# GROUNDWATER MONITORING PLAN
# (rev. 1)

## PLANT YATES -
## R6 CCR LANDFILL - ASH MANAGEMENT AREA
## COWETA COUNTY, GEORGIA

**FOR**

Georgia Power

**JULY 2021**

Atlantic Coast Consulting, Inc.

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# I. CERTIFICATION

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the Georgia Environmental Protection Division (EPD) Rules of Solid Waste Management, Chapter 391-3-4.10(6). According to 391-3-4-.01(57), a Qualified Groundwater Scientist is "a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable individuals to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action." The design of the groundwater monitoring system was developed in compliance with the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management, Chapter 391-3-4.10(6).

Signature: _____

Date: 2021-05-26

# 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 site. This plan meets the requirements of EPD rules and uses EPD's Manual for Ground Water Monitoring dated September 1991 as a guide. Groundwater monitoring well locations are presented in Appendix A, Figure 1 and well construction details are presented in Table 1 of Appendix A.

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

In accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Rule (CCR) (§257.90), which is incorporated in the Georgia State CCR Rule by reference, a detection monitoring well network for R6 Ash Monofill-Ash Management Area (R6-AMA) has been installed. The existing monitoring wells were installed following the guidelines presented herein. Additionally, this plan documents the methods for future monitoring well installation and/or replacement, and procedures for well abandonment. As required by 391-3-4.10(6)(g), a minor modification will be submitted to the EPD prior to the unscheduled installation or abandonment of monitoring wells. Well installation and/or abandonment must be directed by a qualified groundwater scientist. Currently, routine assessment monitoring is completed as required by 391-3-4.10(6)(a) and §257.95. An Assessment of Corrective Measures has been initiated as required by 391-3-4.10(6)(a) and §257.96.

# 2. GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

A Hydrogeological Assessment report was prepared in 2018 and provides a more comprehensive review of both the geological lithology and the hydrogeological conceptual site model. R6 - AMA is located within Plant Yates property.

Plant Yates lies within the Inner Piedmont of western Georgia, immediately southeast of the Brevard Fault Zone, an inactive fault which forms the northern boundary of the Inner Piedmont and the Dadeville Complex lithologies. The rocks in the area have been subjected to several episodes of metamorphism and intrusion by igneous bodies, creating a complex geologic picture. Surface expressions of the joints are observed on topographic maps and aerial photos of the Plant Yates area.

Granitic gneiss and schist units have been identified in the Plant Yates area. Both units are covered by a thick layer of saprolite. The schist unit is a sequence of amphibolites interlayered with chlorite schists and other metasedimentary rocks. Amphibolites are well foliated and may be retrograded to chlorite. The granitic gneiss is metamorphosed light-gray granitic pluton of medium- to coarse-grained texture. The unit is exposed in outcrops that trend northeast.

A thin layer soil from one to two feet thick overlies a thick layer of saprolite. The saprolite, which extends to typical depths of 20-40 feet below ground surface, was formed from the weathering of the underlying metamorphic rocks. There is typically a zone of variable thickness (approximately 5-20 feet) of weathered rock between the saprolite and competent bedrock.

Shallow groundwater is typically encountered near the saprolite/weathered rock interface. Bedrock becomes increasing competent with depth and movement of groundwater occurs only in fractures (i.e., secondary porosity). Recharge to the water-bearing zones in fractured bedrock takes place by seepage through the overlying mantle of soil/saprolite, or by direct entrance through openings in outcrops. A recent water table elevation contour map showing overall flow directions is provided in Appendix A, Figure 2. Average depth of the water table at Plant Yates varies with topography (range of approximately 5 to 50 feet below ground surface).

At the site, groundwater in the saturated overburden represents the uppermost aquifer. This uppermost aquifer is comprised of both residual soils, saprolite, and partially weather rock, and is generally unconfined. It is recharged by precipitation stored in residual soils and typically discharges to streams. Groundwater stored in the overburden also recharges the underlying bedrock through preferentially weathered discontinuities in the bedrock and discharges to steams through inter-connected bedrock fractures. Hydraulic conductivity (K) is defined as the rate at which water can move through a permeable medium. In situ rising head and falling slug tests were performed at multiple locations at R6-AMA to determine horizontal K values. Vertical K values for locations throughout Plant Yates were determined by laboratory testing of undisturbed overburden samples (Shelby Tubes) collected at multiple Plant Yates locations. The range in K values at these locations is small, indicating a fairly uniform hydrogeologic layers across the saprolite and weathered rock horizon (typically range from $10^{-3}$ cm/sec to $10^{-4}$ cm/sec). Appendix A, Table 1, Monitoring System Details, presents summaries of the K testing values from R6-AMA monitoring wells and piezometers and laboratory test results for locations throughout Plant Yates. The values from the field and laboratory tests fall within the standard range of hydraulic conductivity values associated with a silty sand. Supporting data for the K testing values are provided in Appendix B, Hydraulic Conductivity Testing Results.

There are significant differences in rock type at the facility that may result in localized geochemical signatures in groundwater. The presence of ultramafic bodies (e.g. amphibolites) contribute to higher

background concentrations of metals where present. Weathering of minerals occurring in schist such as garnets and staurolite may result in elevated levels of iron, manganese, calcium, and zinc in groundwater. The presence of granitic lithologies may contribute to elevated levels of radium 226/228 in groundwater. Additionally, weathering of sulfide minerals such as pyrite has the potential to alter groundwater pH and lead to increased mineral solubility. Boring logs and well construction diagrams for monitoring well locations within R6-AMA are presented in Appendix C.

The horizontal hydraulic gradient across R6-AMA was measured during the September 2020 groundwater monitoring event from YGWA-40 to YGWC-2R and YGWC-49 to PZ-24I resulting in an average estimated horizontal gradient of 0.022 ft/ft.

Average groundwater flow velocity in the R6-AMA area is based on K, lateral gradient (i) and effective porosity ($P_e$). The average K for the site is 505 feet/year, and the gradient across R6-AMA was 0.022 ft/ft, and the effective porosity ($n_e$) was estimated at 0.20. The average groundwater velocity is calculated as:

$V_{gw} = (K)(i)/n_e = ((505 \text{ ft/year}) (0.022 \text{ ft/ft})/0.20) = 56 \text{ feet/year}$.

# 3. WELL LOCATIONS

Groundwater monitoring wells are installed to monitor the uppermost occurrence of groundwater beneath the site. Locations are selected based on disposal cell layouts and site geologic and hydrogeologic considerations. Locations were chosen to serve as upgradient (GWA designation) or downgradient (GWC designation) based on groundwater flow direction determined by potentiometric evaluation. The well naming nomenclature is based on Georgia EPD's Industrial Waste Disposal Site Design and Operations Plan – Supplemental Data for Solid Waste Handling Permit (undated).

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

A map depicting monitoring well locations is provided on Figure 1 in Appendix A. A tabulated list of individual monitoring wells and piezometers (included in the potentiometric map) with well construction details such as location coordinates, top-of-casing elevations, well depths, and screened intervals is included in Table 1 of Appendix A. Any change to the groundwater monitoring network must be made by a minor modification to the permit pursuant to 391-3-4-4.10(6)(g)7.

The following ten (10) upgradient monitoring wells and well pairs will be utilized as part of the R6-AMA monitoring network system: YGWA-39, YGWA-40, YGWA-4I, YGWA-5I and YGWA-5D, YGWA-17S, YGWA-18S and YGWA-18I, YGWA-20S and YGWA-21I. There are nine (9) additional site-wide upgradient wells located within Plant Yates that are included in the overall upgradient monitoring network system. All 19 upgradient wells are included in Table 1 of Appendix A.

The following nine (9) downgradient monitoring wells will be utilized as part of the R6-AMA monitoring network system: YGWC-23S, YGWC-24SA, YGWC-36A, YGWC-38, YGWC-41, YGWC-42, YGWC-43, YGWC-49 and proposed monitoring well YGWC-50. The monitoring well locations are shown in Appendix A, Figure 1.

# 4. MONITORING WELL DRILLING, CONSTRUCTION, ABANDONMENT & REPORTING

The existing monitoring wells were installed following USEPA Region 4 Science and Ecosystem Support Division (SESD) Operating Procedure for Design and Installation of Monitoring Wells (USEPA, SESDGUID-101-R1) as a general guide for best practices. Monitoring well construction data are provided on Table 1 of Appendix A.

## 4.1 DRILLING

A variety of well drilling methods are available for the purpose of installing groundwater wells. Drilling methodology may include, but not be limited to: hollow stem augers, direct push, air rotary, mud rotary, or rotosonic techniques. The drilling method shall minimize the disturbance of subsurface materials and shall not cause impact to the groundwater. Borings will be advanced using an appropriate drilling technology capable of drilling and installing a well in the site-specific geology. Monitoring wells will be installed using the most current version of the USEPA SESD SESDGUID-101-R1 as a general guide for best practices. Drilling equipment shall be decontaminated before use and between borehole locations using the procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.

Sampling and/or coring may be used to help determine the stratigraphy and geology. Samples will be logged by trained personnel working under the direction of a Professional Geologist/Engineer registered in the State of Georgia. Screen depths will be chosen based on the depth of the uppermost aquifer.

Drilling and well installation activities will be directed by a qualified groundwater scientist. All drilling for any subsurface hydrologic investigation, installation or abandonment of groundwater monitoring wells must be performed by a driller that has, at the time of installation, a performance bond on file with the Water Well Standards Advisory Council.

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

WELL INTAKE DESIGN

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

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

Pre-packed dual-wall well screens may be used for well construction. Pre-packed well screens combine a centralized inner well screen, a developed filter sand pack, and an outer conductor screen in one integrated unit composed of inert materials. Pre-packed well screens will be installed following general industry standards and using the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division Operating Procedure for Design and Installation of Monitoring Wells as a general guide.

FILTER PACK AND ANNULAR SEAL

The materials used to construct the filter pack will be clean quartz sand of a size that is appropriate for the screened formation. Fabric filters will not be used as filter pack material. Sufficient filter material will be placed in the hole and measurements taken to ensure that no bridging occurs. Upon placement of the filter pack, the well may be pumped to assure settlement of the pack. If pumping is performed, the top of filter pack depth will be measured, and additional sand added if necessary. The filter pack will extend approximately one to two feet above the top of the well screen.

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

The annulus above the bentonite seal will be grouted with a cement and bentonite mixture (approximately 94 pounds cement / 3 to 5 pounds bentonite / 6.5 gallons of potable water) placed via tremie pipe from the top of the bentonite seal. During grouting, care will be taken to assure that the bentonite seal is not disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity.

PROTECTIVE CASING AND WELL COMPLETION

After allowing the grout to settle, the well will be finished by installing a flush-mount or above-ground protective casing as appropriate, and building a surface cap. The use of flush-mount wells will generally

be limited to paved surfaces unless site operations warrant otherwise. The surface cap will extend from the top of the cementitious grout to ground surface, where it will become a concrete apron extending outward with a radius of at least 2.0 feet from the edge of the well casing and sloped to drain water away from the well.

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

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

The groundwater monitoring well detail attached in Appendix D, Groundwater Monitoring Well Detail, illustrates the general design and construction details for a monitoring well.

WELL DEVELOPMENT

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

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

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

## 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 Georgia EPD. Well abandonment will be directed by a qualified groundwater scientist.

## 4.4 DOCUMENTATION

The following information documenting the construction and development of each well will be submitted to EPD by a qualified groundwater scientist within 60 days after completing all planned well installations.

- Well identification,
- Name of drilling contractor and type of drill rig,
- Documentation stating that a Georgia-registered professional surveyor shall certify that the horizontal accuracy for the installed monitoring wells is 0.5 feet, and vertical accuracy for top of casing elevations to 0.01 feet using a known datum,
- Documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Standards Advisory Council,
- Type of protective well cap and sump dimensions for each well,
- Dates of drilling and initial well emplacement,
- Drilling method and drilling fluid if used,
- Borehole diameter and well casing diameter,
- Well depth (±0.1 feet),
- Lithologic logs,
- Well casing materials,
- Screen materials and design (i.e., interval in feet below ground surface and elevation),
- Screen length,
- Screen slot size,
- Filter pack material/size and volume (placement narrative),
- Seal emplacement method and type/volume of sealant,
- Surface seal and volumes/mix of annular seal material,
- Well development date,
- Sealant materials and volume,
- Well turbidity following development,
- Narrative of well development method - specific well development,
- Documentation of ground surface elevation (±0.01 feet),
- Documentation of top of casing elevation (±0.01 feet), and
- Schematic of the well with dimensions

# 5. GROUNDWATER MONITORING PARAMETERS AND FREQUENCY

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

Table 1, Groundwater Monitoring Parameters and Frequency, presents the groundwater monitoring parameters and sampling frequency. A minimum of eight independent samples from each groundwater well will be collected and analyzed for 40 CFR 257, Subpart D, Appendix III and Appendix IV test parameters to establish a background statistical dataset. Subsequently, in accordance with 391-3-4-.10(6), the monitoring frequency for the Appendix III parameters will be at least semi-annual during the post-CCR removal monitoring period. Assessment monitoring was initiated on May 15, 2018 at Ash Ponds 3, B, and B', September 2019 for Ash Pond A, and November 13, 2019 for R6 Landfill, per Chapter 391-3-4-.10, Georgia 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 samples will be analyzed using methods specified in USEPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), USEPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by the Georgia EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Program (NELAP). Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

**TABLE 1**
**GROUNDWATER MONITORING PARAMETERS & FREQUENCY**

| MONITORING PARAMETER | | GROUNDWATER MONITORING | |
|---|---|---|---|
| | | Background | Semiannual Events |
| **Field Parameters** | Temperature | X | X |
| | pH | X | X |
| | Specific Conductance | X | X |
| | Turbidity | X | X |
| | Dissolved Oxygen | 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 | EPA Method Number |
|---|---|
| Boron | 6010D/6020B |
| Calcium | 7140/6010D/6020B |
| Chloride | 300.0/300.1/9250/9251/9253/9056A |
| Fluoride | 300.0/300.1/9214/9056A |
| Ph | 150.1field/90405C |
| Sulfate | 9035/9036/9038/300.0/300.1/9056A |
| Total Dissolved Solids (TDS) | 160/2540C |
| | |
| Antimony | 7040/7041/6010D/6020B |
| Arsenic | 7060A/7061A/6010D/6020B |
| Barium | 7080A/7081/6010D/6020B |
| Beryllium | 7090/7091/6010D/6020B |
| Cadmium | 7130/7131A/6020B |
| Chromium | 7190/7191/6010D/6020B |
| Cobalt | 7200/7201/6010D/6020B |
| Fluoride | 300.0/300.1/9214/9056A |
| Lead | 7420/7421/6010D/6020B |
| Lithium | 6010D/6020B |
| Mercury | 7470A/7471B |
| Molybdenum | 6010D/6020B |
| Selenium | 7740/7741A/6010D/6020B |
| Thallium | 7840/7841/6010D/6020B |
| Radium 226 and 228 combined | 903/9320/9315 |

# 6. SAMPLE COLLECTION

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

For groundwater sampling, positive gas displacement PVC, Teflon™ or stainless-steel bladder pumps will be used for purging. If dedicated bladder pumps are not used, portable bladder pumps or peristaltic pumps (with dedicated or disposable tubing) may be used. When non-dedicated equipment is used, it will be decontaminated prior to use and between wells. The applied groundwater purging and sampling methodologies will be discussed in the groundwater semi-annual monitoring reports submitted to EPD.

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
- Notated date(s) and time(s) of sample transfer between individuals
- Signature of person(s) involved in the chain of possession
- Dates of possession by each individual

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

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

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

# 8. FIELD AND LABORATORY QUALITY ASSURANCE / QUALITY CONTROL

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

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

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

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

Calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument. Daily calibration will be documented on field forms and these field forms will be included in 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 also be documented on field calibration forms. Calibration of the instruments will also be checked if any readings during sampling activities are suspect. Replacement probes and meters will be obtained as a corrective action in the event that recalibration does not improve instrument function. Calibration field forms will be provided as part of each groundwater report's quality control documentation.

Groundwater samples will be analyzed by licensed and accredited laboratories through the NELAP.

# 9. REPORTING RESULTS

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

1. A narrative describing sampling activities and findings including a summary of the number of samples collected, the dates the samples were collected and whether the samples were required by the detection or assessment monitoring programs.

2. A brief overview of purging/sampling methodologies.

3. Discussion of results.

4. Recommendations for the future monitoring consistent with the Rules.

5. Potentiometric surface contour map for the aquifer(s) being monitored, signed and sealed by a Georgia-registered P.G. or P.E.

6. Table of as-built information for groundwater monitoring wells including top of casing elevations, ground elevations, screened elevations, current groundwater elevations and depth to water measurements.

7. Groundwater flow rate and direction calculations.

8. Identification of any groundwater wells that were installed or decommissioned during the preceding year, along with a narrative description of why these actions were taken.

9. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels.

10. If applicable, semiannual assessment monitoring results.

11. Any alternate source demonstration completed during the previous monitoring period, if applicable.

12. Laboratory Reports.

13. COC documentation.

14. Field sampling logs including field instrument calibration, indicator parameters and parameter stabilization data.

15. Field logs and forms for each sampling event to include, but not limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling.

16. Documentation of non-functioning wells.

17. Table of current analytical results for each well, highlighting statistically significant increases and concentrations above maximum contaminant level (MCL).

18. Statistical analyses.

19. Certification by a qualified groundwater scientist.

# 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. All 19 upgradient wells at Plant Yates are included in site background.

According to EPD rules (391-3-4-.10(6)(a)), which incorporates the statistical analysis requirements of 40 CFR 257.93 by reference, the site must specify in the operating record the statistical methods to be used in evaluating groundwater monitoring data for each 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 prediction limit. [§257.93(f)(3)].

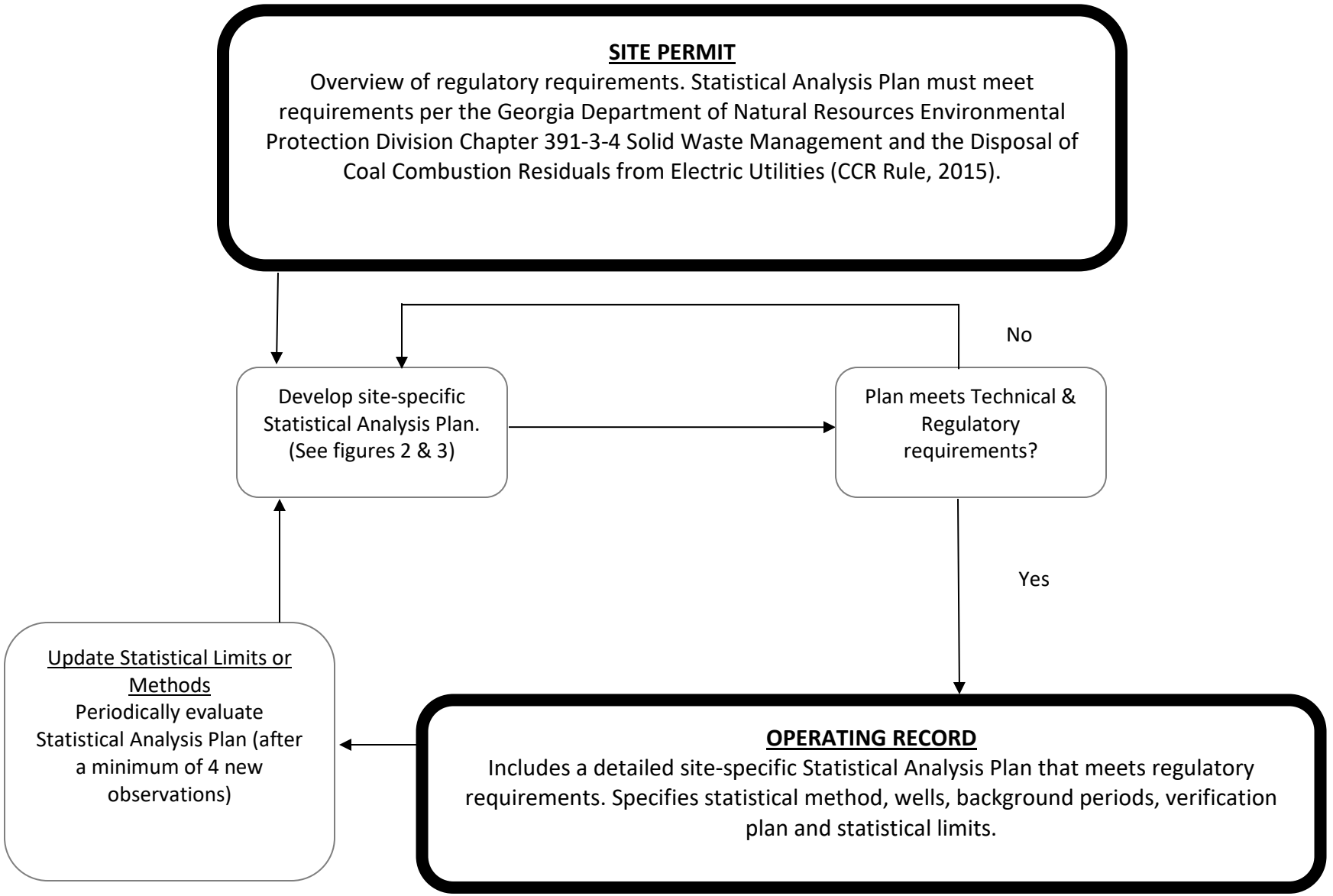
2. A control chart approach that gives control limits for each constituent. [§257.93(f)(4)].

3. Another statistical test method (such as prediction limits or control charts) that meets the performance standards of §257.93(g) [§257.93(f)(5)]. A justification for an alternative method will be placed in the operating record and the Director notified of the use of an alternative test. The justification will demonstrate that the alternative method meets the performance standards of §257.93(g).

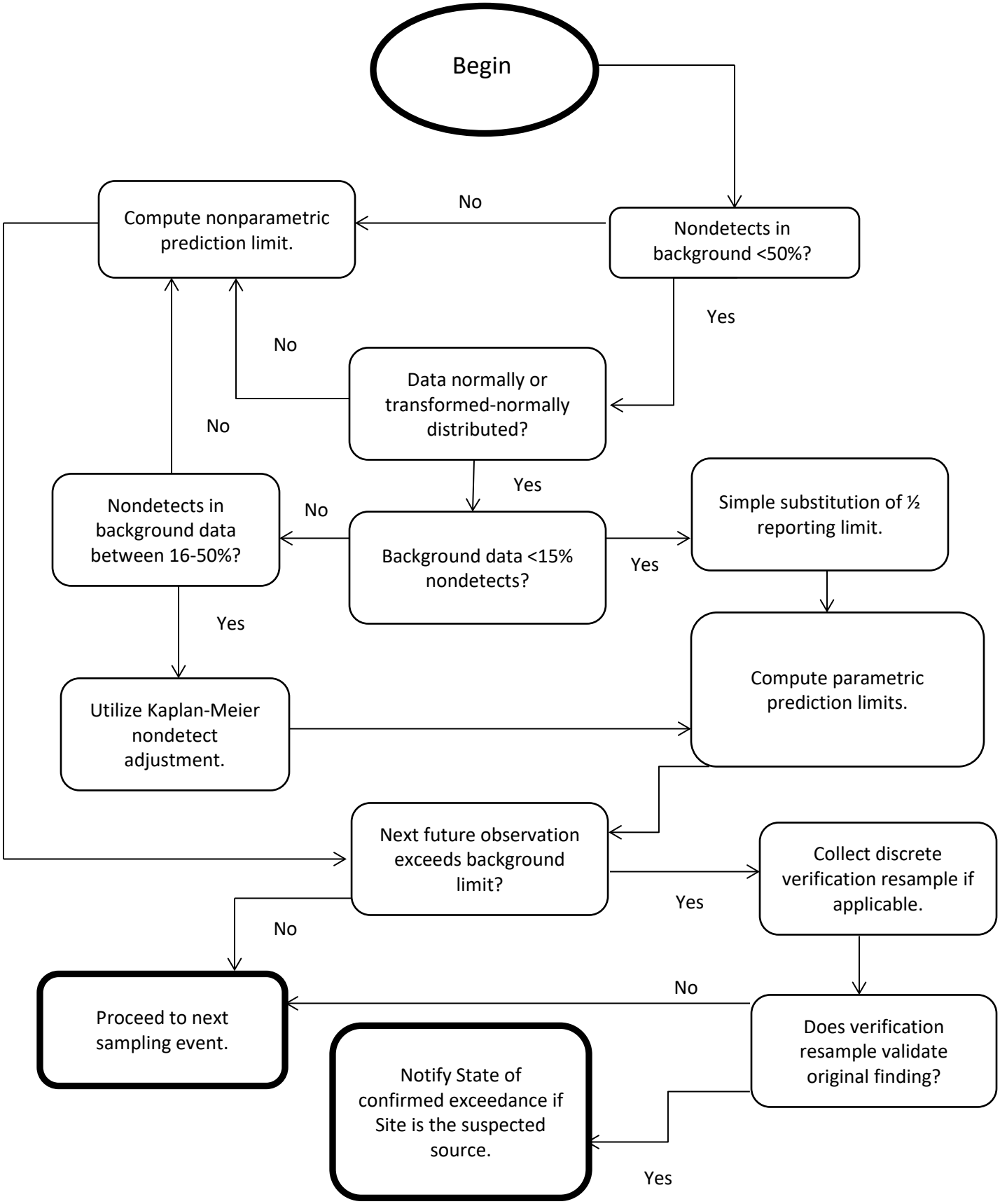
An interwell statistical method will be used to compare Appendix III groundwater monitoring data to background conditions. Confidence intervals will be constructed for each downgradient well and used to compare Appendix IV groundwater monitoring data to groundwater protection standards.

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

# FIGURE 1. STATISTICAL ANALYSIS PLAN OVERVIEW



## FIGURE 2. DECISION LOGIC FOR COMPUTING PREDICTION LIMITS



## APPENDICES

# APPENDIX A. MONITORING SYSTEM DETAILS

**TABLE 1**

**GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS**

| Upgradient Monitoring Well ID | Hydraulic Location | Total Depth (ft BTOC) | Top of Casing (ft) | Screen Interval Elevation (ft) | Depth to Groundwater (ft BTOC) | September 2020 Groundwater Elevation (ft) | Screened Lithology | Horizontal Hydraulic Conductivity (cm/sec) | Vertical Hydraulic Conductivity (cm/sec) |
|---|---|---|---|---|---|---|---|---|---|
| GWA-2 | Upgradient | 52.02 | 805.62 | 763.8 - 753.8 | 34.98 | 770.64 | PWR | 1.46E-03 | n/a |
| YGWA-1I | Upgradient | 53.60 | 836.60 | 793.3 - 783.3 | 36.71 | 799.89 | PWR | 1.80E-04 | n/a |
| YGWA-1D | Upgradient | 128.85 | 837.25 | 759.2 - 709.2 | 48.22 | 789.03 | Bedrock | 6.17E-05 | n/a |
| YGWA-2I | Upgradient | 63.75 | 866.25 | 812.8 - 802.8 | 44.18 | 822.07 | PWR | 3.53E-06 | n/a |
| YGWA-3I | Upgradient | 59.05 | 796.55 | 747.7 - 737.7 | 53.32 | 743.23 | PWR | 1.16E-04 | n/a |
| YGWA-3D | Upgradient | 134.18 | 796.78 | 712.9 - 662.9 | 23.41 | 773.37 | Bedrock | 4.90E-04 | n/a |
| YGWA-4I | Upgradient | 48.81 | 784.21 | 745.7 - 735.7 | 23.45 | 760.76 | PWR | 8.55E-05 | n/a |
| YGWA-5I | Upgradient | 58.94 | 784.54 | 735.9 - 725.9 | 19.82 | 764.72 | PWR | 2.90E-04 | n/a |
| YGWA-5D | Upgradient | 129.13 | 784.53 | 706.0 - 656.0 | 22.51 | 762.02 | Bedrock | 1.11E-04 | n/a |
| YGWA-14S | Upgradient | 34.96 | 748.76 | 724.1 - 714.1 | 17.37 | 731.39 | Saprolite | 4.94E-04 | n/a |
| YGWA-17S | Upgradient | 39.85 | 783.05 | 753.2 - 743.2 | 12.62 | 770.43 | Saprolite | 3.46E-04 | 6.91E-04 |
| YGWA-18S | Upgradient | 39.97 | 790.57 | 760.9 - 750.9 | 20.39 | 770.18 | Saprolite | 1.06E-04 | n/a |
| YGWA-18I | Upgradient | 79.97 | 790.57 | 720.9 - 710.9 | 23.59 | 766.98 | PWR | 6.42E-04 | n/a |
| YGWA-20S | Upgradient | 29.52 | 767.12 | 747.9 - 737.9 | 11.44 | 755.68 | Saprolite | 2.93E-04 | 9.72E-05 |
| YGWA-21I | Upgradient | 79.90 | 783.70 | 714.1 - 704.1 | 31.29 | 752.41 | PWR | 2.20E-05 | n/a |
| YGWA-30I | Upgradient | 59.48 | 762.58 | 713.4 - 703.4 | 48.47 | 714.11 | PWR | 2.27E-03 | n/a |
| YGWA-39 | Upgradient | 68.59 | 818.19 | 760.1 - 750.1 | 21.81 | 796.38 | PWR | 1.85E-03 | n/a |
| YGWA-40 | Upgradient | 48.23 | 815.73 | 778.0 - 768.0 | 25.44 | 790.29 | PWR | 6.50E-04 | n/a |
| YGWA-47 | Upgradient | 59.19 | 758.22 | 709.6 - 699.6 | 33.38 | 724.84 | PWR | 8.04E-04 | n/a |
| YGWC-23S | Downgradient | 38.91 | 764.91 | 735.2 - 725.2 | 17.61 | 747.44 | Saprolite | 2.22E-04 | n/a |
| YGWC-24SA | Downgradient | 57.00 | 765.00 | 718.0 - 708.0 | 28.77 | 736.23 | Saprolite | n/a | n/a |
| YGWC-36A | Downgradient | 51.20 | 740.88 | 698.9 - 688.9 | 7.30 | 733.58 | PWR | n/a | n/a |
| YGWC-38 | Downgradient | 49.59 | 799.69 | 760.1 - 750.1 | 29.82 | 768.78 | Bedrock | 1.91E-04 | n/a |
| YGWC-41 | Downgradient | 66.82 | 803.92 | 747.1 - 737.1 | 26.91 | 777.01 | Bedrock | 5.79E-04 | n/a |
| YGWC-42 | Downgradient | 59.76 | 797.86 | 748.5 - 738.5 | 27.48 | 770.38 | Bedrock | 1.84E-04 | n/a |
| YGWC-43 | Downgradient | 79.66 | 744.96 | 676.8 - 666.8 | 15.11 | 729.85 | Bedrock | 3.14E-03 | n/a |
| YGWC-49 | Downgradient | 78.53 | 782.73 | 714.7 - 704.7 | 31.00 | 751.73 | PWR | 7.46E-04 | n/a |
| YGWC-50 (Proposed) | Downgradient | TBD | TBD | TBD | TBD | n/a | TBD | n/a | n/a |

Notes:

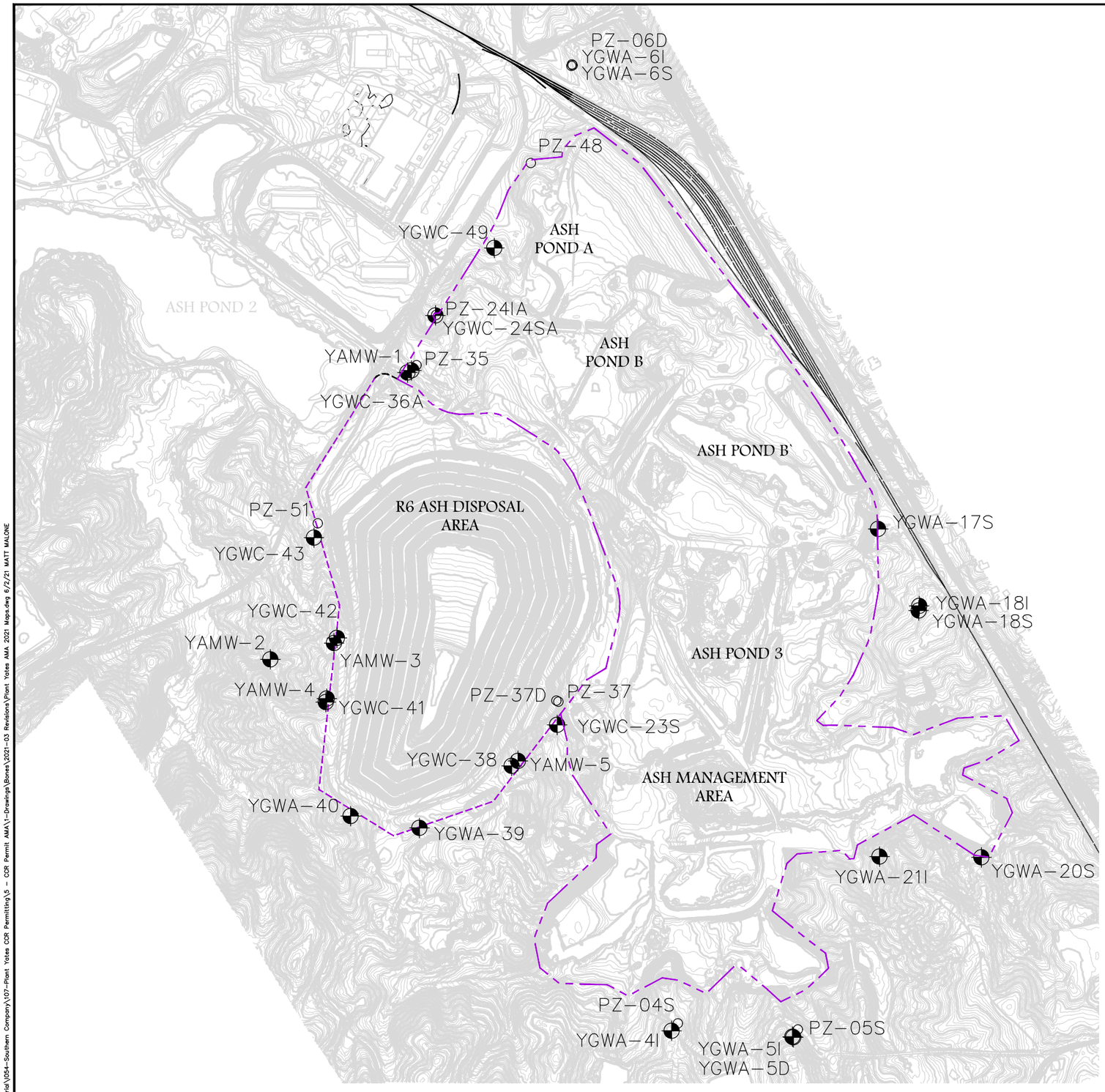
ft BTOC = feet below top of casing; cm/sec = centimeters per second

Elevation in U.S. Survey Feet (NAVD88) based on June 2020 survey.

PWR = Partially Weathered Rock

TBD = to be determined

n/a = not applicable




P:\Industrial\1054-Southern Company\107-Plant Yates CCR Permitting\5 - CCR Permit AMA\1-Drawings\Bones\2021-03 Revisions\Plant Yates AMA 2021 Maps.dwg 6/2/21 MATT MALONE

N

700 0 350 700

SCALE (IN FEET)

**NOTES:**

1. TOPOGRAPHIC SURVEY DATED MAY 26, 2017.

**LEGEND:**

- CCR PERMIT BOUNDARY
- PROMINENT CONTOUR
- INTERMEDIATE CONTOUR
- ROAD
- YGWA-17S — GROUNDWATER WELL
- PZ-04S — PIEZOMETER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PROJECT:

PLANT YATES
MULTI-UNIT
R6-AMA

708 Dyer Road
Newnan, Georgia

Georgia Power

REVISIONS

| Drawn by: | Checked by: | QC by: |
|---|---|---|
| MM | EP | MJ |

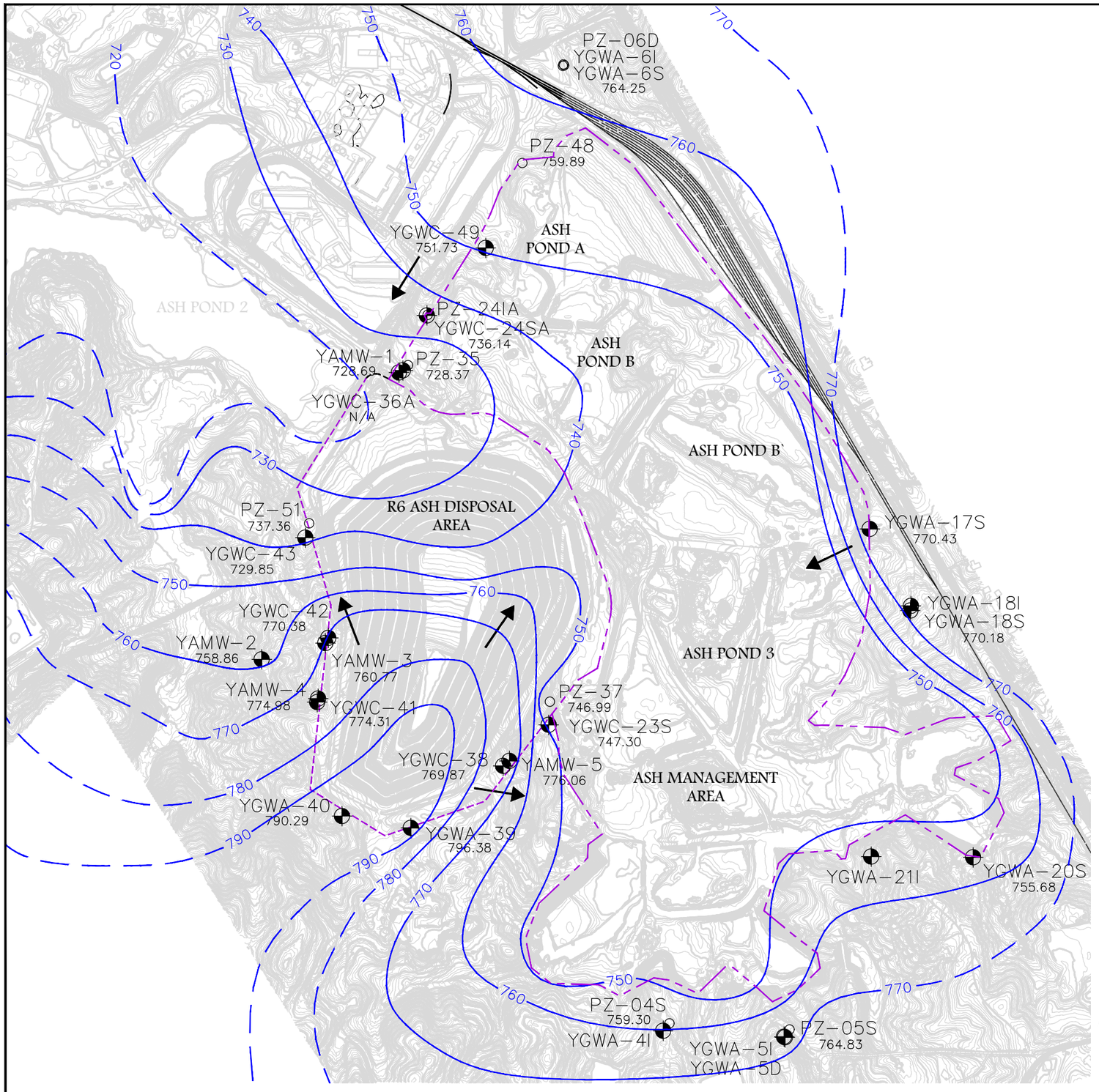
PROJECT NUMBER:

1054-107

June 2021

MONITORING WELL NETWORK

Figure 2




## SUMMARY OF SEPTEMBER 2020 GROUNDWATER ELEVATIONS

| Monitoring Well ID | Total Depth (ft BTOC) | Top of Casing Elevation (ft NAVD88) | Depth to Water (ft BTOC) | Groundwater Elevation (ft NAVD 88) |
|---|---|---|---|---|
| YGWA-4I | 48.81 | 784.21 | 23.45 | 760.76 |
| YGWA-5I | 58.94 | 784.54 | 19.82 | 764.72 |
| YGWA-5D | 129.13 | 784.53 | 22.51 | 762.02 |
| YGWA-17S | 39.85 | 783.05 | 12.62 | 770.43 |
| YGWA-18S | 39.97 | 790.57 | 20.39 | 770.18 |
| YGWA-18I | 79.97 | 790.57 | 23.59 | 766.98 |
| YGWA-20S | 29.52 | 767.12 | 11.44 | 755.68 |
| YGWA-21I | 79.90 | 783.70 | 31.29 | 752.41 |
| YGWA-39 | 68.59 | 818.19 | 21.81 | 796.38 |
| YGWA-40 | 48.23 | 815.73 | 25.44 | 790.29 |
| YGWC-23S | 38.91 | 764.91 | 17.61 | 747.30 |
| YGWC-24SA | 57.00 | 764.91 | 28.77 | 736.14 |
| YGWC-36A | 51.20 | 740.88 | n/a | n/a |
| YGWC-38 | 68.59 | 799.69 | 29.82 | 769.87 |
| YGWC-41 | 66.82 | 803.92 | 29.61 | 774.31 |
| YGWC-42 | 59.76 | 797.86 | 27.48 | 770.38 |
| YGWC-43 | 79.66 | 744.96 | 15.11 | 729.85 |
| YGWC-49 | 78.53 | 782.73 | 31.00 | 751.73 |
| YGWA-6S | 39.87 | 782.47 | 18.22 | 764.25 |
| YGWA-6I | 69.03 | 782.73 | 18.48 | 764.25 |
| PZ-04S | 32.75 | 784.25 | 24.95 | 759.30 |
| PZ-05S | 41.94 | 784.64 | 19.81 | 764.83 |
| PZ-06D | 134.02 | 782.02 | 21.43 | 760.59 |
| PZ-24IA | 89.53 | 764.65 | 29.13 | 735.52 |
| PZ-35 | 50.01 | 743.81 | 15.44 | 728.37 |
| PZ-37 | 49.78 | 760.78 | 13.79 | 746.99 |
| PZ-48 | 58.73 | 779.83 | 19.94 | 759.89 |
| PZ-51 | 36.32 | 744.30 | 6.94 | 737.36 |
| YAMW-1 | 69.93 | 743.83 | 15.14 | 728.69 |
| YAMW-2 | 46.48 | 781.04 | 22.18 | 758.86 |
| YAMW-3 | 91.44 | 796.05 | 35.28 | 760.77 |
| YAMW-4 | 96.55 | 805.59 | 30.61 | 774.98 |
| YAMW-5 | 90.34 | 788.90 | 12.84 | 776.06 |

NOTES:
1. Depths to water measured September 21, 2020.
2. ft BTOC indicates feet below top of casing.
3. Elevation data are feet relative to North American Vertical Datum (NAVD) 1988.
4. n/a indicates well not installed at time of measurement.

**NOTES:**
1. TOPOGRAPHIC SURVEY DATED MAY 26, 2017.
2. WELLS WITH "D" & "I" SUFFIXES MONITOR DEEPER INTERVALS AND ARE NOT USED TO CONSTRUCT WATER TABLE CONTOURS.
3. GROUNDWATER CONTOURS FROM ARCADIS US, INC. 2020. WELLS YGWC-38, YGWC-43, AND YAMW-3 ARE NOT USED TO CONSTRUCT WATER TABLE CONTOURS.

**LEGEND:**
- CCR PERMIT BOUNDARY
- PROMINENT CONTOUR
- INTERMEDIATE CONTOUR
- ROAD
- YGWA-17S 770.43 — GROUNDWATER WELL GROUNDWATER ELEVATION
- PZ-04S 759.30 — PIEZOMETER GROUNDWATER ELEVATION
- 750 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION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Georgia Power

REVISIONS

| Drawn by: | Checked by: | QC by: |
|---|---|---|
| MM | EP | MJ |

PROJECT NUMBER:
1054-107

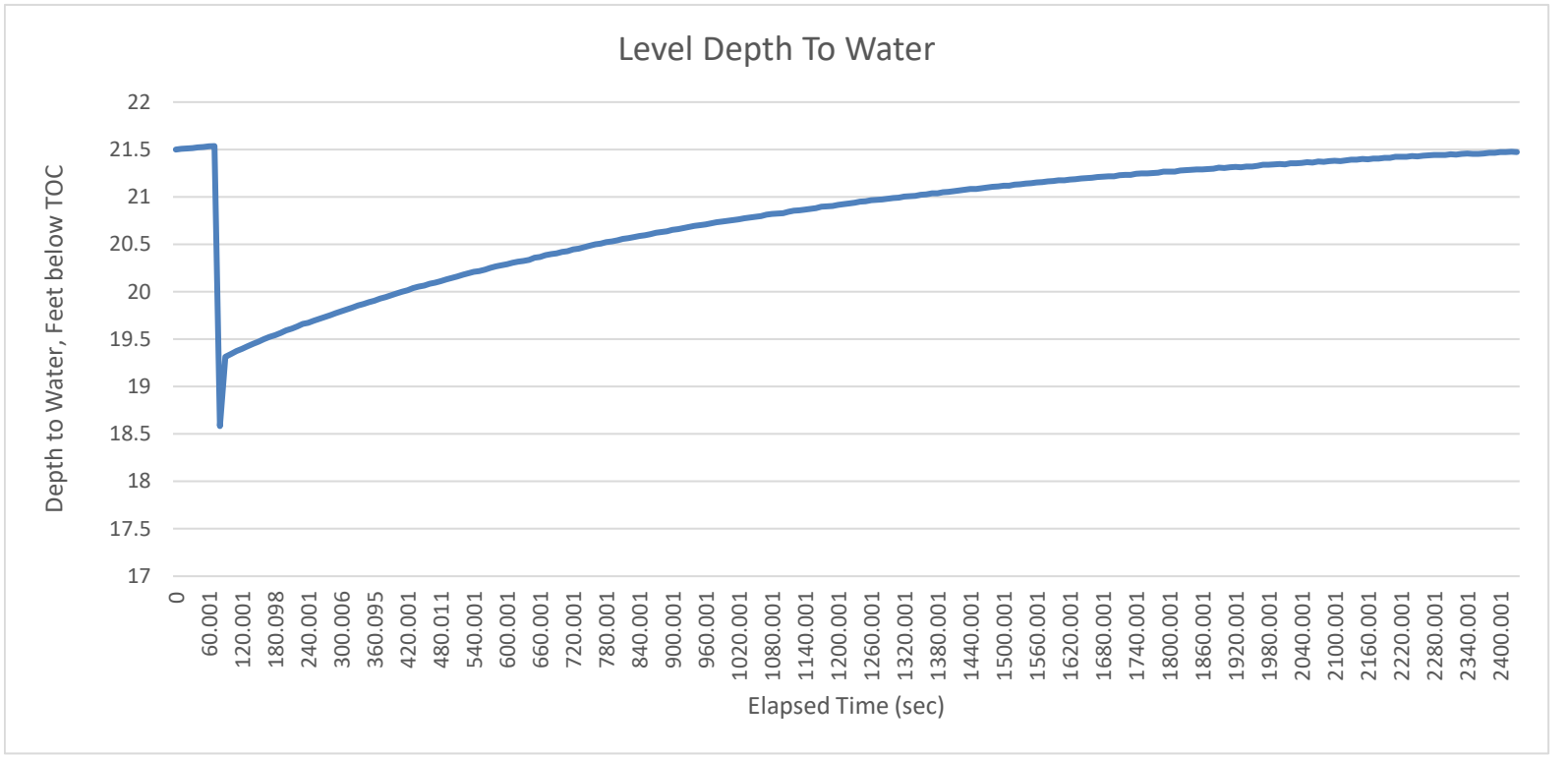
May 2021

# SEPTEMBER 2020 POTENTIOMETRIC SURFACE CONTOUR MAP

Figure 2

# APPENDIX B. HYDRAULIC CONDUCTIVITY TESTING RESULTS

# PZ-4i Test 1 (in)




| Log Configuration | |
|---|---|
| Log Name | PZ-04 I |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 10:00 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

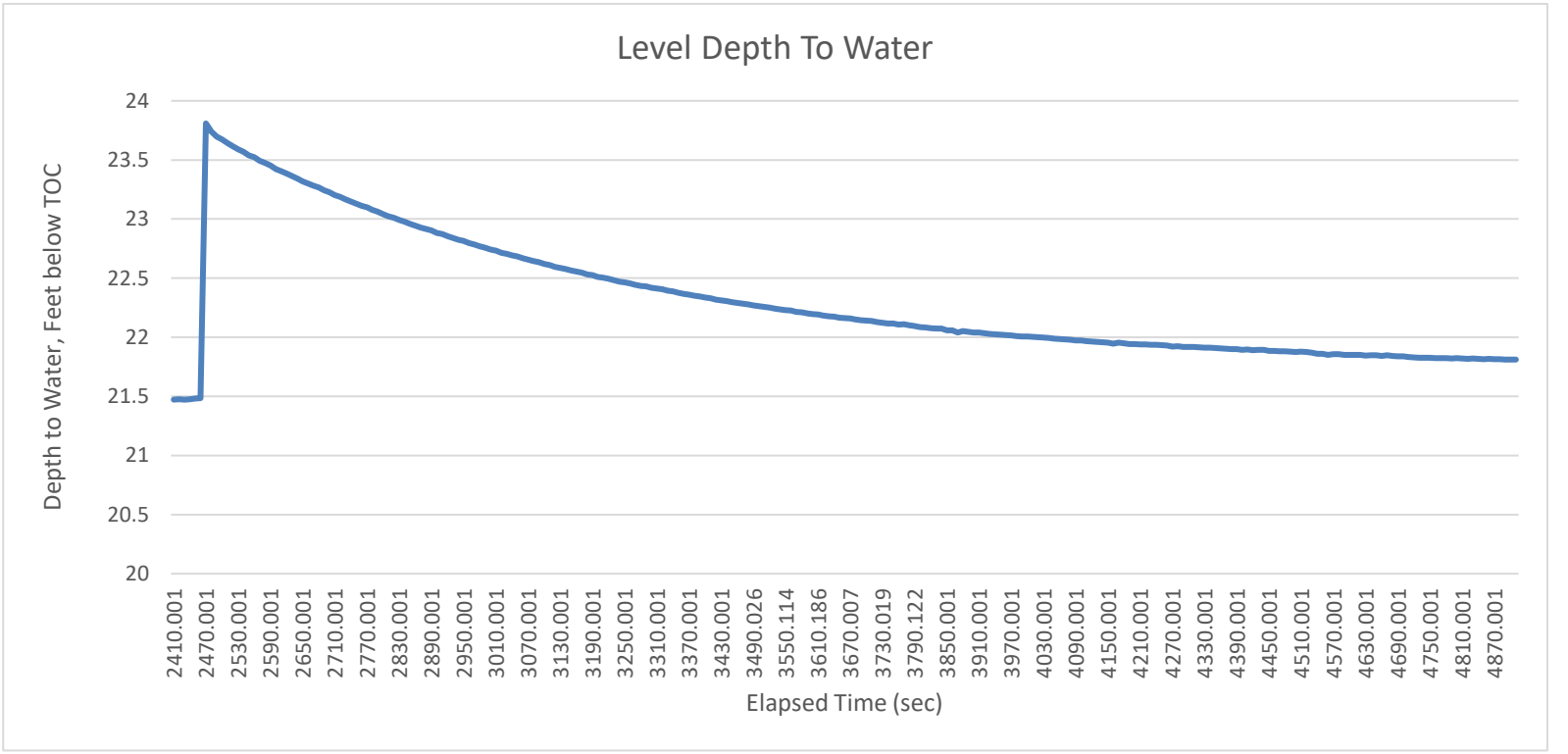
| Other Log Settings | |
|---|---|
| Depth of Probe: | 18.9311 (ft) |
| Head Pressure: | 8.19895 (PSI) |
| Temperature: | 60.3496 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 84 |
| Level Reference Head Pressure | 23 |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 21.45 (ft) |
| Used Battery(%) | 8.19992 (PSI) |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 21.499 | 450 | 20.067 | 900 | 20.652 | 1350 | 21.023 | 1800 | 21.267 |
| 10 | 21.507 | 460 | 20.084 | 910 | 20.662 | 1360 | 21.028 | 1810 | 21.266 |
| 20 | 21.511 | 470 | 20.097 | 920 | 20.672 | 1370 | 21.038 | 1820 | 21.278 |
| 30 | 21.516 | 480 | 20.112 | 930 | 20.684 | 1380 | 21.039 | 1830 | 21.282 |
| 40 | 21.521 | 490 | 20.130 | 940 | 20.694 | 1390 | 21.049 | 1840 | 21.284 |
| 50 | 21.528 | 500 | 20.147 | 950 | 20.703 | 1400 | 21.055 | 1850 | 21.290 |
| 60 | 21.534 | 510 | 20.160 | 960 | 20.711 | 1410 | 21.060 | 1860 | 21.288 |
| 70 | 21.536 | 520 | 20.180 | 970 | 20.721 | 1420 | 21.069 | 1870 | 21.293 |
| 80 | 18.583 | 530 | 20.195 | 980 | 20.733 | 1430 | 21.076 | 1880 | 21.299 |
| 90 | 19.315 | 540 | 20.209 | 990 | 20.741 | 1440 | 21.083 | 1890 | 21.307 |
| 100 | 19.344 | 550 | 20.219 | 1000 | 20.749 | 1450 | 21.085 | 1900 | 21.306 |
| 110 | 19.373 | 560 | 20.232 | 1010 | 20.755 | 1460 | 21.091 | 1910 | 21.312 |
| 120 | 19.398 | 570 | 20.253 | 1020 | 20.765 | 1470 | 21.099 | 1920 | 21.315 |
| 130 | 19.424 | 580 | 20.266 | 1030 | 20.774 | 1480 | 21.106 | 1930 | 21.314 |
| 140 | 19.450 | 590 | 20.279 | 1040 | 20.783 | 1490 | 21.111 | 1940 | 21.319 |
| 150 | 19.475 | 600 | 20.292 | 1050 | 20.791 | 1500 | 21.117 | 1950 | 21.321 |
| 160 | 19.499 | 610 | 20.305 | 1060 | 20.798 | 1510 | 21.119 | 1960 | 21.329 |
| 170 | 19.523 | 620 | 20.316 | 1070 | 20.811 | 1520 | 21.129 | 1970 | 21.338 |
| 180 | 19.544 | 630 | 20.325 | 1080 | 20.819 | 1530 | 21.133 | 1980 | 21.339 |
| 190 | 19.566 | 640 | 20.335 | 1090 | 20.825 | 1540 | 21.140 | 1990 | 21.344 |
| 200 | 19.592 | 650 | 20.359 | 1100 | 20.829 | 1550 | 21.146 | 2000 | 21.347 |
| 210 | 19.611 | 660 | 20.368 | 1110 | 20.844 | 1560 | 21.151 | 2010 | 21.343 |
| 220 | 19.635 | 670 | 20.387 | 1120 | 20.853 | 1570 | 21.155 | 2020 | 21.353 |
| 230 | 19.659 | 680 | 20.398 | 1130 | 20.857 | 1580 | 21.164 | 2030 | 21.356 |
| 240 | 19.673 | 690 | 20.405 | 1140 | 20.866 | 1590 | 21.167 | 2040 | 21.359 |
| 250 | 19.694 | 700 | 20.421 | 1150 | 20.875 | 1600 | 21.174 | 2050 | 21.365 |
| 260 | 19.714 | 710 | 20.428 | 1160 | 20.882 | 1610 | 21.174 | 2060 | 21.362 |
| 270 | 19.735 | 720 | 20.446 | 1170 | 20.896 | 1620 | 21.182 | 2070 | 21.372 |
| 280 | 19.753 | 730 | 20.456 | 1180 | 20.902 | 1630 | 21.188 | 2080 | 21.368 |
| 290 | 19.774 | 740 | 20.468 | 1190 | 20.905 | 1640 | 21.195 | 2090 | 21.378 |
| 300 | 19.796 | 750 | 20.485 | 1200 | 20.916 | 1650 | 21.197 | 2100 | 21.382 |
| 310 | 19.814 | 760 | 20.500 | 1210 | 20.924 | 1660 | 21.203 | 2110 | 21.379 |
| 320 | 19.832 | 770 | 20.508 | 1220 | 20.932 | 1670 | 21.210 | 2120 | 21.386 |
| 330 | 19.854 | 780 | 20.522 | 1230 | 20.940 | 1680 | 21.213 | 2130 | 21.391 |
| 340 | 19.872 | 790 | 20.531 | 1240 | 20.950 | 1690 | 21.216 | 2140 | 21.394 |
| 350 | 19.891 | 800 | 20.543 | 1250 | 20.953 | 1700 | 21.217 | 2150 | 21.400 |
| 360 | 19.906 | 810 | 20.559 | 1260 | 20.964 | 1710 | 21.227 | 2160 | 21.397 |
| 370 | 19.927 | 820 | 20.566 | 1270 | 20.968 | 1720 | 21.231 | 2170 | 21.405 |
| 380 | 19.945 | 830 | 20.576 | 1280 | 20.972 | 1730 | 21.234 | 2180 | 21.403 |
| 390 | 19.964 | 840 | 20.587 | 1290 | 20.981 | 1740 | 21.244 | 2190 | 21.413 |
| 400 | 19.980 | 850 | 20.596 | 1300 | 20.989 | 1750 | 21.247 | 2200 | 21.411 |
| 410 | 20.000 | 860 | 20.606 | 1310 | 20.994 | 1760 | 21.247 | 2210 | 21.422 |
| 420 | 20.016 | 870 | 20.621 | 1320 | 21.002 | 1770 | 21.251 | 2220 | 21.422 |
| 430 | 20.039 | 880 | 20.629 | 1330 | 21.008 | 1780 | 21.255 | 2230 | 21.425 |
| 440 | 20.055 | 890 | 20.637 | 1340 | 21.012 | 1790 | 21.265 | 2240 | 21.430 |

# PZ-4i Test 1 (out)




| Log Configuration | |
|---|---|
| Log Name | PZ-04 I |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 10:00 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

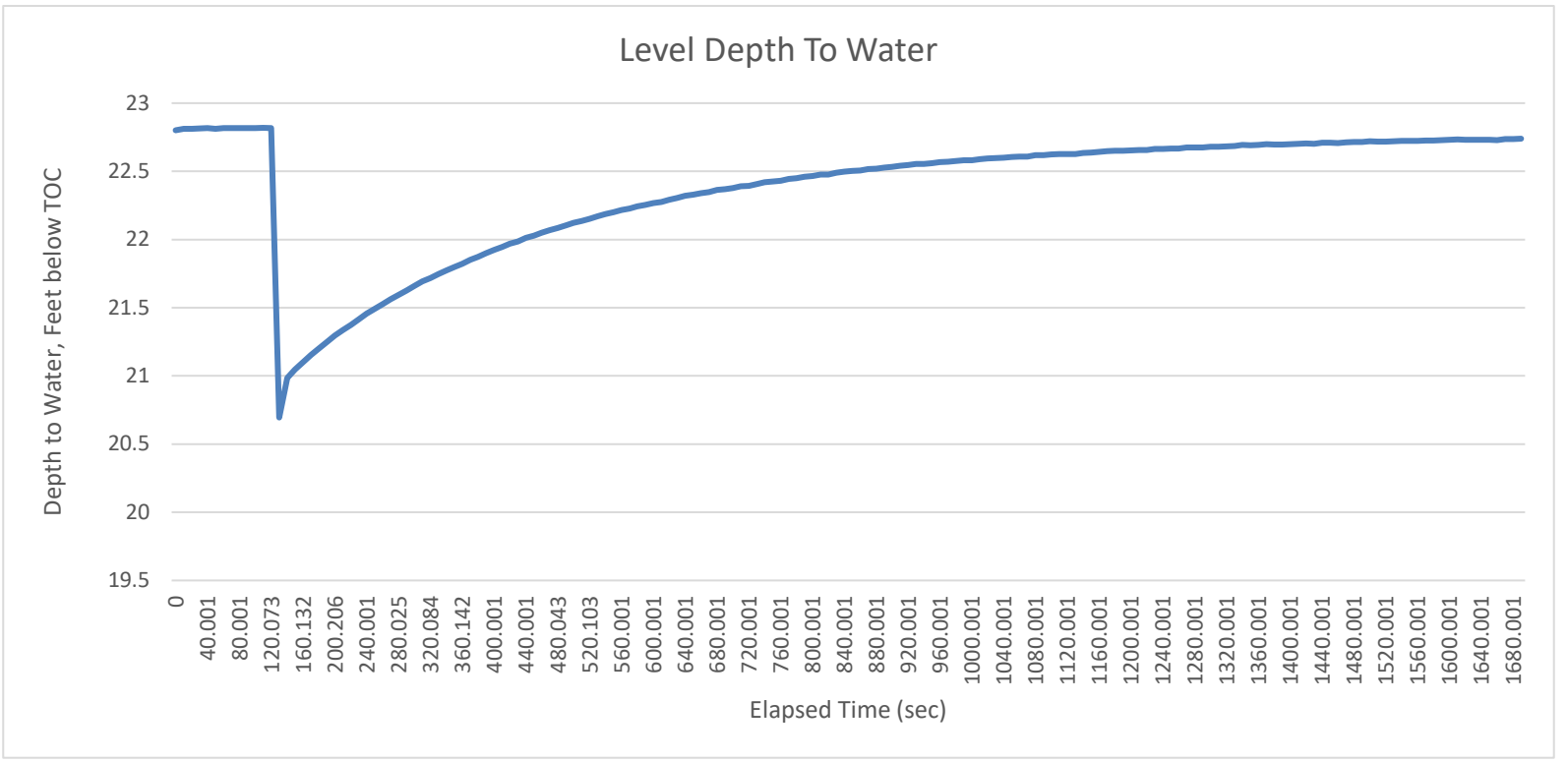
| Other Log Settings | |
|---|---|
| Depth of Probe: | 18.9311 (ft) |
| Head Pressure: | 8.19895 (PSI) |
| Temperature: | 60.3496 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 21.45 (ft) |
| Level Reference Head Pressure | 8.19992 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 84 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 2400 | | 2850 | 22.958 | 3300 | 22.42 | 3750 | 22.118 | 4200 | 21.943 |
| 2410 | 21.473 | 2860 | 22.945 | 3310 | 22.413 | 3760 | 22.108 | 4210 | 21.94 |
| 2420 | 21.477 | 2870 | 22.928 | 3320 | 22.405 | 3770 | 22.109 | 4220 | 21.94 |
| 2430 | 21.472 | 2880 | 22.915 | 3330 | 22.394 | 3780 | 22.102 | 4230 | 21.935 |
| 2440 | 21.476 | 2890 | 22.904 | 3340 | 22.387 | 3790 | 22.094 | 4240 | 21.937 |
| 2450 | 21.483 | 2900 | 22.882 | 3350 | 22.375 | 3800 | 22.087 | 4250 | 21.933 |
| 2460 | 21.486 | 2910 | 22.873 | 3360 | 22.367 | 3810 | 22.082 | 4260 | 21.929 |
| 2470 | 23.809 | 2920 | 22.856 | 3370 | 22.36 | 3820 | 22.076 | 4270 | 21.922 |
| 2480 | 23.739 | 2930 | 22.839 | 3380 | 22.351 | 3830 | 22.073 | 4280 | 21.925 |
| 2490 | 23.697 | 2940 | 22.825 | 3390 | 22.345 | 3840 | 22.073 | 4290 | 21.919 |
| 2500 | 23.672 | 2950 | 22.815 | 3400 | 22.336 | 3850 | 22.06 | 4300 | 21.918 |
| 2510 | 23.641 | 2960 | 22.798 | 3410 | 22.329 | 3860 | 22.058 | 4310 | 21.917 |
| 2520 | 23.614 | 2970 | 22.786 | 3420 | 22.319 | 3870 | 22.04 | 4320 | 21.916 |
| 2530 | 23.591 | 2980 | 22.77 | 3430 | 22.313 | 3880 | 22.053 | 4330 | 21.912 |
| 2540 | 23.569 | 2990 | 22.756 | 3440 | 22.306 | 3890 | 22.047 | 4340 | 21.911 |
| 2550 | 23.54 | 3000 | 22.741 | 3450 | 22.298 | 3900 | 22.039 | 4350 | 21.909 |
| 2560 | 23.523 | 3010 | 22.732 | 3460 | 22.29 | 3910 | 22.039 | 4360 | 21.906 |
| 2570 | 23.493 | 3020 | 22.716 | 3470 | 22.283 | 3920 | 22.035 | 4370 | 21.902 |
| 2580 | 23.476 | 3030 | 22.704 | 3480 | 22.277 | 3930 | 22.028 | 4380 | 21.9 |
| 2590 | 23.453 | 3040 | 22.692 | 3490 | 22.27 | 3940 | 22.025 | 4390 | 21.9 |
| 2600 | 23.424 | 3050 | 22.685 | 3500 | 22.263 | 3950 | 22.023 | 4400 | 21.895 |
| 2610 | 23.404 | 3060 | 22.67 | 3510 | 22.256 | 3960 | 22.019 | 4410 | 21.896 |
| 2620 | 23.385 | 3070 | 22.656 | 3520 | 22.25 | 3970 | 22.017 | 4420 | 21.891 |
| 2630 | 23.365 | 3080 | 22.643 | 3530 | 22.243 | 3980 | 22.01 | 4430 | 21.893 |
| 2640 | 23.343 | 3090 | 22.634 | 3540 | 22.237 | 3990 | 22.008 | 4440 | 21.893 |
| 2650 | 23.32 | 3100 | 22.619 | 3550 | 22.229 | 4000 | 22.008 | 4450 | 21.886 |
| 2660 | 23.3 | 3110 | 22.611 | 3560 | 22.226 | 4010 | 22.004 | 4460 | 21.885 |
| 2670 | 23.282 | 3120 | 22.597 | 3570 | 22.215 | 4020 | 21.999 | 4470 | 21.88 |
| 2680 | 23.268 | 3130 | 22.585 | 3580 | 22.21 | 4030 | 21.996 | 4480 | 21.88 |
| 2690 | 23.243 | 3140 | 22.577 | 3590 | 22.203 | 4040 | 21.994 | 4490 | 21.878 |
| 2700 | 23.227 | 3150 | 22.566 | 3600 | 22.196 | 4050 | 21.988 | 4500 | 21.875 |
| 2710 | 23.203 | 3160 | 22.557 | 3610 | 22.192 | 4060 | 21.985 | 4510 | 21.878 |
| 2720 | 23.187 | 3170 | 22.547 | 3620 | 22.185 | 4070 | 21.981 | 4520 | 21.874 |
| 2730 | 23.167 | 3180 | 22.533 | 3630 | 22.179 | 4080 | 21.978 | 4530 | 21.87 |
| 2740 | 23.147 | 3190 | 22.526 | 3640 | 22.175 | 4090 | 21.974 | 4540 | 21.859 |
| 2750 | 23.13 | 3200 | 22.511 | 3650 | 22.165 | 4100 | 21.972 | 4550 | 21.859 |
| 2760 | 23.112 | 3210 | 22.503 | 3660 | 22.162 | 4110 | 21.968 | 4560 | 21.852 |
| 2770 | 23.099 | 3220 | 22.496 | 3670 | 22.16 | 4120 | 21.965 | 4570 | 21.857 |
| 2780 | 23.078 | 3230 | 22.484 | 3680 | 22.151 | 4130 | 21.961 | 4580 | 21.856 |
| 2790 | 23.062 | 3240 | 22.472 | 3690 | 22.143 | 4140 | 21.958 | 4590 | 21.852 |
| 2800 | 23.042 | 3250 | 22.463 | 3700 | 22.142 | 4150 | 21.956 | 4600 | 21.85 |
| 2810 | 23.024 | 3260 | 22.454 | 3710 | 22.139 | 4160 | 21.946 | 4610 | 21.852 |
| 2820 | 23.01 | 3270 | 22.444 | 3720 | 22.128 | 4170 | 21.954 | 4620 | 21.85 |
| 2830 | 22.992 | 3280 | 22.434 | 3730 | 22.122 | 4180 | 21.95 | 4630 | 21.846 |
| 2840 | 22.977 | 3290 | 22.43 | 3740 | 22.118 | 4190 | 21.944 | 4640 | 21.847 |

# PZ-4s Test 1 (in)




| Log Configuration | |
|---|---|
| Log Name | PZ-04 S |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 9:01 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

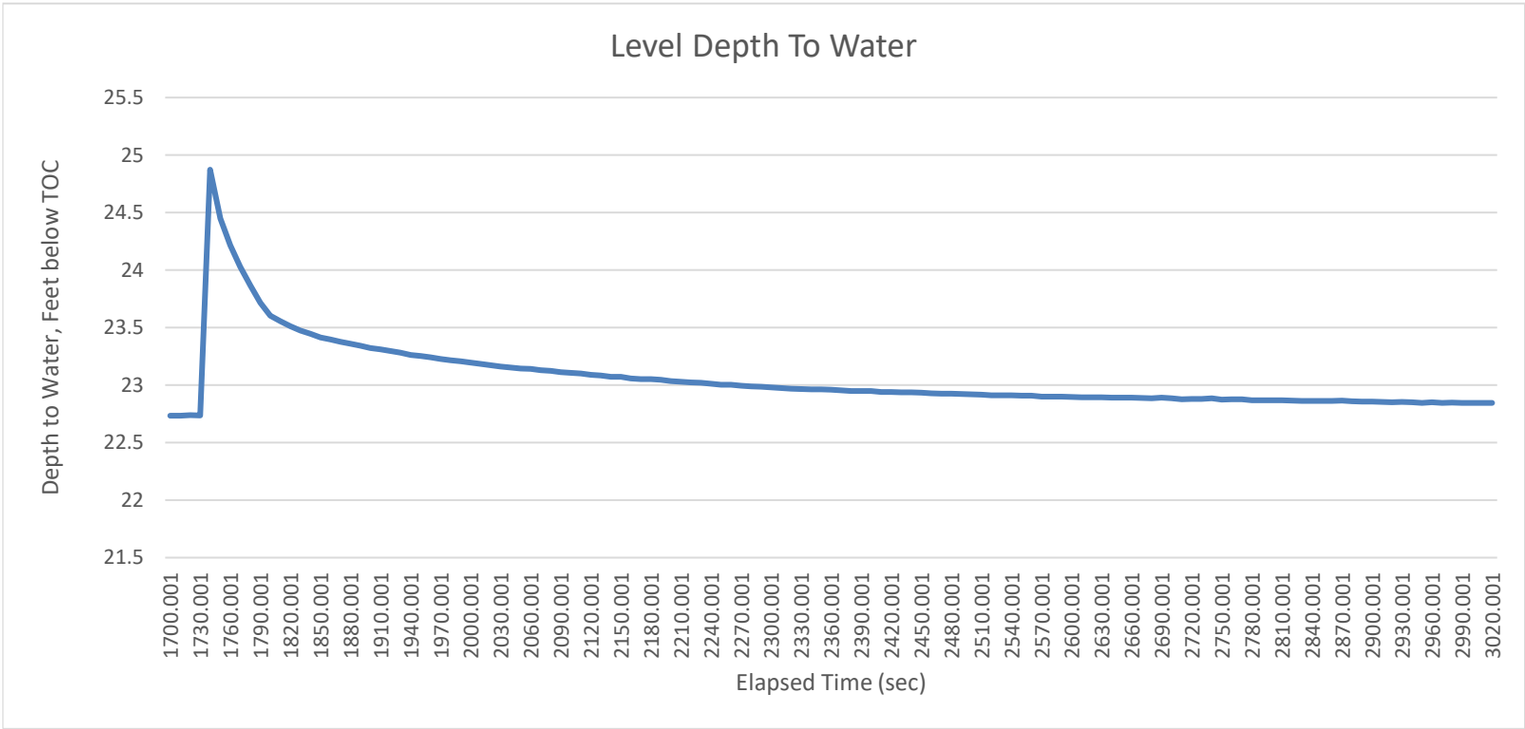
| Other Log Settings | |
|---|---|
| Depth of Probe: | 9.73925 (ft) |
| Head Pressure: | 4.21801 (PSI) |
| Temperature: | 60.8266 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 22.74 (ft) |
| Level Reference Head Pressure | 4.21807 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 81 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 22.802 | 450 | 22.029 | 900 | 22.532 | 1350 | 22.692 | | |
| 10 | 22.812 | 460 | 22.050 | 910 | 22.541 | 1360 | 22.694 | | |
| 20 | 22.813 | 470 | 22.070 | 920 | 22.545 | 1370 | 22.698 | | |
| 30 | 22.814 | 480 | 22.086 | 930 | 22.553 | 1380 | 22.696 | | |
| 40 | 22.818 | 490 | 22.104 | 940 | 22.553 | 1390 | 22.697 | | |
| 50 | 22.813 | 500 | 22.123 | 950 | 22.560 | 1400 | 22.700 | | |
| 60 | 22.816 | 510 | 22.135 | 960 | 22.567 | 1410 | 22.703 | | |
| 70 | 22.817 | 520 | 22.153 | 970 | 22.571 | 1420 | 22.705 | | |
| 80 | 22.817 | 530 | 22.170 | 980 | 22.576 | 1430 | 22.702 | | |
| 90 | 22.816 | 540 | 22.186 | 990 | 22.580 | 1440 | 22.710 | | |
| 100 | 22.818 | 550 | 22.201 | 1000 | 22.581 | 1450 | 22.710 | | |
| 110 | 22.819 | 560 | 22.216 | 1010 | 22.589 | 1460 | 22.708 | | |
| 120 | 22.818 | 570 | 22.228 | 1020 | 22.594 | 1470 | 22.712 | | |
| 130 | 20.695 | 580 | 22.242 | 1030 | 22.596 | 1480 | 22.716 | | |
| 140 | 20.985 | 590 | 22.255 | 1040 | 22.601 | 1490 | 22.716 | | |
| 150 | 21.046 | 600 | 22.268 | 1050 | 22.606 | 1500 | 22.721 | | |
| 160 | 21.101 | 610 | 22.275 | 1060 | 22.607 | 1510 | 22.718 | | |
| 170 | 21.154 | 620 | 22.292 | 1070 | 22.607 | 1520 | 22.718 | | |
| 180 | 21.202 | 630 | 22.304 | 1080 | 22.618 | 1530 | 22.721 | | |
| 190 | 21.249 | 640 | 22.320 | 1090 | 22.619 | 1540 | 22.722 | | |
| 200 | 21.295 | 650 | 22.330 | 1100 | 22.624 | 1550 | 22.723 | | |
| 210 | 21.336 | 660 | 22.340 | 1110 | 22.627 | 1560 | 22.724 | | |
| 220 | 21.375 | 670 | 22.347 | 1120 | 22.628 | 1570 | 22.725 | | |
| 230 | 21.415 | 680 | 22.363 | 1130 | 22.628 | 1580 | 22.725 | | |
| 240 | 21.457 | 690 | 22.370 | 1140 | 22.635 | 1590 | 22.729 | | |
| 250 | 21.492 | 700 | 22.377 | 1150 | 22.638 | 1600 | 22.730 | | |
| 260 | 21.528 | 710 | 22.390 | 1160 | 22.644 | 1610 | 22.735 | | |
| 270 | 21.563 | 720 | 22.394 | 1170 | 22.648 | 1620 | 22.732 | | |
| 280 | 21.595 | 730 | 22.407 | 1180 | 22.651 | 1630 | 22.732 | | |
| 290 | 21.626 | 740 | 22.420 | 1190 | 22.650 | 1640 | 22.732 | | |
| 300 | 21.660 | 750 | 22.426 | 1200 | 22.653 | 1650 | 22.732 | | |
| 310 | 21.692 | 760 | 22.432 | 1210 | 22.657 | 1660 | 22.729 | | |
| 320 | 21.717 | 770 | 22.445 | 1220 | 22.656 | 1670 | 22.736 | | |
| 330 | 21.746 | 780 | 22.451 | 1230 | 22.665 | 1680 | 22.736 | | |
| 340 | 21.773 | 790 | 22.461 | 1240 | 22.665 | 1690 | 22.739 | | |
| 350 | 21.799 | 800 | 22.466 | 1250 | 22.667 | | | | |
| 360 | 21.823 | 810 | 22.476 | 1260 | 22.666 | | | | |
| 370 | 21.851 | 820 | 22.476 | 1270 | 22.676 | | | | |
| 380 | 21.874 | 830 | 22.490 | 1280 | 22.674 | | | | |
| 390 | 21.901 | 840 | 22.497 | 1290 | 22.674 | | | | |
| 400 | 21.924 | 850 | 22.502 | 1300 | 22.681 | | | | |
| 410 | 21.945 | 860 | 22.507 | 1310 | 22.681 | | | | |
| 420 | 21.970 | 870 | 22.518 | 1320 | 22.683 | | | | |
| 430 | 21.986 | 880 | 22.519 | 1330 | 22.687 | | | | |
| 440 | 22.013 | 890 | 22.528 | 1340 | 22.694 | | | | |

