



REPORT

2019 Semi-Annual Groundwater Monitoring and Corrective Action Report

*Georgia Power Company - Plant Branch
Ash Pond E*

Submitted to:



Georgia Power Company

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February 26, 2020

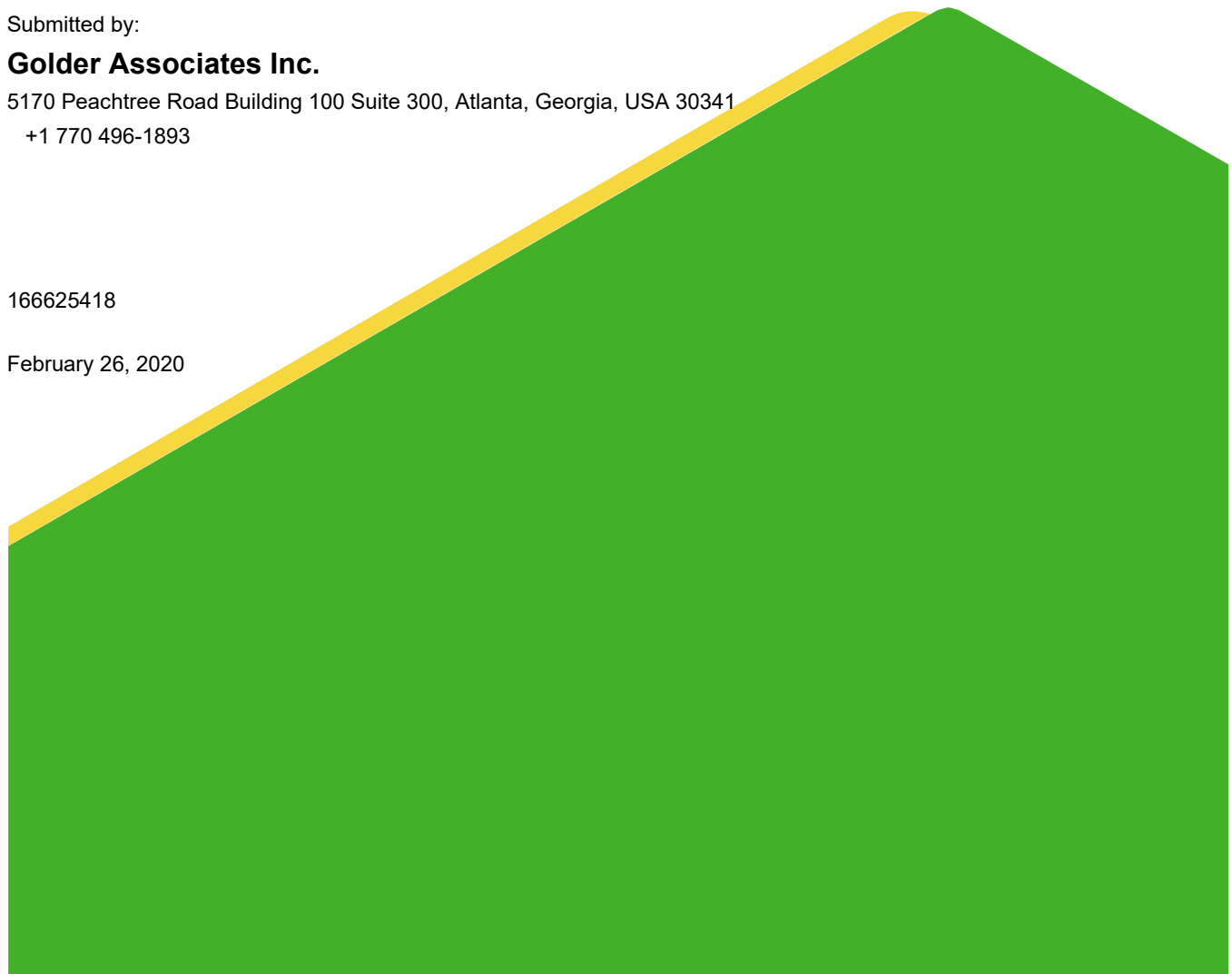


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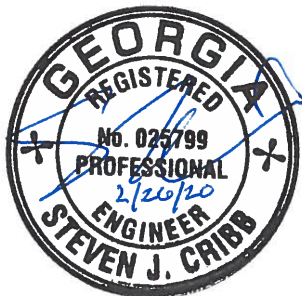
Certification Statement

