

GROUNDWATER MONITORING PLAN

PLANT HAMMOND – HUFFAKER ROAD LANDFILL
FLOYD COUNTY, GEORGIA

FOR



Georgia
Power

NOVEMBER 2025

Geosyntec 
consultants

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I. CERTIFICATION

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

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

Signature: 

Date: November 19, 2025



Signature: 

Date: November 19, 2025



1. INTRODUCTION

Groundwater monitoring is required by the Georgia Environmental Protection Division (EPD) to detect and quantify potential changes in groundwater chemistry. This Groundwater Monitoring Plan (plan) describes the groundwater monitoring program for the Huffaker Road Landfill (Landfill) at Georgia Power Company's (Georgia Power's) Plant Hammond. This plan meets the requirements of EPD rules and uses EPD's *Manual for Ground Water Monitoring* dated September 1991 as a guide. Groundwater monitoring well locations are presented on **Figure A-1 of Appendix A** and well construction details in **Table A-1** of Appendix A.

The Landfill is located on Georgia Power-owned property located approximately five miles northeast of Plant Hammond and consists of parcels A, B, C, D, E, and F. Parcels A, B, and E were built between 2005 and 2007 over a closed surface clay mine, previously owned by Boral Bricks, Inc.; Parcels C, D, and F are proposed as areas for future lateral expansion. Parcels A, B, C, D and E were approved for disposal in 2006 per EPD solid waste permit #057-022D (LI), with disposal operations commencing on May 5, 2008. The Landfill currently receives coal combustion residual (CCR) waste excavated from Plant Hammond Ash Pond (AP-) 1 and AP-2 as part of the closure of these former surface impoundments; the Landfill will also receive CCR from the closure by removal of AP-4, anticipated to begin in 2025. Georgia Power plans to close the Landfill in place and will install a final cover system in accordance with the EPD regulations (391-3-4-.10[7]) regarding landfill closures.

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

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 active parcels (i.e., A, B, and E) has been installed and certified by a qualified professional engineer. The existing monitoring wells shown on **Figure A-1** were installed following the guidelines presented herein. Additionally, this plan documents the methods for future monitoring well installation and/or replacement, and procedures for well abandonment. As required by 391-3-4.10(6)(g), a minor modification will be submitted to the EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment must be directed by a Qualified Groundwater Scientist.

2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

The following section presents the geologic and hydrogeologic conditions for the Landfill as described in the *Plant Hammond Proposed Huffaker Road Coal Combustion By-Products Storage Facility Site Acceptability Report* (SAR) dated December 2002 (Southern Company Services (SCS), 2002) and the SAR Addendum prepared in support of the Parcel F lateral expansion (Stantec, 2023). For reference, the SARs are included in Section 2 of Part B of this permit application.

2.1 SITE GEOLOGY

The Landfill is located in the Valley and Ridge Physiographic Province of northwest Georgia which is characterized by Paleozoic sedimentary rocks that have been folded and faulted into the ridges and valleys that gave this region its name. The Landfill is located in the Floyd Shale member of the Judy Mountain syncline. The Floyd Shale is Mississippian in age and ranges from 200 to 1,200 feet thick in Floyd County. The unit is composed of clay and shale, transitioning to limestone at its base.

Boring logs presented in the SAR indicate sandy clayey silt and silty clay with rock fragments described as shale extending to depths of up to approximately 30 feet below ground surface. Underlying this material is a medium gray to dark gray and dark olive gray, heavily to moderately weathered shale. Rock cores collected at the Landfill are described as slightly weathered to unweathered, thinly bedded shale. Descriptions provided in the boring logs are representative of recorded observations on the Floyd Shale.

2.2 SITE HYDROGEOLOGY

The Landfill is underlain by a regional unconfined groundwater aquifer that occurs within the overburden and heavily to moderately weathered shale layers. Prior field investigations indicate groundwater flows predominantly through the weathered shale layer. Groundwater recharge is from infiltration of precipitation. Groundwater occurring in the bedrock below the Landfill is controlled by the degree of enhanced secondary permeability. In general, groundwater occurring in the bedrock is a result of water infiltrating through areas in the overburden and weathered shale where enhanced permeability exists. Review of the available boring logs does not identify a confined aquifer beneath the Landfill.

Groundwater flow direction in vicinity of Parcels A and B is generally to the southeast, and then south-southwest beneath Parcel E. A potentiometric surface map illustrating the flow directions is provided on **Figure A-2** in Appendix A, representing data recorded February 12, 2024, from the existing monitoring well network. Groundwater flow direction beneath the area proposed for Parcels C and D is generally south-southwest, as depicted on the potentiometric surface map (**Figure A-3**) derived from groundwater elevation data recorded September 17, 2003, from a series of temporary piezometers installed in support of the SAR (SCS, 2002). In vicinity of proposed Parcel F, the general groundwater flow direction is north-northwest from the Judy Mountain ridgeline towards Smith Creek, which serves as a hydraulic divide between the northern parcels and proposed Parcel F. The potentiometric surface map provided on **Figure A-4** represents data recorded February 27, 2024, collected from a series of temporary piezometers installed in support of the SAR Addendum (Stantec, 2023). A minor modification will be submitted to EPD following construction of Parcel F and installation of the associated detection monitoring wells that provides an updated potentiometric surface map and well construction details.

The average horizontal hydraulic conductivity for the heavily to moderately weathered shale layer is 8.74×10^{-5} cm/sec [0.248 feet per day (ft/day)], as computed from slug test data derived from five locations across Parcels A, B, C, D, and E (SCS, 2002). In vicinity of Parcel F, the geometric mean of the weathered shale is 9.83×10^{-5} cm/sec (0.279 ft/day) derived from slug test data recorded from seven locations (Stantec, 2023).

2.3 HYDRAULIC GRADIENT AND GROUNDWATER FLOW VELOCITY

The hydraulic gradient beneath the active parcels was calculated using the water level data presented on the potentiometric surface map (**Figure A-2**), and between existing well pairs located within each parcel area to account for the changing groundwater flow direction in each area. Well pair GWA-1/GWC-7 was used for Parcels A, B, and well pair GWC-9/GWC-20 used for Parcel E. Using the data recorded February 12, 2024, the calculated hydraulic gradient beneath Parcels A and B equals 0.021 feet per feet (ft/ft); the hydraulic gradient beneath Parcel E equals 0.016 ft/ft. Based on the September 17, 2003, data presented on **Figure A-3**, the hydraulic gradient beneath the area proposed for Parcels C and D using well pair HUF-02/HUF-13 equals 0.007 ft/ft. Similarly, the average hydraulic gradient beneath the area proposed for Parcel F, based on data recorded February 27, 2024 and presented on **Figure A-4**, equals 0.032 ft/ft.

The minimum, maximum, and average groundwater velocities were calculated using: the horizontal hydraulic conductivity (K_h) values derived from slug tests detailed in the SAR (SCS, 2002) and SAR Addendum (Stantec, 2023); the hydraulic gradient between each of the well pairs discussed above; and an estimated effective porosity of 0.20, based on interpreted values for weathered shale (Freeze/Cherry, 1979). Based on these parameters, Darcy's equation for flow velocity in a porous medium was used as follows:

$$V = \text{linear velocity} = \frac{K_h * i}{n_e}$$

where:

V = Groundwater flow velocity (ft/day)

K_h = Horizontal Hydraulic Conductivity (ft/day)

i = Horizontal hydraulic gradient (ft/ft)

h_1 and h_2 = Groundwater elevation at location 1 and 2

L = Distance between location 1 and 2

n_e = Effective porosity

The supporting hydraulic gradient calculations and groundwater flow velocity calculations are presented in **Table A-2**.

3. SELECTION OF WELL LOCATIONS

Groundwater monitoring wells were installed to monitor the uppermost occurrence of groundwater beneath Parcels A, B, and E. Locations were selected based on the footprint and geologic and hydrogeologic considerations of these parcels. Georgia Power follows the recommendation as stated in Chapter 2 of the *Manual for Groundwater Monitoring* (EPD, 1991) to establish well spacings based on site-specific conditions. A map depicting the current monitoring well network for Parcels A, B, and E is included in Appendix A, Monitoring System Details (**Figure A-1**). A more detailed discussion of the hydrogeological investigation conducted in support of monitoring well placement is provided in the SAR (SCS, 2002).

The groundwater detection monitoring well network locations were chosen to monitor upgradient (GWA) and downgradient (GWC) conditions at constructed Parcels A, B, and E based on groundwater flow direction determined by potentiometric evaluation. The potentiometric surface map, **Figure A-2** in Appendix A, depicts the groundwater flow directions beneath the three constructed parcels, based on February 2024 conditions. Wells are positioned to provide adequate coverage to detect potential impacts from the CCR unit. Both upgradient and downgradient wells are screened in the weathered shale layer above bedrock.

Figure A-1 shows the proposed detection monitoring wells identified for unconstructed landfill Parcels C and D, and Parcel F that have not been installed. Following the installation of these detection monitoring wells, well installation reports documenting the actual well locations as well as construction details, well logs, and abandonment forms will be submitted to EPD.

Detection monitoring wells are generally located outside of areas with frequent auto traffic; however, wells may be installed in heavily trafficked areas when necessary to meet the groundwater monitoring objectives of the EPD rules. Appendix A includes **Table A-1** which provides a tabulated list of location coordinates for the individual detection monitoring wells currently installed at Parcels A, B, and E. Additional well construction details (i.e., top-of-casing elevation, well depths, and screened intervals) are also provided on this table. Well survey data certified by a Georgia-registered professional surveyor are included in Appendix A. The approximate locations of the proposed wells for Parcels C, D, and F are also included on Table A-1.

4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

The detection monitoring well network associated with Parcels A, B, and E are already in place. The existing monitoring wells were installed in general accordance with the EPD *Manual for Groundwater Monitoring* (EPD, 1991) guidance document available at that time. The monitoring wells were installed by SCS in 2001, 2006, and 2007; the boring and well construction logs associated with these field efforts are provided in Appendix A. Additional monitoring wells for **Parcel A, B and E**, if necessary, and the wells proposed for Parcels C, D, and F, will be installed in accordance with USEPA Region 4 Science and Ecosystem Support Division (SESD) *Guidance for the Design and Installation of Monitoring Wells* (USEPA, SESDGUID-101-R2) or latest version as a general guide for best practices.

4.1 DRILLING

A variety of well drilling methods are available for the purpose of installing groundwater monitoring wells. Drilling methodologies include but are not limited to: hollow stem augers, direct push, air rotary, mud rotary, and rotosonic techniques. The drilling method will be selected to minimize the disturbance of subsurface materials and not cause impacts to groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in the site-specific geology. Monitoring wells will be installed using the most current version of the USEPA SESD SESDGUID-101-R2 as a general guide for best practices. Also, drilling equipment will be decontaminated before use and between borehole locations using the procedures described in the most current version of USEPA LSASD's *Operating Procedure for Field Equipment Cleaning and Decontamination* (USEPA, LSASDPROC-205-R4). Well installation will be directed by a Qualified Groundwater Scientist.

Sampling and/or coring may be used to help determine the stratigraphy and geology at the well location. Samples and cores will be logged by a Qualified Groundwater Scientist. Screen depths will be chosen based on the target installation depth.

All drilling for any subsurface hydrologic investigation, or for installation or abandonment of groundwater monitoring wells, will be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council. Appendix A includes the performance bonds applicable to the wells and piezometers listed in **Table A-1**.

4.2 DESIGN AND CONSTRUCTION

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

WELL CASINGS AND SCREENS

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

WELL INTAKE DESIGN

Intake for groundwater monitoring wells will be designed and constructed to: (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 will not exceed 10 feet without justification as to why a longer screen is necessary (e.g., significant variation in groundwater level). If these specifications prove ineffective for developing a well with sufficient yield or acceptable turbidity, further steps will be taken to assure that the well screen is appropriately sized for the formation material. This may include performing sieve analysis of the formation material and determining well screen slot size based on the grain size distribution.

Pre-packed dual-wall well screens may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. If utilized, pre-packed well screens will be installed following general industry standards and using the current version of USEPA SESDGUID-101-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 boring and measurements taken to ensure that no bridging occurs. Upon placement of the filter pack, the well may be pumped to assure settlement of the pack. If pumping is performed, the top elevation of filter pack depth will be monitored, and additional sand added if necessary. The filter pack will extend a minimum of two feet above the top of the well screen.

The materials used to seal the annular space in the boring above the well pack must prevent hydraulic communication between strata and prevent migration from overlying areas into the well screen interval. A minimum of two feet of bentonite (chips, pellets, or slurry) will be placed immediately above the filter pack. The bentonite seal will extend up to the base of any overlying confining zone or the top of the water-bearing zone to prevent cementitious grout from entering the water-bearing or screened zones. 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 mix 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 two feet above the bentonite seal and injecting grout at low pressure/velocity.

PROTECTIVE CASING AND WELL COMPLETION

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

Each well will be fitted with a cap that contains a hole or opening to allow the air 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. For flush-mount surface completions, the outer lid of the protective vault will be bolted to the vault.

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

The groundwater monitoring well details attached in **Appendix B** illustrate the general design and construction details for a monitoring well, including the above-ground and flush-mount surface completion options.

WELL DEVELOPMENT

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

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

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

4.3 ABANDONMENT

Per Georgia Rule 391-3-4-.10(6)(g), monitoring wells require abandonment and replacement after two consecutive dry sampling events, unless an alternate schedule is approved by the EPD. Monitoring wells will be abandoned using industry-accepted practices and using the EPD *Manual for Groundwater Monitoring* (EPD, 1991) and Georgia's Well Water Standards Act of 1985 [Official Code of Georgia Annotated (O.C.G.A.) § 12-5-120, 1985] as guides. The wells will be abandoned under the direction of a Qualified Groundwater Scientist registered in Georgia. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole. A minor modification shall be submitted in accordance with Rule 391-3-4.02(3)(b)(6) prior to the installation or decommissioning of monitoring wells. Per the previously approved EPD solid waste permit, wells, piezometers, and borings located inside the proposed landfill footprint will be abandoned using the following procedure:

- Tremie cement/bentonite grout into the well casing and screened section from the bottom of the casing up to the top of the rock.
- Overdrill the well using either hollow stem augers, rotary bits, or a reaming device, such that the casing, grout, and seal are removed down to the top of rock.
- Tremie cement/bentonite grout into the overdrilled borehole from the bottom of the overdrilled section to 10 feet below the limit of excavation. Grout to the ground surface with bentonite grout.

4.4 DOCUMENTATION

Within 60 days of the construction, development, and survey, or abandonment of each new groundwater monitoring well completed under the direction of a Qualified Groundwater Scientist, a well installation/abandonment report will be submitted to the EPD. The following information will be documented in this 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 Standards Advisory Council
- Narrative of drilling technique applied, well construction details, and well development procedures, including dates, drilling fluids used (if applicable), well casing and screen materials, screen slot size, and joint type
- Details of filter pack material/size, emplacement method (narrative), and volume
- Seal emplacement method and type/volume of sealant
- Borehole diameter and well casing diameter
- Type of protective well cap and sump dimensions
- Surface seal and volumes/mix of annular seal material
- Screen length and interval reported in feet below ground surface and elevation
- Well location given to within an accuracy of 0.5 feet based upon survey from acceptable survey point datum by a Georgia-registered professional surveyor
- Well depth given to within an accuracy of 0.01 feet based upon survey from acceptable survey point datum by a Georgia-registered professional surveyor
- Lithologic logs

- Documentation that water quality field parameters meet well development criteria (Section 4.2)
- Completed calibration field forms for the water quality instrumentation used during well development activities
- Documentation of ground surface elevation (± 0.01 feet)
- Documentation of top of casing elevation (± 0.01 feet)
- Schematic of the well with dimensions for all components (e.g., casing, screen, sump, well pad)

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

5. MONITORING PARAMETERS AND FREQUENCY

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

Table 1, Groundwater and Underdrain Monitoring Parameters and Frequency, presents the groundwater and underdrain monitoring parameters and sampling frequency. A minimum of eight independent samples from each existing detection monitoring well were collected between March 2016 and March 2017 and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Once installed, a similar background sampling program will be implemented for proposed wells. Subsequently, in accordance with 391-3-4-10(6), the monitoring frequency for the Appendix III parameters will be at least semi-annually during the active life of the facility and the post-closure care period. If required, assessment monitoring will be performed per Georgia Chapter 391-3-4-10(6), Rules for Solid Waste Management.