# PZ-4s Test 1 (out)




| Log Configuration | |
|---|---|
| Log Name | PZ-04 S |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 9:01 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

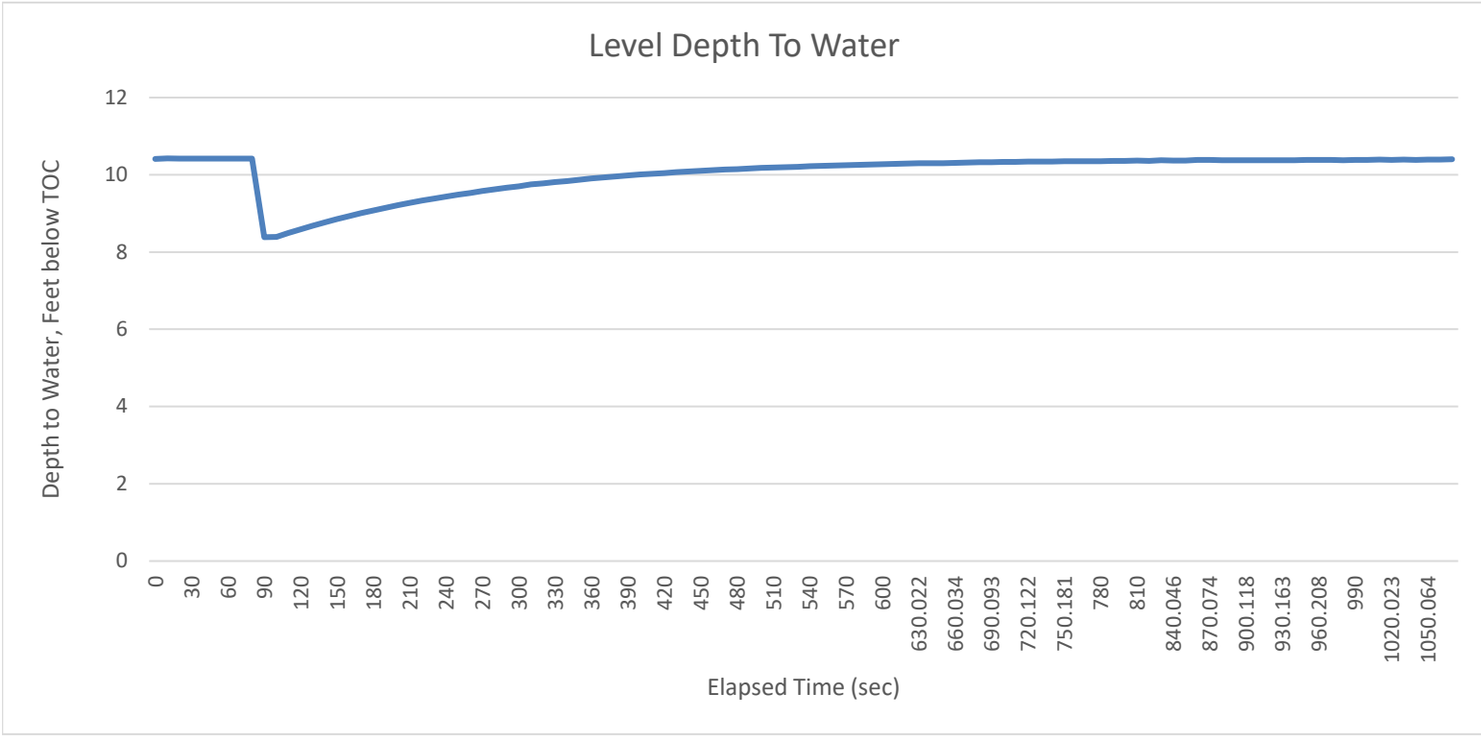
| Other Log Settings | |
|---|---|
| Depth of Probe: | 9.73925 (ft) |
| Head Pressure: | 4.21801 (PSI) |
| Temperature: | 60.8266 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 22.74 (ft) |
| Level Reference Head Pressure | 4.21807 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 81 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 1690 | | 2140 | 23.073 | 2590 | 22.901 | | | | |
| 1700 | 22.734 | 2150 | 23.071 | 2600 | 22.897 | | | | |
| 1710 | 22.734 | 2160 | 23.059 | 2610 | 22.894 | | | | |
| 1720 | 22.739 | 2170 | 23.051 | 2620 | 22.895 | | | | |
| 1730 | 22.735 | 2180 | 23.051 | 2630 | 22.893 | | | | |
| 1740 | 24.873 | 2190 | 23.046 | 2640 | 22.891 | | | | |
| 1750 | 24.448 | 2200 | 23.034 | 2650 | 22.89 | | | | |
| 1760 | 24.215 | 2210 | 23.03 | 2660 | 22.891 | | | | |
| 1770 | 24.028 | 2220 | 23.024 | 2670 | 22.889 | | | | |
| 1780 | 23.864 | 2230 | 23.019 | 2680 | 22.885 | | | | |
| 1790 | 23.717 | 2240 | 23.013 | 2690 | 22.89 | | | | |
| 1800 | 23.604 | 2250 | 23.003 | 2700 | 22.884 | | | | |
| 1810 | 23.555 | 2260 | 23.003 | 2710 | 22.878 | | | | |
| 1820 | 23.513 | 2270 | 22.994 | 2720 | 22.88 | | | | |
| 1830 | 23.474 | 2280 | 22.988 | 2730 | 22.88 | | | | |
| 1840 | 23.445 | 2290 | 22.987 | 2740 | 22.885 | | | | |
| 1850 | 23.415 | 2300 | 22.981 | 2750 | 22.874 | | | | |
| 1860 | 23.398 | 2310 | 22.975 | 2760 | 22.877 | | | | |
| 1870 | 23.377 | 2320 | 22.968 | 2770 | 22.876 | | | | |
| 1880 | 23.359 | 2330 | 22.967 | 2780 | 22.868 | | | | |
| 1890 | 23.342 | 2340 | 22.964 | 2790 | 22.869 | | | | |
| 1900 | 23.323 | 2350 | 22.963 | 2800 | 22.868 | | | | |
| 1910 | 23.311 | 2360 | 22.959 | 2810 | 22.869 | | | | |
| 1920 | 23.296 | 2370 | 22.955 | 2820 | 22.865 | | | | |
| 1930 | 23.281 | 2380 | 22.949 | 2830 | 22.863 | | | | |
| 1940 | 23.263 | 2390 | 22.949 | 2840 | 22.863 | | | | |
| 1950 | 23.254 | 2400 | 22.949 | 2850 | 22.861 | | | | |
| 1960 | 23.242 | 2410 | 22.94 | 2860 | 22.861 | | | | |
| 1970 | 23.228 | 2420 | 22.94 | 2870 | 22.864 | | | | |
| 1980 | 23.216 | 2430 | 22.937 | 2880 | 22.859 | | | | |
| 1990 | 23.206 | 2440 | 22.936 | 2890 | 22.856 | | | | |
| 2000 | 23.196 | 2450 | 22.933 | 2900 | 22.857 | | | | |
| 2010 | 23.183 | 2460 | 22.928 | 2910 | 22.855 | | | | |
| 2020 | 23.173 | 2470 | 22.926 | 2920 | 22.851 | | | | |
| 2030 | 23.162 | 2480 | 22.926 | 2930 | 22.853 | | | | |
| 2040 | 23.154 | 2490 | 22.924 | 2940 | 22.851 | | | | |
| 2050 | 23.144 | 2500 | 22.92 | 2950 | 22.846 | | | | |
| 2060 | 23.142 | 2510 | 22.917 | 2960 | 22.85 | | | | |
| 2070 | 23.129 | 2520 | 22.911 | 2970 | 22.846 | | | | |
| 2080 | 23.124 | 2530 | 22.911 | 2980 | 22.847 | | | | |
| 2090 | 23.113 | 2540 | 22.91 | 2990 | 22.844 | | | | |
| 2100 | 23.106 | 2550 | 22.908 | 3000 | 22.845 | | | | |
| 2110 | 23.101 | 2560 | 22.909 | 3010 | 22.846 | | | | |
| 2120 | 23.089 | 2570 | 22.9 | 3020 | 22.844 | | | | |
| 2130 | 23.085 | 2580 | 22.9 | | | | | | |

# PZ-5d Test 1 (in)




| Log Configuration | |
|---|---|
| Log Name | PZ-05 D |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 1:15 PM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

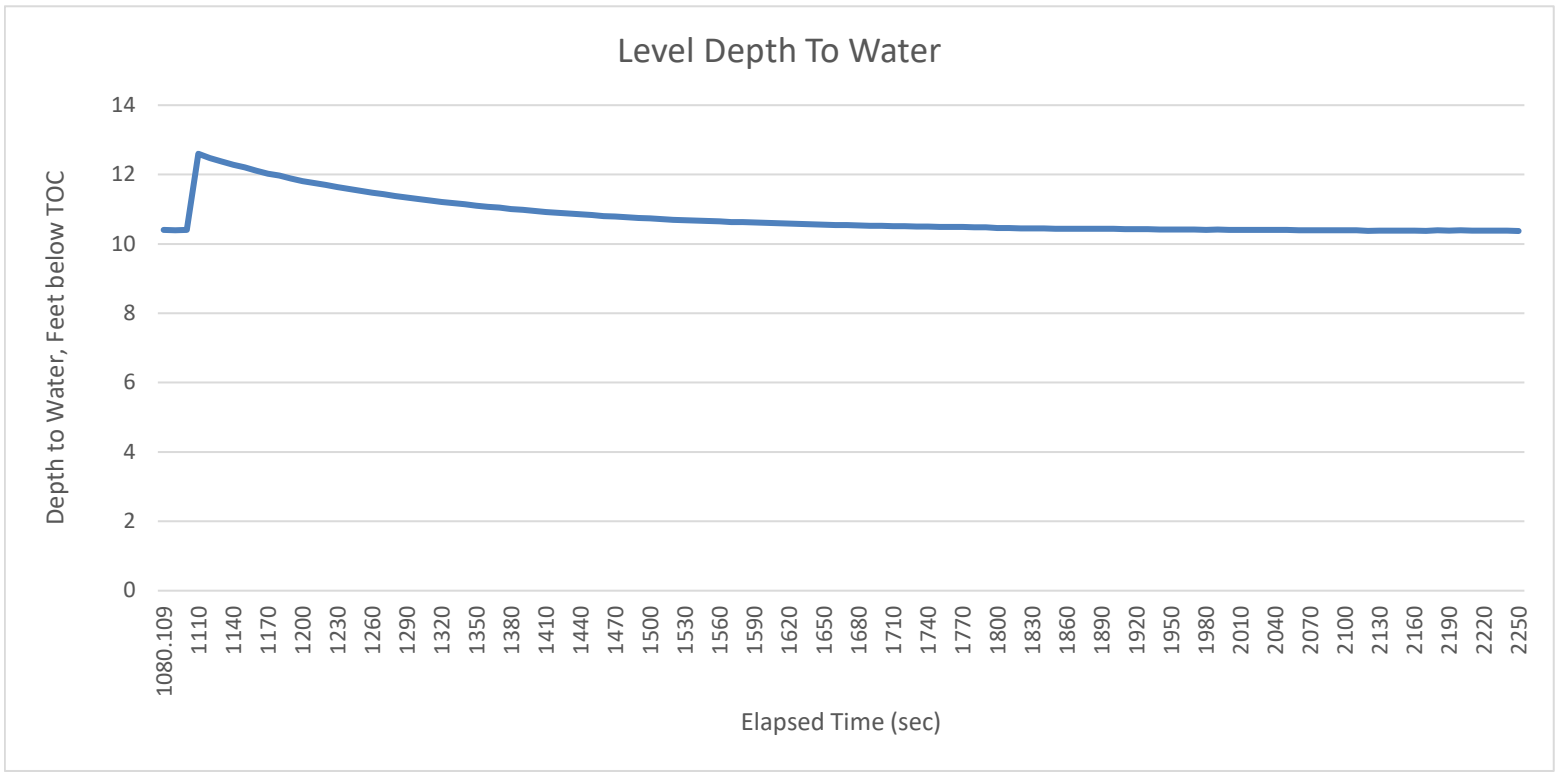
| Other Log Settings | |
|---|---|
| Depth of Probe: | 43.0264 (ft) |
| Head Pressure: | 18.6345 (PSI) |
| Temperature: | 62.0456 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 10.43 (ft) |
| Level Reference Head Pressure | 18.6373 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 93 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 10.412 | 450 | 10.104 | 900 | 10.378 | | | | |
| 10 | 10.425 | 460 | 10.120 | 910 | 10.379 | | | | |
| 20 | 10.422 | 470 | 10.134 | 920 | 10.378 | | | | |
| 30 | 10.423 | 480 | 10.149 | 930 | 10.378 | | | | |
| 40 | 10.422 | 490 | 10.164 | 940 | 10.381 | | | | |
| 50 | 10.422 | 500 | 10.176 | 950 | 10.382 | | | | |
| 60 | 10.422 | 510 | 10.187 | 960 | 10.383 | | | | |
| 70 | 10.421 | 520 | 10.201 | 970 | 10.383 | | | | |
| 80 | 10.416 | 530 | 10.210 | 980 | 10.381 | | | | |
| 90 | 8.385 | 540 | 10.221 | 990 | 10.387 | | | | |
| 100 | 8.391 | 550 | 10.232 | 1000 | 10.384 | | | | |
| 110 | 8.492 | 560 | 10.242 | 1010 | 10.393 | | | | |
| 120 | 8.590 | 570 | 10.251 | 1020 | 10.389 | | | | |
| 130 | 8.683 | 580 | 10.259 | 1030 | 10.398 | | | | |
| 140 | 8.772 | 590 | 10.269 | 1040 | 10.389 | | | | |
| 150 | 8.854 | 600 | 10.276 | 1050 | 10.396 | | | | |
| 160 | 8.932 | 610 | 10.283 | 1060 | 10.397 | | | | |
| 170 | 9.008 | 620 | 10.288 | 1070 | 10.400 | | | | |
| 180 | 9.079 | 630 | 10.297 | | | | | | |
| 190 | 9.146 | 640 | 10.301 | | | | | | |
| 200 | 9.210 | 650 | 10.304 | | | | | | |
| 210 | 9.270 | 660 | 10.312 | | | | | | |
| 220 | 9.330 | 670 | 10.317 | | | | | | |
| 230 | 9.386 | 680 | 10.324 | | | | | | |
| 240 | 9.438 | 690 | 10.326 | | | | | | |
| 250 | 9.487 | 700 | 10.330 | | | | | | |
| 260 | 9.533 | 710 | 10.336 | | | | | | |
| 270 | 9.584 | 720 | 10.339 | | | | | | |
| 280 | 9.622 | 730 | 10.342 | | | | | | |
| 290 | 9.667 | 740 | 10.346 | | | | | | |
| 300 | 9.704 | 750 | 10.348 | | | | | | |
| 310 | 9.750 | 760 | 10.350 | | | | | | |
| 320 | 9.775 | 770 | 10.353 | | | | | | |
| 330 | 9.810 | 780 | 10.353 | | | | | | |
| 340 | 9.841 | 790 | 10.360 | | | | | | |
| 350 | 9.874 | 800 | 10.358 | | | | | | |
| 360 | 9.903 | 810 | 10.369 | | | | | | |
| 370 | 9.928 | 820 | 10.362 | | | | | | |
| 380 | 9.955 | 830 | 10.375 | | | | | | |
| 390 | 9.981 | 840 | 10.367 | | | | | | |
| 400 | 10.007 | 850 | 10.367 | | | | | | |
| 410 | 10.026 | 860 | 10.383 | | | | | | |
| 420 | 10.046 | 870 | 10.382 | | | | | | |
| 430 | 10.068 | 880 | 10.375 | | | | | | |
| 440 | 10.086 | 890 | 10.378 | | | | | | |

# PZ-5d Test 1 (out)




| Log Configuration | |
|---|---|
| Log Name | PZ-05 D |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 1:15 PM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

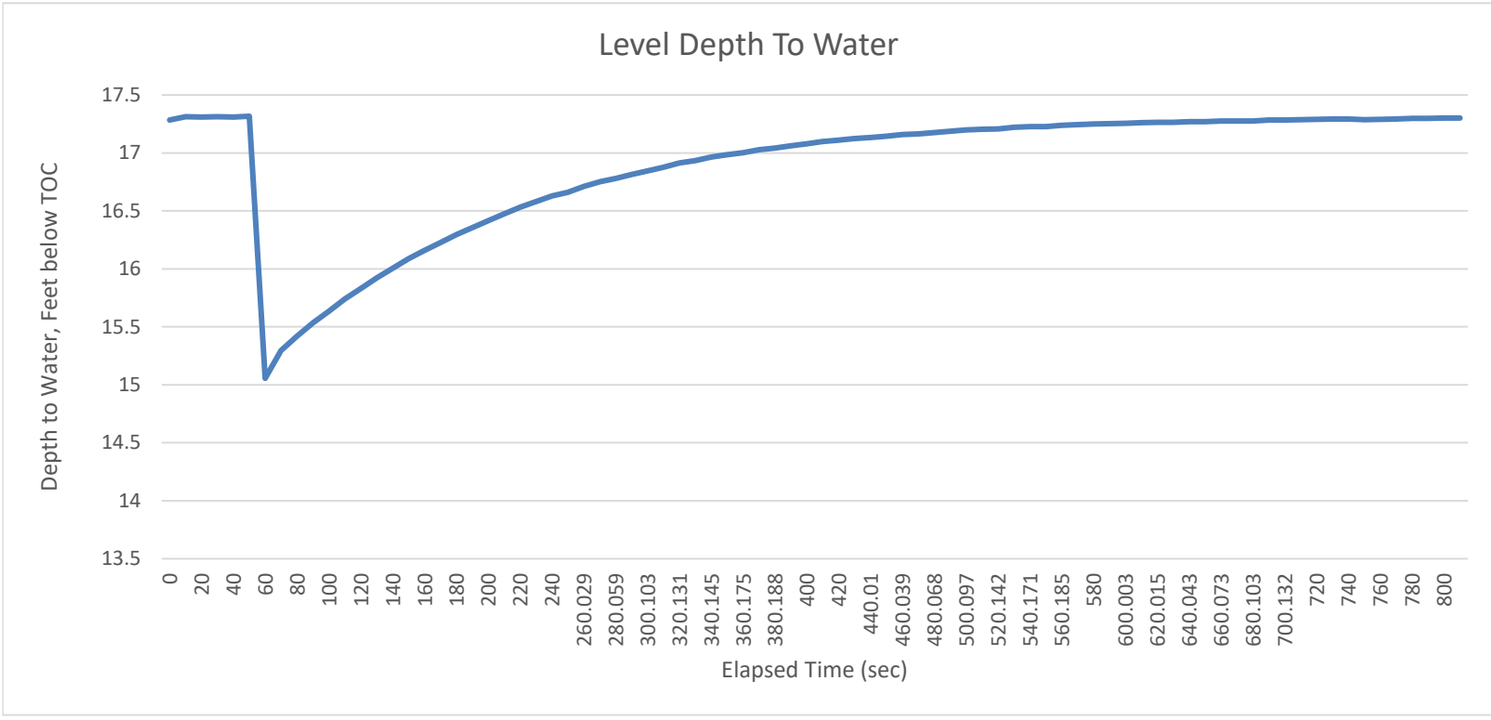
| Other Log Settings | |
|---|---|
| Depth of Probe: | 43.0264 (ft) |
| Head Pressure: | 18.6345 (PSI) |
| Temperature: | 62.0456 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 10.43 (ft) |
| Level Reference Head Pressure | 18.6373 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 93 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 20 | | 470 | | 920 | | 1370 | 11.043 | 1820 | 10.45 |
| 30 | | 480 | | 930 | | 1380 | 11.009 | 1830 | 10.444 |
| 40 | | 490 | | 940 | | 1390 | 10.98 | 1840 | 10.443 |
| 50 | | 500 | | 950 | | 1400 | 10.951 | 1850 | 10.439 |
| 60 | | 510 | | 960 | | 1410 | 10.923 | 1860 | 10.437 |
| 70 | | 520 | | 970 | | 1420 | 10.897 | 1870 | 10.431 |
| 80 | | 530 | | 980 | | 1430 | 10.874 | 1880 | 10.437 |
| 90 | | 540 | | 990 | | 1440 | 10.85 | 1890 | 10.434 |
| 100 | | 550 | | 1000 | | 1450 | 10.828 | 1900 | 10.433 |
| 110 | | 560 | | 1010 | | 1460 | 10.804 | 1910 | 10.423 |
| 120 | | 570 | | 1020 | | 1470 | 10.788 | 1920 | 10.423 |
| 130 | | 580 | | 1030 | | 1480 | 10.77 | 1930 | 10.42 |
| 140 | | 590 | | 1040 | | 1490 | 10.751 | 1940 | 10.416 |
| 150 | | 600 | | 1050 | | 1500 | 10.738 | 1950 | 10.418 |
| 160 | | 610 | | 1060 | | 1510 | 10.717 | 1960 | 10.414 |
| 170 | | 620 | | 1070 | | 1520 | 10.698 | 1970 | 10.416 |
| 180 | | 630 | | 1080 | 10.401 | 1530 | 10.688 | 1980 | 10.409 |
| 190 | | 640 | | 1090 | 10.394 | 1540 | 10.676 | 1990 | 10.411 |
| 200 | | 650 | | 1100 | 10.402 | 1550 | 10.662 | 2000 | 10.407 |
| 210 | | 660 | | 1110 | 12.599 | 1560 | 10.646 | 2010 | 10.404 |
| 220 | | 670 | | 1120 | 12.472 | 1570 | 10.634 | 2020 | 10.404 |
| 230 | | 680 | | 1130 | 12.373 | 1580 | 10.624 | 2030 | 10.402 |
| 240 | | 690 | | 1140 | 12.284 | 1590 | 10.615 | 2040 | 10.399 |
| 250 | | 700 | | 1150 | 12.203 | 1600 | 10.606 | 2050 | 10.399 |
| 260 | | 710 | | 1160 | 12.114 | 1610 | 10.595 | 2060 | 10.396 |
| 270 | | 720 | | 1170 | 12.026 | 1620 | 10.585 | 2070 | 10.395 |
| 280 | | 730 | | 1180 | 11.97 | 1630 | 10.576 | 2080 | 10.39 |
| 290 | | 740 | | 1190 | 11.885 | 1640 | 10.566 | 2090 | 10.392 |
| 300 | | 750 | | 1200 | 11.808 | 1650 | 10.556 | 2100 | 10.388 |
| 310 | | 760 | | 1210 | 11.759 | 1660 | 10.547 | 2110 | 10.389 |
| 320 | | 770 | | 1220 | 11.699 | 1670 | 10.541 | 2120 | 10.375 |
| 330 | | 780 | | 1230 | 11.641 | 1680 | 10.53 | 2130 | 10.382 |
| 340 | | 790 | | 1240 | 11.587 | 1690 | 10.526 | 2140 | 10.384 |
| 350 | | 800 | | 1250 | 11.53 | 1700 | 10.52 | 2150 | 10.383 |
| 360 | | 810 | | 1260 | 11.477 | 1710 | 10.511 | 2160 | 10.381 |
| 370 | | 820 | | 1270 | 11.429 | 1720 | 10.507 | 2170 | 10.375 |
| 380 | | 830 | | 1280 | 11.382 | 1730 | 10.502 | 2180 | 10.388 |
| 390 | | 840 | | 1290 | 11.334 | 1740 | 10.495 | 2190 | 10.383 |
| 400 | | 850 | | 1300 | 11.294 | 1750 | 10.49 | 2200 | 10.391 |
| 410 | | 860 | | 1310 | 11.25 | 1760 | 10.489 | 2210 | 10.385 |
| 420 | | 870 | | 1320 | 11.21 | 1770 | 10.486 | 2220 | 10.377 |
| 430 | | 880 | | 1330 | 11.177 | 1780 | 10.482 | 2230 | 10.378 |
| 440 | | 890 | | 1340 | 11.14 | 1790 | 10.476 | 2240 | 10.379 |
| 450 | | 900 | | 1350 | 11.106 | 1800 | 10.455 | 2250 | 10.376 |
| 460 | | 910 | | 1360 | 11.071 | 1810 | 10.455 | 2260 | |

# PZ-5i Test 1 (in)




| Log Configuration | |
|---|---|
| Log Name | PZ-05 I |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 12:26 PM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

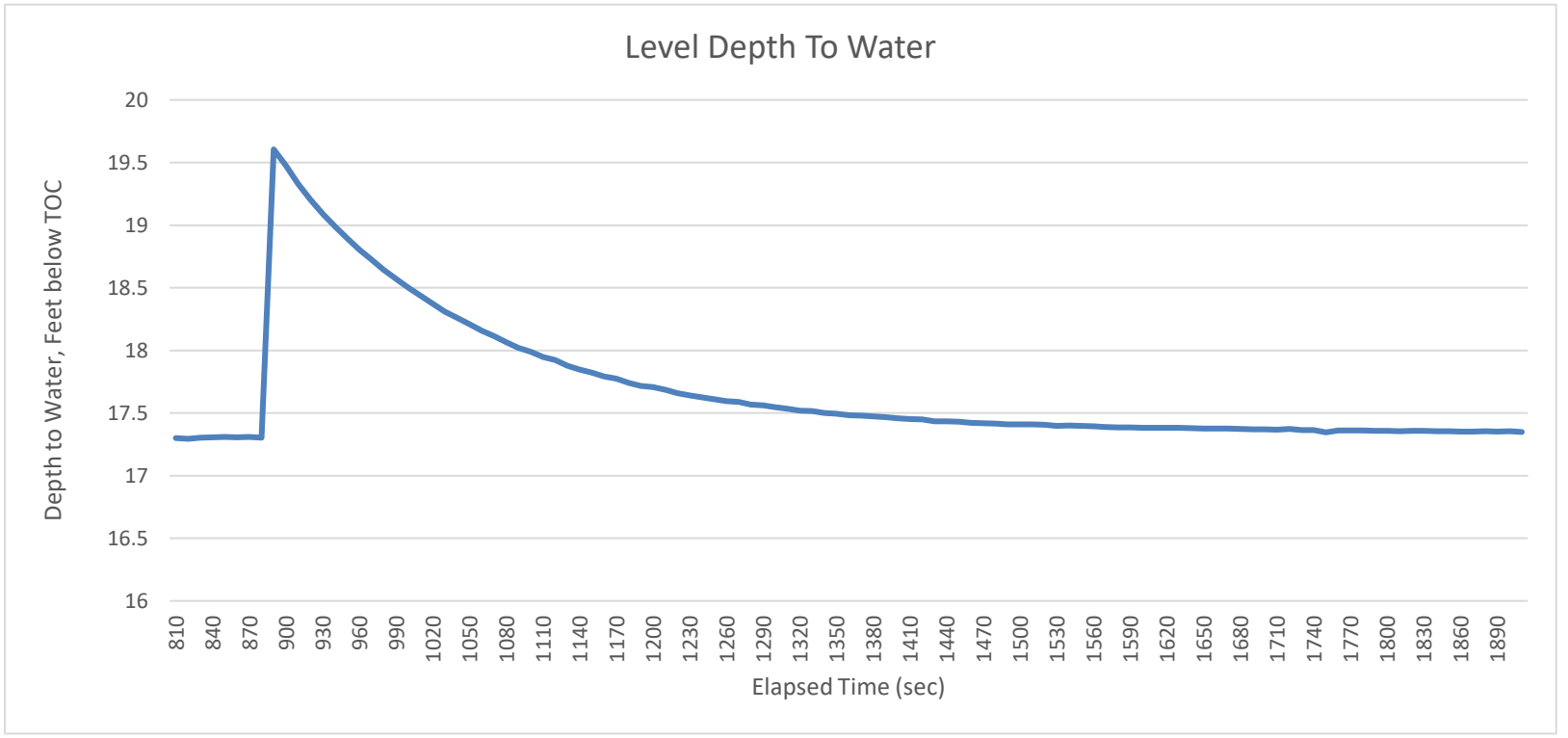
| Other Log Settings | |
|---|---|
| Depth of Probe: | 30.4527 (ft) |
| Head Pressure: | 13.1889 (PSI) |
| Temperature: | 61.7533 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 17.31 (ft) |
| Level Reference Head Pressure | 13.1886 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 90 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 17.284 | 450 | 17.146 | | | | | | |
| 10 | 17.312 | 460 | 17.159 | | | | | | |
| 20 | 17.311 | 470 | 17.165 | | | | | | |
| 30 | 17.313 | 480 | 17.177 | | | | | | |
| 40 | 17.311 | 490 | 17.188 | | | | | | |
| 50 | 17.317 | 500 | 17.198 | | | | | | |
| 60 | 15.056 | 510 | 17.206 | | | | | | |
| 70 | 15.297 | 520 | 17.207 | | | | | | |
| 80 | 15.421 | 530 | 17.221 | | | | | | |
| 90 | 15.534 | 540 | 17.227 | | | | | | |
| 100 | 15.636 | 550 | 17.226 | | | | | | |
| 110 | 15.740 | 560 | 17.238 | | | | | | |
| 120 | 15.833 | 570 | 17.245 | | | | | | |
| 130 | 15.922 | 580 | 17.251 | | | | | | |
| 140 | 16.005 | 590 | 17.252 | | | | | | |
| 150 | 16.088 | 600 | 17.255 | | | | | | |
| 160 | 16.158 | 610 | 17.262 | | | | | | |
| 170 | 16.229 | 620 | 17.264 | | | | | | |
| 180 | 16.295 | 630 | 17.265 | | | | | | |
| 190 | 16.357 | 640 | 17.270 | | | | | | |
| 200 | 16.417 | 650 | 17.271 | | | | | | |
| 210 | 16.475 | 660 | 17.275 | | | | | | |
| 220 | 16.532 | 670 | 17.275 | | | | | | |
| 230 | 16.580 | 680 | 17.277 | | | | | | |
| 240 | 16.628 | 690 | 17.285 | | | | | | |
| 250 | 16.661 | 700 | 17.285 | | | | | | |
| 260 | 16.711 | 710 | 17.286 | | | | | | |
| 270 | 16.751 | 720 | 17.290 | | | | | | |
| 280 | 16.780 | 730 | 17.292 | | | | | | |
| 290 | 16.815 | 740 | 17.294 | | | | | | |
| 300 | 16.847 | 750 | 17.286 | | | | | | |
| 310 | 16.876 | 760 | 17.291 | | | | | | |
| 320 | 16.914 | 770 | 17.292 | | | | | | |
| 330 | 16.934 | 780 | 17.298 | | | | | | |
| 340 | 16.965 | 790 | 17.299 | | | | | | |
| 350 | 16.985 | 800 | 17.302 | | | | | | |
| 360 | 17.002 | 810 | 17.301 | | | | | | |
| 370 | 17.028 | | | | | | | | |
| 380 | 17.041 | | | | | | | | |
| 390 | 17.062 | | | | | | | | |
| 400 | 17.079 | | | | | | | | |
| 410 | 17.098 | | | | | | | | |
| 420 | 17.110 | | | | | | | | |
| 430 | 17.125 | | | | | | | | |
| 440 | 17.133 | | | | | | | | |

# PZ-5i Test 1 (out)




| Log Configuration | |
|---|---|
| Log Name | PZ-05 I |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 12:26 PM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

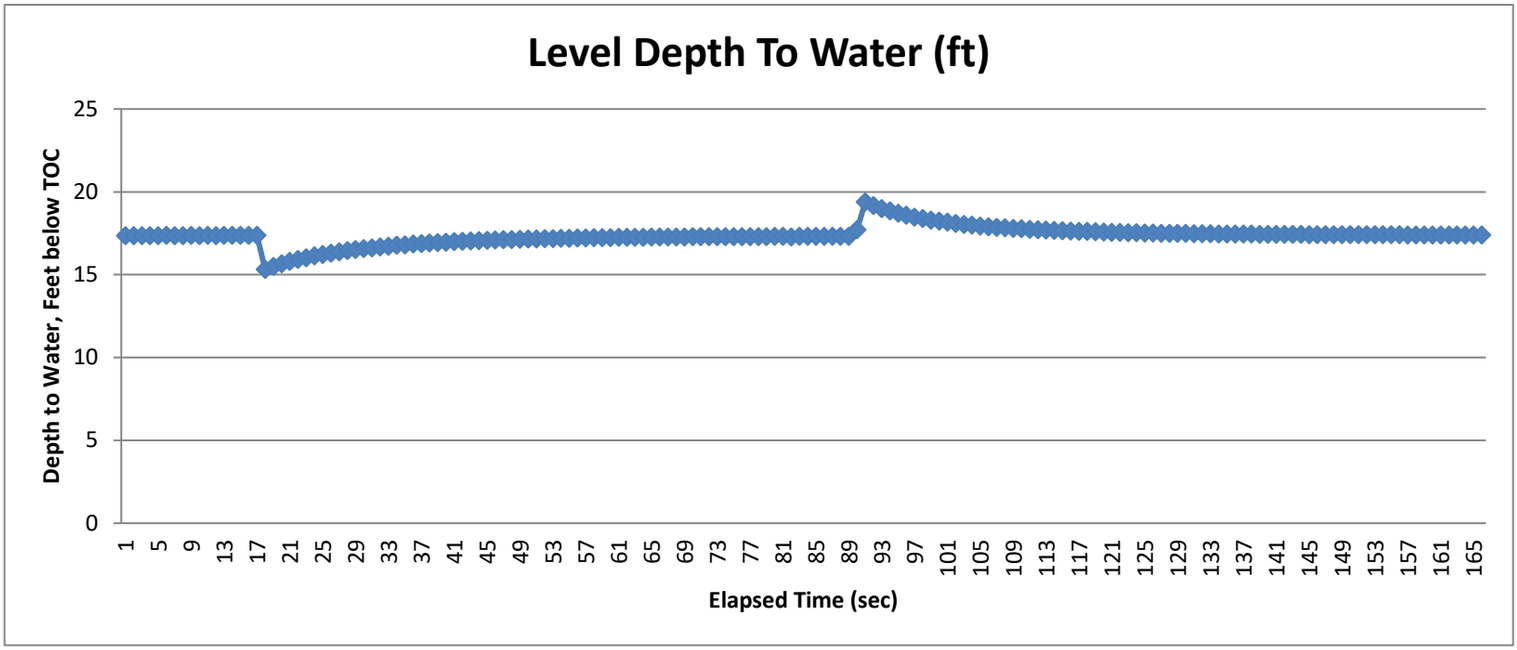
| Other Log Settings | |
|---|---|
| Depth of Probe: | 30.4527 (ft) |
| Head Pressure: | 13.1889 (PSI) |
| Temperature: | 61.7533 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 17.31 (ft) |
| Level Reference Head Pressure | 13.1886 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 90 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | 450 | | 900 | 19.476 | 1350 | 17.493 | 1800 | 17.357 |
| 10 | | 460 | | 910 | 19.33 | 1360 | 17.483 | 1810 | 17.356 |
| 20 | | 470 | | 920 | 19.204 | 1370 | 17.478 | 1820 | 17.357 |
| 30 | | 480 | | 930 | 19.091 | 1380 | 17.473 | 1830 | 17.357 |
| 40 | | 490 | | 940 | 18.99 | 1390 | 17.467 | 1840 | 17.356 |
| 50 | | 500 | | 950 | 18.894 | 1400 | 17.459 | 1850 | 17.355 |
| 60 | | 510 | | 960 | 18.805 | 1410 | 17.452 | 1860 | 17.353 |
| 70 | | 520 | | 970 | 18.724 | 1420 | 17.448 | 1870 | 17.353 |
| 80 | | 530 | | 980 | 18.644 | 1430 | 17.435 | 1880 | 17.355 |
| 90 | | 540 | | 990 | 18.569 | 1440 | 17.433 | 1890 | 17.351 |
| 100 | | 550 | | 1000 | 18.5 | 1450 | 17.43 | 1900 | 17.354 |
| 110 | | 560 | | 1010 | 18.438 | 1460 | 17.423 | 1910 | 17.349 |
| 120 | | 570 | | 1020 | 18.372 | 1470 | 17.418 | | |
| 130 | | 580 | | 1030 | 18.309 | 1480 | 17.415 | | |
| 140 | | 590 | | 1040 | 18.26 | 1490 | 17.41 | | |
| 150 | | 600 | | 1050 | 18.209 | 1500 | 17.41 | | |
| 160 | | 610 | | 1060 | 18.158 | 1510 | 17.409 | | |
| 170 | | 620 | | 1070 | 18.113 | 1520 | 17.406 | | |
| 180 | | 630 | | 1080 | 18.067 | 1530 | 17.396 | | |
| 190 | | 640 | | 1090 | 18.02 | 1540 | 17.4 | | |
| 200 | | 650 | | 1100 | 17.989 | 1550 | 17.396 | | |
| 210 | | 660 | | 1110 | 17.946 | 1560 | 17.395 | | |
| 220 | | 670 | | 1120 | 17.924 | 1570 | 17.389 | | |
| 230 | | 680 | | 1130 | 17.878 | 1580 | 17.386 | | |
| 240 | | 690 | | 1140 | 17.846 | 1590 | 17.386 | | |
| 250 | | 700 | | 1150 | 17.824 | 1600 | 17.382 | | |
| 260 | | 710 | | 1160 | 17.792 | 1610 | 17.382 | | |
| 270 | | 720 | | 1170 | 17.774 | 1620 | 17.382 | | |
| 280 | | 730 | | 1180 | 17.742 | 1630 | 17.382 | | |
| 290 | | 740 | | 1190 | 17.717 | 1640 | 17.38 | | |
| 300 | | 750 | | 1200 | 17.706 | 1650 | 17.376 | | |
| 310 | | 760 | | 1210 | 17.685 | 1660 | 17.376 | | |
| 320 | | 770 | | 1220 | 17.658 | 1670 | 17.375 | | |
| 330 | | 780 | | 1230 | 17.64 | 1680 | 17.374 | | |
| 340 | | 790 | | 1240 | 17.624 | 1690 | 17.369 | | |
| 350 | | 800 | | 1250 | 17.611 | 1700 | 17.371 | | |
| 360 | | 810 | 17.301 | 1260 | 17.595 | 1710 | 17.368 | | |
| 370 | | 820 | 17.294 | 1270 | 17.588 | 1720 | 17.372 | | |
| 380 | | 830 | 17.303 | 1280 | 17.567 | 1730 | 17.365 | | |
| 390 | | 840 | 17.307 | 1290 | 17.562 | 1740 | 17.363 | | |
| 400 | | 850 | 17.308 | 1300 | 17.545 | 1750 | 17.346 | | |
| 410 | | 860 | 17.306 | 1310 | 17.533 | 1760 | 17.362 | | |
| 420 | | 870 | 17.308 | 1320 | 17.52 | 1770 | 17.362 | | |
| 430 | | 880 | 17.302 | 1330 | 17.516 | 1780 | 17.36 | | |
| 440 | | 890 | 19.605 | 1340 | 17.501 | 1790 | 17.358 | | |

# PZ-05 S




| Log Configuration | |
|---|---|
| Log Name | PZ-05 S |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 11:50 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

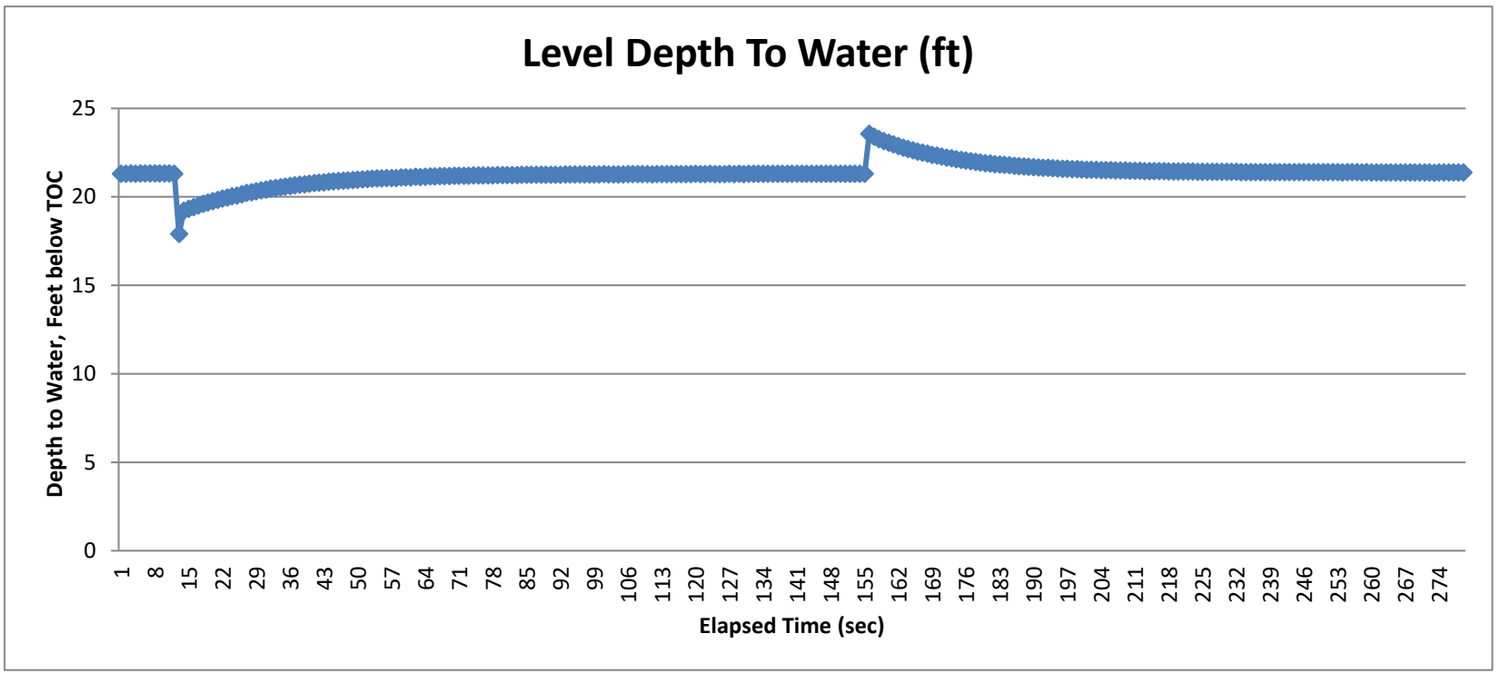
| Other Log Settings | |
|---|---|
| Depth of Probe: | 24.4049 (ft) |
| Head Pressure: | 10.5696 (PSI) |
| Temperature: | 65.1142 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 17.35 (ft) |
| Level Reference Head Pressure | 10.5736 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 87 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 17.348 | 450 | 17.098 | 900 | 19.398 | 1350 | 17.454 | | |
| 10 | 17.357 | 460 | 17.113 | 910 | 19.174 | 1360 | 17.446 | | |
| 20 | 17.357 | 470 | 17.122 | 920 | 18.996 | 1370 | 17.451 | | |
| 30 | 17.364 | 480 | 17.144 | 930 | 18.842 | 1380 | 17.442 | | |
| 40 | 17.36 | 490 | 17.153 | 940 | 18.706 | 1390 | 17.441 | | |
| 50 | 17.37 | 500 | 17.166 | 950 | 18.588 | 1400 | 17.438 | | |
| 60 | 17.362 | 510 | 17.174 | 960 | 18.48 | 1410 | 17.436 | | |
| 70 | 17.362 | 520 | 17.186 | 970 | 18.387 | 1420 | 17.429 | | |
| 80 | 17.367 | 530 | 17.193 | 980 | 18.302 | 1430 | 17.428 | | |
| 90 | 17.365 | 540 | 17.195 | 990 | 18.227 | 1440 | 17.425 | | |
| 100 | 17.369 | 550 | 17.213 | 1000 | 18.164 | 1450 | 17.42 | | |
| 110 | 17.365 | 560 | 17.22 | 1010 | 18.098 | 1460 | 17.419 | | |
| 120 | 17.371 | 570 | 17.23 | 1020 | 18.038 | 1470 | 17.414 | | |
| 130 | 17.369 | 580 | 17.234 | 1030 | 17.99 | 1480 | 17.417 | | |
| 140 | 17.374 | 590 | 17.243 | 1040 | 17.943 | 1490 | 17.411 | | |
| 150 | 17.373 | 600 | 17.251 | 1050 | 17.904 | 1500 | 17.411 | | |
| 160 | 17.372 | 610 | 17.253 | 1060 | 17.862 | 1510 | 17.408 | | |
| 170 | 15.328 | 620 | 17.263 | 1070 | 17.83 | 1520 | 17.411 | | |
| 180 | 15.505 | 630 | 17.263 | 1080 | 17.798 | 1530 | 17.409 | | |
| 190 | 15.659 | 640 | 17.269 | 1090 | 17.771 | 1540 | 17.409 | | |
| 200 | 15.794 | 650 | 17.273 | 1100 | 17.739 | 1550 | 17.408 | | |
| 210 | 15.919 | 660 | 17.277 | 1110 | 17.718 | 1560 | 17.402 | | |
| 220 | 16.027 | 670 | 17.281 | 1120 | 17.694 | 1570 | 17.403 | | |
| 230 | 16.132 | 680 | 17.285 | 1130 | 17.677 | 1580 | 17.404 | | |
| 240 | 16.225 | 690 | 17.287 | 1140 | 17.654 | 1590 | 17.399 | | |
| 250 | 16.309 | 700 | 17.291 | 1150 | 17.64 | 1600 | 17.401 | | |
| 260 | 16.385 | 710 | 17.291 | 1160 | 17.621 | 1610 | 17.401 | | |
| 270 | 16.456 | 720 | 17.291 | 1170 | 17.607 | 1620 | 17.399 | | |
| 280 | 16.52 | 730 | 17.294 | 1180 | 17.592 | 1630 | 17.397 | | |
| 290 | 16.576 | 740 | 17.297 | 1190 | 17.58 | 1640 | 17.4 | | |
| 300 | 16.623 | 750 | 17.3 | 1200 | 17.562 | 1650 | 17.389 | | |
| 310 | 16.68 | 760 | 17.304 | 1210 | 17.55 | | | | |
| 320 | 16.725 | 770 | 17.305 | 1220 | 17.541 | | | | |
| 330 | 16.77 | 780 | 17.305 | 1230 | 17.532 | | | | |
| 340 | 16.807 | 790 | 17.309 | 1240 | 17.521 | | | | |
| 350 | 16.85 | 800 | 17.314 | 1250 | 17.515 | | | | |
| 360 | 16.882 | 810 | 17.276 | 1260 | 17.505 | | | | |
| 370 | 16.917 | 820 | 17.317 | 1270 | 17.498 | | | | |
| 380 | 16.947 | 830 | 17.323 | 1280 | 17.493 | | | | |
| 390 | 16.967 | 840 | 17.319 | 1290 | 17.486 | | | | |
| 400 | 16.993 | 850 | 17.317 | 1300 | 17.479 | | | | |
| 410 | 17.021 | 860 | 17.322 | 1310 | 17.474 | | | | |
| 420 | 17.043 | 870 | 17.321 | 1320 | 17.467 | | | | |
| 430 | 17.062 | 880 | 17.321 | 1330 | 17.462 | | | | |
| 440 | 17.078 | 890 | 17.721 | 1340 | 17.455 | | | | |

# PZ-06 D



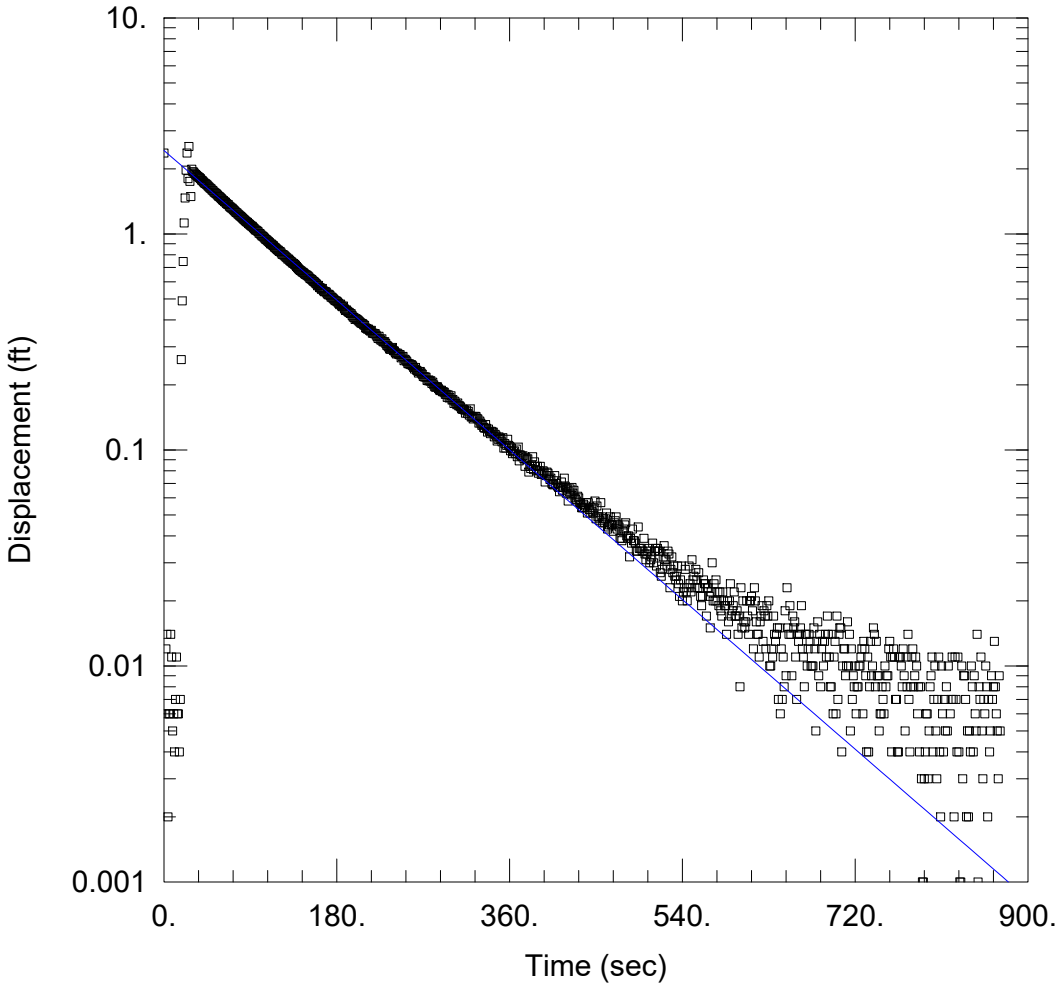

| Log Configuration | |
|---|---|
| Log Name | PZ-06 D |
| Created By | X2WSHAUG |
| Computer Name | X2WSHAUGH |
| Application | WinSitu.exe |
| Application Version | 5.6.25.0 |
| Create Date | 7/10/14 7:04 AM |
| Log Setup Time Zone | Central Daylight Time |
| Notes Size(bytes) | 4096 |
| Overwrite when full | Disabled |
| Scheduled Start Time | Manual Start |
| Scheduled Stop Time | No Stop Time |
| Type | Fast Linear |

| Other Log Settings | |
|---|---|
| Depth of Probe: | 88.7382 (ft) |
| Head Pressure: | 38.432 (PSI) |
| Temperature: | 63.6079 (F) |

| Level Reference Settings At Log Creation | |
|---|---|
| Level Measurement Mode | Level Depth To Water |
| Specific Gravity | 0.999 |
| Level Reference Mode: | Set new reference |
| Level Reference Value: | 21.33 (ft) |
| Level Reference Head Pressure | 38.4335 (PSI) |

| Device Properties | |
|---|---|
| Device | Level TROLL 500 |
| Site | Plant Yates |
| Device Name | |
| Serial Number | 160731 |
| Firmware Version | 2.04 |
| Hardware Version | 3 |
| Device Address | 1 |
| Device Comm Cfg | 19200,8,Even,1,(Modbus-RTU) |
| Used Memory(%) | 78 |
| Used Battery(%) | 23 |

| Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) | Elapsed Time (sec) | Level Depth To Water (ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 21.313 | 450 | 20.898 | 900 | 21.257 | 1350 | 21.301 | 1800 | 21.883 |
| 10 | 21.314 | 460 | 20.921 | 910 | 21.258 | 1360 | 21.299 | 1810 | 21.851 |
| 20 | 21.324 | 470 | 20.935 | 920 | 21.261 | 1370 | 21.3 | 1820 | 21.826 |
| 30 | 21.305 | 480 | 20.956 | 930 | 21.262 | 1380 | 21.302 | 1830 | 21.803 |
| 40 | 21.318 | 490 | 20.973 | 940 | 21.26 | 1390 | 21.3 | 1840 | 21.796 |
| 50 | 21.325 | 500 | 20.987 | 950 | 21.264 | 1400 | 21.305 | 1850 | 21.755 |
| 60 | 21.319 | 510 | 21.008 | 960 | 21.269 | 1410 | 21.301 | 1860 | 21.733 |
| 70 | 21.323 | 520 | 21.021 | 970 | 21.266 | 1420 | 21.302 | 1870 | 21.713 |
| 80 | 21.324 | 530 | 21.038 | 980 | 21.271 | 1430 | 21.304 | 1880 | 21.696 |
| 90 | 21.322 | 540 | 21.05 | 990 | 21.271 | 1440 | 21.304 | 1890 | 21.681 |
| 100 | 21.321 | 550 | 21.064 | 1000 | 21.293 | 1450 | 21.306 | 1900 | 21.662 |
| 110 | 21.304 | 560 | 21.057 | 1010 | 21.275 | 1460 | 21.298 | 1910 | 21.645 |
| 120 | 17.9 | 570 | 21.068 | 1020 | 21.276 | 1470 | 21.305 | 1920 | 21.632 |
| 130 | 19.223 | 580 | 21.1 | 1030 | 21.276 | 1480 | 21.308 | 1930 | 21.616 |
| 140 | 19.321 | 590 | 21.105 | 1040 | 21.276 | 1490 | 21.305 | 1940 | 21.603 |
| 150 | 19.42 | 600 | 21.097 | 1050 | 21.278 | 1500 | 21.305 | 1950 | 21.59 |
| 160 | 19.512 | 610 | 21.132 | 1060 | 21.281 | 1510 | 21.306 | 1960 | 21.579 |
| 170 | 19.6 | 620 | 21.119 | 1070 | 21.279 | 1520 | 21.305 | 1970 | 21.568 |
| 180 | 19.681 | 630 | 21.144 | 1080 | 21.279 | 1530 | 21.306 | 1980 | 21.559 |
| 190 | 19.757 | 640 | 21.156 | 1090 | 21.28 | 1540 | 21.307 | 1990 | 21.547 |
| 200 | 19.829 | 650 | 21.161 | 1100 | 21.274 | 1550 | 23.555 | 2000 | 21.538 |
| 210 | 19.901 | 660 | 21.169 | 1110 | 21.28 | 1560 | 23.395 | 2010 | 21.529 |
| 220 | 19.953 | 670 | 21.174 | 1120 | 21.288 | 1570 | 23.27 | 2020 | 21.523 |
| 230 | 20.036 | 680 | 21.181 | 1130 | 21.287 | 1580 | 23.155 | 2030 | 21.514 |
| 240 | 20.08 | 690 | 21.188 | 1140 | 21.29 | 1590 | 23.055 | 2040 | 21.506 |
| 250 | 20.154 | 700 | 21.19 | 1150 | 21.286 | 1600 | 22.958 | 2050 | 21.504 |
| 260 | 20.213 | 710 | 21.195 | 1160 | 21.288 | 1610 | 22.868 | 2060 | 21.491 |
| 270 | 20.267 | 720 | 21.199 | 1170 | 21.292 | 1620 | 22.785 | 2070 | 21.485 |
| 280 | 20.315 | 730 | 21.207 | 1180 | 21.29 | 1630 | 22.707 | 2080 | 21.485 |
| 290 | 20.37 | 740 | 21.212 | 1190 | 21.296 | 1640 | 22.632 | 2090 | 21.48 |
| 300 | 20.41 | 750 | 21.214 | 1200 | 21.291 | 1650 | 22.563 | 2100 | 21.471 |
| 310 | 20.461 | 760 | 21.218 | 1210 | 21.292 | 1660 | 22.499 | 2110 | 21.466 |
| 320 | 20.501 | 770 | 21.219 | 1220 | 21.296 | 1670 | 22.436 | 2120 | 21.462 |
| 330 | 20.541 | 780 | 21.223 | 1230 | 21.293 | 1680 | 22.375 | 2130 | 21.457 |
| 340 | 20.579 | 790 | 21.229 | 1240 | 21.293 | 1690 | 22.323 | 2140 | 21.453 |
| 350 | 20.615 | 800 | 21.228 | 1250 | 21.294 | 1700 | 22.267 | 2150 | 21.446 |
| 360 | 20.652 | 810 | 21.233 | 1260 | 21.296 | 1710 | 22.219 | 2160 | 21.446 |
| 370 | 20.685 | 820 | 21.239 | 1270 | 21.295 | 1720 | 22.175 | 2170 | 21.443 |
| 380 | 20.716 | 830 | 21.24 | 1280 | 21.299 | 1730 | 22.126 | 2180 | 21.439 |
| 390 | 20.744 | 840 | 21.241 | 1290 | 21.295 | 1740 | 22.089 | 2190 | 21.434 |
| 400 | 20.775 | 850 | 21.245 | 1300 | 21.3 | 1750 | 22.047 | 2200 | 21.431 |
| 410 | 20.804 | 860 | 21.247 | 1310 | 21.298 | 1760 | 22.012 | 2210 | 21.431 |
| 420 | 20.827 | 870 | 21.251 | 1320 | 21.298 | 1770 | 21.974 | 2220 | 21.427 |
| 430 | 20.853 | 880 | 21.248 | 1330 | 21.298 | 1780 | 21.943 | 2230 | 21.424 |
| 440 | 20.876 | 890 | 21.257 | 1340 | 21.301 | 1790 | 21.91 | 2240 | 21.42 |




## YATES PZ-17S

Data Set: S:\...\17S-1.aqt
Date: 03/01/17 Time: 08:46:37

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-17S
Test Date: 11/20/2015

## AQUIFER DATA

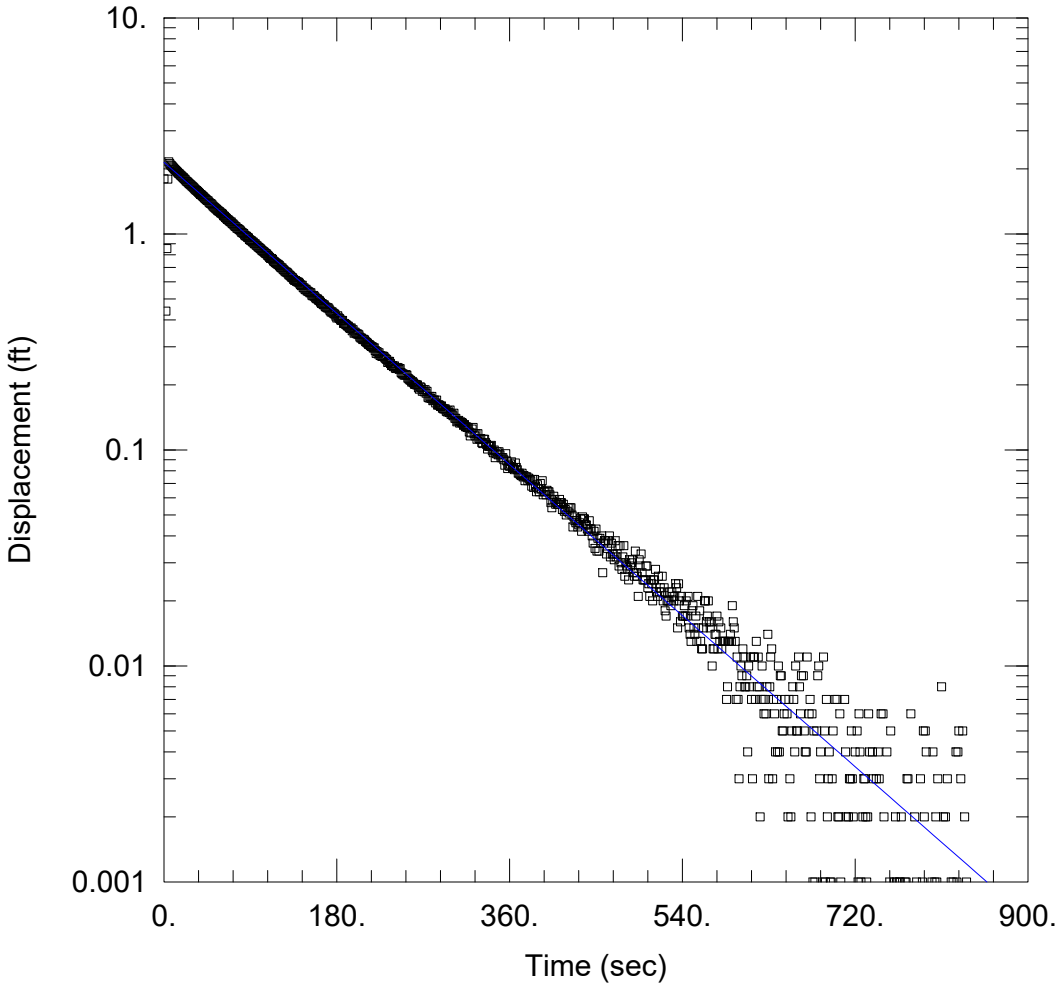
Saturated Thickness: 27.3 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-17S)

Initial Displacement: 2.37 ft
Total Well Penetration Depth: 27.15 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.3 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.9747 ft/day
y0 = 2.434 ft




## YATES PZ-17S

Data Set: S:\...\17S-2.aqt
Date: 03/01/17 Time: 08:47:43

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-17S
Test Date: 11/20/2015

## AQUIFER DATA

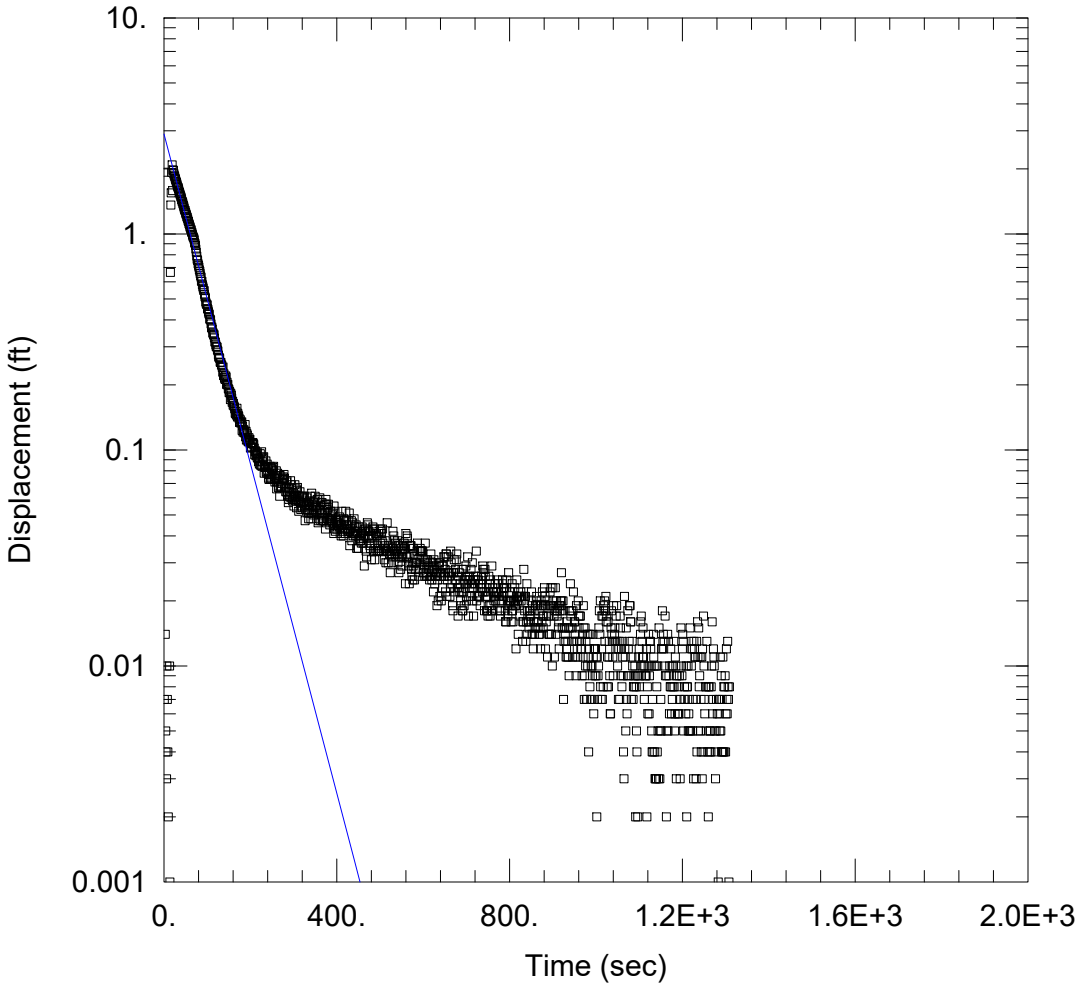
Saturated Thickness: 27.3 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-17S)

Initial Displacement: 1.8 ft
Total Well Penetration Depth: 27.15 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.3 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.984 ft/day
y0 = 2.147 ft




## YATES PZ-18I

Data Set: S:\...\18I-1.aqt
Date: 03/01/17 Time: 08:44:47

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-18I
Test Date: 11/20/2015

## AQUIFER DATA

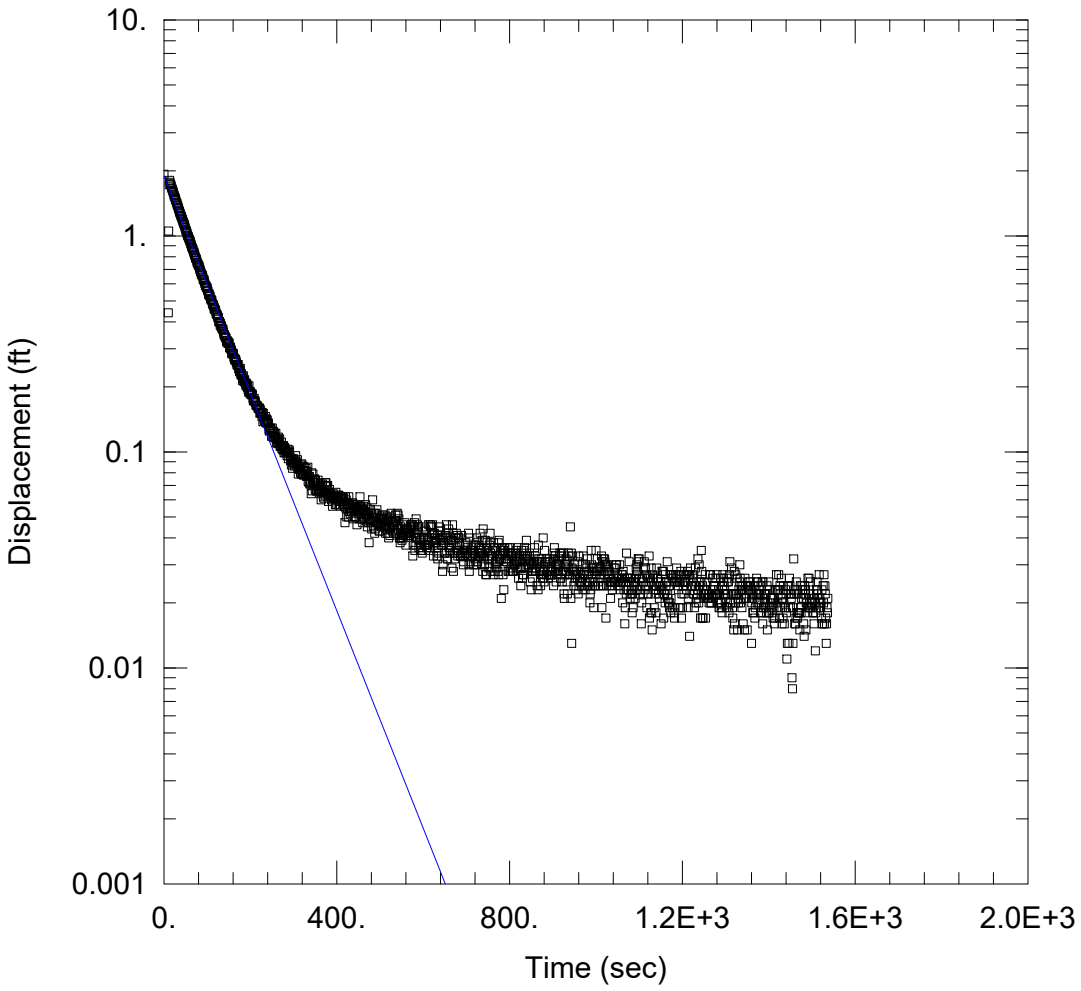
Saturated Thickness: 65.27 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-18I)

Initial Displacement: 1.93 ft
Total Well Penetration Depth: 65.3 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 65.27 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.196 ft/day
y0 = 2.899 ft




## YATES PZ-18I

Data Set: S:\...\18I-2.aqt
Date: 03/01/17 Time: 08:43:34

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-18I
Test Date: 11/23/2015

## AQUIFER DATA

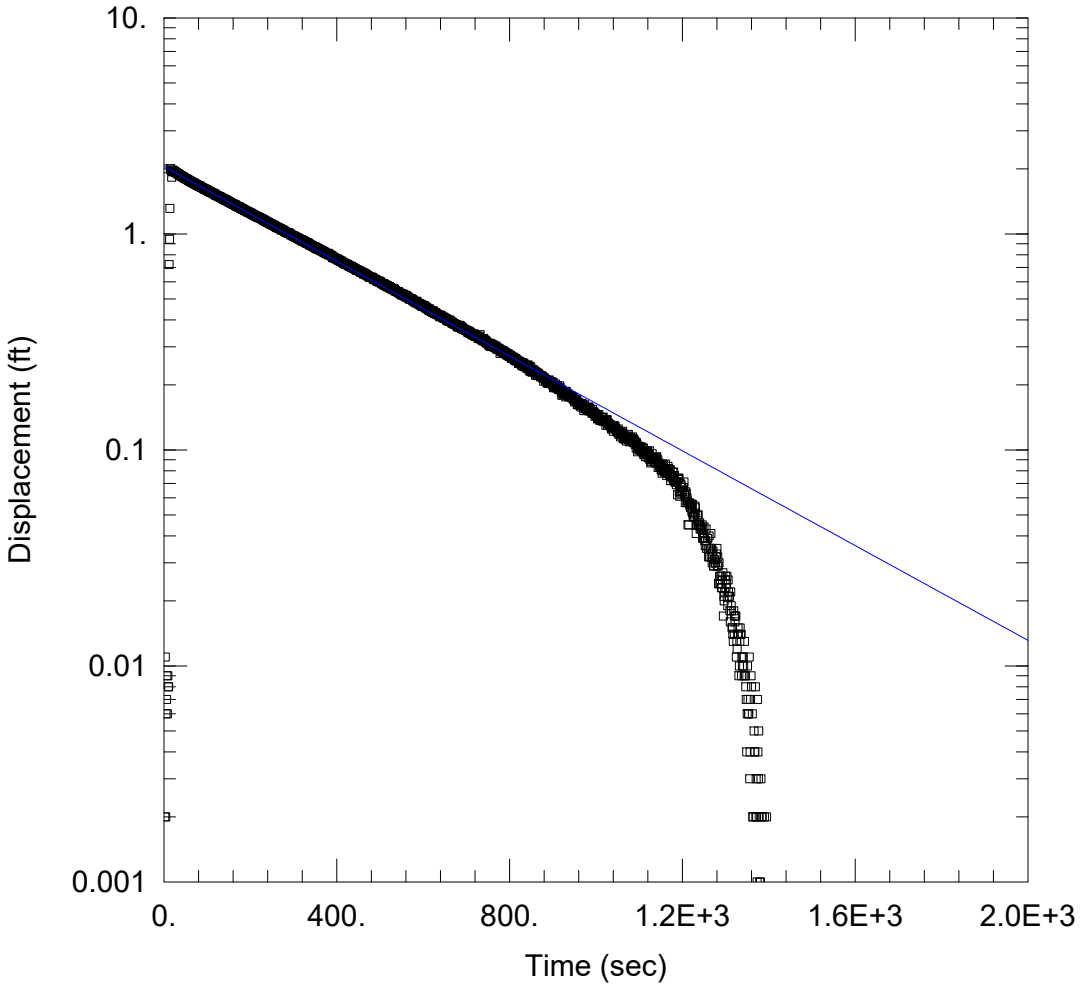
Saturated Thickness: 65.27 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-18I)

