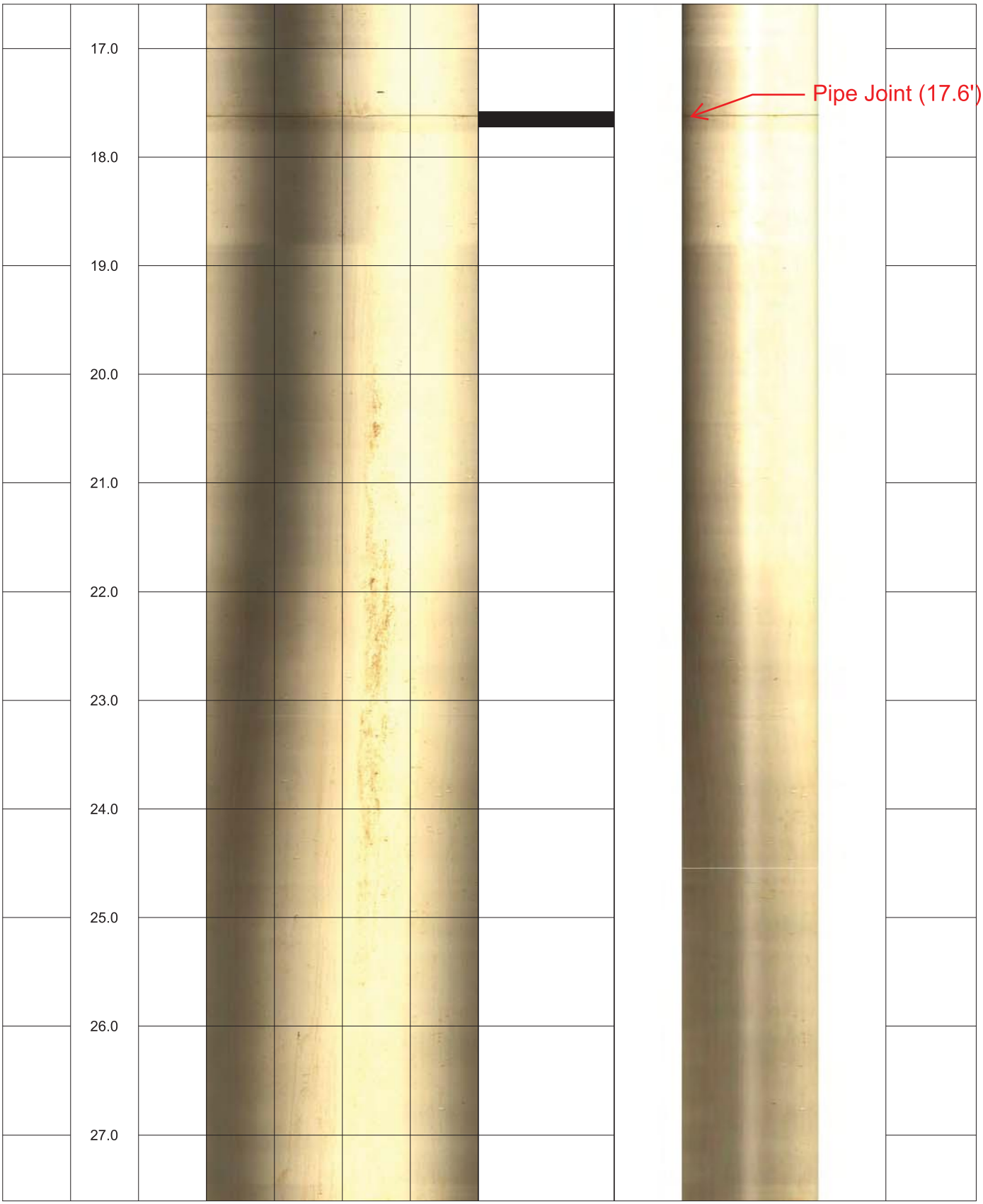
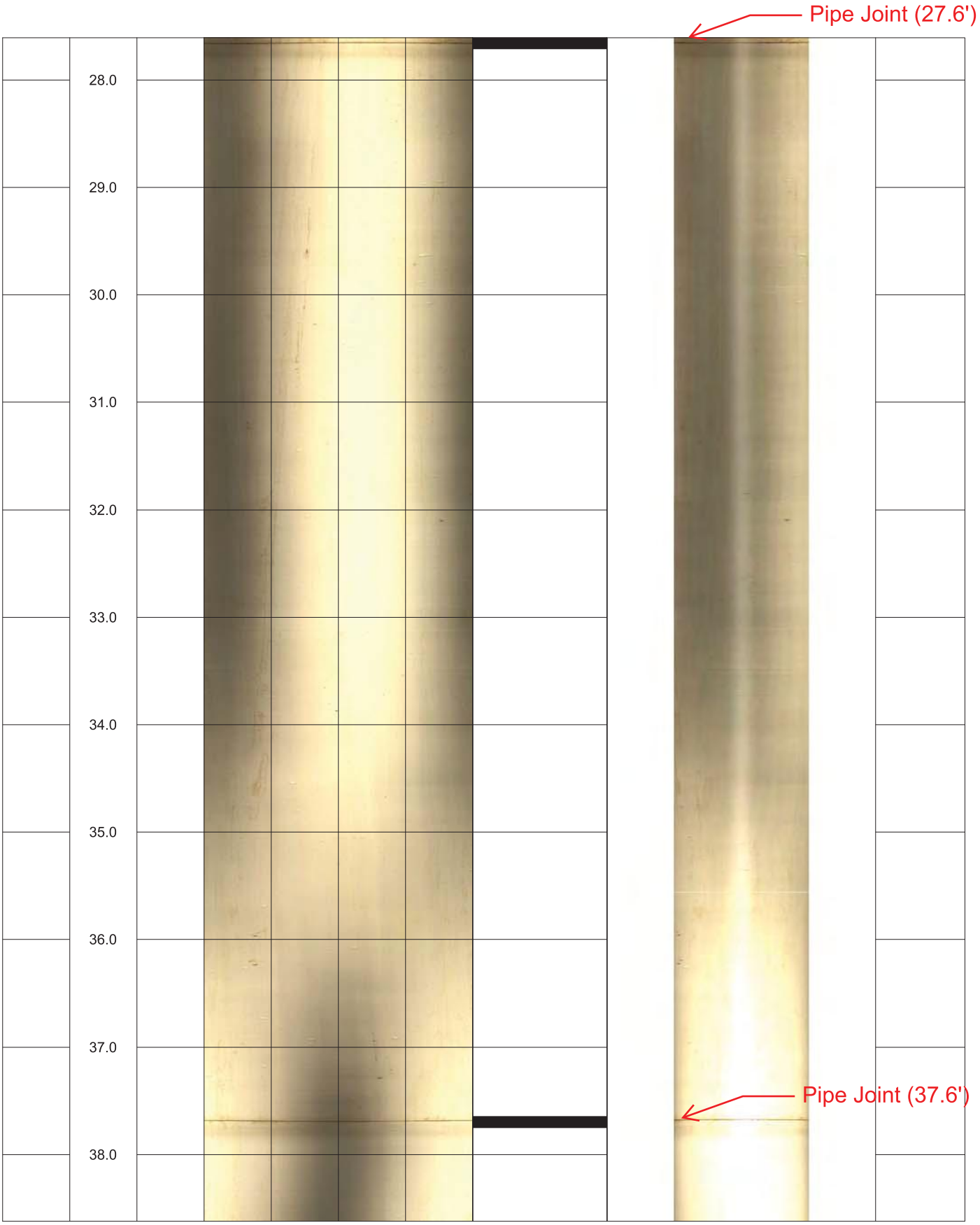
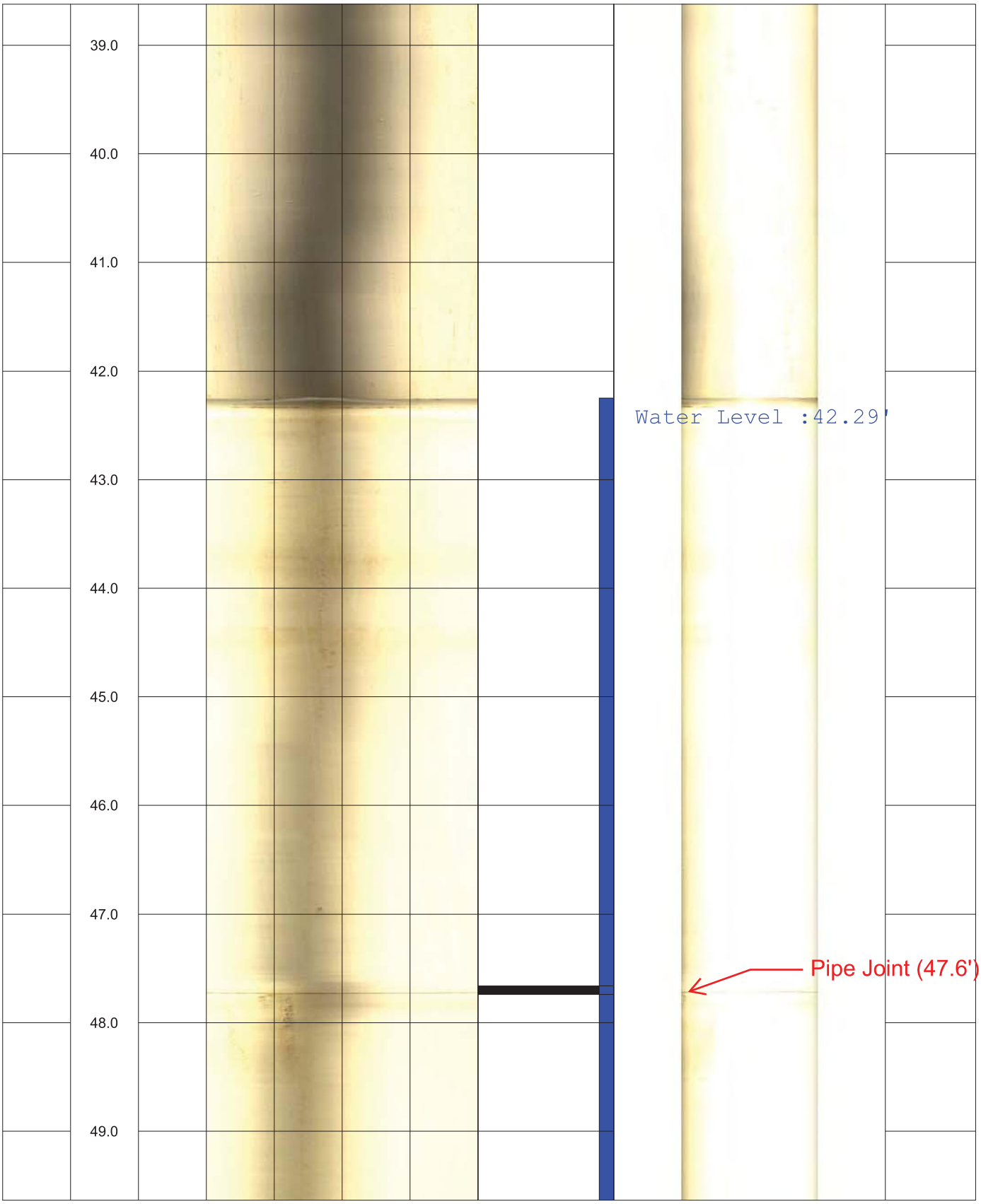
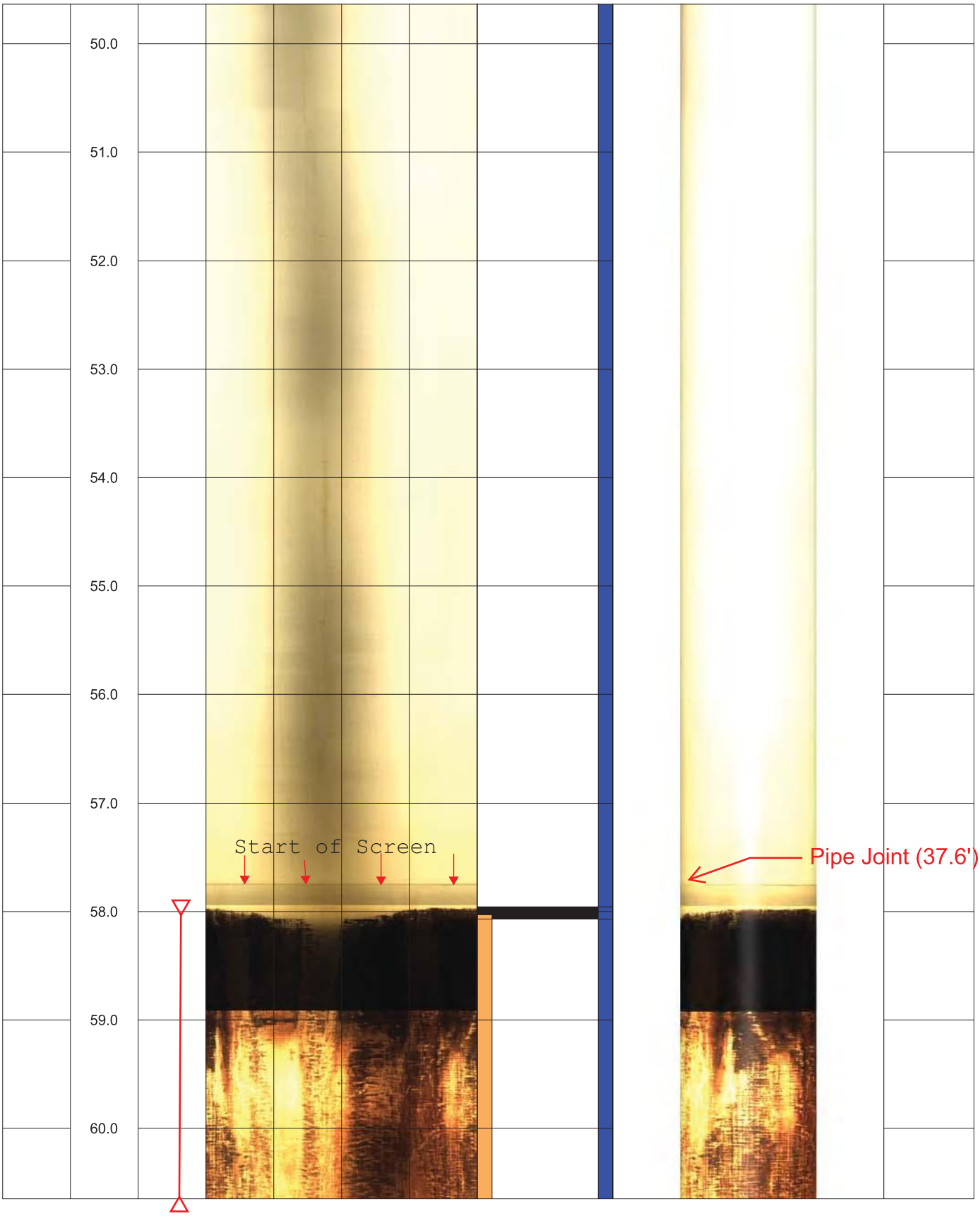
PLANT BOWEN
Optical Teleview
Magnetic North and 3D Image
GWA-47