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

As shown on **Table 2**, Analytical Methods, the groundwater and underdrain samples will be analyzed using methods specified in USEPA Manual SW-846, USEPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Conference (NELAC). Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (s.u.).

TABLE 1
GROUNDWATER and UNDERDRAIN MONITORING PARAMETERS and FREQUENCY

MONITORING PARAMETER		MONITORING EVENT	
		Background	Semi-Annual Events
Field Parameters	Temperature	X	X
	pH	X	X
	ORP	X	X
	Turbidity	X	X
	Specific Conductance	X	X
	Dissolved Oxygen	X	X
EPD-approved modified Appendix I (Detection)	Antimony	X	X
	Arsenic	X	X
	Barium	X	X
	Beryllium	X	X
	Cadmium	X	X
	Chromium	X	X
	Cobalt	X	X
	Copper	X	X
	Lead	X	X
	Nickel, Total	X	X
	Selenium	X	X
	Silver	X	X
	Thallium	X	X
	Vanadium	X	X
	Zinc	X	X
Appendix III (Detection)	Boron	X	X
	Calcium	X	X
	Chloride	X	X
	Fluoride	X	X
	pH	X	X
	Sulfate	X	X
	Total Dissolved Solids	X	X

Appendix IV (Assessment)	Antimony	X	Assessment sampling frequency and parameter list determined in accordance with Georgia Chapter 391-3-4.10(6).
	Arsenic	X	
	Barium	X	
	Beryllium	X	
	Cadmium	X	
	Chromium	X	
	Cobalt	X	
	Fluoride	X	
	Lead	X	
	Lithium	X	
	Mercury	X	
	Molybdenum	X	
	Selenium	X	
	Thallium	X	
	Radium 226 & 228	X	

TABLE 2
ANALYTICAL METHODS

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

6. SAMPLE COLLECTION

During each sampling event, samples will be collected and handled in accordance with the procedures specified in **Appendix C**, Groundwater Sampling Procedure and **Appendix D**, Underdrain Sampling Procedure. Sampling procedures were developed using standard industry practice and USEPA Region 4 *Field Branches Quality System and Technical Procedures* as a guide. Low-flow sampling methodology will be utilized for sample collection. Alternative USEPA accepted sampling techniques may be used when appropriate with prior EPD approval. The applied groundwater purging and sampling methodologies will be discussed in the groundwater semi-annual monitoring reports submitted to EPD.

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

For underdrain sampling (i.e., SWC-1, SWC-2, SWC-3 on Figure A-1), as noted in **Appendix D**, dedicated, non-dedicated, or disposable sampling equipment may be used.

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

7. CHAIN-OF-CUSTODY

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

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

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

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

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

8. FIELD QUALITY ASSURANCE / QUALITY CONTROL

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

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

Field Duplicates - Field duplicates are collected by filling additional containers at the same location, and the field duplicate is assigned a unique sample identification number. One blind field duplicate will be collected for every 10 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 10 samples.

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

Calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument. Daily calibration will be documented on field forms and these field forms will be included in all groundwater monitoring reports. Instruments will be recalibrated as necessary (e.g., when calibration checks indicate significant variability), and all checks and recalibration steps will be documented on field calibration forms. Calibration of the instruments will also be checked if any readings during sampling activities are suspect. Replacement probes and meters will be obtained as a corrective action in the event that recalibration does not improve instrument function. 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 EPD. Semi-annual groundwater monitoring reports will be submitted to the EPD within 90 days of receipt and analysis of the groundwater analytical data from the laboratory. At a minimum, semi-annual reports will include:

1. A narrative describing sampling activities and findings including a summary of the number of samples collected, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs.
2. A narrative of purging/sampling methodologies, which will include the type of sampling equipment used.
3. Discussion of results.
4. Recommendations for the future monitoring consistent with the Rules.
5. Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered P.G. or P.E.
6. Table of as-built information for groundwater monitoring wells including top of casing elevations, ground elevations, screened elevations, current groundwater elevations and depth to water measurements.
7. Groundwater flow rate and direction calculations.
8. Identification of any groundwater wells that were installed or abandoned during the preceding year, along with a narrative description of why these actions were taken.
9. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels).
10. If applicable, semi-annual assessment monitoring results.
11. Any alternate source demonstration completed during the reported monitoring period, if applicable.
12. Laboratory reports and associated data validation reports.
13. COC documentation.
14. Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data.

15. Field logs and forms will be kept for each sampling event, and will include the following, but not be limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.
16. Documentation of non-functioning wells and dry underdrain sampling locations.
17. Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL).
18. Statistical analyses.
19. Certification by a qualified groundwater scientist.
20. An iso-concentration map of each Appendix IV constituent identified at a statistically significant level (SSL) during the reporting period. Inclusion of the map(s) is only applicable for a unit currently undergoing assessment of corrective measures and/or corrective action.
21. Trend Charts (only applicable for a unit currently undergoing assessment of corrective measures and/or corrective action)
22. Updated potable water well survey, annually (if applicable based on exceedance of groundwater protection standards)

10. STATISTICAL ANALYSIS

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

According to EPD rules (391-3-4-.10(6)(a)), the Landfill must specify in the operating record the statistical methods to be used in evaluating groundwater monitoring data for each hazardous 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 tolerance or prediction limit. [§257.93(f)(3)].
2. A control chart approach that gives control limits for each constituent. [§257.93(f)(4)].
3. Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g) [§257.93(f)(5)]. A justification for an alternative method will be placed in the operating record and the Director notified of the use of an alternative test. The justification will demonstrate that the alternative method meets the performance standards of §257.93(g).

Based on site-specific conditions, the selected statistical methods include a combination of intrawell and interwell comparisons (i.e., the approved two-step statistical method). Intrawell methods use background data for individual wells and are sensitive to natural variation; therefore, statistically significant increases (SSIs) may occur as a result of natural variation rather than facility impacts. A second step is 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 is performed to determine whether the measurement exceeds the sitewide background limit. This two-step statistical method 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). 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. This statistical method is combined with a 1-of-2 resample plan, allowing for a collection of an independent resample to confirm or disconfirm the initial finding. A SSI is not declared unless the resample also exceeds the intrawell/interwell prediction limits. 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 Landfill's operating record pursuant to 391-3-4-.10(6). **Figure 1, Statistical Analysis Plan Overview**, includes a flowchart that depicts the process that will be followed to develop the site-specific plan. **Figure 2, Decision Logic for Determining Appropriate Statistical Method**, depicts the decision

logic used to determine the appropriate method as required by 391-3-4-.10(6). **Figure 3, Decision Logic for Computing Prediction Intervals**, presents the logic used to calculate site-specific statistical limits and test compliance results against those limits.

FIGURE 1. STATISTICAL ANALYSIS PLAN OVERVIEW

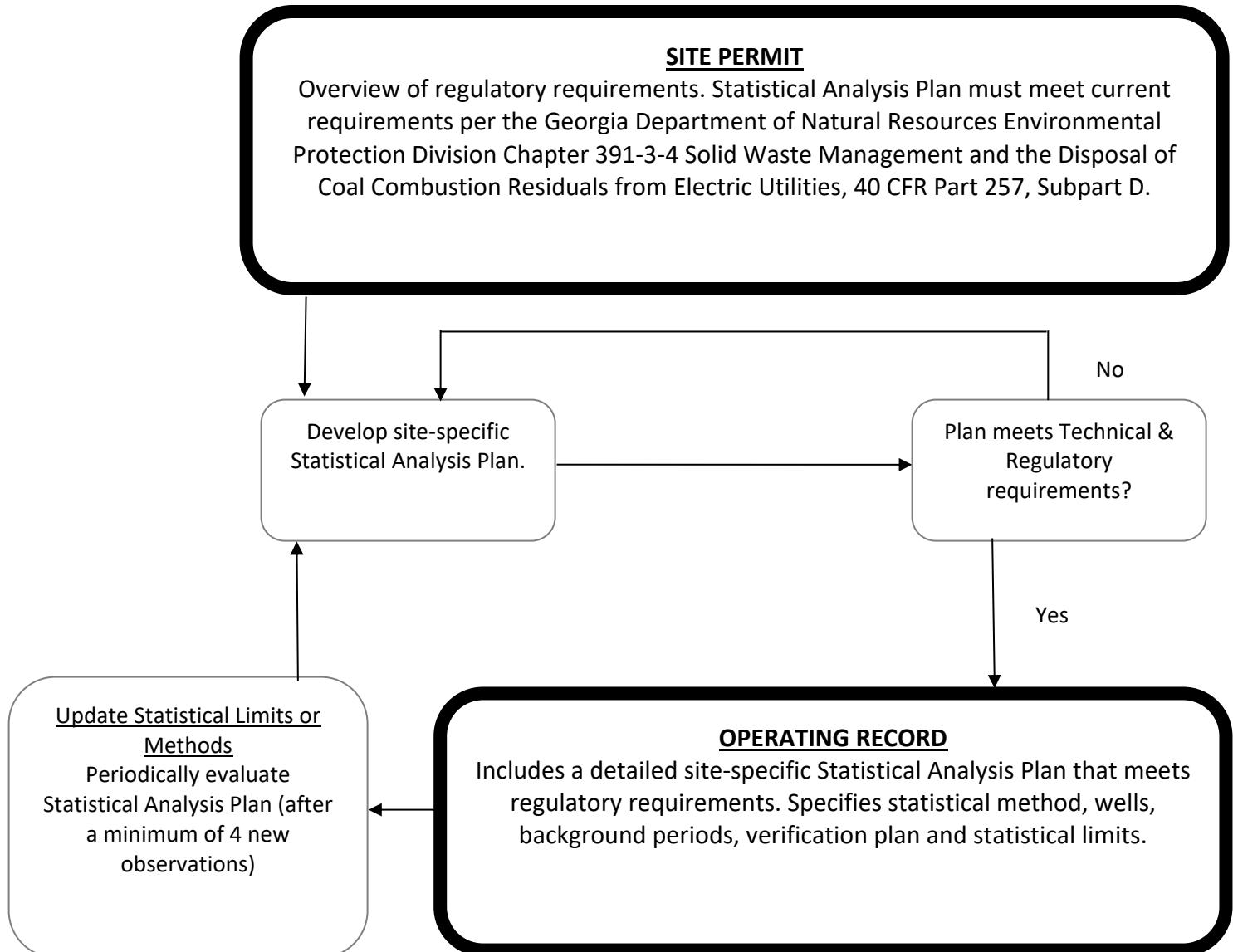


FIGURE 2. DECISION LOGIC FOR DETERMINING APPROPRIATE STATISTICAL METHOD

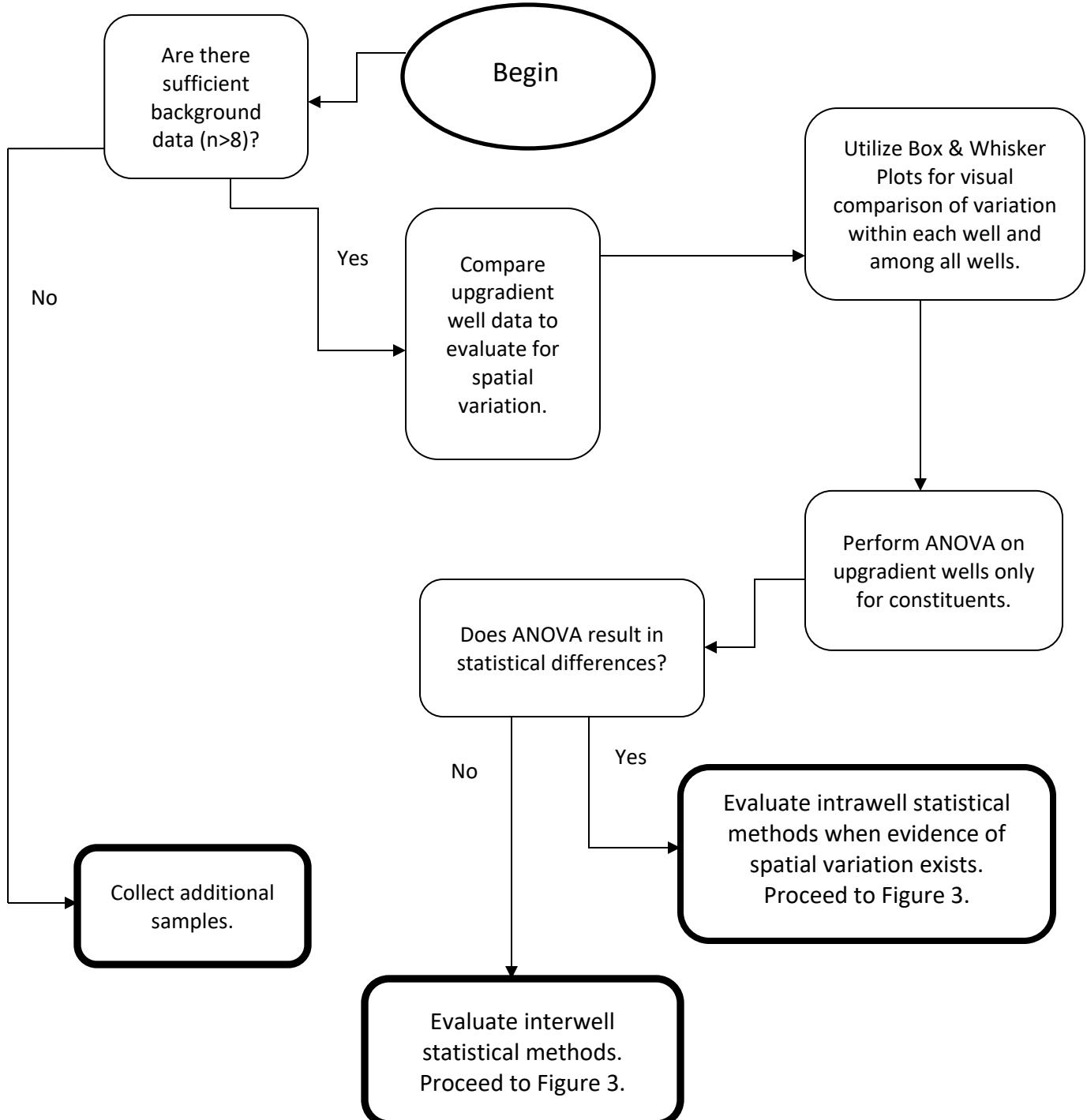
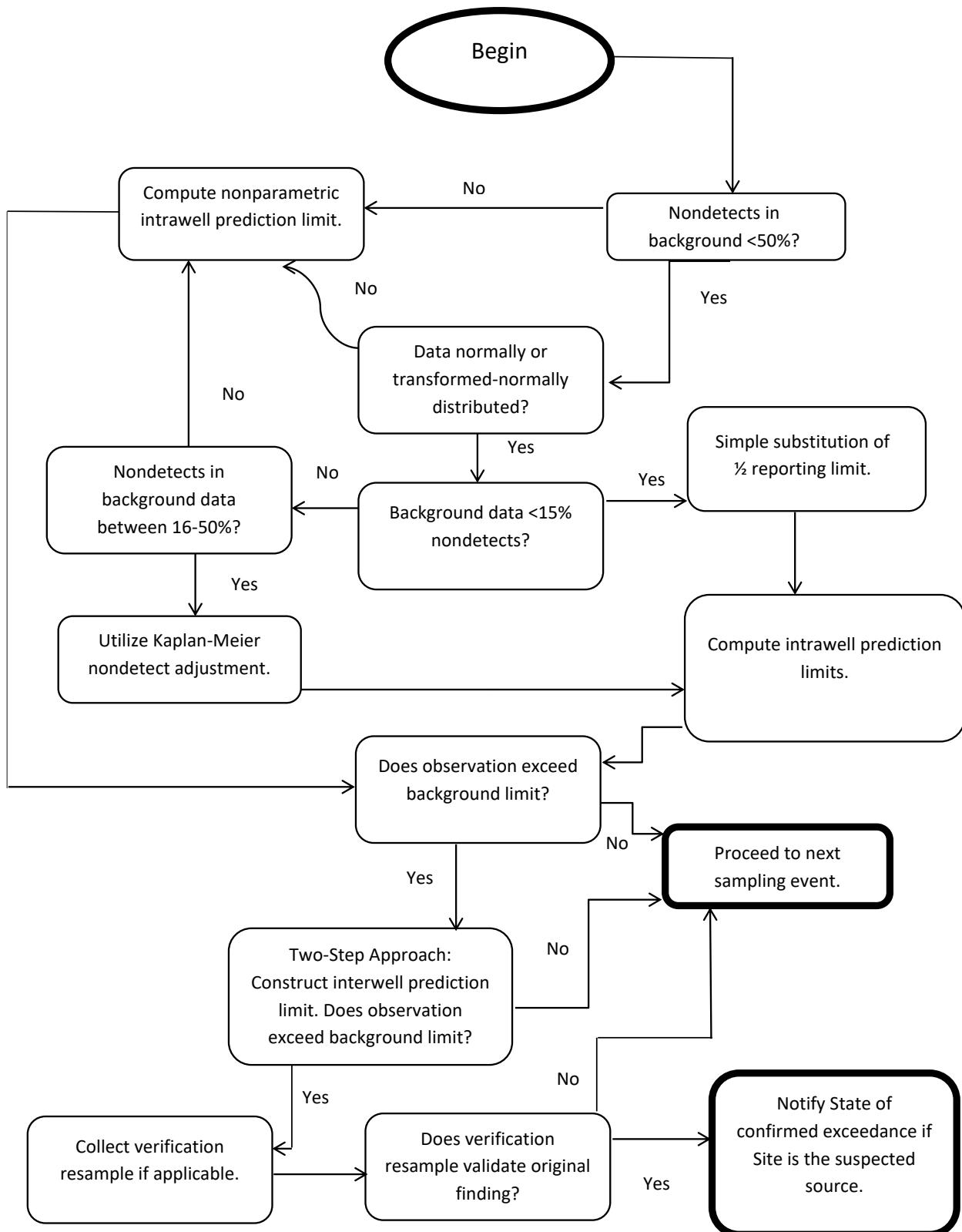