Initial Displacement: 1.93 ft
Total Well Penetration Depth: 65.3 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 65.27 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.449 ft/day
y0 = 1.896 ft




## YATES PZ-18S

Data Set: S:\...\18S-1.aqt
Date: 03/01/17 Time: 08:51:07

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-18S
Test Date: 11/20/2015

## AQUIFER DATA

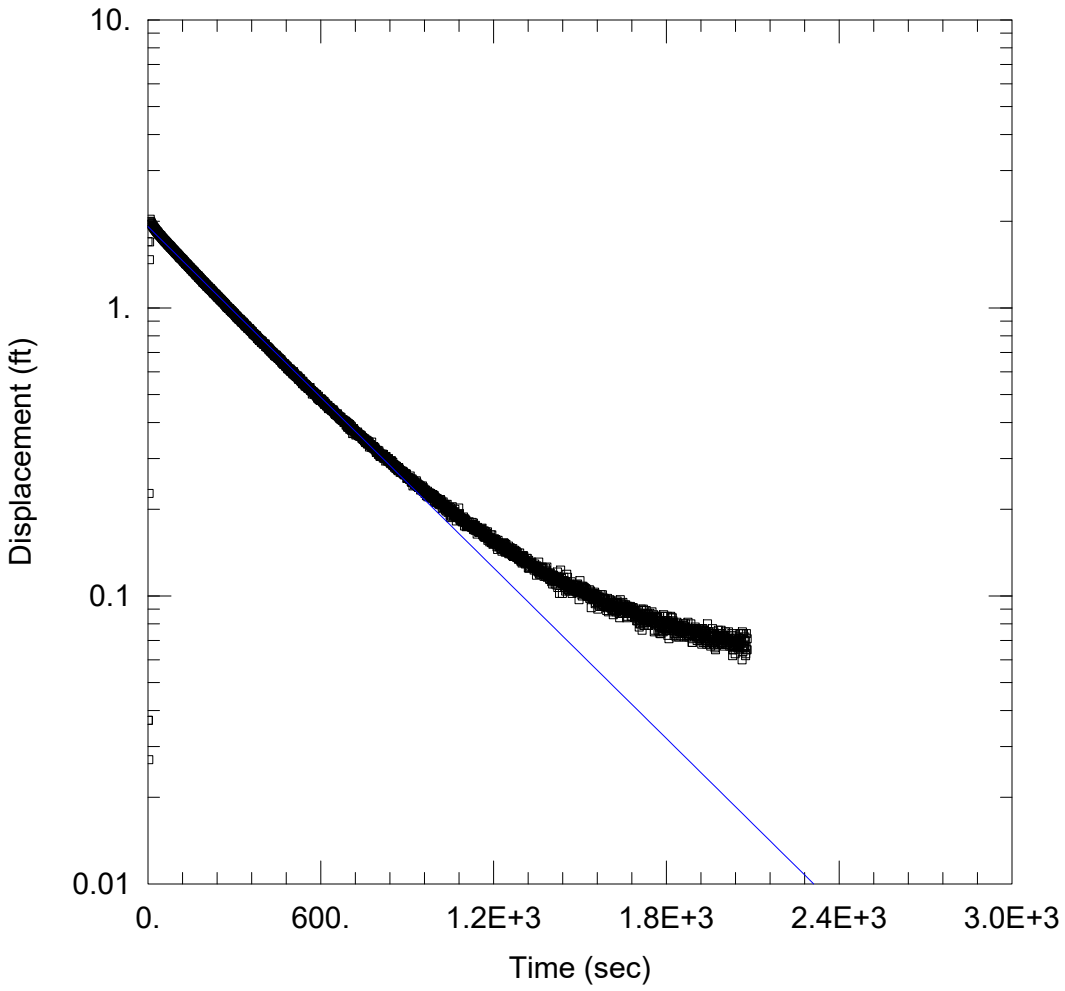
Saturated Thickness: 18.6 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-18S)

Initial Displacement: 2. ft
Total Well Penetration Depth: 19.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 18.6 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2674 ft/day
y0 = 2.053 ft




## YATES PZ-18S

Data Set: S:\...\18S-2.aqt
Date: 03/01/17 Time: 08:53:39

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-18S
Test Date: 11/20/2015

## AQUIFER DATA

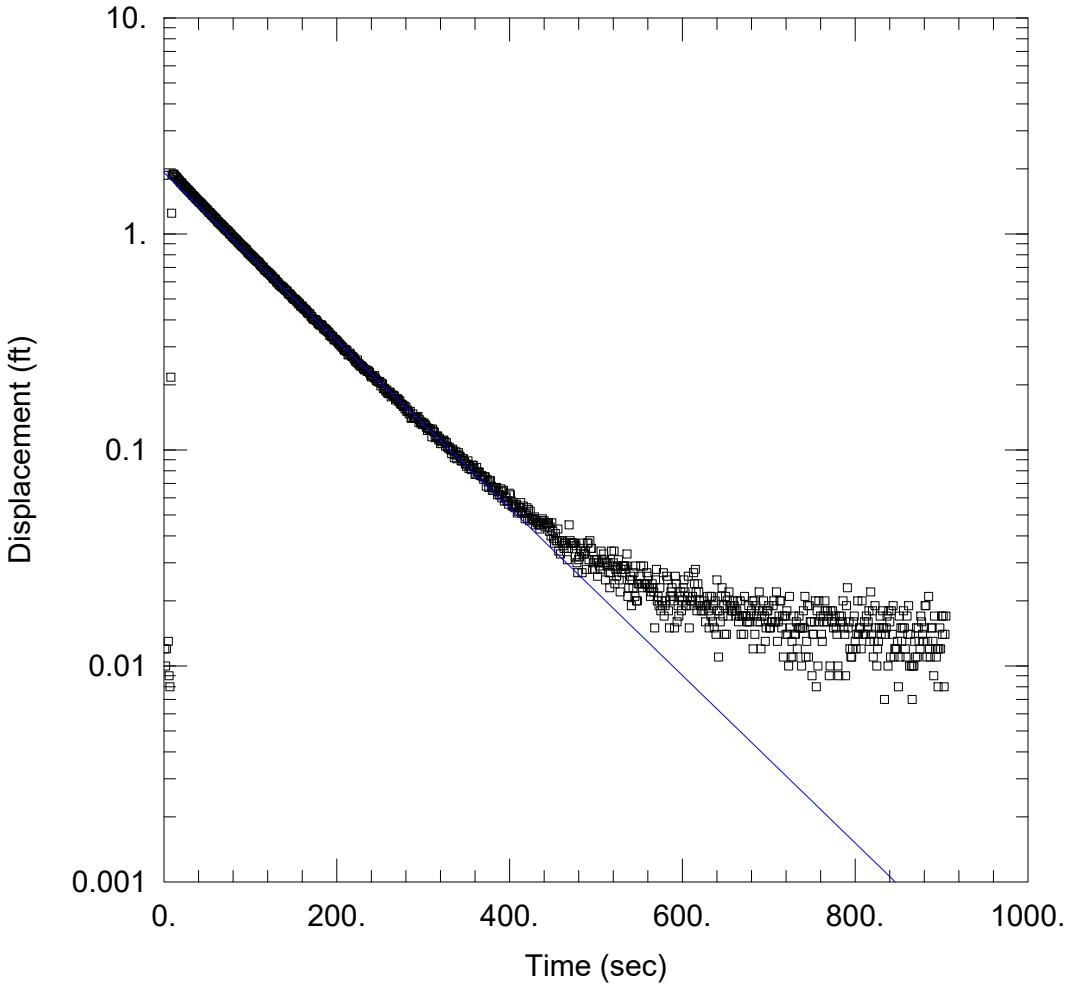
Saturated Thickness: 18.6 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-18S)

Initial Displacement: 1.7 ft
Total Well Penetration Depth: 19.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 18.6 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2407 ft/day
y0 = 1.916 ft




## YATES PZ-19S

Data Set: S:\...\19S-2.aqt
Date: 03/01/17 Time: 08:56:25

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-19S
Test Date: 11/20/2015

## AQUIFER DATA

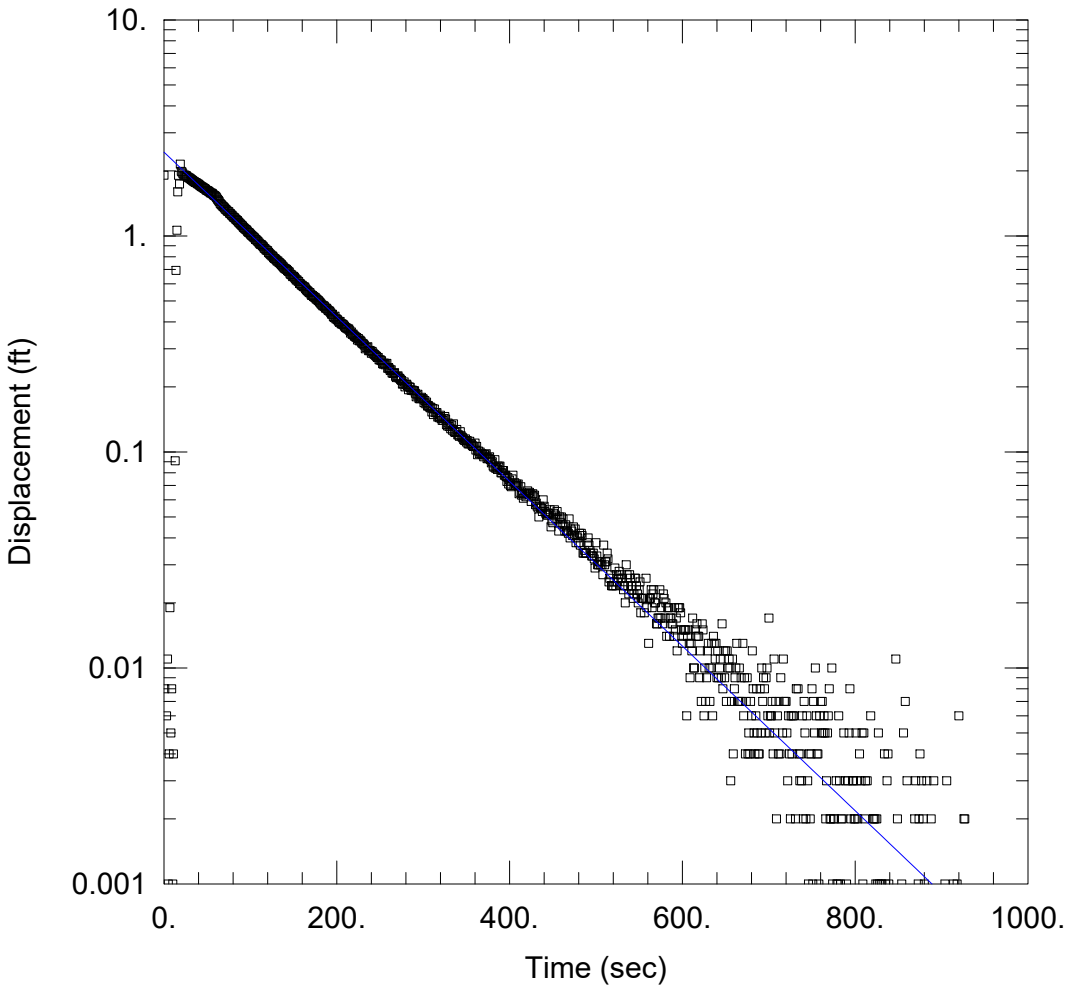
Saturated Thickness: 20.6 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-19S)

Initial Displacement: 1.87 ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 20.6 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.9593 ft/day
y0 = 1.922 ft




## YATES PZ-20S

Data Set: S:\...\20S-1.aqt
Date: 03/01/17 Time: 08:57:38

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-20S
Test Date: 11/20/2015

## AQUIFER DATA

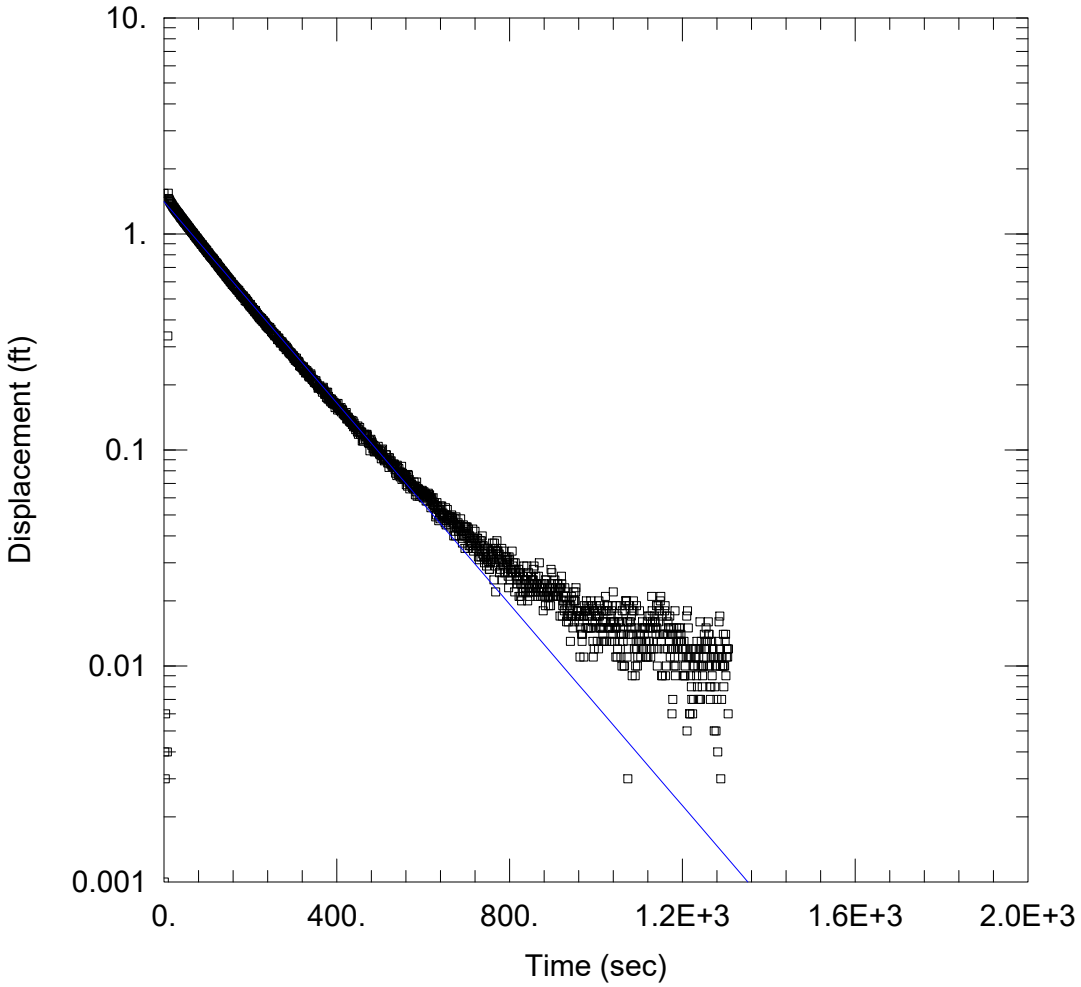
Saturated Thickness: 20.5 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-20S)

Initial Displacement: 1.91 ft
Total Well Penetration Depth: 39. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 20.5 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.028 ft/day
y0 = 2.444 ft




## YATES PZ-20S

Data Set: S:\...\20S-2.aqt
Date: 03/01/17 Time: 09:13:42

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-20S
Test Date: 1/13/16

## AQUIFER DATA

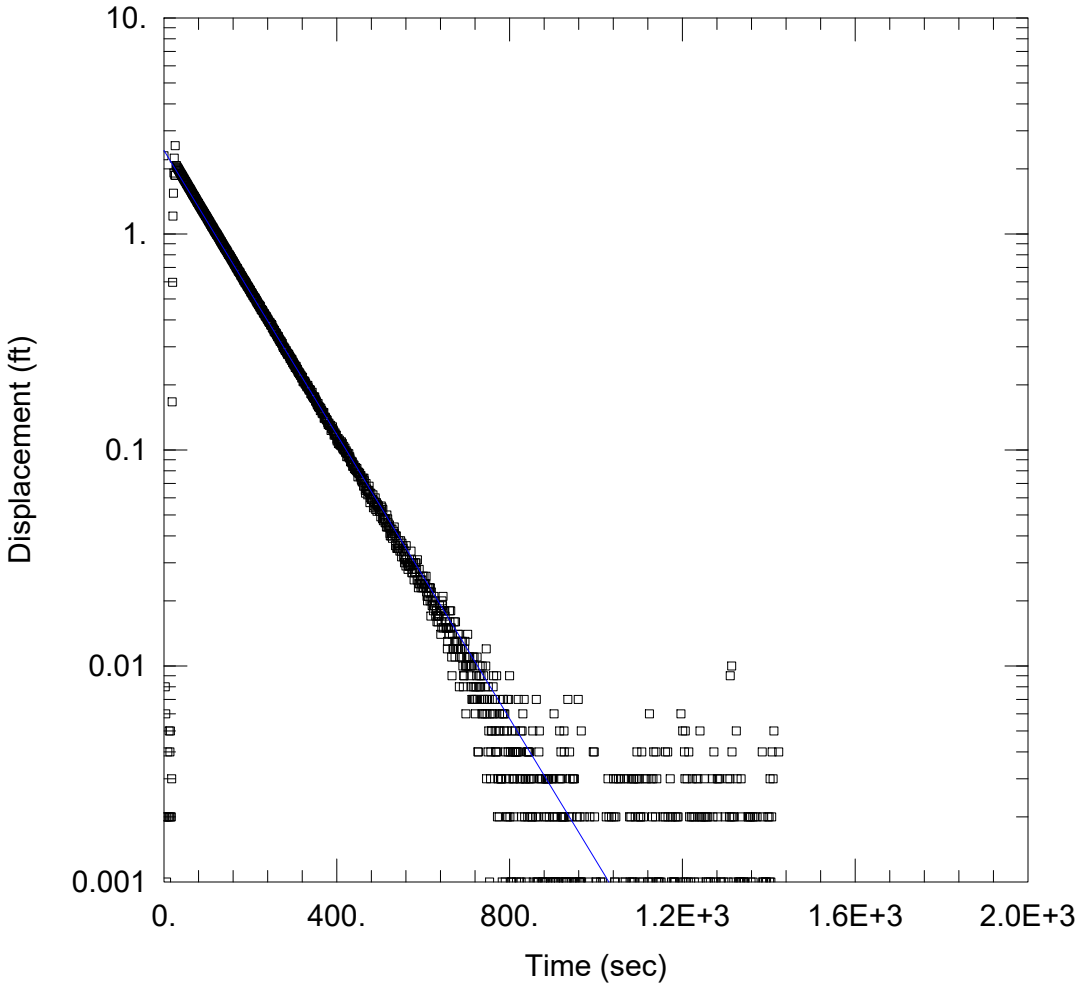
Saturated Thickness: 20.5 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-20S)

Initial Displacement: 1.54 ft
Total Well Penetration Depth: 39. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 20.5 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6286 ft/day
y0 = 1.41 ft




## YATES PZ-22S

Data Set: S:\...\22S-1.aqt
Date: 03/01/17 Time: 09:20:55

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-22S
Test Date: 11/23/2015

## AQUIFER DATA

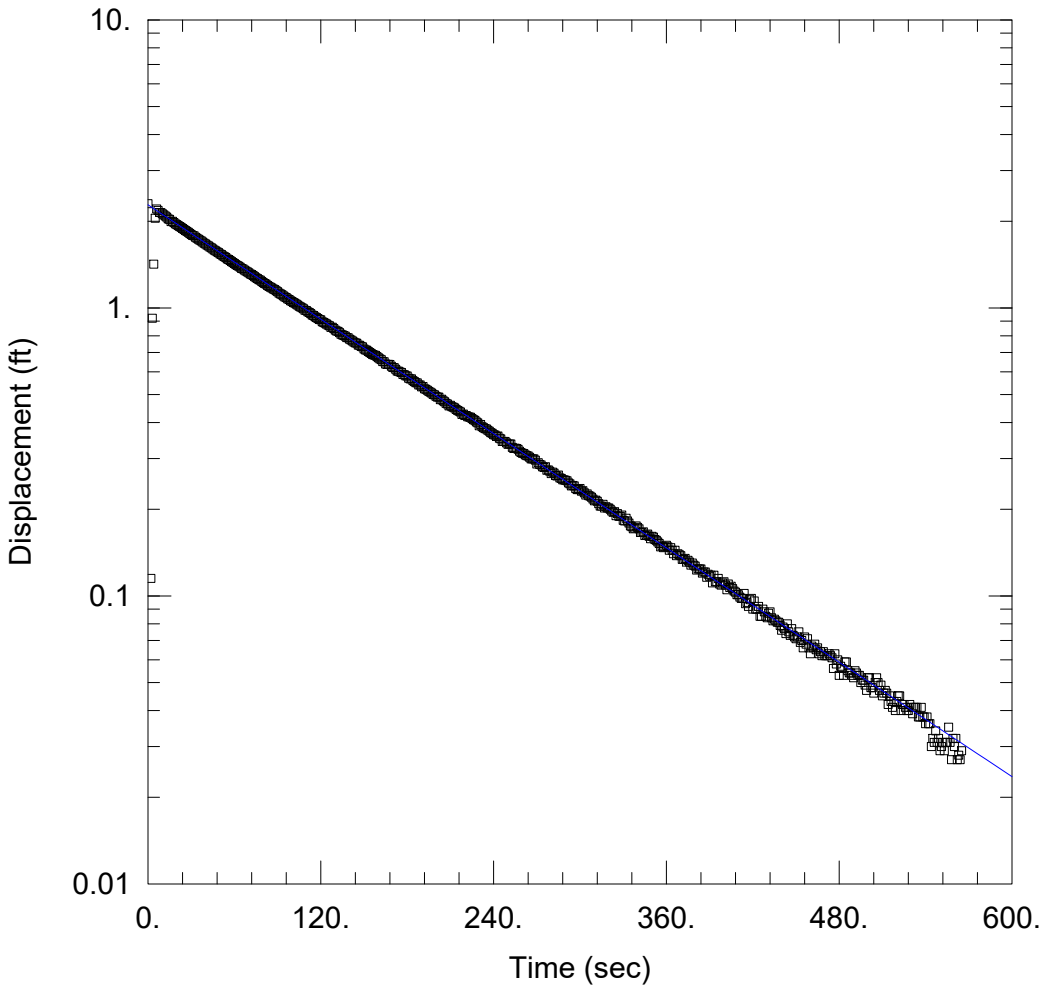
Saturated Thickness: 30.5 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-22S)

Initial Displacement: 2.3 ft
Total Well Penetration Depth: 40.13 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 30.5 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.8904 ft/day
y0 = 2.434 ft




## YATES PZ-22S

Data Set: S:\...\22S-2.aqt
Date: 03/01/17 Time: 09:22:57

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-22S
Test Date: 11/23/2015

## AQUIFER DATA

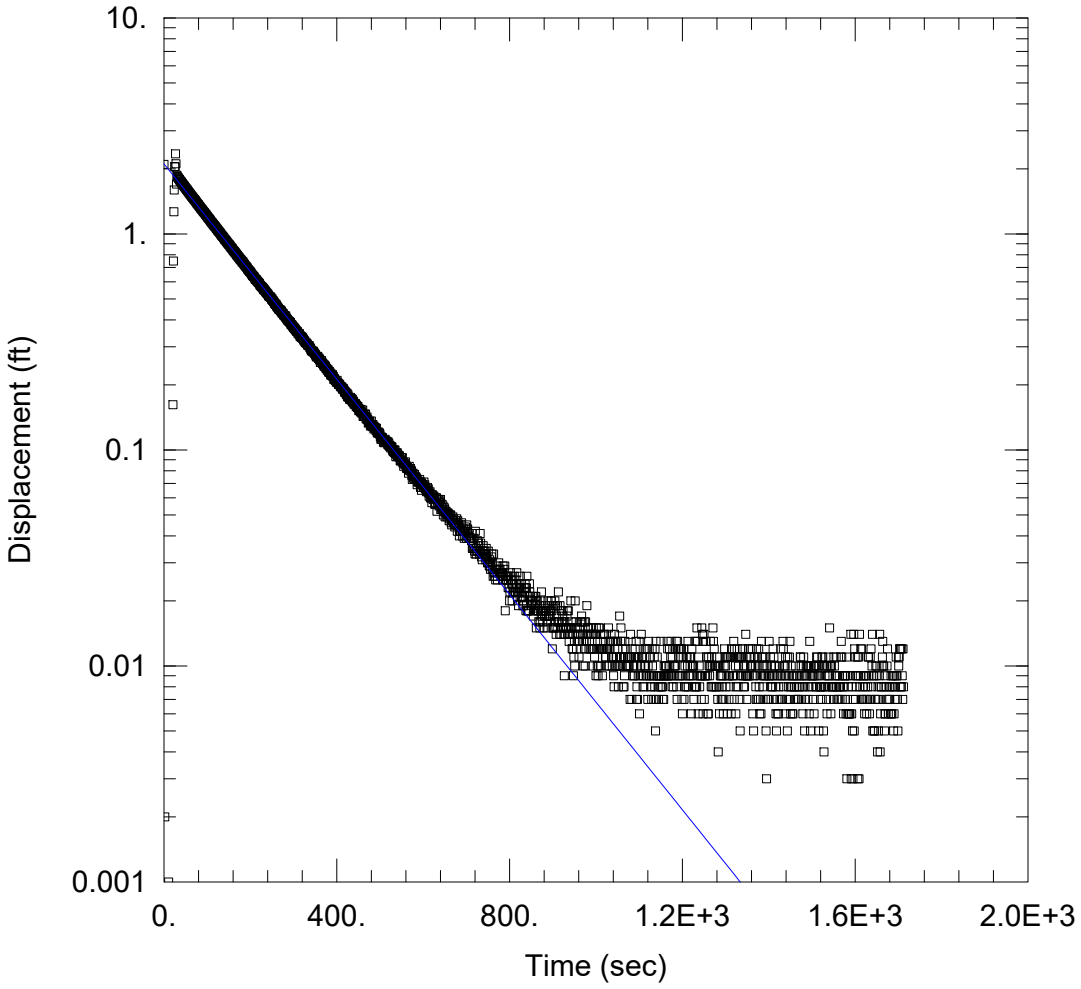
Saturated Thickness: 30.5 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-22S)

Initial Displacement: 2.3 ft
Total Well Penetration Depth: 30.13 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 30.5 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.828 ft/day
y0 = 2.28 ft




## YATES PZ-23S

Data Set: S:\...\23S-1.aqt
Date: 03/01/17 Time: 09:24:54

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-23S
Test Date: 11/23/2015

## AQUIFER DATA

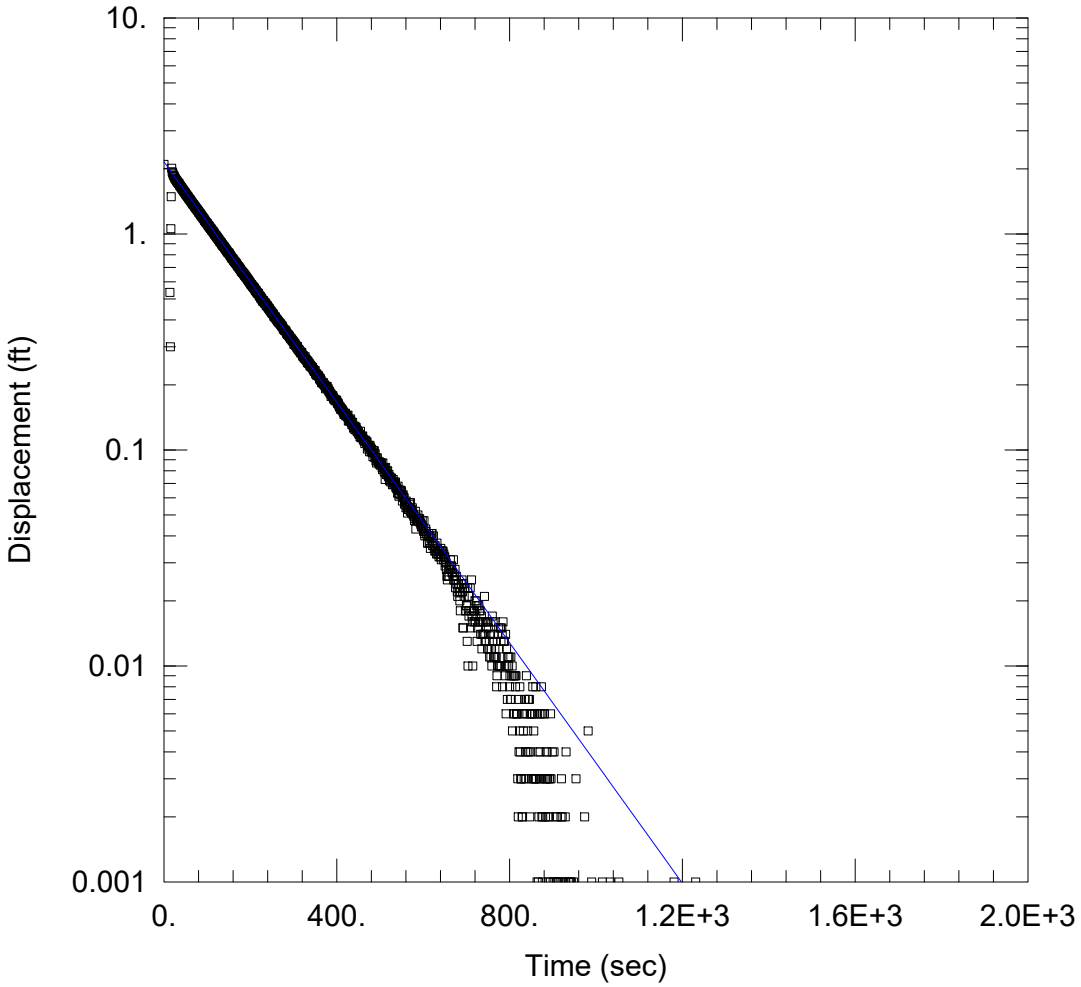
Saturated Thickness: 23.6 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-23S)

Initial Displacement: 2.1 ft
Total Well Penetration Depth: 23.3 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 23.6 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6054 ft/day
y0 = 2.108 ft




## YATES PZ-23S

Data Set: S:\...\23S-2.aqt
Date: 03/01/17 Time: 09:25:50

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ_23S
Test Date: 11/23/2015

## AQUIFER DATA

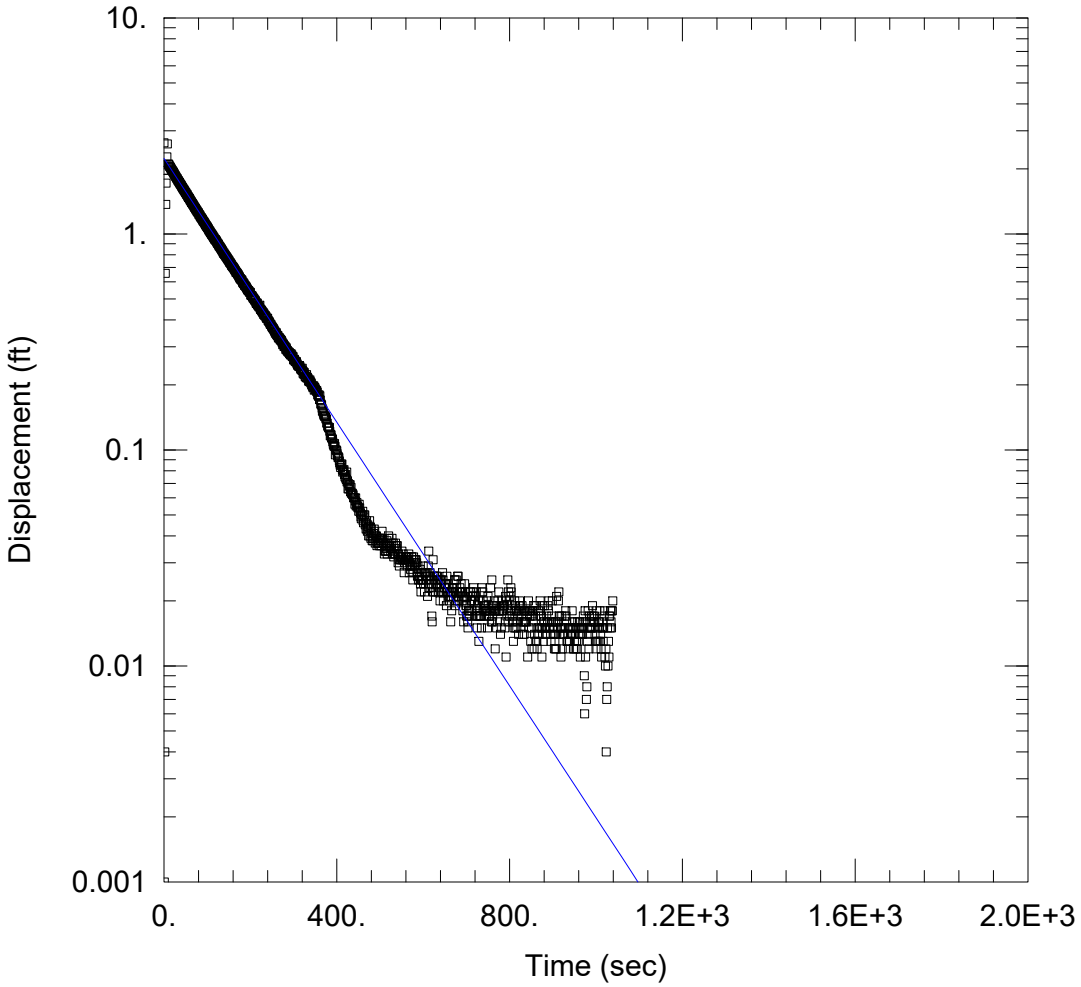
Saturated Thickness: 23.6 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-23S)

Initial Displacement: 2.1 ft
Total Well Penetration Depth: 23.3 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 23.6 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6763 ft/day
y0 = 2.157 ft




## YATES PZ-24S

Data Set: S:\...\24S-1.aqt
Date: 03/01/17 Time: 09:28:07

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-24S
Test Date: 11/23/2015

## AQUIFER DATA

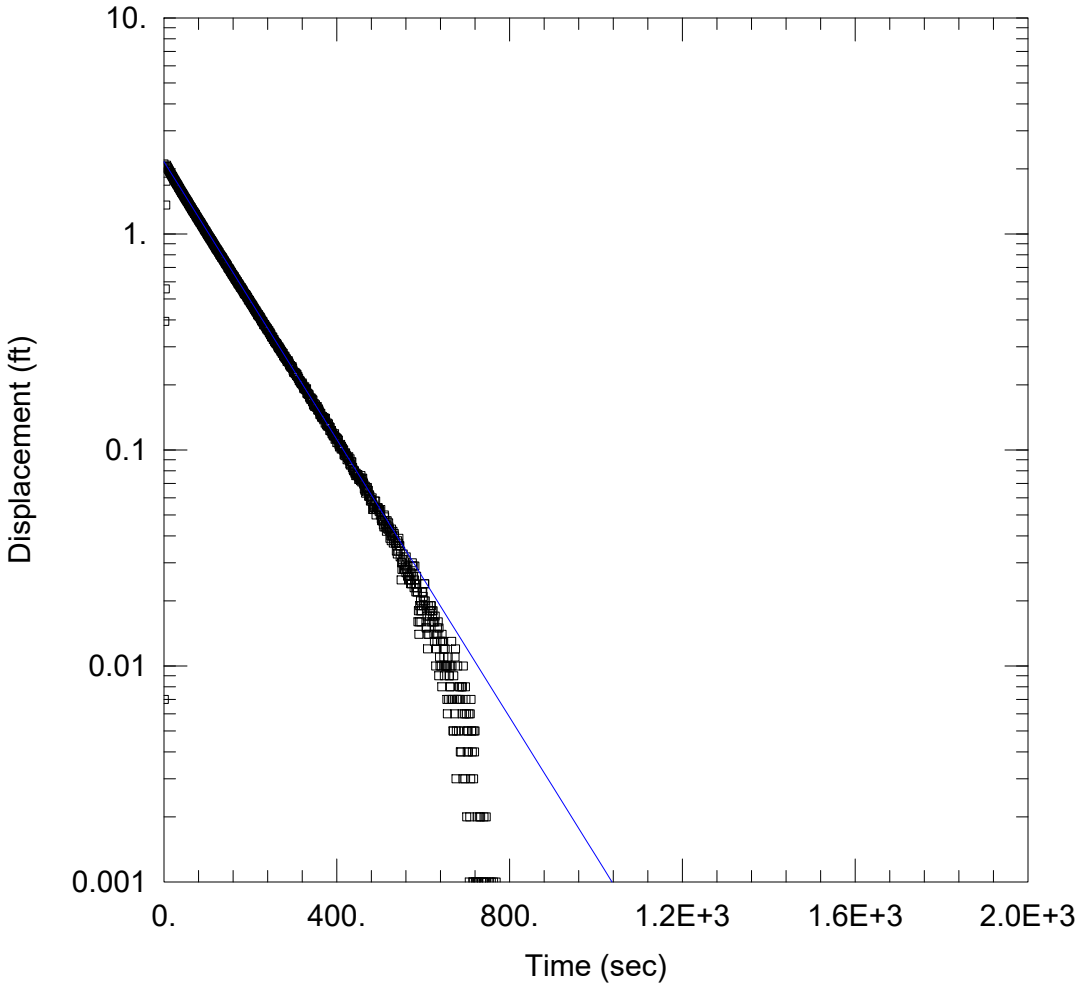
Saturated Thickness: 29.37 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-24S)

Initial Displacement: 2.64 ft
Total Well Penetration Depth: 29.4 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 29.4 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.7924 ft/day
y0 = 2.235 ft




## YATES PZ-24S

Data Set: S:\...\24S-2.aqt
Date: 03/01/17 Time: 09:29:40

## PROJECT INFORMATION

Company: SCS
Client: GPC
Project: Yates
Location: Yates
Test Well: PZ-24S
Test Date: 11/23/2015

## AQUIFER DATA

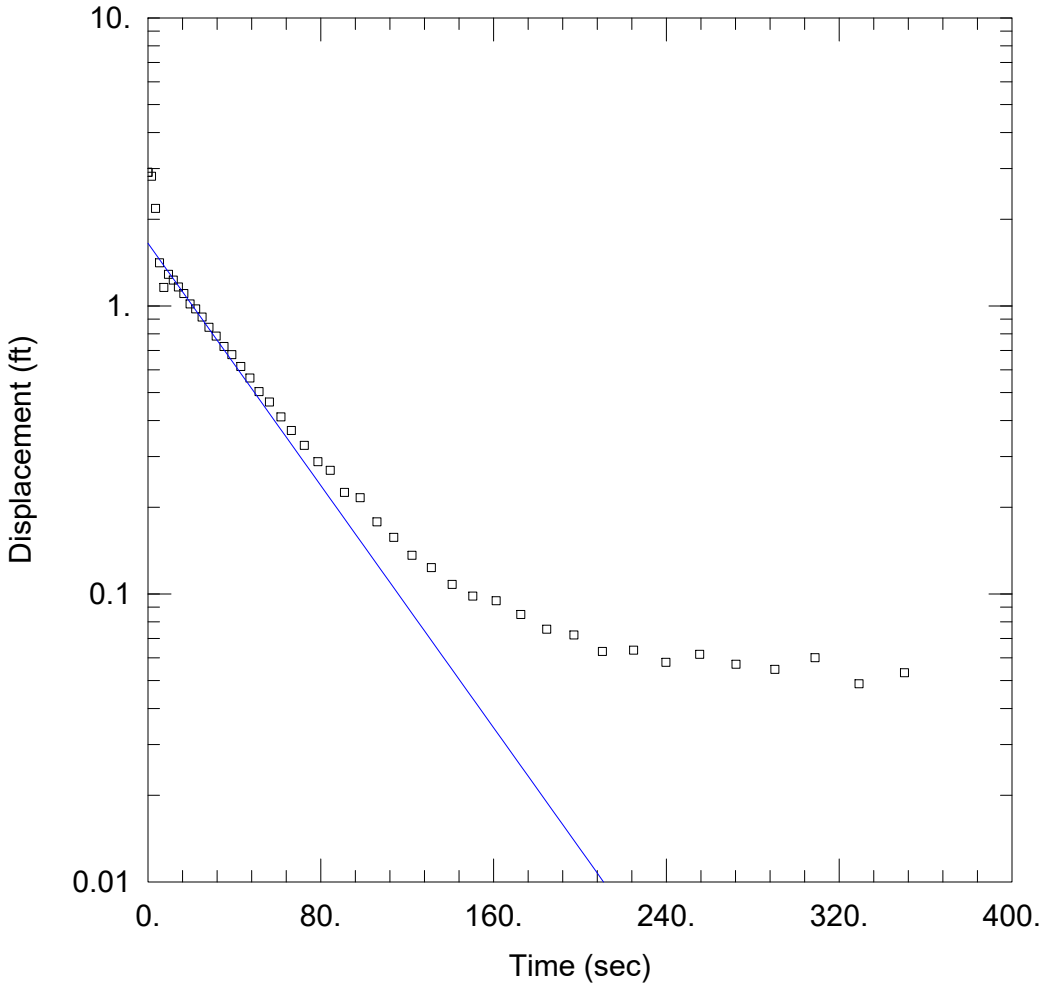
Saturated Thickness: 29.37 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (Yates PZ-24S)

Initial Displacement: 2.11 ft
Total Well Penetration Depth: 29.4 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 29.4 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.8348 ft/day
y0 = 2.161 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-35 IN.aqt
Date: 03/15/17 Time: 14:12:51

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-35 IN
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 36.58 ft Anisotropy Ratio (Kz/Kr): 1.

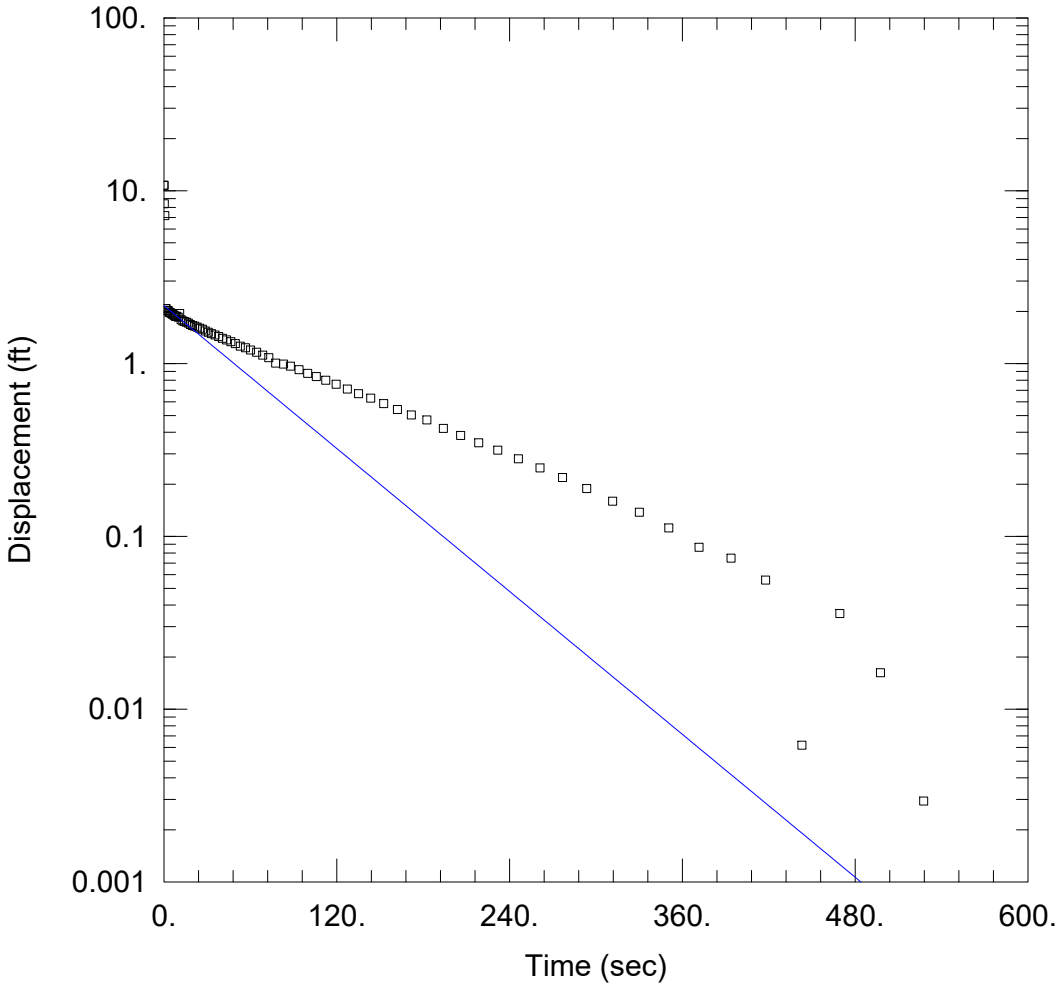
## WELL DATA (PZ-35)

Initial Displacement: 2.91 ft
Total Well Penetration Depth: 36.58 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 36.58 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.003119 cm/sec y0 = 1.65 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-35 OUT.aqt
Date: 03/15/17 Time: 14:13:10

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-35 OUT
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 36.58 ft Anisotropy Ratio (Kz/Kr): 1.

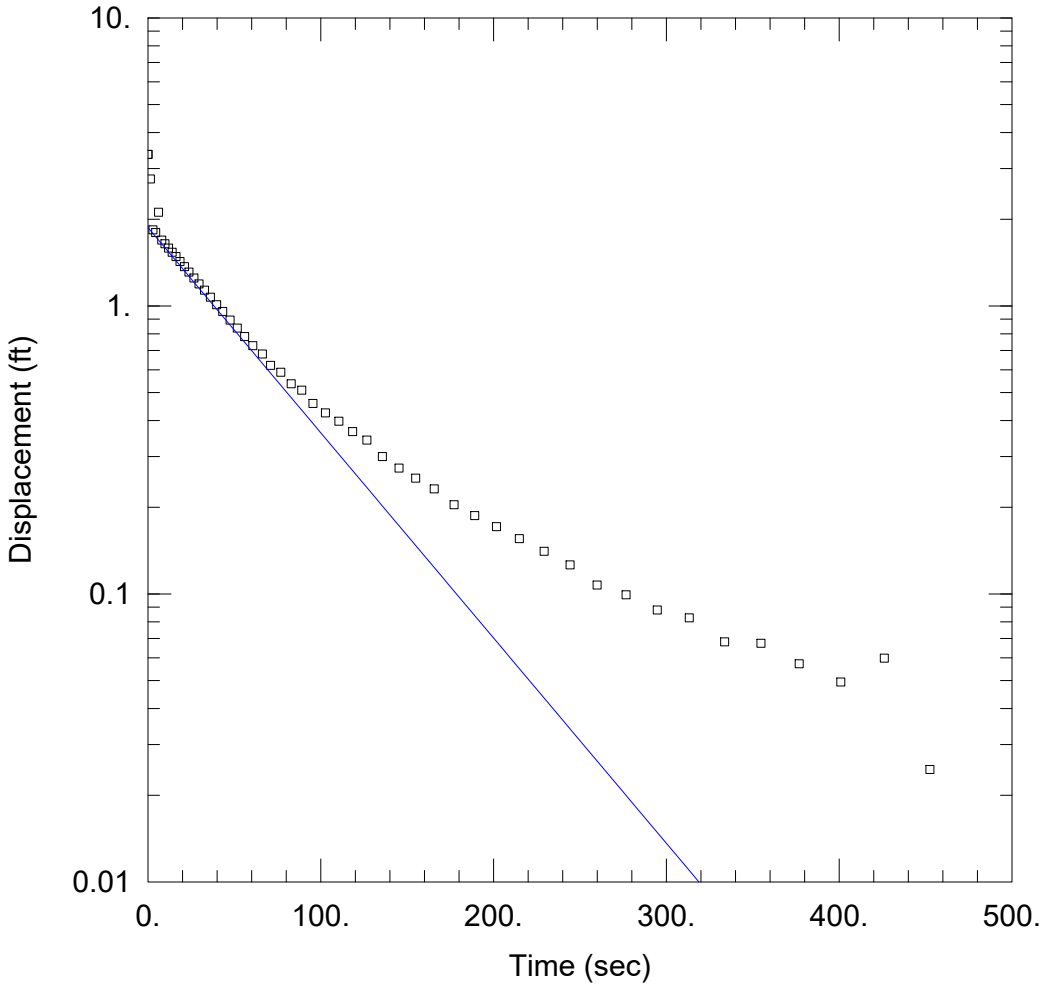
## WELL DATA (PZ-35)

Initial Displacement: 10.76 ft
Total Well Penetration Depth: 36.58 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 36.58 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002045 cm/sec y0 = 2.163 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-37 IN.aqt
Date: 03/15/17 Time: 14:13:25

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-37 IN
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 12.66 ft Anisotropy Ratio (Kz/Kr): 1.

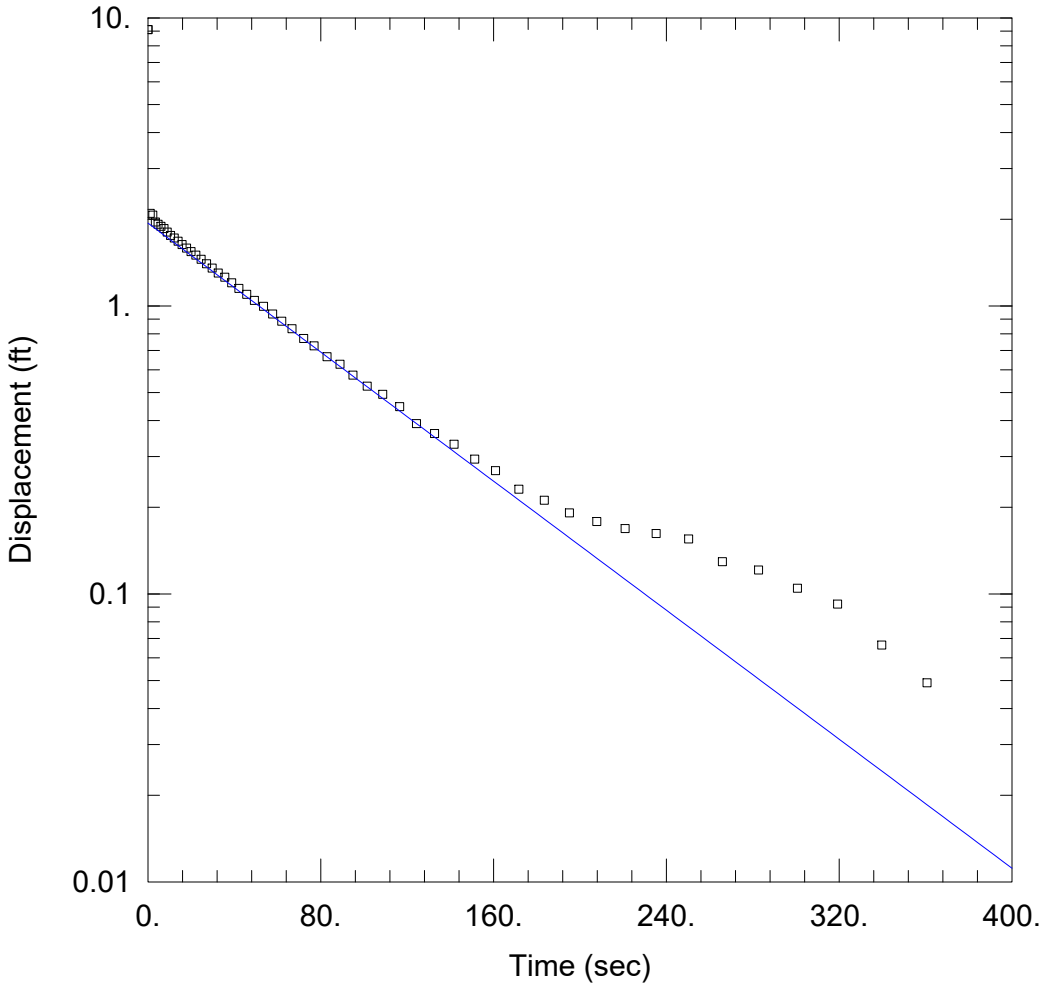
## WELL DATA (PZ-37)

Initial Displacement: 3.36 ft
Total Well Penetration Depth: 36.43 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 35.43 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002113 cm/sec y0 = 1.871 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-37 OUT.aqt
Date: 03/15/17 Time: 14:13:36

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-37 OUT
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 12.66 ft Anisotropy Ratio (Kz/Kr): 1.

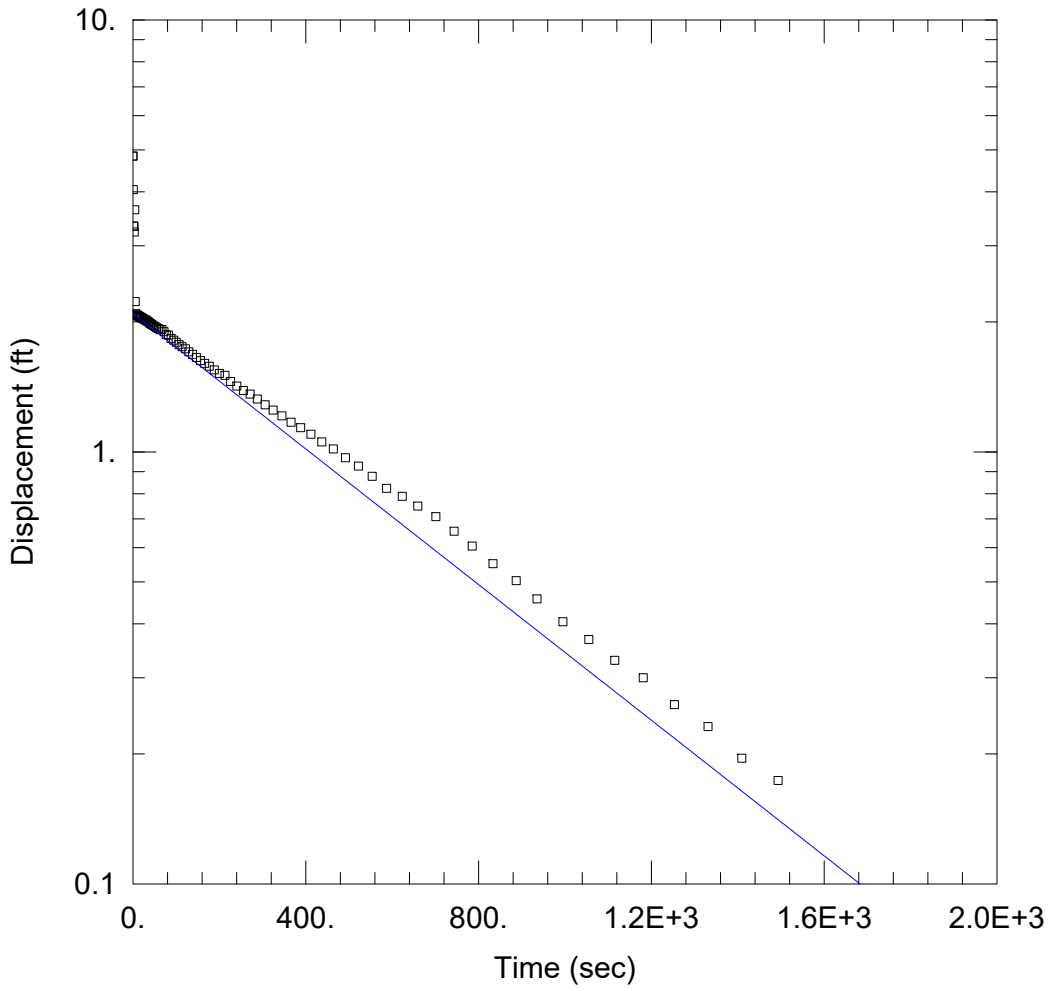
## WELL DATA (PZ-37)

Initial Displacement: 9.11 ft
Total Well Penetration Depth: 35.43 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 35.43 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001653 cm/sec y0 = 1.938 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-38 IN.aqt
Date: 03/15/17 Time: 14:13:49

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-38 IN
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 19.02 ft Anisotropy Ratio (Kz/Kr): 1.

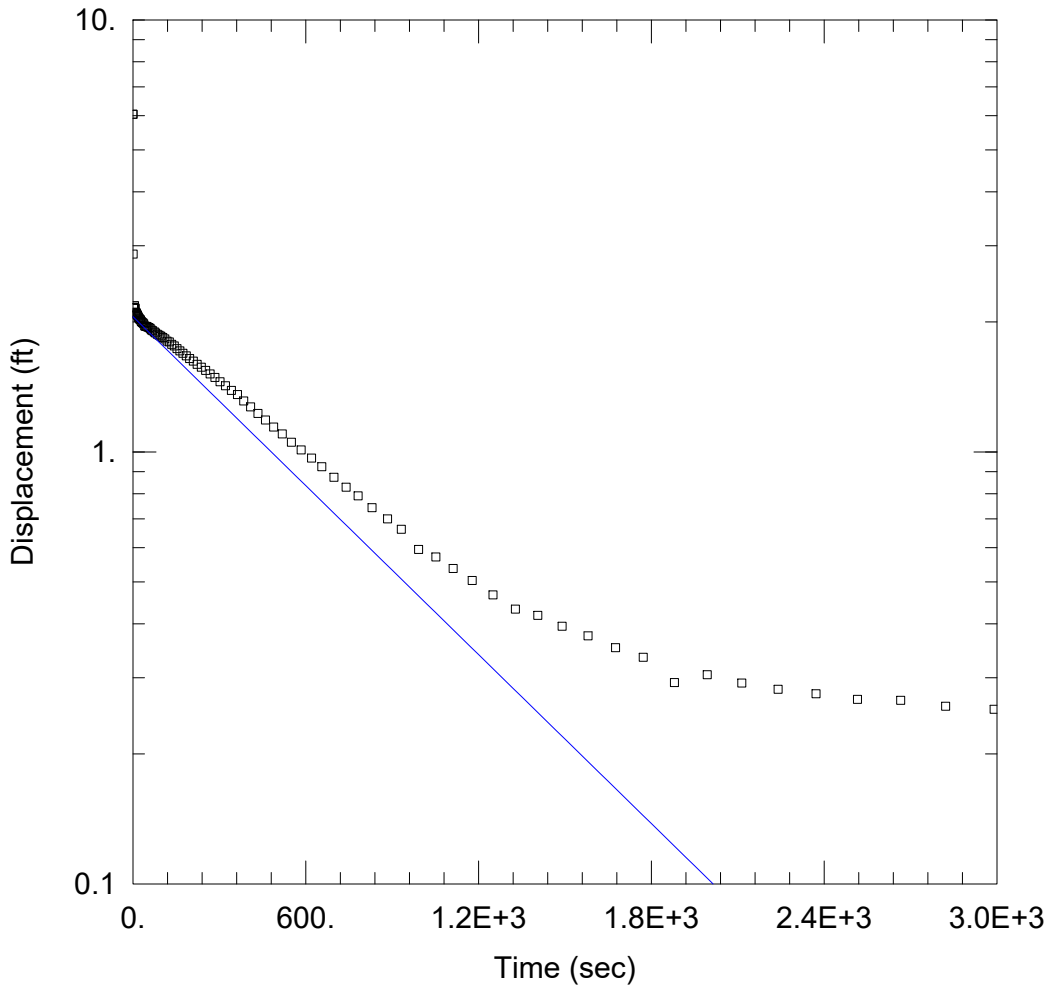
## WELL DATA (PZ-38)

Initial Displacement: 4.84 ft
Total Well Penetration Depth: 19.02 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.02 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002079 cm/sec y0 = 2.093 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-38 OUT.aqt
Date: 03/15/17 Time: 14:14:09

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-38 OUT
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 19.02 ft Anisotropy Ratio (Kz/Kr): 1.

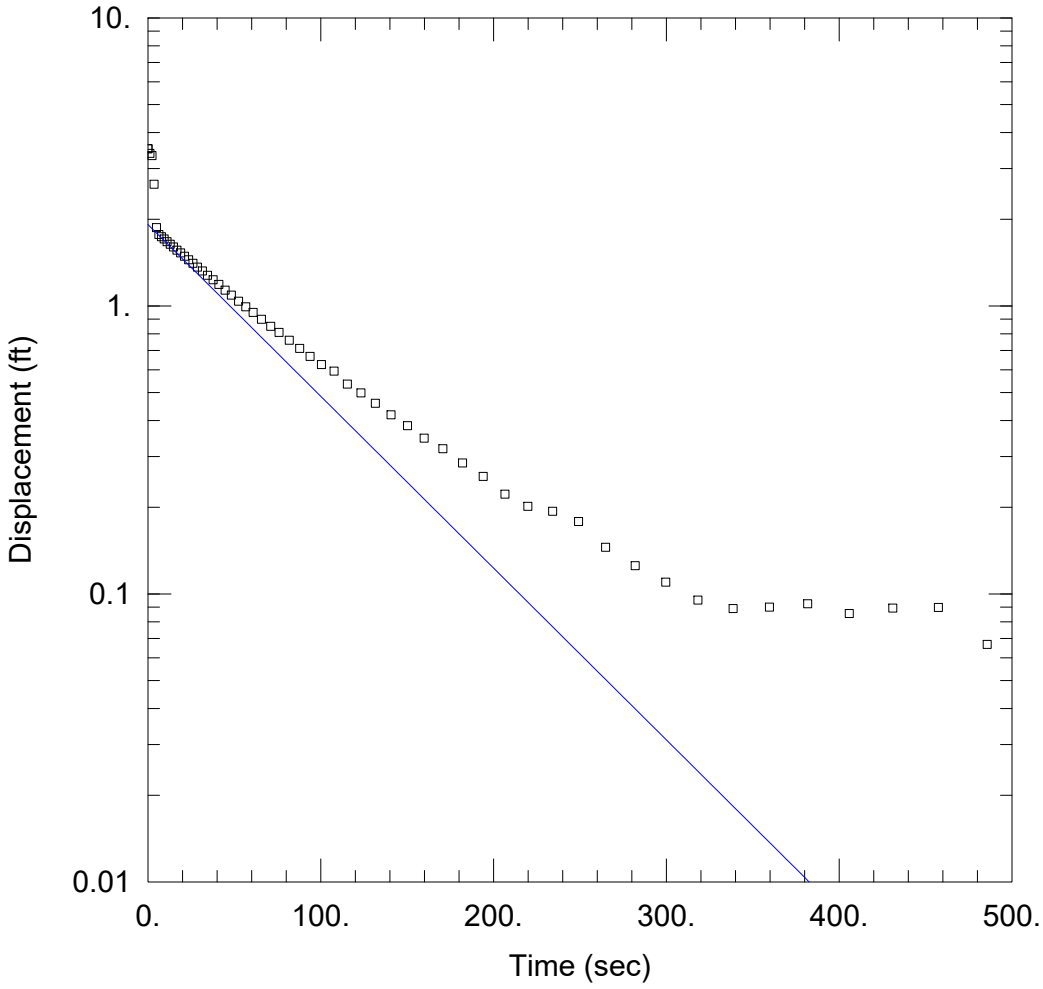
## WELL DATA (PZ-38)

Initial Displacement: 6.05 ft
Total Well Penetration Depth: 19.02 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.02 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0001727 cm/sec y0 = 2.056 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-39 IN.aqt
Date: 03/15/17 Time: 14:14:25

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-39 IN
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 42.21 ft Anisotropy Ratio (Kz/Kr): 1.

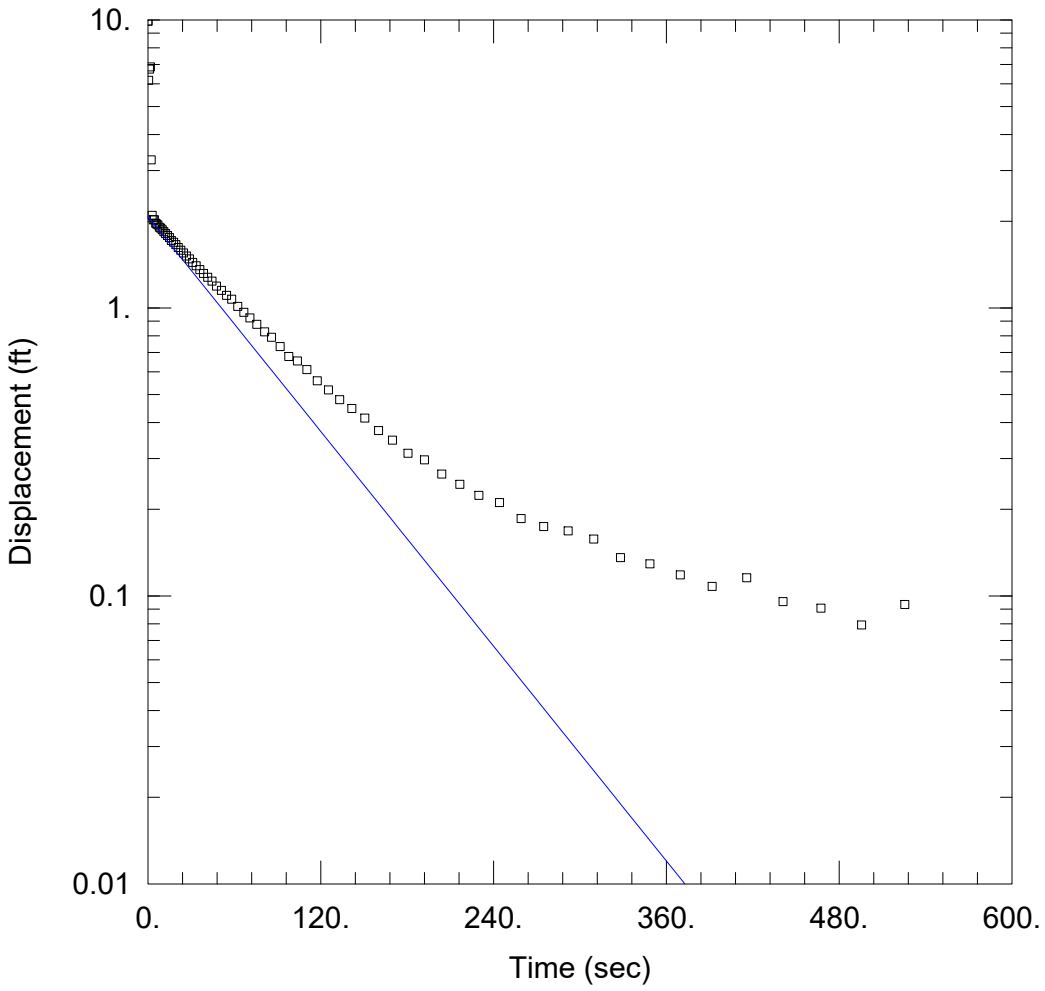
## WELL DATA (PZ-39)

Initial Displacement: 3.52 ft
Total Well Penetration Depth: 42.21 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 42.21 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.00181 cm/sec y0 = 1.917 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-39 OUT.aqt
Date: 03/15/17 Time: 14:14:44

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-39 OUT
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 42.21 ft Anisotropy Ratio (Kz/Kr): 1.

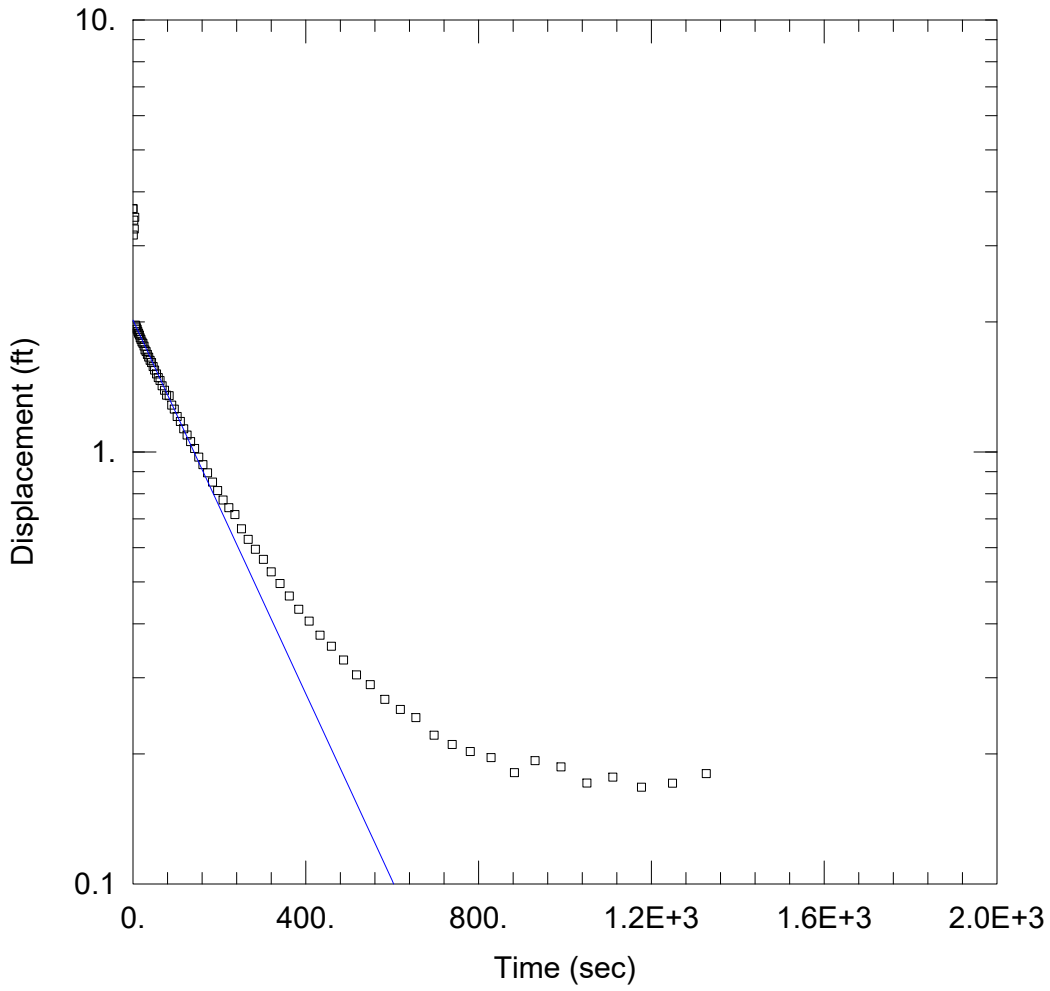
## WELL DATA (PZ-39)

Initial Displacement: 9.91 ft
Total Well Penetration Depth: 42.21 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 42.21 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001885 cm/sec y0 = 2.074 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-40 IN.aqt
Date: 03/15/17 Time: 14:15:02

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-40 IN
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 20.13 ft Anisotropy Ratio (Kz/Kr): 1.

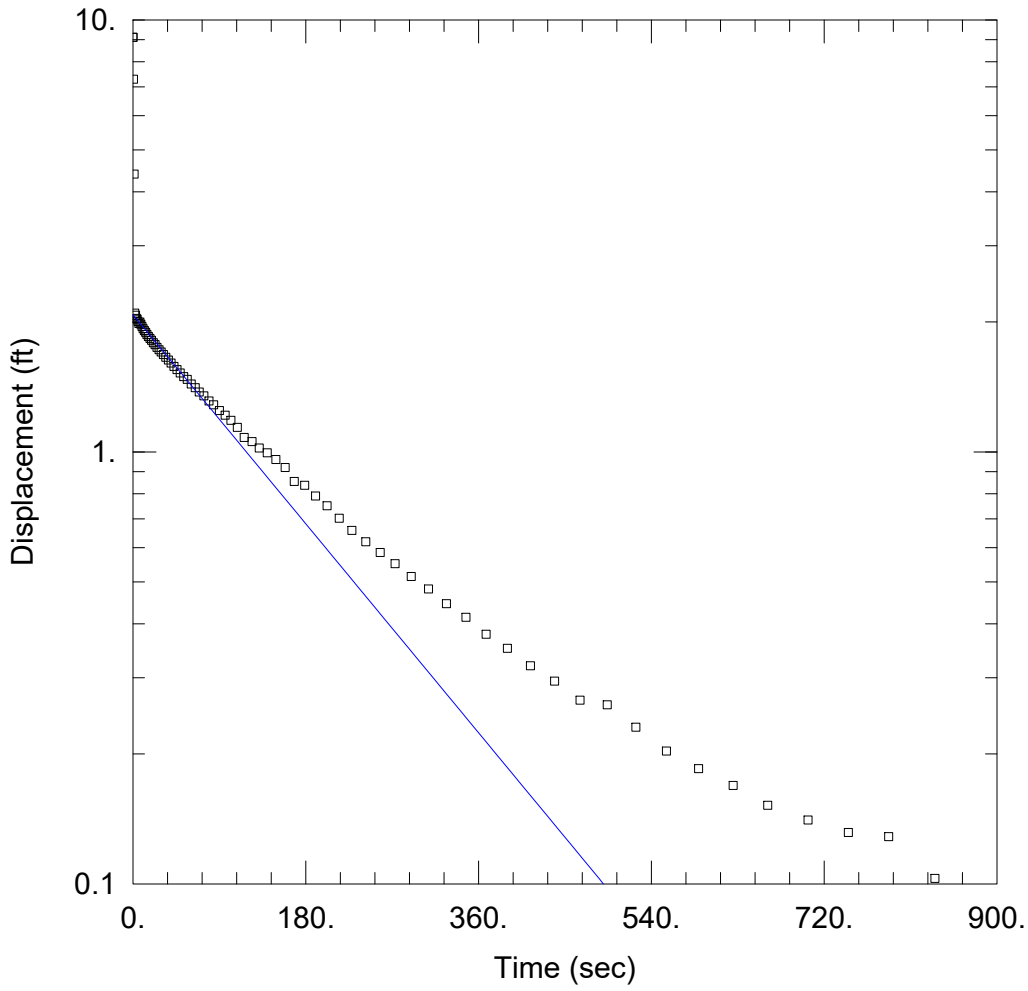
## WELL DATA (PZ-40)

Initial Displacement: 3.66 ft
Total Well Penetration Depth: 20.13 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 20.13 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005789 cm/sec y0 = 2.019 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-40 OUT.aqt
Date: 03/15/17 Time: 14:15:18

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-40 OUT
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 20.13 ft Anisotropy Ratio (Kz/Kr): 1.