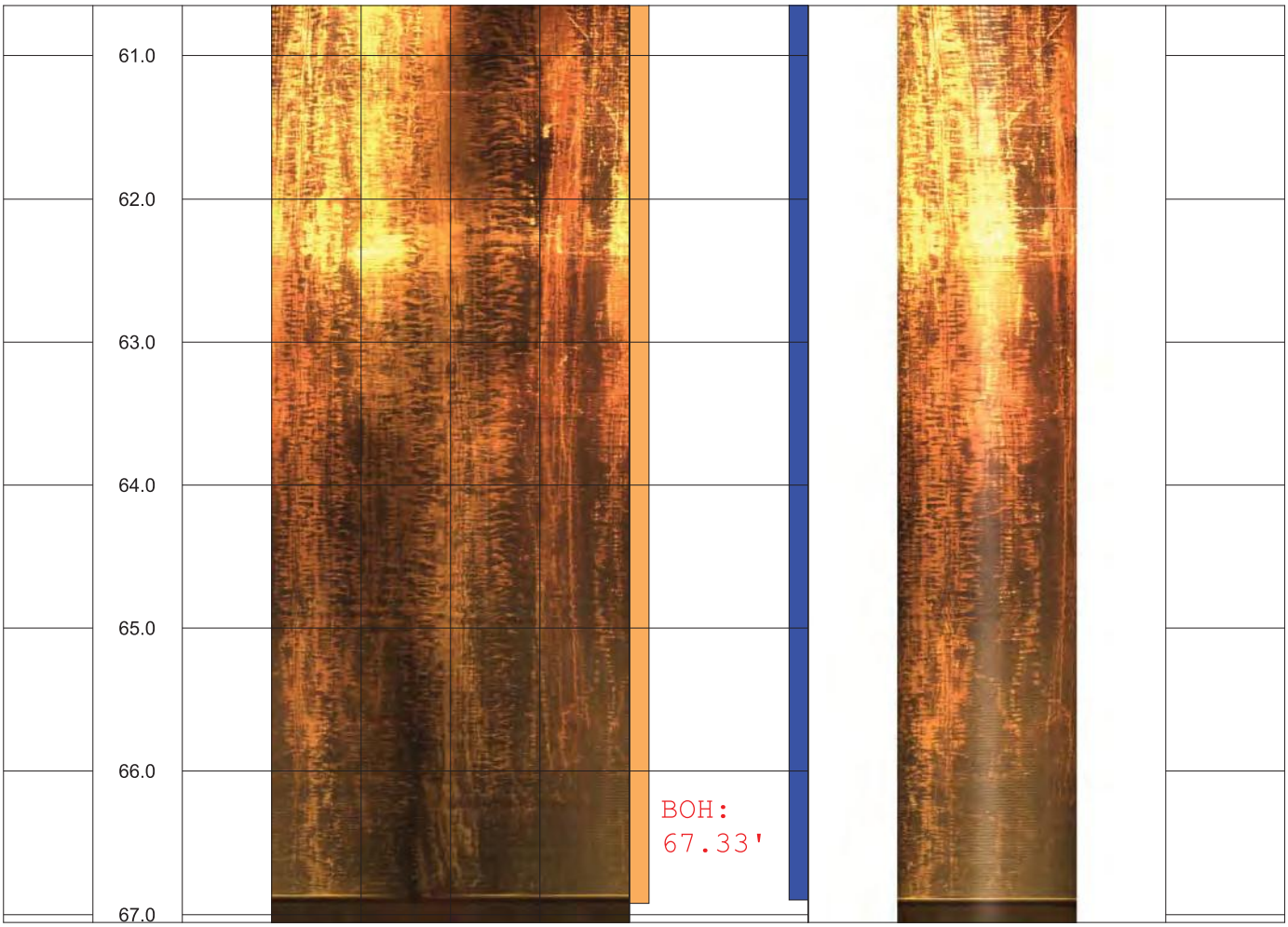

17.0
18.0
19.0
20.0
21.0
22.0
23.0
24.0
25.0
26.0
27.0
Pipe Joint (17.6')

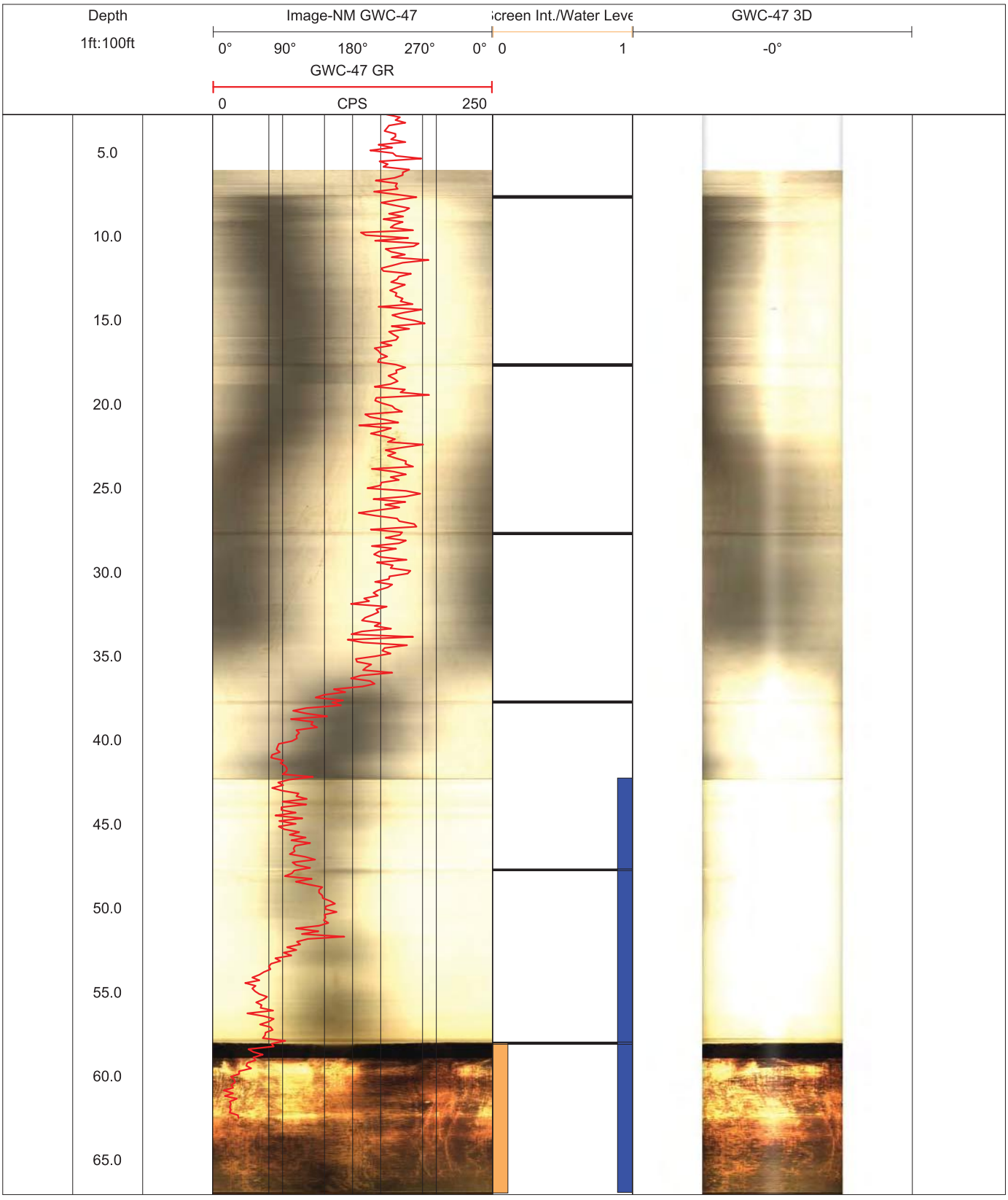

Pipe Joint (27.6')
28.0
29.0
30.0
31.0
32.0
33.0
34.0
35.0
36.0
37.0
38.0
Pipe Joint (37.6')

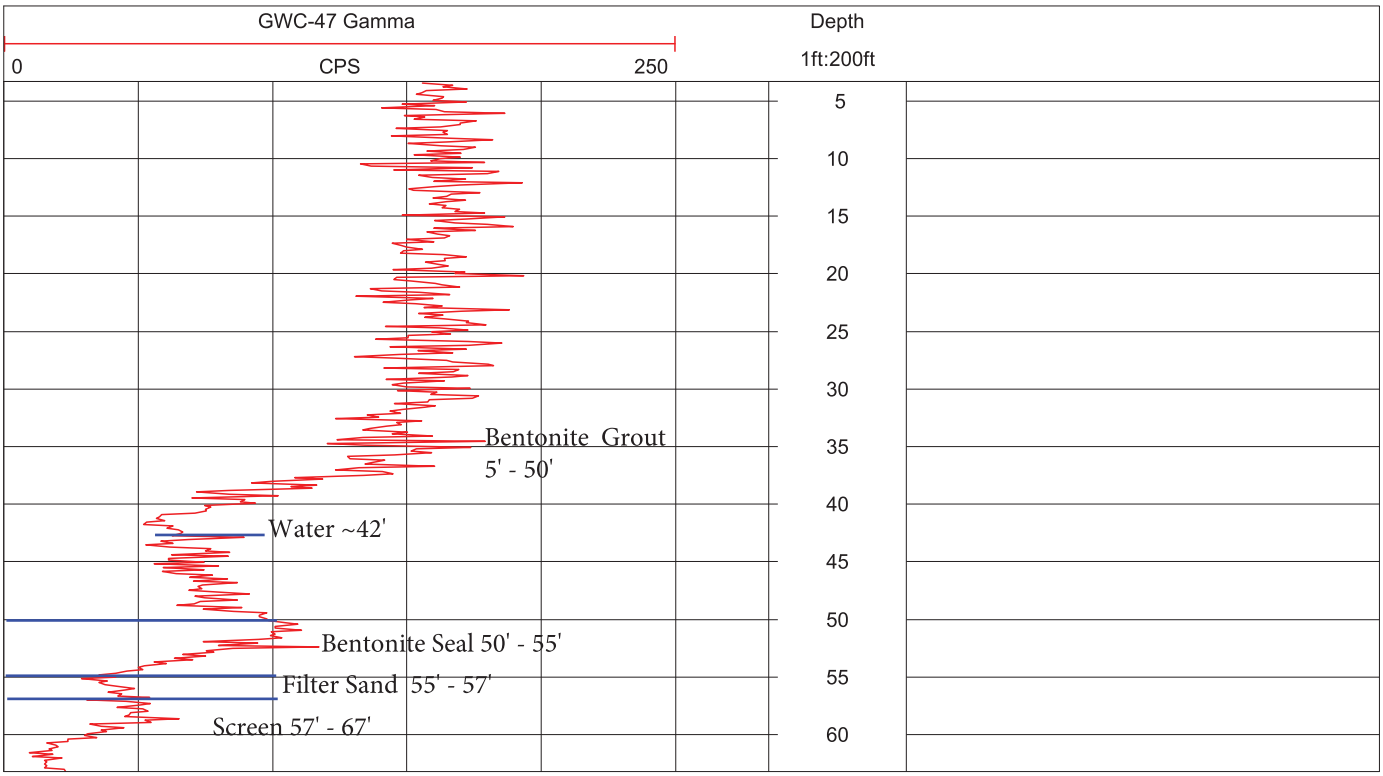

39.0
40.0
41.0
42.0
43.0
44.0
45.0
46.0
47.0
48.0
49.0
Water Level :42.29'
Pipe Joint (47.6')



Borehole inundated
with dark material
growing on sidewalls.
In order to view bettter
exposure and light
were turned up.