FIGURE 3. DECISION LOGIC FOR COMPUTING TOLERANCE OR PREDICTION INTERVALS



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APPENDIX

MONITORING SYSTEM DETAILS

GROUNDWATER MONITORING WELL DETAILS

GROUNDWATER SAMPLING PROCEDURE

UNDERDRAIN SAMPLING PROCEDURE

A. MONITORING SYSTEM DETAILS

FIGURE A-1 GROUNDWATER MONITORING NETWORK PLAN

FIGURE A-2 POTENIOMETRIC SURFACE CONTOUR MAP (PARCELS A, B, AND E) – FEBRUARY 2024

FIGURE A-3 POTENIOMETRIC SURFACE CONTOUR MAP – SEPTEMBER 2003

FIGURE A-4 POTENIOMETRIC SURFACE CONTOUR MAP (PROPOSED PARCEL F) – FEBRUARY 2024


TABLE A-1 **WELL NETWORK DETAILS**

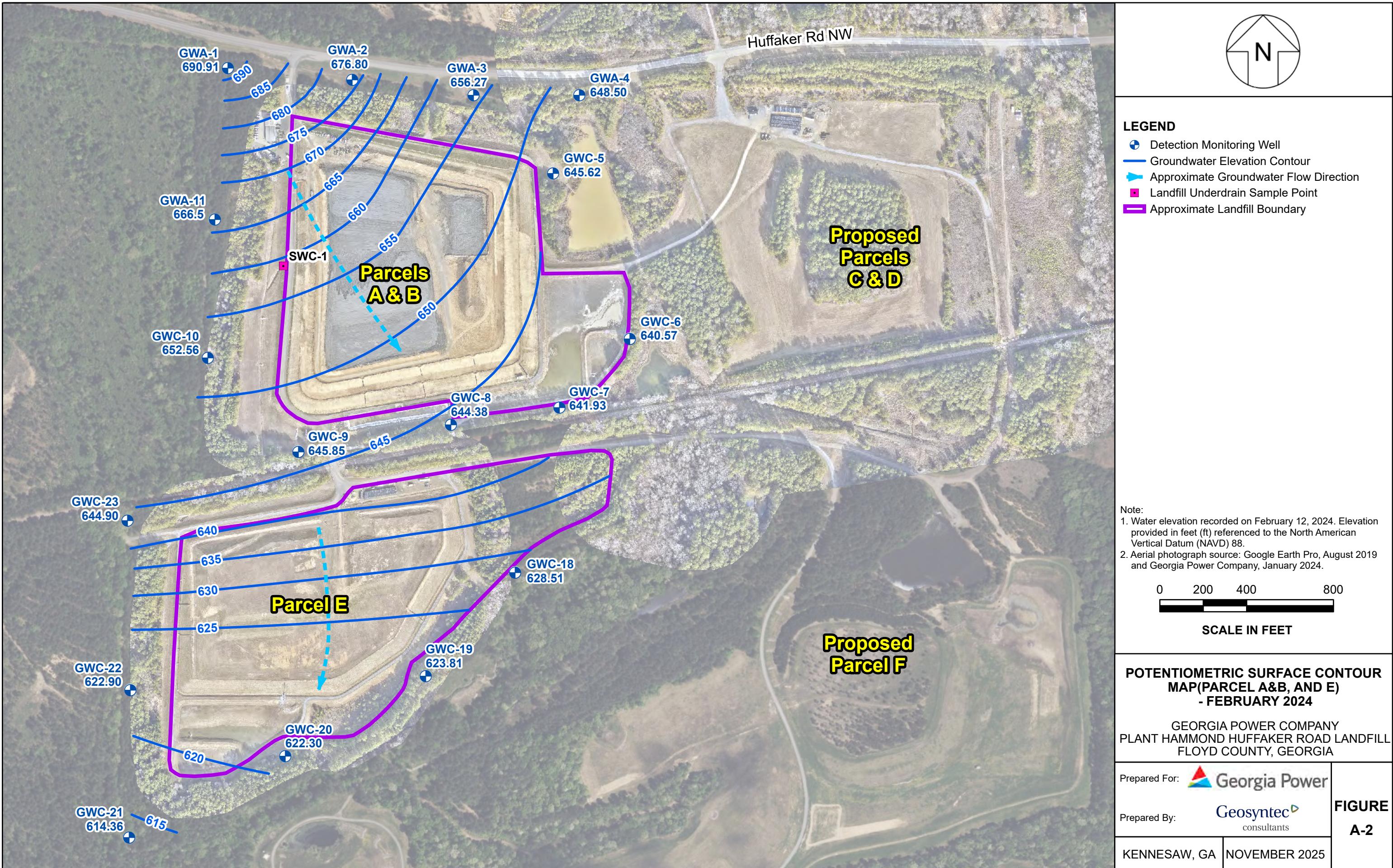
TABLE A-2 HORIZONTAL GROUNDWATER GRADIENT AND FLOW VELOCITY CALCULATIONS

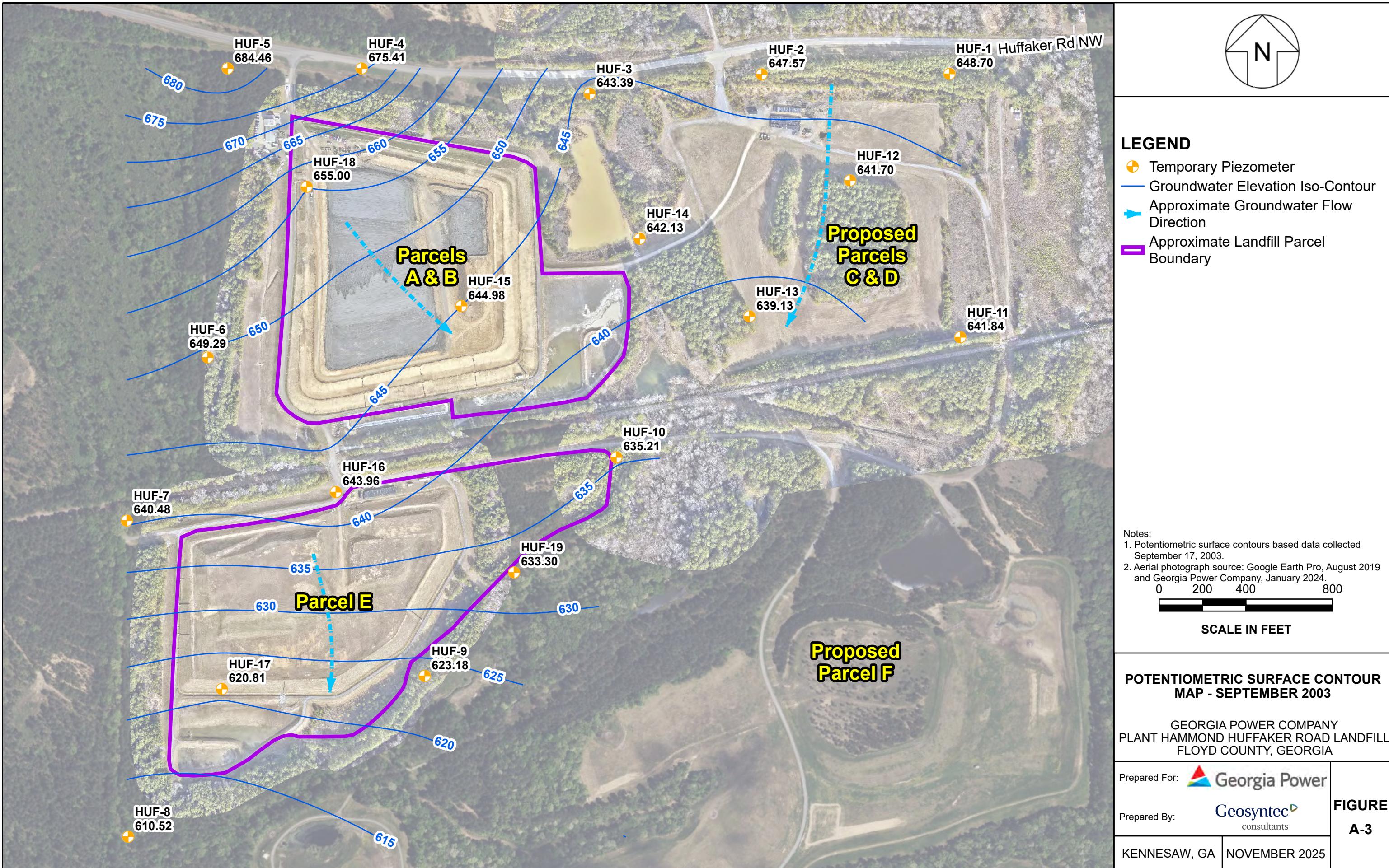
BORING AND WELL CONSTRUCTION LOGS

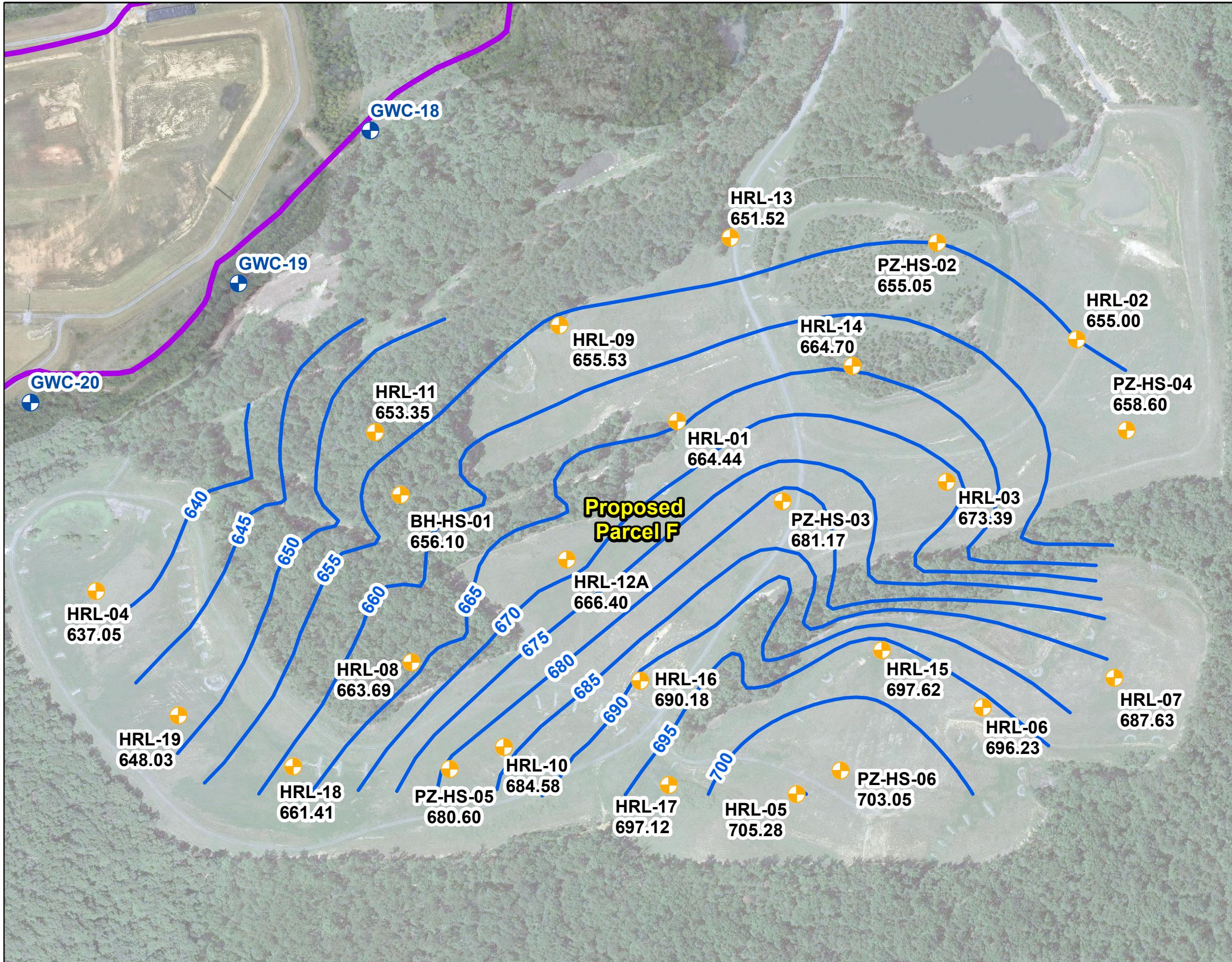
CERTIFIED WELL NETWORK SURVEY DATA

PERFORMANCE BOND FOR DRILLERS









TABLES

Table A-1
Well Network Details
Huffaker Road Landfill, Floyd County, Georgia

Well ID	Parcel	Installation Date	Northing ⁽¹⁾	Easting ⁽¹⁾	Ground Surface Elevation (ft) ⁽²⁾	Top of Casing Elevation (ft) ⁽²⁾	Top of Screen Elevation (ft) ⁽²⁾	Bottom of Screen Elevation (ft) ⁽²⁾	Well Depth ⁽³⁾ (ft BTOC)	Screened Media
Detection Monitoring Wells										
GWA-1	A/B	9/11/2001	1565643.81	1952067.94	698.65	701.96	672.96	662.96	39.30	Weathered shale
GWA-2	A/B	2/5/2007	1565590.06	1952640.89	679.04	681.59	666.08	656.08	25.81	Weathered shale
GWA-3	A/B	2/6/2007	1565520.24	1953199.93	656.35	659.24	648.45	638.45	21.09	Weathered shale
GWA-4	A/B	2/6/2007	1565519.87	1953687.10	653.98	656.93	645.84	635.84	21.39	Weathered shale
GWA-11	A/B	7/21/2006	1564946.55	1952008.03	679.57	682.36	656.76	646.76	35.90	Weathered shale
GWC-5	A/B	2/7/2007	1565159.15	1953566.67	646.44	649.42	638.31	628.31	21.41	Weathered shale
GWC-6	A/B	7/20/2006	1564397.56	1953919.86	653.86	656.35	624.07	614.07	42.58	Weathered shale
GWC-7	A/B	7/19/2006	1564079.14	1953595.85	654.28	657.20	635.59	625.59	31.91	Weathered shale
GWC-8	A/B	7/18/2006	1564000.62	1953095.72	653.96	656.64	639.81	629.81	27.13	Weathered shale
GWC-9	A/B	7/18/2006	1563876.81	1952392.97	657.15	659.46	617.85	607.85	51.91	Weathered shale
GWC-10	A/B	7/20/2006	1564308.39	1951975.66	664.08	667.58	643.90	633.90	33.98	Weathered shale
GWC-18	E	7/12/2006	1563320.44	1953391.49	638.45	641.31	594.59	584.59	57.02	Weathered shale
GWC-19	E	7/11/2006	1562843.12	1952979.72	640.37	642.89	595.91	585.91	57.51	Weathered shale
GWC-20	E	7/17/2006	1562472.78	1952332.31	623.09	625.76	601.88	591.88	34.18	Weathered shale
GWC-21	E	7/12/2006	1562099.56	1951612.93	614.26	618.33	610.65	600.65	18.23	Weathered shale
GWC-22	E	7/13/2006	1562778.89	1951618.67	621.82	625.00	593.39	583.39	41.91	Weathered shale
GWC-23	E	7/19/2006	1563558.66	1951604.97	652.12	654.84	615.41	605.41	49.73	Weathered shale
Proposed Monitoring Wells										
GWC-42	A/B	--	1564744.82	1953563.07	--	--	--	--	--	--
GWC-43	A/B	--	1563908.06	1952787.76	--	--	--	--	--	--
GWA-12	C/D	--	1565616.47	1954530.26	--	--	--	--	--	--
GWA-13	C/D	--	1565619.35	1955395.45	--	--	--	--	--	--
GWC-14	C/D	--	1565037.40	1955419.19	--	--	--	--	--	--
GWC-15	C/D	--	1564404.25	1955445.83	--	--	--	--	--	--
GWC-16	C/D	--	1564343.35	1955006.21	--	--	--	--	--	--