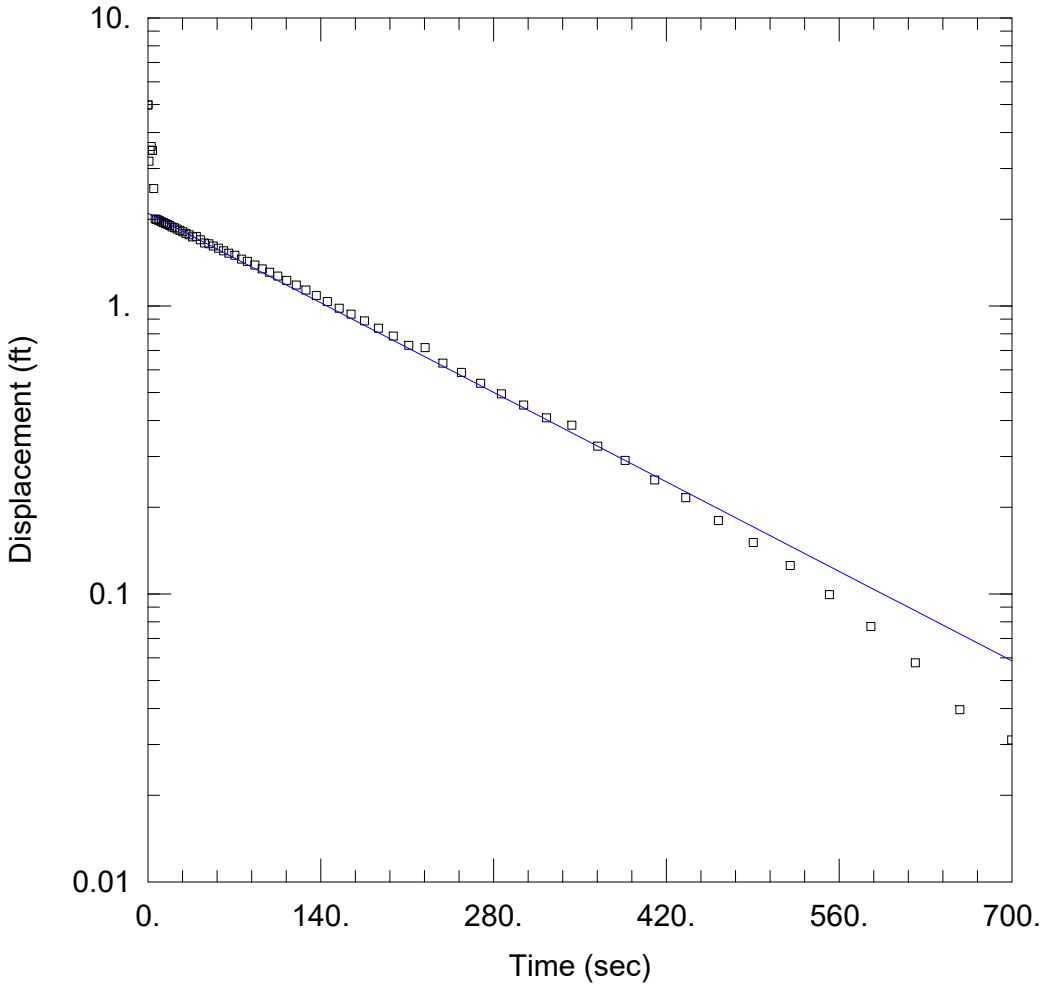
## WELL DATA (PZ-40)

Initial Displacement: 9.12 ft
Total Well Penetration Depth: 20.13 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 20.13 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0007197 cm/sec y0 = 2.077 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-48 IN.aqt
Date: 03/15/17 Time: 14:16:14

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-48 IN
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 34.93 ft Anisotropy Ratio (Kz/Kr): 1.

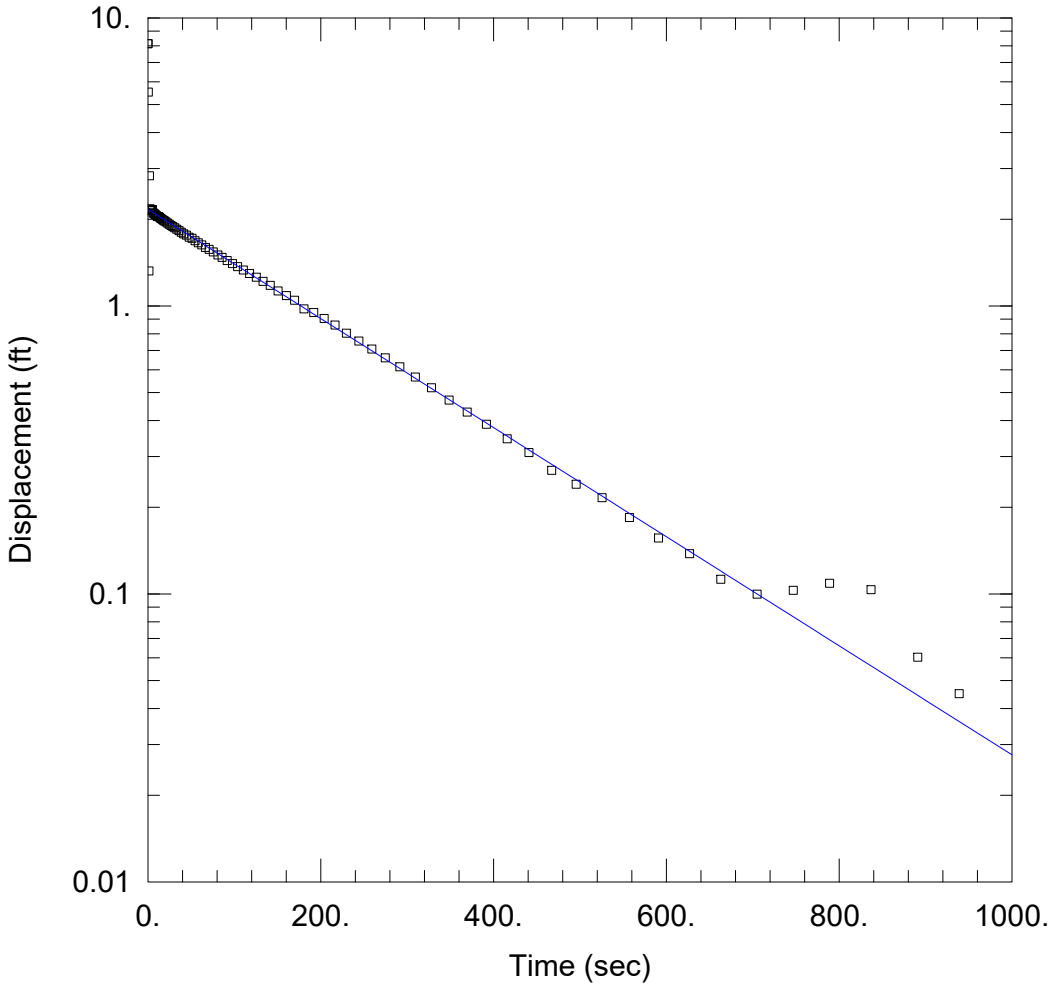
## WELL DATA (PZ-48)

Initial Displacement: 4.99 ft
Total Well Penetration Depth: 34.93 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 34.93 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006539 cm/sec y0 = 2.098 ft




## WELL TEST ANALYSIS

Data Set: P:\...\PZ-48 OUT.aqt
Date: 03/15/17 Time: 14:16:27

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: PZ-48 OUT
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 34.93 ft Anisotropy Ratio (Kz/Kr): 1.

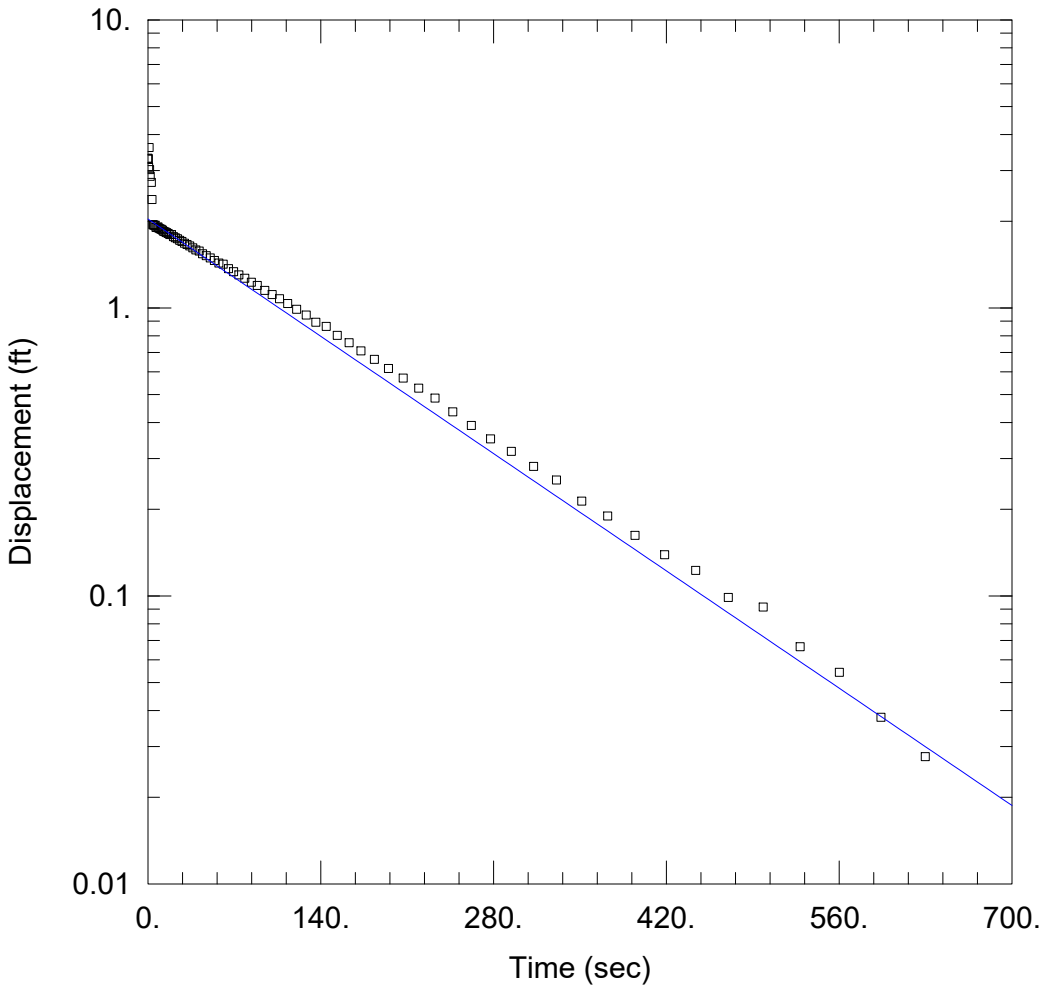
## WELL DATA (PZ-48)

Initial Displacement: 8.14 ft
Total Well Penetration Depth: 34.93 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 34.93 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005577 cm/sec y0 = 2.162 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWA-47 IN.aqt
Date: 03/15/17 Time: 14:16:43

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWA-47 IN
Test Date: 3/3/2017

## AQUIFER DATA

Saturated Thickness: 27.53 ft Anisotropy Ratio (Kz/Kr): 1.

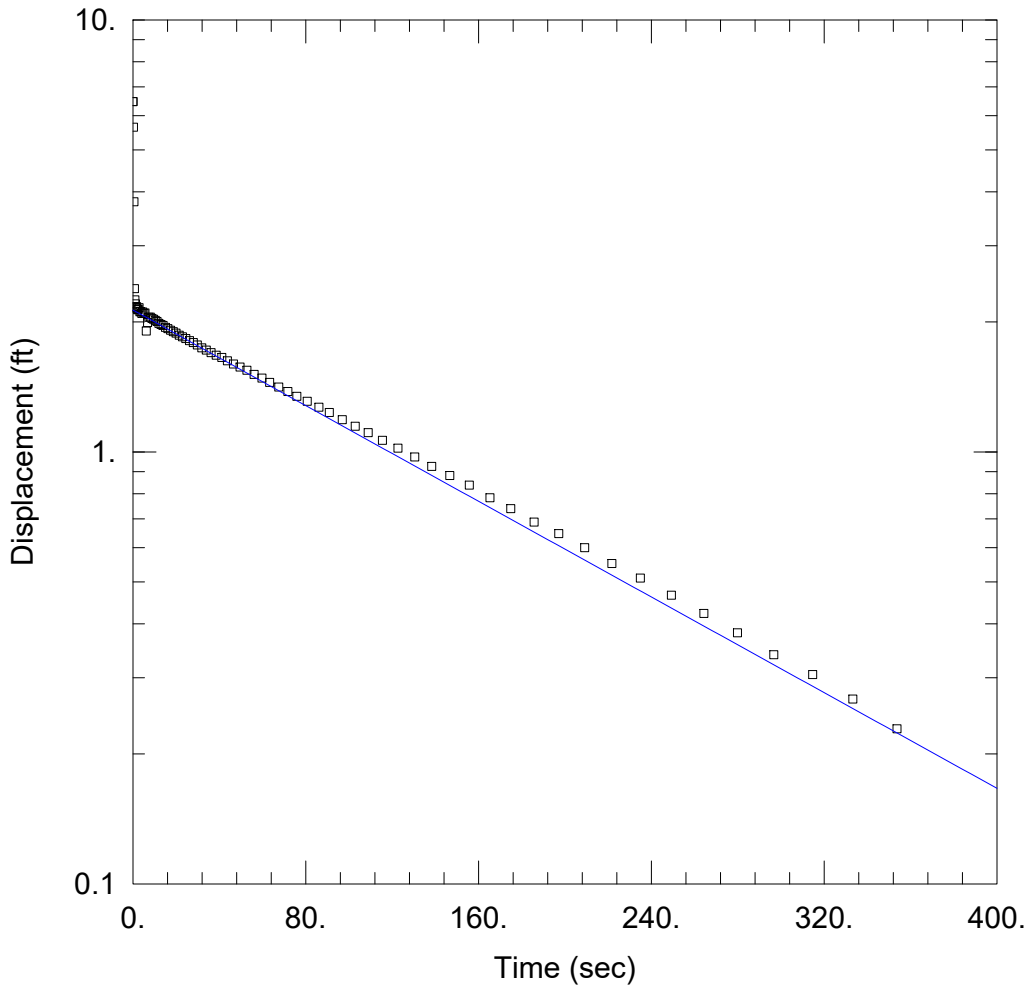
## WELL DATA (YGWA-47)

Initial Displacement: 3.31 ft
Total Well Penetration Depth: 27.53 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.53 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0008235 cm/sec y0 = 2.036 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWA-47 OUT.aqt
Date: 03/15/17 Time: 14:16:59

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWA-47 OUT
Test Date: 3/3/2017

## AQUIFER DATA

Saturated Thickness: 27.53 ft Anisotropy Ratio (Kz/Kr): 1.

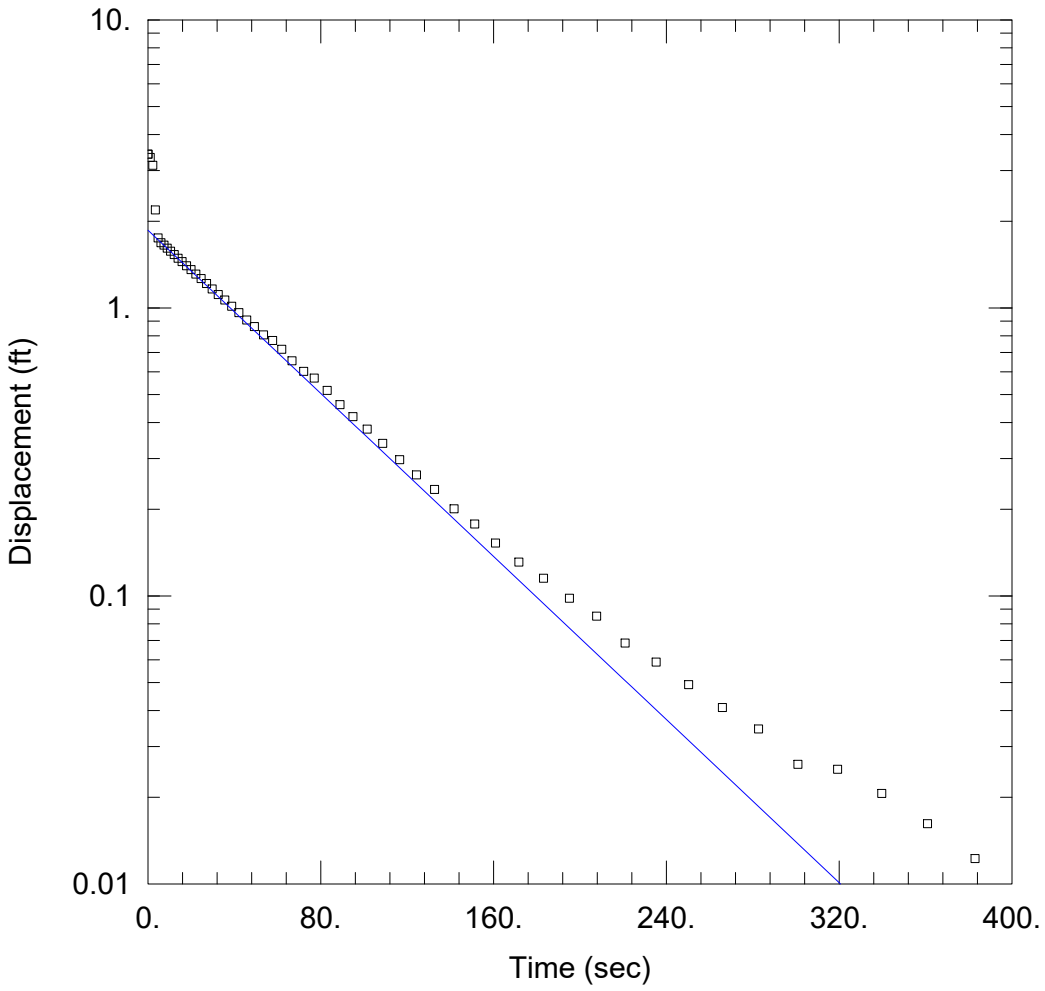
## WELL DATA (YGWA-47)

Initial Displacement: 6.47 ft
Total Well Penetration Depth: 27.53 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 27.53 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0007836 cm/sec y0 = 2.131 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-32I IN.aqt
Date: 03/15/17 Time: 14:19:20

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-32I IN
Test Date: 3/9/2017

## AQUIFER DATA

Saturated Thickness: 19.03 ft Anisotropy Ratio (Kz/Kr): 1.

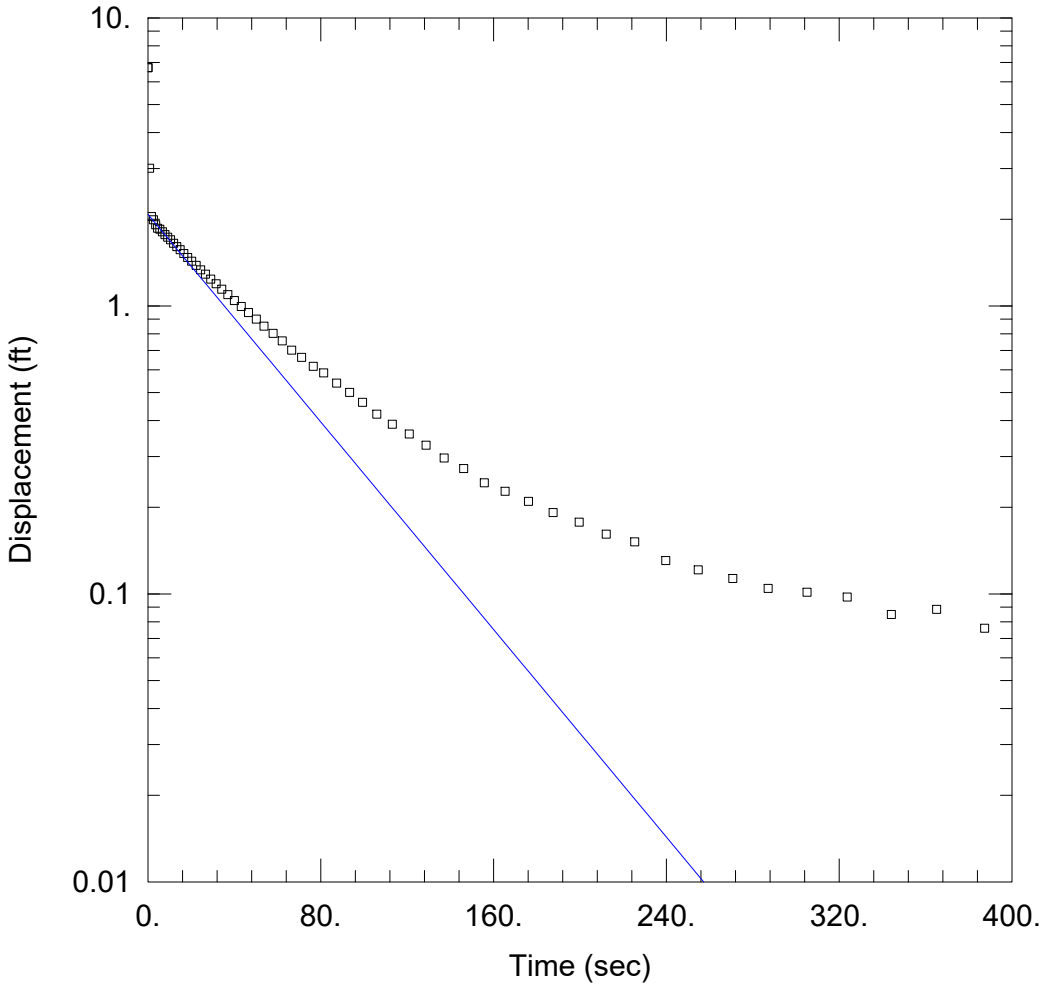
## WELL DATA (YGWC-32I)

Initial Displacement: 3.42 ft
Total Well Penetration Depth: 19.03 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.03 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001876 cm/sec y0 = 1.86 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-32I OUT.aqt
Date: 03/15/17 Time: 14:19:37

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-32I OUT
Test Date: 3/9/2017

## AQUIFER DATA

Saturated Thickness: 19.03 ft Anisotropy Ratio (Kz/Kr): 1.

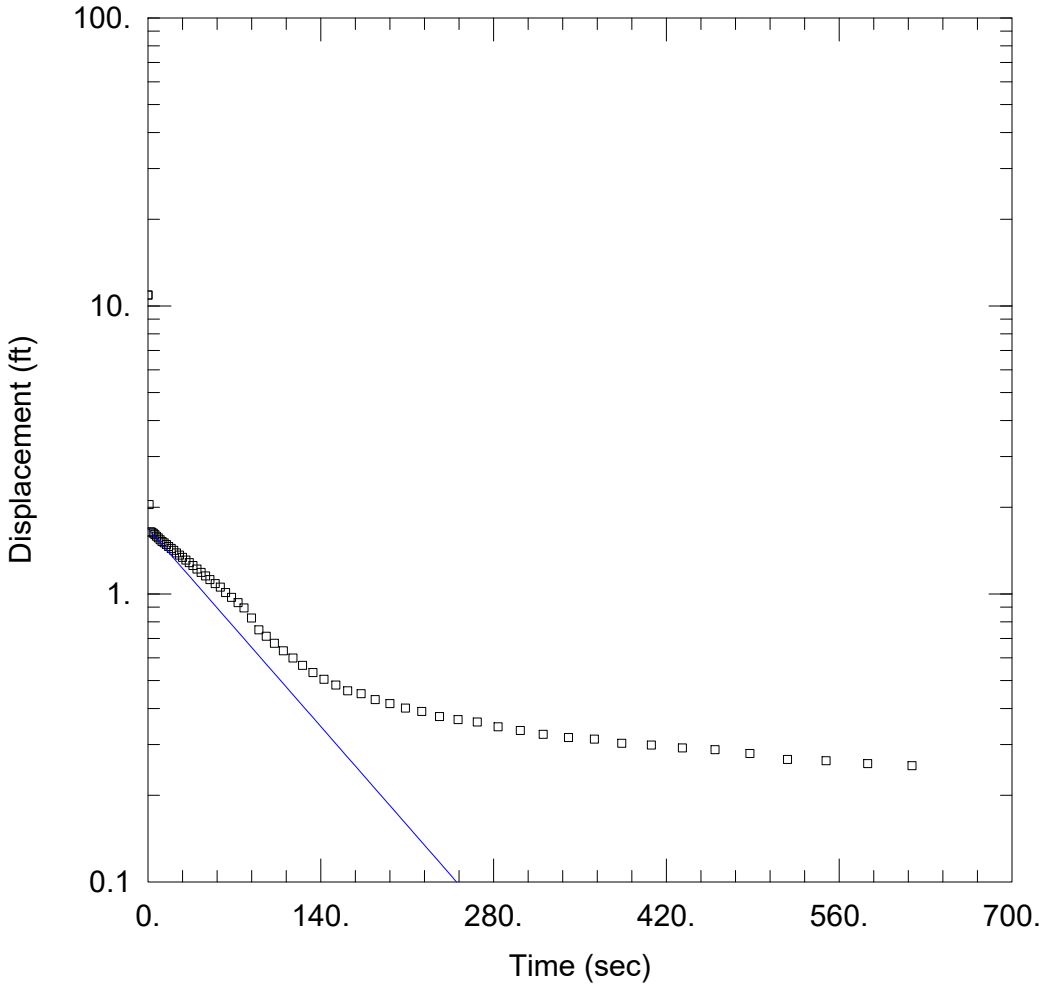
## WELL DATA (YGWC-32I)

Initial Displacement: 6.72 ft
Total Well Penetration Depth: 19.03 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 19.03 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002387 cm/sec y0 = 2.079 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-32S IN.aqt
Date: 03/15/17 Time: 14:19:56

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-32S IN
Test Date: 3/9/2017

## AQUIFER DATA

Saturated Thickness: 7.03 ft Anisotropy Ratio (Kz/Kr): 1.

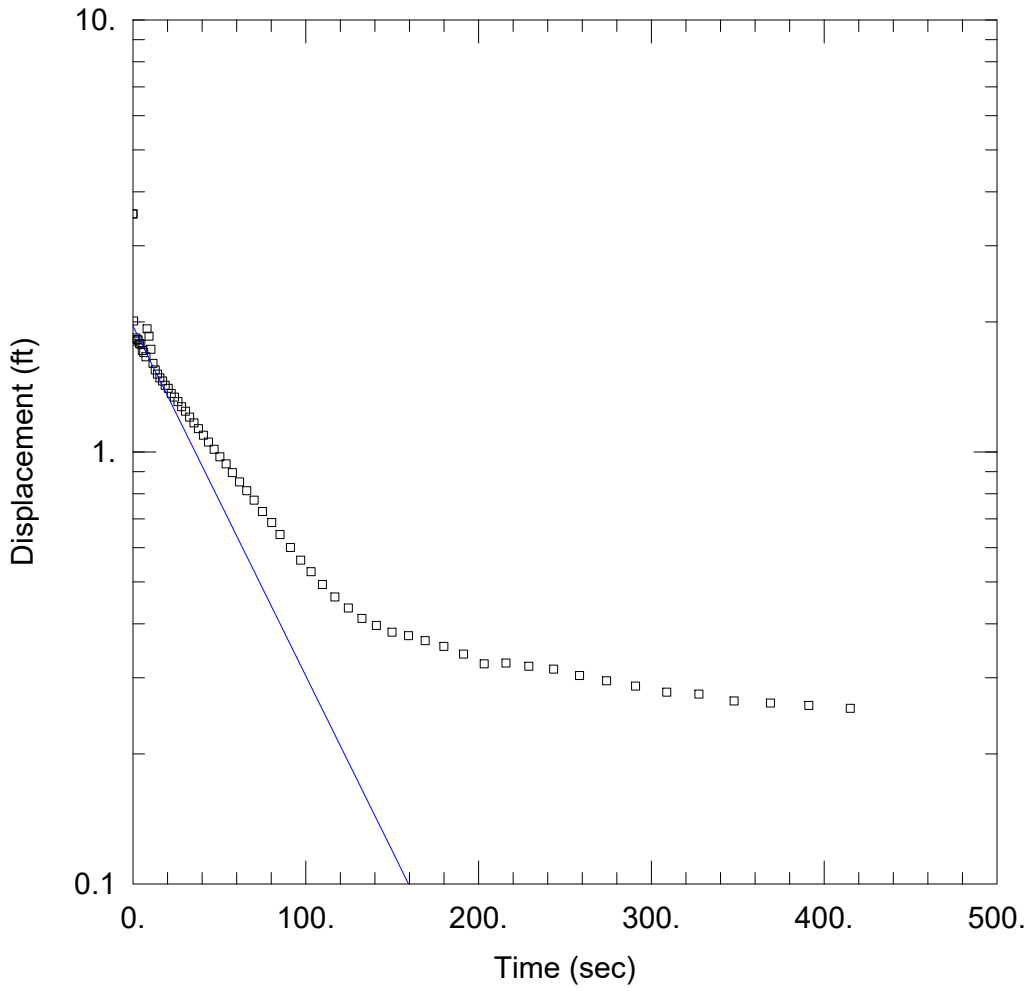
## WELL DATA (YGWC-32S)

Initial Displacement: 10.91 ft
Total Well Penetration Depth: 7.03 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 7.03 ft
Screen Length: 7.03 ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001447 cm/sec y0 = 1.683 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-32S OUT.aqt
Date: 03/15/17 Time: 14:20:09

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-32S OUT
Test Date: 3/9/2017

## AQUIFER DATA

Saturated Thickness: 7.03 ft Anisotropy Ratio (Kz/Kr): 1.

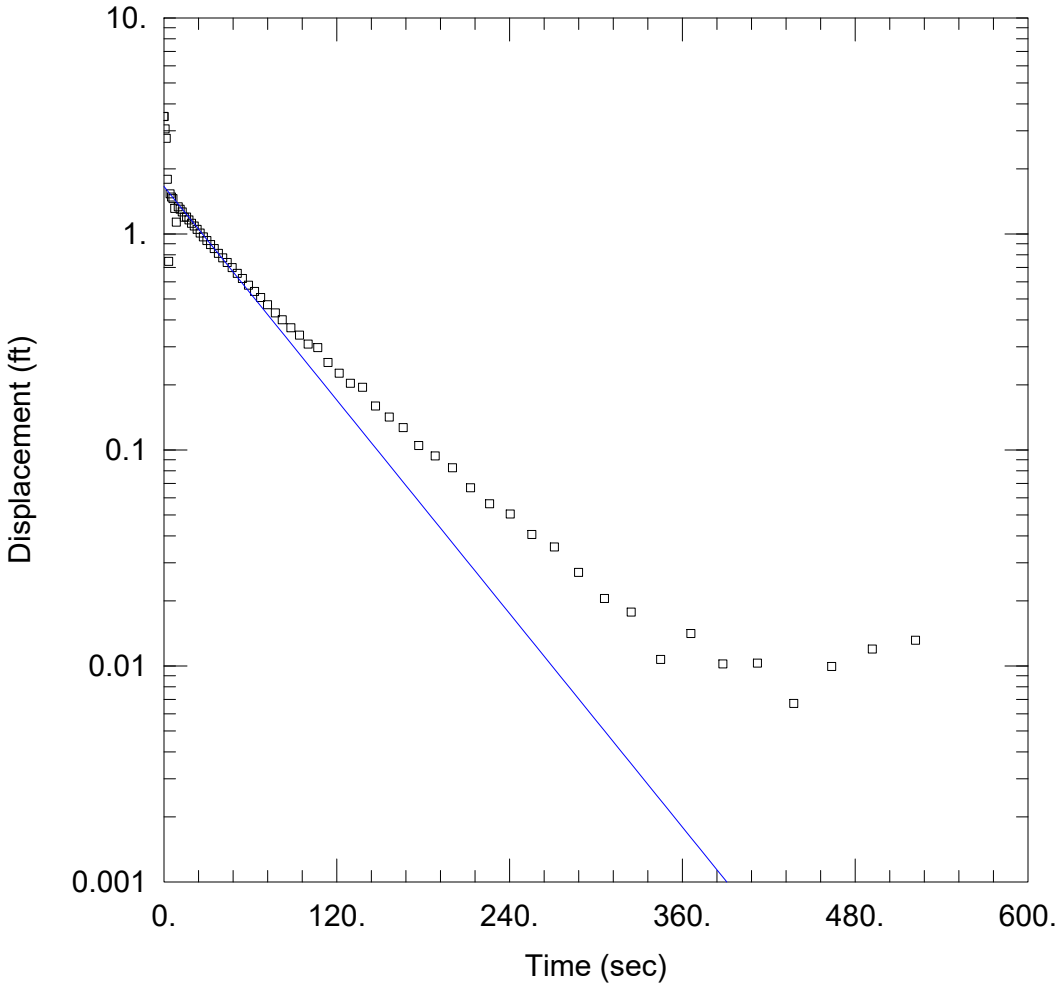
## WELL DATA (YGWC-32S)

Initial Displacement: 3.56 ft
Total Well Penetration Depth: 7.03 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 7.03 ft
Screen Length: 7.03 ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.00239 cm/sec y0 = 1.956 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-33S IN.aqt
Date: 03/15/17 Time: 14:20:26

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-33S IN
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 30.12 ft Anisotropy Ratio (Kz/Kr): 1.

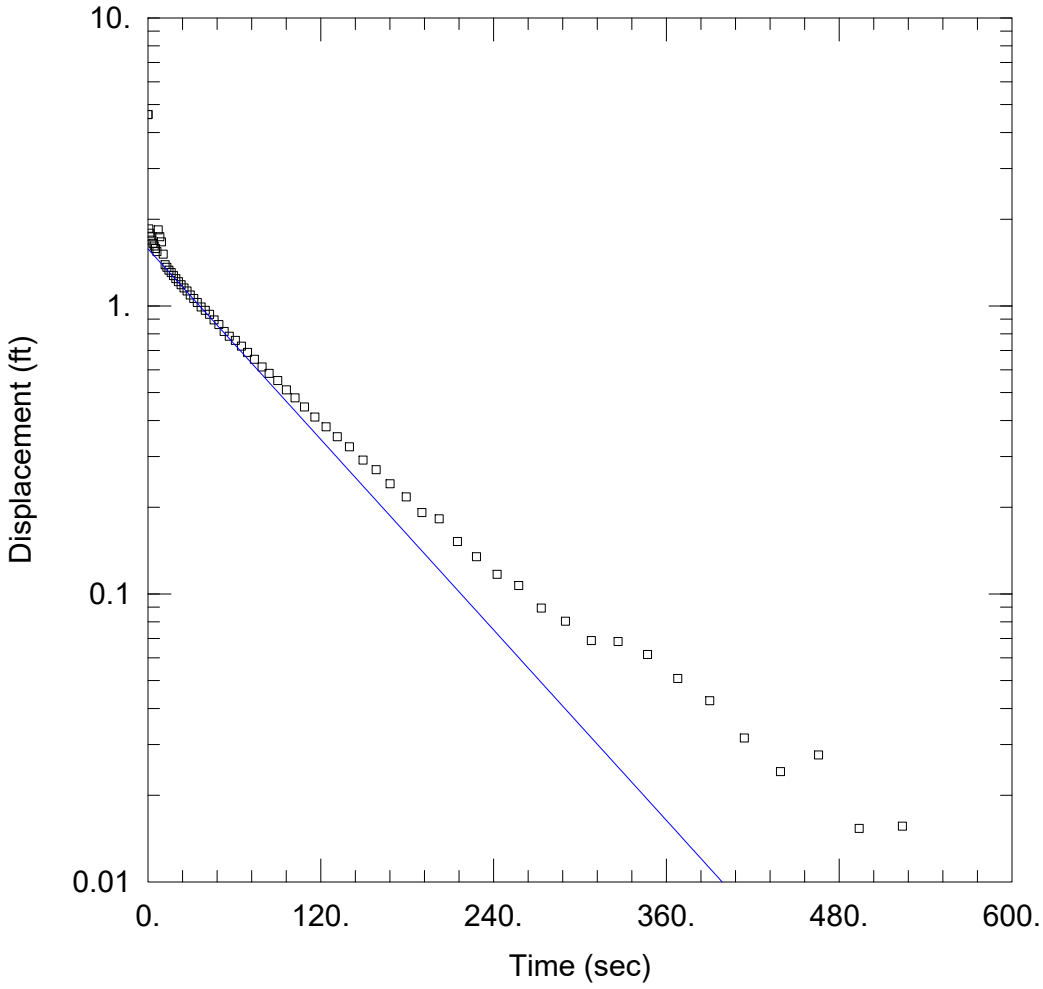
## WELL DATA (YGWC-33S)

Initial Displacement: 3.5 ft
Total Well Penetration Depth: 30.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 30.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002368 cm/sec y0 = 1.657 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-33S OUT.aqt
Date: 03/15/17 Time: 14:20:44

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-33S OUT
Test Date: 3/7/2017

## AQUIFER DATA

Saturated Thickness: 30.12 ft Anisotropy Ratio (Kz/Kr): 1.

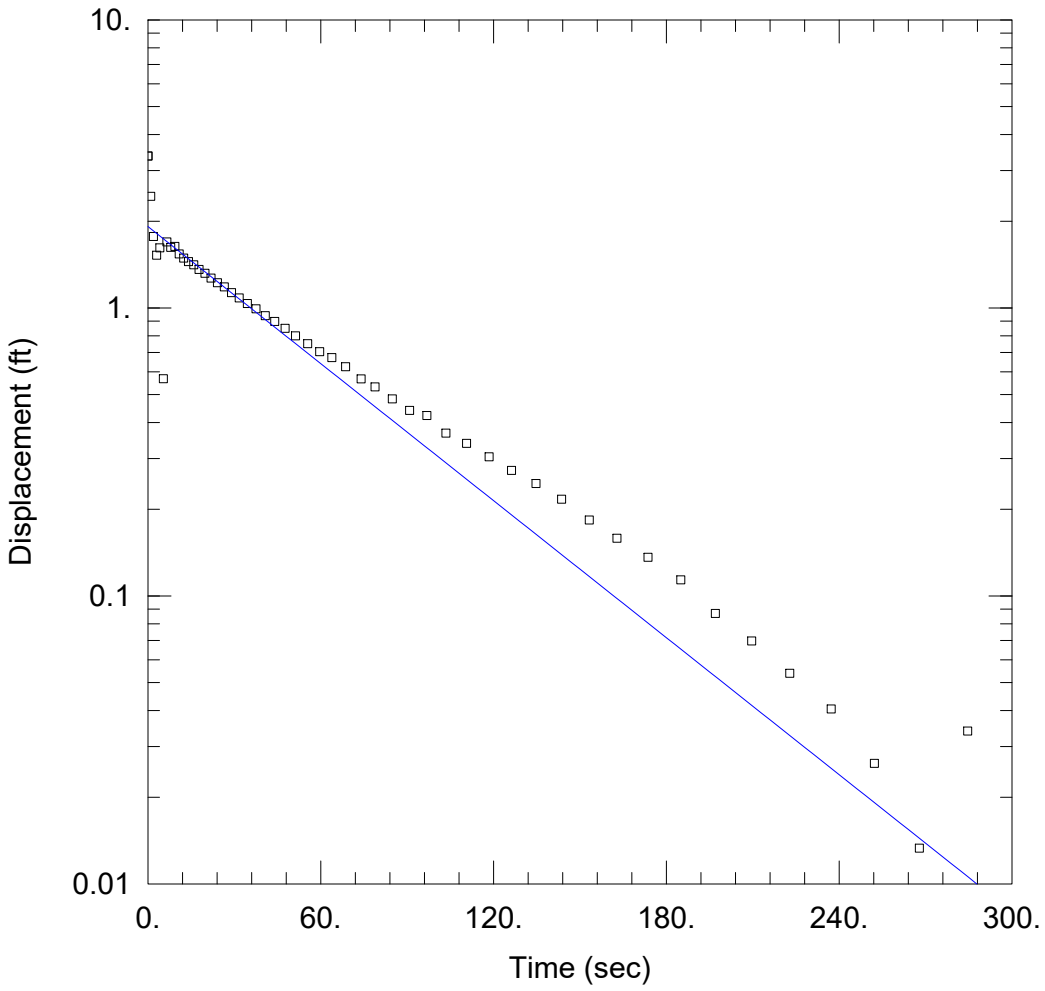
## WELL DATA (YGWC-33S)

Initial Displacement: 4.62 ft
Total Well Penetration Depth: 30.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 30.12 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001584 cm/sec y0 = 1.577 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-34I IN.aqt
Date: 03/15/17 Time: 14:21:01

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-34I IN
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 14.25 ft Anisotropy Ratio (Kz/Kr): 1.

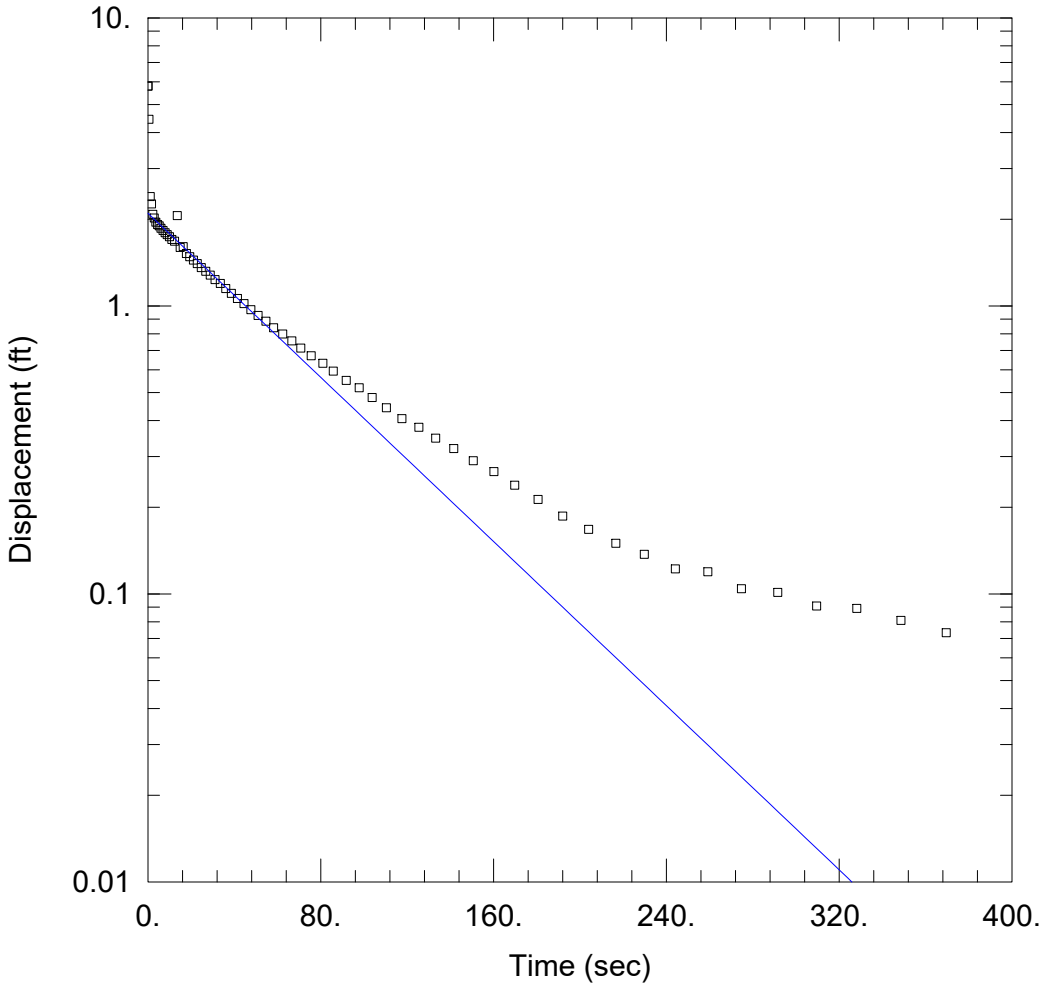
## WELL DATA (YGWC-34I)

Initial Displacement: 3.37 ft
Total Well Penetration Depth: 14.25 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 14.25 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001985 cm/sec y0 = 1.915 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-34I OUT.aqt
Date: 03/15/17 Time: 14:21:19

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-34I OUT
Test Date: 3/8/2017

## AQUIFER DATA

Saturated Thickness: 14.25 ft Anisotropy Ratio (Kz/Kr): 1.

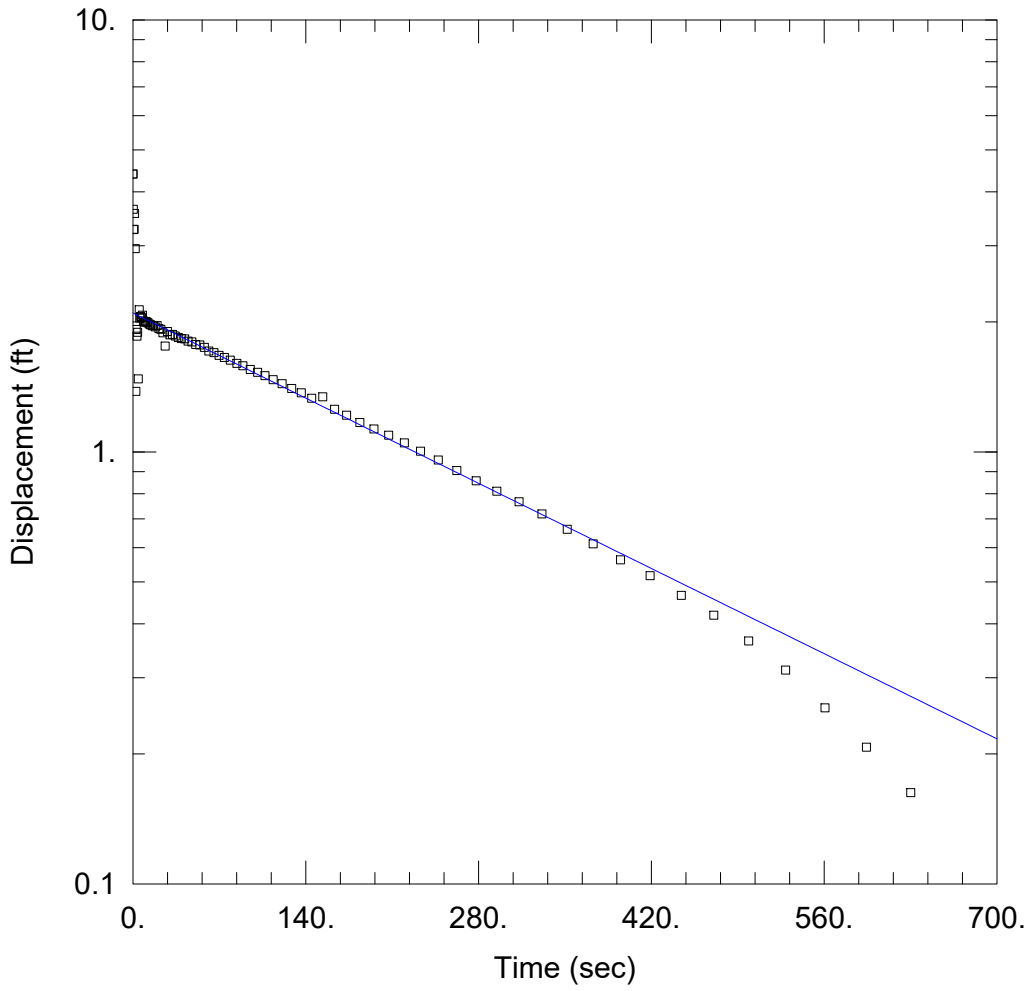
## WELL DATA (YGWC-34I)

Initial Displacement: 5.8 ft
Total Well Penetration Depth: 14.25 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 14.25 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001784 cm/sec y0 = 2.098 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-36 IN.aqt
Date: 03/15/17 Time: 14:21:36

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-36 IN
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 45.56 ft Anisotropy Ratio (Kz/Kr): 1.

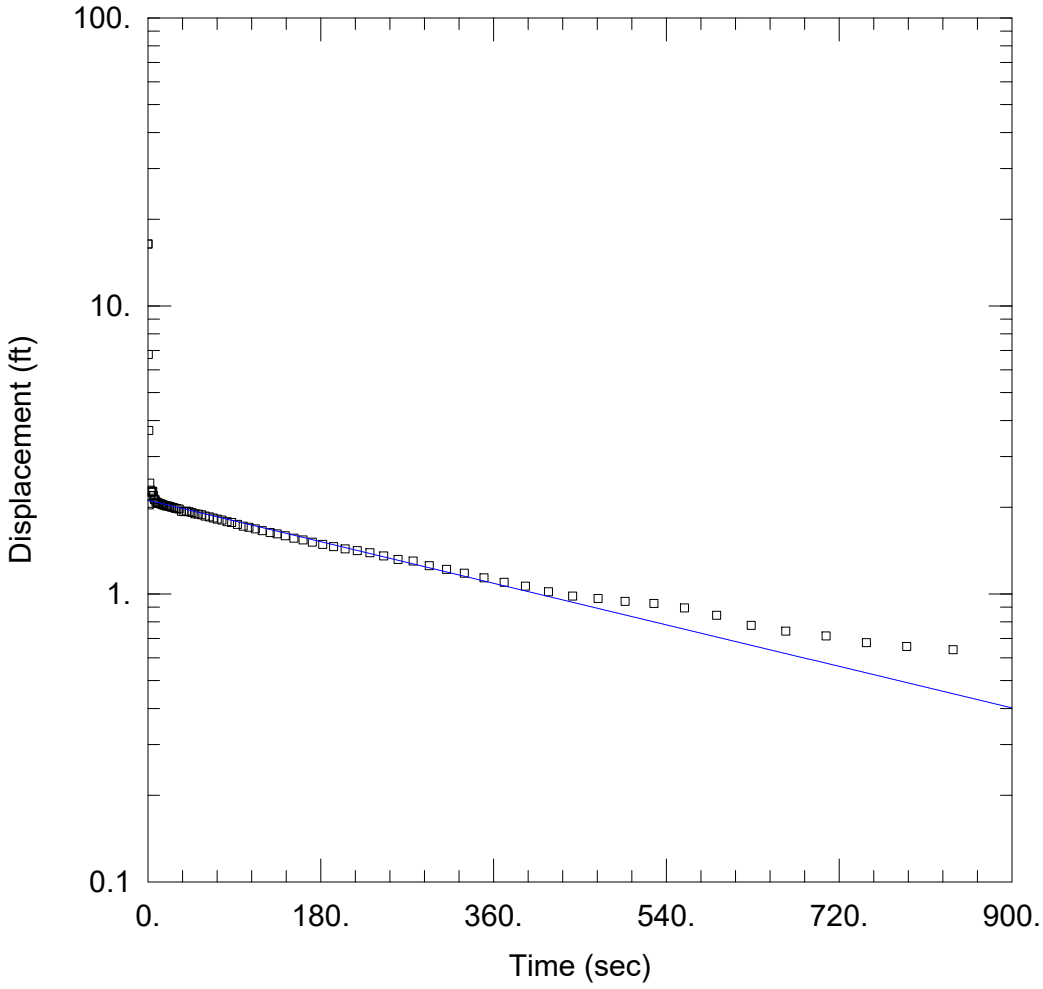
## WELL DATA (YGWC-36)

Initial Displacement: 4.4 ft
Total Well Penetration Depth: 45.56 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 45.56 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0004323 cm/sec y0 = 2.097 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-36 OUT.aqt
Date: 03/15/17 Time: 14:21:55

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-36 OUT
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 45.56 ft Anisotropy Ratio (Kz/Kr): 1.

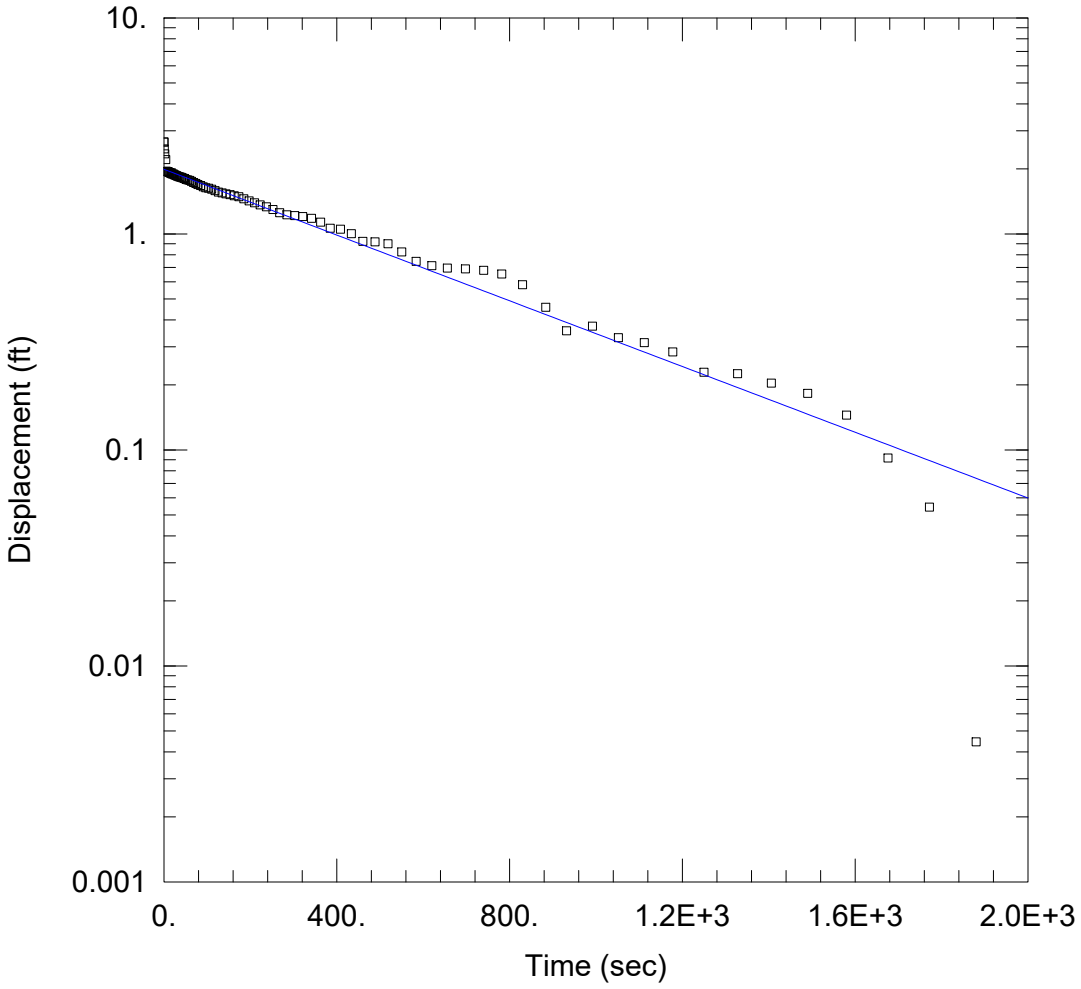
## WELL DATA (YGWC-36)

Initial Displacement: 16.41 ft
Total Well Penetration Depth: 45.56 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 45.56 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000246 cm/sec y0 = 2.116 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-42 IN.aqt
Date: 03/15/17 Time: 14:22:11

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-42 IN
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 31.41 ft Anisotropy Ratio (Kz/Kr): 1.

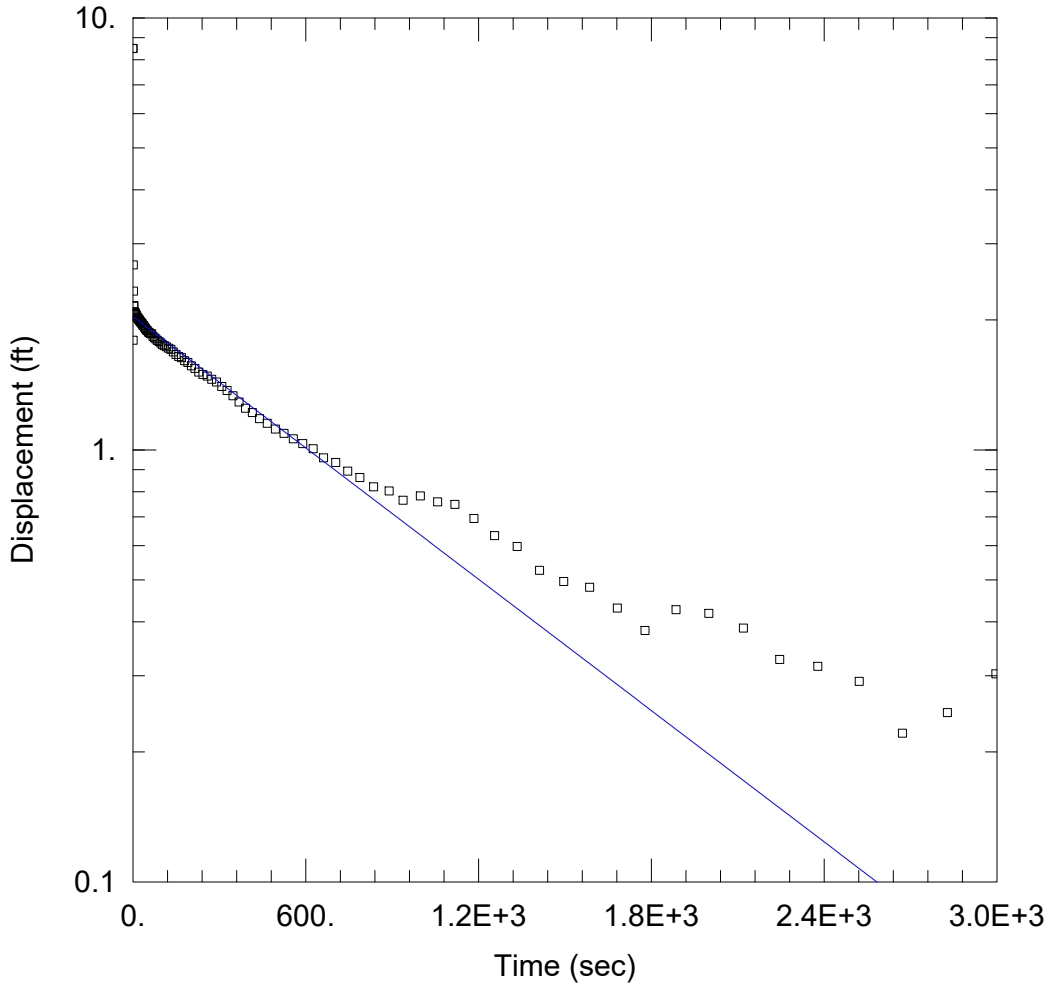
## WELL DATA (YGWC-42)

Initial Displacement: 2.67 ft
Total Well Penetration Depth: 31.41 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 21.41 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0002203 cm/sec y0 = 1.992 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-42 OUT.aqt
Date: 03/15/17 Time: 14:22:47

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-42 OUT
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 31.41 ft Anisotropy Ratio (Kz/Kr): 1.

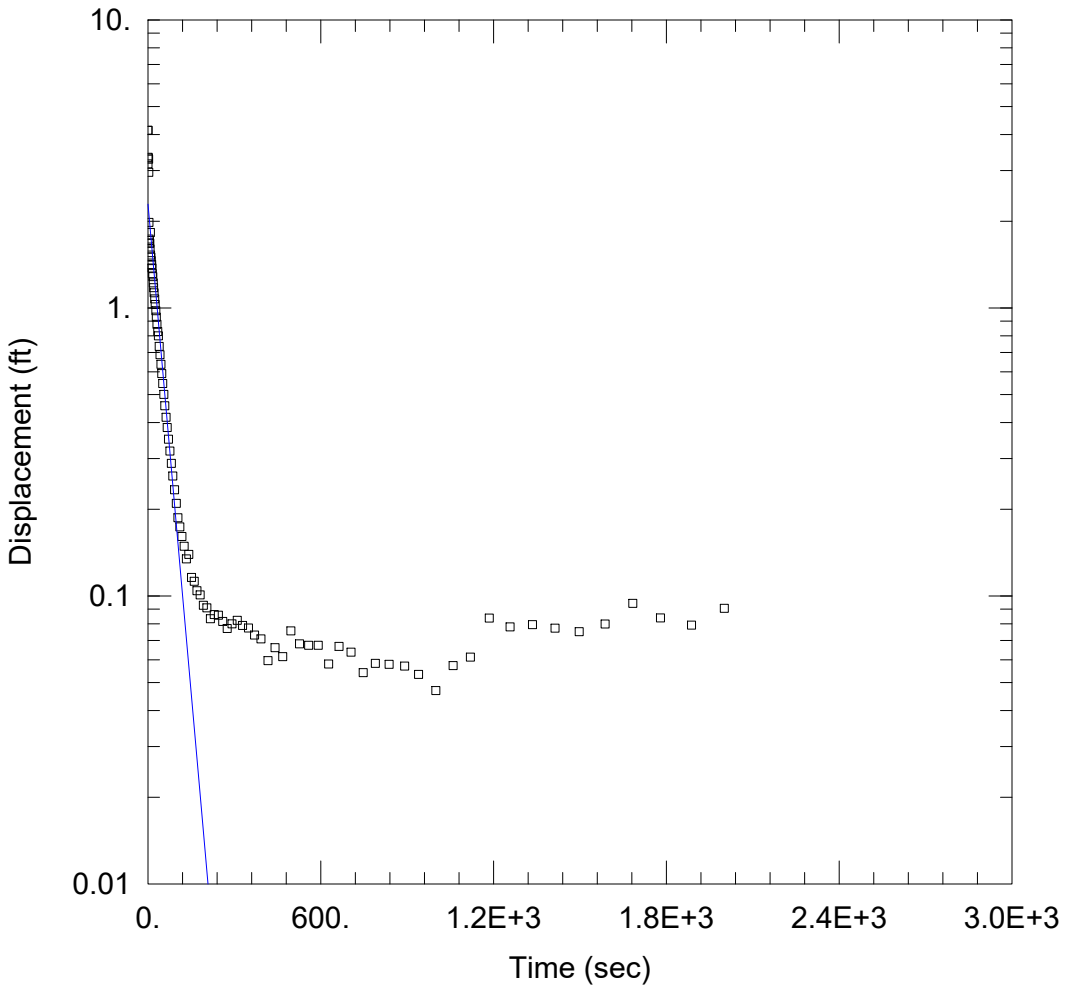
## WELL DATA (YGWC-42)

Initial Displacement: 8.5 ft
Total Well Penetration Depth: 31.41 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 31.41 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0001467 cm/sec y0 = 2.036 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-43 IN.aqt
Date: 03/15/17 Time: 14:23:00

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-43 IN
Test Date: 3/2/2017

## AQUIFER DATA

Saturated Thickness: 55.59 ft Anisotropy Ratio (Kz/Kr): 1.

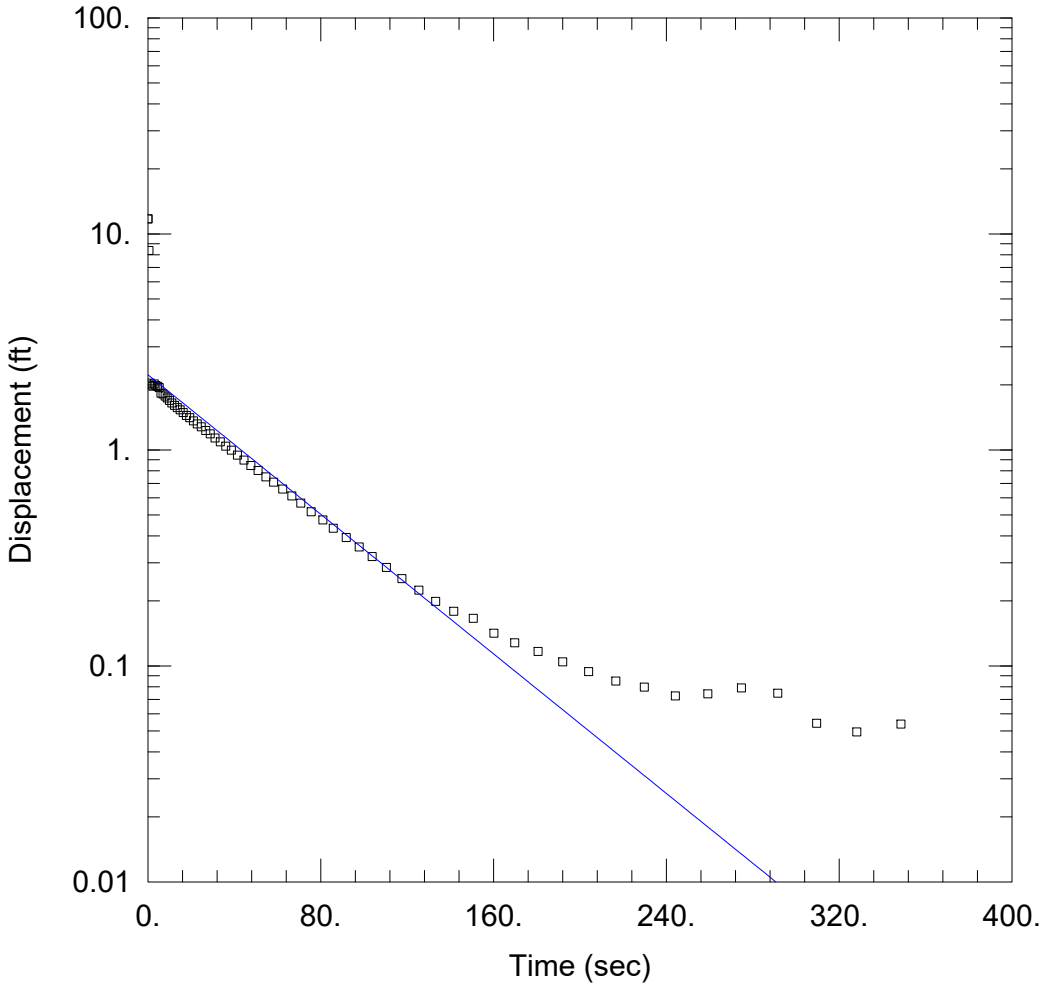
## WELL DATA (YGWC-43)

Initial Displacement: 4.14 ft
Total Well Penetration Depth: 65.59 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 65.59 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.003663 cm/sec y0 = 2.293 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-43 OUT.aqt
Date: 03/15/17 Time: 14:23:17

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-43 OUT
Test Date: 3/2/2017

## AQUIFER DATA

Saturated Thickness: 65.59 ft Anisotropy Ratio (Kz/Kr): 1.

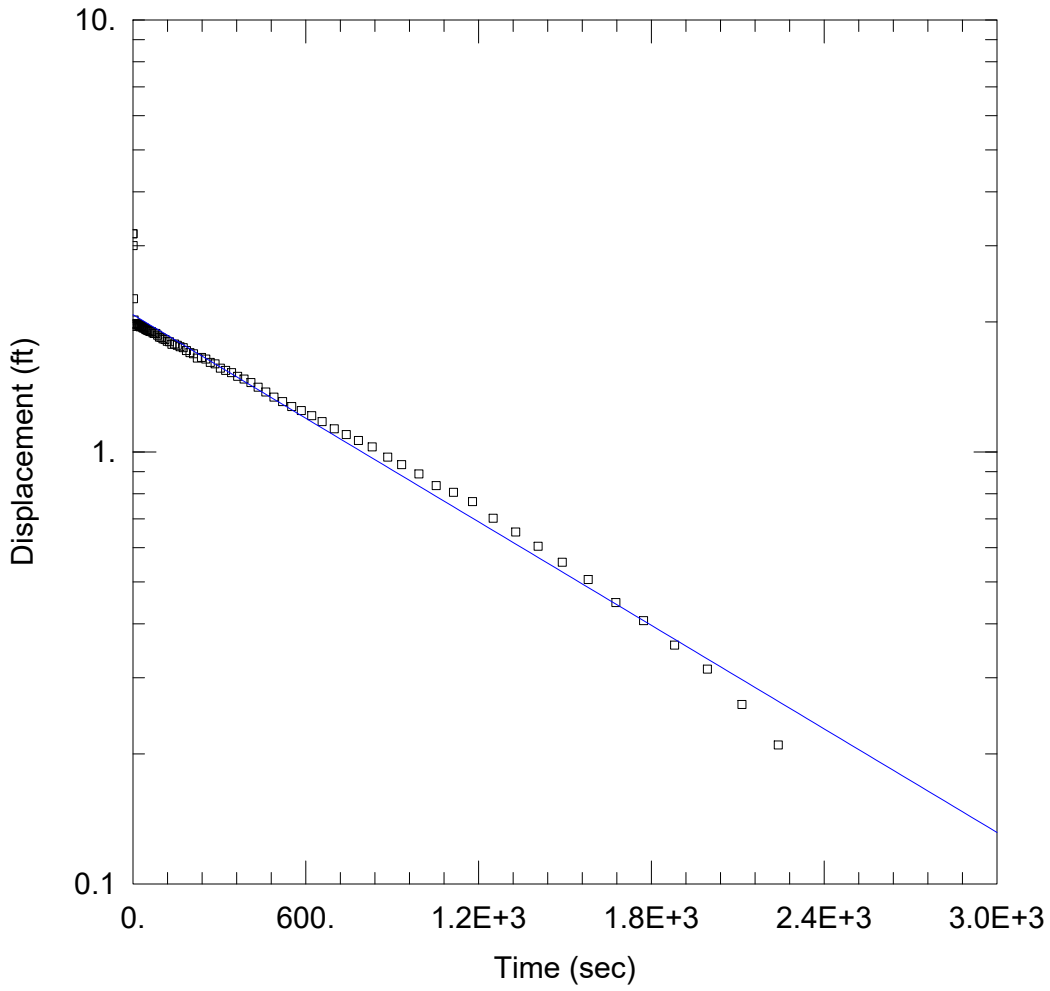
## WELL DATA (YGWC-43)

Initial Displacement: 11.74 ft
Total Well Penetration Depth: 65.59 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 65.59 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.002614 cm/sec y0 = 2.228 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-44 IN.aqt
Date: 03/15/17 Time: 14:23:30

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-44 IN
Test Date: 3/2/2017

## AQUIFER DATA

Saturated Thickness: 39.39 ft Anisotropy Ratio (Kz/Kr): 1.

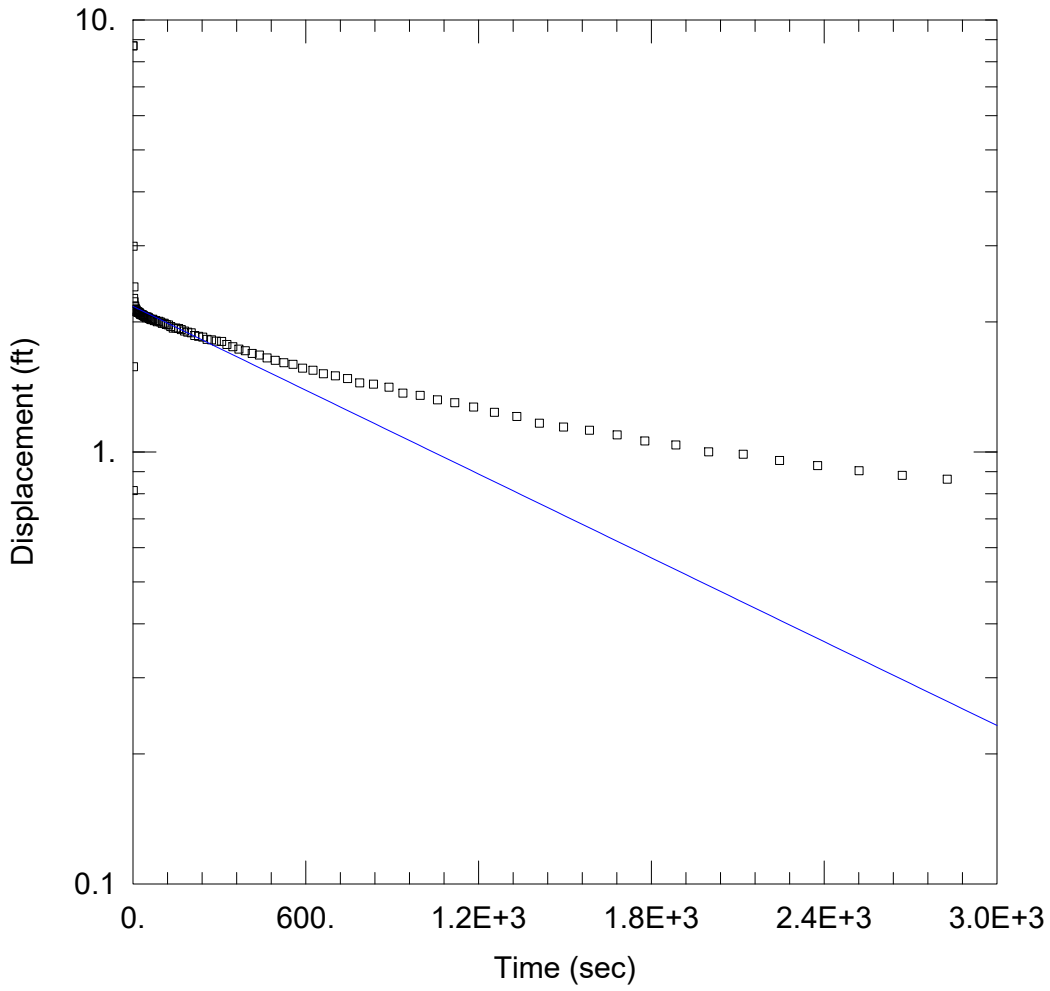
## WELL DATA (YGWC-44)

Initial Displacement: 3.2 ft
Total Well Penetration Depth: 39.39 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 39.39 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0001199 cm/sec y0 = 2.078 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-44 OUT.aqt
Date: 03/15/17 Time: 14:23:48

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-44 OUT
Test Date: 3/2/2017

## AQUIFER DATA

Saturated Thickness: 39.39 ft Anisotropy Ratio (Kz/Kr): 1.