61.0
62.0
63.0
64.0
65.0
66.0
67.0
BOH:
67.33'


Depth
1ft:100ft
Image-NM GWC-47
0°
90°
180°
270°
0°
GWC-47 GR
0
CPS
250
creen Int./Water Leve
0
1
GWC-47 3D
-0°
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
65.0


GWC-47 Gamma
0
CPS
250
Depth
1ft:200ft
5
10
15
20
25
30
35
40
45
50
55
60
Bentonite Grout
5' - 50'
Water ~42'
Bentonite Seal 50' - 55'
Filter Sand 55' - 57'
Screen 57' - 67'

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **687.71**
Top of PVC Casing Elevation (feet, NAVDl88): **691.13**

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING GWC-47R
PAGE 1 OF 2
ECS18611

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT 9 & 10 Landfill Wells
LOCATION Plant Bowen

DATE STARTED 4/22/2014 **COMPLETED** 4/24/2014 **SURF. ELEV.** 687.71' NAVD88 **COORDINATES:** N:1504539.25 E:2072467.10
CONTRACTOR Tristate Drilling **EQUIPMENT** CME550 **METHOD** Hollow Stem Auger; Casing Advance; HQ Rock Core
DRILLED BY D. Wright **LOGGED BY** L. Millet **CHECKED BY** L. Millet **ANGLE** -90 **BEARING** 0
BORING DEPTH 81.2 ft. **GROUND WATER DEPTH: DURING** 38.5 ft. **COMP.** **DELAYED** 35.45 ft. after 192 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
5		**Silty Clay (CL-ML)** - orange, moist, medium stiff, *residuum*, silty, dark red mottling, partially weathered rock fragments	682.7
10		**Silty Clay (CL-ML)** - orange, moist, medium stiff, *residuum*, silty, red and yellow mottling, partially weathered rock fragments	677.7
15		**Silt (ML)** - orange, moist, medium stiff, *residuum*, clayey, red and brown mottling	672.7
20		**Silt (ML)** - yellow, damp, medium stiff, *residuum*, clayey, orange and brown mottling, partially weathered rock fragments	667.7
25		**Silt (ML)** - yellow, damp, stiff, *residuum*, clayey, orange and yellow mottling, partially weathered rock fragments, trace sand	662.7
30		**Silt (ML)** - yellow, damp, medium stiff, *residuum*, clayey, brown and orange mottling, trace sand	657.7
35		**Silt (ML)** - yellow, damp, stiff, *residuum*, clayey, brown and orange mottling, trace sand	652.7
40		**Lean to Fat Clay (CL-ML)** - orange, wet, stiff, *residuum*, silty, red and yellow mottling, sandy in places	647.7

WELL DATA

Protective steel cover
4-foot square concrete pad
Top of casing Elev. = 691.13

ELEV. (DEPTH)

← Surface Seal: concrete
685.7
(2.0)

← Annular Fill: Portland Cement Grout

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT 9 & 10 Landfill Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
45		**Silt (ML)** - orange, very moist, soft, *residuum*, clayey, yellow and brown mottling, thin sand lenses	642.7
50		**Silt (ML)** - orange, very moist, very soft, *residuum*, clayey, red and yellow mottling, partially weathered rock fragments, few thin sand lenses	637.7
55		**Silt (ML)** - orange, very moist, very hard, *residuum*, clayey, yellow and light gray mottling, partially weathered rock fragments, trace sand	632.7
60		**(ML)** - cored through sample interval - no recovery	631.4
		Chert - gray, not weathered, chert boulder	627.7
65		**Lean to Fat Clay (CH)** - orange, very moist, very soft, *residuum*, sandy, red mottling, thin silt lenses	622.7
		Dolomite - gray, hard, slightly weathered, slightly decomposed, slightly fractured	620.7
70		**Dolomite** - gray, hard, slightly weathered, slightly decomposed, slightly fractured	617.9
		Dolomite - gray, hard, slightly to moderately weathered, slightly decomposed, slightly fractured	612.9
75		**Dolomite** - gray, hard, slightly weathered, slightly decomposed, slightly fractured	607.9
80		**Dolomite** - gray, hard, slightly weathered, moderately decomposed, slightly fractured	606.5

Bottom of borehole at 81.2 feet.

WELL DATA

Protective steel cover
4-foot square concrete pad
Top of casing Elev. = 691.00

(CONTINUED)

ELEV. (DEPTH)

622.7 (65.0)
Annular Seal: bentonite pellets
618.5 (69.2)
Filter: silica filter sand
616.9 (70.8)

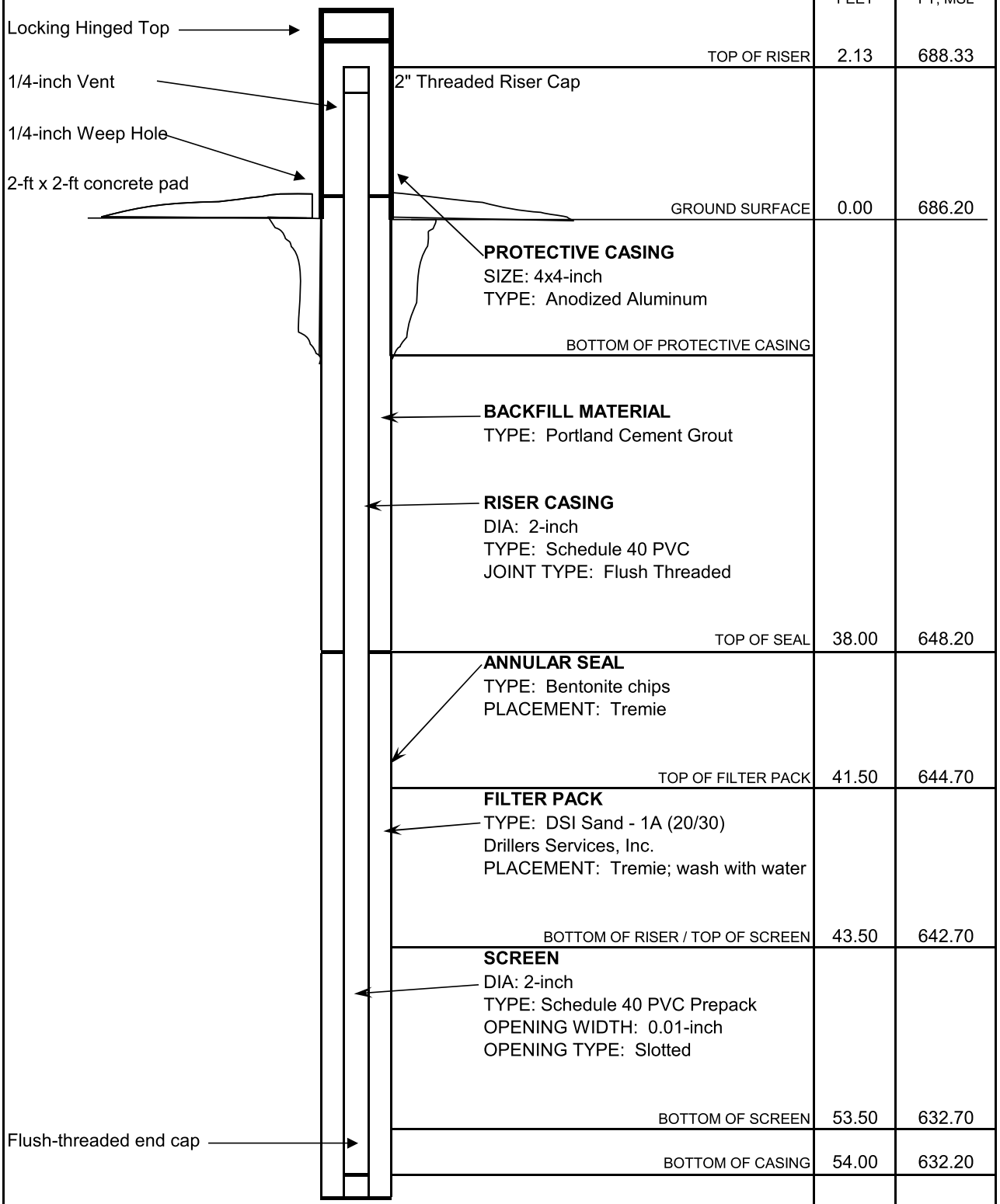
Well: 2" OD PVC (SCH 40)

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

606.9
Sump:0.40 ft.

WELL CONSTRUCTION LOG — Southern Company Generation

PROJECT:	CCB Disposal	DRILLING CO.:	Boart Longyear	WELL NAME
		DRILLER:	Boart	
LOCATION:	Cells 9 and 10	RIG TYPE:	Rotosonic	
LOGGER:	G Dyer	DRILLING METHODS:	RotoSonic	GWC-48
DATE CONSTRUCT	6/8/2011			



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.13	688.33
2" Threaded Riser Cap		
GROUND SURFACE	0.00	686.20
PROTECTIVE CASING SIZE: 4x4-inch TYPE: Anodized Aluminum		
BOTTOM OF PROTECTIVE CASING		
BACKFILL MATERIAL TYPE: Portland Cement Grout		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	38.00	648.20
ANNULAR SEAL TYPE: Bentonite chips PLACEMENT: Tremie		
TOP OF FILTER PACK	41.50	644.70
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. PLACEMENT: Tremie; wash with water		
BOTTOM OF RISER / TOP OF SCREEN	43.50	642.70
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted		
BOTTOM OF SCREEN	53.50	632.70
BOTTOM OF CASING	54.00	632.20

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **686.20**
Top of PVC Casing Elevation (feet, NAVDl88): **688.33**

SOUTHERN COMPANY
Energy to Serve Your World™

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **GWC-48**
Sheet 1 of 2

SITE	Plant Bowen	HOLE DEPTH	57'	SURFELEV	686.20 FT
LOCATION	Landfill Cells 9 &10	COORDINATES	1504490.63		2072851.71
ANGLE		BEARING		CONTRACTOR	Boart
DRILL NO.		DRILLING METHOD	Rotosonic	NO. SAMPLES	
NO. U.D. SAMPLES		CASING SIZE	2"	LENGTH	10'
CORE SIZE		TOTAL % REC.		WATER TABLE DEPTH	39.73 FT
ELEV.	648.76 FT	TIME AFTER COMP.		DATE TAKEN	8/25/2014
TYPE GROUT		QUANTITY		MIX	·
DRILLING START DATE	6/8/2011	DRILLER		RECORDER	Dyer / Abraham
APPROVED		DRILLING COMP. DATE	6/8/2011		

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
0	686.20								
1		**CLAYEY SILT (0 - 3 FT)**							
2		White to tan and orange, weakly-cemented, clayey silt; few dolomitic fragments; dry.							
3		**SILTY SAND (3 - 8 FT)**							
4		Orange to red-brown silty sand with minor angular to sub-angular gravels; dry.							
5	681.20								
6									
7									
8		**CLAYEY SILT (8 - 16 FT)**							
9		Tan to white clayey silt with few gravels; dark colored banding - likely manganese bands with contorted bedding; moist.							
10	676.20								
11									
12									
13									
14									
15	671.20								
16									
17		**GRAVELLY SAND (16 - 22 FT)**							
18		Brownish gravelly sand with wet clay layers; Low plastic clay.							
19									
20	666.20								
21									
22									
23									
24	662.20								

Form GS9901 7-26-2004

DRILLING LOG
GEOLOGICAL SERVICES

Hole No. **GWC-48**

Sheet 2 of 2

SITE **Plant Bowen** TOTAL DEPTH **57'** SURF.ELEV. 686.20 FT

Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test From To	Blows	N	Comments	% Rec	RQD
25	661.20								
26									
27									
28									
29									
30	656.20	SILT							
31		Tan to orange silt (70%) with clay (15%) and sandy gravel (15%); low plastic clay; lacks structure; wet.							
32									
33									
34									
35	651.20								
36									
37									
38									
39									
40	646.20								
41									
42									
43									
44									
45	641.20								
46		**SILT (46 - 50 FT)** Tan to orange silt (70%) with clay (15%) and sandy gravel (15%); low plastic clay; lacks structure; wet.							
47									
48									
49									
50	636.20	**CLAYEY SILT (50 - 56 FT)**							
51		Tan to orange silt (65%) with clay (20%) and sandy gravel (15%); low plastic clay; lacks structure; wet.							
52									
53									
54									
55	631.20								
56	630.20	END OF BORING, 57 FT							

Form GS9901 7-26-2004

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **706.12**
Top of PVC Casing Elevation (feet, NAVDl88): **709.11**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-49 Z
PAGE 1 OF 3
GPC633179