Table A-1
Well Network Details
Huffaker Road Landfill, Floyd County, Georgia

Well ID	Parcel	Installation Date	Northing ⁽¹⁾	Easting ⁽¹⁾	Ground Surface Elevation (ft) ⁽²⁾	Top of Casing Elevation (ft) ⁽²⁾	Top of Screen Elevation (ft) ⁽²⁾	Bottom of Screen Elevation (ft) ⁽²⁾	Well Depth ⁽³⁾ (ft BTOC)	Screened Media
GWC-17	C/D	--	1564218.85	1954376.71	--	--	--	--	--	--
GWC-45	C/D	--	1564279.72	1954695.74	--	--	--	--	--	--
GWC-46	C/D	--	1564232.56	1954254.66	--	--	--	--	--	--
GWC-47	C/D	--	1564613.00	1954075.41	--	--	--	--	--	--
GWC-48	C/D	--	1565117.15	1954126.83	--	--	--	--	--	--
GWC-44	E	--	1562597.80	1952722.70	--	--	--	--	--	--
GWC-21A	E	--	1562286.95	1951808.23	--	--	--	--	--	--
GWA-24	F	--	1561197.79	1955033.71	--	--	--	--	--	--
GWA-25	F	--	1561195.62	1954681.06	--	--	--	--	--	--
GWA-26	F	--	1561199.96	1954177.59	--	--	--	--	--	--
GWA-27	F	--	1561196.77	1953654.75	--	--	--	--	--	--
GWC-28	F	--	1561622.76	1953477.12	--	--	--	--	--	--
GWC-29	F	--	1562054.18	1953392.05	--	--	--	--	--	--
GWC-30	F	--	1562466.96	1953433.35	--	--	--	--	--	--
GWC-31	F	--	1562717.32	1953732.54	--	--	--	--	--	--
GWC-32	F	--	1562925.50	1954122.65	--	--	--	--	--	--
GWC-33	F	--	1563143.90	1954513.97	--	--	--	--	--	--
GWC-34	F	--	1563221.14	1954849.69	--	--	--	--	--	--
GWC-35	F	--	1563146.66	1955272.09	--	--	--	--	--	--
GWC-36	F	--	1563246.66	1955659.07	--	--	--	--	--	--
GWC-37	F	--	1562981.67	1955958.26	--	--	--	--	--	--
GWC-38	F	--	1562537.23	1955973.88	--	--	--	--	--	--
GWC-39	F	--	1562036.01	1955836.73	--	--	--	--	--	--
GWC-40	F	--	1561590.59	1955731.41	--	--	--	--	--	--
GWC-41	F		1561293.28	1955437.35	--	--	--	--	--	--

Notes:

ft = feet

ft BTOC = feet below top of casing

(1) Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet. Survey completed by GEL Solutions obtained June 26, 2020. The coordinates listed for the Proposed Monitoring Wells are estimated.

(2) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88). Survey completed by GEL Solutions obtained June 26, 2020.

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

Table A-2
 Horizontal Groundwater Gradient and Flow Velocity Calculations
 Huffaker Road Landfill, Floyd County, Georgia

Horizontal Hydraulic Gradient							
Landfill Parcels	Gauging Date	Well Pair	h_1 (ft)	h_2 (ft)	L (ft)	i (ft/ft)	Parcel F Average i (ft/ft)
A & B	2/12/2024	GWA-1 to GWC-7	690.91	641.93	2,300	0.021	
C & D	9/17/2003	HUF-02 to HUF-13	647.57	639.13	1,132	0.007	
E	2/12/2024	GWC-9 to GWC-20	645.85	622.30	1,450	0.016	
F	2/27/2024	PZ-HS-03 to HRL-02 HRL-05 to HRL-04 PZ-HS-03 to HRL-13 HRL-05 to HRL-12A	681.17 705.28 681.17 705.28	655.00 637.05 651.52 666.40	1,048 2,353 841 1,025	0.025 0.029 0.035 0.038	0.032

Minimum Groundwater Flow Velocity							
Landfill Parcels	Gauging Date	Well Pair	K_h (ft/day)⁽¹⁾	n_e	i (ft/ft)	V (ft/day)⁽²⁾	Parcel F Average V_{min} (ft/day)
A & B	2/12/2024	GWA-1 to GWC-7	0.011	0.20	0.021	1.17E-03	
C & D	9/17/2003	HUF-02 to HUF-13			0.007	4.10E-04	
E	2/12/2024	GWC-9 to GWC-20			0.016	8.93E-04	
F	2/27/2024	PZ-HS-03 to HRL-02 HRL-05 to HRL-04 PZ-HS-03 to HRL-13 HRL-05 to HRL-12A	0.042	0.20	0.025 0.029 0.035 0.038	5.24E-03 6.09E-03 7.40E-03 7.97E-03	0.007

Maximum Groundwater Flow Velocity							
Landfill Parcels	Gauging Date	Well Pair	K_h (ft/day)⁽¹⁾	n_e	i (ft/ft)	V (ft/day)⁽²⁾	Parcel F Average V_{max} (ft/day)
A & B	2/12/2024	GWA-1 to GWC-7	0.907	0.20	0.021	9.66E-02	
C & D	9/17/2003	HUF-02 to HUF-13			0.007	3.38E-02	
E	2/12/2024	GWC-9 to GWC-20			0.016	7.37E-02	
F	2/27/2024	PZ-HS-03 to HRL-02 HRL-05 to HRL-04 PZ-HS-03 to HRL-13 HRL-05 to HRL-12A	5.10	0.20	0.025 0.029 0.035 0.038	6.37E-01 7.39E-01 8.99E-01 9.67E-01	0.811

Average Groundwater Flow Velocity							
Landfill Parcels	Gauging Date	Well Pair	K_h (ft/day)⁽¹⁾	n_e	i (ft/ft)	V (ft/day)⁽²⁾	Parcel F Average V_{avg} (ft/day)
A & B	2/12/2024	GWA-1 to GWC-7	0.248	0.20	0.021	2.64E-02	
C & D	9/17/2003	HUF-02 to HUF-13			0.007	9.25E-03	
E	2/12/2024	GWC-9 to GWC-20			0.016	2.01E-02	
F	2/27/2024	PZ-HS-03 to HRL-02 HRL-05 to HRL-04 PZ-HS-03 to HRL-13 HRL-05 to HRL-12A	0.356	0.20	0.025 0.029 0.035 0.038	4.44E-02 5.16E-02 6.28E-02 6.75E-02	0.057

$i = h_1 - h_2 / L$ = horizontal hydraulic gradient

K_h = horizontal hydraulic conductivity

L = distance between location 1 and 2 along the flow path

n_e = effective porosity

V = groundwater flow velocity

(1) Source of the K_h values for: Parcels A, B, C, D, E (2002 Site Acceptability Report (SCS, 2002)); Proposed Parcel F (2023 Site Acceptability Report (Stantec, 2023)).

(2) Groundwater flow velocity equation: $V = [K_h * i] / n_e$

BORING AND WELL CONSTRUCTION LOGS

Log revised with current well ID and survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES						Hole No. GWA-1 (HUF-5)				
						Sheet 1 of 2				
SITE	Plant Hammond, Huffaker Road Landfill			HOLE DEPTH	35.9	SURF.ELEV. 698.65				
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	1565643.81	E 1952067.94				
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO. CME 550				
DRILLING METHOD	H S A		NO. SAMPLES	5	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 9/11/2001						
DRILLER	RECORDER	APPROVED	NA	DRILLING COMP. DATE 9/11/2001						
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD	
				From To	Blows	N				
0	698.65	Ground Surface								
1	697.65	NOTE: HUF-5 was installed in September 2001. No changes were made to the well, except the name, to become upgradient well GWA-1.	17-26.5							
2	696.65									
3	695.65									
4	694.65									
5	693.65									
6	692.65									
7	691.65									
8	690.65									
9	689.65									
10	688.65									
11	687.65									
12	686.65									
13	685.65									
14	684.65									
15	683.65									
16	682.65									
17	681.65			Soft, moderately weathered SHALE						
18	680.65									
19	679.65									
20	678.65									
21	677.65									
22	676.65									
23	675.65									
24	674.65									

Form GS9901 7-26-2004

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with current well ID and survey data dated 6/26/2020.

 DRILLING LOG GEOLOGICAL SERVICES				Hole No. GWA-1 (HUF-5)					
				Sheet 2 of 2					
SITE Plant Hammond, Huffaker Road Landfill				TOTAL DEPTH 35.9		SURF.ELEV. 698.65			
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
25	673.65	Soft weathered to unweathered SHALE	26.5-35.9						
26	672.65								
27	671.65								
28	670.65								
29	669.65								
30	668.65								
31	667.65								
32	666.65								
33	665.65								
34	664.65								
35	663.65								
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									

Log revised with current well ID and survey data dated 6/26/2020.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum Storage Facility LOCATION: Huffaker Rd. LOGGER: DATE CONSTRUCTED: 9/11/2001	DRILLING CO.: SCS DRILLER: RIG TYPE: CME 550 DRILLING METHODS: HSA/HQ rock core with water	WELL NAME GWA-1 (HUF-5)
		DEPTH FEET
		ELEVATION FEET
Hinged locking top 2" Threaded riser cap	TOP OF RISER	3.31
1/4-inch Weep Hole 6-ft DIA concrete pad	GROUND SURFACE	0.00
PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	BOTTOM OF PROTECTIVE CASING	
BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 6.1 cf		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
Well Development: Pump/surge until clear	TOP OF SEAL	19.00
ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: Unknown PLACEMENT: Tremie	TOP OF FILTER PACK	679.65
FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: Unknown PLACEMENT: Tremie; wash with water		676.65
	BOTTOM OF RISER / TOP OF SCREEN	25.69
SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"		672.96
	BOTTOM OF SCREEN	35.69
	BOTTOM OF CASING	35.99
	BOTTOM OF HOLE	36.52
HOLE DIA: 8"		

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWA-2			
							Sheet 1 of 1			
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	24	SURF.ELEV. 679.04			
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1565590.06	E 1952640.89			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550			
DRILLING METHOD	H S A		NO. SAMPLES	5	NO. U.D. SAMPLES	0				
CASING SIZE			LENGTH		CORE SIZE					
WATER TABLE DEPTH	13.5'		ELEV.		TIME AFTER COMP.					
TYPE GROUT	bentonite	QUANTITY		MIX		DRILLING START DATE	2/5/2007			
DRILLER	B. Filipovich	RECORDER	K. Hobbs	APPROVED	NA	DRILLING COMP. DATE	2/5/2007			
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test					
0	679.04	Ground Surface			From To	Blows	N	Comments	% Rec	RQD
1	678.04	Yellow orange SILT, moist, with mica		1	3.5-5.0	4-4-3	7			
2	677.04			2	8.5-10	1-5-15	20			
3	676.04			3	13.5-15	21-37-50	87			
4	675.04			4	18.5-20	50/3	R			
5	674.04			5	23.5-25	50/3	R			
6	673.04									
7	672.04									
8	671.04									
9	670.04									
10	669.04									
11	668.04									
12	667.04									
13	666.04									
14	665.04									
15	664.04									
16	663.04									
17	662.04									
18	661.04									
19	660.04									
20	659.04									
21	658.04									
22	657.04									
23	656.04									
24	655.04	Bottom of boring								

Log revised with survey data dated 6/26/2020.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Hobbs	DRILLING METHODS: H S A	GWA-2
DATE CONSTRUCTED: 2/5/2007 - 16:00		
Hinged locking top		DEPTH
2" Threaded riser cap		FEET
	TOP OF RISER	681.59
1/4-inch Weep Hole		
6-ft DIA concrete pad		
	1/4-inch vent	
	GROUND SURFACE	0.00
		679.04
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear		
	BACKFILL MATERIAL	
	TYPE: Portland Cement	
	VOLUME: 2.2 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush Threaded	
	TOP OF SEAL	9.80
		669.24
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 5 gallons	
	PLACEMENT: Tremie	
	TOP OF FILTER PACK	11.80
		667.24
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 8 bags; 50 lb bags	
	PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	12.96
		666.08
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	22.96
		656.08
	BOTTOM OF CASING	23.26
	BOTTOM OF HOLE	24.00
		(654.8)

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

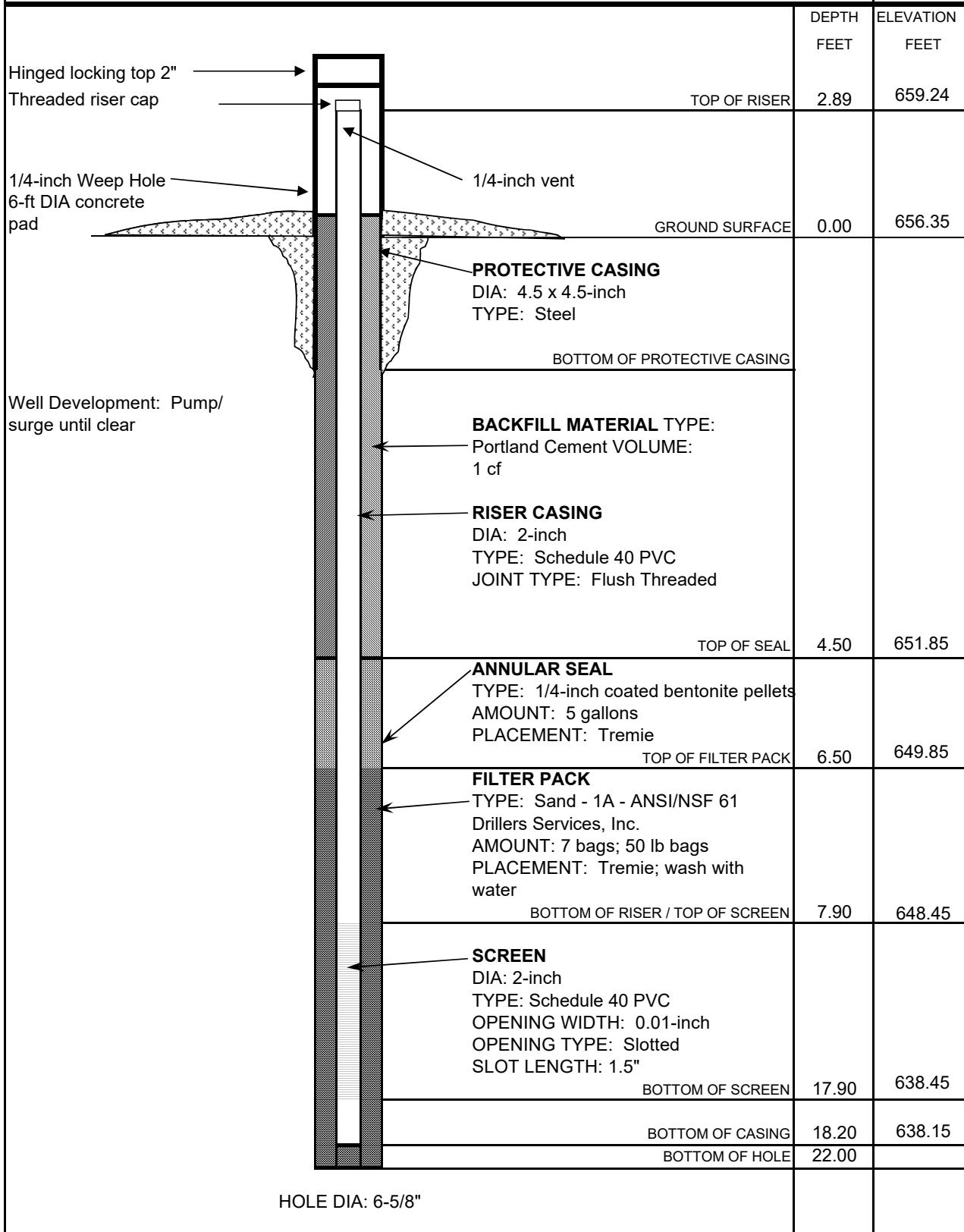
Log revised with survey data dated 6/26/2020.

 DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWA-3			
							Sheet 1 of 1			
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	22	SURF.ELEV. 656.35			
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1565520.24	E 1953199.93			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550			
DRILLING METHOD	H S A		NO. SAMPLES	4	NO. U.D. SAMPLES		0			
CASING SIZE			CORE SIZE		TOTAL % REC.					
WATER TABLE DEPTH	8.5'	ELEV.		TIME AFTER COMP.		DATE TAKEN				
TYPE GROUT		QUANTITY		MIX		DRILLING START DATE	2/6/2007			
DRILLER	B. Filipovich	RECORDER	K. Hobbs	APPROVED	NA	DRILLING COMP. DATE	2/6/2007			
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test					
					From To	Blows	N	Comments	% Rec	RQD
0	656.35	Ground Surface								
1	655.35									
2	654.35									
3	653.35									
4	652.35									
5	651.35	Dark gray SHALE, highly fractured, dry, with mica		1	3.5-5.0	13-21-31	52			
6	650.35									
7	649.35									
8	648.35	Dark gray SHALE, highly fractured, wet, with mica		2	8.5-10	20-50/5	R			
9	647.35									
10	646.35									
11	645.35									
12	644.35									
13	643.35									
14	642.35	Same as above		3	13.5-15	50/3	R			
15	641.35									
16	640.35									
17	639.35									
18	638.35									
19	637.35	Same as above		4	18.5-20	50/3	R			
20	636.35									
21	635.35									
22	635.35									
23		Bottom of boring								
24										

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Hobbs	DRILLING METHODS: H S A	GWA-3
DATE CONSTRUCTED: 2/6/2007 - 11:00		



Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES						Hole No.	GWA-4					
												Sheet 1 of 1
SITE	Plant Hammond, Huffaker Road Landfill					HOLE DEPTH	<u>22</u>	SURF.ELEV. <u>653.98</u>				
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	<u>1565519.87</u>	E	<u>1953687.10</u>					
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550					
DRILLING METHOD	H S A		NO. SAMPLES	<u>4</u>	NO. U.D. SAMPLES	0						
CASING SIZE	WATER	LENGTH	CORE SIZE		TOTAL % REC.							
TABLE DEPTH	TYPE	<u>7.8'</u>	ELEV.	TIME AFTER COMP.	DATE TAKEN							
GROUT	DRILLER	QUANTITY	MIX	NA	DRILLING START DATE	<u>2/6/2007</u>						
	B. Filipovich	RECORDER	K. Hobbs	APPROVED	NA	DRILLING COMP. DATE	<u>2/6/2007</u>					
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test			Comments	% Rec	RQD		
0	653.98	Ground Surface			From To	Blows	N					
1	652.98	Brown and orange weathered SHALE, flakey		1	3.5-5.0	5-13-33	46					
2	651.98											
3	650.98											
4	649.98											
5	648.98											
6	647.98											
7	646.98											
8	645.98											
9	644.98			Gray SHALE, crumbly, wet, fractured		2	8.5-10	31-50/5	R			
10	643.98											
11	642.98											
12	641.98											
13	640.98											
14	639.98											
15	638.98	Same as above		3	13.5-15	50/3	R					
16	637.98											
17	636.98											
18	635.98											
19	634.98											
20	633.98											
21	632.98											
22	631.98											
23		Bottom of boring										
24												

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Easting and Northing in NAD

1983. Elevations in NAVD 1988.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Hobbs	DRILLING METHODS: H S A	GWA-4
DATE CONSTRUCTED: 2/6/2007 - 17:00		
		DEPTH FEET
		ELEVATION FEET
Hinged locking top 2"		
Threaded riser cap	TOP OF RISER	2.95 656.93
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00 653.98
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/ surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 0.9 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	4.20 649.78
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	6.80 647.18
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 7 bags; 50 lb bags PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	8.14 645.84
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	18.14 635.84
	BOTTOM OF CASING	18.44 635.54
	BOTTOM OF HOLE	22.00
	HOLE DIA: 6-5/8"	

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWA-11		
							Sheet 1 of 2		
SITE	Plant Hammond's Huffaker Road Landfill					HOLE DEPTH	33.5	SURF.ELEV. 679.57	
LOCATION	~10 miles west of Rome, Georgia			COORDINATES	N 1564946.55	E	1952008.03		
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME550		
DRILLING METHOD	HSA/HQ Rock core with water			NO. SAMPLES	5	NO. U.D. SAMPLES	0		
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.	80%		
TABLE DEPTH	TYPE	18'	ELEV.	TIME AFTER COMP.	4 days	DATE TAKEN	7/24/2006		
GROUT	DRILLER		QUANTITY	MIX		DRILLING START DATE	7/20/2006		
		S. Milam	RECORDER	Grissom/Bearce	APPROVED	NA	DRILLING COMP. DATE	7/21/2006	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	679.57	Ground Surface							
1	678.57								
2	677.57								
3	676.57								
4	675.57								
5	674.57								
6	673.57	Dark yellowish brown silty CLAY, hard	1	4.5-6	15-17-22	39			
7	672.57								
8	671.57								
9	670.57								
10	669.57								
11	668.57	As above, very stiff	2	9.5-11	15-20-25	45			
12	667.57								
13	666.57								
14	665.57								
15	664.57								
16	663.57	Dark grey CLAY, hard, weathered shale one vertical joint through 1/2 of recovered core	3	14.5-16	16-22-31	53			
17	662.57								
18	661.57								
19	660.57								
20	659.57								
21	658.57								
22	657.57								
23	656.57								
24	655.57	Same as above	4	19.5-21	26-50/4	R			

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Easting and Northing in NAD

1983. Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-5			
							Sheet 1 of 1			
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	22	SURF.ELEV. 646.44			
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1565159.15	E 1953566.67			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550			
DRILLING METHOD	H S A		NO. SAMPLES	4	NO. U.D. SAMPLES 0					
CASING SIZE WATER			LENGTH		CORE SIZE	TOTAL % REC.				
TABLE DEPTH TYPE	8.5'		ELEV.		TIME AFTER COMP.	DATE TAKEN				
GROUT DRILLER			QUANTITY		MIX	DRILLING START DATE	2/7/2007			
	B. Filipovich	RECORDER	K. Hobbs	APPROVED	NA	DRILLING COMP. DATE	2/7/2007			
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test					
0	646.44	Ground Surface			From To	Blows	N	Comments	% Rec	RQD
1	645.44	Gray SHALE, crumbly, some mica flakes and rust staining		1	3.5-5.0	24-33-47	80			
2	644.44									
3	643.44									
4	642.44									
5	641.44									
6	640.44									
7	639.44									
8	638.44									
9	637.44									
10	636.44									
11	635.44									
12	634.44									
13	633.44									
14	632.44									
15	631.44	Same as above		3	13.5-15	42-50/4	R			
16	630.44									
17	629.44									
18	628.44									
19	627.44									
20	626.44	Same as above		4	18.5-20	50/3	R			
21	625.44									
22	624.44									
23		Bottom of boring								
24										

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Hobbs	DRILLING METHODS: H S A	GWC-5
DATE CONSTRUCTED: 2/7/2007 - 14:00		
		DEPTH FEET ELEVATION FEET
Hinged locking top 2"		2.98 649.42
Threaded riser cap	TOP OF RISER	
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00 646.44
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/ surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 1 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	4.50 641.94
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	6.50 639.94
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 7 bags; 50 lb bags PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	8.13 638.31
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	18.13 628.31
	BOTTOM OF CASING	18.43 628.01
	BOTTOM OF HOLE	22.00
	HOLE DIA: 6-5/8"	

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES						Hole No. GWC-6			
						Sheet 1 of 2			
SITE	Plant Hammond, Huffaker Road Landfill			HOLE DEPTH	40.2	SURF.ELEV. 653.86			
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	1564397.56	E 1953919.86			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO. CME 550			
DRILLING METHOD	HSA/HQ rock core with water			NO. SAMPLES	6	NO. U.D. SAMPLES 0			
CASING SIZE WATER				CORE SIZE		TOTAL % REC. 20%			
TABLE DEPTH TYPE				ELEV.	TIME AFTER COMP.	DATE TAKEN			
GROUT DRILLER				QUANTITY	MIX	DRILLING START DATE 7/19/2006			
			B. Filipovich RECORDER A.Grisson APPROVED	NA		DRILLING COMP. DATE 7/20/2006			
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test		Comments	% Rec	RQD
From To	Blows	N							
0 653.86	Ground Surface								
1 652.86									
2 651.86									
3 650.86									
4 649.86									
5 648.86	Light brown to gray, dry, slightly sandy CLAY with shale fragments			1	3.5-5	2-3-5	8		
6 647.86									
7 646.86									
8 645.86	Same as above			2	8.5-10	2-2-4	6		
9 644.86									
10 643.86									
11 642.86									
12 641.86									
13 640.86	Same as above			3	13.5-15	3-4-5	9		
14 639.86									
15 638.86									
16 637.86									
17 636.86									
18 635.86	Dark gray to black, highly weathered SHALE with iron staining			4	18.5-20	9-15-19	34		
19 634.86									
20 633.86									
21 632.86									
22 631.86									
23 630.86	Dark gray, wet, highly weathered SHALE with clay			5	23.5-25	11-19-28	47		
24 629.86									

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Easting and Northing in NAD 1983.

Elevation in NAVD 1988.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES					Hole No. GWC-6			
							Sheet 2 of 2			
SITE	Plant Hammond, Huffaker Road Landfill			TOTAL DEPTH		SURF.ELEV. 653.86				
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test			Comments	% Rec	RQD
From	To	Blows	N							
25	628.86									
26	627.86									
27	626.86									
28	625.86	Same as above		6	28.5-30	45-50/2	R			
29	624.86									
30	623.86									
31	622.86									
32	621.86	Auger refusal @ 32.0'								
33	620.86									
34	619.86									
35	618.86									
36	617.86									
37	616.86	Begin coring 34.2'								
38	615.86									
39	614.86	Dark gray to black weathered SHALE								
40	613.86									
41		Bottom of boring								
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										
53										
54										
55										
56										

Form GS9901 7-26-2004

Easting and Northing in NAD
1983. Elevations in NAVD 1988.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-6
DATE CONSTRUCTED: 7/20/06 - 9:00		
	DEPTH FEET	ELEVATION FEET
Hinged locking top 2"		
Threaded riser cap	TOP OF RISER	2.49 656.35
1/4-inch Weep Hole		
6-ft DIA concrete pad		
1/4-inch vent		
	GROUND SURFACE	0.00 653.86
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 5.5 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	25.00 628.86
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	27.00 626.86
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 2 1/4 bags; 50 lb bags PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	29.79 624.07
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	39.79 614.07
	BOTTOM OF CASING	40.09 613.77
	BOTTOM OF HOLE	40.20
HOLE DIA: 6-5/8"		

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-7			
							Sheet 1 of 2			
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	29.0'	SURF.ELEV.	654.28		
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1564079.14	E	1953595.85		
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550			
DRILLING METHOD	HSA/HQ Rock core with water				NO. SAMPLES	3	NO. U.D. SAMPLES	0		
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.	58%			
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		DATE TAKEN				
GROUT DRILLER		QUANTITY		MIX		DRILLING START DATE	7/18/2006			
	B. Filipovich	RECODER	A. Grissom	APPROVED	NA	DRILLING COMP. DATE	7/19/2006			
Depth	Elev.	Material Description, Classification and Remarks			Sample No.	Standard Penetration Test		Comments	% Rec	RQD
0	654.28	Ground Surface				From To	Blows	N		
1	653.28	Yellow to light brown, slightly sandy silty CLAY, dry			1	3.5'-5.0'	3-3-4	7		
2	652.28				2	8.5-10	2-2-4	6		
3	651.28				3	13.5-15	2-1-3	4		
4	650.28									
5	649.28									
6	648.28									
7	647.28									
8	646.28									
9	645.28									
10	644.28									
11	643.28									
12	642.28									
13	641.28									
14	640.28									
15	639.28									
16	638.28									
17	637.28									
18	636.28	Auger refusal @ 17.7'								
19	635.28	Begin coring @ 18.0'			18-19			1.0/0.3	33%	
20	634.28				19-24		5.0/4.0	80		
21	633.28									
22	632.28									
23	631.28									
24	630.28									

Form GS9901 7-26-2004

Easting and Northing in NAD

1983. Elevations in NAVD 1988.

Log revised with new survey data dated 6/26/2020.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES					Hole No. GWC-7		
							Sheet 2 of 2		
SITE <u>Plant Hammond, Huffaker Road Landfill</u>		TOTAL DEPTH <u>29.0</u>			SURF.ELEV. <u>654.28</u>				
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
25	629.28	Same as above		24-29			5.0/3.0	60	
26	628.28								
27	627.28								
28	626.28								
29	625.28								
30		Bottom of boring							
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: Filipovich	NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-7
DATE CONSTRUCTED: 7/19/06 - 9:00		
Hinged locking top 2"		DEPTH
Threaded riser cap		FEET
	TOP OF RISER	2.92
1/4-inch Weep Hole		ELEVATION
6-ft DIA concrete		FEET
pad		657.20
1/4-inch vent		
	GROUND SURFACE	0.00
		654.28
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/ surge until clear	BACKFILL MATERIAL TYPE:	
	Portland Cement VOLUME:	
	3.3 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush	
	Threaded	
	TOP OF SEAL	15.00
		639.28
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 5 gallons	
	PLACEMENT: Tremie	
	TOP OF FILTER PACK	17.40
		636.88
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 2 bags; 50 lb bags	
	PLACEMENT: Tremie; wash with	
	water	
	BOTTOM OF RISER / TOP OF SCREEN	18.69
		635.59
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	28.69
		625.59
	BOTTOM OF CASING	28.99
		625.29
	BOTTOM OF HOLE	29.00
	HOLE DIA: 6-5/8"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-8
							Sheet 1 of 1
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	24.8'	SURF.ELEV. 653.96
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1564000.62	E 1953095.72
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550
DRILLING METHOD	HSA/HQ Rock core with water			NO. SAMPLES	3	NO. U.D. SAMPLES	0
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.	98%
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		DATE TAKEN	
GROUT DRILLER		QUANTITY		MIX		DRILLING START DATE	7/18/2006
				APPROVED	NA	DRILLING COMP. DATE	7/18/2006
B. Filipovich	RECORDER	A. Grissom					
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test		
0	653.96	Ground Surface			From To	Blows	N
1	652.96			1	3.5-5	3-4-7	11
2	651.96			2	8.5-10	2-2-5	7
3	650.96			3	13.5-15	50/1	R
4	649.96	Dark brown silty CLAY, dry					
5	648.96						
6	647.96						
7	646.96	SAA with trace weathered shale					
8	645.96						
9	644.96						
10	643.96						
11	642.96						
12	641.96						
13	640.96	Dark brown to dark gray weathered SHALE with some clay					
14	639.96						
15	638.96						
16	637.96	Auger refusal @ 15.5'					
17	636.96	Begin coring 15.6'		15.6'-19.8'	4.2/4.0'	4.2/4.0	95
18	635.96						
19	634.96	Dark gray, hard SHALE with rust-stained fractures from 16.4-18.8					
20	633.96						
21	632.96						
22	631.96						
23	630.96						
24	629.96	Bottom of boring 24.8		19.8'-24.8'		5.0/5.0	100