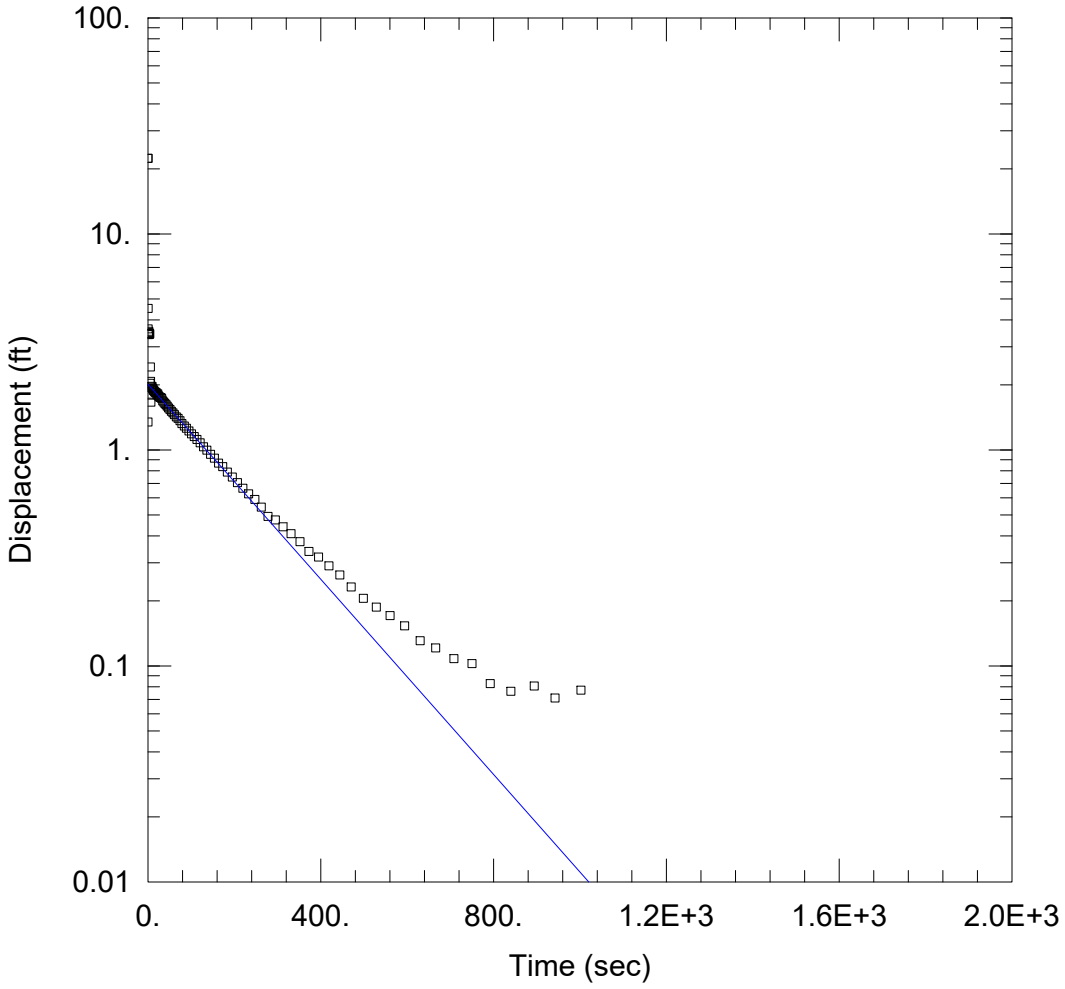
## WELL DATA (YGWC-44)

Initial Displacement: 8.71 ft
Total Well Penetration Depth: 39.39 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 39.39 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 9.707E-5 cm/sec y0 = 2.172 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-49 IN.aqt
Date: 03/15/17 Time: 14:25:07

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-49 IN
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 44.89 ft Anisotropy Ratio (Kz/Kr): 1.

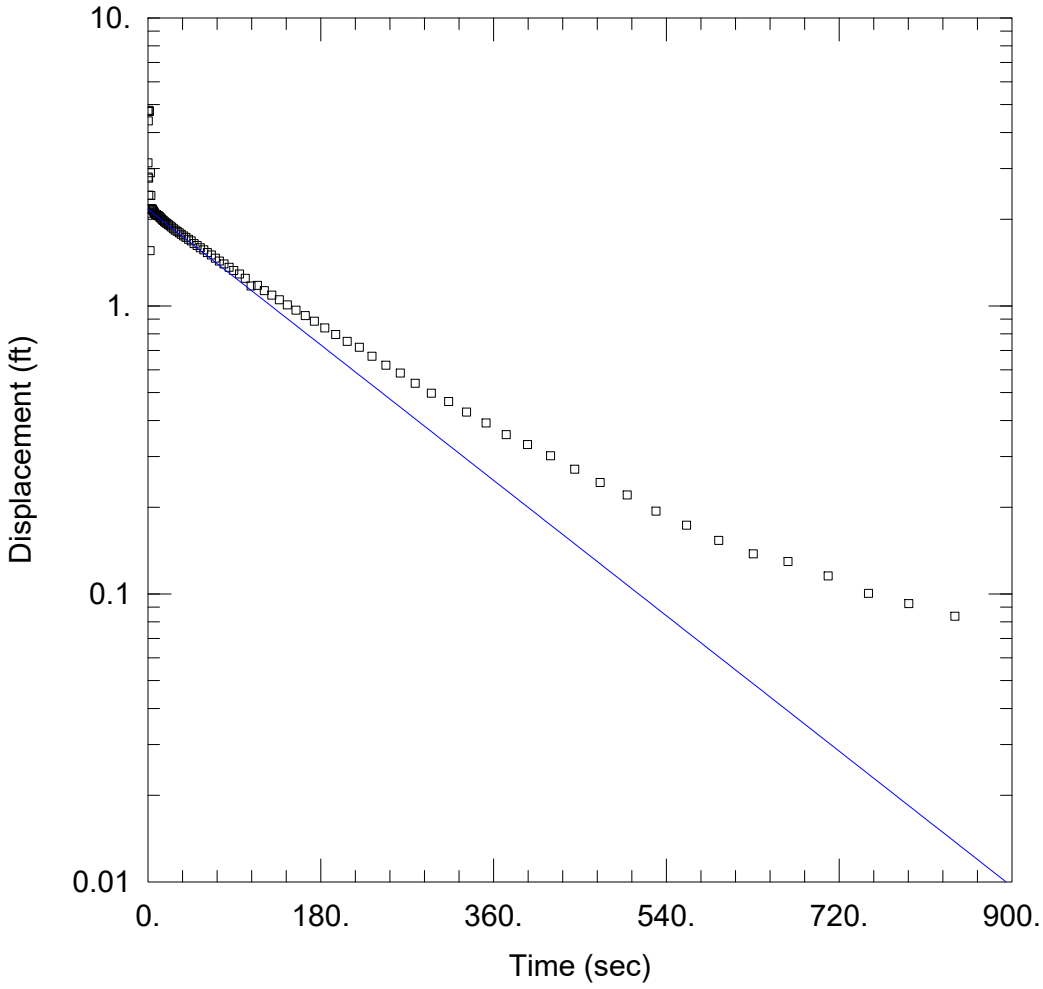
## WELL DATA (YGWC-49)

Initial Displacement: 22.38 ft
Total Well Penetration Depth: 44.89 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 44.89 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006917 cm/sec y0 = 2.015 ft




## WELL TEST ANALYSIS

Data Set: P:\...\YGWC-49 OUT.aqt
Date: 03/15/17 Time: 14:25:20

## PROJECT INFORMATION

Company: ACC
Project: I054-104
Location: Plant Yates
Test Well: YGWC-49 OUT
Test Date: 3/6/2017

## AQUIFER DATA

Saturated Thickness: 44.89 ft Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (YGWC-49)

Initial Displacement: 4.74 ft
Total Well Penetration Depth: 44.89 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 44.89 ft
Screen Length: 10. ft
Well Radius: 0.25 ft
Gravel Pack Porosity: 0.3

## SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0008 cm/sec y0 = 2.162 ft

October 27, 2015

Bart Smelser
**Southern Company Services, Inc.**
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**Subject:** **Laboratory Testing Results**
*Plant Yates Piezometers Geotechnical Investigation*
*Cardno Project Number Z003000203*

Mr. Smelser:

Cardno ATC has completed the soils testing for the Shelby Tube samples collected from the Plant Yates Piezometers location. These samples were collected by Southern Company Services, Inc. and delivered to the Cardno ATC laboratory in Alabaster, AL by members of Cardno staff. This work was conducted in accordance with the master agreement between Cardno ATC and Southern Company Affiliates, dated February 28, 2014, and detailed in the Work Authorization dated September 23, 2015.

The purpose of this letter is to report the results of the laboratory testing which are detailed in the following pages.

Cardno ATC sincerely appreciates the opportunity to work with you on this project. If you have any questions or if we may be of further service to you, please contact us.

Respectfully Submitted,

**Cardno ATC**

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Enclosures: laboratory report

# Table of Contents

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# SUMMARY OF LABORATORY RESULTS



**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA

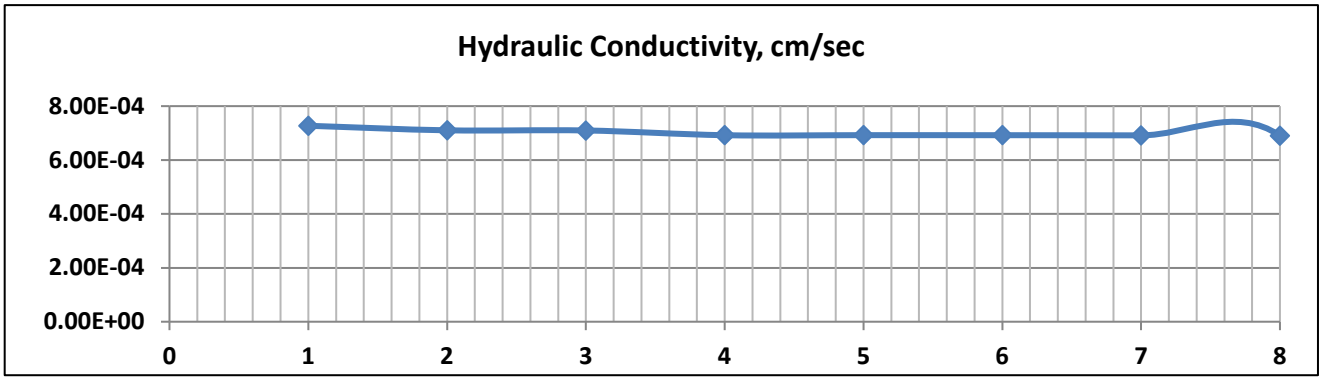
| Borehole | Depth | Liquid Limit | Plastic Limit | Plasticity Index | Maximum Size (mm) | %<#200 Sieve | Class-ification | Water Content (%) | Dry Density (pcf) | Specific Gravity | Void Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PZ-17s | 17.0 | NP | NP | NP | 4.75 | 21.2 | SM-SC | | | 2.665 | |
| PZ-19s | 17.0 | NP | NP | NP | 9.5 | 42.0 | SM-SC | | | 2.681 | |
| PZ-20s | 17.0 | NP | NP | NP | 4.75 | 28.9 | SM-SC | | | 2.665 | |
| PZ-22s | 7.0 | NP | NP | NP | 9.5 | 20.3 | SM-SC | | | 2.731 | |
| PZ-22s | 17.0 | NP | NP | NP | 9.5 | 28.0 | SM-SC | | | 2.717 | |
| PZ-24s | 17.0 | NP | NP | NP | 19 | 15.3 | SM-SC | | | 2.693 | |
| PZ-24s | 37.0 | NP | NP | NP | 4.75 | 22.0 | SM-SC | | | 2.701 | |
| PZ-25s | 33.0 | NP | NP | NP | 9.5 | 23.4 | SM-SC | | | 2.678 | |
| PZ-25s | 44.0 | NP | NP | NP | 19 | 22.3 | SM-SC | | | 2.682 | |
| PZ-26s | 17.0 | 37 | 27 | 10 | 4.75 | 57.9 | ML | | | 2.741 | |
| PZ-26s | 27.0 | NP | NP | NP | 4.75 | 33.7 | SM-SC | | | 2.720 | |
| PZ-27s | 17.0 | 39 | 30 | 9 | 4.75 | 73.5 | ML | | | 2.661 | |
| PZ-27s | 27.0 | NP | NP | NP | 2 | 45.0 | SM-SC | | | 2.673 | |
| PZ-28s | 17.0 | NP | NP | NP | 19 | 18.9 | SM-SC | | | 2.578 | |
| PZ-30s | 27.0 | NP | NP | NP | 4.75 | 16.6 | SM-SC | | | 2.710 | |
| PZ-31s | 7.0 | NP | NP | NP | 4.75 | 16.7 | SM-SC | | | 2.653 | |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-17s (17'-19')** |
| Sample Location : | **PZ-17S (17'-19') UD-01** | Date Sampled: | **09/10/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 119.8 | | | Wet Density, pcf | 119.6 |
| Dry Density, pcf | 98.0 | Chamber | 92 | Dry Density, pcf | 98.1 |
| Moisture Content, % | 22.2 | Head | 79 | Moisture Content, % | 22.0 |
| Void ratio, e | 0.697 | Tail | 77 | Void ratio, e | 0.695 |
| Porosity, n | 0.411 | Conso. | 14 | Porosity, n | 0.410 |
| Saturation, Percent | 84.9 | **Soil Specific Gravity** | | Saturation, Percent | 84.2 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.665 | Hydraulic Gradient, i | 7.1 |
| Sample Length, Inches | 5.668 | **Proctor Referenced** | | Sample Length, Inches | 5.650 |
| Sample Volume, cc | 584.4856 | -- | | Sample Volume, cc | 583.5545 |
| B-value : | 97.0% | Sample Consolidated During Saturation, % | | | 0.32% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.08 | 1.9180 | **7.27E-04** | **20** |
| **2** | 0.17 | 1.8429 | **7.10E-04** | **20** |
| **3** | 0.25 | 1.7692 | **7.10E-04** | **20** |
| **4** | 0.33 | 1.7053 | **6.92E-04** | **20** |
| **5** | 0.42 | 1.6385 | **6.92E-04** | **20** |
| **6** | 0.50 | 1.5746 | **6.92E-04** | **20** |
| **7** | 0.58 | 1.5134 | **6.92E-04** | **20** |
| **8** | 0.67 | 1.4550 | **6.91E-04** | **20** |
| **9** | 0.00 | | | **20** |

**Hydraulic Conductivity, cm/sec**

**6.91E-04**

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# GRAIN SIZE DISTRIBUTION

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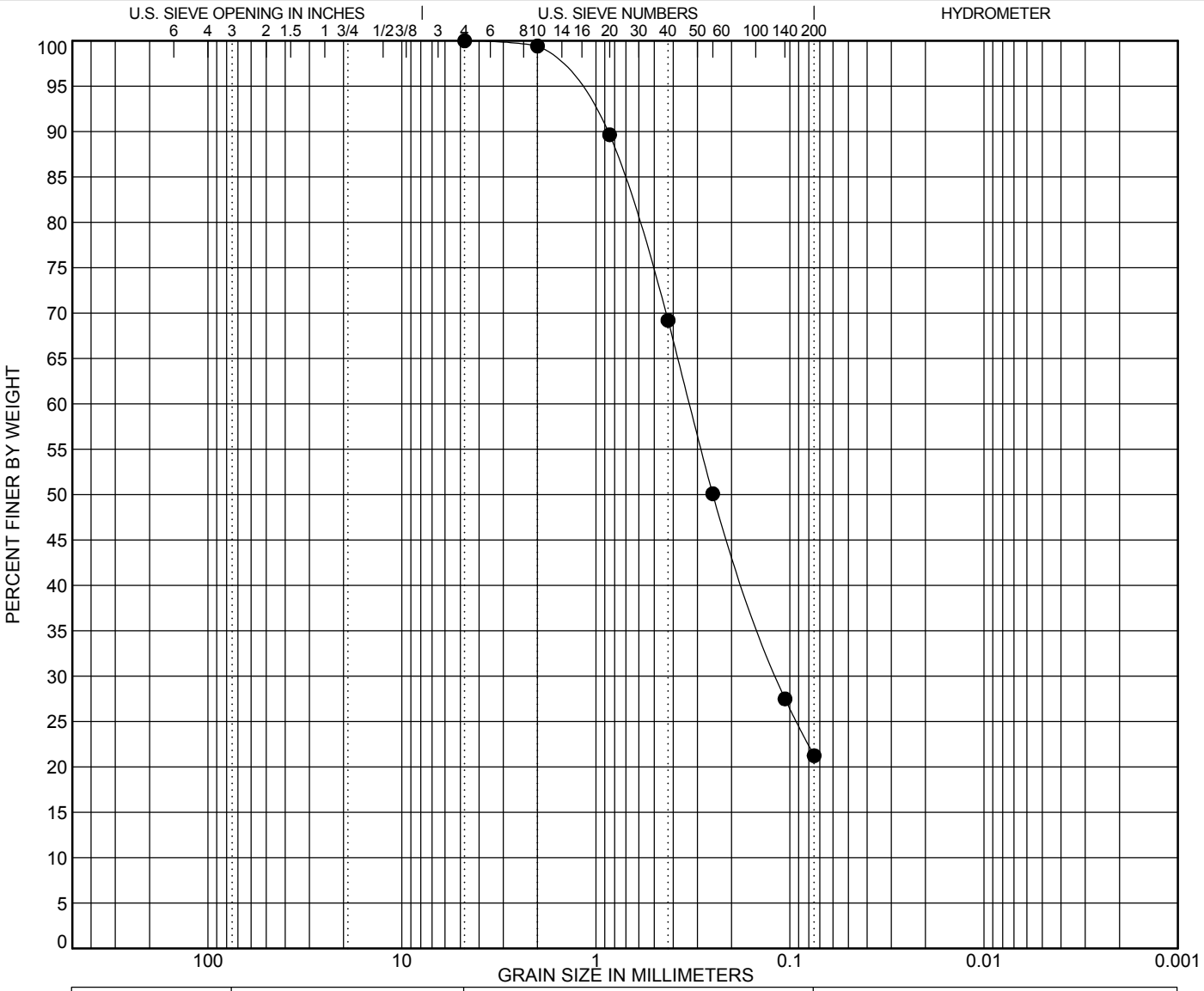
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● **PZ-17S** | **17** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● **PZ-17S** | **17** | **4.75** | **0.329** | **0.117** | | **0.0** | **78.8** | **21.2** | |

# ATTERBERG LIMITS RESULTS

Cardno ATC
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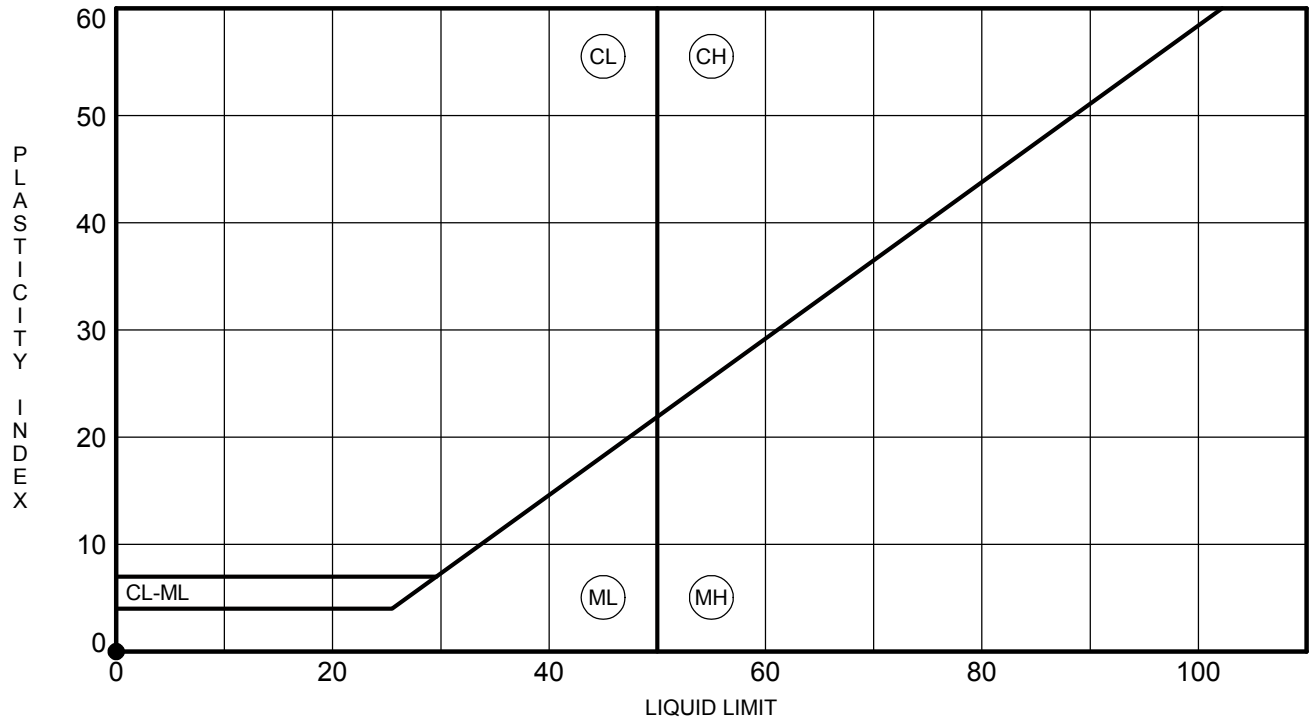
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



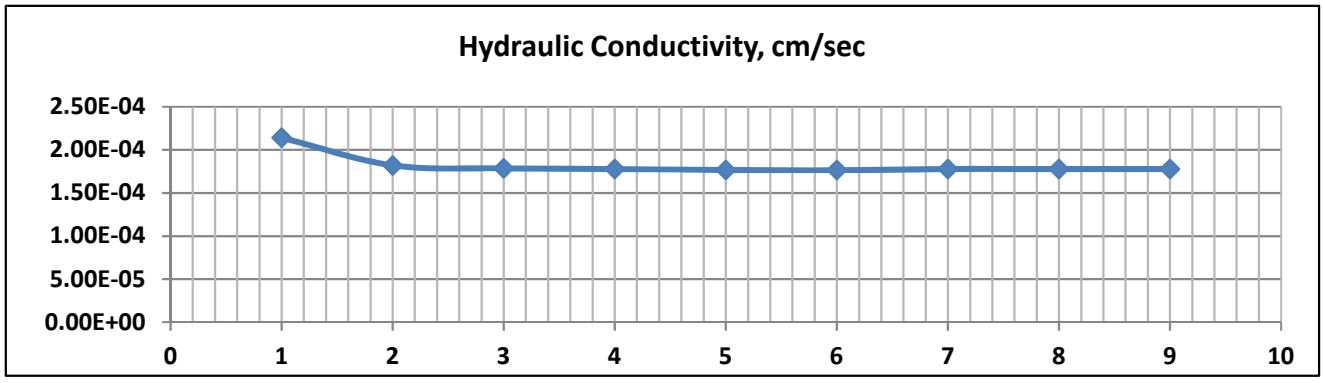

| BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● **PZ-17S** | **17** | **NP** | **NP** | **NP** | | **21** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-19S (17'-19')** |
| Sample Location : | **PZ-19S (17'-19') UD-01** | Date Sampled: | **09/21/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 112.9 | | | Wet Density, pcf | 110.9 |
| Dry Density, pcf | 85.5 | Chamber | 87 | Dry Density, pcf | 85.5 |
| Moisture Content, % | 32.1 | Head | 78 | Moisture Content, % | 29.7 |
| Void ratio, e | 0.956 | Tail | 76 | Void ratio, e | 0.956 |
| Porosity, n | 0.489 | Conso. | 10 | Porosity, n | 0.489 |
| Saturation, Percent | 89.9 | **Soil Specific Gravity** | | Saturation, Percent | 83.3 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.681 | Hydraulic Gradient, i | 8.4 |
| Sample Length, Inches | 5.613 | **Proctor Referenced** | | Sample Length, Inches | 5.613 |
| Sample Volume, cc | 582.1245 | -- | | Sample Volume, cc | 582.1245 |
| B-value : | 98.0% | Sample Consolidated During Saturation, % | | | 0.00% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.17 | 1.9513 | **2.14E-04** | **20** |
| **2** | 0.33 | 1.9180 | **1.82E-04** | **20** |
| **3** | 0.50 | 1.8804 | **1.79E-04** | **20** |
| **4** | 0.67 | 1.8429 | **1.78E-04** | **20** |
| **5** | 0.83 | 1.8068 | **1.77E-04** | **20** |
| **6** | 1.00 | 1.7706 | **1.77E-04** | **20** |
| **7** | 1.00 | 1.7692 | **1.78E-04** | **20** |
| **8** | 1.17 | 1.7331 | **1.78E-04** | **20** |
| **9** | 1.33 | 1.6983 | **1.78E-04** | **20** |

**Hydraulic Conductivity, cm/sec**

**1.78E-04**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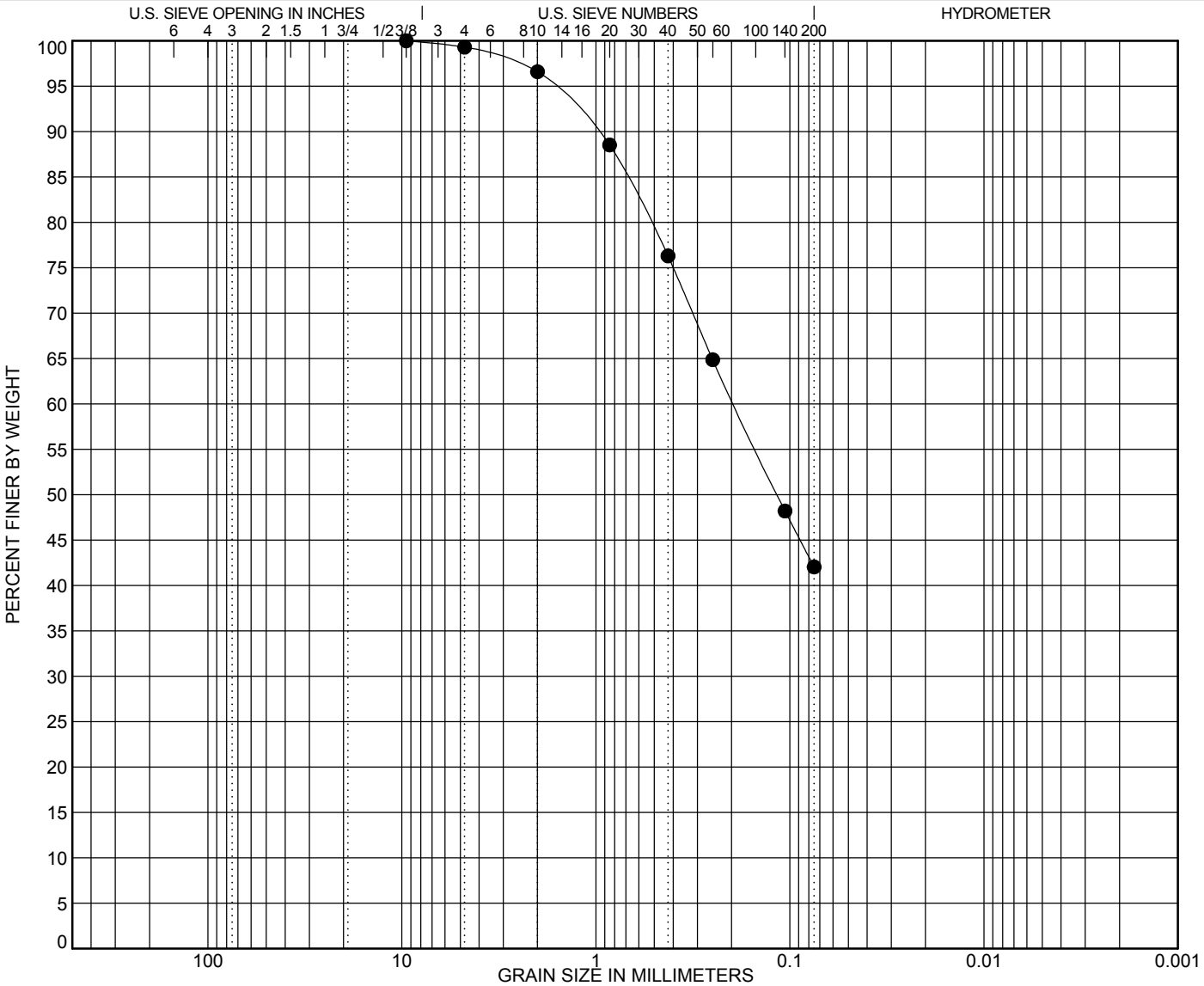
Fax: 205-733-8954

**CLIENT** Southern Company Services
**PROJECT NAME** Plant Yates Piezometers
**PROJECT NUMBER** Z003000203
**PROJECT LOCATION** Newnan, GA




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-19S** | **17** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| | BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **PZ-19S** | **17** | **9.5** | **0.195** | | | **0.7** | **57.3** | **42.0** | |

GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:26 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

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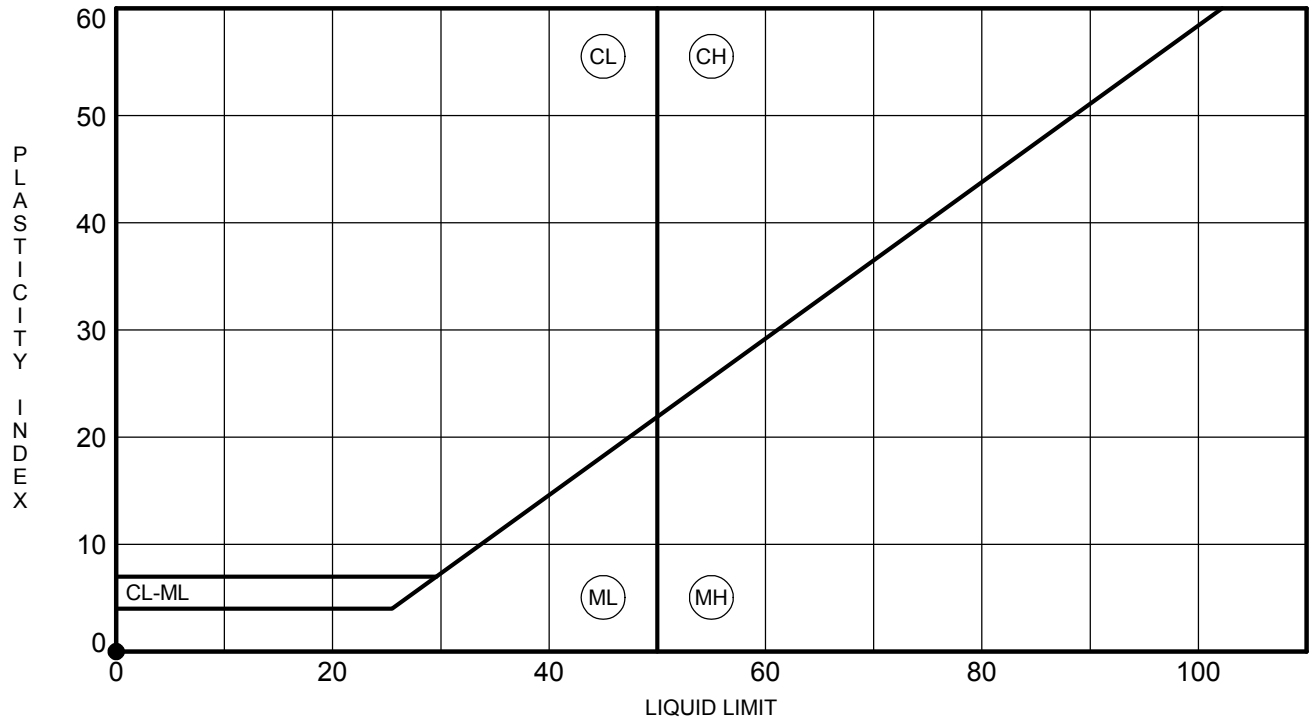
**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



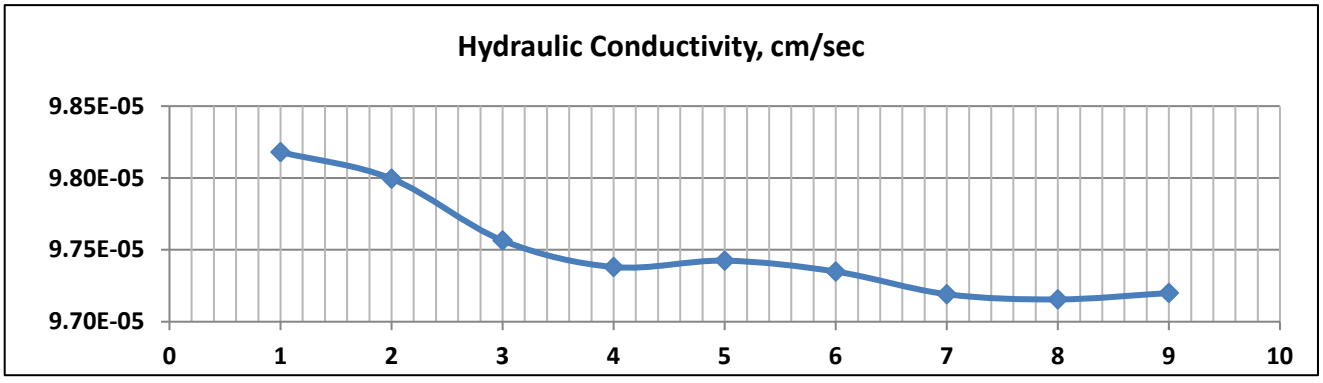

| BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● **PZ-19S** | **17** | **NP** | **NP** | **NP** | | **42** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-20s (17'-19')** |
| Sample Location : | **PZ-20s (17'-19') UD-01** | Date Sampled: | **09/03/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 126.8 | | | Wet Density, pcf | 120.2 |
| Dry Density, pcf | 98.4 | Chamber | 93 | Dry Density, pcf | 98.8 |
| Moisture Content, % | 28.9 | Head | 79 | Moisture Content, % | 21.7 |
| Void ratio, e | 0.690 | Tail | 77 | Void ratio, e | 0.683 |
| Porosity, n | 0.408 | Conso. | 15 | Porosity, n | 0.406 |
| Saturation, Percent | 111.5 | **Soil Specific Gravity** | | Saturation, Percent | 84.5 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.665 | Hydraulic Gradient, i | 8.2 |
| Sample Length, Inches | 5.585 | **Proctor Referenced** | | Sample Length, Inches | 5.535 |
| Sample Volume, cc | 569.1641 | -- | | Sample Volume, cc | 566.5934 |
| B-value : | 100.0% | | | Sample Consolidated During Saturation, % | 0.90% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.33 | 1.9563 | **9.82E-05** | **20** |
| **2** | 0.67 | 1.9138 | **9.80E-05** | **20** |
| **3** | 1.00 | 1.8727 | **9.76E-05** | **20** |
| **4** | 1.33 | 1.8323 | **9.74E-05** | **20** |
| **5** | 1.67 | 1.7926 | **9.74E-05** | **20** |
| **6** | 2.00 | 1.7539 | **9.73E-05** | **20** |
| **7** | 2.33 | 1.7164 | **9.72E-05** | **20** |
| **8** | 2.67 | 1.6794 | **9.72E-05** | **20** |
| **9** | 3.00 | 1.6430 | **9.72E-05** | **20** |

**Hydraulic Conductivity, cm/sec**

**9.72E-05**

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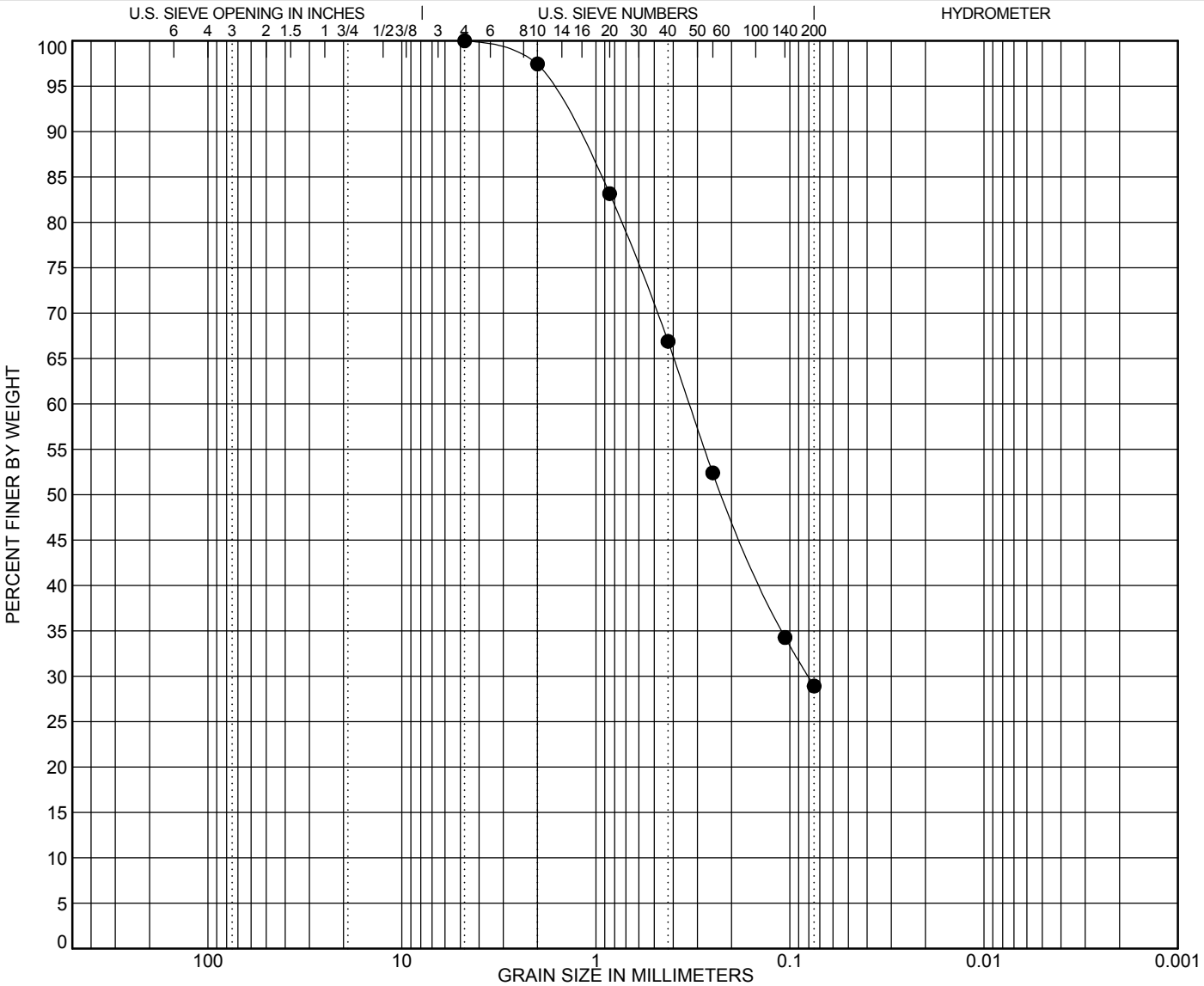
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● **PZ-20s** | **17** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● **PZ-20s** | **17** | **4.75** | **0.33** | **0.08** | | **0.0** | **71.1** | **28.9** | |

GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:27 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

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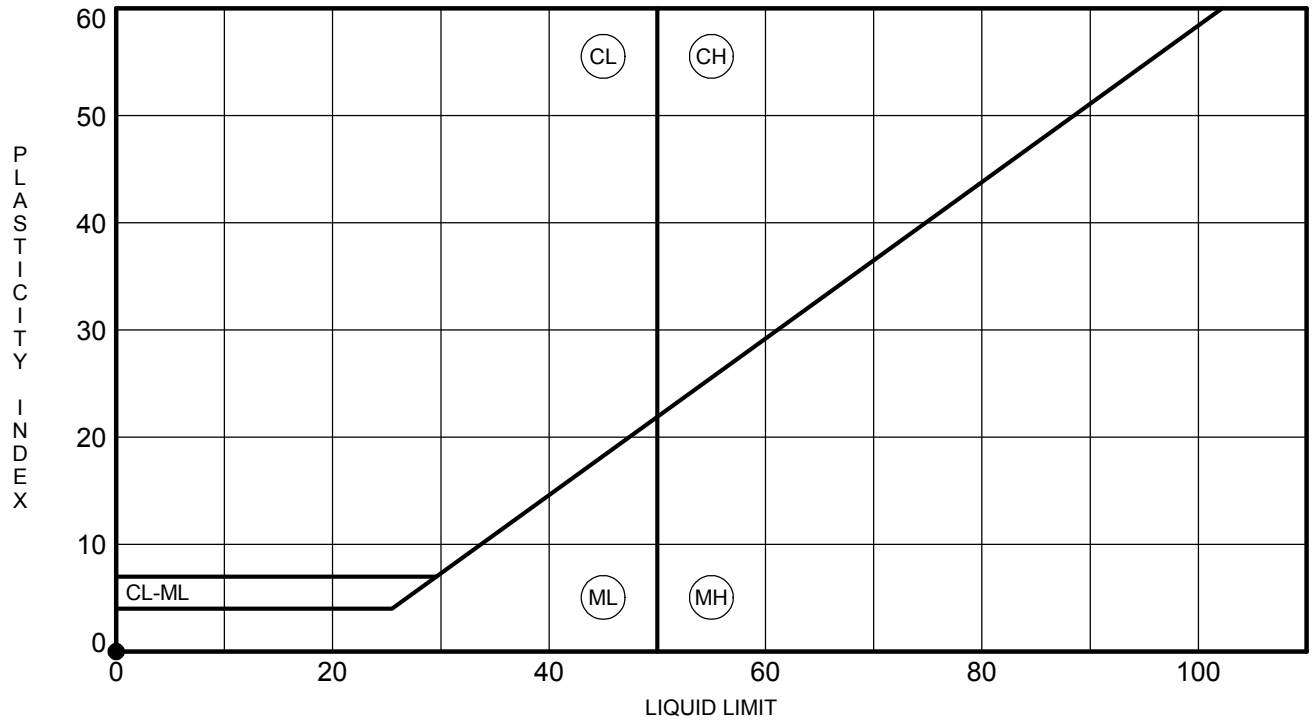
**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



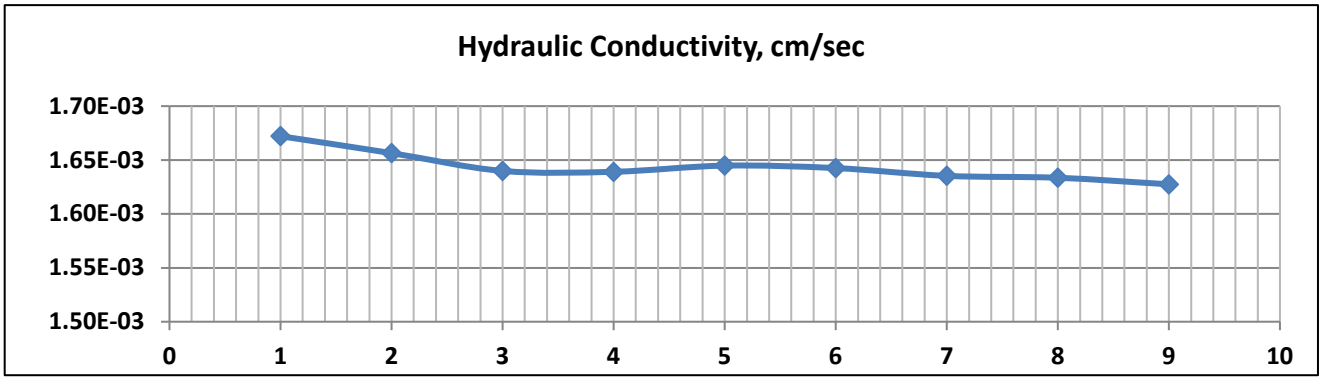

| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-20s** | **17** | **NP** | **NP** | **NP** | | **29** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-22S (7'-9')** |
| Sample Location : | **PZ-22S (7'-9') UD-01** | Date Sampled: | **09/17/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 110.9 | | | Wet Density, pcf | 110.3 |
| Dry Density, pcf | 83.5 | Chamber | 83 | Dry Density, pcf | 83.6 |
| Moisture Content, % | 32.8 | Head | 78 | Moisture Content, % | 31.9 |
| Void ratio, e | 1.040 | Tail | 76 | Void ratio, e | 1.038 |
| Porosity, n | 0.510 | Conso. | 6 | Porosity, n | 0.509 |
| Saturation, Percent | 86.2 | **Soil Specific Gravity** | | Saturation, Percent | 84.0 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.731 | Hydraulic Gradient, i | 8.4 |
| Sample Length, Inches | 5.618 | **Proctor Referenced** | | Sample Length, Inches | 5.600 |
| Sample Volume, cc | 571.7477 | -- | | Sample Volume, cc | 570.8288 |
| B-value : | 96.0% | Sample Consolidated During Saturation, % | | | 0.32% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.02 | 1.9625 | **1.67E-03** | **20** |
| **2** | 0.03 | 1.9263 | **1.66E-03** | **20** |
| **3** | 0.05 | 1.8916 | **1.64E-03** | **20** |
| **4** | 0.07 | 1.8568 | **1.64E-03** | **20** |
| **5** | 0.08 | 1.8220 | **1.64E-03** | **20** |
| **6** | 0.10 | 1.7887 | **1.64E-03** | **20** |
| **7** | 0.12 | 1.7567 | **1.64E-03** | **20** |
| **8** | 0.13 | 1.7247 | **1.63E-03** | **20** |
| **9** | 0.15 | 1.6941 | **1.63E-03** | **20** |

**Hydraulic Conductivity, cm/sec**

**1.63E-03**

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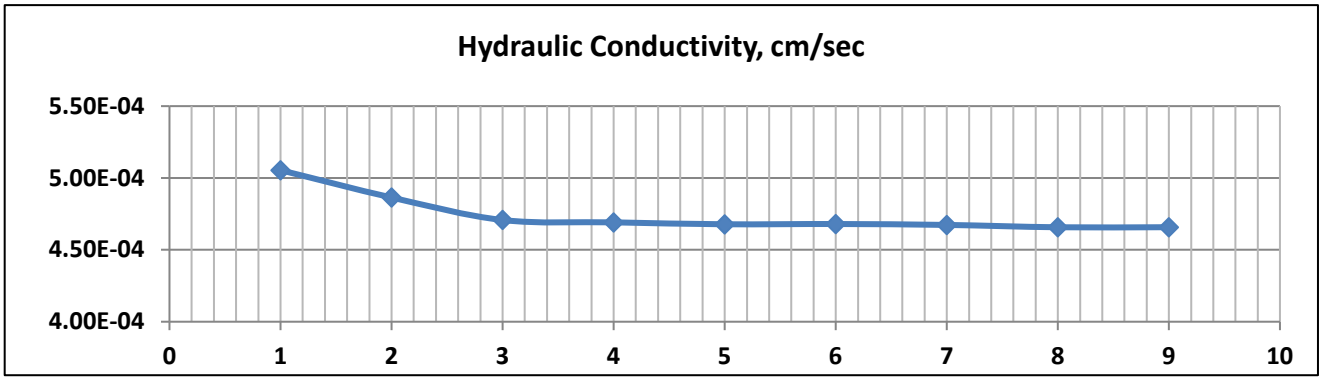
Alabaster, Alabama 35007

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-22s (17'-19')** |
| Sample Location : | **PZ-22s (17'-19') UD-02** | Date Sampled: | **09/17/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 111.1 | | | Wet Density, pcf | 110.3 |
| Dry Density, pcf | 82.5 | Chamber | 88 | Dry Density, pcf | 82.4 |
| Moisture Content, % | 34.7 | Head | 78 | Moisture Content, % | 33.8 |
| Void ratio, e | 1.056 | Tail | 76 | Void ratio, e | 1.057 |
| Porosity, n | 0.514 | Conso. | 11 | Porosity, n | 0.514 |
| Saturation, Percent | 89.4 | **Soil Specific Gravity** | | Saturation, Percent | 86.9 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.717 | Hydraulic Gradient, i | 7.8 |
| Sample Length, Inches | 5.645 | **Proctor Referenced** | | Sample Length, Inches | 5.648 |
| Sample Volume, cc | 572.9644 | -- | | Sample Volume, cc | 573.1166 |
| B-value : | 99.0% | | | Sample Swelled During Saturation, % | 0.05% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.08 | 1.9444 | **5.05E-04** | **20** |
| **2** | 0.17 | 1.8943 | **4.86E-04** | **20** |
| **3** | 0.25 | 1.8485 | **4.71E-04** | **20** |
| **4** | 0.33 | 1.8012 | **4.69E-04** | **20** |
| **5** | 0.42 | 1.7553 | **4.68E-04** | **20** |
| **6** | 0.50 | 1.7100 | **4.68E-04** | **20** |
| **7** | 0.58 | 1.6663 | **4.67E-04** | **20** |
| **8** | 0.67 | 1.6246 | **4.66E-04** | **20** |
| **9** | 0.75 | 1.5829 | **4.66E-04** | **20** |

**Hydraulic Conductivity, cm/sec**

**4.66E-04**

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Alabaster, Alabama 35007

# GRAIN SIZE DISTRIBUTION

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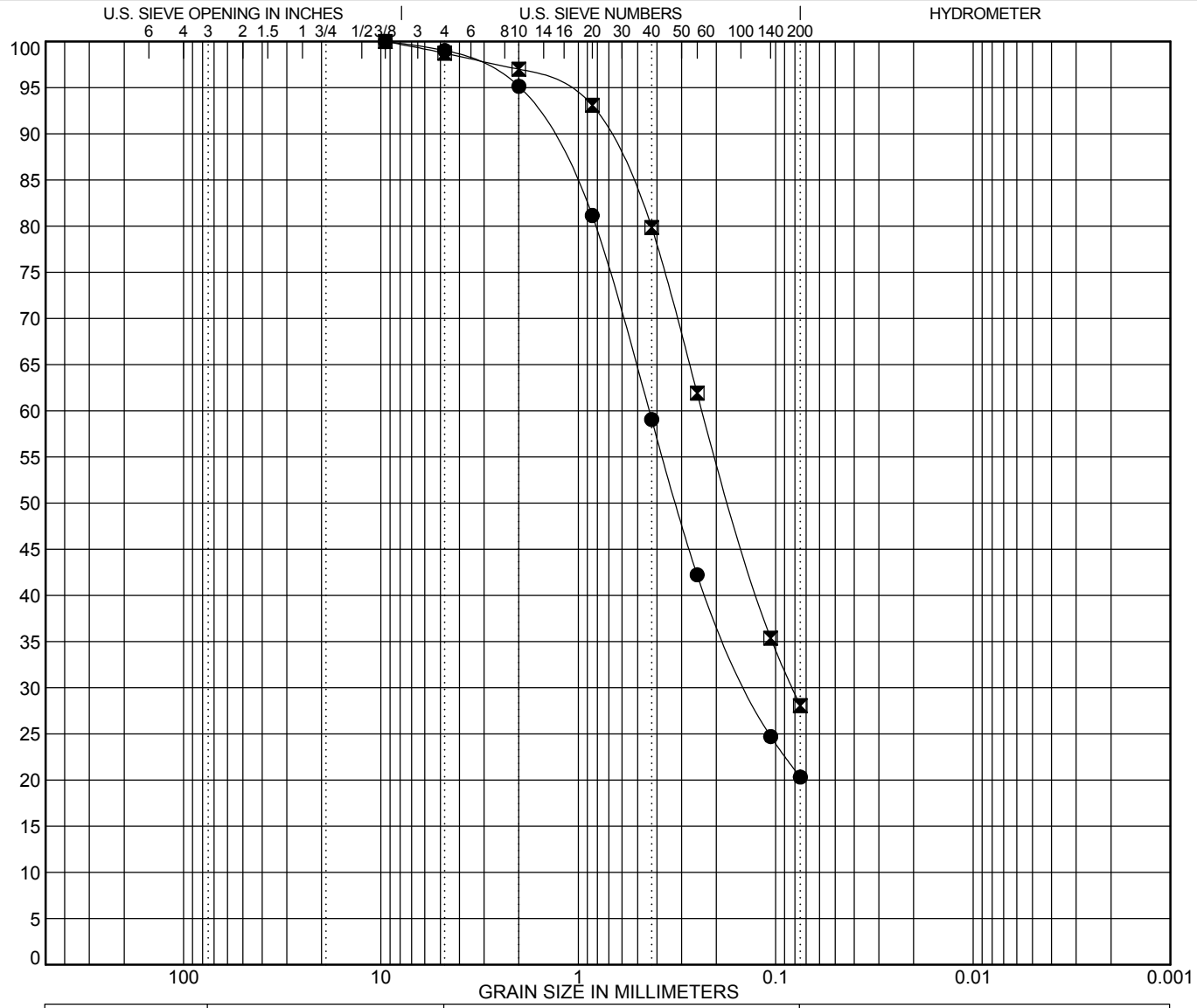
200 Wellington Court, Suite 100
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services
**PROJECT NAME** Plant Yates Piezometers
**PROJECT NUMBER** Z003000203
**PROJECT LOCATION** Newnan, GA




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-22S** | **7** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |
| ⊠ | **PZ-22S** | **17** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| | BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **PZ-22S** | **7** | **9.5** | **0.438** | **0.137** | | **1.0** | **78.7** | **20.3** | |
| ⊠ | **PZ-22S** | **17** | **9.5** | **0.235** | **0.082** | | **1.3** | **70.7** | **28.0** | |

# ATTERBERG LIMITS RESULTS

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200 Wellington Court, Suite 100
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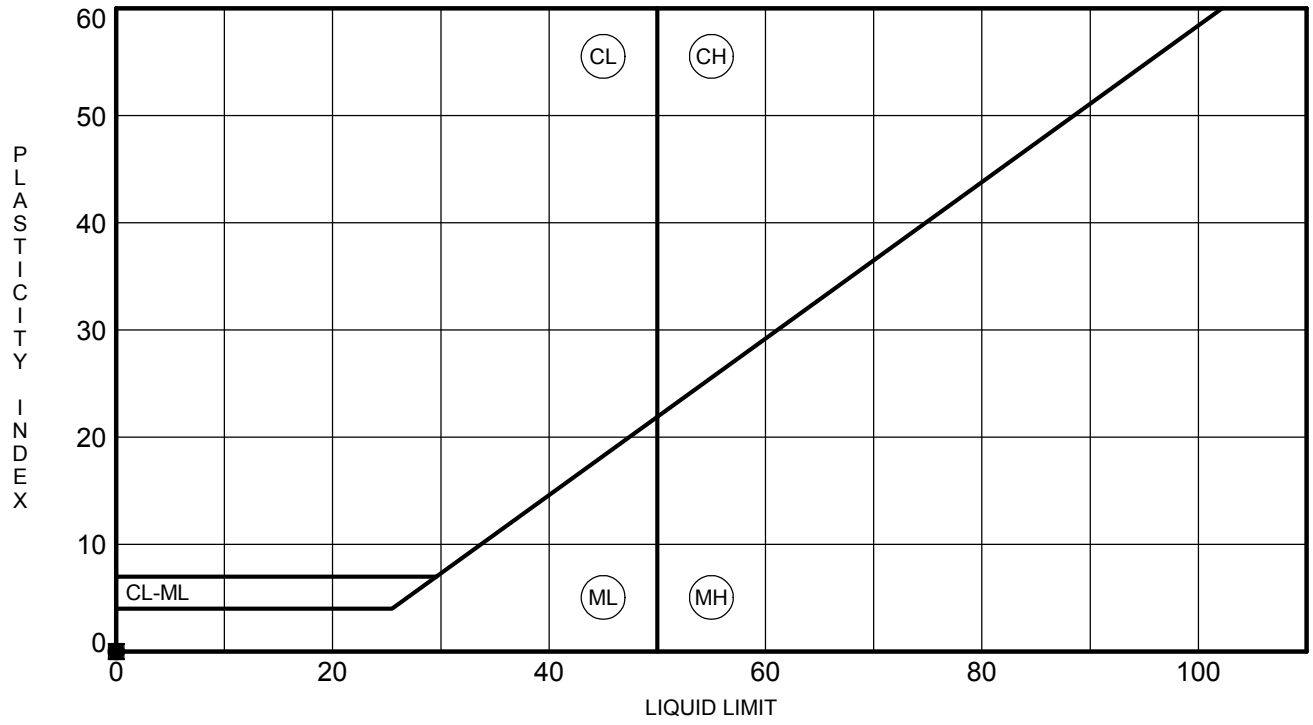
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



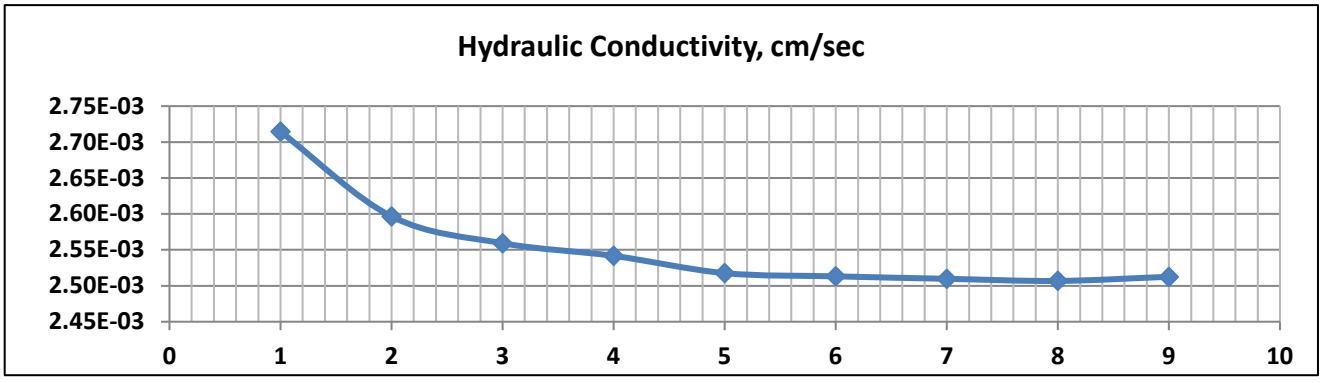

| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-22S** | **7** | **NP** | **NP** | **NP** | | **20** | **SILTY SAND (SM-SC)** |
| ⧓ | **PZ-22S** | **17** | **NP** | **NP** | **NP** | | **28** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-24S (17'-19')** |
| Sample Location : | **PZ-24S (17'-19') UD-01** | Date Sampled: | **09/17/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 103.0 | | | Wet Density, pcf | 111.1 |
| Dry Density, pcf | 83.4 | Chamber | 90 | Dry Density, pcf | 83.4 |
| Moisture Content, % | 23.5 | Head | 79 | Moisture Content, % | 33.3 |
| Void ratio, e | 1.015 | Tail | 77 | Void ratio, e | 1.015 |
| Porosity, n | 0.504 | Conso. | 12 | Porosity, n | 0.504 |
| Saturation, Percent | 62.2 | **Soil Specific Gravity** | | Saturation, Percent | 88.2 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.693 | Hydraulic Gradient, i | 7.7 |
| Sample Length, Inches | 5.587 | **Proctor Referenced** | | Sample Length, Inches | 5.583 |
| Sample Volume, cc | 566.4718 | -- | | Sample Volume, cc | 566.2689 |
| B-value : | 96.0% | | | Sample Consolidated During Saturation, % | 0.07% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.02 | 1.9388 | **2.71E-03** | **20** |
| **2** | 0.03 | 1.8846 | **2.60E-03** | **20** |
| **3** | 0.05 | 1.8318 | **2.56E-03** | **20** |
| **4** | 0.07 | 1.7803 | **2.54E-03** | **20** |
| **5** | 0.08 | 1.7317 | **2.52E-03** | **20** |
| **6** | 0.10 | 1.6830 | **2.51E-03** | **20** |
| **7** | 0.12 | 1.6357 | **2.51E-03** | **20** |
| **8** | 0.13 | 1.5899 | **2.51E-03** | **20** |
| **9** | 0.15 | 1.5440 | **2.51E-03** | **20** |

**Hydraulic Conductivity, cm/sec**

**2.51E-03**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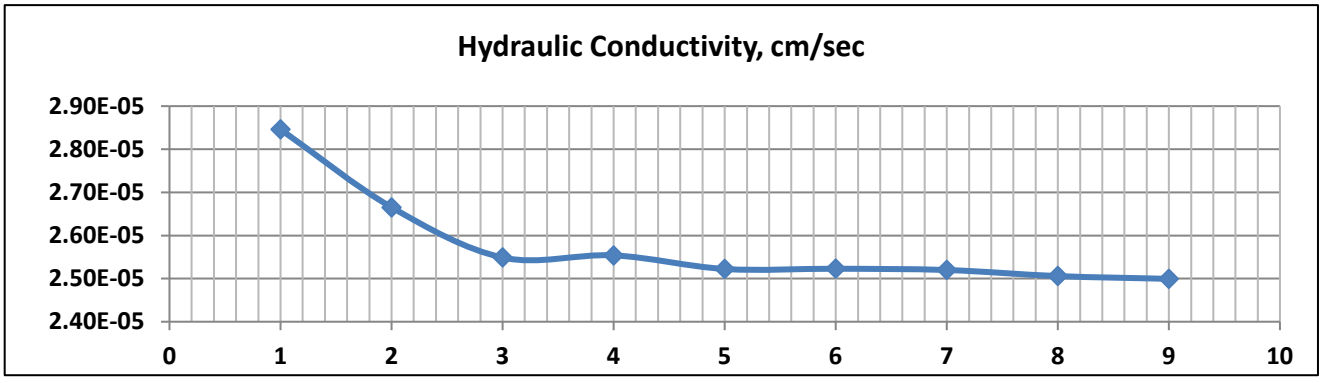
# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-24S (37'-39')** |
| Sample Location : | **PZ-24S (37'-39') UD-02** | Date Sampled: | **09/16/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 109.6 | | | Wet Density, pcf | 112.3 |
| Dry Density, pcf | 90.6 | Chamber | 101 | Dry Density, pcf | 91.0 |
| Moisture Content, % | 21.0 | Head | 79 | Moisture Content, % | 23.3 |
| Void ratio, e | 0.860 | Tail | 77 | Void ratio, e | 0.851 |
| Porosity, n | 0.462 | Conso. | 23 | Porosity, n | 0.460 |
| Saturation, Percent | 66.0 | **Soil Specific Gravity** | | Saturation, Percent | 74.0 |
| Hydraulic Gradient, i | 9.6 | Gs | 2.701 | Hydraulic Gradient, i | 8.3 |
| Sample Length, Inches | 5.745 | **Proctor Referenced** | | Sample Length, Inches | 5.687 |
| Sample Volume, cc | 594.031 | -- | | Sample Volume, cc | 591.0023 |
| B-value : | 100.0% | | | Sample Consolidated During Saturation, % | 1.01% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 1.00 | 1.9611 | **2.85E-05** | **20** |
| **2** | 2.00 | 1.9277 | **2.67E-05** | **20** |
| **3** | 3.00 | 1.8971 | **2.55E-05** | **20** |
| **4** | 4.00 | 1.8638 | **2.55E-05** | **20** |
| **5** | 5.00 | 1.8332 | **2.52E-05** | **20** |
| **6** | 6.00 | 1.8015 | **2.52E-05** | **20** |
| **7** | 7.00 | 1.7706 | **2.52E-05** | **20** |
| **8** | 8.00 | 1.7414 | **2.51E-05** | **20** |
| **9** | 9.00 | 1.7122 | **2.50E-05** | **20** |

**Hydraulic Conductivity, cm/sec**

**2.50E-05**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# GRAIN SIZE DISTRIBUTION

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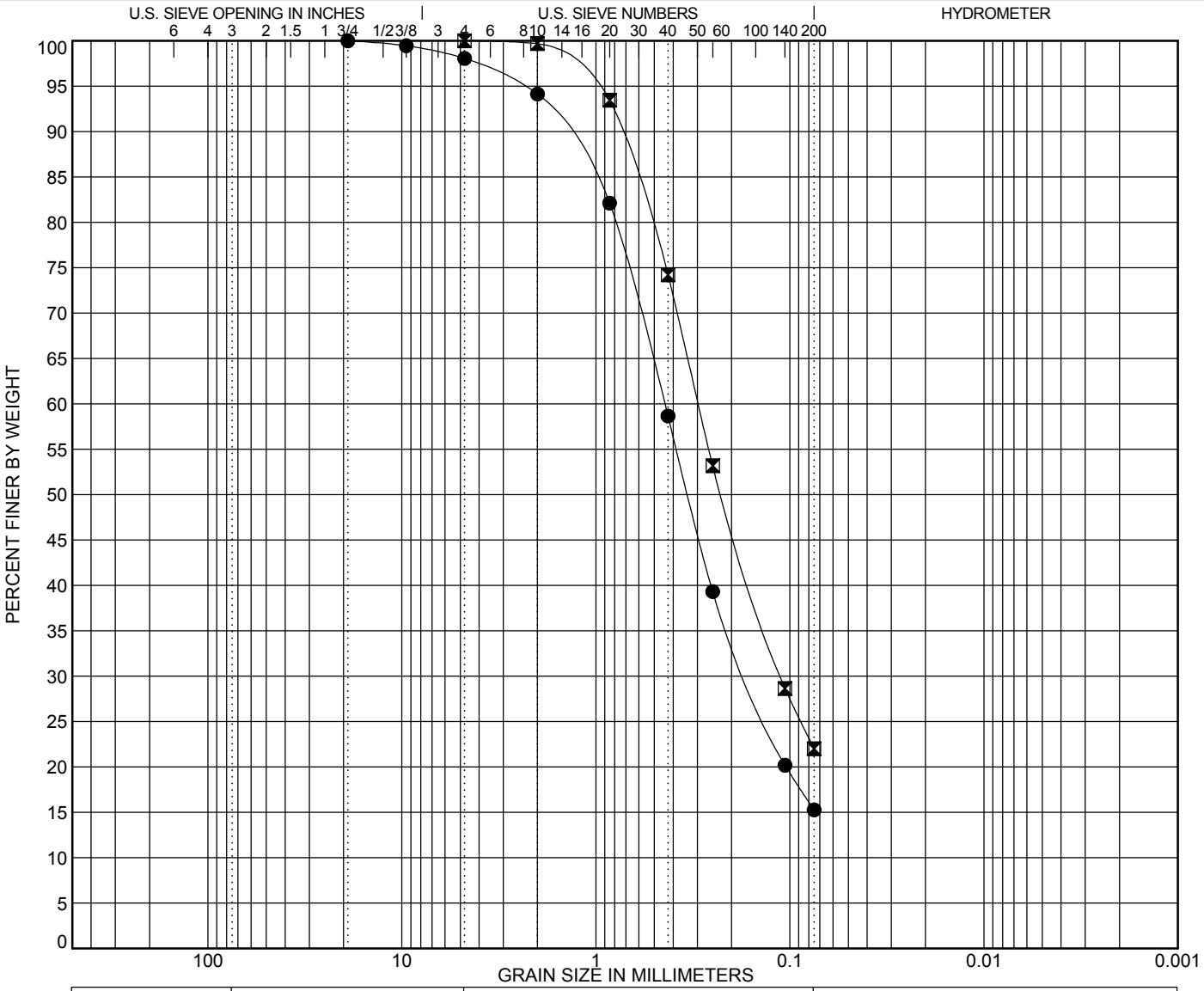
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services
**PROJECT NAME** Plant Yates Piezometers
**PROJECT NUMBER** Z003000203
**PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● PZ-24S | 17 | SILTY SAND (SM-SC) | NP | NP | NP | | |
| ⊠ PZ-24S | 37 | SILTY SAND (SM-SC) | NP | NP | NP | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● PZ-24S | 17 | 19 | 0.442 | 0.165 | | 1.9 | 82.8 | 15.3 | |
| ⊠ PZ-24S | 37 | 4.75 | 0.297 | 0.111 | | 0.0 | 78.0 | 22.0 | |

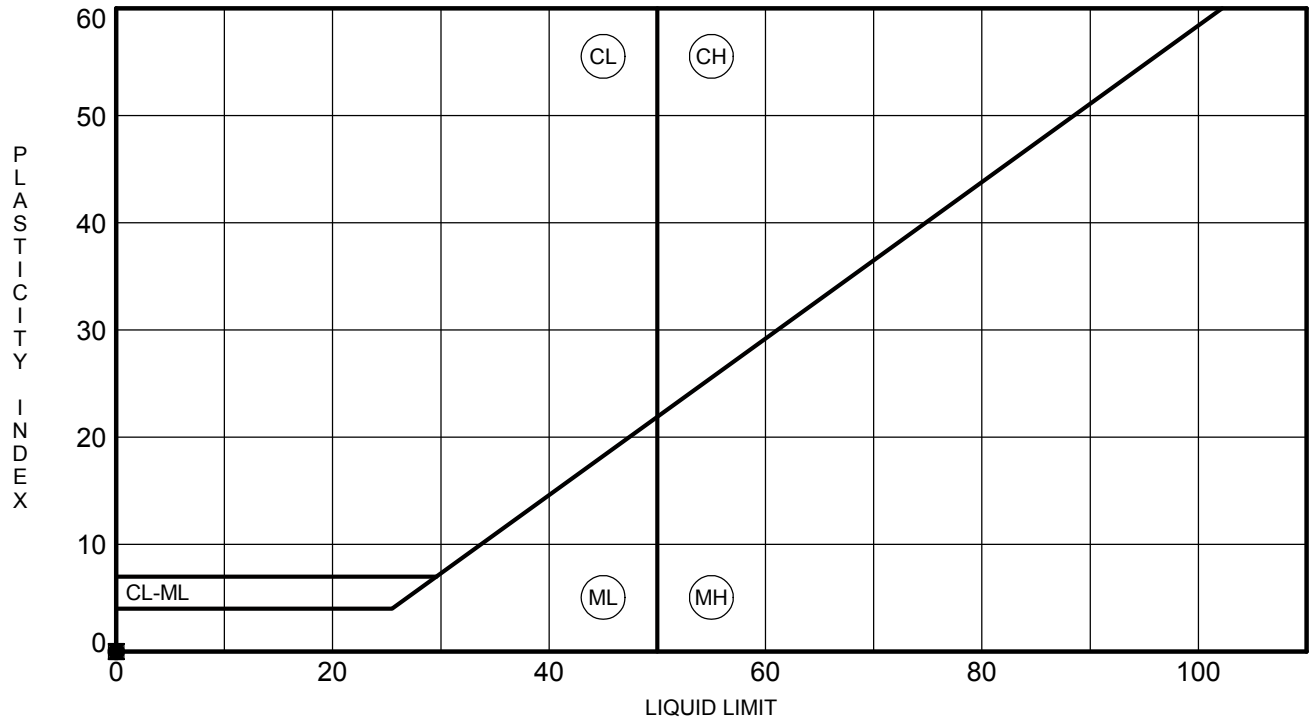
GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:28 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

Cardno ATC
200 Wellington Court, Suite 100
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



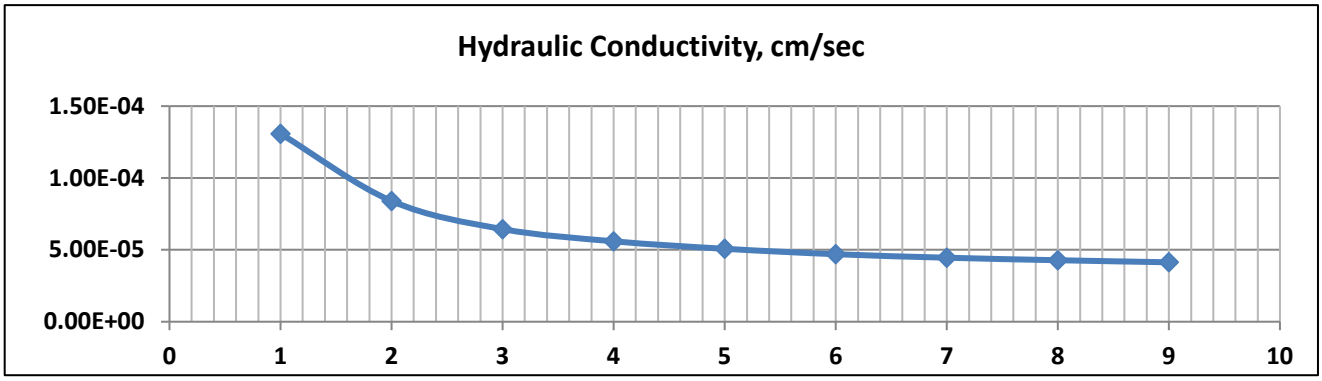

| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-24S** | **17** | **NP** | **NP** | **NP** | | **15** | **SILTY SAND (SM-SC)** |
| ⧓ | **PZ-24S** | **37** | **NP** | **NP** | **NP** | | **22** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-25S (33'-35')** |
| Sample Location : | **PZ-25S (33'-35') UD-01** | Date Sampled: | **09/03/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 110.9 | | | Wet Density, pcf | 112.1 |
| Dry Density, pcf | 85.8 | Chamber | 98 | Dry Density, pcf | 86.1 |
| Moisture Content, % | 29.2 | Head | 79 | Moisture Content, % | 30.3 |
| Void ratio, e | 0.947 | Tail | 77 | Void ratio, e | 0.942 |
| Porosity, n | 0.486 | Conso. | 20 | Porosity, n | 0.485 |
| Saturation, Percent | 82.7 | **Soil Specific Gravity** | | Saturation, Percent | 86.1 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.678 | Hydraulic Gradient, i | 7.7 |
| Sample Length, Inches | 5.635 | **Proctor Referenced** | | Sample Length, Inches | 5.600 |
| Sample Volume, cc | 575.4849 | -- | | Sample Volume, cc | 573.6865 |
| B-value : | 97.0% | Sample Consolidated During Saturation, % | | | 0.62% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 1.00 | 1.8290 | **1.31E-04** | **20** |
| **2** | 2.00 | 1.7831 | **8.40E-05** | **20** |
| **3** | 3.00 | 1.7525 | **6.44E-05** | **20** |
| **4** | 4.00 | 1.7164 | **5.59E-05** | **20** |
| **5** | 5.00 | 1.6816 | **5.07E-05** | **20** |
| **6** | 6.00 | 1.6497 | **4.70E-05** | **20** |
| **7** | 7.00 | 1.6163 | **4.45E-05** | **20** |
| **8** | 8.00 | 1.5829 | **4.28E-05** | **20** |
| **9** | 9.00 | 1.5509 | **4.13E-05** | **20** |