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/23/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 706.12' NAVD88 **COORDINATES:** N:1505238.30 E:2072896.49
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 107 ft. **GROUND WATER DEPTHDURING** 48 ft. **COMP.** 47.3 ft. **DELAYED** 47.2 ft. after 96 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		Sandy Silt (ML) - mottled grayish brown (10YR 5/2), strong brown (7.5YR 5/6) and brownish yellow / dark yellowish orange (10YR 6/6) very damp, soft, some clay and gravel - medium stiff				Completion: protective aluminum cover with bollards; 4-foot square concrete pad Surface Seal: Concrete
5						
		- mottled reddish yellow (7.5YR 6/8) and yellowish red (5YR 4/6) moist, medium stiff, medium plasticity, some clay and gravel - stiff				
10						
		Dolostone (COBBLES AND BOULDERS) - dolostone boulder, about 2 ft. thick, gray, fresh				Annular Fill: Portland Cement-Bentonite Grout (4 - 94lbs bags PC, 1 - 50lbs bags Gel, 40 gal. Water)
15						
		- mottled strong brown (7.5YR 5/8) and red (2.5YR 4/6) dry, medium stiff, medium plasticity, some clay and gravel - stiff				
20						
		- mottled brownish yellow (10YR 6/8) and red (2.5YR 4/8)				
25						
		Silt (ML) - mottled brownish yellow (10YR 6/8) and red (2.5yr 4/8) dry, medium stiff, low to medium plasticity, some sand - damp				
30						
						Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (77.0'-74.0')) and Baroid Hole Plug 3/8 Chips (10 - 50lbs bags (74.0'-25.0'))
35						
		Elastic Silt (MH) - mottled brownish yellow (10YR 6/8) and red (2.5YR 4/8) wet, medium stiff				
40						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
		Elastic Silt (MH) *(Con't)*				Completion: protective aluminum cover with bollards; 4-foot square concrete pad
45		- red (2.5YR 4/6), very pale brown (10YR 8/3) and yellow (10YR 7/8) clay seam				(CONTINUED)
		Sandy Lean Clay (CL)				
50		- very pale brown (10YR 8/3), strong brown (7.5YR 5/6) and red (2.5YR 4/6) wet, medium stiff, medium plasticity, some gravel				
55						
60		- red (2.5YR 4/8), light gray (10YR 7/1) and black (10YR 2/1) wet, medium stiff, medium to high plasticity, some gravel, interbedded zones of CHS Sandy Fat Clay				Annular Seal: Pel-Plug 3/8 Bentonite Coated Pellets (0.5 - 5gal buckets (77.0'-74.0')) and Baroid Hole Plug 3/8 Chips (10 - 50lbs bags (74.0'-25.0'))
65						
70		- yellowish brown (10YR 5/6) and yellowish brown (10YR 5/6) wet, medium stiff, medium to high plasticity, some gravel				
75						
80		- and dark yellowish brown (10YR 4/6) saturated, very soft, high plasticity, with cobbles and gravel				Filter: Filter Media 20/40 Silica Sand (4 - 50 lbs bags)
85						**Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; 0.010" Slot Prepack

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	GROUNDWATER OBSERVATIONS	WELL DATA
90		**Sandy Lean Clay (CL)***(Con't)*				(CONTINUED) Completion: protective aluminum cover with bollards; 4-foot square concrete pad
95		- and dark yellowish brown (10YR 4/6) saturated, very soft, high plasticity, with gravel				Sump:0.3 ft.
100						Backfill:Filter Media 20/40 Silica Sand (0.25 - 50 lbs bags (90.0'-89.5')) and Baroid Hole Plug 3/8 Chips (5 - 50lbs bags (107.0'-92.0')
105						Cave-in to 107 ft.
		Bottom of borehole at 107.0 feet.				
110						
115						
120						
125						
130						
135						

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **706.12**
Top of PVC Casing Elevation (feet, NAVDl88): **709.11**

SOUTHERN COMPANY

LOG OF TEST BORING

BORING GWC-49 Z
PAGE 1 OF 3
GPC633179

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DATE STARTED 2/23/2016 **COMPLETED** 3/1/2016 **SURF. ELEV.** 706.12 **COORDINATES:** N:1504238.30 E:2072896.49
CONTRACTOR Cascade **EQUIPMENT** Tracked **METHOD** Rotosonic
DRILLED BY T. Ardito **LOGGED BY** W. Shaughnessy **CHECKED BY** B. Smelser **ANGLE** **BEARING**
BORING DEPTH 107 ft. **GROUND WATER DEPTHDURING** 48 ft. **COMP.** 47.3 ft. **DELAYED** 47.2 ft. after 96 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
5		**Sandy Silt (ML)** - mottled grayish brown (10YR 5/2), strong brown (7.5YR 5/6) and brownish yellow / dark yellowish orange (10YR 6/6) very damp, soft, some clay and gravel - medium stiff			(Recovery=64% between 0 and 7ft.)	
10		- mottled reddish yellow (7.5YR 6/8) and yellowish red (5YR 4/6) moist, medium stiff, medium plasticity, some clay and gravel - stiff			(Recovery=50% between 7 and 17ft.)	
15		**Dolostone (COBBLES AND BOULDERS)** - dolostone boulder, about 2 ft. thick, gray, fresh				
20		- mottled strong brown (7.5YR 5/8) and red (2.5YR 4/6) dry, medium stiff, medium plasticity, some clay and gravel - stiff			(Recovery=90% between 17 and 27ft.)	
25		- mottled brownish yellow (10YR 6/8) and red (2.5YR 4/8)				
30		**Silt (ML)** - mottled brownish yellow (10YR 6/8) and red (2.5yr 4/8) dry, medium stiff, low to medium plasticity, some sand - damp			(Recovery=90% between 27 and 37ft.)	
35						
40		**Elastic Silt (MH)** - mottled brownish yellow (10YR 6/8) and red (2.5YR 4/8) wet, medium stiff			(Recovery=100% between 37 and 47ft.)	

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
45		**Elastic Silt (MH)** *(Con't)*			*(Con't)*	
		- red (2.5YR 4/6), very pale brown (10YR 8/3) and yellow (10YR 7/8) clay seam				
		Sandy Lean Clay (CL)			(Recovery=100% between 47 and 57ft.)	
50		- very pale brown (10YR 8/3), strong brown (7.5YR 5/6) and red (2.5YR 4/6) wet, medium stiff, medium plasticity, some gravel				
55					(Recovery=65% between 57 and 67ft.)	
60		- red (2.5YR 4/8), light gray (10YR 7/1) and black (10YR 2/1) wet, medium stiff, medium to high plasticity, some gravel, interbedded zones of CHS Sandy Fat Clay				
65					(Recovery=65% between 67 and 77ft.)	
70		- yellowish brown (10YR 5/6) and yellowish brown (10YR 5/6) wet, medium stiff, medium to high plasticity, some gravel				
75					(Recovery=17% between 77 and 92ft.)	
80		- and dark yellowish brown (10YR 4/6) saturated, very soft, high plasticity, with cobbles and gravel				
85						

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Landfill Replacement Monitoring Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	HCL REACTION (Weak / Moderate / Strong)	COMMENTS	Natural Gamma (55 / 110 / 165)
90		**Sandy Lean Clay (CL)***(Con't)*			*(Con't)*	
95		- and dark yellowish brown (10YR 4/6) saturated, very soft, high plasticity, with gravel			(Recovery=13% between 92 and 107ft.)	
100						
105						
		Bottom of borehole at 107.0 feet.				
110						
115						
120						
125						
130						
135						

Log updated with revised survey certified 3/23/2021
Ground Surface Elevation (feet, NAVD88): **706.24**
Top of PVC Casing Elevation (feet, NAVDl88): **709.56**

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

BORING GWC-49R
PAGE 1 OF 3
ECS18611

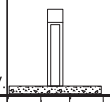
SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT 9 & 10 Landfill Wells
LOCATION Plant Bowen

DATE STARTED 4/16/2014 **COMPLETED** 4/17/2014 **SURF. ELEV.** 706.24' NAVS88 **COORDINATES:** N:1504246.02 E:2072918.76
CONTRACTOR Tristate **EQUIPMENT** SME550 **METHOD** Hollow Stem Auger; Casing Advance; HQ Rock Core
DRILLED BY D. Wright **LOGGED BY** L. Millet **CHECKED BY** L. Millet **ANGLE** -90 **BEARING** 0
BORING DEPTH 131.1 ft. **GROUND WATER DEPTH: DURING** 63.5 ft. **COMP.** 44.9 ft. **DELAYED** 49.3 ft. after 12 hrs.
NOTES

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
5		**Lean Clay (CL-ML)** - orange, very moist, medium stiff, yellow mottling, partially weathered rock fragments	701.2
10		**Silt (ML)** - brown, damp, very stiff, clayey, orange and dark red mottling, trace sand, partially weathered rock fragments	696.2
15		**Well-graded Sand (SW)** - gray, dry, medium dense, fine to coarse grain, yellow and red mottling, clay lenses, chert fragments	691.2
20		**Lean Clay (CL-ML)** - orange, damp, soft, yellow and red mottling, occasional partially weathered rock fragments, trace sand	686.2
25		**Silt (ML)** - orange, damp, very stiff, clayey, red and yellow mottling, partially weathered rock fragments, trace sand	681.2
30		**Silt (ML)** - orange, damp, very stiff, clayey, red and yellow mottling, partially weathered rock fragments, trace sand	676.2
35		**Silt (ML)** - orange, damp, very stiff, clayey, red, yellow, and light gray mottling, occasional partially weathered rock fragments, sandy lenses throughout	671.2
40		**Silt (ML)** - orange, damp, stiff, clayey, red and yellow mottling, partially weathered rock fragments	666.2

WELL DATA



Protective steel cover
4-foot square concrete pad
Top of casing Elev. = 709.56

ELEV. (DEPTH)

← Surface Seal: concrete 704.2 (2.0)

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT 9 & 10 Landfill Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
45		**Lean to Fat Clay (CH)** - red, damp, stiff, low to medium plasticity, yellow mottling, silty, trace sand	661.2
50		**Silt (ML)** - orange, damp, medium stiff, clayey, yellow and light yellow mottling, clayey lenses	656.2
55		**Silt (ML)** - yellow, very moist, stiff, clayey, light yellow mottling, few sand lenses	651.2
60		**Silt (ML)** - yellow, wet, medium stiff, clayey, brown mottling, few thin sand lenses, trace clay	646.2
65			
70		**Clayey Sand (SC)** - brown, wet, medium dense, medium to coarse grain	636.2
75		**Elastic Silt (MH)** - yellow, wet, hard, medium plasticity, clayey, orange and black mottling, partially weathered rock fragments	631.2
80		**Silt (MH)** - yellow, wet, soft, medium plasticity, clayey, orange and black mottling, trace sand	626.2
85		**Elastic Silt (ML)** - yellow, wet, stiff, clayey, orange and dark brown mottling, clay lenses, partially weathered rock fragments	621.2
		(MH) - yellow, wet, very hard, medium plasticity, clayey, brown mottling, sand lenses, partially weathered rock fragments	

WELL DATA

Protective steel cover
4-foot square concrete pad
Top of casing Elev. = 709.56

(CONTINUED)

ELEV. (DEPTH)

←Annular Fill: Portland Cement Grout

(Continued Next Page)

SOUTHERN COMPANY

LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT 9 & 10 Landfill Wells
LOCATION Plant Bowen

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.
90		**(MH)***(Con't)*	616.2
		- hard, No recovery	
95			611.2
		Elastic Silt (MH) - brown, wet, very stiff, medium plasticity, clayey, orange mottling, sandy lenses, partially weathered rock fragments	
100			606.2
		Elastic Silt (MH) - orange, wet, very stiff, medium plasticity, clayey, gray mottlin, partially weathered rock fragments, clay lenses, trace sand	
105			601.2
		Silt (MH) - orange, wet, very soft, clayey, light orange mottling, heavily and partially weathered rock fragments, trace sand	
110			596.2
		Clayey Sand (ML) - gray, wet, very hard, clayey, yellow mottling, partially weathered rock fragments	
115			591.2
		Dolostone (SC) - yellow, wet, very hard, fine to coarse grain, partially weathered rock fragments	
120			586.2
		Dolomite - gray, hard, slightly weathered, slightly disintegrated, slightly fractured	
125			581.2
		Dolomite - gray, hard, moderately weathered, slightly disintegrated, moderately to intensely fractured	
130			576.2
		Dolomite - gray, hard, slightly weathered, slightly disintegrated, moderately to intensely fractured	575.1

Bottom of borehole at 131.1 feet.

WELL DATA

Protective steel cover
4-foot square concrete pad
Top of casing Elev. = 709.56

(CONTINUED)

ELEV. (DEPTH)

593.2 (113.0)

← Annular Seal: bentonite pellets

586.6 (119.6)

← Filter: silica filter sand

585.5 (120.7)

Well: 2" OD PVC (SCH 40)

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

575.5

← Sump:0.40 ft.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Approved
Solid Waste Management Program

Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:14:55 -04'00'

ATTACHMENT A2

WELL DRILLING CONTRACTOR PROOF OF BONDING

GA Water Well Contractor License # 651

Bond Number 612424813

Performance Bond For Water Well Contractors

Name of Water Well Contractor Richard Alan Mooney

Know All Men By These Presents

That we Cascade Drilling, L.P. and Richard Alan Mooney and any and all employees, officers and partners (collectively hereinafter, **Principal**), and we United States Fire Insurance Company, duly organized under the laws of the State of Delaware (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 **THIRTY THOUSAND DOLLARS ($30,000.00)** 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 Water Well Contractor, 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 30th day of June, 20 25 and shall continue in effect until June 30, 2027, 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 2nd day of May, 20 25.