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-8
DATE CONSTRUCTED: 7/18/06 - 16:00		
Hinged locking top 2"	TOP OF RISER	DEPTH FEET
Threaded riser cap	2.68	ELEVATION FEET
1/4-inch Weep Hole		656.64
6-ft DIA concrete pad		
1/4-inch vent		
GROUND SURFACE	0.00	653.96
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
	BACKFILL MATERIAL	
	TYPE: Portland Cement	
	VOLUME: 2.4 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush Threaded	
	TOP OF SEAL	10.80 643.16
Well Development: Pump/surge until clear		
Note: GWA-1 was originally installed as HUF-5 in 2001. Only the name was changed to make this well GWA-1.		
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 3.75 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	12.80 641.16
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 2 bags; 50 lbs/bag	
	PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	14.15 639.81
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	24.15 629.81
	BOTTOM OF CASING	24.45 629.51
	BOTTOM OF HOLE	24.80
	HOLE DIA: 6-5/8"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No.	GWC-9		
							Sheet 1 of 2			
SITE	Plant Hammond Huffaker Road Landfill						HOLE DEPTH	51.5'	SURF.ELEV. 657.15	
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	1563876.81	E	1952392.97			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME550			
DRILLING METHOD	H S A			NO. SAMPLES	9	NO. U.D. SAMPLES	0			
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.	0%			
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		DATE TAKEN				
GROUT	DRILLER	QUANTITY	MIX	NA	DRILLING START DATE	7/17/2006				
		S. Milam	RECODER	A. Grissom	APPROVED	NA	DRILLING COMP. DATE	7/18/2006		
Depth	Elev.	Material Description, Classification and Remarks			Sample No.	Standard Penetration Test		Comments	% Rec	RQD
0	657.15	Ground Surface				From To	Blows			
1	656.15	Stiff, light brown to orange, dry, sandy silty CLAY			1	4.5-6	6-7-8	15		
2	655.15				2	9.5-11	6-7-9	16		
3	654.15				3	14.5-16	6-9-13	22		
4	653.15				4	19.5-21	9-11-13	24		
5	652.15									
6	651.15									
7	650.15									
8	649.15									
9	648.15									
10	647.15									
11	646.15									
12	645.15									
13	644.15									
14	643.15									
15	642.15									
16	641.15	Same as above (6") then dark gray weathered SHALE with clay, dry								
17	640.15									
18	639.15									
19	638.15									
20	637.15									
21	636.15									
22	635.15									
23	634.15									
24	633.15									

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Easting and Northing in NAD

1983. Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES				Hole No. GWC-9	
		Sheet 2 of 2					
SITE	Plant Hammond Huffaker Road Landfill			TOTAL DEPTH	51.5	SURF.ELEV.	657.15
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments
				From To	Blows	N	% Rec
25	632.15	Dark gray to black weathered SHALE, dry	5	24.5-26	15-33-50/4	R	
26	631.15						
27	630.15						
28	629.15						
29	628.15						
30	627.15						
31	626.15	Dark gray to black, clayey weathered SHALE, wet	6	29.5-31	50/3	R	
32	625.15						
33	624.15						
34	623.15	Stiff, light brown to orange, dry, sandy silty CLAY					
35	622.15	Black, dry, weathered SHALE with little clay	7	34.5-36	50/3	R	
36	621.15						
37	620.15						
38	619.15						
39	618.15						
40	617.15	No recovery	8	39.5'-41.0'			
41	616.15						
42	615.15						
43	614.15						
44	613.15	Same as above (6") then dark gray weathered					
45	612.15	Black, dry, weathered SHALE with some clay	9	44.5-46	50/3	R	
46	611.15	Auger refusal @ 46.2'					
47	610.15						
48	609.15	Begin coring 46.5'		46.5-51.5			5.0/0.0
49	608.15						0
50	607.15						
51	606.15	No core recovery					
52		Bottom of boring					
53							
54							
55							
56							

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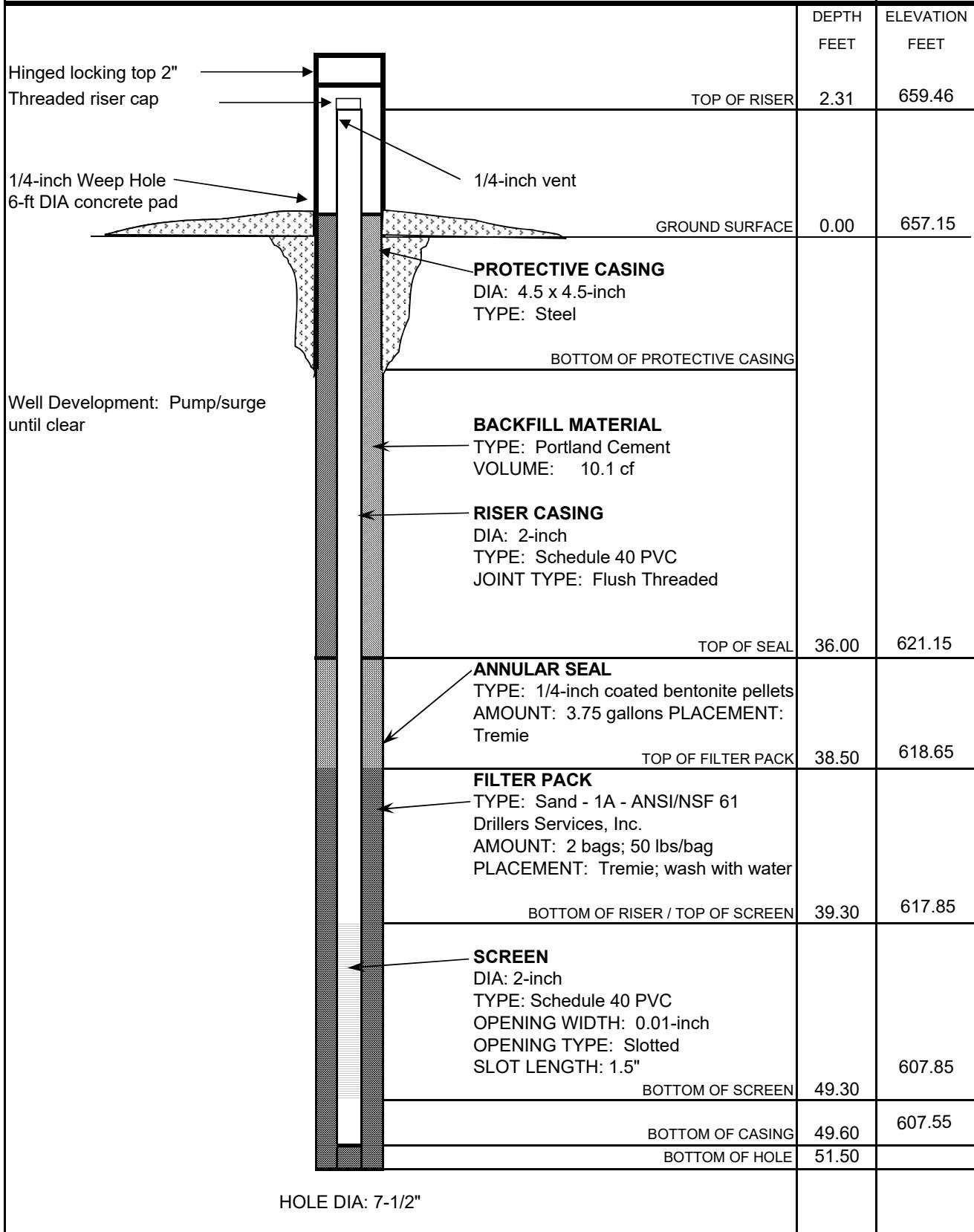
Easting and Northing in NAD

1983. Elevations in NAVD 1988.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Milam	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-9
DATE CONSTRUCTED: 7/18/06 - 9:00		



HOLE DIA: 7-1/2"

Easting and Northing in NAD 1983.

Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-10		
							Sheet 1 of 2		
SITE	Plant Hammond's Huffaker Road Landfill				HOLE DEPTH	30.5'	SURF.ELEV. 664.08		
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1564308.39	E 1951975.66		
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME550		
DRILLING METHOD	HSA/HQ Rock core with water		NO. SAMPLES	4	NO. U.D. SAMPLES		0		
CASING SIZE	WATER	LENGTH		CORE SIZE	TOTAL % REC.		82%		
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.	DATE TAKEN				
GROUT DRILLER		QUANTITY		MIX	DRILLING START DATE		7/19/2006		
	S. Milam	RECORDER	A. Grissom	APPROVED	NA	DRILLING COMP. DATE		7/20/2006	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	664.08	Ground Surface							
1	663.08	Light brown, dry, clayey SILT	1	4.5-6	35-7-5	12			
2	662.08								
3	661.08								
4	660.08								
5	659.08								
6	658.08								
7	657.08								
8	656.08								
9	655.08								
10	654.08		Light gray to orange brown, dry, silty CLAY	2	9.5-11	3-8-12	20		
11	653.08								
12	652.08								
13	651.08								
14	650.08								
15	649.08								
16	648.08	Dark gray, dry, clayey weathered SHALE		3	14.5-16	14-28-34	62		
17	647.08								
18	646.08								
19	645.08								
20	644.08								
21	643.08								
22	642.08								
23	641.08								
24	640.08								

Form GS9901 7-26-2004

Easting and Northing in NAD

1983. Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

SOUTHERN COMPANY <i>Energy to Serve Your World™</i>		DRILLING LOG GEOLOGICAL SERVICES				Hole No. GWC-10	Sheet 2 of 2			
SITE		Plant Hammond's Huffaker Road Landfill		TOTAL DEPTH	30.5	SURF.ELEV.	664.08			
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD	
				From To	Blows	N				
25	639.08	Light to dark gray SHALE		22.5-27.5			5.0/5.0	100		
26	638.08			27.5-30.5			3.0/1.9			
27	637.08									
28	636.08									
29	635.08									
30	634.08									
31	633.08			Bottom of boring						
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
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48										
49										
50										
51										
52										
53										
54										
55										
56										

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: Milam	WELL NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: A. Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-10
DATE CONSTRUCTED: 7/20/06 - 16:00		
Hinged locking top 2"	TOP OF RISER	DEPTH FEET
Threaded riser cap	3.50	ELEVATION FEET
1/4-inch Weep Hole		667.58
6-ft DIA concrete pad	GROUND SURFACE	0.00
		664.08
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 4.6 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	16.50
	647.58	
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 3.75 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	18.50
	645.58	
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	20.18
	643.90	
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	30.18
	633.90	
	BOTTOM OF CASING	30.48
	633.60	
	BOTTOM OF HOLE	30.50
	HOLE DIA: 7-1/2"	

Log revised with new survey data dated 6/26/2020.

SOUTHERN COMPANY		DRILLING LOG GEOLOGICAL SERVICES					Hole No.	GWA-11	
							Sheet 2 of 2		
SITE		Plant Hammond's Huffaker Road Landfill			TOTAL DEPTH		33.5	SURF.ELEV. 679.57	
Depth	Elev.	Material Description, Classification and Remarks			Sample No.	Standard Penetration Test			
						From To	Blows	N	
25	654.57	Same as above			5	24.5-26	21-26-45	71	
26	653.57								
27	652.57								
28	651.57	Auger refusal @ 28.5'				28.5-33.5			
29	650.57								
30	649.57	Dark grey SHALE, highly fissile, fractured						4.0/5.0	80
31	648.57								
32	647.57								
33	646.57								
34	645.57	Bottom of boring							
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: Milam	NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom/Bearce	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWA-11
DATE CONSTRUCTED: 7/21/06 - 9:00		
		DEPTH FEET
Hinged locking top 2"	TOP OF RISER	682.36
Threaded riser cap		
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00
	1/4-inch vent	679.57
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 5.6 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	20.00
	659.57	
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	22.00
	657.57	
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	22.81
	656.76	
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	32.81
	646.76	
	BOTTOM OF CASING	33.11
	BOTTOM OF HOLE	33.50
	HOLE DIA: 7-1/2"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES						Hole No.	GWC-18						
												Sheet 1 of 2	
SITE	Plant Hammond's Huffaker Road Landfill					HOLE DEPTH	54.1'	SURF.ELEV. 638.45					
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	1563320.44	E	1953391.49						
ANGLE	NA	BEARING	NA	CONTRACTOR	DRILL NO.								
DRILLING METHOD	HSA/HQ rock core with water			NO. SAMPLES	9	NO. U.D. SAMPLES							
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.	100%						
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		DATE TAKEN							
GROUT	DRILLER	QUANTITY		MIX		DRILLING START DATE	7/11/2006						
				NA		DRILLING COMP. DATE	7/12/2006						
B. Filipovich	RECORDER	L. Millet	APPROVED	NA									
Depth	Elev.	Material Description, Classification and Remarks			Sample No.	Standard Penetration Test		Comments	% Rec	RQD			
0	638.45	Ground Surface				From To	Blows	N					
1	637.45	Gray and brown silty CLAY, dry			1	3.5-5	1-2-3	5					
2	636.45												
3	635.45												
4	634.45												
5	633.45												
6	632.45												
7	631.45												
8	630.45												
9	629.45												
10	628.45				Weathered dark gray SHALE with clay, dry			2	8.5-10	7-15-27	42		
11	627.45												
12	626.45												
13	625.45												
14	624.45												
15	623.45	Weathered black SHALE, dry			3	13.5-15	50/4	R					
16	622.45												
17	621.45												
18	620.45												
19	619.45	Same as above			4	18.5-20	50/5	R					
20	618.45												
21	617.45												
22	616.45												
23	615.45												
24	614.45	Same as above, saturated			5	23.5-25	50/4	R					

Log revised with new survey data dated 6/26/2020.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES					Hole No. GWC-18												
							Sheet 2 of 2												
SITE	Plant Hammond's Huffaker Road Landfill			TOTAL DEPTH		54.1'	SURF.ELEV.	638.45											
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test			Comments	% Rec	RQD									
					From To	Blows	N												
25	613.45	Weathered black SHALE, more intact than above, saturated		6	28.5-30	50/4	R												
26	612.45																		
27	611.45																		
28	610.45																		
29	609.45																		
30	608.45																		
31	607.45																		
32	606.45																		
33	605.45																		
34	604.45																		
35	603.45																		
36	602.45																		
37	601.45	Same as above		7	33.5-35	50/5	R												
38	600.45																		
39	599.45																		
40	598.45																		
41	597.45																		
42	596.45																		
43	595.45																		
44	594.45																		
45	593.45																		
46	592.45																		
47	591.45										47.1 - Auger refusal		8	38.5-40	50/1	R			
48	590.45										Highly fractured slate/shale bedrock, some secondary mineralizatin, no regularly oriented fracture sets, some conchoidal fracturing								
49	589.45																		
50	588.45																		
51	587.45																		
52	586.45																		
53	585.45																		
54	584.45																		
55																			
56																			
		Bottom of boring																	

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: Filipovich	WELL NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-18
DATE CONSTRUCTED: 7/12/06 - 9:00		
Hinged locking top 2"	TOP OF RISER	DEPTH FEET ELEVATION FEET
Threaded riser cap	2.86	641.31
1/4-inch Weep Hole 6-ft DIA concrete pad	GROUND SURFACE	0.00 638.45
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 8.3 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	37.70 600.75
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 2.5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	42.00 596.45
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 1 bag; 50 lbs/bag PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	43.86 594.59
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	53.86 584.59
	BOTTOM OF CASING	54.16 584.29
	BOTTOM OF HOLE	55.00
	HOLE DIA: 6-5/8"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-19			
							Sheet 1 of 2			
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	55	SURF.ELEV. 640.37			
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1562843.12	E 1952979.72			
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550			
DRILLING METHOD	HSA/HQ rock core with water		NO. SAMPLES	9	NO. U.D. SAMPLES					
CASING SIZE	WATER	LENGTH	CORE SIZE	TOTAL % REC.			50%			
TABLE DEPTH	TYPE	ELEV.	TIME AFTER COMP.	DATE TAKEN						
GROUT DRILLER		QUANTITY	MIX	DRILLING START DATE	7/11/2006					
	S. Milam	RECORDER	L. Millet	APPROVED	NA	DRILLING COMP. DATE	7/11/2006			
Depth	Elev.	Material Description, Classification and Remarks		Sample No.	Standard Penetration Test					
0	640.37	Ground Surface			From To	Blows	N	Comments	% Rec	RQD
1	639.37	Tan and orange silty CLAY, dry		1	4.5-6	3-2-3	5			
2	638.37									
3	637.37									
4	636.37									
5	635.37									
6	634.37									
7	633.37									
8	632.37									
9	631.37									
10	630.37									
11	629.37									
12	628.37									
13	627.37									
14	626.37									
15	625.37	Same as above with occasional pebbles		2	9.5-11	3-4-6	10			
16	624.37									
17	623.37									
18	622.37									
19	621.37									
20	620.37									
21	619.37									
22	618.37									
23	617.37									
24	616.37	Dark gray weathered SHALE, dry		4	19.5-21	16-13-15	28			