This 2019 Semi-Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company Plant Branch Ash Pond E (AP-E) has been prepared in compliance with the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10(6)(a-c) by a qualified groundwater scientist with Golder Associates.

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1.0 INTRODUCTION

In accordance with the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management 391-3-4-.10(6)(a)-(c), this *2019 Semi-Annual Groundwater Monitoring and Corrective Action Report* has been prepared to document groundwater monitoring activities conducted at Georgia Power Company's (GPC's) Plant Branch Ash Pond E, referred to as AP-E. To specify groundwater monitoring requirements, GA EPD rule 391-3-4-.10(6)(a) incorporates by reference the United States Environmental Protection Agency (US EPA) Coal Combustion Residuals (CCR) Rule 40 Code of Federal Regulations (CFR) § 257.90 through 257.91 and 257.93 through 257.94. This report documents the activities completed July 1 through December 31, 2019 following the requirements of the site's groundwater monitoring program and in accordance with § 257.90(e) and Georgia EPD rule 391-3-4-.10(6)(a). For ease of reference, the US EPA CCR rules are cited within this report.

Two monitoring events were conducted during this monitoring period: (1) an initial assessment monitoring event was conducted in August 2019 as a result of statistical exceedances during the first detection monitoring event, and (2) the subsequent assessment event conducted in October 2019, which served as the semi-annual compliance monitoring event for the year. This report documents the activities completed through the second half of 2019.

1.1 Site Description and Background

Plant Branch is located in Putnam County, GA, approximately 8 miles north of Milledgeville. The property occupies approximately 3,200 acres and is bounded on the south and east by Lake Sinclair, which is an approximate 15,330-acre hydroelectric reservoir that was created in 1953 by the impoundment of the Oconee River. A site location map and a detailed site map is included as Figure 1.

Plant Branch formerly operated as a coal-fired power plant since the 1960s until its retirement in 2015. Plant Branch is no longer active and is currently being decommissioned. During its operation, five ash ponds were used for management of the CCR on the plant property. These CCR ponds are identified as Ponds A, B, C, D, and E. Ash Pond A, the first ash pond constructed at the Site, was taken out of service in the late 1960's and was closed in April 2016 by the removal and relocation of its stored CCR to Ash Pond E. Ponds B, C, D, and E are currently inactive, and will be closed by removal by relocation of the stored CCR material to a proposed fully lined landfill located on the plant property. This report documents the groundwater monitoring program at the unit AP-E.

Plant Branch ceased producing electricity prior to April 2015. Therefore, Ash Pond E is not subject to the Federal CCR Rule. A CCR Unit Solid Waste Handling Permit application for AP-E was submitted to GA EPD in November 2018 and is currently under review.

1.2 Site Geology and Hydrogeologic Setting

The following section and subsections include a general description of regional geologic and hydrogeologic characteristics of formations that occur beneath the site. Information presented in this section is based on published literature, discussion with local geologic experts, and experience working in this geologic terrain.

The site is located within the Piedmont Physiographic Province of central Georgia, which is characterized by gently rolling hills and narrow valleys, with locally pronounced linear ridges. Overall, the property slopes gently east and south toward Beaverdam Creek and Lake Sinclair. The metamorphic and igneous rocks that underlie the area have been subjected to physical and chemical weathering which has created a landscape dissected by creeks and streams forming a dendritic drainage pattern. These rocks are deeply weathered due to the humid

climate and bedrock is typically overlain by a variably thick blanket of residual soils and saprolite. The overall depth of weathering in the Piedmont/Blue Ridge is generally about 20 to 60 feet; however, the depth of weathering along discontinuities and/or very feldspathic rock units may extend to depths greater than 100 feet. Because of such variations in rock types and structure, the depth of weathering can vary significantly over short horizontal distances.