Principal Cascade Drilling, L.P.

Print name:

Title:

Seal:

Surety United States Fire Insurance Company

Print name: Melissa Haddick

Title: Attorney-in-Fact

Seal:

Revised 03.17.2021

POWER OF ATTORNEY
UNITED STATES FIRE INSURANCE COMPANY
PRINCIPAL OFFICE - MORRISTOWN, NEW JERSEY

(PRODUCER CODE)

KNOW ALL MEN BY THESE PRESENTS: That United States Fire Insurance Company, a corporation duly organized and existing under the laws of the state of Delaware, has made, constituted and appointed, and does hereby make, constitute and appoint: **Sandra Parker; Melissa Haddick; Tannis Mattson; Orlando Aguirre; Stacy Killebrew; Madison Diaz and Megan Sivley** each, its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver: Any and all bonds and undertakings of surety and other documents that the ordinary course of surety business may require, and to bind United States Fire Insurance Company thereby as fully and to the same extent as if such bonds or undertakings had been duly executed and acknowledged by the regularly elected officers of United States Fire Insurance Company at its principal office, in amounts or penalties: **One Hundred Twenty Five Million Eight Hundred Thousand Dollars ($125,800,000)**

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind United States Fire Insurance Company except in the manner and to the extent therein stated.

This Power of Attorney is granted pursuant to Article IV of the By-Laws of United States Fire Insurance Company as now in full force and effect, and consistent with Article III thereof, which Articles provide, in pertinent part:

Article IV, Execution of Instruments - Except as the Board of Directors may authorize by resolution, the Chairman of the Board, President, any Vice-President, any Assistant Vice President, the Secretary, or any Assistant Secretary shall have power on behalf of the Corporation:

(a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;
(b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation.

Article III, Officers, Section 3.11, Facsimile Signatures. The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed, facsimile, lithographed or otherwise produced. In addition, if and as authorized by the Board of Directors, dividend warrants or checks, or other numerous instruments similar to one another in form, may be signed by the facsimile signature or signatures, lithographed or otherwise produced, of such officer or officers of the Corporation as from time to time may be authorized to sign such instruments on behalf of the Corporation. The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, United States Fire Insurance Company has caused these presents to be signed and attested by its appropriate officer and its corporate seal hereunto affixed this 17th day of January, 2025.

UNITED STATES FIRE INSURANCE COMPANY

Matthew E. Lubin, President

State of New Jersey}
County of Morris }

On this 17th day of January, 2025, before me, a Notary public of the State of New Jersey, came the above named officer of United States Fire Insurance Company, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seal of United States Fire Insurance Company thereto by the authority of his office.

ETHAN SCHWARTZ
NOTARY PUBLIC
STATE OF NEW JERSEY
MY COMMISSION EXPIRES 6/25/2029
COMMISSION: #50223171

Ethan Schwartz (Notary Public)

I, the undersigned officer of United States Fire Insurance Company, a Delaware corporation, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is still in force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of United States Fire Insurance Company on the 2nd day of May 20 25

UNITED STATES FIRE INSURANCE COMPANY

Michael C. Fay, Senior Vice President

*For verification of the authenticity of the Power of Attorney, please contact (phone number) or email: patricia.taber @amyntagroup.com

Power of Attorney

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

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

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

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

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

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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

By _____
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

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

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

_____
Notary Public

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

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

ATLANTIC SPECIALTY INSURANCE COMPANY CORPORATE SEAL 1986 NEW YORK

This Power of Attorney expires
January 31, 2025

_____
Kara Barrow, Secretary

Please direct bond verifications to surety@intactinsurance.com

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. 800033976

Issued on 9/27/2017
Expires on 6/30/2021
Renewed on 4/12/2021
Expires on 6/30/2023

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

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

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

does hereby continue said bond in force for the further period

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

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

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

Description of bond Performance Bond for Water Well Contractors

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

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

Atlantic Specialty Insurance Company

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

Parker, Smith & Feek, Inc.
Agent

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

425-709-3600
Telephone Number of Agent

S-0157/GE 8/08

XDP

CONTINUATION
CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

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

does hereby continue said bond in force for the further period

beginning on June 30, 2021
(MONTH-DAY-YEAR)

and ending on June 30, 2022
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractors & Drillers

Premium: $100.00

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

Signed and dated on 05/06/2021
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

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

McGriff Insurance Services, Inc.
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

Liberty Mutual SURETY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: **8205019-016032**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

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

does hereby continue said bond in force for the further period

beginning on June 30, 2022
(MONTH-DAY-YEAR)

and ending on June 30, 2023
(MONTH-DAY-YEAR)

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

Description of bond Water Well Contractors & Drillers

Premium: $100.00

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

Signed and dated on 05/06/2021
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

175 Berkeley Street, Boston, MA 02116

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

McGriff Insurance Services, Inc.
Agent

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

(205) 252-9871
Telephone Number of Agent

S-0157/GE 8/08

XDP

Liberty Mutual SURETY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

Certificate No: **8205019-016032**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That American States Insurance Company is a corporation duly organized under the laws of the State of Indiana, that First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Alisa B. Ferris; Anna Childress; Jeffrey M. Wilson; Mark W. Edwards II; Richard H. Mitchell; Robert R. Freel; Sam Audia; William M. Smith

all of the city of Birmingham state of AL each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 11th day of March, 2021.

American States Insurance Company
First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 11th day of March, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of American States Insurance Company, First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of May, 2021.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company , Surety upon

a certain Bond No. 800033976

Issued on 9/27/2017
Expires on 6/30/2019
Renewed on 3/4/2019
Expires on 6/30/2021

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 06/30/2019
(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

S-0157/GE 8/08

XDP

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

and in favor of **Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2014**
(MONTH-DAY-YEAR)

and ending on **June 30, 2015**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 09, 2014**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By _____
D-Ann Kleidosty, Attorney-In-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 8125754

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sharon J. Potts; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of May, 2013.

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss
COUNTY OF KING

On this 15th day of May, 2013, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.

K D RILEY COMM. EXP. NOTARY PUBLIC 12-09-2013 STATE OF WASHINGTON

By: _____
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and biding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of April, 20 14.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

SOUTHERN COMPANY

May 8, 2013

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Dear Mr. McCook:

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2014.

Please let me know if you need additional assistance.

Sincerely,

Clementine Broaders

Clementine Broaders
Risk Management Associate
cbbroade@southernco.com
404-506-0701

/cb

Enclosure

cc: Sarah Roberts

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

and in favor of **Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2013**
(MONTH-DAY-YEAR)

and ending on **June 30, 2014**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **May 03, 2013**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By D-a Kleidosty

D-Ann Kleidosty, Attorney-In-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.
This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 5634691

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America are corporations duly organized under the laws of the State of New Hampshire (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Chaun M. Wilson; D-Ann Kleidosty; Gary D. Eklund; Sylvia M. Ogle; Tracey D. Watson; William G. Moody

all of the city of Atlanta, state of GA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 31st day of October, 2012.

First National Insurance Company of America
General Insurance Company of America
Safeco Insurance Company of America

By: _____
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss
COUNTY OF KING

On this 31st day of October, 2012, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the day and year first above written.

By: KD Riley
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America, which are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes Gregory W. Davenport, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and biding upon the Company with the same force and effect as though manually affixed.

I, David M. Carey, the undersigned, Assistant Secretary, of First National Insurance Company of America, General Insurance Company of America, and Safeco Insurance Company of America do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 3rd day of May, 2013.

By: _____
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

April 20, 2012

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Dear Mr. McCook:

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2013.

Please let me know if you need additional assistance.

Sincerely,

Clementine Broaders

Clementine Broaders
Risk Management Associate
cbbroade@southernco.com
404-506-0701

/cb

Enclosure

cc: Stacy Sprayberry, SCS

CONTINUATION CERTIFICATE

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

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

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

and in favor of **Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2012**
(MONTH-DAY-YEAR)

and ending on **June 30, 2013**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 11, 2012**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By _____
D-Ann Kleidosty, Attorney-In-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND. 5193485

This Power of Attorney limits the a[illegible]f those named herein, and they have no authority [illegible]d the Company except in the manner and to the extent herein stated.

SAFECO INSURANCE COMPANY OF AMERICA
SEATTLE, WASHINGTON
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint GARY D. EKLUND, CHAUN M. WILSON, MICHAEL F. YADACH, NORMANDY SUTTON, WILLIAM G. MOODY, D-ANN KLEIDOSTY, TRACEY D. WATSON, SYLVIA M. OGLE, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA.....

.....

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding TWO HUNDRED FIFTY MILLION AND 00/100********** DOLLARS ($ 250,000,000.00**********) each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE IV - Officers: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, David M. Carey, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 24th day of February, 2012.

SAFECO INSURANCE COMPANY OF AMERICA

By _____
David M. Carey, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 24th day of February, 2012, before me, a Notary Public, personally came David M. Carey, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires Mar. 28, 2013
Member, Pennsylvania Association of Notaries

By _____
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Vice President of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Officer specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 11th day of April, 2012.

Gregory W. Davenport, Vice President

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

SOUTHERN COMPANY
Energy to Serve Your World®

May 2, 2011

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

Re: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2012.

Please let us know if you need additional information.

Sincerely,

Clementine Broaders

Clementine Broaders
Southern Company Services, Inc.
Risk Management Department

/cb

Enclosure

cc: Stacy Sprayberry, SCS

Liberty Mutual.

CONTINUATION CERTIFICATE

COPY

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2011**
(MONTH-DAY-YEAR)

and ending on **June 30, 2012**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **License Bond - Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 21, 2011**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Barbara S. MacArthur

Barbara S. MacArthur, Attorney-In-Fact

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

4178633

COPY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

SAFECO INSURANCE COMPANY OF AMERICA
SEATTLE, WASHINGTON
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS: That Safeco Insurance Company of America (the "Company"), a Washington stock insurance company, pursuant to and by authority of the By-law and Authorization hereinafter set forth, does hereby name, constitute and appoint **VIRGINIA B. MCMANUS, GARY D. EKLUND, BARBARA S. MACARTHUR, CHAUN M. WILSON, MICHAEL F. YADACH, ALL OF THE CITY OF ATLANTA, STATE OF GEORGIA**

, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations in the penal sum not exceeding **ONE HUNDRED MILLION AND 00/100**** ****** DOLLARS ($ 100,000,000.00********** ******)** each, and the execution of such undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents, shall be as binding upon the Company as if they had been duly signed by the president and attested by the secretary of the Company in their own proper persons.

That this power is made and executed pursuant to and by authority of the following By-law and Authorization:

ARTICLE IV - Execution of Contracts: Section 12. Surety Bonds and Undertakings.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitations as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the president and attested by the secretary.

By the following instrument the chairman or the president has authorized the officer or other official named therein to appoint attorneys-in-fact:

Pursuant to Article IV, Section 12 of the By-laws, Garnet W. Elliott, Assistant Secretary of Safeco Insurance Company of America, is authorized to appoint such attorneys-in-fact as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

That the By-law and the Authorization set forth above are true copies thereof and are now in full force and effect.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of Safeco Insurance Company of America has been affixed thereto in Plymouth Meeting, Pennsylvania this 14th day of October, 2010.

SAFECO INSURANCE COMPANY OF AMERICA

By Garnet W. Elliott
Garnet W. Elliott, Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 14th day of October, 2010, before me, a Notary Public, personally came Garnet W. Elliott, to me known, and acknowledged that he is an Assistant Secretary of Safeco Insurance Company of America; that he knows the seal of said corporation; and that he executed the above Power of Attorney and affixed the corporate seal of Safeco Insurance Company of America thereto with the authority and at the direction of said corporation.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Plymouth Meeting, Pennsylvania, on the day and year first above written.

Notarial Seal
Teresa Pastella, Notary Public
Plymouth Twp., Montgomery County
My Commission Expires Mar. 28, 2013
Member, Pennsylvania Association of Notaries

By Teresa Pastella
Teresa Pastella, Notary Public

CERTIFICATE

I, the undersigned, Assistant Secretary of Safeco Insurance Company of America, do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy, is in full force and effect on the date of this certificate; and I do further certify that the officer or official who executed the said power of attorney is an Assistant Secretary specially authorized by the chairman or the president to appoint attorneys-in-fact as provided in Article IV, Section 12 of the By-laws of Safeco Insurance Company of America.

This certificate and the above power of attorney may be signed by facsimile or mechanically reproduced signatures under and by authority of the following vote of the board of directors of Safeco Insurance Company of America at a meeting duly called and held on the 18th day of September, 2009.

VOTED that the facsimile or mechanically reproduced signature of any assistant secretary of the company, wherever appearing upon a certified copy of any power of attorney issued by the company in connection with surety bonds, shall be valid and binding upon the company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the said company, this 21st day of April, 2011.

David M. Carey
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

Liberty Mutual.

CONTINUATION CERTIFICATE

COPY

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2010**
(MONTH-DAY-YEAR)

and ending on **June 30, 2011**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **License Bond - Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 15, 2010**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Barbara S. MacArthur

Barbara S. MacArthur, Attorney-In-Fact

S-0157/GEEF 11/99

COPY

POWER
OF ATTORNEY

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

**********GARY D. EKLUND; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS; CHAUN M. WILSON; MICHAEL F. YADACH; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 2nd day of February 2010

Dexter R. Legg

Dexter R. Legg, Secretary

T A Mikolajewski

Timothy A. Mikolajewski, Vice President

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Dexter R. Legg , Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 15th day of April 2010

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

Dexter R. Legg

Dexter R. Legg, Secretary

WEB PDF

S-0974/DS 3/09

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

SOUTHERN COMPANY
Energy to Serve Your World®

May 27, 2009

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

RE: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2010.