Log revised with survey data dated 6/26/2020.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES				Hole No. GWC-19	
		Sheet 2 of 2					
SITE	Plant Hammond, Huffaker Road Landfill			TOTAL DEPTH	55	SURF.ELEV.	640.37
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments % Rec RQD
From To	Blows	N					
25	615.37	Same as above	5	24.5-26	50/3	R	
26	614.37						
27	613.37						
28	612.37						
29	611.37						
30	610.37		6	29.5-31	50/4	R	
31	609.37						
32	608.37						
33	607.37						
34	606.37						
35	605.37						
36	604.37		7	34.5-36	50/3	R	
37	603.37	Same as above, moist					
38	602.37						
39	601.37						
40	600.37		8	39.5-41	50/3	R	
41	599.37						
42	598.37						
43	597.37						
44	596.37						
45	595.37		9	44.5-46	50/2	R	
46	594.37						
47	593.37						
48	592.37						
49	591.37	Same as above 46' - Auger Refusal					
50	590.37						
51	589.37						
52	588.37						
53	587.37						
54	586.37						
55	585.37						
56		Bottom of boring					

Form GS9901 7-26-2004

Easting and Northing in NAD

1983. Elevations in NAVD 1988.

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Milam	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-19
DATE CONSTRUCTED: 7/11/06 - 16:00		
Hinged locking top 2"		DEPTH FEET
Threaded riser cap	TOP OF RISER	2.52
1/4-inch Weep Hole		ELEVATION FEET
6-ft DIA concrete pad		642.89
1/4-inch vent		
6-ft DIA concrete pad	GROUND SURFACE	0.00
		640.37
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL	
	TYPE: Portland Cement	
	VOLUME: 10.6 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush Threaded	
	TOP OF SEAL	38.00
	602.37	
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 3.75 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	41.00
	599.37	
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 2-1/2 bags; 50 lbs/bag	
	PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	44.46
	595.91	
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	54.46
	585.91	
	BOTTOM OF CASING	54.99
	BOTTOM OF HOLE	55.00
HOLE DIA: 7-1/2"		

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-20		
							Sheet 1 of 2		
SITE	Plant Hammond, Huffaker Road Landfill				HOLE DEPTH	31.5	SURF.ELEV. 623.09		
LOCATION	~10 miles west of Rome, Georgia				COORDINATES N	1562472.78	E 1952332.31		
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.	CME 550		
DRILLING METHOD	HSA/HQ rock core with water		NO. SAMPLES	4	NO. U.D. SAMPLES				
CASING SIZE WATER	LENGTH		CORE SIZE	TOTAL % REC.			53%		
TABLE DEPTH TYPE	ELEV.		TIME AFTER COMP.	DATE TAKEN					
GROUT DRILLER	QUANTITY		MIX	DRILLING START DATE			7/13/2006		
	B. Filipovich	RECORDER	M. Hughes	APPROVED	NA	DRILLING COMP. DATE		7/17/2006	
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
				From To	Blows	N			
0	623.09	Ground Surface.							
1	622.09								
2	621.09								
3	620.09								
4	619.09								
5	618.09								
6	617.09								
7	616.09								
8	615.09	weathered SHALE w/ clay, dark gray& brown, dry	1	5	7-12-15	27			
9	614.09								
10	613.09								
11	612.09								
12	611.09	Same as above	2	10	17-40-50/3	R			
13	610.09								
14	609.09								
15	608.09								
16	607.09								
17	606.09								
18	605.09	Same as above	3	15	50/4	R			
19	604.09								
20	603.09								
21	602.09	Same as above	4	20	50/3	R			
22	601.09								
23	600.09								
24	599.09	Auger refusal at 23.5 Begin coring at 23.5'	5	25					

Form GS9901 7-26-2004

Easting and Northing in NAD

1983. Elevations in NAVD 1988.

Log revised with survey data dated 6/26/2020.

SOUTHERN COMPANY Energy to Serve Your World™		DRILLING LOG GEOLOGICAL SERVICES				Hole No.	GWC-20		
SITE		Plant Hammond, Huffaker Road Landfill		TOTAL DEPTH	31.5	SURF.ELEV.	623.09		
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD
25	598.09	No recovery		23.5-25			1.5/0.0	0	
26	597.09								
27	596.09								
28	595.09	Dark gray to black SHALE, slightly weathered		25-30			5.0/3.0	60	
29	594.09								
30	593.09	Same as above with many polished faces, brittle		30-31.5			1.5/1.5	100	
31	592.09								
32	591.09	Bottom of boring							
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52		Auger refusal at 23.5 Begin coring at 23.5'							
53									
54									
55									
56									

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL
Storage Facility	DRILLER: Filipovich	NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: M. Hughes	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-20
DATE CONSTRUCTED: 7/17/06 - 9:00		
Hinged locking top 2"		DEPTH
Threaded riser cap		FEET
	TOP OF RISER	
	2.67	625.76
1/4-inch Weep Hole		
6-ft DIA concrete		
pad		
	GROUND SURFACE	
	0.00	623.09
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/ surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 3.7 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush Threaded	
	TOP OF SEAL	
	17.00	606.09
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 3.75 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	
	19.60	603.49
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 1-1/2 bags; 50 lbs/bag	
	PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	
	21.21	601.88
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	
	31.21	591.88
	BOTTOM OF CASING	
	31.51	591.58
	BOTTOM OF HOLE	
	31.51	
	HOLE DIA: 6-5/8"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-21						
							Sheet 1 of 1						
SITE	Plant Hammond, Huffaker Road Landfill			HOLE DEPTH	14.4	SURF.ELEV.	614.26						
LOCATION	~10 miles west of Rome, Georgia			COORDINATES N	1562099.56	E	1951612.93						
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS	DRILL NO.							
DRILLING METHOD	HSA/HQ rock core with water			NO. SAMPLES	1	NO. U.D. SAMPLES	0						
CASING SIZE	WATER	LENGTH		CORE SIZE		TOTAL % REC.							
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		DATE TAKEN							
GROUT DRILLER		QUANTITY		MIX		DRILLING START DATE	7/12/2006						
	B. Filipovich	RECODER	L. Millet	APPROVED	NA	DRILLING COMP. DATE	7/12/2006						
Depth	Elev.	Material Description, Classification and Remarks			Sample No.	Standard Penetration Test		Comments	% Rec	RQD			
0	614.26	Ground Surface				From To	Blows	N					
1	613.26	Dark gray weathered SHALE, high clay content 6.2' - Auger refusal Dark gray to black fractured SHALE, with secondary mineralization in smaller fractures			1	6.2-14.4							
2	612.26												
3	611.26												
4	610.26												
5	609.26												
6	608.26												
7	607.26												
8	606.26												
9	605.26												
10	604.26												
11	603.26												
12	602.26												
13	601.26												
14	600.26												
15	599.26	Bottom of boring											
16	598.26												
17	597.26												
18	596.26												
19	595.26												
20	594.26												
21	593.26												
22	592.26												
23	591.26												
24	590.26												

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Filipovich	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-21
DATE CONSTRUCTED: 7/12/06 - 16:00		
Hinged locking top 2"	TOP OF RISER	DEPTH FEET
Threaded riser cap	4.07	ELEVATION FEET
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00
		614.26
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 0.42 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	1.50
	612.76	
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 2.5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	3.00
	611.26	
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 1-1/2 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	3.61
	610.65	
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	13.61
	600.65	
	BOTTOM OF CASING	14.16
	BOTTOM OF HOLE	14.40
HOLE DIA: 7 1/2"		

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No GWC-22 Sheet 1 of 2		
SITE Plant Hammond, Huffaker Road Landfill							HOLE DEPTH 38.8'	SURF.ELEV. 621.82	
LOCATION ~10 miles west of Rome, Georgia							COORDINATES 1562778.89	E 1951618.67	
ANGL	NA	BEARING	NA	CONTRACTO	SCS	RILL NO.			
DRILLING METHOD HSA/HQ rock core with water							NO. SAMPLES 6	NO. U.D. SAMPLES	
CASING SIZE	WATER	LENGTH		CORE SIZ		TOTAL % REC.	30%		
TABLE DEPTH	TYPE	ELEV.		TIME AFTER COMP.		ATE TAKEN	RILLING		
GROUT	DRILLER	QUANTITY		MIX		START DATE	RILLING		
		S. Milam	RECORDER	L. Millet	APPROVED	NA	COMP. DATE	7/12/2006	
									7/13/2006
Depth	Elev.	Material Description, Classification and Remarks	Standard Penetration Test				Comments	% Rec	RQD
			Samp	le No.	From To	Blows			
0	621.82	Ground Surface							
1	620.82								
2	619.82								
3	618.82								
4	617.82								
5	616.82								
6	615.82	Tan silty clay, dry to 6", then dark gray black weathered SHALE with clay, dry, occasional w and light gray mottling	1	4.5-6	9-16-34	50			
7	614.82								
8	613.82								
9	612.82								
10	611.82	Same as above	2	9.5-11	28-44-50/3	R			
11	610.82								
12	609.82								
13	608.82								
14	607.82								
15	606.82	Same as above, moist	3	14.5-16	50/3	R			
16	605.82								
17	604.82								
18	603.82								
19	602.82								
20	601.82	Light gray SHALE, weathered, wet	4	19.5-21	50/4	R			
21	600.82								
22	599.82								
23	598.82								
24	597.82								

DRILLING LOG GEOLOGICAL SERVICES							Hole No. GWC-22														
							Sheet 2 of 2														
SITE	Plant Hammond, Huffaker Road Landfill			OTAL DEPTH	38.8'	SURF.ELEV.	621.82														
Depth	Elev.	Material Description, Classification and Remarks	Samp	Standard Penetration Test			Comments	% Rec	RQD												
			le No.	From To	Blows	N															
25	596.82	Very highly weathered dark gray SHALE, saturated, high clay content	5	24.5-26	50/4	R															
26	595.82		Weathered SHALE, high clay content, saturated	6	29.5-31	50/2	R														
27	594.82			Auger refusal																	
28	593.82				Weathered SHALE																
29	592.82					2.0/1.0															
30	591.82						50														
31	590.82							4.8/0.5													
32	589.82								10												
33	588.82									Bottom of boring											
34	587.82																				
35	586.82																				
36	585.82																				
37	584.82																				
38	583.82																				
39																					
40																					
41																					
42																					
43																					
44																					
45																					
46																					
47																					
48																					
49																					
50																					
51																					
52																					
53																					
54																					
55																					
56																					

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum Storage Facility	DRILLING CO.: SCS DRILLER: Milam	WELL NAME
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Millet	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-22
DATE CONSTRUCTED: 7/13/06 - 9:00		
Hinged locking top 2"	TOP OF RISER	DEPTH FEET ELEVATION FEET
Threaded riser cap	3.18	625.00
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00 621.82
	PROTECTIVE CASING DIA: 4.5 x 4.5-inch TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL TYPE: Portland Cement VOLUME: 6.9 cf	
	RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded	
	TOP OF SEAL	24.50 597.32
	ANNULAR SEAL TYPE: 1/4-inch coated bentonite pellets AMOUNT: 5 gallons PLACEMENT: Tremie	
	TOP OF FILTER PACK	27.00 594.82
	FILTER PACK TYPE: Sand - 1A - ANSI/NSF 61 Drillers Services, Inc. AMOUNT: 4 bags; 50 lbs/bag PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	28.43 593.39
	SCREEN DIA: 2-inch TYPE: Schedule 40 PVC OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	38.43 583.39
	BOTTOM OF CASING	38.73 583.09
	BOTTOM OF HOLE	38.80
	HOLE DIA: 7-1/2"	

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES							Hole No.	GWC-23		
							Sheet 1 of 2			
SITE	Plant Hammond Huffaker Road Landfill						HOLE DEPTH	47	SURF.ELEV.	652.12
LOCATION	10 MILES WEST OF ROME, GA			COORDINATES N	1563558.66		E	1951604.97		
ANGLE	NA	BEARING	NA	CONTRACTOR	SCS		DRILL NO.	CME 550		
DRILLING METHOD	HSA/HQ rock core with water			NO. SAMPLES	7		NO. U.D. SAMPLES	0		
CASING SIZE WATER	LENGTH			CORE SIZE		TOTAL % REC.			76	
TABLE DEPTH TYPE	29'	ELEV.		TIME AFTER COMP.		DATE TAKEN				
GROUT DRILLER	NA	QUANTITY	NA	MIX	NA	DRILLING START DATE	7/18/2006			
	S. Milam	RECORDER	A. Grissom	APPROVED	NA	DRILLING COMP. DATE	7/19/2006			
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments	% Rec	RQD	
				From To	Blows	N				
0	652.12	Ground Surface								
1	651.12									
2	650.12									
3	649.12									
4	648.12									
5	647.12									
6	646.12	Yellow to orange brown, dry, silty CLAY with trace pebbles	1	4.5-6.0	3-4-4	8				
7	645.12									
8	644.12									
9	643.12									
10	642.12									
11	641.12	Orange brown, dry, slightly sandy silty CLAY	2	9.5-11	7-13-15	28				
12	640.12									
13	639.12									
14	638.12									
15	637.12									
16	636.12	Dark gray, highly weathered SHALE	3	14.5-16	17-39-50/1	R				
17	635.12									
18	634.12									
19	633.12									
20	632.12									
21	631.12	Same as above	4	19.5-21	25-33-36	69				
22	630.12									
23	629.12									
24	628.12									

Log revised with survey data dated 6/26/2020.

DRILLING LOG GEOLOGICAL SERVICES						Hole No.	GWC-23				
						Sheet 2 of 2					
SITE		Plant Hammond Huffaker Road Landfill		TOTAL DEPTH	47	SURF.ELEV.	652.12				
Depth	Elev.	Material Description, Classification and Remarks	Sample No.	Standard Penetration Test			Comments				
				From To	Blows	N	% Rec				
25	627.12	Dark gray, highly weathered SHALE	5	24.5-26	23-39-50/3	R					
26	626.12		6	29.5-31	28-50/4	R					
27	625.12										
28	624.12										
29	623.12										
30	622.12										
31	621.12										
32	620.12										
33	619.12										
34	618.12										
35	617.12										
36	616.12		7	34.5-36	50/4	R					
37	615.12										
38	614.12										
39	613.12										
40	612.12										
41	611.12										
42	610.12										
43	609.12										
44	608.12	Dark gray to black highly weathered SHALE					5.0/3.8				
45	607.12										
46	606.12										
47	605.12										
48		41-46				76					
49											
50											
51											
52											
53											
54											
55											
56											

WELL CONSTRUCTION LOG

Southern Company Generation

PROJECT: Plant Hammond Gypsum	DRILLING CO.: SCS	WELL NAME
Storage Facility	DRILLER: Milam	
LOCATION: Huffaker Rd.	RIG TYPE: CME 550	
LOGGER: Grissom	DRILLING METHODS: HSA/HQ Rock Core w/Water	GWC-23
DATE CONSTRUCTED: 7/19/06 - 9:00		
	DEPTH FEET	ELEVATION FEET
Hinged locking top 2"		
Threaded riser cap	TOP OF RISER	2.72 654.84
1/4-inch Weep Hole		
6-ft DIA concrete pad	GROUND SURFACE	0.00 652.12
	PROTECTIVE CASING	
	DIA: 4.5 x 4.5-inch	
	TYPE: Steel	
	BOTTOM OF PROTECTIVE CASING	
Well Development: Pump/surge until clear	BACKFILL MATERIAL	
	TYPE: Portland Cement	
	VOLUME: 8.8 cf	
	RISER CASING	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	JOINT TYPE: Flush Threaded	
	TOP OF SEAL	31.50 620.62
	ANNULAR SEAL	
	TYPE: 1/4-inch coated bentonite pellets	
	AMOUNT: 5 gallons	
	PLACEMENT: Tremie	
	TOP OF FILTER PACK	34.00 618.12
	FILTER PACK	
	TYPE: Sand - 1A - ANSI/NSF 61	
	Drillers Services, Inc.	
	AMOUNT: 3 bags; 50 lbs/bag	
	PLACEMENT: Tremie; wash with water	
	BOTTOM OF RISER / TOP OF SCREEN	36.71 615.41
	SCREEN	
	DIA: 2-inch	
	TYPE: Schedule 40 PVC	
	OPENING WIDTH: 0.01-inch	
	OPENING TYPE: Slotted	
	SLOT LENGTH: 1.5"	
	BOTTOM OF SCREEN	46.71 605.41
	BOTTOM OF CASING	47.01 605.11
	BOTTOM OF HOLE	47.00
HOLE DIA: 7-1/2"		

CERTIFIED WELL NETWORK SURVEY DATA

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Pad Northing	Pad Easting	Pad Elevation
GWA-1	1565643.8090	1952067.9350	701.96	1565643.7700	1952068.7470	698.65
GWA-2	1565590.0580	1952640.8860	681.59	1565590.9150	1952641.0270	679.04
GWA-3	1565520.2380	1953199.9260	659.24	1565519.5200	1953199.9110	656.35
GWA-4	1565519.8700	1953687.1040	656.93	1565518.9690	1953687.3230	653.98
GWC-5	1565159.1510	1953566.6650	649.42	1565159.0560	1953565.8480	646.44
GWC-6	1564397.5570	1953919.8550	656.35	1564397.6960	1953919.3420	653.86
GWC-7	1564079.1400	1953595.8490	657.20	1564079.8040	1953595.4950	654.28
GWC-8	1564000.6230	1953095.7210	656.64	1564001.2720	1953095.4650	653.96
GWC-9	1563876.8140	1952392.9690	659.46	1563876.8680	1952393.6820	657.15
GWC-10	1564308.3930	1951975.6590	667.58	1564308.3780	1951976.2070	664.08
GWA-11	1564946.5540	1952008.0290	682.36	1564946.6470	1952008.7080	679.57
GWC-18	1563320.4410	1953391.4910	641.31	1563320.0740	1953390.9190	638.45
GWC-19	1562843.1190	1952979.7200	642.89	1562843.4950	1952979.3960	640.37
GWC-20	1562472.7750	1952332.3050	625.76	1562472.9190	1952332.7680	623.09
GWC-21	1562099.5550	1951612.9270	618.33	1562099.6950	1951613.6880	614.26
GWC-22	1562778.8880	1951618.6740	625.00	1562778.9400	1951619.3210	621.82
GWC-23	1563558.6580	1951604.9730	654.84	1563558.7020	1951605.5870	652.12

Landfill Underdrain Discharge Pipe	Pipe Northing	Pipe Easting	Pipe Invert Elevation	Description
SWC-1	1564710.4550	1952300.5030	655.46	6" Plastic Pipe

Benchmark	Northing	Easting	Elevation
BM H-5	1563937.4180	1952560.0250	657.52

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING.