**Hydraulic Conductivity, cm/sec**

**4.13E-05**

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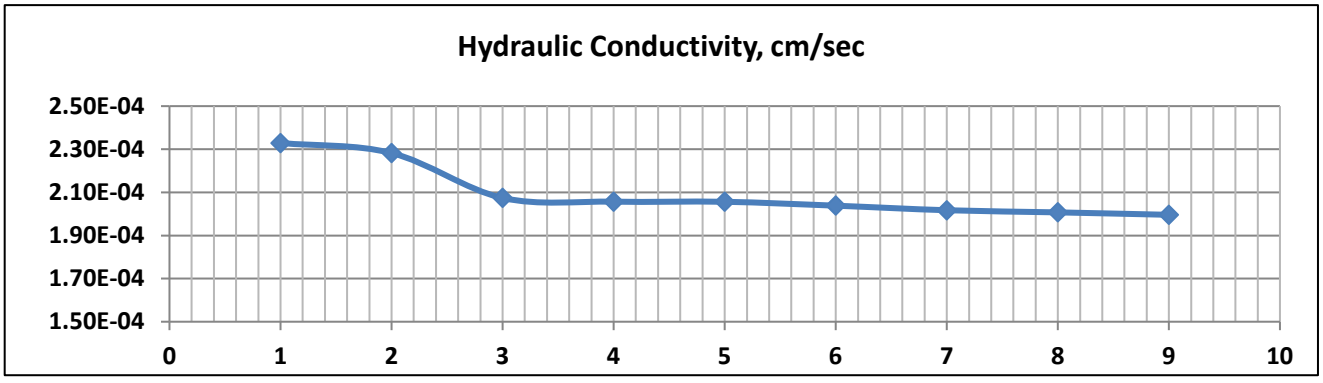
Alabaster, Alabama 35007

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-25S (44'-46')** |
| Sample Location : | **PZ-25S (44'-46') UD-02** | Date Sampled: | **09/03/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 118.4 | | | Wet Density, pcf | 119.4 |
| Dry Density, pcf | 97.9 | Chamber | 104 | Dry Density, pcf | 98.1 |
| Moisture Content, % | 21.0 | Head | 78 | Moisture Content, % | 21.7 |
| Void ratio, e | 0.710 | Tail | 76 | Void ratio, e | 0.706 |
| Porosity, n | 0.415 | Conso. | 27 | Porosity, n | 0.414 |
| Saturation, Percent | 79.2 | **Soil Specific Gravity** | | Saturation, Percent | 82.4 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.682 | Hydraulic Gradient, i | 9.0 |
| Sample Length, Inches | 5.610 | **Proctor Referenced** | | Sample Length, Inches | 5.577 |
| Sample Volume, cc | 572.1864 | -- | | Sample Volume, cc | 570.4937 |
| B-value : | 97.0% | Sample Consolidated During Saturation, % | | | 0.59% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.08 | 1.9736 | **2.33E-04** | **20** |
| **2** | 0.17 | 1.9486 | **2.28E-04** | **20** |
| **3** | 0.25 | 1.9302 | **2.07E-04** | **20** |
| **4** | 0.33 | 1.9082 | **2.06E-04** | **20** |
| **5** | 0.42 | 1.8860 | **2.06E-04** | **20** |
| **6** | 0.50 | 1.8651 | **2.04E-04** | **20** |
| **7** | 0.58 | 1.8451 | **2.02E-04** | **20** |
| **8** | 0.67 | 1.8248 | **2.01E-04** | **20** |
| **9** | 0.75 | 1.8051 | **2.00E-04** | **20** |

**Hydraulic Conductivity, cm/sec**

**2.00E-04**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# GRAIN SIZE DISTRIBUTION

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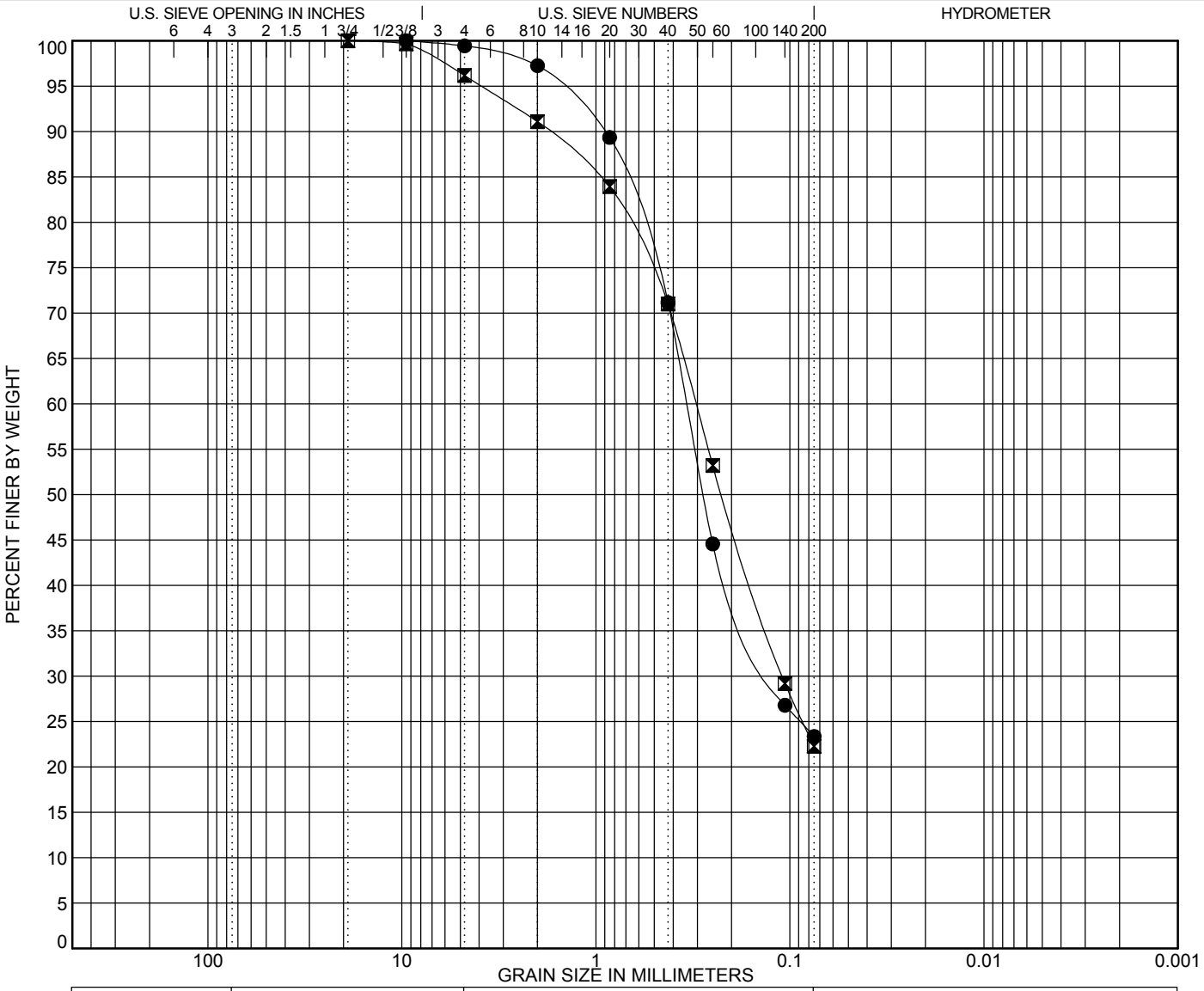
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● PZ-25S | 33 | SILTY SAND (SM-SC) | NP | NP | NP | | |
| ⊠ PZ-25S | 44 | SILTY SAND (SM-SC) | NP | NP | NP | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● PZ-25S | 33 | 9.5 | 0.34 | 0.124 | | 0.6 | 76.1 | 23.4 | |
| ⊠ PZ-25S | 44 | 19 | 0.306 | 0.109 | | 3.8 | 73.9 | 22.3 | |

GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:29 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

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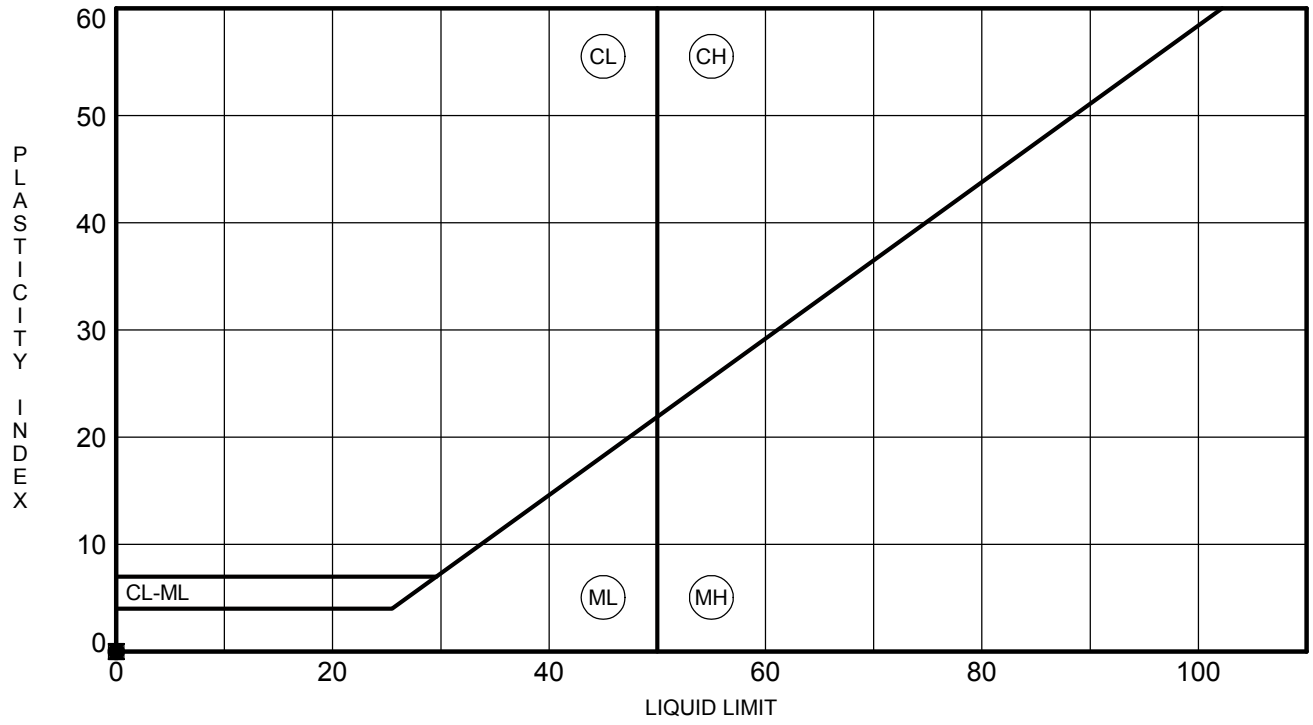
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



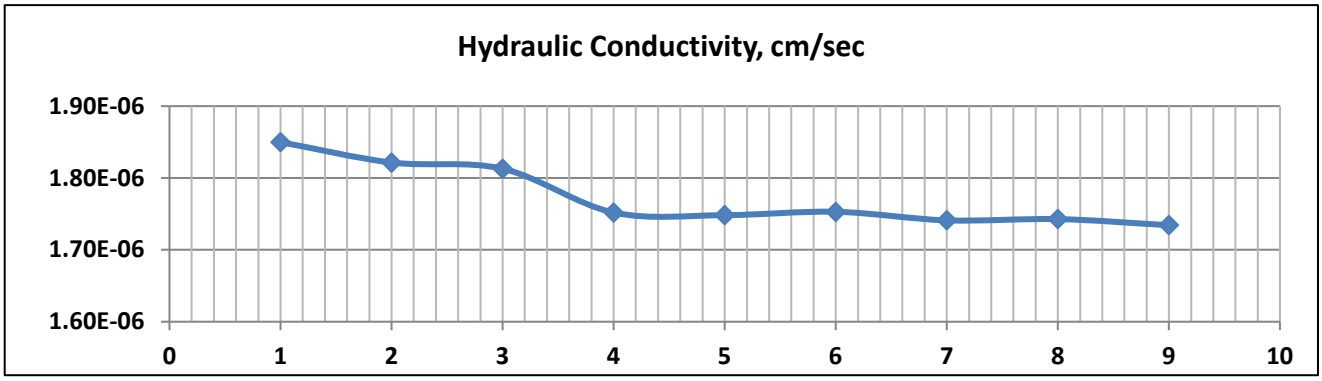

| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-25S** | **33** | **NP** | **NP** | **NP** | | **23** | **SILTY SAND (SM-SC)** |
| ⧓ | **PZ-25S** | **44** | **NP** | **NP** | **NP** | | **22** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-26S (17'-19')** |
| Sample Location : | **PZ-26S (17'-19') UD-01** | Date Sampled: | **9/31/2015** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 122.6 | | | Wet Density, pcf | 115.8 |
| Dry Density, pcf | 94.9 | Chamber | 92 | Dry Density, pcf | 95.2 |
| Moisture Content, % | 29.3 | Head | 79 | Moisture Content, % | 21.7 |
| Void ratio, e | 0.803 | Tail | 77 | Void ratio, e | 0.797 |
| Porosity, n | 0.445 | Conso. | 14 | Porosity, n | 0.443 |
| Saturation, Percent | 99.9 | **Soil Specific Gravity** | | Saturation, Percent | 74.5 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.741 | Hydraulic Gradient, i | 8.9 |
| Sample Length, Inches | 5.645 | **Proctor Referenced** | | Sample Length, Inches | 5.601 |
| Sample Volume, cc | 590.4383 | -- | | Sample Volume, cc | 588.1194 |
| B-value : | 100.0% | | | Sample Consolidated During Saturation, % | 0.78% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 10.00 | 1.9741 | **1.85E-06** | **20** |
| **2** | 20.00 | 1.9494 | **1.82E-06** | **20** |
| **3** | 30.00 | 1.9249 | **1.81E-06** | **20** |
| **4** | 40.00 | 1.9038 | **1.75E-06** | **20** |
| **5** | 50.00 | 1.8807 | **1.75E-06** | **20** |
| **6** | 60.00 | 1.8574 | **1.75E-06** | **20** |
| **7** | 70.00 | 1.8357 | **1.74E-06** | **20** |
| **8** | 80.00 | 1.8131 | **1.74E-06** | **20** |
| **9** | 90.00 | 1.7920 | **1.73E-06** | **20** |

**Hydraulic Conductivity, cm/sec**

**1.73E-06**

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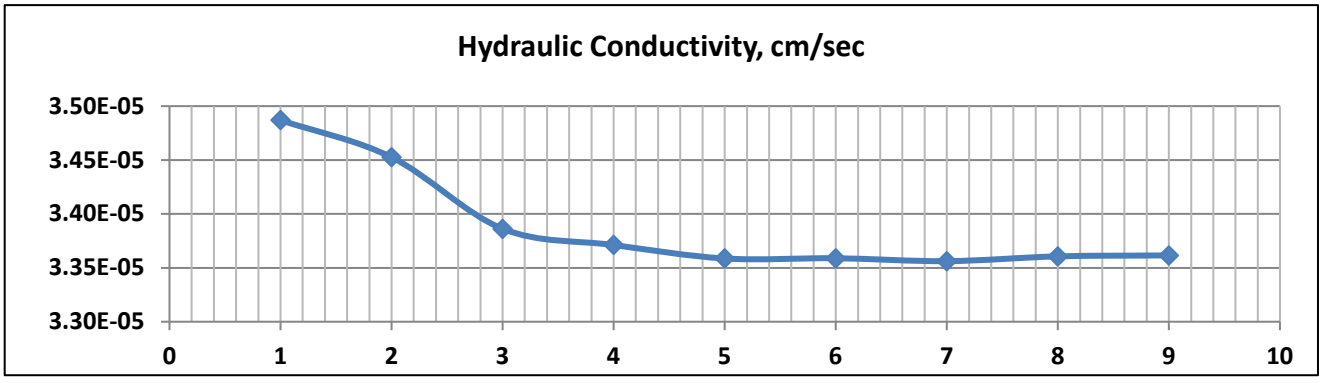
# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-26S (27'-29')** |
| Sample Location : | **PZ-26S (27'-29') UD-02** | Date Sampled: | **9/31/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 120.1 | | | Wet Density, pcf | 119.2 |
| Dry Density, pcf | 92.5 | Chamber | 101 | Dry Density, pcf | 92.5 |
| Moisture Content, % | 29.8 | Head | 79 | Moisture Content, % | 28.8 |
| Void ratio, e | 0.834 | Tail | 77 | Void ratio, e | 0.834 |
| Porosity, n | 0.455 | Conso. | 23 | Porosity, n | 0.455 |
| Saturation, Percent | 97.1 | **Soil Specific Gravity** | | Saturation, Percent | 94.1 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.720 | Hydraulic Gradient, i | 8.0 |
| Sample Length, Inches | 5.623 | **Proctor Referenced** | | Sample Length, Inches | 5.619 |
| Sample Volume, cc | 570.3925 | -- | | Sample Volume, cc | 570.1895 |
| B-value : | 100.0% | | | Sample Consolidated During Saturation, % | 0.07% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 1.00 | 1.9538 | **3.49E-05** | **20** |
| **2** | 2.00 | 1.9096 | **3.45E-05** | **20** |
| **3** | 3.00 | 1.8685 | **3.39E-05** | **20** |
| **4** | 4.00 | 1.8273 | **3.37E-05** | **20** |
| **5** | 5.00 | 1.7873 | **3.36E-05** | **20** |
| **6** | 6.00 | 1.7475 | **3.36E-05** | **20** |
| **7** | 7.00 | 1.7089 | **3.36E-05** | **20** |
| **8** | 8.00 | 1.6705 | **3.36E-05** | **20** |
| **9** | 9.00 | 1.6332 | **3.36E-05** | **20** |

**Hydraulic Conductivity, cm/sec**

**3.36E-05**

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# GRAIN SIZE DISTRIBUTION

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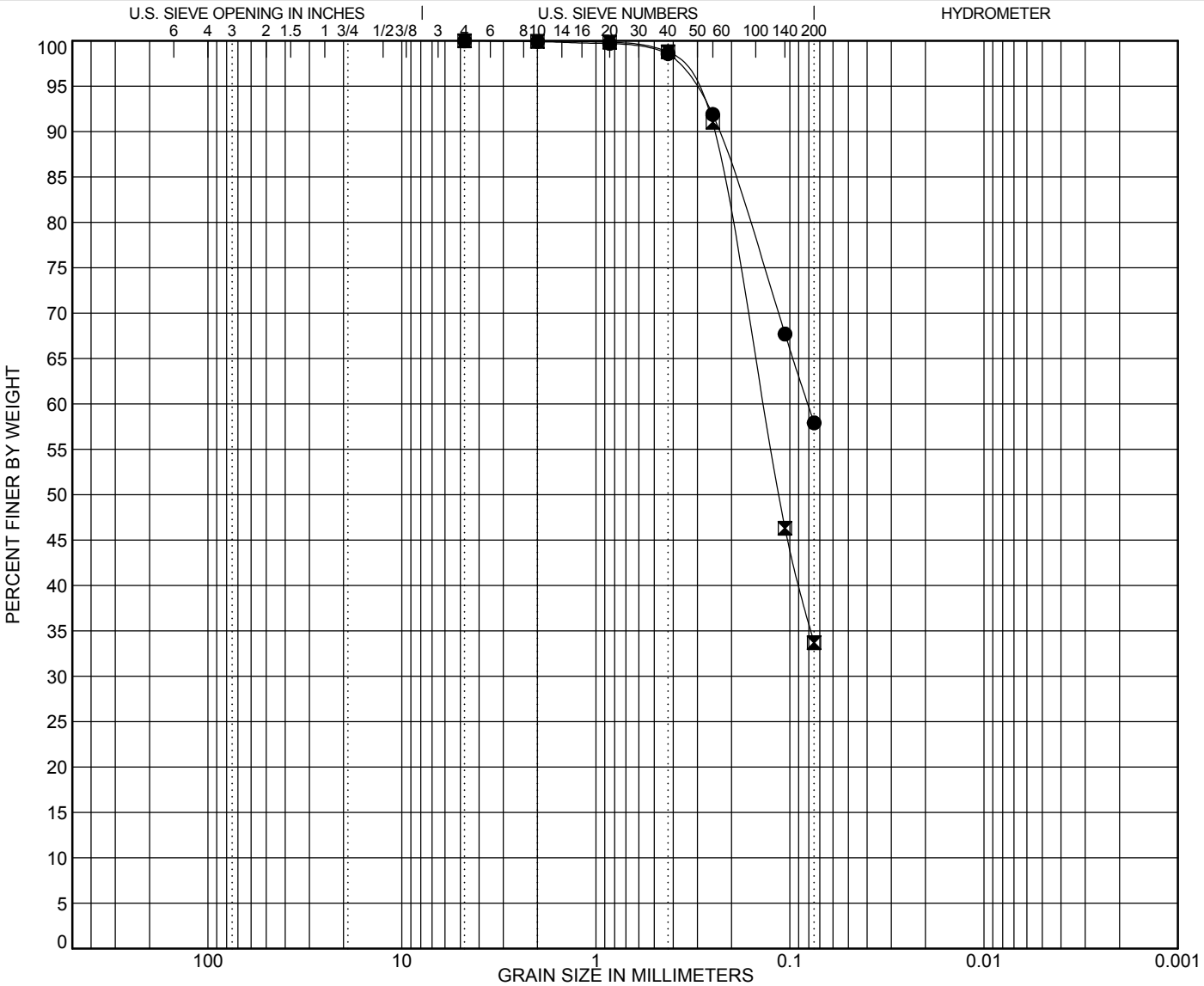
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-26s** | **17** | **SANDY SILT (ML)** | **37** | **27** | **10** | | |
| ⊠ | **PZ-26s** | **27** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| | BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **PZ-26s** | **17** | **4.75** | **0.081** | | | **0.0** | **42.1** | **57.9** | |
| ⊠ | **PZ-26s** | **27** | **4.75** | **0.138** | | | **0.0** | **66.3** | **33.7** | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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# ATTERBERG LIMITS RESULTS

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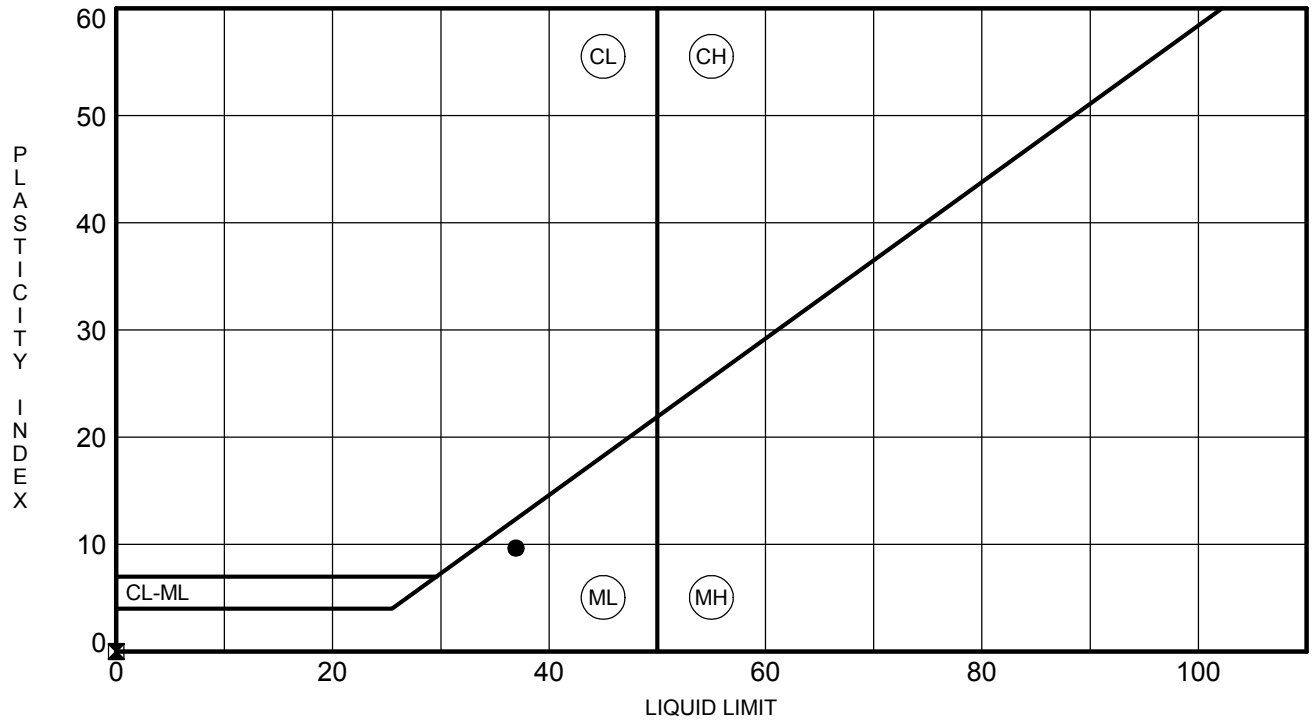
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-26s** | **17** | **37** | **27** | **10** | | **58** | **SANDY SILT (ML)** |
| ⧓ | **PZ-26s** | **27** | **NP** | **NP** | **NP** | | **34** | **SILTY SAND (SM-SC)** |

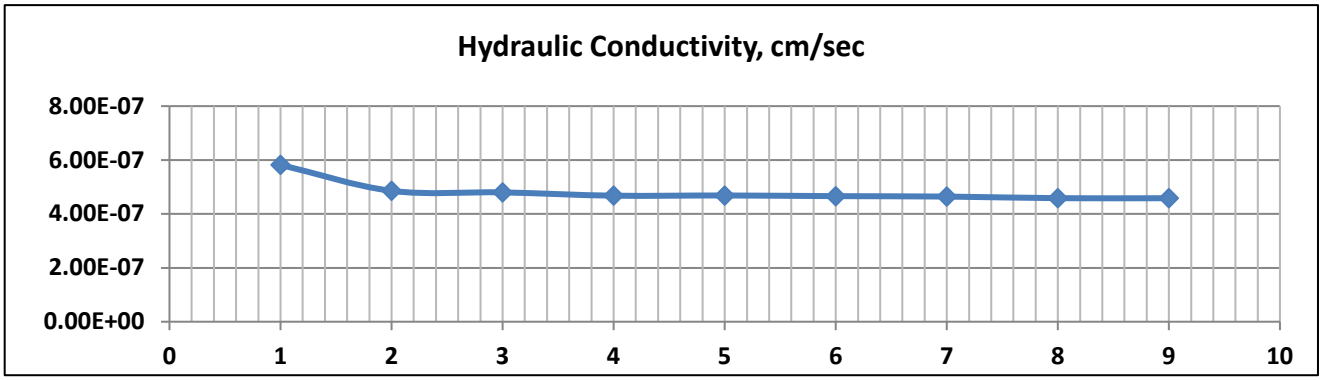
ATTERBERG LIMITS - GINT STD US LAB.GDT - 10/27/15 11:29 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-27S (17'-19')** |
| Sample Location : | **PZ-27S (17'-19') UD-01** | Date Sampled: | **10/07/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 126.5 | | | Wet Density, pcf | 126.1 |
| Dry Density, pcf | 99.6 | Chamber | 93 | Dry Density, pcf | 99.8 |
| Moisture Content, % | 27.0 | Head | 79 | Moisture Content, % | 26.3 |
| Void ratio, e | 0.667 | Tail | 77 | Void ratio, e | 0.663 |
| Porosity, n | 0.400 | Conso. | 15 | Porosity, n | 0.399 |
| Saturation, Percent | 107.7 | **Soil Specific Gravity** | | Saturation, Percent | 105.7 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.661 | Hydraulic Gradient, i | 9.6 |
| Sample Length, Inches | 5.635 | **Proctor Referenced** | | Sample Length, Inches | 5.603 |
| Sample Volume, cc | 578.7582 | -- | | Sample Volume, cc | 577.1055 |
| B-value : | 97.0% | | | Sample Consolidated During Saturation, % | 0.57% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 10.00 | 1.9917 | **5.82E-07** | **20** |
| **2** | 20.00 | 1.9861 | **4.86E-07** | **20** |
| **3** | 30.00 | 1.9794 | **4.80E-07** | **20** |
| **4** | 40.00 | 1.9733 | **4.68E-07** | **20** |
| **5** | 50.00 | 1.9666 | **4.68E-07** | **20** |
| **6** | 60.00 | 1.9602 | **4.66E-07** | **20** |
| **7** | 70.00 | 1.9538 | **4.64E-07** | **20** |
| **8** | 80.00 | 1.9480 | **4.58E-07** | **20** |
| **9** | 90.00 | 1.9416 | **4.58E-07** | **20** |

**Hydraulic Conductivity, cm/sec**

**4.58E-07**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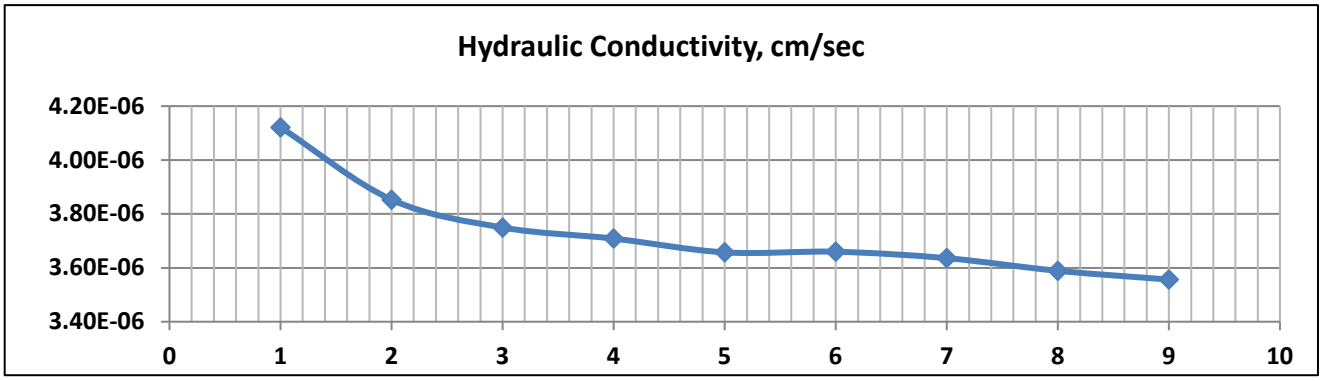
# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-27S (27'-29')** |
| Sample Location : | **PZ-27S (27'-29') UD-02** | Date Sampled: | **10/07/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 120.0 | | | Wet Density, pcf | 119.6 |
| Dry Density, pcf | 91.1 | Chamber | 98 | Dry Density, pcf | 91.3 |
| Moisture Content, % | 31.7 | Head | 79 | Moisture Content, % | 31.0 |
| Void ratio, e | 0.831 | Tail | 77 | Void ratio, e | 0.827 |
| Porosity, n | 0.454 | Conso. | 20 | Porosity, n | 0.453 |
| Saturation, Percent | 101.9 | **Soil Specific Gravity** | | Saturation, Percent | 100.2 |
| Hydraulic Gradient, i | 9.8 | Gs | 2.673 | Hydraulic Gradient, i | 8.8 |
| Sample Length, Inches | 5.657 | **Proctor Referenced** | | Sample Length, Inches | 5.629 |
| Sample Volume, cc | 576.1263 | -- | | Sample Volume, cc | 574.6934 |
| B-value : | 99.0% | | | Sample Consolidated During Saturation, % | 0.49% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 5.00 | 1.9725 | **4.12E-06** | **20** |
| **2** | 10.00 | 1.9488 | **3.85E-06** | **20** |
| **3** | 15.00 | 1.9258 | **3.75E-06** | **20** |
| **4** | 20.00 | 1.9027 | **3.71E-06** | **20** |
| **5** | 25.00 | 1.8807 | **3.66E-06** | **20** |
| **6** | 30.00 | 1.8576 | **3.66E-06** | **20** |
| **7** | 35.00 | 1.8359 | **3.64E-06** | **20** |
| **8** | 40.00 | 1.8159 | **3.59E-06** | **20** |
| **9** | 45.00 | 1.7959 | **3.56E-06** | **20** |

**Hydraulic Conductivity, cm/sec**

**3.56E-06**

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# GRAIN SIZE DISTRIBUTION

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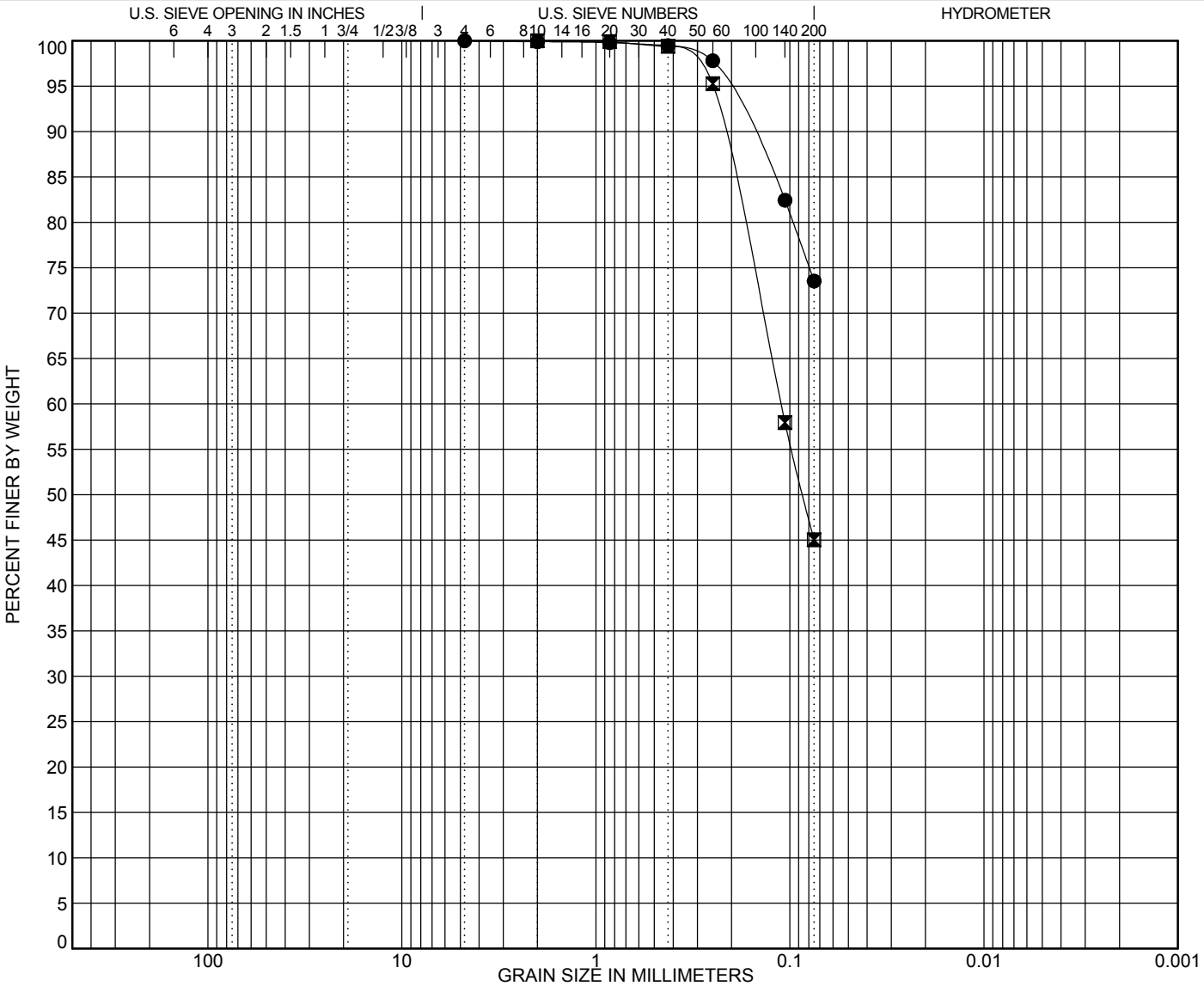
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● PZ-27s | 17 | SILT with SAND (ML) | 39 | 30 | 9 | | |
| ⊠ PZ-27s | 27 | SILTY SAND(SM-SC) | NP | NP | NP | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● PZ-27s | 17 | 4.75 | | | | 0.0 | 26.5 | 73.5 | |
| ⊠ PZ-27s | 27 | 2 | 0.111 | | | 0.0 | 55.0 | 45.0 | |

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# ATTERBERG LIMITS RESULTS

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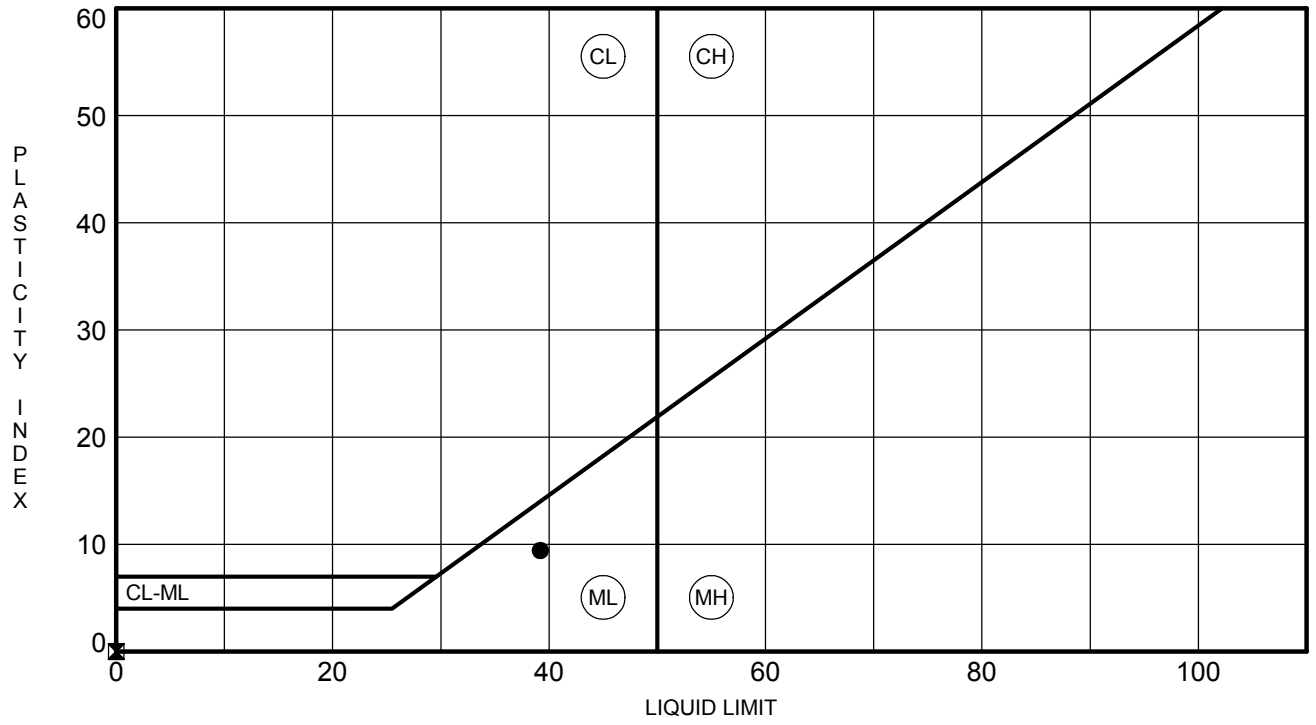
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



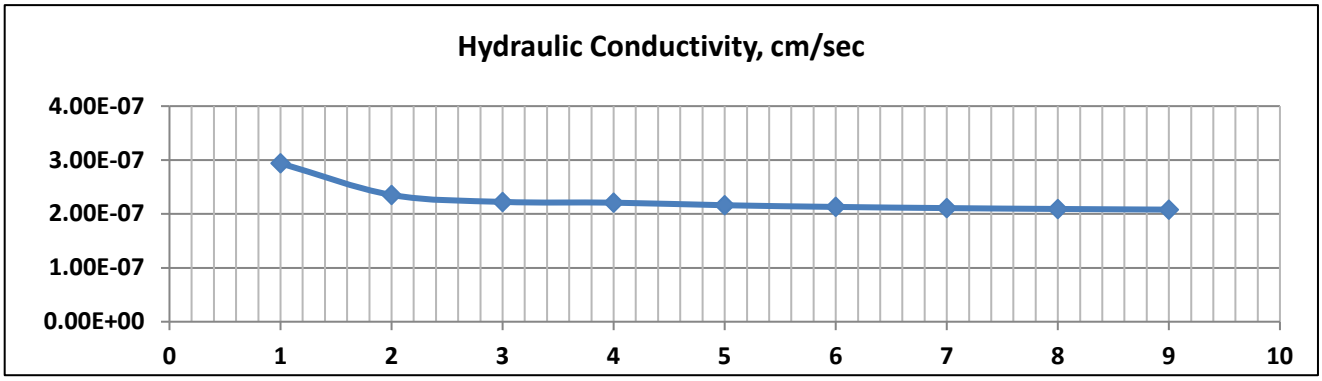

| | BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-27s** | **17** | **39** | **30** | **9** | | **74** | **SILT with SAND (ML)** |
| ⧓ | **PZ-27s** | **27** | **NP** | **NP** | **NP** | | **45** | **SILTY SAND(SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-28S (17'-19')** |
| Sample Location : | **PZ-28S (17'-19') UD-01** | Date Sampled: | **No Date** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 124.6 | | | Wet Density, pcf | 126.0 |
| Dry Density, pcf | 100.8 | Chamber | 93 | Dry Density, pcf | 100.9 |
| Moisture Content, % | 23.6 | Head | 79 | Moisture Content, % | 24.9 |
| Void ratio, e | 0.597 | Tail | 77 | Void ratio, e | 0.594 |
| Porosity, n | 0.374 | Conso. | 15 | Porosity, n | 0.373 |
| Saturation, Percent | 102.2 | **Soil Specific Gravity** | | Saturation, Percent | 108.0 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.578 | Hydraulic Gradient, i | 9.8 |
| Sample Length, Inches | 5.606 | **Proctor Referenced** | | Sample Length, Inches | 5.584 |
| Sample Volume, cc | 568.1281 | -- | | Sample Volume, cc | 567.0091 |
| B-value : | 99.0% | Sample Consolidated During Saturation, % | | | 0.39% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 10.00 | 1.9958 | **2.94E-07** | **20** |
| **2** | 20.00 | 1.9933 | **2.35E-07** | **20** |
| **3** | 30.00 | 1.9905 | **2.22E-07** | **20** |
| **4** | 40.00 | 1.9875 | **2.21E-07** | **20** |
| **5** | 50.00 | 1.9847 | **2.16E-07** | **20** |
| **6** | 60.00 | 1.9819 | **2.13E-07** | **20** |
| **7** | 70.00 | 1.9791 | **2.11E-07** | **20** |
| **8** | 80.00 | 1.9764 | **2.09E-07** | **20** |
| **9** | 90.00 | 1.9736 | **2.08E-07** | **20** |

**Hydraulic Conductivity, cm/sec**

**2.08E-07**

Cardno ATC
Shaping the Future

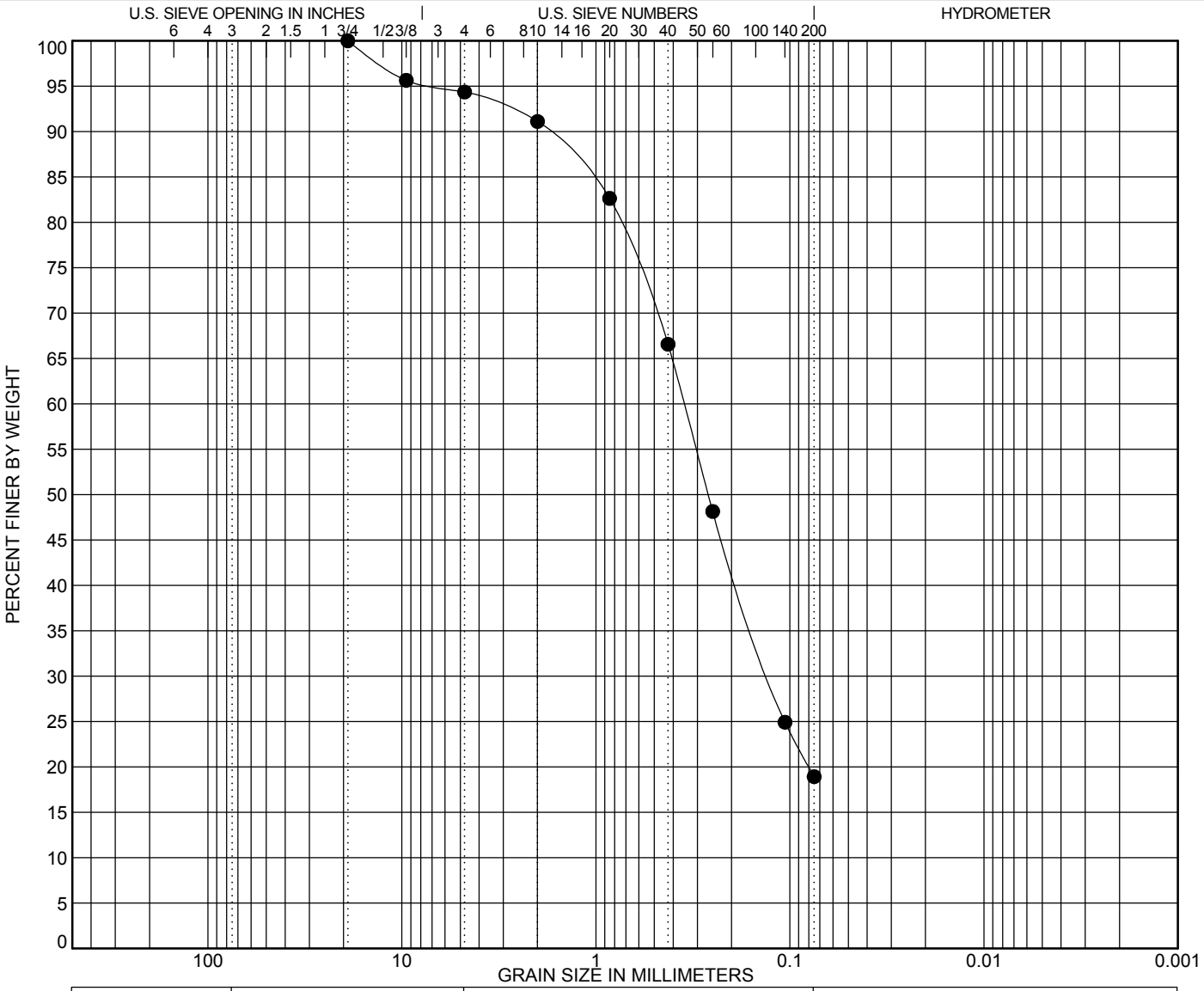
200 Wellington Manor Court Suite 100
Alabaster, Alabama 35007

# GRAIN SIZE DISTRIBUTION

Cardno ATC
200 Wellington Court, Suite 100
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | **PZ-28s** | **17** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| | BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|---|
| ● | **PZ-28s** | **17** | **19** | **0.352** | **0.128** | | **5.7** | **75.4** | **18.9** | |

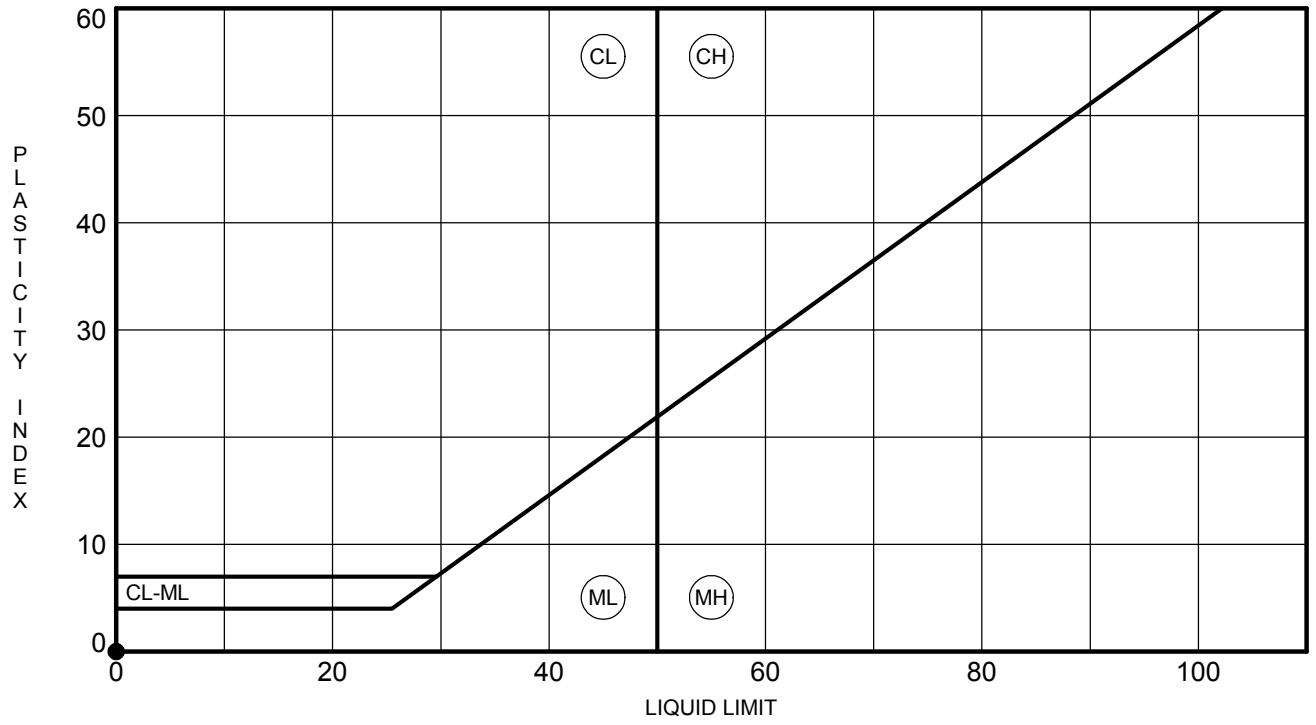
GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:30 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

Cardno ATC
200 Wellington Court, Suite 100
Alabaster, Alabama 35007
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



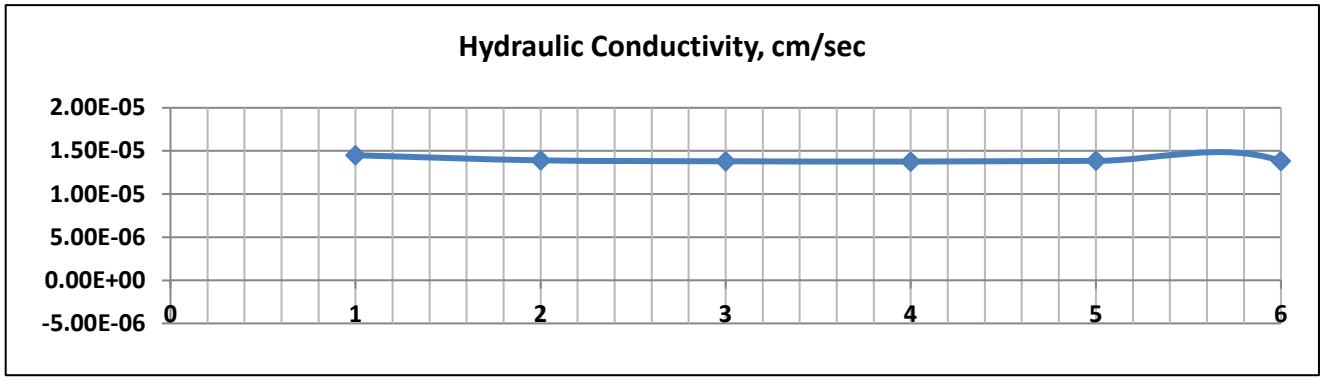

| BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● **PZ-28s** | **17** | **NP** | **NP** | **NP** | | **19** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-30S (27'-29')** |
| Sample Location : | **PZ-30S (27'-29') UD-01** | Date Sampled: | **09/23/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 122.4 | | | Wet Density, pcf | 124.0 |
| Dry Density, pcf | 99.7 | Chamber | 101 | Dry Density, pcf | 100.5 |
| Moisture Content, % | 22.7 | Head | 79 | Moisture Content, % | 23.5 |
| Void ratio, e | 0.696 | Tail | 77 | Void ratio, e | 0.683 |
| Porosity, n | 0.410 | Conso. | 23 | Porosity, n | 0.406 |
| Saturation, Percent | 88.5 | **Soil Specific Gravity** | | Saturation, Percent | 93.1 |
| Hydraulic Gradient, i | 10.0 | Gs | 2.710 | Hydraulic Gradient, i | 7.5 |
| Sample Length, Inches | 5.538 | **Proctor Referenced** | | Sample Length, Inches | 5.450 |
| Sample Volume, cc | 580.1959 | -- | | Sample Volume, cc | 575.5133 |
| B-value : | 100.0% | Sample Consolidated During Saturation, % | | | 1.59% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 5.00 | 1.8985 | **1.45E-05** | **20** |
| **2** | 10.00 | 1.8098 | **1.39E-05** | **20** |
| **3** | 15.00 | 1.7236 | **1.38E-05** | **20** |
| **4** | 20.00 | 1.6410 | **1.38E-05** | **20** |
| **5** | 25.00 | 1.5596 | **1.38E-05** | **20** |
| **6** | 30.00 | 1.4842 | **1.38E-05** | **20** |
| **7** | 0.00 | | | **20** |
| **8** | 0.00 | | | **20** |
| **9** | 0.00 | | | **20** |

**Hydraulic Conductivity, cm/sec**

**1.38E-05**

Cardno ATC
Shaping the Future

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# GRAIN SIZE DISTRIBUTION

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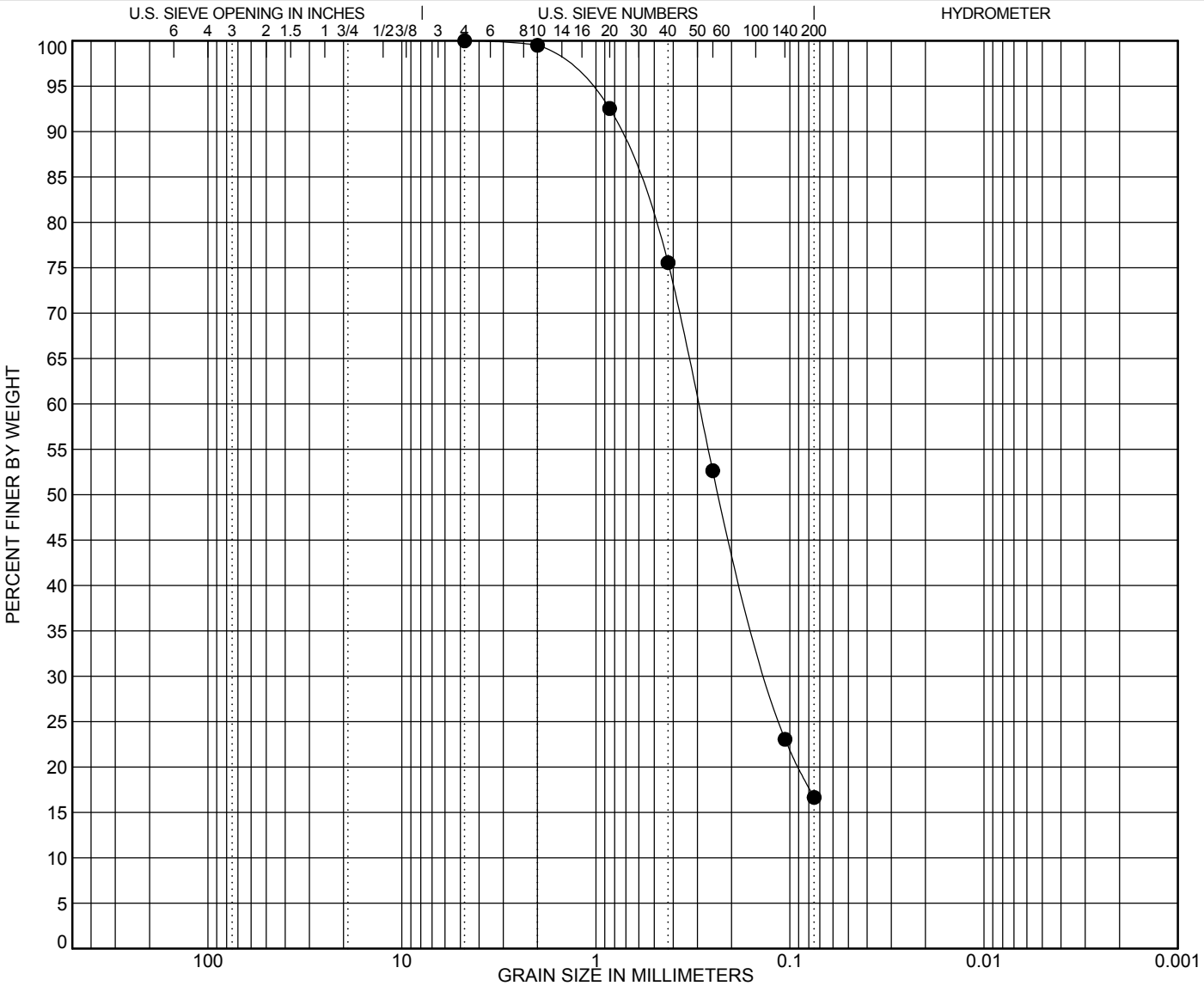
Office: 205-738-8775
Fax: 205-733-8954

**CLIENT** Southern Company Services
**PROJECT NAME** Plant Yates Piezometers
**PROJECT NUMBER** Z003000203
**PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● **PZ-30s** | **27** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● **PZ-30s** | **27** | **4.75** | **0.296** | **0.13** | | **0.0** | **83.4** | **16.6** | |

GRAIN SIZE - GINT STD US LAB.GDT - 10/27/15 11:30 - S:\TRADITIONAL\BIRMINGHAM LAB\SOUTHERN COMPANY\PLANT YATES PIEZOMETERS\GINT\PLANT YATES PIEZOMETERS.GPJ

# ATTERBERG LIMITS RESULTS

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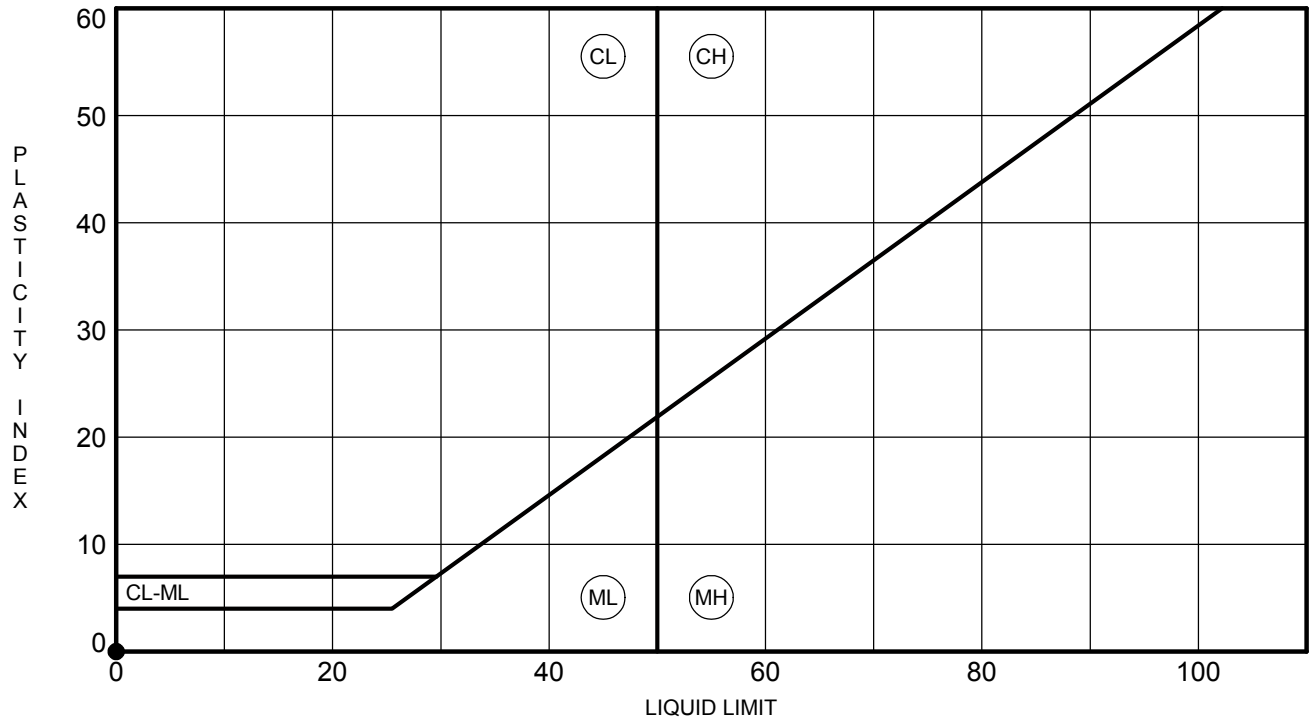
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA



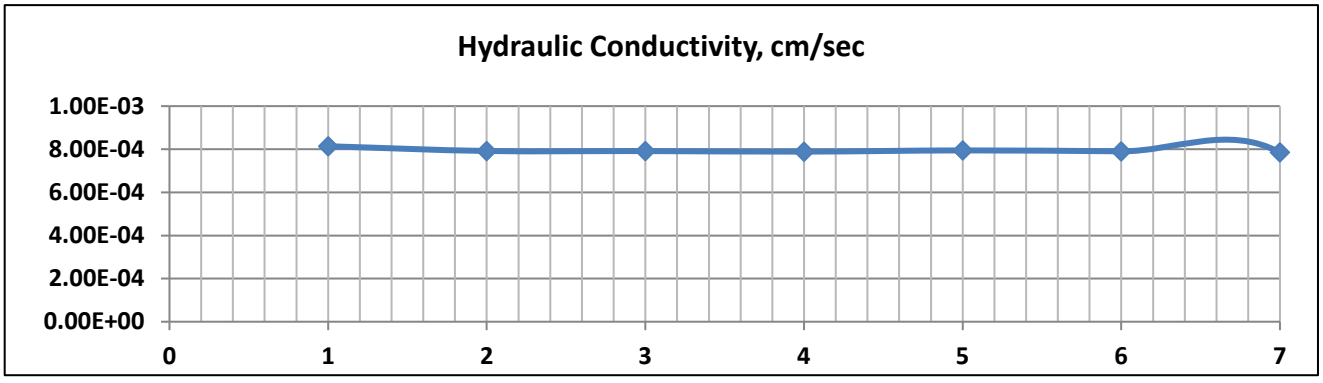

| BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● **PZ-30s** | **27** | **NP** | **NP** | **NP** | | **17** | **SILTY SAND (SM-SC)** |

# Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D 5084-10

| | | | |
|---|---|---|---|
| Project : | **Plant Yates Piezometers** | Project Number: | **Z003000203** |
| Client : | **Southern Company Services, INC** | Sample Number : | **PZ-31S (44'-46')** |
| Sample Location : | **PZ-31S (44'-46')** | Date Sampled: | **09/03/15** |
| Northing: -- | Easting: -- | Elevation: | -- |
| Sample Preparation: | **Shelby Tube Pushed** | Permeant Liquid : | De-Aired Tap Water |

| **Initial Sample Conditions** | | **Initial Working Pressures, psi** | | **Final Sample Conditions** | |
|---|---|---|---|---|---|
| Wet Density, pcf | 99.9 | | | Wet Density, pcf | 108.3 |
| Dry Density, pcf | 79.1 | Chamber | 83 | Dry Density, pcf | 79.2 |
| Moisture Content, % | 26.3 | Head | 79 | Moisture Content, % | 36.7 |
| Void ratio, e | 1.092 | Tail | 77 | Void ratio, e | 1.089 |
| Porosity, n | 0.522 | Conso. | 5 | Porosity, n | 0.521 |
| Saturation, Percent | 63.8 | **Soil Specific Gravity** | | Saturation, Percent | 89.3 |
| Hydraulic Gradient, i | 9.9 | Gs | 2.653 | Hydraulic Gradient, i | 7.2 |
| Sample Length, Inches | 5.617 | **Proctor Referenced** | | Sample Length, Inches | 5.598 |
| Sample Volume, cc | 583.669 | -- | | Sample Volume, cc | 582.6785 |
| B-value : | 98.0% | Sample Consolidated During Saturation, % | | | 0.34% |




| **Start Test @ t=0** | Cum. Time Δ t, min. | Head Loss, Δh2 psi | **Hydraulic Conductivity, k (Permeability)** | |
|---|---|---|---|---|
| **0** | 0.00 | 2.0000 | **cm/sec** | **°C** |
| **1** | 0.08 | 1.9099 | **8.14E-04** | **20** |
| **2** | 0.17 | 1.8284 | **7.92E-04** | **20** |
| **3** | 0.25 | 1.7484 | **7.92E-04** | **20** |
| **4** | 0.33 | 1.6727 | **7.89E-04** | **20** |
| **5** | 0.42 | 1.5971 | **7.95E-04** | **20** |
| **6** | 0.50 | 1.5290 | **7.90E-04** | **20** |
| **7** | 0.58 | 1.4653 | **7.85E-04** | **20** |
| **8** | 0.67 | | | **20** |
| **9** | 0.75 | | | **20** |

**Hydraulic Conductivity, cm/sec**

**7.85E-04**

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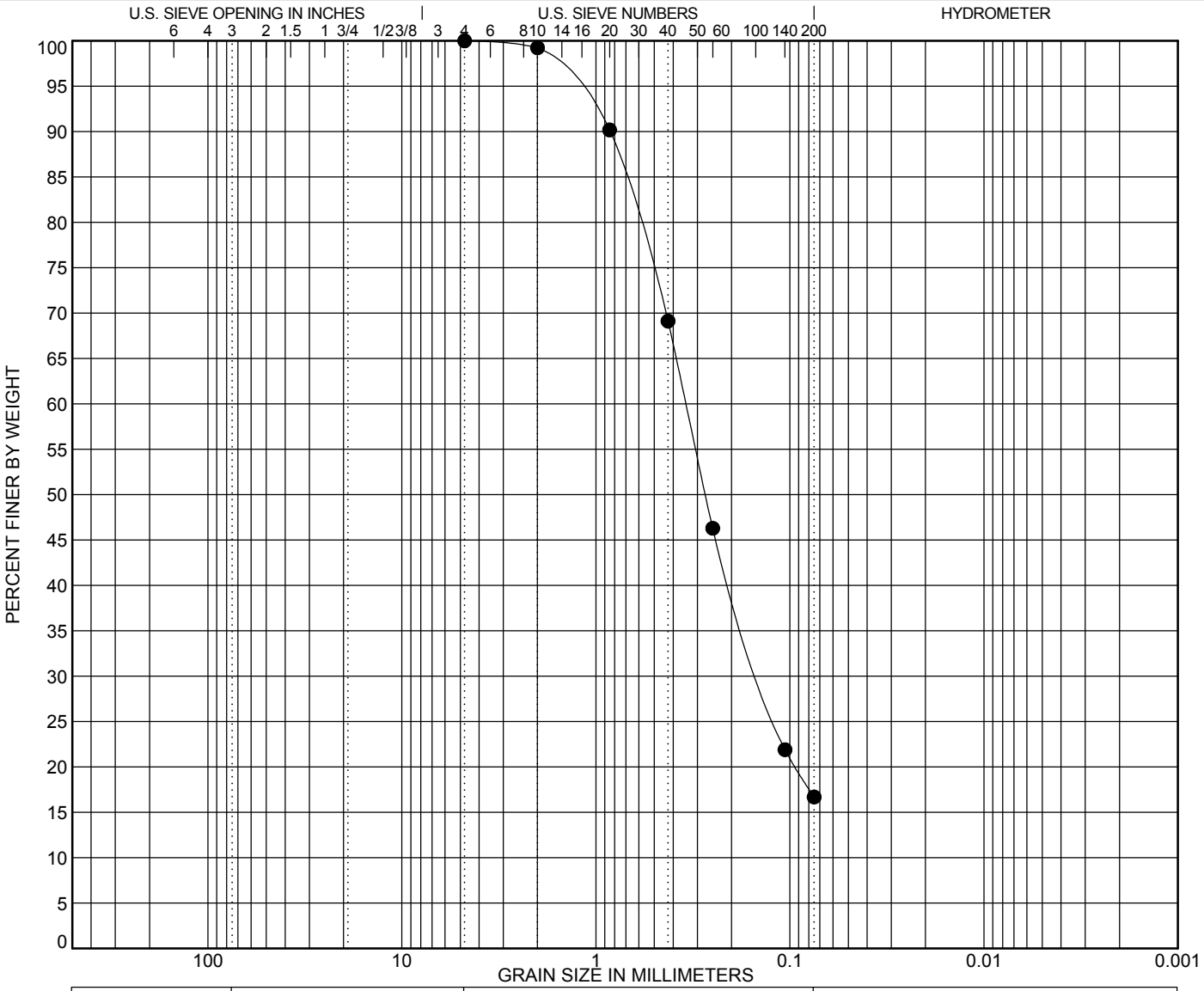
Fax: 205-733-8954

# GRAIN SIZE DISTRIBUTION

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | Classification | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|
| ● **PZ-31s** | **7** | **SILTY SAND (SM-SC)** | **NP** | **NP** | **NP** | | |

| BOREHOLE | DEPTH | D100 | D60 | D30 | D10 | %Gravel | %Sand | %Silt | %Clay |
|---|---|---|---|---|---|---|---|---|---|
| ● **PZ-31s** | **7** | **4.75** | **0.344** | **0.141** | | **0.0** | **83.3** | **16.7** | |

# ATTERBERG LIMITS RESULTS

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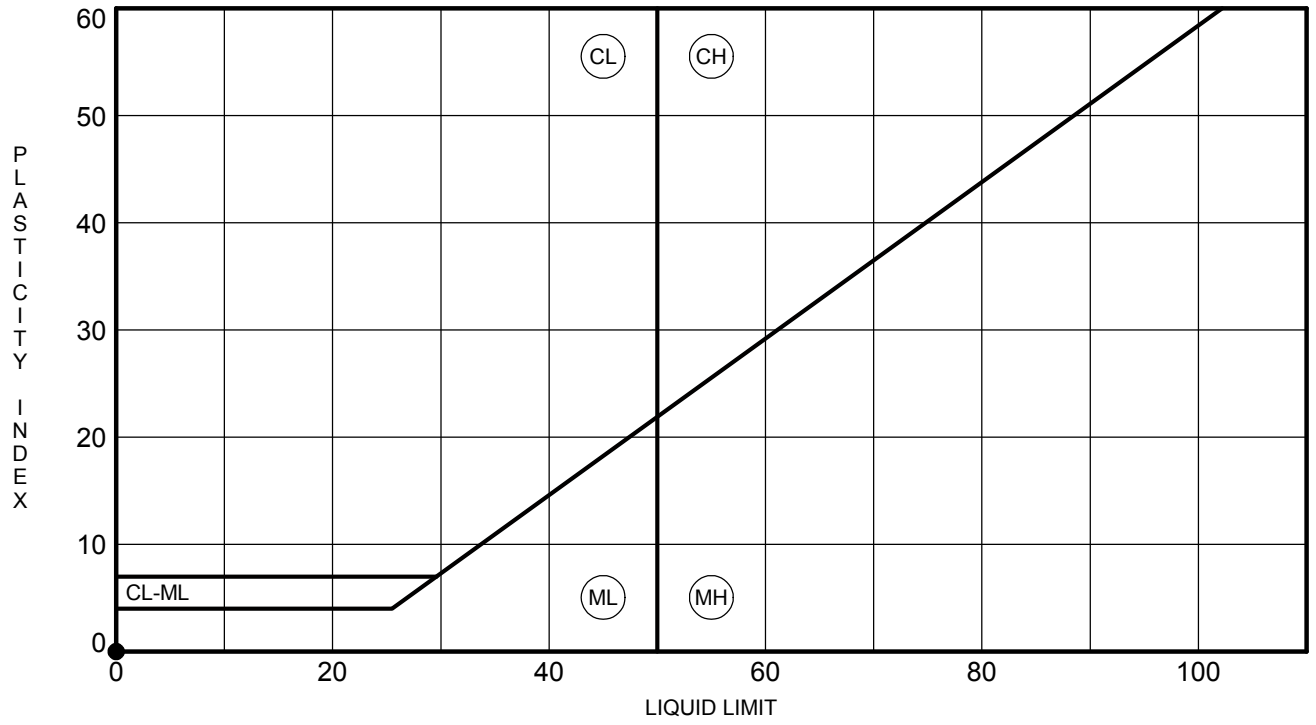
Fax: 205-733-8954

**CLIENT** Southern Company Services **PROJECT NAME** Plant Yates Piezometers

**PROJECT NUMBER** Z003000203 **PROJECT LOCATION** Newnan, GA




| BOREHOLE | DEPTH | LL | PL | PI | %M | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● **PZ-31s** | **7** | **NP** | **NP** | **NP** | | **17** | **SILTY SAND (SM-SC)** |

# APPENDIX C. BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-4I**
PAGE 1 OF 1
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/10/2014 **COMPLETED** 5/21/2014 **SURF. ELEV.** 781.9 **COORDINATES:** N:1,254,436.58 E:2,075,455.62
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 46.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 17.72 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 784.21

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. |
|---|---|---|---|
| | | **Sandy Silt (ML)**<br>- rusty red, damp, medium stiff, low plasticity, very fine grain, cohesive; micaceous; trace organics | 779.4 |
| 5 | | **Silty Sand (SM)**<br>- reddish brown to light brown, dry, medium dense to loose, no plasticity, lower fine to upper medium grain, some to trace clay decreasing with depth; trace mica; trace organics<br>- SM: medium to light brown to tan, dry, loose, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; noncohesive; trace rock fragments (brittle); trace mica | |
| 10 | | - SM: light brown to tan grading to reddish brown @ 15', damp, loose, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; noncohesive; trace rock fragments (brittle); trace mica | |
| 15 | | - SM: reddish brown to tan to white with a greenish tan zone @ approx. 18-20', moist, medium dense, no plasticity, lower fine to upper medium grain, *saprolite*, visible zones where saprolite has not completely broken down to residual soil and remnant rock fabric visible; zone of more competent saprolite observed; gravel sized rock fragments included; muscovite, biotite, chlorite phyllosilicates visible | |
| 20 | | | |
| 25 | | - SM: orangish brown to light gray to white, moist, medium dense, no plasticity, lower fine to upper medium grain, *saprolite*, increasing rock fragment size and abundance with depth; rock fragments range from coarse gravel to cobble size; angular fragments | |
| 30 | | | 751.4 |
| 35 | | **Interlayered Granitic Gneiss and Biotite Gneiss**<br>- light gray to white with rusty red to orangish brown staining, lower fine to lower medium grain, medium hard, moderately weathered, trace banding, quartz, biotite, muscovite, plagioclase, hornblende; low to moderate angle fractures visible; slight schistose foliation visible in some weathered zones; some zones highly weathered | |
| 40 | | | |
| 45 | | - Interlayered Granitic Gneiss and Biotite Gneiss: light gray to white with zones of dark gray to black, upper fine to lower medium grain, hard, slightly weathered, trace banding, quartz, biotite, muscovite, plagioclase, hornblende, trace garnet; thin zones (1-2 mm to 2-4 mm) of mica schist interlayered with the gneiss; low to moderate angled fractures; total healing observed with quartz fracture fill | 735.4 |

**WELL DATA**

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

ELEV. (DEPTH)

- Surface Seal: concrete — 779.9 (2.0)
- Annular Fill: 90/10 Portland Cement/Bentonite Powder — 751.3 (30.6)
- Annular Seal: 3/8 Hole Plug — 747.4 (34.5)
- Filter: 20/30 Silica Sand — 745.7 (36.2)
- **Well: 2" OD PVC (SCH 40)**
- Screen: 10 ft; pre-pack — 735.7
- Sump:0.30 ft. — 735.4

Bottom of borehole at 46.5 feet.