Please let us know if you need additional information.

Best Regards,

Annie Jackson

Annie Jackson
Southern Company Services, Inc.
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS

Liberty Mutual.

CONTINUATION CERTIFICATE

COPY

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2009**
(MONTH-DAY-YEAR)

and ending on **June 30, 2010**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **License Bond - Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 24, 2009**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Barbara S. MacArthur

Barbara S. MacArthur, Attorney-In-Fact

S-0157/GEEF 11/99

COPY

Liberty Mutual

POWER OF ATTORNEY

Safeco Insurance Company of America
General Insurance Company of America
1001 4th Avenue
Suite 1700
Seattle, WA 98154

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

**********SANDRA S. CARTER; GARY D. EKLUND; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS; EDWARD L. MITCHELL; NANCY G. NIX; CHAUN M. WILSON; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 21st day of March, 2009

Dexter R. Legg — **Dexter R. Legg, Secretary**

T A Mikolajewski — **Timothy A. Mikolajewski, Vice President**

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Dexter R. Legg, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 24th day of April, 2009

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

Dexter R. Legg

Dexter R. Legg, Secretary

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

SOUTHERN COMPANY
Energy to Serve Your World®

June 26, 2008

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

RE: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2009.

Please let us know if you need additional information.

Best Regards,

Annie Jackson
Southern Company Services, Inc.
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS

CONTINUATION CERTIFICATE

COPY

Safeco

SAFECO Insurance Company of America , Surety upon

a certain Bond No. **4993104**

dated effective **June 30, 2005**
(MONTH-DAY-YEAR)

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

and in favor of **State of Georgia - Dept. of Natural Resources**

(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on **June 30, 2008**
(MONTH-DAY-YEAR)

and ending on **June 30, 2009**
(MONTH-DAY-YEAR)

Amount of bond **$10,000.00**

Description of bond **License Bond - Water Well Contractors & Drillers**

Premium: **$100.00**

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

Signed and dated on **April 25, 2008**
(MONTH-DAY-YEAR)

SAFECO Insurance Company of America

By Barbara S. MacArthur

Barbara S. MacArthur, Attorney-In-Fact

S-0157/GEEF 11/99

COPY

Safeco

POWER OF ATTORNEY

Safeco Insurance Company of America
General Insurance Company of America
Safeco Plaza
Seattle, WA 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

**********SANDRA S. CARTER; GARY D. EKLUND; JUDITH S. FLEMING; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS; EDWARD L. MITCHELL; NANCY G. NIX; CHAUN M. WILSON; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 28th day of February , 2008 .

Stephanie Daley-Watson

STEPHANIE DALEY-WATSON,SECRETARY

T A Mikolajewski

TIM MIKOLAJEWSKI, SENIOR VICE-PRESIDENT, SURETY

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Stephanie Daley-Watson , Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 25th day of April , 2008 .

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

Stephanie Daley-Watson

STEPHANIE DALEY-WATSON, SECRETARY

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308

SOUTHERN COMPANY
Energy to Serve Your World®

August 14, 2007

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King Jr. Dr. SW
Room 400
Atlanta, GA 30334

RE: Performance Bond for Water Well Contractors and Drillers
Safeco Bond #4993104

Attached is the original signed Continuation Certificate for the above referenced bond on behalf of Southern Company Services, Inc. This certificate keeps this bond in force until June 30, 2008.

Please let us know if you need additional information.

Best Regards,

Annie Jackson

Annie Jackson
Southern Company Services, Inc.
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS

Safeco

CONTINUATION CERTIFICATE

SAFECO INSURANCE COMPANY OF AMERICA, Surety upon

a certain Bond No. **4993104**

dated effective June 30 2005
(MONTH-DAY-YEAR)

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

and in favor of Georgia - Dept. of Natual Resources
(OBLIGEE)

does hereby continue said bond in force for the further period

beginning on June 30 2007
(MONTH-DAY-YEAR)

and ending on June 30 2008
(MONTH-DAY-YEAR)

Amount of bond $10,000

Description of bond License Bond - Water Well Contractractors and Drillers

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 June 30 2007
(MONTH-DAY-YEAR)

SAFECO INSURANCE COMPANY OF AMERICA

By _____
ATTORNEY-IN-FACT Laurel D. Huss

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

Marsh USA, Inc.
Agent

3475 Piedmont Road NE, Suite 1200, Atlanta, GA 30305
Address of Agent

(404) 995-3702
Telephone Number of Agent

Safeco

POWER OF ATTORNEY

Safeco Insurance Company of America
General Insurance Company of America
Safeco Plaza
Seattle, WA 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

**********SANDRA S. CARTER; GARY D. EKLUND; JUDY S. FLEMING;LAUREL D. HUSS; BARBARA S. MACARTHUR; VIRGINIA B. MCMANUS; EDWARD L. MITCHELL; NANCY NIX; CHAUN M. WILSON; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 17th day of August, 2006

Stephanie Daley-Watson — T A Mikolajewski

STEPHANIE DALEY-WATSON,SECRETARY — **TIM MIKOLAJEWSKI, SENIOR VICE-PRESIDENT, SURETY**

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Stephanie Daley-Watson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 30th day of June, 2007

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

Stephanie Daley-Watson

STEPHANIE DALEY-WATSON, SECRETARY

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

AND DRILLERS Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER _____

KNOW ALL MEN BY THESE PRESENTS,

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1193) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2006

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 15th day of April, 2003.

SOUTHERN COMPANY SERVICES, INC.
Principal, By: _____ (L.S.)
Title: SAM H. DABBS, JR.

Approved as to sufficiency and accepted:

ASSISTANT SECRETARY

SAFECO

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

SANDRA S. CARTER; JUDY GAY CERA; GARY D. EKLUND; JUDY S. FLEMING; VIRGINIA B. MCMANUS; BARBARA S. MACARTHUR; EDWARD L. MITCHELL; NANCY NIX; BARBARA THOMPSON; CYNTHIA I. RUDOLPH; LAUREL D. HUSS; Atlanta, Georgia********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 14th day of November 2001

R A Pierson
R.A. PIERSON, SECRETARY

Mike McGavick
MIKE MCGAVICK, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R.A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 15th day of April 2003

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

IMPORTANT NOTICE TO SURETY BOND CUSTOMERS REGARDING THE TERRORISM RISK INSURANCE ACT OF 2002

As a surety bond customer of one of the SAFECO insurance companies (SAFECO Insurance Company of America, General Insurance Company of Americas, First National Insurance Company, American States Insurance Company or American Economy Insurance Company), it is our duty to notify you that the Terrorism Risk Insurance Act of 2002 extends to "surety insurance". This means that under certain circumstances, we may be eligible for reimbursement of certain surety bond losses by the United States government under a formula established by this Act.

Under this formula, the United States government pays 90% of losses caused by certified acts of terrorism that exceed a statutorily established deductible to be paid by the insurance company providing the bond. The Act also establishes a $100 billion cap for the total of all losses to be paid by all insurers for certified acts of terrorism. Losses on some or all of your bonds may be subject to this cap.

This notice does not modify any of the existing terms and conditions of this bond, the underlying agreement guaranteed by this bond, any statutes governing the terms of this bond, or any generally applicable rules of law.

At this time, there is no premium charge resulting from this Act.

270 Peachtree Street NW
Atlanta, Georgia 30303-1205
Tel 404.506.6526

SOUTHERN COMPANY
Energy to Serve Your World℠

November 5, 2001

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King, Jr. Dr., SW
Room 400
Atlanta, Georgia 30334

RE: Performance Bond for Water Well Contractors and Drillers - 4993104

Dear Mr. McCook:

Enclosed is the original signed copy of the captioned bond effective through June 30, 2003. Please call if you have any questions or need further information.

Annie Jackson
Risk Management Associate

/aj

Enclosure

cc: Alan Garrard

\\GAXGPFS02\ANLJACKS$\Data\WORD\Dean\GPC Water Well Bond.doc

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

AND DRILLERS Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER _____

KNOW ALL MEN BY THESE PRESENTS,

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2003

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 30th day of October, 2001.

SOUTHERN COMPANY SERVICES, INC.
Principal, By: _____ (L.S.)
Title: SAM H. DABBS, JR.
ASSISTANT SECRETARY

Approved as to sufficiency and accepted:

Environmental Protection Division,

Department of Natural Resources

SAFECO INSURANCE COMPANY OF AMERICA
Surety, By: _____ (L.S.)
Sandra J. Mathis, Attorney-In-Fact

SAFECO

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA,** each a Washington corporation, does each hereby appoint

*****SANDRA S. CARTER; JUDY GAY CERA; GARY D. EKLUND; JUDY S. FLEMING; VIRGINIA B. MCMANUS; BARBARA S. MACARTHUR; SANDRA J. MATHIS; EDWARD L. MITCHELL; NANCY NIX; BARBARA THOMPSON; CYNTHIA I. RODOLPH; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 2nd day of February, 2001.

R A Pierson
R.A. PIERSON, SECRETARY

Boh A Dickey
BOH A. DICKEY, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R.A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA,** do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 30th day of October, 2001.

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

S-0974/SAEF 7/98

2/7/01 PDF

Southern Company Services, I
Bin 920
270 Peachtree Street NW
Atlanta, Georgia 30303
Tel 404.506 0701

SOUTHERN COMPANY
Energy to Serve Your World℠

July 24, 2000

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King, Jr. Dr., SW
Room 400
Atlanta, Georgia 30334

RE: Performance Bond for Water Well Contractors and Drillers - 4993104

Dear Mr. McCook:

Enclosed is the original signed copy of the captioned bond. Please call if you have any questions or need further information.

Annie Jackson
Risk Management Associate

/aj

Enclosure

cc: Alan Garrard

H:\Data\WORD\Dean\GPC Water Well Bond.doc

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

AND DRILLERS Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER _____

KNOW ALL MEN BY THESE PRESENTS,

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2001

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 11th day of July, 2000.

SOUTHERN COMPANY SERVICES, INC.
Principal, By: _____ (L.S.)
Title: SAM N. DABBS, JR.
ASSISTANT SECRETARY

Approved as to sufficiency and accepted:

_____
Environmental Protection Division,

Department of Natural Resources

SAFECO INSURANCE COMPANY OF AMERICA
Surety, By: _____ (L.S.)
Sandra J. Mathis, Attorney-In-Fact

SAFECO

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint

**********SANDRA S. CARTER; JUDY GAY CERA; GARY D. EKLUND; JUDY S. FLEMING; VIRGINIA B. MCMANUS; BARBARA S. MACARTHUR; SANDRA J. MATHIS; EDWARD L. MITCHELL; NANCY NIX; BARBARA THOMPSON; RONALD A. SANTANIELLO; Atlanta, Georgia**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 21 day of October , 1999 .

R A Pierson
R.A. PIERSON, SECRETARY

W. Randall Stoddard
W. RANDALL STODDARD, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R.A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 11th day of July , 2000 .

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

S-0974/SAEF 7/98

11/17/1999 PDF

270 Peachtree Street, NW.
Atlanta, Georgia 30303
Tel 770.393.0650

SOUTHERN COMPANY
Energy to Serve Your World℠

January 14, 1998

Mr. Tony McCook
Georgia Geologic Survey
19 Martin Luther King, Jr. Dr., SW
Room 400
Atlanta, Georgia 30334

RE: Performance Bond for Water Well Contractors and Drillers - 4993104

Dear Mr. McCook:

Enclosed is the original signed copy of the captioned bond. Please call if you have any questions or need further information.

Dean Jobko
Manager, International
Risk & Insurance

DJ/aj

Enclosure

perfbnd.doc

cc: Alan Garrard

Sandra J. Mathis
Senior Client Administrator

J&H Marsh & McLennan
191 Peachtree Street, N.E.
Suite 3400
Atlanta, GA 30303-1762
(404) 586-8378 Fax: (404) 586-8208
Sandra_Mathis@jh.com

J&H MARSH & McLENNAN

January 6, 1998

Mr. Dean Jobko
Southern Company Services, Inc.
270 Peachtree Street, N. W.
Suite 1900
Atlanta, Georgia 30303

Subject: Performance Bond For Water Well Contractors and Drillers - 4993104

Dear Dean:

Enclosed is the captioned renewal bond in the amount of **$10,000** with an expiration date of **June 30, 2000**, for your further handling.

Thank you and should you have questions, please let me know.

Sincerely,

Sandra

Sandra J. Mathis
Surety

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

BOND #4993104 AND DRILLERS

WATER WELL CONTRACTOR OR DRILLER

KNOW ALL MEN BY THESE PRESENTS.

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2000.

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and seals, this 6th day of January, 1998.