DATE OF FIELD SURVEY & INSPECTION: 06/15/2020-06/17/2020

FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD'88

EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION.

THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM H-4 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL




6/26/2020

PERFORMANCE BOND FOR DRILLERS

270 Peachtree Street NW

Atlanta, Georgia 30303-1205

Tel 404.506.6526



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.

A handwritten signature in black ink, appearing to read "Annie Jackson".

Annie Jackson
Risk Management Associate

/aj

Enclosure

cc: Alan Garrard

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 1983 (Ga. Laws 1983, 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: Sam H. Dabbs, Jr. (L.S.)
Title: SAM H. DABBS, JR.

Approved as to sufficiency
and accepted:

ASSISTANT SECRETARY

Environmental Protection
Division,

SAFECO INSURANCE COMPANY OF AMERICA

Department of Natural
Resources

surety, by: Sandra J. Mathis (L.S.)

Sandra J. Mathis, Attorney-In-Fact



POWER
OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98165

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, SECRETARY

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



R.A. PIERSON, 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 1983 (Ga. Laws 1983, 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: Sam H. Dabbs, Jr. (L.S.)
Title: SAM H. DABBS, JR.

Approved as to sufficiency
and accepted:

ASSISTANT SECRETARY



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



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.

Southern Company Services, Inc.
30 Ivan Allen Jr. Boulevard NW
Atlanta, Georgia 30308



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,

A handwritten signature in black ink that reads "Annie Jackson".

Annie Jackson
Southern Company Services, Inc.
Risk Management Department

/aj

Enclosure

cc: Alan Garrard, SCS

SAFECO INSURANCE COMPANY OF AMERICA

, Surety upon

a certain Bond No. **4993104**dated effective **June 30 2005**
(MONTH-DAY-YEAR)on behalf of **Southern Company Services, Inc.**
(PRINCIPAL)and in favor of **Georgia - Dept. of Natural 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 Contractors 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 AMERICABy *Laurel D. Huss*
ATTORNEY-IN-FACT Laurel D. Huss

Marsh USA, Inc.

Agent

3475 Piedmont Road NE, Suite 1200, Atlanta, GA 30305

Address of Agent

(404) 995-3702

Telephone Number of Agent





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, SECRETARY

TIM MIKOŁAJEWSKI, 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

day of

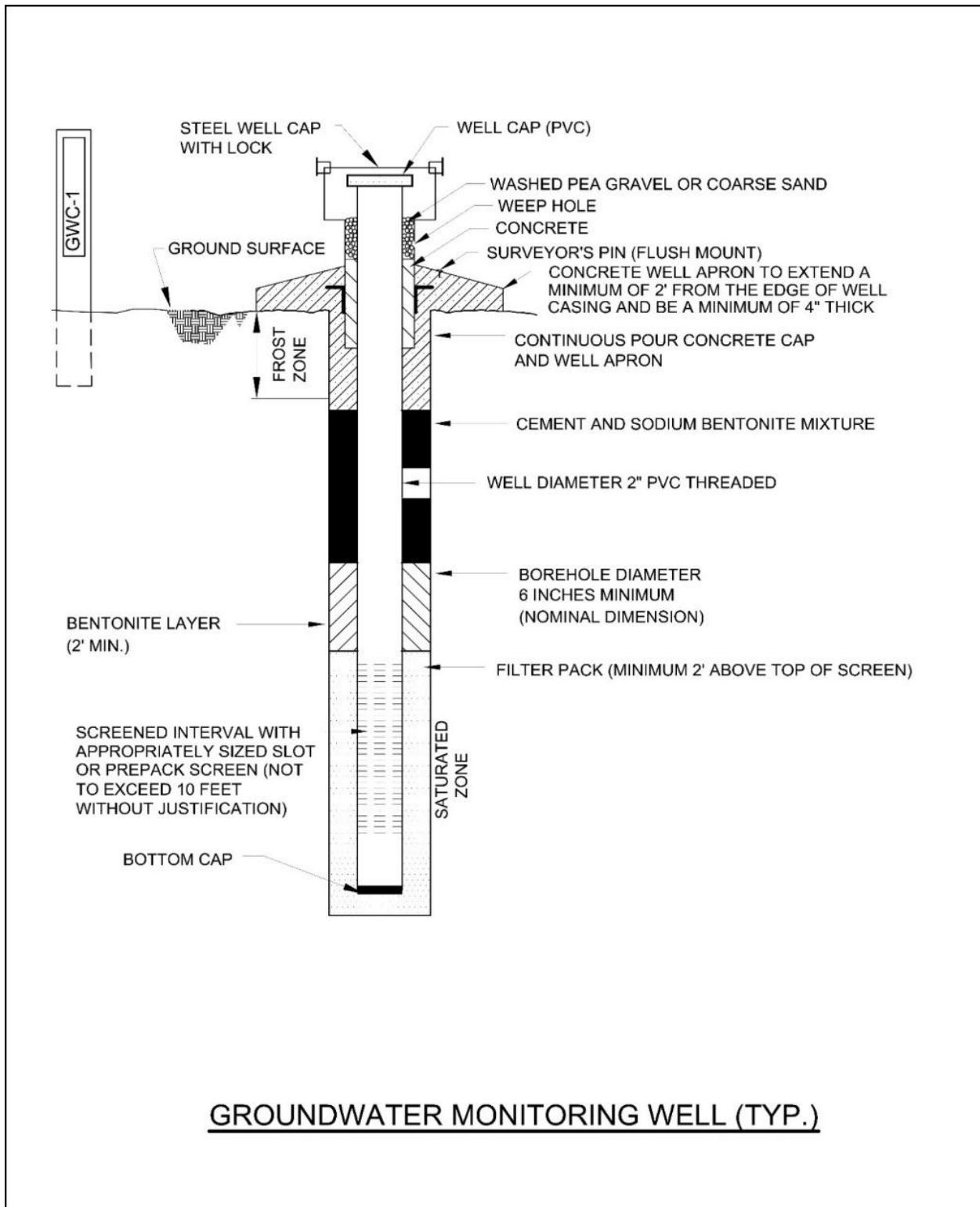


STEPHANIE DALEY-WATSON, SECRETARY

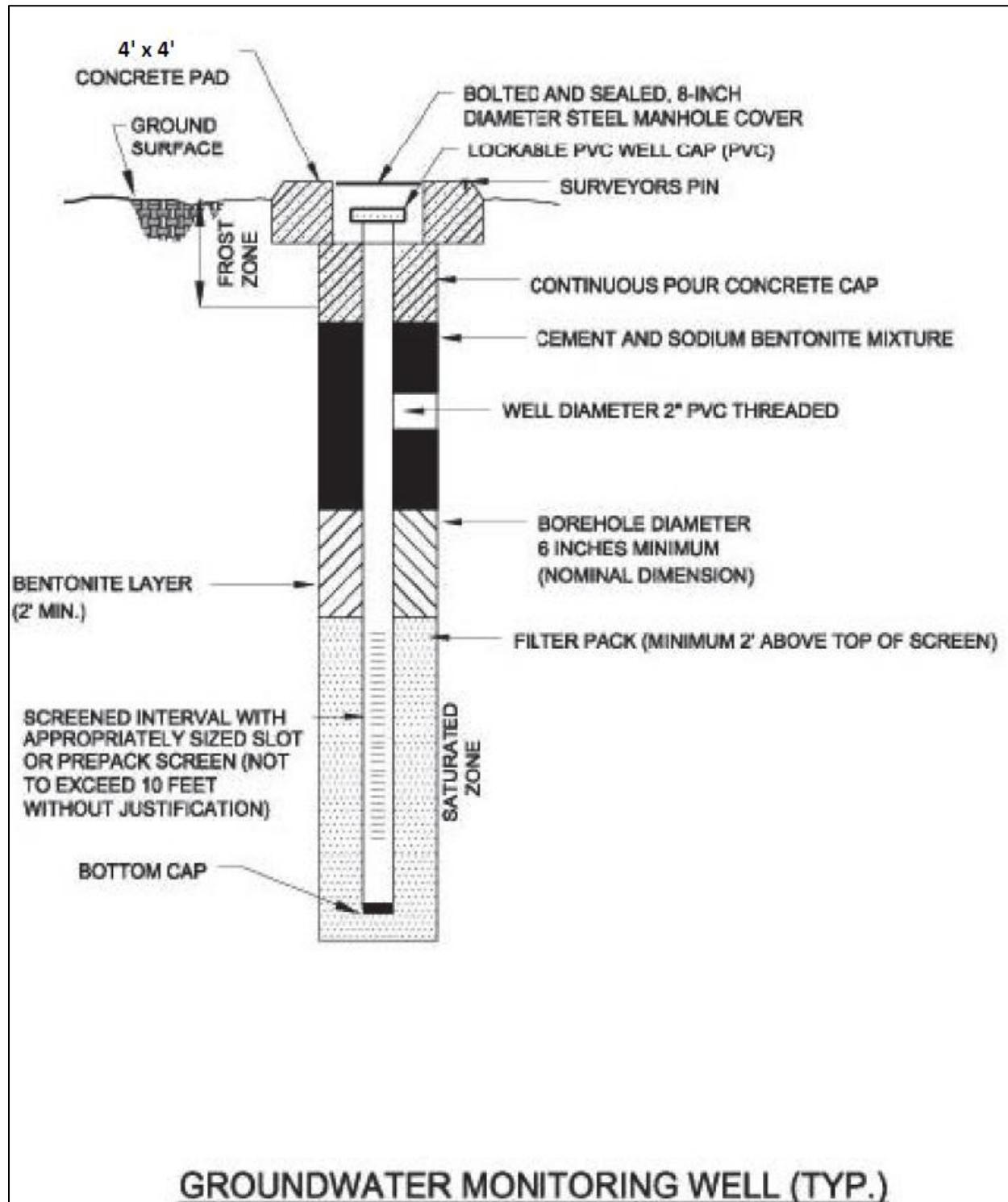
Safeco® and the Safeco logo are registered trademarks of Safeco Corporation.

B. GROUNDWATER MONITORING WELL DETAILS

ABOVE-GROUND WELL CONFIGURATION



FLUSH-MOUNT WELL CONFIGURATION



C. GROUNDWATER SAMPLING PROCEDURE

Groundwater sampling will be conducted using the most current applicable USEPA Region 4 SESD Field Branches Quality System and Technical Procedures as a guide (<https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches>). The following procedures describe the general methods associated with groundwater sampling at the Site. Prior to sampling, the well must be evacuated (purged) to ensure that representative groundwater is obtained. Any item coming in contact with the inside of the well casing or the well water will be kept in a clean container and handled only with gloved hands.

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

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations if it appears that the well has been compromised.
2. Measure and record the depth to water in all wells to be sampled prior to purging using a water measuring device consisting of probe and measuring tape capable of measuring water levels with accuracy to 0.01 foot. Static water levels will be measured from each well, within a 24-hour period. The water level measuring device will be decontaminated prior to lowering in each well.
3. Install Pump: If a dedicated pump is not present, slowly lower the pump into the well to the midpoint of the well screen or a depth otherwise approved by the hydrogeologist or project scientist. The pump intake must be kept at least two feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. All non-dedicated equipment will be decontaminated before use and between well locations in general accordance with USEPA Region 4 SESD guidance document, *Operating Procedure - Field Equipment Cleaning and Decontamination* (EPA, SESDGUID-205-R3), or the latest version of the document.
4. Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.
5. Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (mL/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 feet or less of variability. Avoid entraining air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.
6. Monitor Indicator Parameters: Monitor and record the field indicator parameters [turbidity, temperature, specific conductance, pH, oxidation-reduction potential (ORP), and dissolved oxygen (DO)] approximately every three to five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings at a minimum:

±0.1 for pH

±5% for specific conductance (conductivity)

$\pm 10\%$ or ± 0.2 mg/L (whichever is greater) for DO where DO>0.5mg/L. If DO<0.5mg/L no stabilization criteria apply

<5 NTU for turbidity

Temperature – Record only, not used for stabilization criteria

ORP – Record only, not used for stabilization criteria.

7. Collect samples at a low-flow rate according to the most current version of USEPA Region 4 SESD guidance document, *Operating Procedure – 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 (i.e., >10 NTU), duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45-micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. A new filter must be used for each well and each sampling event. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity. Additional details related to managing for elevated turbidity is discussed below.
9. All sample bottles will be filled, capped, and placed in an ice containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.
10. Sample containers and preservative will be appropriate for the analytical method being used.
11. Information contained on sample container labels will include:
 - a. Name of facility
 - b. Date and time of sampling
 - c. Sample description (well number)
 - d. Sampler's initials
 - e. Preservatives
 - f. Analytical method(s)
12. After samples are collected, samplers will remove all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.

13. Samples will be delivered to the laboratory following appropriate COC and temperature control requirements. The goal for sample delivery will be within 48 hours of collection.

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

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

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

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

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

D. UNDERDRAIN SAMPLING PROCEDURE

Underdrain samples will be collected in accordance with the general procedures outlined below. These procedures were developed using field sampling guidelines described in the USEPA Region 4 Field Branches Quality System and Technical Procedures (<https://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches>). Underdrain samples will be monitored concurrently with groundwater for the same parameters applying the same analytical methods outline in Tables 1 and 2, respectively, of Section 5 of this plan.

Underdrain samples will be collected from the underdrain pipe outlet and not from ponded water around the pipe outlet. If a dipper or other transfer vessel other than the sample container is used, it must be composed of a non-porous inert material such as glass, PVC, polyethylene, or stainless steel. The following procedures will be used to collect underdrain samples:

- a. Hold the bottle near the base with one hand, and with the other, remove the cap.
- b. Rinse the sample container with the water to be sampled prior to filling the container, unless the sample containers are pre-preserved. Pre-preserved sample containers should not be rinsed prior to sampling.
- c. Hold the container underneath the outfall and allow the container to be filled with water. Remove the container from underneath the outfall and place the cap back on the container.
- d. Information contained on sample container labels will include:
 - i. Name of facility
 - ii. Date and time of sampling
 - iii. Sample description (underdrain number)
 - iv. Sampler's initials
 - v. Preservatives
 - vi. Analytical method(s)
- e. Place the samples in a cooler containing water-ice, if required, for courier or hand delivery to the laboratory within the sample hold times.
- f. Follow COC and temperature protocols outlined within this plan.