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 19:25 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-5I**
PAGE 1 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/9/2014 **COMPLETED** 5/21/2014 **SURF. ELEV.** 782.1 **COORDINATES:** N:1,254,399.95 E: 2,076,218.86
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 56.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 13.66 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 784.54

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| 5 | | **Silty Sand (SM)** - brown, dry, medium dense, no plasticity, upper fine to lower medium grain, noncohesive; trace organics; angular to sub angular grains - SM: brown, dry, medium dense, no plasticity, upper fine to lower medium grain, slight increase in clay content with depth; cohesive (slight); trace mica; trace coarse grains | 777.1 | ← Surface Seal: concrete | 780.1 (2.0) |
| 10 | | **Poorly-graded Sand (SP)** - light gray to off white, dry, very loose, no plasticity, upper fine to upper medium grain, noncohesive; upper coarse to coarse gravel sized weathered rock fragments; angular to subangular grains; angular rock fragments | | | |
| 15 | | - SP: med gray to tan to light gray /white with orangish brown to greenish gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of more competent (completely weathered) rock increasing with depth; trace lenses of silt/clay interbedded within the sand/saprolite; brittle upper coarse to lower gravel sized rock fragments included; micaceous | | | |
| 20 | | - SP: light gray/white grading to med gray with orangish brown to dark gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; angular to subangular grains | | ← Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 25 | | | | | |
| 30 | | - SP: light gray to med gray, damp, loose, no plasticity, upper fine to lower medium grain, *saprolite*, increasing in gravel sized rock fragments (completely weathered, very brittle) | | | |
| 35 | | | | | |
| 40 | | - SP: medium gray to light gray, damp, loose, no plasticity, upper fine to upper coarse grain, *saprolite*, noncohesive; completely weathered to residual soil with zones of more competent but brittle rock fragments; angular grains; micaceous | 742.1 | | |

*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-5I**
PAGE 2 OF 2
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA |
|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad |
| | | (CONTINUED) | | ELEV. (DEPTH) |
| | | **Partially Weathered Rock** | 741.1 | 741.8 (40.3) |
| | | - light gray, Pulverized Rock (powder) due to sonic drilling; no describable sample | | Annular Seal: 3/8 Hole Plug (medium bentonite chips) |
| | | **Biotite Gneiss** | | 737.6 |
| 45 | | - light brown to light gray to white, upper fine to upper medium grain, medium hard to soft, moderately weathered, banded, quartz, biotite, muscovite, plagioclase, hornblende, trace chlorite; low to moderate angled fractures; no visible healing/fracture fill | | Filter: 20/30 Silica Sand (44.5) |
| | | | | 735.9 (46.2) |
| | | | | **Well: 2" OD PVC (SCH 40)** |
| 50 | | - Biotite Gneiss: light gray to medium gray, upper fine to upper medium grain, medium hard to hard, moderately weathered, banded, quartz, biotite, muscovite, plagioclase, hornblende, trace chlorite; increase in mafic minerals; orangish brown staining visible in zones; low to moderate angled fractures visible; no visible healing/fracture fill; slight schistose foliation observed in zones | | Screen: 10 ft; pre-pack |
| 55 | | | | 725.9 |
| | | | 725.6 | Sump:0.30 ft. 725.6 |
| | | Bottom of borehole at 56.5 feet. | | |

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-5D**
PAGE 1 OF 3
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/11/2014 **COMPLETED** 5/21/2014 **SURF. ELEV.** 781.9 **COORDINATES:** N:1,254,396.67 E:2,076,223,63
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 126.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 6.84 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 784.53

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| | | | | ← Surface Seal: concrete | 779.9 (2.0) |
| 5 | | **Silty Sand (SM)** - brown, dry, medium dense, no plasticity, upper fine to lower medium grain, noncohesive; trace organics; angular to sub angular grains - SM: brown, dry, medium dense, no plasticity, upper fine to lower medium grain, slight increase in clay content with depth; cohesive (slight); trace mica; trace coarse grains | 776.9 | | |
| 10 | | **Poorly-graded Sand (SP)** - light gray to off white, dry, very loose, no plasticity, upper fine to upper medium grain, noncohesive; upper coarse to coarse gravel sized weathered rock fragments; angular to subangular grains; angular rock fragments | | | |
| 15 | | - SP: med gray to tan to light gray /white with orangish brown to greenish gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of more competent (completely weathered) rock increasing with depth; trace lenses of silt/clay interbedded within the sand/saprolite; brittle upper coarse to lower gravel sized rock fragments included; micaceous | | | |
| 20 | | - SP: light gray/white grading to med gray with orangish brown to dark gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; angular to subangular grains | | Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 25 | | | | | |
| 30 | | - SP: light gray to med gray, damp, loose, no plasticity, upper fine to lower medium grain, *saprolite*, increasing in gravel sized rock fragments (completely weathered, very brittle) | | | |
| 35 | | | | ← | |
| 40 | | - SP: medium gray to light gray, damp, loose, no plasticity, upper fine to upper coarse grain, *saprolite*, noncohesive; completely weathered to residual soil with zones of more competent but brittle rock fragments; angular grains; micaceous | 742.1 | | |

*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

DEPTH (ft) | GRAPHIC LOG

## STRATA DESCRIPTION

ELEV.

**Biotite Gneiss**

- light gray to white with light brown to tan staining, lower fine to upper fine grain, medium hard to soft, slightly to moderately weathered, banded, quartz, biotite, plagioclase, muscovite, hornblende, trace chlorite; low angle fracturing visible; 1-2 mm to 6-8 mm thick quartz fracture fill; moderate to partial healing; visible weathering characteristics include staining/discoloration and some mineral decomposition

- Biotite Gneiss: light gray to white with light brown to tan staining, lower fine to upper fine grain, medium hard, moderately weathered, banded, quartz, biotite, plagioclase, muscovite, hornblende, trace chlorite; low to moderate angle fracturing visible; some quartz fracture fill visible; partial to no visible healing

- Interlayered/Alternating Biotite Gneiss and Mica Schist: alternating dark gray and white bands (Gneiss) interlayered with thin (1-2 mm to 5-6 mm) dark gray to greenish gray (Schist), upper fine to lower medium grain, medium hard to hard, not weathered, banded, slight schistose foliation associated with the interlayered mica schist, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite, trace chlorite; primarily low to moderate angled fracturing observed, difficult to distinguish between natural and mechanical fractures; no fracture healing visible; fracturing tends to occur along thinly interlayered zones of schist

- Interlayered/Alternating Biotite Gneiss and Mica Schist: alternating dark gray and white bands (Gneiss) interlayered with thin (1-2 mm to 5-6 mm) dark gray to greenish gray (Schist), upper fine to lower medium grain, medium hard to hard, not weathered, banded, slight schistose foliation associated with the interlayered mica schist, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite, trace chlorite; primarily low to moderate angled fracturing observed; no to partial healing visible; fracturing tends to occur along thinly interlayered zones of schist; @ approx. 66' and 74', 90-120 mm thick zones of white, localized, coarse grained plagioclase feldspar and quartz (Granulite? unclassified metamorphic) with thinly interlayered mica schist; no banding visible in the plagioclase/quartz zone; trace augen plagioclase surrounded by flaky/bladed habit biotite and muscovite, around the zones associated with the coarse grain plagioclase

- Interlayered/Alternating Biotite Gneiss and Mica Schist: alternating dark gray and white bands (Gneiss) interlayered with thin (1-2 mm to 5-6 mm) dark gray to greenish gray (Schist), upper fine to lower medium grain, medium hard to hard, not to slightly weathered, banded, slight schistose foliation associated with the interlayered mica schist, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite, trace chlorite; primarily low to moderate angled fracturing observed; no to partial healing visible; highly fractured (rubble zone) @ approx. 84-86' with some discoloration/staining

- Biotite Gneiss: light gray to white with dark gray to med gray bands, lower medium to upper medium with zones of lower coarse to trace

*(Continued Next Page)*

## WELL DATA

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

ELEV. (DEPTH)

(CONTINUED)

Annular Fill: 90/10 Portland Cement/Bentonite Powder

712.2
(69.7)

Annular Seal: 3/8 Hole Plug (medium bentonite chips)

707.7
(74.2)

Filter: 20/30 Silica Sand

705.7
(76.2)

Screen: 50 ft; 0.01" slotted

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-5D**

ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. |
|---|---|---|---|
| 90 | | upper coarse grain, medium hard to hard, not weathered, banded, trace schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite; decrease to trace interlayered dark gray to greenish gray mica schist; low to moderate angled fractures, no visible healing/ fracture fill<br>**Biotite Gneiss***(Con't)* | |
| 95 | | | 685.9 |
| 100 | | **Interlayered/Alternating Unclassified Metamorphic and Biotite Gneiss**<br>- white to light gray, lower medium (gneiss) to lower coarse to upper coarse (unclassified metamorphic) grain, hard, not weathered, no banding visible, quartz, plagioclase, biotite, muscovite, hornblende, pyrite; white, coarse grained plagioclase with thin inclusions of porphyroblastic biotite, muscovite crystals in alternating layers; low to moderate angled fractures, no visible healing/ fracture fill; difficult to distinguish between natural and mechanical fractures due to sonic drilling | |
| 105 | | | 675.9 |
| 110 | | **Biotite Gneiss**<br>- alternating light gray and dark gray, lower medium to upper medium with trace lower coarse grain, medium hard to hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite; @ approx. 114-116', highly fractured (rubble zone -no visible weathering or healing/fracture fill) of greenish gray to dark gray to medium gray alternating schist and gneiss; low angled fractures visible; no visible healing/fracture fill | |
| 115 | | - Biotite Gneiss: alternating light gray and dark gray, lower medium to upper medium with trace lower coarse grain, medium hard to hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite; low angled fractures visible; no visible healing/fracture fill | |
| 120 | | | |
| 125 | | - Biotite Gneiss: alternating light gray and dark gray, lower medium to upper medium with trace lower coarse grain, medium hard to hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende, trace pyrite; low angled fractures visible; no visible healing/fracture fill | 655.4 |

Bottom of borehole at 126.5 feet.

**WELL DATA**

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

(CONTINUED) ELEV. (DEPTH)

Screen: 50 ft; 0.01" slotted
**Well: 2" OD PVC (SCH 40)**

655.7
Sump:0.30 ft. 655.4

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 18:56 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING

**BORING YGWA-17S**
PAGE 1 OF 1
ECS37967

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/10/2015 **COMPLETED** 9/10/2015 **SURF. ELEV.** 780.2 **COORDINATES:** N:1,257,602.79 E:2,076,758.31
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 37 ft. **GROUND WATER DEPTH: DURING** 15 ft. **COMP.** 20 ft. **DELAYED** 10.3 ft. after 24 hrs.
**NOTES** Top of casing elev: 783.05

| DEPTH (ft) | MATERIAL DESCRIPTION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|
| | **Silty Sand (SM)** | | | Completion: protective aluminum cover with bollards; 4-foot square concrete pad |
| | - very pale brown (10YR 7/3) dry, fine to coarse-grained, with mica | | | Surface Seal: concrete |
| 5 | - mottled very pale brown (10YR 7/3) and white (10YR 8/1) | | | |
| | - pale brown (10YR 6/3) | | | |
| 10 | - brownish yellow (10YR 6/8) | | | Annular Fill: cement-bentonite grout |
| | - light reddish brown (2.5YR 7/3) thin banding | | | |
| 15 | - white (10YR 8/1) wet, massive feldspar and quartz seam | | | |
| | - light reddish brown (2.5YR 7/3) | | | |
| | - light reddish brown (2.5YR 7/4) wet | | | |
| 20 | - mottled pale yellow (2.5Y 8/3) and white / yellowish gray (5Y 8/1) | | | Annular Seal: bentonite pellets |
| 25 | | | | Filter: silica filter sand |
| 30 | - grayish brown (2.5Y 5/2) saprolite | | | **Standpipe: 2" OD PVC (SCH 40)** |
| | - banded pale yellow (2.5Y 7/3) and white / yellowish gray (5Y 8/1) | | | Screen: 10 ft; pre-pack |
| 35 | | | | |
| | Bottom of borehole at 37.0 feet. | | | Sump:0.299999999999997 ft. |
| 40 | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:03 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETERS\YATES 2015 PZS.GPJ

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING

**BORING YGWA-18S**
PAGE 1 OF 1
ECS37967

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/4/2015 **COMPLETED** 9/8/2015 **SURF. ELEV.** 787.6 **COORDINATES:** N:1,257,116.05 E: 2,077,015.25
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 37 ft. **GROUND WATER DEPTH: DURING** 18 ft. **COMP.** 19 ft. **DELAYED** 18.5 ft. after 24 hrs.
**NOTES** Top of casing elev: 790.57

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| | | **Clayey Sand (SC)**<br>- yellowish red (5YR 5/8) dry, no, fine to medium-grained | | | | Completion:<br>protective aluminum cover with bollards;<br>4-foot square concrete pad |
| 5 | | - with mica | | | | Surface Seal:<br>concrete |
| | | **Silty Sand (SM)**<br>- mottled reddish yellow (7.5YR 6/8) and very pale brown (10YR 8/4) dry, fine to medium-grained, with mica | | | | |
| 10 | | - mottled pale yellow (2.5Y 7/4) and very pale brown / very pale orange (10YR 8/2) dry | | | | Annular Fill:<br>cement-bentonite grout |
| 15 | | - moist<br>- saprolite | | | | |
| | | - banded light yellowish brown (2.5Y 6/3) and white (N9) moist, fine to coarse-grained | | | | |
| 20 | | - pale olive (5Y 6/3) very moist, fine to medium-grained<br>- mottled light yellowish brown (2.5Y 6/3) and dark olive brown (2.5Y 3/3)<br>- mottled pale olive (5Y 6/3), dark olive brown (2.5Y 3/3) and white (N9) | | | | |
| 25 | | - wet | | | | Annular Seal:<br>bentonite pellets<br>Filter:<br>silica filter sand |
| | | - wet | | | | |
| | | **Clayey Silty Sand (SC-SM)**<br>- pale olive / dusky yellow (5Y 6/4) saturated, fine to coarse-grained, with mica | | | | |
| 30 | | - mottled olive / moderate olive brown (5Y 4/4) and white (N9) | | | | **Standpipe:**<br>**2" OD PVC (SCH 40)** |
| | | - pale yellow (5Y 8/2) | | | | Screen:<br>10 ft; pre-pack |
| 35 | | - banded olive brown (2.5Y 4/4) and white (N9)<br>- regolith<br>- mottled pale yellow (5Y 7/3) and pale yellow (2.5Y 8/2) wet | | | | Sump:0.299999999999997 ft. |
| | | Bottom of borehole at 37.0 feet. | | | | |
| 40 | | | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:03 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETERS\YATES 2015 PZS.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING

**BORING YGWA-18I**
PAGE 1 OF 2
ECS37967

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/3/2015 **COMPLETED** 9/8/2015 **SURF. ELEV.** 787.9 **COORDINATES:** N:1,257,090.05 E: 2,077,015.82
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 77 ft. **GROUND WATER DEPTH: DURING** **COMP.** 19 ft. **DELAYED** 18.5 ft. after 24 hrs.
**NOTES** Top of casing elev: 790.57

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| | | **Clayey Sand (SC)**<br>- olive / light olive brown (5Y 5/6) moist, fine to coarse-grained | | | | Completion: protective aluminum cover with bollards; 4-foot square concrete pad<br>Surface Seal: concrete |
| 5 | | **Silty Sand (SM)**<br>- mottled strong brown (7.5YR 5/6) and very pale brown / grayish orange (10YR 7/4) dry, fine to coarse-grained, with mica | | | | |
| | | - pale yellow (2.5Y 8/3) dry, some residual quartz gravel | | | | |
| 10 | | - pale yellow (2.5Y 7/3) | | | | |
| 15 | | - mottled pale yellow (2.5Y 7/3) and yellow (2.5Y 7/6) | | | | |
| | | - mottled light brownish gray (2.5Y 6/2) and light gray (2.5Y 7/1) damp | | | | |
| 20 | | **Clayey Silty Sand (SC-SM)**<br>- mottled pale yellow (2.5Y 7/4) and white / yellowish gray (5Y 8/1) wet, fine to coarse-grained, massive white quartz+feldspar (completely weathered), with mica<br>- mottled pale yellow (2.5Y 7/3) and white (2.5Y 8/1) | | | | Annular Fill: cement-bentonite grout |
| 25 | | - white / yellowish gray (5Y 8/1) fine to coarse-grained, massive white quartz+feldspar (completely weathered), with mica<br>- pale olive (5Y 6/3) | | | | |
| 30 | | - banded light olive gray (5Y 6/2) and white (2.5Y 8/1) wet, fine to coarse-grained, with mica | | | | |
| | | - banded light yellowish brown (2.5Y 6/3) and white (2.5Y 8/1) | | | | |
| 35 | | - saprolite | | | | |
| 40 | | - mottled light gray (2.5Y 7/2) and white (2.5Y 8/1) wet, fine to coarse-grained | | | | |

*(Continued Next Page)*

**BORING YGWA-18I**
**PAGE 2 OF 2**
**ECS37967**

# LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| | | **Clayey Silty Sand (SC-SM)** *(Con't)*<br>- mottled light gray (2.5Y 7/2) and white / yellowish gray (5Y 8/1) massive quartz+feldspar | | | | Completion:<br>protective aluminum cover with bollards; 4-foot square concrete pad<br>(CONTINUED) |
| 45 | | - mottled dark yellowish brown (10YR 4/6) and very dark gray (10YR 3/1) weathered schist seam<br>- mottled light gray (2.5Y 7/2) and white (2.5Y 8/1) | | | | |
| | | **Silty Sand (SM)**<br>- brown (10YR 5/3) wet, cohesive, fine to coarse-grained | | | | |
| 50 | | **Grantic gneiss**<br>- transition zone, quartz, interbedded with mica schist<br>- pale yellow (2.5Y 7/3) slightly to completely weathered, with gravelly silty sand (weathered zones)<br>- dark yellowish brown (10YR 4/6) and pale yellow (2.5Y 7/3) fine to coarse grain, medium hard, slightly to completely weathered | | | | Annular Fill:<br>cement-bentonite grout |
| 55 | | | | | | |
| | | - yellowish brown (10YR 5/6) and very dark greenish gray (10G 3/1) coarse grain, soft to medium hard, highly weathered, thinly foliated, moderately fractured, fractures sub-horizontal, separates at foliation planes, feldspar, quartz, mica, water stained<br>- dark greenish gray (10BG 4/1) and light bluish gray (5PB 7/1) slightly weathered<br>- yellowish brown (10YR 5/6) and very dark gray (10YR 3/1) highly weathered | | | | |
| 60 | | | | | | |
| 65 | | - highly weathered, water stained | | | | Annular Seal:<br>bentonite pellets<br>Filter:<br>silica filter sand |
| | | - grayish brown (10YR 5/2) and black (5Y 2.5/1) coarse grain, moderately weathered, thinly foliated, moderately fractured, fractures sub-horizontal<br>- brownish yellow (10YR 6/8) and white (10R 8/1)<br>- white (10R 8/1) massive feldspar and quartz seam | | | | **Standpipe:**<br>**2" OD PVC (SCH 40)**<br>Screen:<br>10 ft; pre-pack |
| 70 | | | | | | |
| 75 | | - grayish brown (10YR 5/2) and white (10R 8/1) massive quartzite seam<br>- thinly foliated<br>- bluish gray (5PB 6/1) and white (10R 8/1) not weathered, fresh competent rock | | | | Sump:0.299999999999997 ft. |
| | | Bottom of borehole at 77.0 feet. | | | | |
| 80 | | | | | | |
| 85 | | | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:03 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETER\YATES 2015 PZS.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING

**BORING YGWA-20S**
PAGE 1 OF 1
ECS37967

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/28/2015 **COMPLETED** 9/29/2015 **SURF. ELEV.** 764.6 **COORDINATES:** N:1,255,531.55 E: 2,077,410.37
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 27 ft. **GROUND WATER DEPTH: DURING** 7 ft. **COMP.** 6.5 ft. **DELAYED** 6.5 ft. after 24 hrs.
**NOTES** Top of casing elev: 767.12

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| 0 | | **Clayey Silty Sand (SC-SM)**<br>- dark grayish brown (2.5Y 4/2) wet, fine grained<br>- very pale brown (10YR 7/3) and yellowish brown / moderate yellowish brown (10YR 5/4) fine to coarse-grained, with quartzite gravel | | | | Completion: protective aluminum cover with bollards; 4-foot square concrete pad<br>Surface Seal: concrete |
| 5 | | - mottled very pale brown (10YR 7/3) and reddish yellow (7.5YR 7/8) moist<br>- moist | | | | Annular Fill: cement-bentonite grout |
| 10 | | - mottled light yellowish brown (2.5Y 6/3) and pale yellow (2.5Y 8/3) very moist, fine to coarse grained<br>- dark grayish brown / dark yellowish brown (10YR 4/2)<br>- mottled brownish yellow / dark yellowish orange (10YR 6/6) and white (10YR 8/1) | | | | |
| 15 | | | | | | Annular Seal: bentonite pellets<br>Filter: silica filter sand |
| 20 | | **Silty Sand (SM)**<br>- mottled brownish yellow / dark yellowish orange (10YR 6/6) and white (10YR 8/1) saprolite wet, fine to coarse-grained<br>- light yellowish brown (2.5Y 6/3), pale yellow (2.5Y 8/2) and white (2.5Y 8/1) | | | | **Standpipe: 2" OD PVC (SCH 40)**<br>Screen: 10 ft; pre-pack |
| 25 | | **Clayey Silty Sand (SC-SM)**<br>- mottled white (2.5Y 8/1) and pinkish white (5YR 8/2) moist, massive weathered feldspar and quartzite | | | | Sump:0.300000000000001 ft. |
| 30 | | Bottom of borehole at 27.0 feet. | | | | |
| 35 | | | | | | |
| 40 | | | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:04 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETERS\YATES 2015 PZS.GPJ

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING

**BORING YGWA-21I**
PAGE 1 OF 2
ECS37967

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/23/2015 **COMPLETED** 9/28/2015 **SURF. ELEV.** 780.8 **COORDINATES:** N:1,255,538.27 E: 2,076,768.14
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 77 ft. **GROUND WATER DEPTH: DURING** **COMP.** 24 ft. **DELAYED** 24 ft. after 48 hrs.
**NOTES** Top of casing elev: 783.7

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| | | **Clayey Sand (SC)**<br>- mottled strong brown (7.5YR 5/6) and yellowish red / light brown (5YR 5/6) dry, fine to coarse-grained, mica | | | | Completion:<br>protective aluminum cover with bollards;<br>4-foot square concrete pad<br>Surface Seal:<br>concrete |
| | | **Silty Sand (SM)**<br>- reddish yellow (7.5YR 6/8) soil fine to coarse-grained | | | | |
| 5 | | **Well-graded Sand (SW)**<br>- very pale brown (10YR 7/3) fine to coarse-grained, mica, gravel (residual rock) | | | | |
| | | **Poorly-graded Sand with Silt (SP-SM)**<br>- pale yellow (2.5Y 8/3) and pale yellow (2.5Y 8/2) dry | | | | |
| 10 | | - fine to medium-grained<br>- yellow (2.5Y 7/6) | | | | |
| 15 | | **Silty Sand (SM)**<br>- mottled yellow (2.5Y 7/6), white (2.5Y 8/1) and olive brown (2.5Y 4/4) saprolite weathered schist, feldsapr, quartz, fine to coarse-grained | | | | |
| | | **Poorly-graded Sand with Silt (SP-SM)**<br>- mottled white (2.5Y 8/1) and yellowish brown / moderate yellowish brown (10YR 5/4) dry, fine to medium-grained | | | | |
| 20 | | - highly decomposed granitic gneiss interbedded with biotite schist<br>- mottled olive brown (2.5Y 4/3) and white (2.5Y 8/1) | | | | Annular Fill:<br>cement-bentonite grout |
| 25 | | ▼<br>- yellowish brown / moderate yellowish brown (10YR 5/4) | | | | |
| | | - mottled light olive brown (2.5Y 5/4) and pale yellow (2.5Y 8/3) moist, highly decomposed mica scist | | | | |
| 30 | | - mottled white (2.5Y 8/1) and pale brown (10YR 6/3) dry, highly decomposed granitic gneiss, feldspar quartz, mica | | | | |
| 35 | | **Well-graded Sand (SW)**<br>- mottled brown (10YR 4/3) and pale yellow (2.5Y 8/2) moist, fine to coarse grained, mica, quartz | | | | |
| | | - Granitic gneiss interbedded with biotite gneiss: mottled light gray (2.5Y 7/2) and white (2.5Y 8/1) | | | | |
| 40 | | - Bedrock transition zone | | | | |

*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|---|
| | | *(Con't)* | | | | Completion: protective aluminum cover with bollards; 4-foot square concrete pad |
| | | - white (2.5Y 8/1) and dark grayish brown (2.5Y 4/2) coarse grain, soft to hard, slightly to moderately weathered, medium to thick foliation, banded, moderately fractured (veritcal to sub-vertical) | | | | (CONTINUED) |
| 45 | | | | | | |
| | | - white (2.5Y 8/1), dark grayish brown (2.5Y 4/2) and pale yellow (2.5Y 7/3) coarse grain, soft to hard, not to highly weathered, medium to thick foliation, banded, noderately fractured (near vertical), biotite gneiss | | | | Annular Fill: cement-bentonite grout |
| 50 | | | | | | |
| 55 | | | | | | |
| | | - gray (2.5Y 6/1), dark gray (2.5Y 4/1) and white (2.5Y 8/1) coarse grain, not to highly weathered, thin to medium foliation, moderately fractured (vertical to sub-vertical), pyrite, biotite, feldspar, quartz<br>- pale yellow / grayish yellow (5Y 8/4) | | | | |
| 60 | | | | | | |
| 65 | | | | | | Annular Seal: bentonite pellets<br>Filter: silica filter sand |
| | | - very dark gray (2.5Y 3/1) and white (2.5Y 8/1) coarse grain, not to slightly weathered, thin to medium foliation, moderately fractured (vertical to sub-vertical) | | | | |
| 70 | | | | | | **Standpipe: 2" OD PVC (SCH 40)**<br>Screen: 10 ft; pre-pack |
| 75 | | | | | | |
| | | Bottom of borehole at 77.0 feet. | | | | Sump:0.299999999999997 ft. |
| 80 | | | | | | |
| 85 | | | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:04 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETER\YATES 2015 PZS.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWA-40/PZ-40

SHEET 1 of 1

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 46.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/6/16
DATE COMPLETED: 7/7/16

NORTHING: 1,255,791.95
EASTING: 2,073,431.34
GS ELEVATION: 813.5
TOC ELEVATION: 815.73 ft

DEPTH W.L.: 23.1 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|
| 0 | 813.5 | 0.00 - 2.00<br>sandy SILT, fine to medium sand, reddish brown, low plastic | SM | 811.5 / 2.00 | 1 | | 6.00 / 6.00 |
| 5 | 810 | 2.00 - 6.00<br>fine to medium sand, light orange brown, micaceous, dry, loose | | 807.5 / 6.00 | | | |
| 10 | 805 | 6.00 - 16.00<br>fine to coarse sand, low plastic silt, some gravel, brown grey to grey, corasening downward, relict laminations, more dense with depth, saprolitic, dry | | 797.5 / 16.00 | 2 | | 12.00 / 10.00 |
| 15 | 800 | 16.00 - 17.00<br>coarse, competent | | 796.5 / 17.00 | 3 | | 3.00 / 3.00 |
| 20 | 795 | 17.00 - 19.00<br>transitionally weathered rock - highly weathered GNEISS, red, white, dark brown | PWR | 794.5 / 19.00 | 4 | | 7.00 / 7.00 |
| 25 | 790 | 19.00 - 36.00<br>highly weathered biotite GNEISS, oxidized staining | | | | | |
| 30 | 785 | | | | 5 | | 10.00 / 10.00 |
| 35 | 780 | | | 777.5 / 36.00 | | | |
| 40 | 775 | 36.00 - 46.00<br>bedrock - biotite GNEISS, some weathering, trace pyrite | GNEISS | | 6 | | 9.00 / 10.00 |
| 45 | 770 | | | 767.5 | | | |
| 50 | 765 | Boring completed at 46.00 ft | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1; Bentonite Pellets and Chips; 0.010" Slotted Screen; #1 Type Sand; Sump

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-35.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 35.5'-45.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010" Slotted Screen
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 32.5'-46.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 27.0'-32.5
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-27.0'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Adam M.

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWA-39/PZ-39

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 66.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/6/16
DATE COMPLETED: 7/7/16

NORTHING: 1,255,717.13
EASTING: 2,073,865.58
GS ELEVATION: 815.6
TOC ELEVATION: 818.19 ft

DEPTH W.L.: 19.15 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|
| 0 | 815 | 0.00 - 0.40<br>topsoil | TOPSOIL | 0.40 | | | |
| | | 0.40 - 7.00<br>poorly sorted SAND with SILT, trace gravel, tan, mica fragments, dry, firm | SP-SM | | 1 | | 7.00 / 7.00 |
| 5 | 810 | | | 808.6 | | | |
| | | 7.00 - 17.00<br>some silt, tan, dry, firm | | 7.00 | 2 | | 10.00 / 10.00 |
| 10 | 805 | | | | | | |
| 15 | 800 | | | 798.6 | | | |
| | | 17.00 - 19.00<br>silty SAND, non-plastic fines, orange tan, micaceous, cohesive, firm | SM | 17.00<br>796.6 | 3 | | 4.00 / 4.00 |
| 20 | 795 | 19.00 - 21.00<br>poorly graded SAND with SILT, non-plastic fines, moist, firm | SP-SM | 19.00<br>794.6 | | | |
| | | 21.00 - 24.00<br>silty SAND, 15-20% fines, orange tan with iron staining, wet (saprolite) | SM | 21.00<br>791.6 | 4 | | 6.00 / 6.00 |
| 25 | 790 | 24.00 - 29.00<br>SAND to silty SAND, some fines, mica, orange tan to tan, severely weathered fragements, dry to moist (saprolite) | SP-SM | 24.00<br>786.6 | | | |
| 30 | 785 | 29.00 - 32.00<br>transitionally weathered rock - sand, some gravel, tan, rock seams, iron staining | PWR | 29.00<br>783.6 | 5 | | 3.80 / 6.00 |
| | | 32.00 - 33.00<br>pulverized GNEISS, tan | | 32.00<br>782.6 | | | |
| 35 | 780 | 33.00 - 37.00<br>bedrock - biotite GNEISS, fresh to medium weathered, medium strong to extremely strong, iron stains and deposits | GNEISS | 33.00<br>778.6 | 6 | | 4.00 / 4.00 |
| | | 37.00 - 39.00<br>biotite GNEISS, severely weathered, iron staining and deposits | | 37.00<br>776.6 | | | |
| 40 | 775 | 39.00 - 43.00<br>biotite GNEISS, severely weathered,sand layers noted iron staining and deposits | | 39.00<br>772.6 | | | |
| | | 43.00 - 47.00<br>biotite GNEISS, severely weathered, iron staining and deposits | | 43.00<br>768.6 | | | |
| 45 | 770 | 47.00 - 57.00<br>biotite GNEISS, fresh to slightly weathered, medium strong to extremely strong | | 47.00 | 7 | | 7.00 / 10.00 |
| 50 | | Log continued on next page | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1; 1/2"

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-55.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 55.5'-65.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010" Slotted Screen
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 52.5'-66.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 47.5'-52.5'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-47.5'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWA-39/PZ-39

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 66.00 ft
LOCATION: Newnan, GA

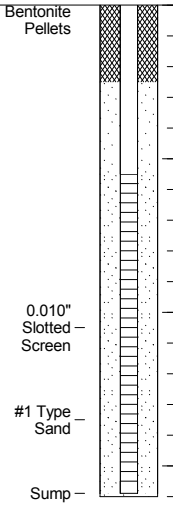
DRILL RIG: Sonic PS-150
DATE STARTED: 7/6/16
DATE COMPLETED: 7/7/16

NORTHING: 1,255,791.95
EASTING: 2,073,431.34
GS ELEVATION: 815.6
TOC ELEVATION: 818.19 ft

DEPTH W.L.: 19.15 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 50 | 765 | 47.00 - 57.00<br>biotite GNEISS, fresh to slightly weathered, medium strong to extremely strong *(Continued)* | | | | 7 | | 7.00 / 10.00 |
| 55 | 760 | | | | 758.6 | | | |
| | | 57.00 - 66.00<br>bitite GNEISS, fresh to moderately weathered, discoloration, iron stains, medium strong to extremely strong | | | 57.00 | 8 | | 5.00 / 9.00 |
| 60 | 755 | | | | | | | |
| 65 | 750 | | | | 749.6 | | | |
| | | Boring completed at 66.00 ft | | | | | | |
| 70 | 745 | | | | | | | |
| 75 | 740 | | | | | | | |
| 80 | 735 | | | | | | | |
| 85 | 730 | | | | | | | |
| 90 | 725 | | | | | | | |
| 95 | 720 | | | | | | | |
| 100 | | | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES




WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-55.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 55.5'-65.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010" Slotted Screen
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 52.5'-66.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 47.5'-52.5'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-47.5'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

**BORING YGWC-23S**
PAGE 1 OF 1
ECS37967

SOUTHERN COMPANY

# LOG OF TEST BORING

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** CCR Piezometers
**LOCATION** Plant Yates

**DATE STARTED** 9/18/2015 **COMPLETED** 9/21/2015 **SURF. ELEV.** 762.0 **COORDINATES:** N:33.451710 E:-84.894029
**CONTRACTOR** Cascade **EQUIPMENT** **METHOD** Rotosonic
**DRILLED BY** L. Yancey **LOGGED BY** W. Shaughnessy **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 36 ft. **GROUND WATER DEPTH: DURING** 16 ft. **COMP.** 12.8 ft. **DELAYED** 12.6 ft. after 24 hrs.
**NOTES**

| DEPTH (ft) | MATERIAL DESCRIPTION | ELEVATION | HCL REACTION (Weak / Moderate / Strong) | GROUNDWATER OBSERVATIONS | WELL DATA |
|---|---|---|---|---|---|
| | **Clayey Sand (SC)** | | | | Completion: protective aluminum cover with bollards; 4-foot square concrete pad |
| | - red (2.5YR 4/6) damp, fine to coarse-grained, with mica | | | | Surface Seal: concrete |
| 5 | - mottled red (2.5YR 4/6) and reddish yellow (5YR 6/8) | | | | |
| | **Silty Sand (SM)** | | | | |
| | - mottled red (2.5YR 4/6) and reddish yellow (5YR 6/8) damp, fine to coarse-grained, with mica | | | | |
| 10 | | | | | Annular Fill: cement-bentonite grout |
| | - saprolite | | | | |
| | - mottled dark brown (7.5YR 3/3), light yellowish brown (10YR 6/4) and black (10YR 2/1) damp | | | | |
| 15 | | | | | |
| | | | | | |
| 20 | - mottled brownish yellow (10YR 6/8) and white (2.5Y 8/1) wet | | | | |
| | - mottled brown (10YR 4/3) and white (2.5Y 8/1) | | | | |
| | **Clayey Sand (SC)** | | | | |
| | - mottled brown (10YR 4/3) and white (2.5Y 8/1) wet, fine to medium-grained | | | | Annular Seal: bentonite pellets |
| | **Silty Sand (SM)** | | | | Filter: silica filter sand |
| 25 | - mottled light olive brown (2.5Y 5/4) and white (2.5Y 8/1) dry, fine to coarse-grained, massive weathered feldspar and quartizite | | | | |
| | - mottled yellowish brown (10YR 5/6) and white (2.5Y 8/1) | | | | |
| | - yellowish brown (10YR 5/8) | | | | |
| 30 | | | | | **Standpipe: 2" OD PVC (SCH 40)** Screen: 10 ft; pre-pack |
| | - mottled strong brown (7.5YR 5/6) and very pale brown / very pale orange (10YR 8/2) | | | | |
| | - pale brown (10YR 6/3) damp | | | | |
| 35 | | | | | Sump:0.299999999999997 ft. |
| | Bottom of borehole at 36.0 feet. | | | | |
| 40 | | | | | |

SIMPLE GEOLOGY WITH WELL - ESEE DATABASE.GDT - 11/15/15 12:04 - \\ALTRCFP01\WSHAUGNE$\DESKTOP\PLANTS PROJECTS\GEORGIA POWER\YATES\2015 PIEZOMETERS\YATES 2015 PZS.GPJ

ARCADIS Design & Consultancy for natural and built assets

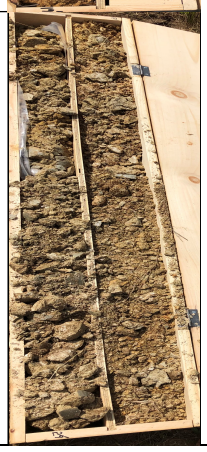
# Boring Log/Well Construction Log

Boring No.: YGWC-24SA

Sheet: 1 of 2

Project Name: Plant Yates
Project Number: 30055278
Project Location: Newnan, GA

Date Started: 06/03/2020
Date Completed: 06/04/2020
Logger: Clement Papafio
Editor: Grant Willford
Weather Conditions: -

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Construction Details | Well |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | |
| 1 | | | | | | | (0.0-13.0') No recovery. Hydrovac to 13.0 ft bgs for borehole clearance. | Surface completion consists of a locking monument 3.00' above ground surface with a weep hole, vent hole in well casing, pea gravel between well monument and well casing, 4'x4'x4" concrete pad, and four concrete bollards. | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | |  | | | (13.0-16.0') Silty sand (SM); pale brown (10YR 8/3) mottled with white (10YR 8/1); fine grained sand to medium grained sand; very loose; mics present; weathered quartz vein present; saprolitic; moist. | Portland Cement with 6% Bentonite. 2 inch diameter schedule 40 PVC riser. | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | (16.0-19.0') Silty sand (SM); brownish yellow (10YR 6/8); trace clay; loose; slight plasticity; mica present; moist. | | |
| 18 | | | | | | | | | |
| 19 | | | | | | | | | |
| 20 | | | |  | | | (19.0-29.0') Silty sand (SM); brownish yellow (10YR 6/8); fine grained to medium grained sand; mica present; weathered quartz vein present; oxidised iron present; saprolitic; dry. | | |
| 21 | | | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | | | | | | | | | |
| 29 | | | | | | | | | |

Drilling Co.: Cascade Drilling
Driller: Ike Young
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; NA = not applicable / available.

Sampling Method: Core Barrel
Sampling Interval: Continous
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 762.00
North Coor: 1258907.98
East Coor: 2073924.81

MPC BORING LOGS TO GINT L C:\USERS\GWILLFORD\DESKTOP\FOR NIKKI\GINT FILES\MPC BORING LOGS PASF P.GPJ ARCADIS.GDT 7/17/20

ARCADIS Design & Consultancy for natural and built assets

# Boring Log/Well Construction Log

Boring No.: YGWC-24SA

Sheet: 2 of 2

Project Name: Plant Yates
Project Number: 30055278
Project Location: Newnan, GA

Date Started: 06/03/2020
Date Completed: 06/04/2020

Logger: Clement Papafio
Editor: Grant Willford
Weather Conditions: -

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Construction Details | Well |
|---|---|---|---|---|---|---|---|---|---|
| 30–39 | | | |  | | | (29.0-39.0') Silty sand (SM); yellowish brown (10YR 5/8); fine grained to medium grained sand; loose to medium dense; mica present; feldspars present.<br><br>(34.0-36.0') Color change to dark brown (10YR 3/3); medium dense; dry.<br><br>(36.0-39.0') Color change to white (10YR 8/1); oxidised iron present.<br>(37.0-37.5') Weathered quartz vein. | Portland Cement with 6% Bentonite. 2 inch diameter schedule 40 PVC riser. | |
| 40–49 | | | |  | | | (39.0-49.0') Silty sand (SM); mottled pale brown (10YR 6/3) with yellow (10YR 8/8/); mica present; wet.<br><br>(41.0-49.0') Color change to yellowish brown (10YR 5/8); quartz seam present; moist. | Bentonite seal.<br><br>Filter pack: #1A (12-40) sand. | |
| 50–54 | | | |  | | | (49.0-54.0') Silty sand (SM); light olive gray (5Y 6/2); fine grained to coarse grained sand; loose; mica present; weathered quartz vein present; wet. | 2 inch diameter Sch. 40 PVC U-Pack dual wall 0.010-inch slotted screen . | |
| 55–62 | | | | | | | End of boring 54.0 ft bgs. | | |

Remarks:

ARCADIS Design & Consultancy for natural and built assets

# Soil Boring Log

Boring No.: YGWC-36A

Sheet: 1 of 2

Project Name: Yates
Project Number: 30061098
Project Location: Newnan, Georgia

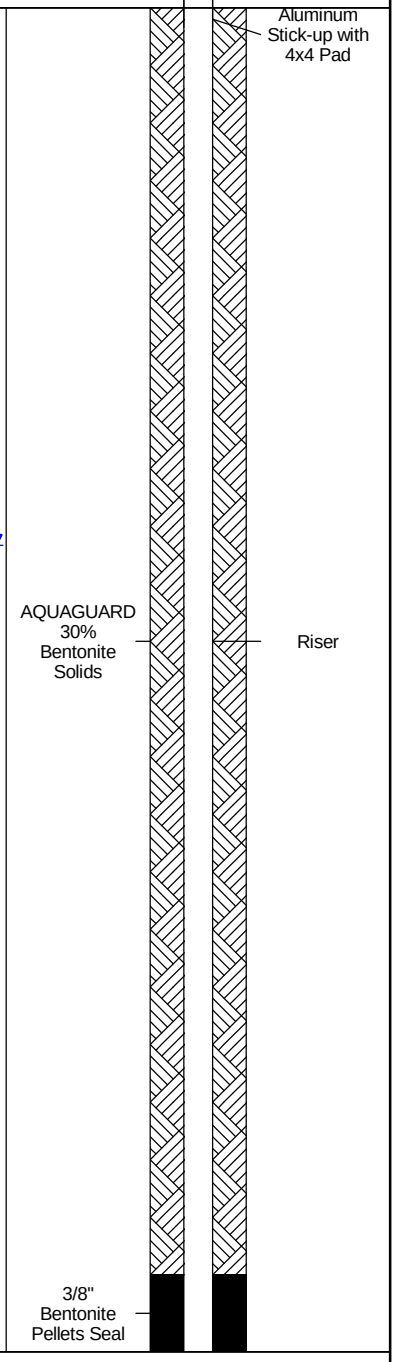
Date Started: 09/21/2020
Date Completed: 09/22/2020

Logger: Becky Steever
Editor: Geoff Gay
Weather Conditions: Sunny & Warm

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description |
|---|---|---|---|---|---|---|---|
| 1–35 | | | |  | | | (0.0-8.0'): Fill, Silty Clayey Sand (SM); tan to orange-red; fine grained to medium grained sand; no staining/odor; wet |
| | | | | | | | (8.0-10'); Sand; tan to medium gray; medium grained sand; no staining/odor; some silt; moist |
| | | | | | | | (10-14'); Silty Sandy Clay; mottled gray; orange, tan, and brown; saprolite, relict structure; fine grained sand; dry |
| | | | | | | | (14-35); Silty Sand (SM); medium brown; fine to medium grained sand; no staining/odor; wet |

Well Construction

TOC Elev. 740.88




Drilling Co.: Cascade
Driller:
Drilling Method: Sonic
Drilling Fluid: None
Remarks:

Sampling Method: Cont.
Sampling Interval: Cont.
Water Level Start: 14
Water Level Finish: 12.1
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 737.7
North Coor.: 1258547.74
East Coor.: 2073748.73

SOIL BORING LOG C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\PROJECT FILE-2.GPJ ARCADIS.GDT 11/11/20

ARCADIS Design & Consultancy for natural and built assets

# Soil Boring Log

Boring No.: YGWC-36A

Sheet: 2 of 2

Project Name: Yates
Project Number: 30061098
Project Location: Newnan, Georgia

Date Started: 09/21/2020
Date Completed: 09/22/2020

Logger: Becky Steever
Editor: Geoff Gay
Weather Conditions: Sunny & Warm

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Well Construction |
|---|---|---|---|---|---|---|---|---|
| 36–53 | | | |  | | | (35-38'); Silty Sand (SM); brown to gray; fine to medium grained sand; no staining/odor; slightly moist<br>Same as above, some clay<br>Pulverized rock sand; pale gray; some fine plagioclase gravel; fine grained sand | So. Products Filter Pack #1 (16-40)<br>Top of Screen<br>2" PVC Screen<br>Bottom of Screen<br>HOLEPLUG Bentonite Backfill |
| 54–72 | | | | | | | | |

Remarks:

SOIL BORING LOG C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\PROJECT FILE-2.GPJ ARCADIS.GDT 11/11/20

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-38/PZ-38

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 67.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/20/16
DATE COMPLETED: 7/23/16

NORTHING: 1,256,108.38
EASTING: 2,074,446.80
GS ELEVATION: 797.1
TOC ELEVATION: 799.69 ft

DEPTH W.L.: 26.35 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/23/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|
| 0 | 795 | 0.00 - 1.00<br>silty SAND, goethite, loose, moist<br>1.00 - 8.00<br>tan to brown, mottled, loose, dry | SM | 796.10<br>1.00 | 1 | | 5.00<br>7.00 |
| 5 | 790 | | | 789.10 | | | |
| 10 | 785 | 8.00 - 9.00<br>white to tan, plagioclase, loose, dry<br>9.00 - 27.00<br>tan to brown, mottled, micaceous, loose, dry | | 8.00<br>788.10<br>9.00 | 2 | | 10.00<br>10.00 |
| 15 | 780 | | | | | | |
| 20 | 775 | | | | 3 | | 10.00<br>10.00 |
| 25 | 770 | 27.00 - 34.00<br>brown to tan, relict structure, moist to wet, loose (saprolite) | | 770.10<br>27.00 | | | |
| 30 | 765 | | | | 4 | | 7.00<br>10.00 |
| 35 | 760 | 34.00 - 37.00<br>transitionally weathered rock - weathered GNEISS to high grade SCHIST, garnet, muscovite, biotite, recrytallization, fractured, friable | PWR | 763.10<br>34.00<br>760.10 | | | |
| 40 | 755 | 37.00 - 39.00<br>bedrock - muscovite/biotite GNEISS, hornblende, fresh<br>39.00 - 40.00<br>muscovite/biotite GNEISS, hornblende, iron staining<br>40.00 - 56.00<br>muscovite/biotite GNEISS, hornblende, fresh | GNEISS | 37.00<br>758.10<br>39.00<br>757.10<br>40.00 | 5 | | 7.00<br>10.00 |
| 45 | 750 | | | | 6 | | 6.00<br>10.00 |
| 50 | | Log continued on next page | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1; 1/2" Bentonite Pellets; 0.010" Slotted Screen; #1 Type Sand; Sump

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-37.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 37.0'-47.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010'
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 35.0'-48.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 30.0'-35.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-30.0'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Kirk Fraley
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-38/PZ-38



PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 67.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/20/16
DATE COMPLETED: 7/23/16

NORTHING: 1,256,108.38
EASTING: 2,074,446.80
GS ELEVATION: 797.1
TOC ELEVATION: 799.69 ft

DEPTH W.L.: 26.35 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/23/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE: DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | | 40.00 - 56.00<br>muscovite/biotite GNEISS, hornblende, fresh *(Continued)* | | | | | | | | |
| | 745 | | | | | | | | Bentonite Pellet Backfill | |
| | | | | | | 6 | | 6.00 / 10.00 | | |
| 55 | | | | | 741.10 / 56.00 | | | | | |
| | 740 | 56.00 - 58.00<br>muscovite/biotite GNEISS, hornblende, iron staining | | | 739.10 / 58.00 | | | | | |
| | | 58.00 - 67.00<br>muscovite/biotite GNEISS, hornblende, fresh | | | | | | | | |
| 60 | | | | | | | | | | |
| | 735 | | | | | 7 | | 7.00 / 10.00 | | |
| 65 | | | | | | | | | | |
| | 730 | | | | 730.10 | | | | | |
| | | Boring completed at 67.00 ft | | | | | | | | |
| 70 | | | | | | | | | | |
| | 725 | | | | | | | | | |
| 75 | | | | | | | | | | |
| | 720 | | | | | | | | | |
| 80 | | | | | | | | | | |
| | 715 | | | | | | | | | |
| 85 | | | | | | | | | | |
| | 710 | | | | | | | | | |
| 90 | | | | | | | | | | |
| | 705 | | | | | | | | | |
| 95 | | | | | | | | | | |
| | 700 | | | | | | | | | |
| 100 | | | | | | | | | | |

**WELL CASING**
Interval: 0.0'-37.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 37.0'-47.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010'
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 35.0'-48.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 30.0'-35.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-30.0'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Kirk Fraley
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-41/PZ-41

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 64.50 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/7/16
DATE COMPLETED: 7/8/16

NORTHING: 1,256,510.62
EASTING: 2,073,274.41
GS ELEVATION: 801.1
TOC ELEVATION: 803.92 ft

DEPTH W.L.: 22.1 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: 07:30

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 0 | 800 | 0.00 - 2.00<br>sandy SILT, dark reddish brown, severely weathered gneiss, dry | ML | | 799.10 | 1 | | 4.00 / 4.00 |
| | | 2.00 - 4.00<br>silty SAND, light brown, dry, non-cohesive | SM | | 2.00<br>797.10 | | | |
| 5 | 795 | 4.00 - 14.00<br>light brown, quartz sand at ~5', dry | | | 4.00 | 2 | | 10.00 / 10.00 |
| 10 | 790 | | | | 787.10 | | | |
| 15 | 785 | 14.00 - 24.00<br>light brown, dry | | | 14.00 | 3 | | 9.00 / 10.00 |
| 20 | 780 | | | | 777.10 | | | |
| 25 | 775 | 24.00 - 29.00<br>trace gravel, sand coarsening, light brown, dry | | | 24.00 | 4 | | 5.00 / 5.00 |
| | | | | | 772.10 | | | |
| 30 | 770 | 29.00 - 38.00<br>transitionally weathered rock - highly weathered biotite/muscovite GNEISS | PWR | | 29.00 | 5 | | 5.00 / 5.00 |
| 35 | 765 | | | | 763.10 | 6 | | 5.00 / 5.00 |
| | | 38.00 - 39.00<br>more competent | | | 38.00<br>762.1 | | | |
| 40 | 760 | 39.00 - 44.00<br>bedrock - biotite GNEISS, red to orange staining | GNEISS | | 39.00 | 7 | | 4.00 / 5.00 |
| | | | | | 757.10 | | | |
| 45 | 755 | 44.00 - 54.00<br>transitionally weathered rock - highly weathered biotite GNEISS, red oxide staining | PWR | | 44.00 | 8 | | 5.00 / 10.00 |
| 50 | | Log continued on next page | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1; Bentonite Pellets and Chips

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-54.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 54.0'-64.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 51.0'-64.5'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 45.5'-51.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-45.5'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER:

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-41/PZ-41

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 64.50 ft
LOCATION: Newnan, GA

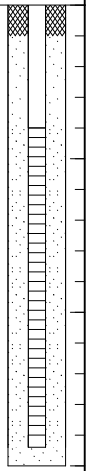
DRILL RIG: Sonic PS-150
DATE STARTED: 7/7/16
DATE COMPLETED: 7/8/16

NORTHING: 1,256,510.62
EASTING: 2,073,274.41
GS ELEVATION: 801.1
TOC ELEVATION: 803.92 ft

DEPTH W.L.: 22.1 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: 07:30

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE: DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 50 | 750 | 44.00 - 54.00<br>transitionally weathered rock - highly weathered biotite GNEISS, red oxide staining *(Continued)* | PWR | | 747.10 | 8 | | 5.00 / 10.00 |
| 55 | 745 | 54.00 - 64.00<br>bedrock - biotite GNEISS, vertical oxide staining along fractures | GNEISS | | 54.00 | 9 | | 8.00 / 10.00 |
| 60 | 740 | | | | 737.10 | | | |
| 65 | 735 | Boring completed at 64.50 ft | | | 64.00 | | | |
| 70 | 730 | | | | | | | |
| 75 | 725 | | | | | | | |
| 80 | 720 | | | | | | | |
| 85 | 715 | | | | | | | |
| 90 | 710 | | | | | | | |
| 95 | 705 | | | | | | | |
| 100 | | | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES




WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-54.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 54.0'-64.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2'
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 51.0'-64.5'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 45.5'-51.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-45.5'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER:

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-42/ PZ-42

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 57.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/7/16
DATE COMPLETED: 7/8/16

NORTHING: 1,256,882.87
EASTING: 2,073,326.52
GS ELEVATION: 795.1
TOC ELEVATION: 797.86 ft

DEPTH W.L.: 26.2 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 795 | 0.00 - 3.00<br>silty SAND, plastic fines, orange brown, micaceous, firm, decreasing moisture with depth | SM | | 792.10 | | | | |
| | | 3.00 - 7.00<br>poorly graded SAND, some silt, tan to black, white to red, micaceous, dry | SP | | 3.00<br>788.10 | 1 | | 7.00<br>7.00 | |
| 5 | 790 | 7.00 - 10.50<br>some silt, tan to black, white to red, dry | | | 7.00<br>784.60 | | | | |
| 10 | 785 | 10.50 - 18.00<br>some silt, tan to black, white to red, increasing biotite, dry | | | 10.50 | 2 | | 10.00<br>10.00 | |
| 15 | 780 | | | | 777.10 | | | | |
| | | 18.00 - 19.00<br>silty SAND, red seam | SM | | 18.00<br>776.10 | | | | |
| 20 | 775 | 19.00 - 27.00<br>poorlyly graded SAND, some silt, tan to black, white to red, plagioclase, dry | SP | | 19.00 | 3 | | 10.00<br>10.00 | Portland Type 1 |
| 25 | 770 | | | | 768.10 | | | | |
| | | 27.00 - 30.00<br>no recovery | | | 27.00<br>765.10 | 4 | | 5.00<br>10.00 | |
| 30 | 765 | 30.00 - 34.00<br>bedrock - biotite GNEISS, fresh to moderately weathered, medium strong to extremely strong, foliated | GNEISS | | 30.00<br>761.10 | | | | |
| 35 | 760 | 34.00 - 37.00<br>biotite GNEISS, increased biotite, fresh to moderately weathered, medium strong to extremely strong, foliated | | | 34.00<br>758.10 | | | | |
| | | 37.00 - 40.00<br>biotite GNEISS, fresh to moderately weathered, medium strong to extremely strong, fractured, foliated | | | 37.00<br>755.10 | 5 | | 8.00<br>10.00 | Bentonite Pellets and Chips |
| 40 | 755 | 40.00 - 50.00<br>biotite GNEISS, fresh to moderately weathered, medium strong to extremely strong, foliated | | | 40.00 | | | | |
| 45 | 750 | | | | | | | | |
| | | | | | | 6 | | 6.00<br>10.00 | #1 Type Sand |
| 50 | | | | | 745.10 | | | | |

Log continued on next page

**WELL CONSTRUCTION DETAILS**

**WELL CASING**
Interval: 0.0'-47'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 46.6'-56.6'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 46.0'-57.0'
Type: #1 Sand

**FILTER PACK SEAL**
Interval: 37.5'-46.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-37.5'
Type: Portlant Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-42/ PZ-42

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 57.00 ft
LOCATION: Newnan, GA

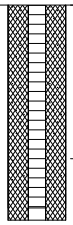
DRILL RIG: Sonic PS-150
DATE STARTED: 7/7/16
DATE COMPLETED: 7/8/16

NORTHING: 1,256,882.87
EASTING: 2,073,326.52
GS ELEVATION: 795.1
TOC ELEVATION: 797.86 ft

DEPTH W.L.: 26.2 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/8/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 50 | 745 | 50.00 - 56.00<br>biotite GNEISS, fresh to moderately weathered, iron staining, medium strong to extremely strong, foliated | | | 50.00 | 6 | | 6.00<br>10.00 |
| 55 | 740 | | | | 739.10 | | | |
| | | 56.00 - 57.00<br>biotite GNEISS, fresh to moderately weathered, iron staining, medium strong to extremely strong, foliated, stained, fractured | | | 56.00<br>738.10 | | | |
| | | Boring completed at 57.00 ft | | | | | | |
| 60 | 735 | | | | | | | |
| 65 | 730 | | | | | | | |
| 70 | 725 | | | | | | | |
| 75 | 720 | | | | | | | |
| 80 | 715 | | | | | | | |
| 85 | 710 | | | | | | | |
| 90 | 705 | | | | | | | |
| 95 | 700 | | | | | | | |
| 100 | | | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES




WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-47'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 46.6'-56.6'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 46.0'-57.0'
Type: #1 Sand

**FILTER PACK SEAL**
Interval: 37.5'-46.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-37.5'
Type: Portlant Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-43/ PZ-43

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 77.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/8/16
DATE COMPLETED: 7/9/16

NORTHING: 1,257,547.41
EASTING: 2,073,199.65
GS ELEVATION: 742.3
TOC ELEVATION: 744.96 ft

DEPTH W.L.: 30.5 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/9/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|
| 0 | 745 | 0.00 - 5.00<br>SAND to silty SAND, 10-15% fines, red to tan to brown, micaceous, dry to moist | SM | 737.30 | | | 8.00<br>8.00 |
| 5 | 740 | 5.00 - 6.00<br>10-15% fines, red to tan to brown, plagioclase, micaceous, dry to moist | | 5.00<br>736.30 | | | |
| | | 6.00 - 14.00<br>10-15% fines, red to tan to brown, micaceous, dry to moist | | 6.00 | | | |
| 10 | 735 | | | | | | 8.00<br>9.00 |
| | | | | 728.30 | | | |
| 15 | 730 | 14.00 - 28.00<br>transitionally weathered rock - feldspathic GNEISS, moderately to highly weathered, medium strong to extremely strong, discolored, iron stains and deposits | PWR | 14.00 | | | 3.50<br>4.00 |
| 20 | 725 | | | | | | |
| 25 | 720 | | | | | | 3.00<br>8.00 |
| | | | | 714.30 | | | |
| 30 | 715 | 28.00 - 33.00<br>bedrock - feldspathic GNEISS, fresh to slighly weathered, medium strong to extremely strong, discolored, iron stains and deposits | GNEISS | 28.00 | | | |
| | | | | 709.30 | | | |
| 35 | 710 | 33.00 - 38.00<br>feldspathic GNEISS, fresh to lightly weathered, medium strong to extremely strong, fabric, discolored, some iron stains and deposits | | 33.00 | | | 10.00<br>10.00 |
| | | | | 704.30 | | | |
| 40 | 705 | 38.00 - 77.00<br>feldspathic GNEISS, fresh, olive colored mineral, some garnet, quartz, biotite | | 38.00 | | | |
| 45 | 700 | | | | | | 10.00<br>10.00 |
| 50 | | Log continued on next page | | | | | 10.00 |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-66.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 66.5'-75.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 63.7'-77.0'
Type: #1 Sand

**FILTER PACK SEAL**
Interval: 58.5'-63.7'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-58.5'
Type: Portlant Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-43/ PZ-43



PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 77.00 ft
LOCATION: Newnan, GA

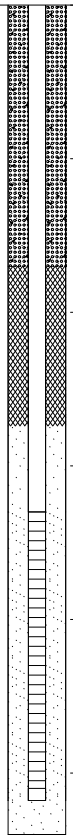
DRILL RIG: Sonic PS-150
DATE STARTED: 7/8/16
DATE COMPLETED: 7/9/16

NORTHING: 1,257,547.41
EASTING: 2,073,199.65
GS ELEVATION: 742.3
TOC ELEVATION: 744.96 ft

DEPTH W.L.: 30.5 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/9/2016
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 50 | 695 | 38.00 - 77.00<br>feldspathic GNEISS, fresh, olive colored mineral, some garnet, quartz, biotite *(Continued)* | | | | | | 10.00 |
| 55 | 690 | | | | | | | 10.00 / 10.00 |
| 60 | 685 | | | | | | | |
| 65 | 680 | | | | | | | 10.00 / 10.00 |
| 70 | 675 | | | | | | | |
| 75 | 670 | | | | 665.30 | | | 7.00 / 10.00 |
| | | Boring completed at 77.00 ft | | | | | | |
| 80 | 665 | | | | | | | |
| 85 | 660 | | | | | | | |
| 90 | 655 | | | | | | | |
| 95 | 650 | | | | | | | |
| 100 | | | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES




WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-66.5'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 66.5'-75.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 63.7'-77.0'
Type: #1 Sand

**FILTER PACK SEAL**
Interval: 58.5'-63.7'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-58.5'
Type: Portlant Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Courtney Vissman
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-49/ PZ-49

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 75.90 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/12/16
DATE COMPLETED: 7/13/16

NORTHING: 1,259,375.23
EASTING: 2,074,337.51
GS ELEVATION: 780.1
TOC ELEVATION: 782.73 ft

DEPTH W.L.: 26.95 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: 15:26

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE: DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | 0.00 - 10.00<br>No recovery; Hydrovac | | | 770.0 | | | | | |
| 10 | 770 | 10.00 - 16.00<br>silty SAND, fine sand, greyish brown to reddish brown, non-cohesive, dry, loose | SM | | 10.00<br>764.0 | 1 | | 6.00<br>6.00 | | |
| 15 | 765 | | | | | | | | | |
| 20 | 760 | 16.00 - 26.00<br>No recovery due to soil washing out of core barrel | | | 16.00<br>754.0 | 2 | | 0.00<br>10.00 | Portland Type I | |
| 25 | 755 | | | | | | | | | |
| 30 | 750 | 26.00 - 36.00<br>silty SAND, dark brown to grayish brown, relict laminations, fully weathered schist, dry, loose (saprolite) | SM | | 26.00<br>774.0 | 3 | | 10.00<br>10.00 | | |
| 35 | 745 | | | | | | | | | |
| 40 | 740 | 36.00 - 46.00<br>softer zone | | | 36.00<br>734.0 | 4 | | 9.00<br>10.00 | | |
| 45 | 735 | | | | | | | | | |
| 50 | 730 | 46.00 - 54.00<br>some silt and some gravel increasing with depth, mottled dark brown to orange, relict laminations, dry, loose (saprolite) | SP | | 46.00 | 5 | | 8.00<br>8.00 | | |

Log continued on next page

**WELL CASING**
Interval: 0.0'-65.4'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 65.4-75.4
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 63.3'-75.9'
Type: #1 Sand

**FILTER PACK SEAL**
Interval: 58.7'-62.2'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-58.7'
Type: N/A

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Dale

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-49/ PZ-49

SHEET 2 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 75.90 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/12/16
DATE COMPLETED: 7/13/16

NORTHING: 1,259,375.23
EASTING: 2,074,337.51
GS ELEVATION: 780.1
TOC ELEVATION: 782.73 ft

DEPTH W.L.: 26.95 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: 15:26

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE: DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | | 46.00 - 54.00<br>some silt and some gravel increasing with depth, mottled dark brown to orange, relict laminations, dry, loose (saprolite)<br>*(Continued)* | SP | | 726.0 | 5 | | 8.00 / 8.00 | | |
| 55 | 725 | 54.00 - 65.00<br>transitionally weathered rock -biotite mica SCHIST, deeply stained, highly weathered, friable | PWR | | 54.00<br>715.0 | 6 | | 0.50 / 11.00 | Bentonite Pellets and Chips | **WELL CASING**<br>Interval: 0.0'-65.4'<br>Material: Schedule 40 PVC<br>Diameter: 2"<br>Joint Type: Threaded<br>**WELL SCREEN**<br>Interval: 65.4-75.4<br>Material: U-Pack Schedule 40 PVC<br>Diameter: 2"<br>Slot Size: 0.010"<br>End Cap: Schedule 40 PVC<br>**FILTER PACK**<br>Interval: 63.3'-75.9'<br>Type: #1 Sand<br>**FILTER PACK SEAL**<br>Interval: 58.7'-62.2'<br>Type: Bentonite Pellets and Chips<br>**ANNULUS SEAL**<br>Interval: 0.0'-58.7'<br>Type: N/A<br>**WELL COMPLETION**<br>Pad: 4'x4'x4"<br>Protective Casing: Aluminum<br>**DRILLING METHODS**<br>Soil Drill: 4" Sonic<br>Rock Drill: 4" Sonic |
| 60 | 720 | | | | | | | | | |
| 65 | 715 | 65.00 - 76.00<br>highly fractured | | | 65.00 | | | | #1 Sand | |
| 70 | 710 | | | | | 7 | | 2.00 / 11.00 | 0.010" Slotted Screen | |
| 75 | 705 | | | | 704.0 | | | | Sump | |
| | | Boring completed at 75.90 ft | | | 76.00 | | | | | |
| 80 | 700 | | | | | | | | | |
| 85 | 695 | | | | | | | | | |
| 90 | 690 | | | | | | | | | |
| 95 | 685 | | | | | | | | | |
| 100 | 680 | | | | | | | | | |

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Dale

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING PZ-4S**
PAGE 1 OF 1
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/11/2014 **COMPLETED** 5/21/2014 **SURF. ELEV.** 781.8 **COORDINATES:** N:1,254,442.86 E:2,075,454.20
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 30.3 ft. **GROUND WATER DEPTH: DURING** **COMP.** 18.98 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 784.25

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| | | **Sandy Silt (ML)** - rusty red, damp, medium stiff, low plasticity, very fine grain, cohesive; micaceous; trace organics | | Surface Seal: concrete | 779.8 (2.0) |
| | | | 779.3 | | |
| 5 | | **Silty Sand (SM)** - reddish brown to light brown, dry, medium dense to loose, no plasticity, lower fine to upper medium grain, some to trace clay decreasing with depth; trace mica; trace organics | | | |
| | | - SM: medium to light brown to tan, dry, loose, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; noncohesive; trace rock fragments (brittle); trace mica | | Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 10 | | - SM: light brown to tan grading to reddish brown @ 15', damp, loose, no plasticity, lower fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; noncohesive; trace rock fragments (brittle); trace mica | | | |
| 15 | | | | | 767.3 (14.5) |
| | | - SM: reddish brown to tan to white with a greenish tan zone @ approx. 18-20', moist, medium dense, no plasticity, lower fine to upper medium grain, *saprolite*, visible zones where saprolite has not completely broken down to residual soil and remnant rock fabric visible; zone of more competent saprolite observed; gravel sized rock fragments included; muscovite, biotite, chlorite phyllosilicates visible | | Annular Seal: 3/8 Hole Plug (medium bentonite chips) | 763.6 (18.2) |
| 20 | | | | Filter: 20/30 Silica Sand | 761.8 (20.0) |
| | | | | **Well: 2" OD PVC (SCH 40)** | |
| 25 | | | | Screen: 10 ft; pre-pack | |
| | | - SM: orangish brown to light gray to white, moist, medium dense, no plasticity, lower fine to upper medium grain, *saprolite*, increasing rock fragment size and abundance with depth; rock fragments range from coarse gravel to cobble size; angular fragments | | | |
| 30 | | | 751.5 | Sump:0.30 ft. | 751.8 751.5 |

Bottom of borehole at 30.3 feet.

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 19:09 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING PZ-5S**
PAGE 1 OF 1
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/10/2014 **COMPLETED** 5/21/2014 **SURF. ELEV.** 782.2 **COORDINATES:** N:1,254,404.42 E:2,076,211.43
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 39.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 13.53 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 784.64

| DEPTH (ft) | STRATA DESCRIPTION | ELEV. |
|---|---|---|
| 5 | **Silty Sand (SM)**<br>- brown, dry, medium dense, no plasticity, upper fine to lower medium grain, noncohesive; trace organics; angular to sub angular grains<br>- SM: brown, dry, medium dense, no plasticity, upper fine to lower medium grain, slight increase in clay content with depth; cohesive (slight); trace mica; trace coarse grains | 777.2 |
| 10 | **Poorly-graded Sand (SP)**<br>- light gray to off white, dry, very loose, no plasticity, upper fine to upper medium grain, noncohesive; upper coarse to coarse gravel sized weathered rock fragments; angular to subangular grains; angular rock fragments | |
| 15 | - SP: med gray to tan to light gray /white with orangish brown to greenish gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of more competent (completely weathered) rock increasing with depth; trace lenses of silt/clay interbedded within the sand/saprolite; brittle upper coarse to lower gravel sized rock fragments included; micaceous | |
| 20 | - SP: light gray/white grading to med gray with orangish brown to dark gray mottling, damp, medium dense, no plasticity, upper fine to lower medium grain, *saprolite*, noncohesive; completely weathered to residual soil; angular to subangular grains | |
| 25 | | |
| 30 | - SP: light gray to med gray, damp, loose, no plasticity, upper fine to lower medium grain, *saprolite*, increasing in gravel sized rock fragments (completely weathered, very brittle) | |
| 35 | - SP: medium gray to light gray, damp, loose, no plasticity, upper fine to upper coarse grain, *saprolite*, noncohesive; completely weathered to residual soil with zones of more competent but brittle rock fragments; angular grains; micaceous | 742.7 |

**WELL DATA**

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

| | ELEV. (DEPTH) |
|---|---|
| Surface Seal: concrete | 780.2 (2.0) |
| Annular Fill: 90/10 Portland Cement/Bentonite Powder | 758.5 (23.7) |
| Annular Seal: 3/8 Hole Plug (medium bentonite chips) | 754.8 |
| Filter: 20/30 Silica Sand | (27.4) |
| | 753.0 (29.2) |
| **Well: 2" OD PVC (SCH 40)** | |
| Screen: 10 ft; pre-pack | |
| | 743.0 |
| Sump:0.30 ft. | 742.7 |

Bottom of borehole at 39.5 feet.

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 18:37 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

## BORING YGWA-6S/PZ-6S

PAGE 1 OF 1
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/22/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 779.8 **COORDINATES:** N: 1,260,484.87 E: 2,074,786.49
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 37.2 ft. **GROUND WATER DEPTH: DURING** **COMP.** 14.77 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 782.47

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| | | | | Surface Seal: concrete | 777.8 (2.0) |
| | | **Poorly-graded Sand with Silt (SP-SM)** - dark brown, damp, loose, no plasticity, lower fine to upper fine grain, cohesive; trace organics; trace gravel sized rock fragments; angular to subangular grains | 776.8 | | |
| 5 | | **Silty Sand (SM)** - rusty red, dry, medium dense, no plasticity, lower fine to upper fine grain, cohesive; slight increase in clay content; micaceous | | | |
| 10 | | - SM: orangish brown to tan grading to light gray/white, dry, medium dense to loose, no plasticity, upper fine to lower medium with trace upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; trace gravel sized rock fragments; rock fragments range from brittle/friable to hard/more competent; micaceous; muscovite, chlorite, biotite, quartz, plagioclase identifiable | | Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 15 | | ▼ - SM: medium brown/orangish brown to medium gray with greenish gray mottling, damp, medium dense to loose, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of remnant banding visible; brittle to hard rock fragments included; chlorite, biotite, muscovite, quartz, plagioclase identifiable; harder/more competent rock fragments tend to be felsic (quartz, plagioclase) and brittle/friable rock fragments tend to be mafic (biotite, chlorite) | | | |
| 20 | | | | | 759.0 (20.8) |
| | | - SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous | | Annular Seal: 3/8 Hole Plug (medium bentonite chips) | |
| 25 | | | | | 754.8 (25.0) |
| | | | | Filter: 20/30 Silica Sand | 752.9 (26.9) |
| 30 | | | | **Well: 2" OD PVC (SCH 40)** | |
| | | | | Screen: 10 ft; pre-pack | |
| 35 | | - SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous | | | |
| | | | 742.8 | | 742.9 |
| | | | | Sump:0.30 ft. | 742.6 |

Bottom of borehole at 37.2 feet.

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 17:32 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-6I/PZ-6I**

ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/21/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 780.2 **COORDINATES:** N:1,260,490.02 E:2,074,790.49
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 66.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 14.9 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 782.73

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| | | **Poorly-graded Sand with Silt (SP-SM)** - dark brown, damp, loose, no plasticity, lower fine to upper fine grain, cohesive; trace organics; trace gravel sized rock fragments; angular to subangular grains | | ← Surface Seal: concrete | 778.2 |
| | | | 777.2 | | (2.0) |
| 5 | | **Silty Sand (SM)** - rusty red, dry, medium dense, no plasticity, lower fine to upper fine grain, cohesive; slight increase in clay content; micaceous | | | |
| 10 | | - SM: orangish brown to tan grading to light gray/white, dry, medium dense to loose, no plasticity, upper fine to lower medium with trace upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; trace gravel sized rock fragments; rock fragments range from brittle/friable to hard/more competent; micaceous; muscovite, chlorite, biotite, quartz, plagioclase identifiable | | | |
| 15 | | ▼ - SM: medium brown/orangish brown to medium gray with greenish gray mottling, damp, medium dense to loose, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of remnant banding visible; brittle to hard rock fragments included; chlorite, biotite, muscovite, quartz, plagioclase identifiable; harder/more competent rock fragments tend to be felsic (quartz, plagioclase) and brittle/friable rock fragments tend to be mafic (biotite, chlorite) | | Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 20 | | | | | |
| 25 | | - SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous; | | ← | |
| 30 | | | | | |

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 17:36 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING YGWA-6I/PZ-6I**



**ECS37976**

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study

**LOCATION** Newnan, GA

DEPTH (ft) | GRAPHIC LOG

## STRATA DESCRIPTION

ELEV.