SOUTHERN COMPANY SERVICES, INC.
Principal, By: [signature] (L.S.)
Title: Financial VP, Chief Executive Officer + Treasurer

Approved as to sufficiency and accepted:

Environmental Protection Division,

Department of Natural Resources

SAFECO INSURANCE COMPANY OF AMERICA
Surety, By: Sandra J. Mathis (L.S.)
Sandra J. Mathis, Attorney-In-Fact

SAFECO®

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 4363

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint
C. A. DRIVER; SANDRA J. MATHIS; EDWARD L. MITCHELL; SANDRA S. CARTER; NICOLE ALLEN; CATHERINE M. LINDSAY; GLEN R. BAILEY; Atlanta, Georgia*******

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 17th day of January, 19 95.

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,
(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R. A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 6th day of January, 19 98.

Southern Company Services, Inc.
64 Perimeter Center East
Atlanta, Georgia 30346
Telephone (404) 393-0650

Southern Company Services
the southern electric system

June 23, 1994

Mr. Michael Laitta
State of Georgia - Environmental Protection Department
Room 400
19 Martin Luther King, Jr. Drive
Atlanta, GA 30334

RE: Southern Company Services, Inc.
Water Well Contractors & Drillers Performance Bond

Dear Mr. Laitta:

Please find enclosed a renewal of the captioned bond. If you have any questions or need further information, please call me at (404)668-3274. Thank you.

Sincerely,

Dean Jobko
Sr. Risk Management Analyst

DMB300

cc: Alan Garrard

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

BOND #4993104 AND DRILLERS

WATER WELL CONTRACTOR OR DRILLER _____

KNOW ALL MEN BY THESE PRESENTS.

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 1997.

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 19th day of May, 1994.

SOUTHERN COMPANY SERVICES, INC.
Principal, By: _____ (L.S.)
Title: Vice President & Secretary

Approved as to sufficiency and accepted:

_____
Environmental Protection Division,

Department of Natural Resources

SAFECO INSURANCE COMPANY OF AMERICA
Surety, By: _____
Sandra J. Mathis, Attorney-in-Fact

SAFECO®

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 4363

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint
*****C. A. DRIVER; DEANNA L. FULTON; SANDRA J. MATHIS; EDWARD L. MITCHELL, Atlanta, Georgia*****

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 26th day of October, 19 93.

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA**
and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,
(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R. A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 19th day of May, 19 94.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
Approved
Solid Waste Management Program
Approved By: Mark Wescott P.G. Digitally signed by Mark Wescott P.G. Date: 2026.06.01 09:10:20 -04'00'

ATTACHMENT A3

SURVEYOR'S CERTIFICATION

Wood PLC
Plant Bowen-Euharlee, Ga.
MONITORING WELL SURVEY DATA
March 23, 2021
DGA JOB # 6620-003-D1, C1399

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND	NAIL	TOP OF	TOP OF
			ELEVATION	IN CONCRETE	WELL PAD	CASING
GWC-8RR	1502857.71	2073501.74	698.96	699.33		701.92
GWC-8Z	1502827.67	2073526.15	698.68	699.03		702.09
GWC-6RZ	1502502.00	2072900.50	728.66	729.07		731.91
GWC-7Z	1502640.13	2073193.22	709.70	710.04		713.04
GWC-6	1502520.08	2072962.89	725.97		726.32	728.64
GWC-5	1502341.56	2072677.44	735.11		735.19	737.56
GWA-3A	1502374.48	2072061.21	728.68	728.79		731.68
GWA-4RZ	1502238.85	2072329.55	740.04	740.34		742.84
GWA-4	1502241.02	2072318.24	740.40		740.57	743.06
GWA-4R	1502246.31	2072317.15	740.65	740.82		743.23
GWA-50	1502154.80	2072442.13	728.74		728.84	731.21
GWA-50R	1502150.85	2072448.35	727.87		728.08	730.37
SPRING WELL	1506642.00	2075342.34	652.80			
GWC-25R	1506494.89	2075088.90	673.59		673.91	676.42
GWC-18R	1506301.39	2072929.47	718.97	719.2		721.76
GWC-18	1506306.70	2072929.28	718.92	719.12		721.88
GWA-39RZ	1502618.73	2071164.20	729.57	730.1		732.62
GWA-39Z	1502655.66	2071120.65	731.80	732.49		735.15
GWC-13RZ	1503926.70	2073517.44	681.71	682.09		684.60
GWC-13R	1503908.53	2073501.95	683.17		683.77	685.97
GWC-13	1503898.17	2073495.16	684.19		684.62	686.76
GWC-12	1503662.54	2073693.63	674.66		675	677.25
GWC-11R	1503395.25	2073828.03	675.98		675.6	677.73
GWC-11	1503390.40	2073829.95	675.04		675.45	677.83
GWC-10R	1503154.01	2074020.44	685.33		685.95	687.95
GWC-10	1503162.70	2074019.96	684.89		685.05	687.87
GWC-9	1503018.96	2073781.05	691.99		691.93	694.67
GWA-2R	1502615.38	2071965.52	732.66		732.26	734.83
GWA-2	1502640.55	2071935.13	731.48		731.56	733.89
GWA-1	1502842.29	2071724.15	738.86		738.99	741.76
GWA-40	1503195.09	2071299.94	728.93	728.97		731.77
GWA-41R	1503527.39	2071050.84	737.95	740.13		743.08
GWA-41	1503519.02	2071046.18	738.91	739.32		742.35
GWA-42	1503823.34	2071049.95	734.45	735.11		738.05
GWA-43R	1504117.39	2070973.14	707.80	708.14		711.19
GWA-43	1504129.20	2070982.44	707.61	707.93		710.94
GWC-44	1504436.66	2071414.30	710.15	710.13		712.89

GWC-45	1504539.38	2071956.71	698.41	698.8		701.53
GWC-45R	1504538.68	2071945.39	699.00	399.6		702.02
GWC-46R	1504522.23	2072184.47	687.94	688.18		690.49
GWC-47R	1504539.25	2072467.10	687.71	687.96		691.13
GWC-47	1504543.69	2072481.34	687.44	687.7		690.86
GWC-48	1504490.63	2072851.71	686.20	686.31		688.33
GWC-49Z	1504238.30	2072896.49	706.12	706.48		709.11
GWC-49R	1504246.02	2072918.76	706.24	706.39		709.56
GWC-15R	1503936.17	2072919.39	693.39		693.72	696.13
GWC-15	1503943.59	2072927.52	692.75		693.2	695.19
GWC-15Z	1503952.26	2072918.71	693.28	693.43		695.92
GWC-14Z	1504060.77	2073193.66	684.34	684.63		687.28
GWC-14	1504059.92	2073205.96	684.04		684.16	686.81
GWA-36R	1505051.72	2073384.47	681.41	681.39		684.16
GWA-36	1505057.77	2073384.03	681.89	681.94		684.50
GWA-37	1505345.45	2073069.32	700.44	701.08		703.72
GWA-38	1505501.33	2072831.77	713.32	713.6		716.24
GWC-24R	1506694.13	2074806.11	673.76	673.94		676.57
GWC-16R	1505877.86	2072607.38	727.77	727.87		730.59
GWC-17R	1506069.29	2072829.29	730.02	730.29		733.37
GWC-19R	1506395.96	2073158.36	723.13	723.63		726.31
GWC-20R	1506602.14	2073486.53	717.63	717.88		720.59
GWC-21R	1506695.89	2073784.42	720.45	720.47		723.07
GWC-22R	1506717.93	2074105.65	712.54	712.84		715.41
GWC-23R	1506701.61	2074446.53	688.02	688.41		690.94
GWA-56	1506128.38	2074633.08	689.14	689.25		692.17
GWA-55R	1506041.22	2074517.62	693.28	693.75		696.53
GWA-55	1506034.69	2074507.04	693.43	693.9		696.72
GWA-54	1505853.39	2074286.28	701.23	701.3		704.23
GWA-53	1505695.52	2074038.90	707.61	707.95		710.99
GWA-53R	1505689.06	2074032.00	708.38	708.45		711.58
GWA-52	1505459.85	2073876.00	706.56	706.78		709.77
GWA-51RZ	1505310.36	2073781.34	705.81	705.89		708.58
COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD 83.						
ELEVATIONS ARE BASED ON NAVD 88.						

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

Wood PLC
Plant Bowen-Euharlee, Ga.
MONITORING WELL SURVEY DATA
July 7, 2021
DGA JOB # 6620-003-D1, C1399

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND ELEVATION	NAIL IN CONCRETE	TOP OF WELL PAD	TOP OF CASING
GWA-36RA	1505060.13	2073365.45	682.26	682.50	n/a	685.20
COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD 83.						
ELEVATIONS ARE BASED ON NAVD 88 DATUM.						

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

Wood PLC
Plant Bowen-Euharlee, Ga.
MONITORING WELL SURVEY DATA
March 22, 2022
DGA JOB # 6620-003-D1, C1399

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND ELEVATION	NAIL IN CONCRETE	TOP OF WELL PAD	TOP OF CASING
GWA-36A	1505026.95	2073357.46	680.63	680.85	n/a	683.75
COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD 83.						
ELEVATIONS ARE BASED ON NAVD 88 DATUM.						

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

Metro Engineering & Surveying Co., Inc.
Plant Bowen-Euharlee, GA.
Monitoring Well Survey Data
June 13, 2023
MES Job No.: 15476

Well ID	Latitude	Longitude	Casing Northing	Casing Easting	Top of Casing Elevation (PVC)	Nail on Pad Northing	Nail on Pad Easting	Nail on Pad Elevation	Ground Elevation (Rebar)
GWC26	N34.138443	W84.897943	1506231.7	2075314.3	676.28	1506231.0	2075314.1	673.28	673.15
GWC27	N34.137919	W84.897363	1506039.7	2075488.4	675.85	1506039.0	2075487.8	673.20	673.21
GWC27R	N34.137872	W84.897296	1506022.3	2075508.5	676.17	1506021.4	2075507.9	673.13	673.29
GWC28	N34.137270	W84.896520	1505801.7	2075741.9	675.30	1505801.1	2075741.4	672.89	672.82
GWC29	N34.136471	W84.896086	1505509.8	2075871.2	679.29	1505509.2	2075871.4	676.33	676.13
GWC29R	N34.136405	W84.896094	1505485.9	2075868.3	679.12	1505485.0	2075868.5	676.34	676.22
GWC30	N34.135636	W84.896143	1505206.2	2075851.5	685.00	1505205.9	2075852.4	682.20	681.86
GWC31	N34.134870	W84.896251	1504927.6	2075816.9	683.13	1504927.5	2075817.5	680.34	680.20
GWC31R	N34.134941	W84.896243	1504953.4	2075819.5	683.09	1504953.0	2075820.5	680.22	680.18
GWC32	N34.133989	W84.896452	1504607.5	2075753.7	692.18	1504606.3	2075753.8	689.20	688.93
GWA33	N34.133244	W84.898594	1504341.0	2075103.7	675.48	1504341.8	2075104.0	672.75	672.57
GWA33R	N34.133252	W84.898678	1504344.0	2075078.2	675.20	1504345.1	2075078.4	672.21	672.13
GWA34	N34.133357	W84.900917	1504387.1	2074401.0	673.25	1504388.0	2074401.3	670.57	670.19
GWA34R	N34.133387	W84.900992	1504398.3	2074378.3	672.95	1504399.0	2074378.3	670.46	670.24
GWA35	N34.134194	W84.902100	1504694.2	2074045.1	696.66	1504694.6	2074044.7	693.79	693.83
GWA57	N34.133192	W84.899584	1504324.3	2074803.9	675.07	1504325.5	2074804.0	672.14	672.06

Benchmarks	Latitude	Longitude	Northing	Easting	Elevation	Description
GWC-24R	N34.139704	W84.899635	1506694.0	2074805.7	673.94	Nail on Pad
GWA-36RA	N34.135187	W84.904354	1505060.8	2073365.8	682.50	Nail on Pad

GWA-33, GWA-33R, GWA-34, GWA-34R, GWA-35 and GWA-57 well IDs were updated to GWC-33, GWC-33R, GWC-34, GWC-34R, GWC-35 and GWC-57

Survey Data Certification for Southern Company to determine the northing, easting and vertical elevation of the nail in the concrete pad & the top of the PVC well casing.

Date of field survey: June 7, 2023 thru June 9, 2023.

Field survey positional tolerence: 0.5 feet horizontal-NAD83(2011), 0.01 feet vertical-NAVD88.

Equipment used for horizontal location: Leica GS16 (Base Unit) and Leica GS18T (Rover Unit).

The vertical location of each well was established based upon level runs with a digital level loop from nails on concrete pads of existing wells established by others (GWC-24R Nail on pad elev.= 673.94 and GWA-36RA Nail on pad elev.=682.50) using a Leica DNA10 digital level.