**Silty Sand (SM)***(Con't)*
- SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous;

743.2

**Unclassified Metamorphic**
- white with orangish brown to pinkish staining, lower medium to upper coarse grain, soft to medium hard, moderately weathered, no banding visible, felsic rock; abundant plagioclase with trace quartz; high to moderate angled fractures; quartz fracture fill visible; low recovery; driller notes rubble zone with no recovery 38-40.5'

739.7

**Interlayered/Alternating Mica Schist and Granitic Gneiss**
- dark gray/black to greenish gray (schist) with light gray (gneiss), lower fine to upper fine grain size grain, medium hard, moderately to slightly weathered, schistose foliation visible along with slight banding in the zones of interlayered gneiss, gneiss is thinly interlayered and alternating (1-2" to 4-6"); quartz, plagioclase; biotite; chlorite; muscovite; trace pyrite, hornblende; high to moderate angled fractures with rusty red to dark brown staining

732.2

**Granitic Gneiss**
- light gray with trace greenish gray interlayering, lower fine to upper fine grain, medium hard to hard, slightly to not weathered, slight banding, slight schistose foliation visible, greenish gray interlayering decreases with depth; thin zone of localized, coarse grained plagioclase with trace to some quartz @ 55-56' (Granulite? Unclassified Metamorphic); increase in siliceous/felsic minerals decrease in mafic; quartz, plagioclase, biotite; muscovite; trace chlorite; trace pyrite; garnet, possible hornblende visible; high to moderate angled fractures; complete to partial healing

723.7

**Unclassified Metamorphic**
- white, upper coarse grain, hard, not weathered, zone of coarse grained plagioclase with slightly pinkish quartz; plagioclase crystals are tabular; interlayered within the unclassified plagioclase zone is thinly (1 cm) layered schist, dark greenish gray with bladed to elongated chlorite, biotite, hornblende; moderately to high angled fractures; moderate angled fractures show more fracture fill and more complete healing than high angle fractures

721.7

**Interlayered/Alternating Granitic Gniess and Mica Schist**
- light gray to white (gneiss) with dark gray /black to greenish gray (schist), lower fine to upper fine with trace lower medium to lower coarse quartz fracture fill grain, medium hard to hard, slightly weathered, banded, schistose foliation visible within some fracture zones and interlayered schist, quartz, plagioclase, biotite, muscovite, trace pyrite, trace chlorite; schist layers range in thickness from 1-2" to 5-6"; moderate to high angle fractures visible; total to moderate healing/quartz fracture fill; quartz fracture fill thickness 1-2 cm to 1-2" in thickness

713.7

Bottom of borehole at 66.5 feet.

## WELL DATA

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

(CONTINUED)

ELEV. (DEPTH)

Annular Fill: 90/10 Portland Cement/Bentonite Powder

729.7 (50.5)

Annular Seal: 3/8 Hole Plug (medium bentonite chips)

725.8 (54.4)

Filter: 20/30 Silica Sand

724.0 (56.2)

**Well: 2" OD PVC (SCH 40)**

Screen: 10 ft; pre-pack

714.0

Sump:0.30 ft.

713.7

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING PZ-6D**
PAGE 1 OF 4
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

**DATE STARTED** 4/22/2014 **COMPLETED** 5/19/2014 **SURF. ELEV.** 779.5 **COORDINATES:** N: 1,260,480.15 E: 2,074,782.68
**CONTRACTOR** Cascade Drilling **EQUIPMENT** PS-150 **METHOD** Rotosonic
**DRILLED BY** D. Wilcox **LOGGED BY** B. Smelser **CHECKED BY** **ANGLE** **BEARING**
**BORING DEPTH** 131.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** 18.93 ft. **DELAYED**
**NOTES** Top of Casing Elevation = 782.02

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA | ELEV. (DEPTH) |
|---|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad | |
| | | **Poorly-graded Sand with Silt (SP-SM)** - dark brown, damp, loose, no plasticity, lower fine to upper fine grain, cohesive; trace organics; trace gravel sized rock fragments; angular to subangular grains | | ← Surface Seal: concrete | 777.5 (2.0) |
| | | | 776.5 | | |
| 5 | | **Silty Sand (SM)** - rusty red, dry, medium dense, no plasticity, lower fine to upper fine grain, cohesive; slight increase in clay content; micaceous - SM: orangish brown to tan grading to light gray/white, dry, medium dense to loose, no plasticity, upper fine to lower medium with trace upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; trace gravel sized rock fragments; rock fragments range from brittle/friable to hard/more competent; micaceous; muscovite, chlorite, biotite, quartz, plagioclase identifiable | | | |
| 10 | | | | | |
| 15 | | - SM: medium brown/orangish brown to medium gray with greenish gray mottling, damp, medium dense to loose, no plasticity, upper fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; zones of remnant banding visible; brittle to hard rock fragments included; chlorite, biotite, muscovite, quartz, plagioclase identifiable; harder/more competent rock fragments tend to be felsic (quartz, plagioclase) and brittle/friable rock fragments tend to be mafic (biotite, chlorite) | | Annular Fill: 90/10 Portland Cement/Bentonite Powder | |
| 20 | | | | | |
| 25 | | - SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous | | | |
| 30 | | | | | |

2012 GEOTECH LOG WITH WELL - ESEE2012DATABASE.GDT - 6/10/14 17:40 - \\ALTRCFS02\X2DBSMEL$\GINT\PLANT YATES HYDRO-GEOLOGICAL STUDY.GPJ

*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

DEPTH (ft) | GRAPHIC LOG

## STRATA DESCRIPTION

ELEV.

**Silty Sand (SM)***(Con't)*

- SM: white to light gray with zones of orangish brown to brown, damp, medium dense to loose, no plasticity, fine to upper medium grain, *saprolite*, noncohesive; completely weathered to residual soil; remnant banding visible in darker (more mafic) zones; gravel sized, angular rock fragments included; rock fragment size and strength (hardness) increases with depth; micaceous

743.0

- No Recovery (36.5-46.5')

733.0

**Interlayered/Alternating Granitic Gneiss and Biotite Gneiss**

- dark gray to light gray, lower fine to upper fine grain, medium hard, moderately to slightly weathered, trace banding visible, slight schistose foliation visible along thin zones of interlayered schist, quartz, biotite, plagioclase, muscovite, pyrite, trace chlorite, hornblende (elongated crystal habit visible); thin (1") interlayered zones of dark gray/black to greenish gray schist; moderate to high angle fractures visible; difficult to distinguish between natural and mechanical fractures; moderately angled fractures show total to moderate healing; high angled fractures not healed and tend to follow interlayered zones of schist; some dark brown staining within fractures; white to light gray, upper medium quartz fracture fill

731.0

**Unclassified Metamorphic**

- white with trace greenish gray veining (fractures?), upper medium to lower coarse grain, medium hard to hard, moderately to slightly weathered, no visible banding or foliation, Granulite? localized, high grade metamorphic; plagioclase (large, white, tabular to bladed crystals), quartz (pinkish, translucent), muscovite, trace mafics i.e. chlorite, biotite; trace orangish brown staining visible; low angled fracturing with trace high angle fractures; high angle fractures show a greenish gray, schistose appearance; difficult to distinguish between natural and mechanical fracturing; slight to no visible healing

728.0

**Granitic Gneiss**

- light gray to white, upper fine to lower medium grain, medium hard to hard, slightly weathered, banding visible, orangish brown staining @ approx. 51-52' and 56-56.5'; quartz, plagioclase, chlorite, biotite, hornblende, muscovite, trace pyrite; thin, high angled fractures observed; partially healed with greenish gray fracture fill
- Interlayered/Alternating Granitic Gneiss, Biotite Gneiss and Mica Schist: light gray to medium gray to greenish gray, upper fine to lower medium grain, medium hard to hard, slightly to not weathered, banded (dark bands grading from dark gray to greenish gray in appearance, quartz, plagioclase, muscovite, biotite, chlorite, hornblende, increase in pyrite along fracture planes, trace garnet;

*(Continued Next Page)*

## WELL DATA

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

ELEV. (DEPTH)
(CONTINUED)

Annular Fill: 90/10 Portland Cement/Bentonite Powder

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. |
|---|---|---|---|
| 70 | | thin, high angled fractures observed; partially healed with greenish gray fracture fill; interlayered, greenish gray schist averages 1-2 mm thick throughout the unit<br>**Granitic Gneiss***(Con't)*<br>- Interlayered/Alternating Granitic Gneiss, Biotite Gneiss and Mica Schist: light gray to medium gray to greenish gray, upper fine to upper medium grain, medium hard to hard, not weathered, banded (dark bands grading from dark gray to greenish gray in appearance, quartz, plagioclase, muscovite, biotite, chlorite, hornblende, increase in pyrite along fracture planes, trace garnet; thin, high angled fractures observed; partially healed with greenish gray fracture fill; interlayered, greenish gray schist averages 1-2 mm thick | |
| 75 | | **Unclassified Metamorphic**<br>- white to light gray with dark gray /black veining (fractures?), upper medium to lower coarse to upper coarse, mafic minerals tend to be upper fine to lower medium grain, medium hard to hard, slightly to not weathered, zones of trace banding visible, Granulite? localized, high grade metamorphic; large, tabular to bladed to elongated plagioclase with quartz; dark veins of biotite, chlorite, trace muscovite; visible platy crystal habit of biotite and muscovite; veining shows a slight schistose foliation | 704.5 |
| 80 | | **Interlayered/Alternating Granitic Gneiss and Biotite Gneiss**<br>- medium gray to light gray grading to white with depth, lower fine to lower medium grain, hard to very hard, not weathered, trace banding with some zones having a schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace garnet; pyrite abundant in fractures; thinly (1-2 cm to 1-2") interlayered, dark gray to greenish gray schist; moderate to high angle fractures; trace weathering visible in some fractures | 700.5 |
| 85 | | - Interlayered/Alternating Granitic Gneiss and Biotite Gneiss: medium gray to light gray grading to white with depth, lower fine to lower medium grain, hard to very hard, not weathered, trace banding with some zones having a schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace garnet; pyrite abundant in fractures; thinly (1-2 cm to 1-2") interlayered, dark gray to greenish gray schist; moderate to high angle fractures; trace weathering visible in some fractures | |
| 90 | | | |
| 95 | | - Interlayered/Alternating Granitic Gneiss and Biotite Gneiss: medium gray to light gray grading to white with depth, lower fine to lower medium grain, hard to very hard, not weathered, trace banding with some zones having a schistose foliation, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace garnet; pyrite abundant in fractures; thinly (1-2 cm to 1-2") interlayered, dark gray to greenish gray schist; moderate to high angle fractures; trace weathering visible in some fractures | |
| 100 | | | |

## WELL DATA

Surface:
protective aluminum cover with bollards; 4-foot square concrete pad

(CONTINUED)

ELEV. (DEPTH)

Annular Fill: 90/10 Portland Cement/Bentonite Powder

705.9
(73.6)

Annular Seal: 3/8 Hole Plug (medium bentonite chips)

701.0
(78.5)

Filter: 20/30 Silica Sand

698.3
(81.2)

Screen: 50 ft; 0.01" slotted

**Well: 2" OD PVC (SCH 40)**



*(Continued Next Page)*

SOUTHERN COMPANY

# LOG OF TEST BORING AND WELL INSTALLATION

**BORING PZ-6D**
PAGE 4 OF 4
ECS37976

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

**PROJECT** Plant Yates Hydro-Geological Study
**LOCATION** Newnan, GA

| DEPTH (ft) | GRAPHIC LOG | STRATA DESCRIPTION | ELEV. | WELL DATA |
|---|---|---|---|---|
| | | | | Surface: protective aluminum cover with bollards; 4-foot square concrete pad |
| | | (CONTINUED) | | ELEV. (DEPTH) |
| 105 | | **Interlayered/Alternating Granitic Gneiss and Biotite Gneiss** *(Con't)* | 673.5 | |
| 110 | | **Unclassified Metamorphic**<br>- white to light gray with dark gray /black veining (fractures?), upper medium to lower coarse to upper coarse, mafic minerals tend to be upper fine to lower medium grain, medium hard to hard, not weathered, zones of trace banding visible, Granulite? localized, high grade metamorphic; large, tabular to bladed to elongated plagioclase with quartz; dark veins of biotite, chlorite, trace muscovite; visible platy crystal habit of biotite and muscovite; veining shows a slight schistose foliation; moderate to high angled fractures; partial healing/fracture fill visible | | |
| 115 | | | | |
| 120 | | - Unclassified Metamorphic: white to light gray with dark gray /black veining (fractures?), upper medium to lower coarse to upper coarse, mafic minerals tend to be upper fine to lower medium grain, medium hard to hard, not weathered, zones of trace banding visible, Granulite? localized, high grade metamorphic; large, tabular to bladed to elongated plagioclase with quartz; dark veins of biotite, chlorite, trace muscovite; visible platy crystal habit of biotite and muscovite; veining shows a slight schistose foliation | 658.5 | Screen: 50 ft; 0.01" slotted |
| 125 | | **Interlayered/Alternating Granitic Gneiss and Biotite Gneiss**<br>- medium gray to light gray grading to white with depth, lower fine to lower medium grain, hard to very hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace garnet; less, thinly interlayered, dark gray to greenish gray schist than above; moderate to high angle fractures; no visible healing/fracture fill; trace weathering visible in some fractures; little to no schistose foliation observed<br>- Interlayered/Alternating Granitic Gneiss and Biotite Gneiss: medium gray to light gray grading to white with depth, lower fine to lower medium grain, hard to very hard, not weathered, banded, quartz, plagioclase, biotite, muscovite, hornblende, pyrite, trace garnet; less, thinly interlayered, dark gray to greenish gray schist than above; moderate to high angle fractures; no visible healing/fracture fill; trace weathering visible in some fractures | | |
| 130 | | | 648.5 | 648.3<br>Sump:0.30 ft.<br>648.0 |

Bottom of borehole at 131.5 feet.

ARCADIS Design & Consultancy for natural and built assets

# Boring Log/Well Construction Log

Boring No.: PZ-24IA

Sheet: 1 of 3

Project Name: Plant Yates
Project Number: 30055278
Project Location: Newnan, GA

Date Started: 06/02/2020
Date Completed: 06/03/2020

Logger: Clement Papafio
Editor: Grant Willford
Weather Conditions: -

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Construction Details | Well |
|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | |
| 1 | | | | | | | (0.0-19.0') No recovery. Hydrovac to 19.0 ft bgs for borehole clearance. | Surface completion consists of a locking monument above 2.85' ground surface with a weep hole, vent hole in well casing, pea gravel between well monument and well casing, 4'x4'x4" concrete pad, and four concrete bollards. | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | Portland Cement with 6% Bentonite. 2 inch diameter Schedule 40 PVC riser. | |
| 19 | | | | | | | | | |
| 20 | | | |  | | | (19.0-29.0') Silty sand (SM); mottled very pale brown (10YR7/4) and white (10YR 8/1); fine grained to medium grained sand; very loose; some mica; iron oxidation present; low recovery; saprolitic. | | |
| 21 | | | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | | | | | | | | | |
| 29 | | | | | | | | | |

Drilling Co.: Cascade Drilling
Driller: Ike Young
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: ' / ft = feet; " / in = inch; bgs = below ground surface; NA = not applicable / available.

Sampling Method: Core Barrel
Sampling Interval: Continous
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 761.80
North Coor: 1258910.76
East Coor: 2073930.07

ARCADIS Design & Consultancy for natural and built assets

Boring No.: PZ-24IA

# Boring Log/Well Construction Log

Sheet: 2 of 3

Project Name: Plant Yates
Project Number: 30055278
Project Location: Newnan, GA

Date Started: 06/02/2020
Date Completed: 06/03/2020
Logger: Clement Papafio
Editor: Grant Willford
Weather Conditions: -

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Construction Details | Well |
|---|---|---|---|---|---|---|---|---|---|
| 30–39 | | | |  | | | (29.0-39.0') Silty sand (SM); grayish brown (10YR 5/2); fine grained to medium grained sand; loose; iron oxidation present.<br>(33.0-34.0') Color change to mottled very pale brown (10YR 7/4) and white (10YR 8/1).<br>(34.0-39.0') Color change to very pale brown (10YR 8/2); loose; dry; saprolitic. | | |
| 40–49 | | | |  | | | (39.0-44.0') Clayey silty sand (SM-SC); light yellowish brown (10YR 6/4); fine grained to medium grained sand; trace clay; loose; slight plasticity; mica present; moist.<br>(44.0-48.0) Silty sand (SM); pale brown (10YR 6/3); fine grained to medium grained sand; loose; moist.<br>(48.0-49.0') Sand; white (10YR 8/1); fine grained to coarse grained sand; weathered quartz vein; moist. | Portland Cement with 6% Bentonite. 2 inch diameter Schedule 40 PVC riser. | |
| 50–59 | | | |  | | | (49.0-52.0') Poorly graded sand (SP); very pale brown (10YR 8/3); fine grained to medium grained sand; some silt; loose; dry.<br>(52.0-54.0') Silty sand (SM); mottled light brown (7.5YR 6/3) and light olive gray (5Y 6/2); fine grained to medium grained sand; mica present; wet.<br>(54.0-59.0') Well graded sand (SW); mottled reddish brown (2.5YR 6/4) and white (10YR 8/1); fine grained to coarse grained sand; loose to medium dense; residual rock gravel; possible transition to partially weathered bedrock (PWR); dry. | | |
| 60–62 | | | | | | | (59.0-71.0') Granitic gneiss; light gray (5YR 7/1); feldspar, quartz, mica mineralogy; highly to moderately weathered; intensely fractured; sub horizontal to horizontal fractures; staining on fracture surface medium foliation; joints and fractures parallel to foliation; low recovery; very poor RQD. | | |

Remarks:

ARCADIS Design & Consultancy for natural and built assets

Boring No.: PZ-24IA

# Boring Log/Well Construction Log

Sheet: 3 of 3

Project Name: Plant Yates
Project Number: 30055278
Project Location: Newnan, GA

Date Started: 06/02/2020
Date Completed: 06/03/2020
Logger: Clement Papafio
Editor: Grant Willford
Weather Conditions: -

| Depth (feet) | Sample Interval | Blow Counts | Recovery (in.) | Photo Log | PID (ppm) | Graphic Log | Description | Construction Details | Well |
|---|---|---|---|---|---|---|---|---|---|
| 63 | | | |  | | | (59.0-71.0') Granitic gneiss; light gray (5YR 7/1); feldspar, quartz, mica mineralogy; highly to moderately weathered; intensely fractured; sub horizontal to horizontal fractures; staining on fracture surface medium foliation; joints and fractures parallel to foliation; low recovery; very poor RQD. | Portland Cement with 6% Bentonite. 2 inch diameter Schedule 40 PVC riser. | |
| 64 | | | | | | | | | |
| 65 | | | | | | | | | |
| 66 | | | | | | | | | |
| 67 | | | | | | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | | | |  | | | (71.0-82.5') Granitic gneiss; gray (7.5YR 5/1); feldspar, quartz, mica mineralogy; thin to moderate foliation moderately weathered; moderately fractured; staining on fracture surface. | | |
| 71 | | | | | | | | | |
| 72 | | | | | | | | | |
| 73 | | | | | | | | Bentonite seal. | |
| 74 | | | | | | | | | |
| 75 | | | | | | | (75.0-82.5') Near horizontal fractures; moderately foliated; slightly weathered to fresh; hard; fair RQD; color change to white (7.5YR 8/1). | | |
| 76 | | | | | | | | Filter pack: #1A (12-40) sand | |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 | | | |   | | | | | |
| 81 | | | | | | | | | |
| 82 | | | | | | | | | |
| 83 | | | | | | | | 2 inch diameter Sch. 40 PVC U-Pack dual wall 0.010-inch slotted screen. | |
| 84 | | | | | | | | | |
| 85 | | | | | | | | | |
| 86 | | | | | | | | | |
| 87 | | | | | | | (82.5-87.0') Granitic gneiss; light gray (5Y 7/1); feldspar, quartz, mica mineralogy; intensely to moderately fractured; near horizontal to sub horizontal fractures; very slightly weathered to fresh rock; moderatly hard; very poor RQD. | | |
| 88 | | | | | | | End of boring 87.0 ft bgs. | | |
| 89 | | | | | | | | | |
| 90 | | | | | | | | | |
| 91 | | | | | | | | | |
| 92 | | | | | | | | | |
| 93 | | | | | | | | | |
| 94 | | | | | | | | | |
| 95 | | | | | | | | | |

Remarks:

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE PZ-35

SHEET 1 of 1

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 47.10 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/13/16
DATE COMPLETED: 7/20/16

NORTHING: 1,258,593.16
EASTING: 2,073,805.60
GS ELEVATION: 740.9
TOC ELEVATION: 743.81

DEPTH W.L.: 9.99 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/20/16
TIME W.L.: N/A

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | SAMPLES: TYPE | SAMPLES: REC | MONITORING WELL / PIEZOMETER DIAGRAM and NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 740 | 0.00 - 10.00<br>No recovery; Hydrovac | | | | | | | |
| | | | | | 730.90 | | | | |
| 10 | 730 | 10.00 - 11.00<br>silty SAND, ash in core sample possibly recovered from hydrovac zone above | SM | | 10.00<br>29.90 | | | | |
| | | 11.00 - 14.00<br>CLAY, dark reddish browm, cohesive, moist | CH | | 11.00<br>726.90 | 1 | | 7.00<br>7.00 | |
| 15 | 725 | 14.00 - 17.00<br>SAND, fine sand, mottled brown and grey, moist, loose | SP | | 14.00<br>723.90 | | | | Portland Type 1 |
| | | 17.00 - 27.00<br>fine sand, mottled brown and grey, relict laminations, moist, loose | | | 17.00 | 2 | | 10.00<br>10.00 | |
| 25 | 715 | | | | 713.90 | | | | |
| | | 27.00 - 30.00<br>silty SAND, dull grey to brown, moist, loose | SM | | 27.00<br>710.90 | | | | |
| 30 | 710 | 30.00 - 32.00<br>mottled brown to tan, lamination, dry to moist, loose | | | 30.00<br>708.90 | 3 | | 5.00<br>10.00 | Bentonite Pellets and Chips |
| | | 32.00 - 37.00<br>mottled brown to tan, lamination, micaceous, dry to moist, loose | | | 32.00 | | | | |
| 35 | 705 | | | | 703.90 | | | | 0.010" Slotted Screen |
| | | 37.00 - 42.00<br>grey, dry, loose | | | 37.00 | | | | |
| 40 | 700 | | | | 698.90 | 4 | | 4.00<br>10.00 | #1 Type Sand |
| | | 42.00 - 47.00<br>transitionally weathered rock - biotite/muscovite GNEISS, weathered, friable | PWR | | 42.00 | | | | |
| 45 | 695 | | | | 693.90 | | | | Sump |
| | | Boring completed at 47.10 ft | | | 47.00 | | | | |
| 50 | | | | | | | | | |

**WELL CASING**
Interval: 0.0'-36.0'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 36.0'-46.0'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 34.0'-46.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 31.0'-34.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-31.0'
Type: Portlant Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Dale

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE PZ-37

SHEET 1 of 1

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 47.00 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 6/29/16
DATE COMPLETED: 7/6/16

NORTHING: 1,256,471.14
EASTING: 2,074,699.59
GS ELEVATION: 758.0
TOC ELEVATION: 760.78

DEPTH W.L.: 6.0 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/6/2016
TIME W.L.: 07:40

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC |
|---|---|---|---|---|---|---|---|---|
| 0 | 755 | 0.00 - 3.00<br>silty CLAY, red to brown, micaceous | CL-ML | | 755.00 | | | |
| | | 3.00 - 5.00<br>silty SAND, trace gravel, pale grey to green, plagioclase nodules (saprolite) | SM | | 3.00<br>753.00 | 1 | | 7.00<br>7.00 |
| 5 | | 5.00 - 7.00<br>trace clay, white and orange nodules, plagioclase, dry (saprolite) | | | 5.00<br>751.00 | | | |
| | 750 | 7.00 - 9.50<br>trace gravel, white to dark brown, muscovite | | | 7.00<br>749.00 | | | |
| 10 | | 9.50 - 17.00<br>trace clay, pale yellow brown, plagioclase nodules, dry (saprolite) | | | 9.50 | 2 | | 10.00<br>10.00 |
| | 745 | | | | | | | |
| 15 | | | | | 741.00 | | | |
| | 740 | 17.00 - 27.00<br>pale yellow brown to brown, white and brown nodules, saprolitic gneiss, dry | | | 17.00 | 3 | | 10.00<br>10.00 |
| 20 | | | | | | | | |
| | 735 | | | | | | | |
| 25 | | | | | 731.00 | | | |
| | 730 | 27.00 - 37.00<br>transitionally weathered rock- feldspathic GNEISS, muscovite, biotite, feldspar, quartz, foliated and layered, dark green, amphiboile lense | PWR | | 27.00 | 4 | | 10.00<br>10.00 |
| 30 | | | | | | | | |
| | 725 | | | | | | | |
| 35 | | | | | 721.00 | | | |
| | 720 | 37.00 - 43.00<br>bedrock - feldspathic GNEISS, biotite, muscovite, quartz, plagioclase, grey to white, more feldspar and quartz, oxidized and fractured | GNEISS | | 37.00 | 5 | | 8.00<br>10.00 |
| 40 | | | | | | | | |
| | 715 | 43.00 - 47.00<br>more granitic, lots of feldspar and quartz | | | 715.00<br>43.00 | | | |
| 45 | | | | | | | | |
| | 710 | Boring completed at 47.00 ft | | | 711.00 | | | |
| 50 | | | | | | | | |

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES: Portland Type 1; Bentonite Pellets and Chips; 0.010" Slotted Screen; #1 Type Sand; Sump

WELL CONSTRUCTION DETAILS

**WELL CASING**
Interval: 0.0'-36'
Material: Schedule 40 PVC
Diameter: 2
Joint Type: Threaded

**WELL SCREEN**
Interval: 36.5'-46.5'
Material: U-Pack Schedule 40 PVC
Diameter: 2
Slot Size: 0.010" Slotted Screen
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 33.0'-47.0'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 25.0'-33.0'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'-25.0'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Tom Ardito

GA INSPECTOR: Tim Richards
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

The well coordinates and elevation data were revised based on a June 2020 survey (Arcadis, June 29, 2020).

# RECORD OF BOREHOLE YGWC-48/ PZ-48

SHEET 1 of 2

PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 56.10 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/11/16
DATE COMPLETED: 7/12/16

NORTHING: 1,259,868.04
EASTING: 2,074,528.00
GS ELEVATION: 777.2
TOC ELEVATION: 779.83 ft

DEPTH W.L.: 17.71 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: 15:25

| DEPTH (ft) | ELEVATION (ft) | DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 777 | 0.00 - 10.00<br>No recovery; hydrovac | | | 767.20 | | | | |
| 10 | 765 | 10.00 - 12.00<br>clayey SAND, coarse sand, dark red, cohesive | SC | | 10.00<br>765.20 | | | | |
| | | 12.00 - 14.00<br>sandy SILT to silty SAND, pinkish orange | SP-ML | | 12.00<br>763.20 | 1 | | 6.00<br>6.00 | |
| 15 | | 14.00 - 16.00<br>sandy SILT, reddish brown, moist loose | ML | | 14.00<br>761.20 | | | | |
| 20 | 760 | 16.00 - 22.00<br>sandy SILT to silty SAND, dark reddish brown, trace gravel, dry, loose | SP-ML | | 16.00<br>755.20 | 2 | | 10.00<br>10.00 | Portland Type 1 |
| | 755 | 22.00 - 26.00<br>silty SAND, mottled white and grey, high plagioclase content | SM | | 22.00<br>751.20 | | | | |
| 30 | 750 | 26.00 - 32.00<br>poorly sorted, greyish brown, dry, loose | | | 26.00<br>745.12 | 3 | | 10.00<br>10.00 | |
| 35 | 745 | 32.00 - 36.00<br>transitionally weathered rock, pegmatite GRANITE, highly weathered, large plagioclase and quartz crytals | PWR | | 32.00<br>741.20 | | | | |
| 40 | 740 | 36.00 - 46.00<br>biotite GNEISS, some staining near top of core, pyrite inclusions | GNEISS | | 36.00<br>731.20 | 4 | | 10.00<br>10.00 | Bentonite Pellets and Chips |
| 45 | 735 | 46.00 - 49.00<br>biotite GNEISS | | | 46.00<br>728.20 | 5 | | 10.00<br>10.00 | 0.010" Slotted Screen |
| 50 | 730 | | | | 49.00 | | | | |

Log continued on next page

**WELL CONSTRUCTION DETAILS**

**WELL CASING**
Interval: 0.0'-45.8'
Material: Schedule 40 PVC
Diameter: 2"
Joint Type: Threaded

**WELL SCREEN**
Interval: 45.8'-55.8'
Material: U-Pack Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010'
End Cap: Schedule 40 PVC

**FILTER PACK**
Interval: 43.1'-56.1'
Type: #1 Type Sand

**FILTER PACK SEAL**
Interval: 38.5'-43.1'
Type: Bentonite Pellets and Chips

**ANNULUS SEAL**
Interval: 0.0'38.5'
Type: Portland Type 1

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

**DRILLING METHODS**
Soil Drill: 4" Sonic
Rock Drill: 4" Sonic

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Dale

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

Golder Associates

BOREHOLE RECORD YATES BORING LOGS.GPJ PIEDMONT.GDT 9/26/17

# RECORD OF BOREHOLE YGWC-48/ PZ-48



PROJECT: SCS Plant Yates
PROJECT NUMBER: 1660300
DRILLED DEPTH: 56.10 ft
LOCATION: Newnan, GA

DRILL RIG: Sonic PS-150
DATE STARTED: 7/11/16
DATE COMPLETED: 7/12/16

NORTHING: 1,259,868.04
EASTING: 2,074,528.00
GS ELEVATION: 777.2
TOC ELEVATION: 779.83 ft

DEPTH W.L.: 17.71 ft (bgs)
ELEVATION W.L.: (amsl)
DATE W.L.: 7/13/2016
TIME W.L.: 15:25

| DEPTH (ft) | ELEVATION (ft) | SOIL PROFILE: DESCRIPTION | USCS | GRAPHIC LOG | ELEV. / DEPTH (ft) | SAMPLES: SAMPLE NO. | TYPE | REC | MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | | 49.00 - 52.00<br>biotite GNEISS, migmatic gneiss bands with iron staining<br>*(Continued)* | | | 725.20 | | | | #1 Type Sand | **WELL CASING**<br>Interval: 0.0'-45.8'<br>Material: Schedule 40 PVC<br>Diameter: 2"<br>Joint Type: Threaded |
| | 725 | 52.00 - 56.00<br>biotite GNEISS | | | 52.00 | 5 | | 10.00<br>10.00 | | **WELL SCREEN**<br>Interval: 45.8'-55.8'<br>Material: U-Pack Schedule 40 PVC<br>Diameter: 2"<br>Slot Size: 0.010'<br>End Cap: Schedule 40 PVC |
| 55 | | | | | 721.20 | | | | Sump | |
| | | Boring completed at 56.10 ft | | | 56.00 | | | | | **FILTER PACK**<br>Interval: 43.1'-56.1'<br>Type: #1 Type Sand |
| | 720 | | | | | | | | | **FILTER PACK SEAL**<br>Interval: 38.5'-43.1'<br>Type: Bentonite Pellets and Chips |
| 60 | | | | | | | | | | **ANNULUS SEAL**<br>Interval: 0.0'38.5'<br>Type: Portland Type 1 |
| | 715 | | | | | | | | | **WELL COMPLETION**<br>Pad: 4'x4'x4"<br>Protective Casing: Aluminum |
| 65 | | | | | | | | | | **DRILLING METHODS**<br>Soil Drill: 4" Sonic<br>Rock Drill: 4" Sonic |
| | 710 | | | | | | | | | |
| 70 | | | | | | | | | | |
| | 705 | | | | | | | | | |
| 75 | | | | | | | | | | |
| | 700 | | | | | | | | | |
| 80 | | | | | | | | | | |
| | 695 | | | | | | | | | |
| 85 | | | | | | | | | | |
| | 690 | | | | | | | | | |
| 90 | | | | | | | | | | |
| | 685 | | | | | | | | | |
| 95 | | | | | | | | | | |
| | 680 | | | | | | | | | |
| 100 | | | | | | | | | | |

LOG SCALE: 1 in = 6.5 ft
DRILLING COMPANY: Cascade Drilling
DRILLER: Dale

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/29/17

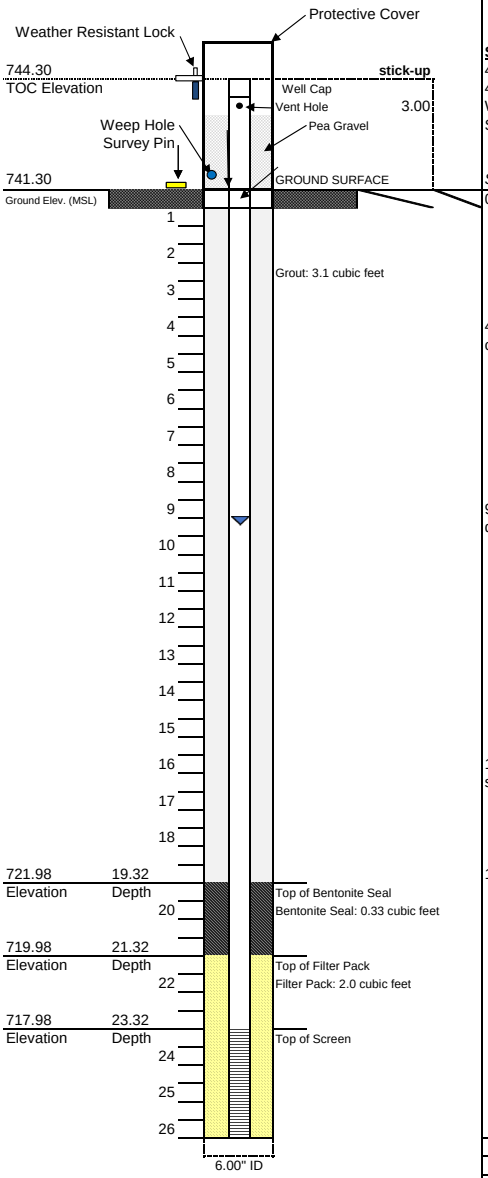
Golder Associates

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

ATLANTIC COAST CONSULTING, INC.

**PZ-51**
BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 36.69 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 7-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 8-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 7' BGS | | |
| **WATER AFTER 48 HOURS:** | 6.27' BGS | | |




Northing: 1257595.80
Easting: 2073182.55

**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0-4' Hydrovac. No observable cuttings

4-9' Hard rock. Gniessic banding/schist. Moderately weathered to competent. Some iron staining present (5/5)

9-16' As above except very competent rock. No iron staining. Very hard drilling (5/7)

16-19' As above except rock now slightly weathered and some iron staining present (2/3)

19-29' As above except now more iron staining present (6/10)

Core Photos

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Campbell Monoflex |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Campbell Monoflex |

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**PZ-51**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 36.69 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 7-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 8-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 7' BGS | | |
| **WATER AFTER 48 HOURS:** | 6.27' BGS | | |

Core Photos

| Elevation MSL | Depth BGS | |
|---|---|---|
| | 28 | |
| | 29 | 29-33' As above except rock now very competent. No iron staining present. Very hard drilling (4/4) |
| | 30 | |
| | 31 | |
| | 32 | |
| 707.98 | 33.32 | Bottom of Screen |
| | | Silt Trap (0.3') |
| Elevation | Depth | |
| | 34 | |
| | 35 | |
| | 36 | |
| | 37 | |
| | 38 | |
| | 39 | |
| | 40 | |
| | 41 | |
| | 42 | |
| | 43 | |
| | 44 | |
| | 45 | |
| | 46 | |
| | 47 | |
| | 48 | |
| | 49 | |
| | 50 | |
| | 51 | |
| | 52 | |

Total well depth 33.62' BGS

6.00" OD

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

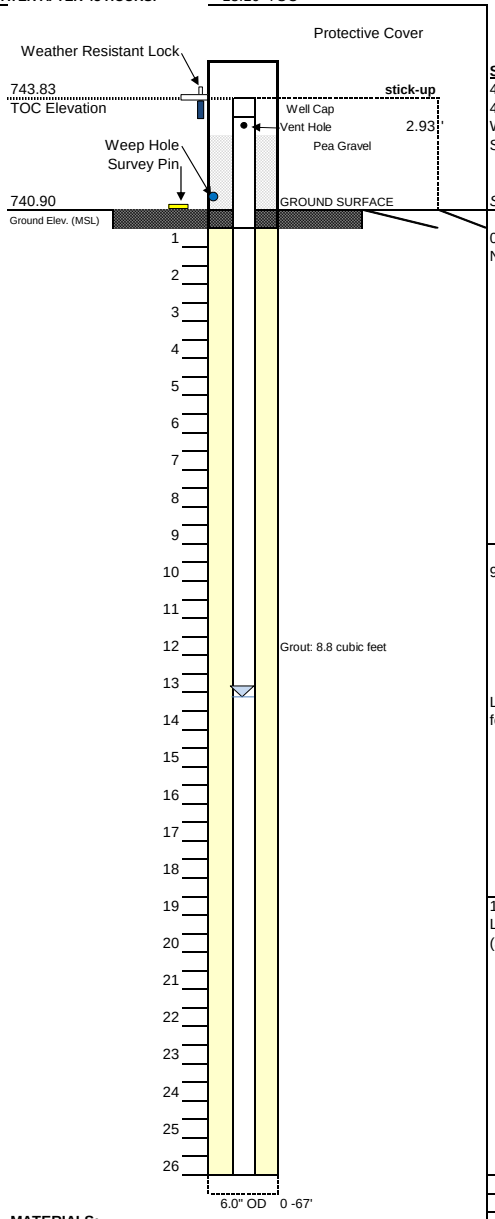
ATLANTIC COAST CONSULTING, INC.

**YAMW-1**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates - Ash Pond 3 | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 70.53 ft btoc | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 18-Sep-2018 | **DRILLER:** | Ray Whitt |
| **DATE COMPLETE:** | 19-Sep-2018 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | **TOC Elev:** | 743.83 ft msl |
| **WATER 1ST ENCOUNTERED:** | 49' BGS | | |
| **WATER AFTER 48 HOURS:** | 13.10' TOC | | |

Northing: 1258602.12
Easting: 2073815.29




**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0.00 - 10.00'
No recovery; Hydrovac

9.0 - 19.0

Light brown, moist to saturated sandy SILT (ML), feldspathic soil overburden

19.00 - 29.00
Light to medium brown, gray and white, saturated, silty SAND, saprolitic (SM)

**MATERIALS:**

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

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-1**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates - Ash Pond 3 | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 70.53 ft. TOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 18-Sep-2018 | **DRILLER:** | Ray Whitt |
| **DATE COMPLETE:** | 19-Sep-2018 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | **TOC Elev:** | 743.83 ft msl |
| **WATER 1ST ENCOUNTERED:** | 49' BGS | | |
| **WATER AFTER 48 HOURS:** | 13.10' TOC | | |

| Elevation MSL | Depth BGS | |
|---|---|---|
| | 28 | Light to medium brown, gray and white, saturated, silty SAND, saprolitic (SM) |
| | 29 | 19.0 -29.0 |
| | 30 | 29.0 - 39.0 Recovery (10/10) |
| | 31 | |
| | 32 | |
| | 33 | |
| | 34 | Medium brown, white and gray, dry silty SAND, micacous and saprolitic (SM) |
| | 35 | |
| | 36 | |
| | 37 | |
| | 38 | |
| | 39 | |
| | 40 | 39.0 - 44.0 Recovery (5/5) Medium brown, white and gray, dry silty SAND, micacous and saprolitic (SM) |
| | 41 | |
| | 42 | |
| | 43 | |
| | 44 | |
| | 45 | 44. - 49.0 Recovery (2/5) |
| | 46 | |
| | 47 | |
| | 48 | White to dark brown, Biotite/muscovite gneiss,weathered, friable, iron staining at 54' (easily fractured) |
| | 49 | |
| | 50 | 49.0 -59.0 Recovery (5/10) |
| | 51 | Gray, white brown Gneiss, iron staining |
| | 52 | |

6.0" OD 0 -67'

**MATERIALS:**

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

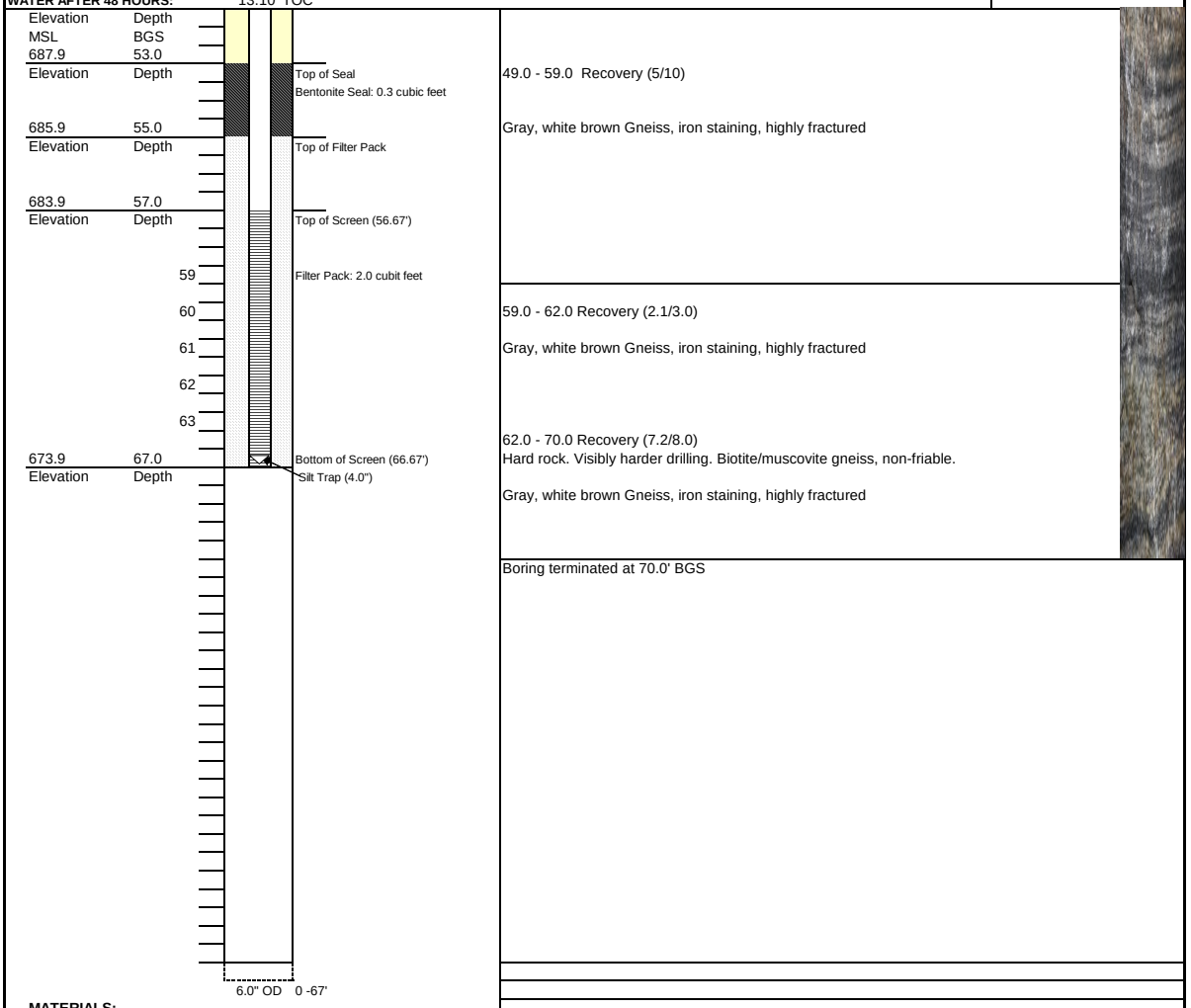
TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-1**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates - Ash Pond 3 | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 70.53 ft. TOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 18-Sep-2018 | **DRILLER:** | Ray Whitt |
| **DATE COMPLETE:** | 19-Sep-2018 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | **TOC Elev:** | 743.83 ft msl |
| **WATER 1ST ENCOUNTERED:** | 49' BGS | | |
| **WATER AFTER 48 HOURS:** | 13.10' TOC | | |




49.0 - 59.0 Recovery (5/10)

Gray, white brown Gneiss, iron staining, highly fractured

59.0 - 62.0 Recovery (2.1/3.0)

Gray, white brown Gneiss, iron staining, highly fractured

62.0 - 70.0 Recovery (7.2/8.0)

Hard rock. Visibly harder drilling. Biotite/muscovite gneiss, non-friable.

Gray, white brown Gneiss, iron staining, highly fractured

Boring terminated at 70.0' BGS

**MATERIALS:**

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

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

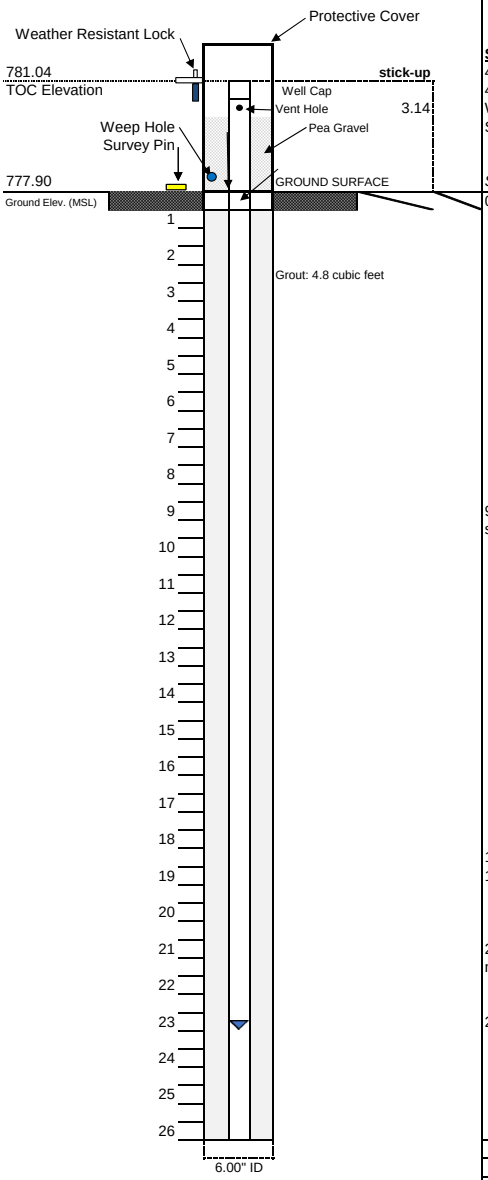
The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

ATLANTIC COAST CONSULTING, INC.

**YAMW-2**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 46.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 11-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 12-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 20' BGS | | |
| **WATER AFTER 48 HOURS:** | 22.72' BGS | | |




Northing: 1256780.59
Easting: 2072924.89

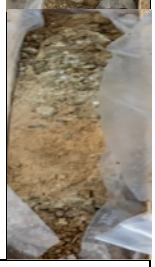
**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0-10' Hydrovac. No observable cuttings

9-19' Dark reddish brown to white/tan/pale brown. Silty sand (SC) with some silt and clays, moist to dry, soft, some saprolite. (10/10)

19-29' (10/10)
19-21' As above except mostly sand.



21-23' Mostly silt, brown, moist, medium dense, slight plasticity and micaceous.

23-29' Moslty sand (SC) brown to tan, slightly moist, some saprolite.

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Campbell Monoflex |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Campbell Monoflex |

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

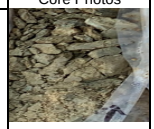
ATLANTIC COAST CONSULTING, INC.

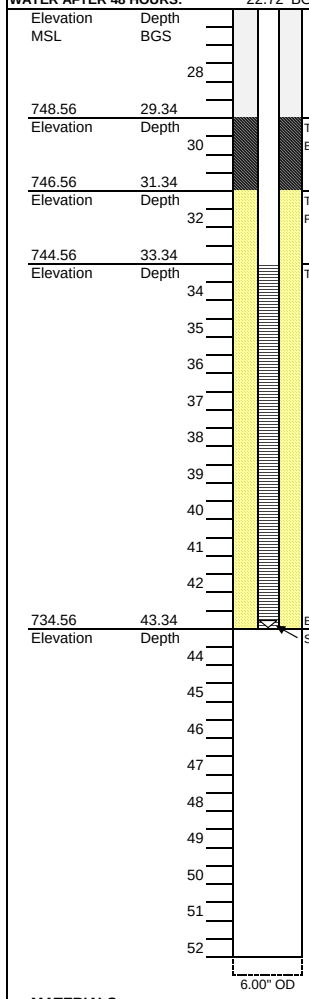
**YAMW-2**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 46.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 11-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 12-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 20' BGS | | |
| **WATER AFTER 48 HOURS:** | 22.72' BGS | | |

Core Photos






29-39' Harder drilling. No recovery (0/10)

39-43' Hard rock gneissic banding/schist. Some garnet. Iron staining present (4/4)

Total well depth 43.64' BGS

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

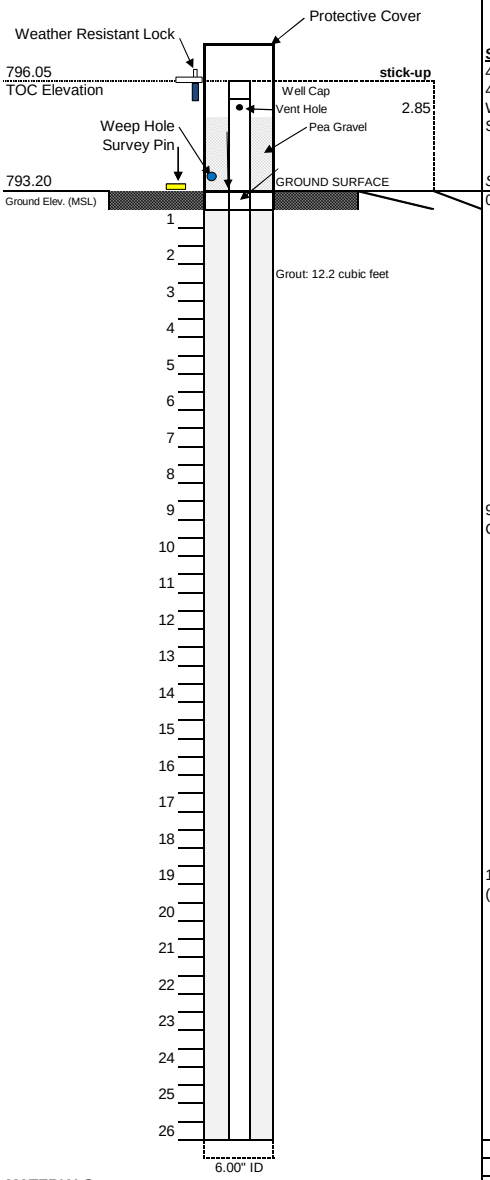
The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

ATLANTIC COAST CONSULTING, INC.

**YAMW-3**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 91.96 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 6-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 34.44' BGS | | |




Northing: 1256915.25
Easting: 2073345.21

**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0-9' Hydrovac. No observable cuttings

9-19' Dark to pale brown silty sand. Dry, soft with some clay and gravel
Gravel is friable and medium to highly weathered

19-29' As above-tan to medium brown, some hard gravel pieces
(10/10)

Core Photos

**MATERIALS:**

| | | |
|---|---|---|
| GROUT: | | Bentonite Grout |
| MANUFACTURER: | | AquaGuard |
| BENTONITE SEAL: | | 3/8" Bentonite Pellets |
| MANUFACTURER: | | Pel-Plug |
| FILTER PACK SAND: | | 20/30 Mesh |
| MANUFACTURER: | | Filter Media |
| WELL SCREEN: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |
| SLOT SIZE: | | 0.010-Inch Slot |
| WELL CASING: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-3**

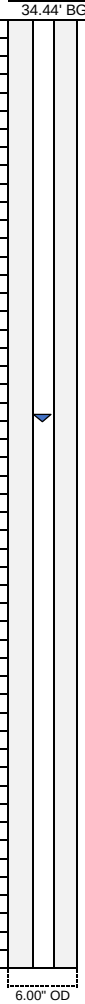
BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 91.96 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 6-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 34.44' BGS | | |

Core Photos

Elevation MSL / Depth BGS

28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52



6.00" OD

29-39' Hard rock-metamorphic gneiss banding/schist, fractured core iron staining (4.5/10)

39-49' As above (4.5/10)

49-59' As above-less fractured rock (8/10)

**MATERIALS:**

| | | |
|---|---|---|
| GROUT: | | Bentonite Grout |
| MANUFACTURER: | | AquaGuard |
| BENTONITE SEAL: | | 3/8" Bentonite Pellets |
| MANUFACTURER: | | Pel-Plug |
| FILTER PACK SAND: | | 20/30 Mesh |
| MANUFACTURER: | | Filter Media |
| WELL SCREEN: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Silver-Line |
| SLOT SIZE: | | 0.010-Inch Slot |
| WELL CASING: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-3**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 91.96 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 6-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 34.44' BGS | | |

Core Photos

| Elevation MSL | Depth BGS | |
|---|---|---|
| | 54 | |
| | 55 | |
| | 56 | |
| | 57 | |
| | 58 | |
| | 59 | 59-69' As above, large rock pieces/less fractures<br>No iron staining (5/10) |
| | 60 | |
| | 61 | |
| | 62 | |
| | 63 | |
| | 64 | |
| | 65 | |
| | 66 | |
| | 67 | |
| | 68 | |
| | 69 | 69-79' (10/10)<br>72-74' more fractured than previous<br>74-79' lots of iron staining. Some quartzite. |
| | 70 | |
| | 71 | |
| | 72 | |
| | 73 | |
| | 74 | |
| 718.61 Elevation | 74.59 Depth | Top of Bentonite Seal<br>Bentonite Seal: 0.33 cubic feet |
| | 76 | |
| 716.61 Elevation | 76.59 Depth | Top of Filter Pack<br>Filter Pack: 2.0 cubic feet |
| | 78 | |

6.00" OD





**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

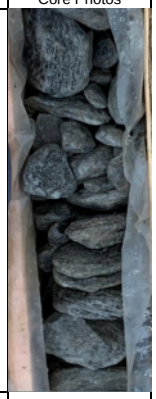
ATLANTIC COAST CONSULTING, INC.

**YAMW-3**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 91.96 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 6-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 34.44' BGS | | |

Core Photos



714.61 Elevation / 78.59 Depth — Top of Screen

704.61 Elevation / 88.59 Depth — Bottom of Screen

Silt Trap (0.3')

6.00" OD

79-88' As above. Iron staining stops at ~81'

Total well depth 88.89' BGS

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

Page 4 of 4

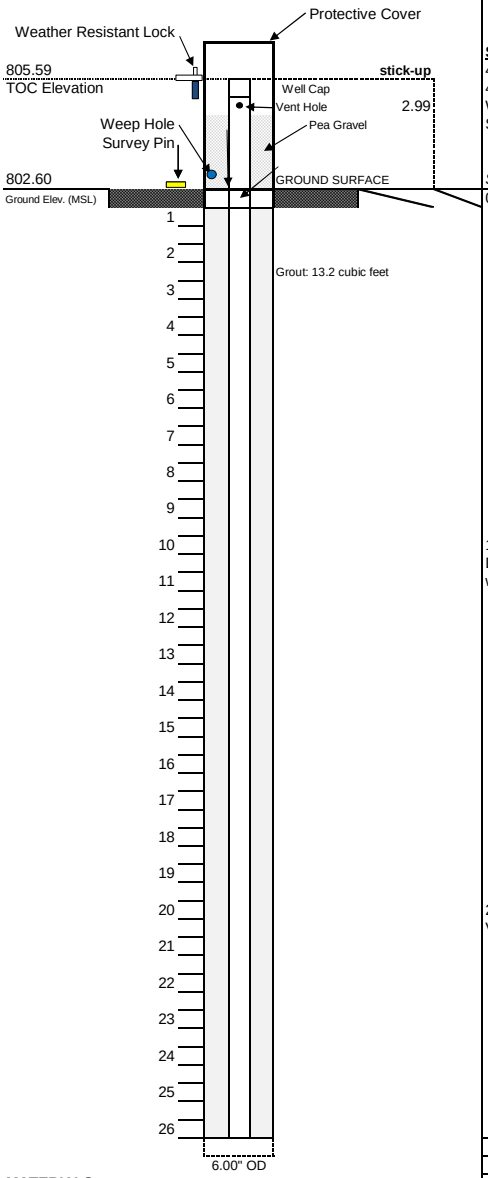
The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

ATLANTIC COAST CONSULTING, INC.

**YAMW-4**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 96.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 7-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 30.68' BGS | | |




Northing: 1256532.64
Easting: 2073280.71

**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0-10' Hydrovac. No observable cuttings

10-20' Brown to pale brown sandy silt with some clay and some gravel
Dry, soft, slightly micaceous, low plasticity, medium to highly weathered saprolite. Friable. (10/10)

Core Photos

20-30' As above-slightly harder weathered rock at 20-21'-still friable
Very sandy layer at 24-25' (10/10)

**MATERIALS:**

| | | |
|---|---|---|
| GROUT: | | Bentonite Grout |
| MANUFACTURER: | | AquaGuard |
| BENTONITE SEAL: | | 3/8" Bentonite Pellets |
| MANUFACTURER: | | Pel-Plug |
| FILTER PACK SAND: | | 20/30 Mesh |
| MANUFACTURER: | | Filter Media |
| WELL SCREEN: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |
| SLOT SIZE: | | 0.010-Inch Slot |
| WELL CASING: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-4**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 96.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 7-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 30.68' BGS | | |

Core Photos

| Elevation MSL | Depth BGS | |
|---|---|---|
| | 28 | |
| | 29 | |
| | 30 | 30-35' Mostly sand silt with 10% gravel-hard to friable |
| | 31 | 35-37' Clayey sand-high to medium plasticity |
| | 32 | 37-40' Return to silty sand with medium to highly weathered rock. Micaceous |
| | 33 | |
| | 34 | |
| | 35 | |
| | 36 | |
| | 37 | |
| | 38 | |
| | 39 | |
| | 40 | 40-44' As above (5/5) |
| | 41 | |
| | 42 | |
| | 43 | |
| | 44 | |
| | 45 | 45-49' Hard rock. Metamorphic gneiss banding/schist. Iron staining present. 44-45' Moderately hard, somewhat friable. (5/5) |
| | 46 | |
| | 47 | |
| | 48 | |
| | 49 | 49-59' As above, moderately weathered, somewhat friable, iron staining present (2/10) |
| | 50 | |
| | 51 | |
| | 52 | |

6.00" OD

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-4**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 96.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 7-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 30.68' BGS | | |

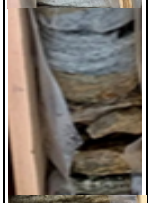
Core Photos

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

6.00" OD

59-69' As above except less weathered rock, non friable. Still some iron staining present (8/10)

69-79' As aboveexcept rock is more weathered. Section of quartzite at 73-74'. Iron staining ends at 77'. (7/10)



**MATERIALS:**

| | | |
|---|---|---|
| GROUT: | | Bentonite Grout |
| MANUFACTURER: | | AquaGuard |
| BENTONITE SEAL: | | 3/8" Bentonite Pellets |
| MANUFACTURER: | | Pel-Plug |
| FILTER PACK SAND: | | 20/30 Mesh |
| MANUFACTURER: | | Filter Media |
| WELL SCREEN: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Silver-Line |
| SLOT SIZE: | | 0.010-Inch Slot |
| WELL CASING: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-4**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 96.86 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 5-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 7-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 30' BGS | | |
| **WATER AFTER 48 HOURS:** | 30.68' BGS | | |

Core Photos

| Elevation MSL | Depth BGS | |
|---|---|---|
| 723.04 | 79.56 | |
| Elevation | Depth | Top of Bentonite Seal |
| | | Bentonite Seal: 0.33 cubic feet |
| | 81 | |
| 721.04 | 81.56 | |
| Elevation | Depth | Top of Filter Pack |
| | | Filter Pack: 2.0 cubic feet |
| | 83 | |
| 719.04 | 83.56 | |
| Elevation | Depth | Top of Screen |
| | 85 | |
| | 86 | |
| | 87 | |
| | 88 | |
| | 89 | |
| | 90 | |
| | 91 | |
| | 92 | |
| | 93 | |
| 709.04 | 93.56 | Bottom of Screen |
| Elevation | Depth | Silt Trap (0.3') |
| | 95 | |
| | 96 | |
| | 97 | |
| | 98 | |
| | 99 | |
| | 100 | |
| | 101 | |
| | 102 | |
| | 103 | |
| | 104 | |

6.00" OD

79-89' Very competent rock with some fracturing at 84-85' and 88-89'. Iron staining at 88-89'

89-94' Fractures and iron staining from 89-90' and 93-94'. Some slight iron staining from 90-93' but mostly solid core.

Total well depth 93.86' BGS

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

Page 4 of 4

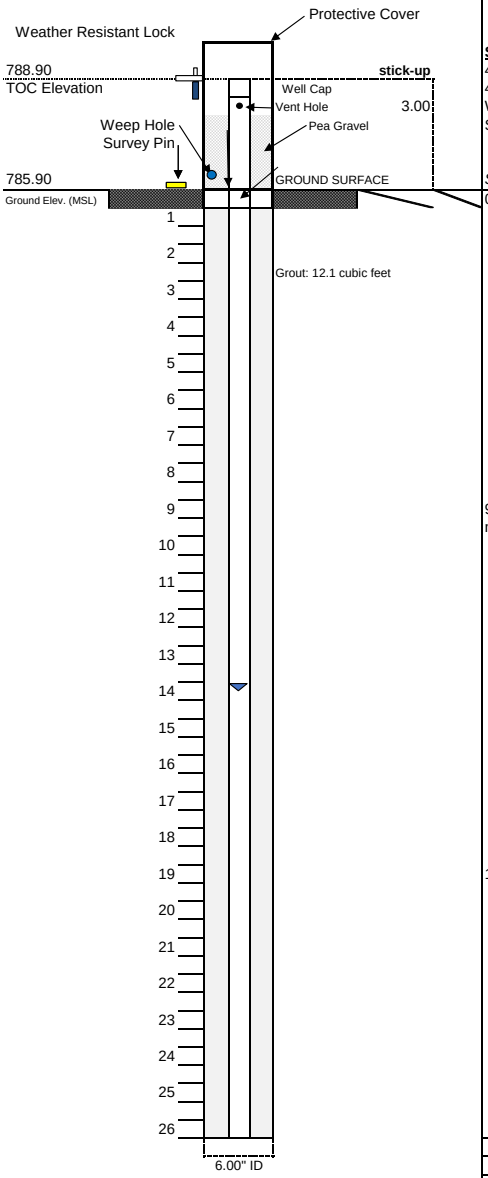
The well coordinates and elevation data were revised
based on a June 2020 survey (Arcadis, June 29, 2020).

ATLANTIC COAST CONSULTING, INC.

**YAMW-5**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 90.66 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 12-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 13-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 35' BGS | | |
| **WATER AFTER 48 HOURS:** | 11.21' BGS | | |




Northing: 1256140.21
Easting: 2074486.69

**SURFACE COMPLETION:**
4"x4" Aluminum Protective Casing
4'x4'x4" Concrete Pad
Weather Resistant Lock
Survey Pin

*SOIL DESCRIPTION*

0-10' Hydrovac. No observable cuttings

9-19' tan to pale brown. Silty sand (SC) with some silt and clays, moist to dry, soft, some saprolite. (10/10)

19-29' As above (9/10).

Core Photos

**MATERIALS:**

| | | |
|---|---|---|
| GROUT: | | Bentonite Grout |
| MANUFACTURER: | | AquaGuard |
| BENTONITE SEAL: | | 3/8" Bentonite Pellets |
| MANUFACTURER: | | Pel-Plug |
| FILTER PACK SAND: | | 20/30 Mesh |
| MANUFACTURER: | | Filter Media |
| WELL SCREEN: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |
| SLOT SIZE: | | 0.010-Inch Slot |
| WELL CASING: | | Sch. 40 - 2" PVC |
| MANUFACTURER: | | Campbell Monoflex |

Soil Descriptions from Unified Soil Classification System

BTOC - Below Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

ATLANTIC COAST CONSULTING, INC.

**YAMW-5**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 90.66 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 12-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 13-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 35' BGS | | |
| **WATER AFTER 48 HOURS:** | 11.21' BGS | | |

Core Photos

| Elevation MSL | Depth BGS |
|---|---|
| | 28 |
| | 29 |
| | 30 |
| | 31 |
| | 32 |
| | 33 |
| | 34 |
| | 35 |
| | 36 |
| | 37 |
| | 38 |
| | 39 |
| | 40 |
| | 41 |
| | 42 |
| | 43 |
| | 44 |
| | 45 |
| | 46 |
| | 47 |
| | 48 |
| | 49 |
| | 50 |
| | 51 |
| | 52 |

6.00" OD

29-39' Harder drilling. Gniessic banding with schist. Iron and manganese staining. Some fractures present.

39-49' As above except no iron staining (7/10)

49-59' As above (8/10)

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
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ATLANTIC COAST CONSULTING, INC.

**YAMW-5**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 90.66 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 12-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 13-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 35' BGS | | |
| **WATER AFTER 48 HOURS:** | 11.21' BGS | | |

Core Photos

Elevation MSL | Depth BGS

54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72

712.56 Elevation | 73.34 Depth — Top of Bentonite Seal

74 — Bentonite Seal: 0.33 cubic feet

710.56 Elevation | 75.34 Depth — Top of Filter Pack

76 — Filter Pack: 2.0 cubic feet

708.56 Elevation | 77.34 Depth — Top of Screen

78

6.00" OD

59-69' As above except more competent rock. Iron staining and fractures present (6/10)

69-79' As above except no iron staining (9/10)

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

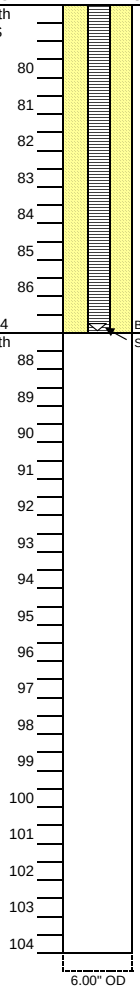
ATLANTIC COAST CONSULTING, INC.

**YAMW-5**

BORING ID

| | | | |
|---|---|---|---|
| **PROJECT:** | Plant Yates | **PROJECT NO.:** | I054-110 |
| **TOTAL DEPTH:** | 90.66 ft. BTOC | **SITE LOCATION:** | Newnan, Georgia |
| **DATE BEGIN:** | 12-Nov-2019 | **DRILLER:** | Isaac Young |
| **DATE COMPLETE:** | 13-Nov-2019 | **RIG TYPE:** | T-300 Rotosonic |
| **INSTALLED BY:** | Cascade | **METHOD:** | Rotosonic |
| **SUPERVISED BY:** | Ryan Walker | | |
| **WATER 1ST ENCOUNTERED:** | 35' BGS | | |
| **WATER AFTER 48 HOURS:** | 11.21' BGS | | |

Core Photos




| Elevation MSL | Depth BGS | |
|---|---|---|
| 698.56 | 87.34 | Bottom of Screen |
| | | Silt Trap (0.3') |

79-87' As above except rock slightly weathered. Iron staining and some fractures present (6/10)

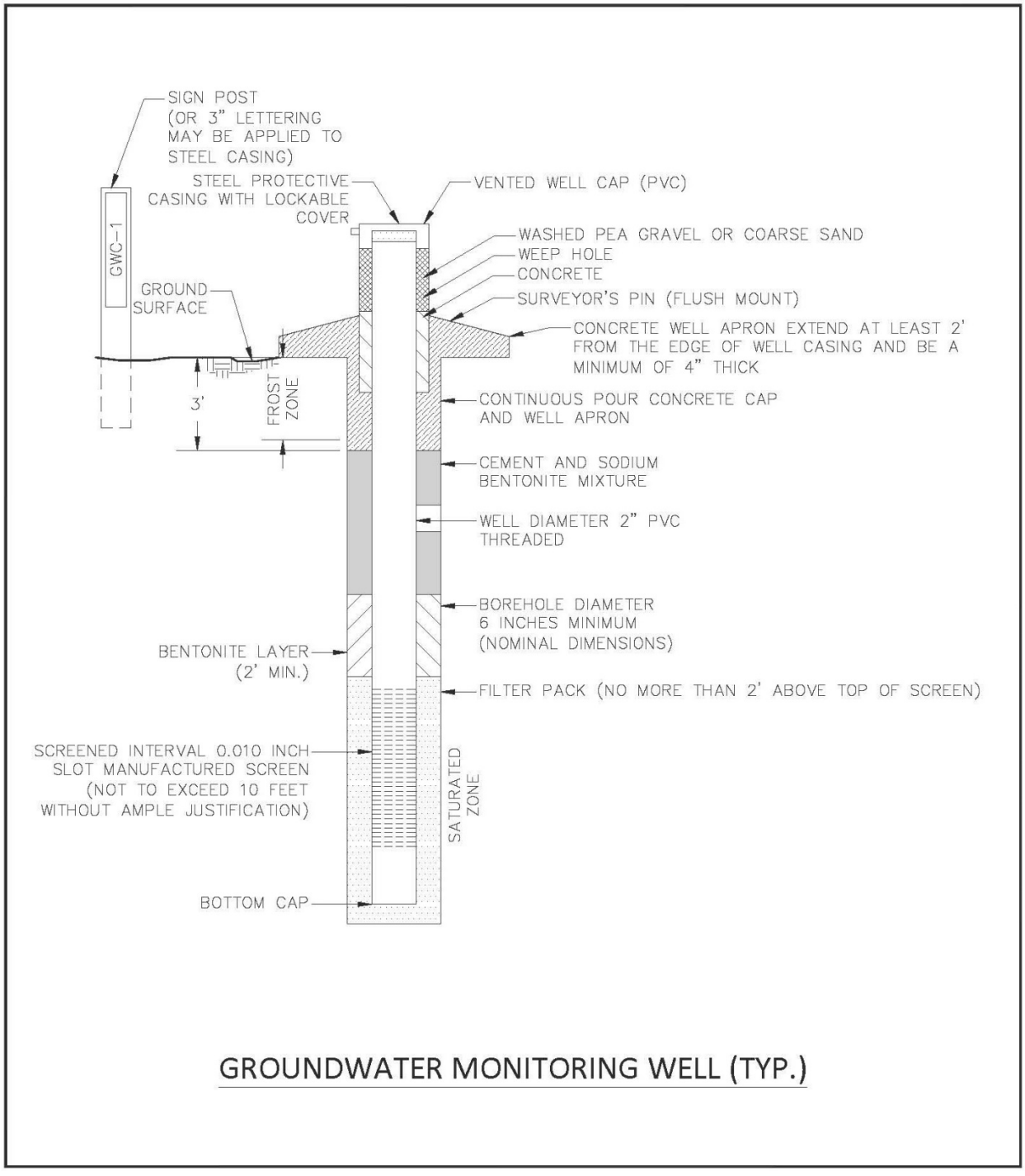
Total well depth 87.64' BGS

**MATERIALS:**

| | |
|---|---|
| GROUT: | Bentonite Grout |
| MANUFACTURER: | AquaGuard |
| BENTONITE SEAL: | 3/8" Bentonite Pellets |
| MANUFACTURER: | Pel-Plug |
| FILTER PACK SAND: | 20/30 Mesh |
| MANUFACTURER: | Filter Media |
| WELL SCREEN: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |
| SLOT SIZE: | 0.010-Inch Slot |
| WELL CASING: | Sch. 40 - 2" PVC |
| MANUFACTURER: | Silver-Line |

TOC - Top of Casing
ID - Inside Diameter; OD - Outside Diameter
MSL - Mean Sea Level
BGS - Below Ground Surface

# APPENDIX D. GROUNDWATER MONITORING WELL DETAIL




GROUNDWATER MONITORING WELL (TYP.)

# APPENDIX E. GROUNDWATER SAMPLING PROCEDURES

Groundwater sampling will be conducted using most current USEPA Region 4 Field Quality and Technical Procedures as a guide. The following procedures describe the general methods associated with groundwater sampling at the site. Prior to sampling, the well must be evacuated (purged) to ensure that representative groundwater is obtained. Any item coming in contact with the inside of the well casing or the well water will be kept in a clean container and handled only with gloved hands.

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

1. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations and notify Georgia Power if it appears that the well has been compromised.

2. Measure and record the depth to water in all wells to be sampled prior to purging 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 (2) feet above the bottom of the well to prevent disturbance and suspension of any sediment present in the bottom of the well. Record the depth to which the pump is lowered. All non-dedicated pumps and wiring will be decontaminated before use and between well locations using procedures described in the latest version of the Region 4 U.S. Environmental Protection Agency Science and Ecosystem Support Division (SESD) Operating Procedure for Field Equipment Cleaning and Decontamination as a guide.

4. Measure Water Level: Immediately prior to purging, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

5. Purge Well: Begin pumping the well at approximately 100 to 500 milliliters per minute (mL/min). Monitor the water level continually. Maintain a steady flow rate that results in a stabilized water level with 0.3 foot 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 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)

±10% for DO where DO > 0.5 mg/L (milligrams per liter). If DO < 0.5 mg/L, no stabilization criteria applies

≤5 NTUs for turbidity

Temperature – Record only, not used for stabilization criteria

ORP – Record only, not used for stabilization criteria.

7. Collect samples at a low flow rate and such that drawdown of the water level within the well is stable. Flow rate must be reduced if excessive drawdown is observed during sampling. All sample containers should be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.

8. Compliance samples will be unfiltered; however, to determine if turbidity is affecting sample results, duplicate samples may be filtered in the field prior to being placed in a sample container, clearly marked as filtered and preserved. Filtering will be accomplished by the use of 0.45-micron filters on the sampling line. At least two filter volumes of sample will pass through before filling sample containers. Filtered samples are not considered compliance samples and are only used to evaluate the effects of turbidity.

9. All sample bottles will be filled, capped, and placed in an ice containing cooler immediately after sampling where temperature control is required. Samples that do not require temperature control will be placed in a clean and secure container.

10. Sample containers and preservative will be appropriate for the analytical method being used.

11. Information contained on sample container labels will include:

    a. Name of facility

    b. Date and time of sampling

    c. Sample description (well number)

    d. Sampler's initials

    e. Preservatives

    f. Analytical method(s)

12. After samples are collected, samplers will remove all non-dedicated equipment. Upon completion of all activity the well will be closed and locked.

13. Samples will be delivered to the laboratory following appropriate COC and temperature control requirements. The goal for sample delivery will be within 48 hours of collection; however, at no time will samples be analyzed after the method-prescribed hold time.

Throughout the sampling process, new 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 will be 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 10 NTU and all other stabilization criteria have been met, samplers will continue purging for up to 3 additional hours in order to reduce the turbidity to 10 NTU or less, as follows:

- 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 COC form.