GEORGIA POWER
PLANT BOWEN
MONITORING WELL SURVEY DATA
November 20, 2025
DGA JOB # 5568-011-D1, H119

WELL ID	NORTHING	EASTING	ELEVATIONS			
			GROUND	NAIL	TOP OF	TOP OF
			ELEVATION	IN CONCRETE	CASING	WELL PAD
GWC-25	1506432.72	2075063.86	673.69	673.83	676.52	
GWC-31S	1504948.63	2075780.69	680.33	n/a	683.01	680.51
GWC-58	1504081.03	2075608.12	670.36	670.71	673.28	

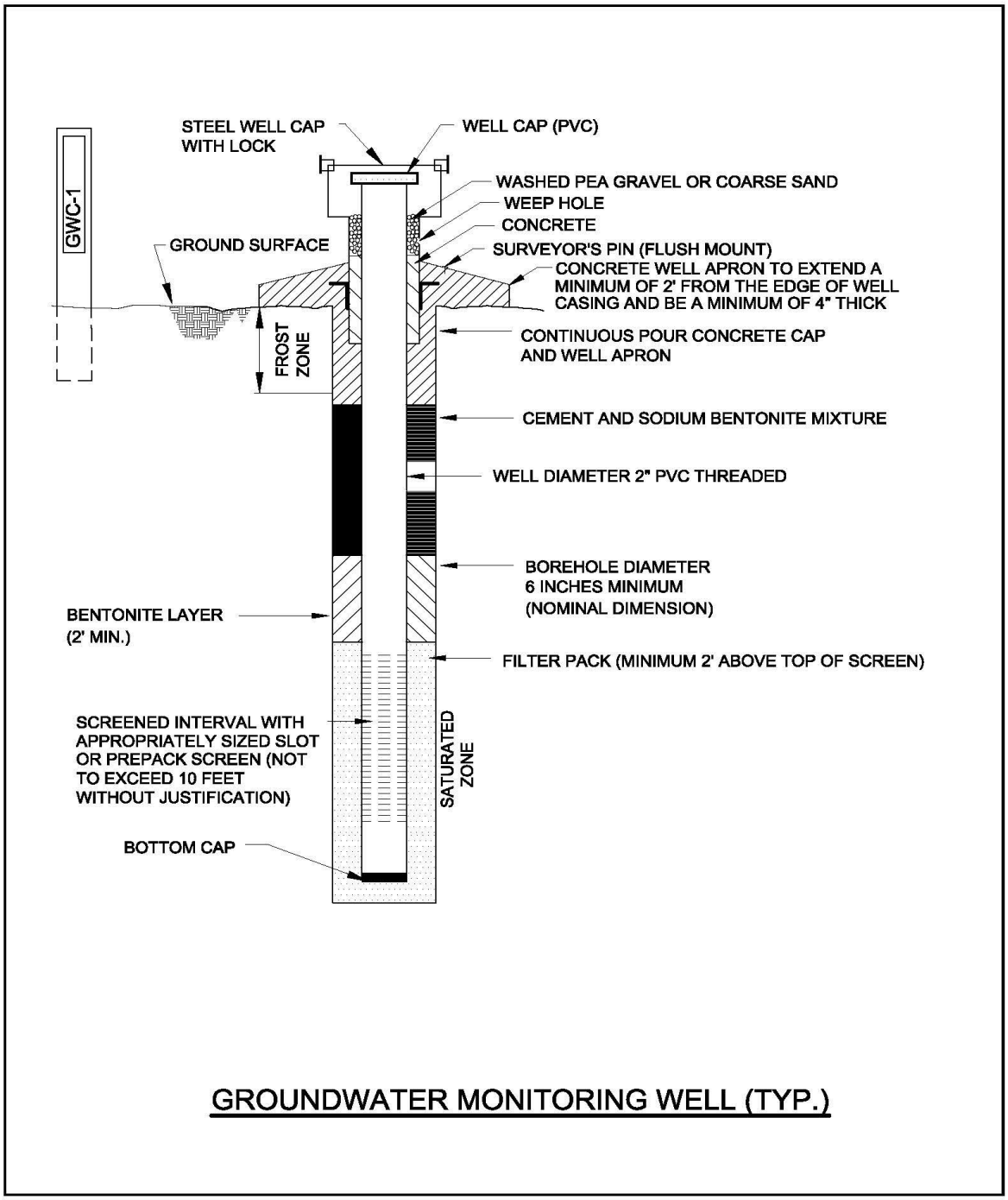
COORDINATES ARE GA STATE PLANE, WEST ZONE, NAD83.
ELEVATIONS ARE BASED ON MEAN SEA LEVEL, NAVD88.

Survey data shown below has a horizontal positional tolerance of +/-0.5 feet and a vertical positional tolerance of +/- 0.01 feet at the 95% level of confidence.
Equipment used to obtain horizontal and vertical coordinates was a CARLSON BRX7 GPS RECEIVER WITH A SOKKIA SHC6000 DATA COLLECTOR.
Benchmark used to establish vertical position was established from previously surveyed well GWC-25R(top of casing elev=676.42). Coordinates are reported in Ga state plane west zone U.S. survey feet. To convert to International feet, multiply by 1.000002.

B. GROUNDWATER MONITORING WELL DETAILS

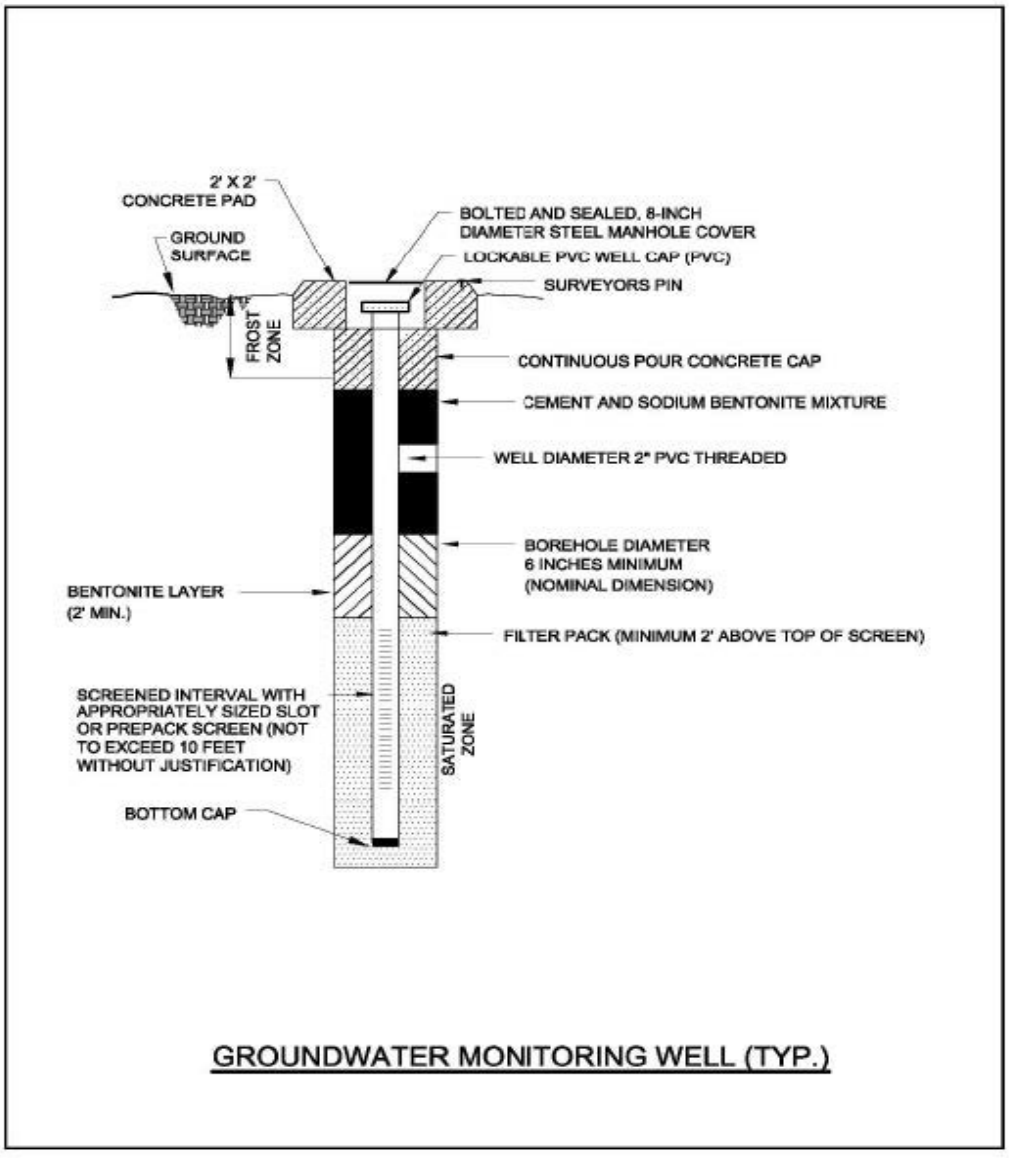
Attachment B1	Groundwater Monitoring Well Detail Post Type Surface Completion
Attachment B2	Groundwater Monitoring Well Detail Flush-Mount Surface Completion

B1. GROUNDWATER MONITORING WELL DETAIL POST TYPE SURFACE COMPLETION



GROUNDWATER MONITORING WELL (TYP.)

B2. GROUNDWATER MONITORING WELL DETAIL FLUSH-MOUNT SURFACE COMPLETION



GROUNDWATER MONITORING WELL (TYP.)

C. GROUNDWATER SAMPLING PROCEDURES

Groundwater sampling will be conducted using USEPA Region 4 Field Branches Quality System and Technical Procedures - Science and Ecosystem Support Division groundwater sampling procedure SESDPROC-301-R4 and updates as a guide. The following procedures describe the general methods associated with groundwater sampling at the Site. Prior to sampling, the well must be evacuated (purged) to make certain 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 or its contractor will follow the procedures below at each well to ensure that a representative sample is collected:

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify Georgia Power if it appears that the well has been compromised.

2. Measure and record the depth to water in all wells to be sampled prior to purging. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well. The water measuring device shall consist of a probe and measuring tape capable of measuring water levels with accuracy to 0.01 feet.

3. Install Pump: If a dedicated pump is not present, slowly lower the 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 (2) feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth of the pump intake once positioned. All non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Laboratory Services and Applied Science Division (LSASD) Operating Procedure for Field Equipment Cleaning and Decontamination (LSASDPROC-205-R4 June 22, 2020) and updates 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:

- pH ±0.1 Standard Units (S.U.)
- Specific Conductance ±5% (conductivity)
- DO ±10 percent or ±0.2 milligrams per liter (mg/L) (whichever is greater) for DO where DO > 0.5 mg/L. If DO < 0.5 mg/L no stabilization criteria apply.
- Turbidity measurements ≤ 5 nephelometric turbidity units (NTUs) or between 5 and 10 NTUs after 3 hours of purging.
- Temperature – Record only, not used for stabilization criteria
- ORP – Record only, not used for stabilization criteria.

7. Collect samples at a low-flow rate according to the most current version of USEPA Region 4 SESD guidance document, Operating Procedure – Groundwater Sampling (EPA, SESDPROC-301-R#), and such that drawdown of the water level within the well is stable. Flow rate must be reduced if excessive drawdown is observed during sampling. All sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.

8. Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results, duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45-micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity.

9. All sample bottles will be filled, capped, and placed in an ice containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.

10. Sample containers and preservative will be appropriate for the analytical method being used.

11. Information contained on sample container labels will include:

    a. Name of facility
    b. Date and time of sampling
    c. Sample description (well number)
    d. Sampler's initials
    e. Preservatives
    f. Analytical method(s)

12. After samples are collected, samplers will remove all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.

13. Samples will be delivered to the laboratory following appropriate chain-of-custody (COC) and temperature control requirements. The goal for sample delivery will be within 48 hours of collection; however, at no time will samples be analyzed after the method-prescribed hold time.

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

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

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

- If turbidity remains above 5 NTUs, but is less than 10 NTUs, and all other parameters are stabilized, the well can be sampled.

- Where turbidity remains above 10 NTUs, an unfiltered sample will be collected followed by a filtered sample that has passed through an in-line 0.45-micron filter attached to the discharge (sample collection) tube. Data from filtered samples will only be used to quantify the effects of turbidity on sample results.

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

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

D. SURFACE WATER SAMPLING AND ANALYSIS PROCEDURES

Surface water samples will be collected in accordance with the general procedures outlined below if flowing water is observed at each sampling location. These procedures were developed using field sampling guidelines described in the USEPA Region 4 Laboratory Services and Applied Science Division (LSASD) Operating Procedure for Surface Water Sampling (LSASDPROC-201-R5) and updates.

A small spring at the northeastern edge of Cells 3 & 4 will be monitored for the same parameters and at the same frequency as groundwater. The spring may not discharge water during the drier times of the year. When water is flowing from the spring, it will be sampled. The spring water samples will be analyzed for the same parameters using the same analytical methods as the groundwater samples listed in **Tables 2 and 3** of this plan. The minimum sampling frequency for surface water will be semi-annual; provided water is flowing from the spring.

Surface water samples will be collected from the flowing water of the spring and not from ponded water collected on the ground surface. If a dipper or other transfer vessel other than the sample container is used, it must be composed of a non-porous inert material such as glass, PVC, polyethylene, or stainless steel and decontaminated before use. The following procedures will be used to collect surface water samples:

a. Hold the bottle near the base of the flow with one hand, and with the other, remove the cap.

b. Rinse the sample container with the water to be sampled prior to filling the container, unless the sample containers are pre-preserved. Pre-preserved sample containers should not be rinsed prior to sampling.

c. Hold the container partially submerged within the stream flow and allow the container to be filled with water. Remove the container from the flow and place the cap back on the container.

d. Label the sample container, at a minimum, to include: Sample Number, Name of Collector, Date and Time of Collection, and Place/Point of Collection.

e. Place the samples in a cooler containing ice, if required, for courier or hand delivery to the laboratory within the sample hold times.

f. Follow COC and temperature protocols.