The near surface conditions were determined based upon available boring and monitoring well installation logs. Based on our review of this information, micaceous, locally saprolitic soils, consisting primarily of clay, silty clay, silt, and sandy clay occur as a variably thick blanket of residuum overlying bedrock across most of the site. The thickness of the residual soil encountered in the borings is variable, ranging from approximately 11 feet to as much as 74 feet. Saprolitic soils and/or saprolitic rock vary in thickness across the site but are generally encountered at or near ground surface. Saprolitic rock is also considered to be transitionally weathered rock (TWR) or partially weathered rock (PWR), as defined by standard penetration test data, where available. Material overlying the top of rock surface, including residual soils, saprolite, and transitionally weathered rock, is collectively referred to as overburden or regolith.

1.3 Groundwater Monitoring Well Network

Pursuant to § 257.91 of the CCR rule and 391-3-4-.10(6), a groundwater monitoring system was installed within the uppermost aquifer at AP-E. Wells placed in upgradient, and downgradient locations based on groundwater flow direction as determined by the potentiometric surface elevation contour maps.

A network of 12 monitoring wells were installed between 2014 to 2018 for groundwater monitoring in proximity to AP-E. Table 1, Monitoring Well Network Summary includes the pertinent construction details for the AP-E monitoring well network at Plant Branch.

Based on the site hydrogeology, the monitoring system is designed to monitor groundwater flow in the overburden, the transition-zone, and the upper bedrock as a single inter-connected aquifer system. Wells suffixed with an “S” are installed in overburden (saprolitic soil), an “I” indicates transitionally weathered rock (transition zone), and “D” indicates upper bedrock. Groundwater in the overburden, partially weathered rock, fractured bedrock, and the materials comprise a single uppermost aquifer based on site hydrogeologic conditions.

2.0 GROUNDWATER MONITORING ACTIVITIES

The following section describes monitoring-related activities performed during the previous semi-annual monitoring period (July 1 through December 31, 2019). Groundwater sampling was performed in accordance with § 257.93 and EPD rule 391-3-4-.10(6)(a). Samples were collected from each well in the certified monitoring system for the CCR unit. The location of each of these monitoring wells is shown on Figure 2.

Pursuant to § 257.90(e)(3), Table 2, Groundwater Sampling Event Summary, presents a summary of groundwater sampling events completed for AP-E.

2.1 Monitoring Well Installation and Maintenance

For this reporting period, monitoring well-related activities included the following:

- Visual inspection of well conditions prior to sampling, recording the site conditions, and performing exterior maintenance to perform sampling under safe and clean conditions.

- Installation of additional site piezometers as part of ongoing site investigations. Additional piezometers installed at Plant Branch are documented in a report, *Piezometer Installation Report, Georgia Power Company – Plant Branch, Milledgeville, Georgia*, dated September 26, 2018, and *Piezometer Installation Report for Surface Impoundment Georgia Power Plant Branch, Milledgeville, Georgia*, dated May 31, 2018. Each of these installation reports are included in Appendix A, Well/Piezometer Installation Reports.

2.2 Initial Assessment Monitoring

Statistically Significant Increases (SSI) of Appendix III constituents were identified in the initial detection monitoring event (March 2019). Pursuant to §257.94(e)(3), an assessment monitoring program has been initiated for AP-E at Plant Branch based on statistically significant increases documented in the 2019 Annual Groundwater Monitoring and Corrective Action Report, (Golder 2019). A notice of assessment monitoring was placed in the operation record on November 13, 2019.

Groundwater sampling events were conducted for AP-E during August and October 2019. Resampling events were also completed during November and December 2019 due to laboratory error. During the initial assessment sampling event in August 2019, groundwater samples were collected and analyzed for Appendix IV to meet the requirement of §257.95(b). During the October 2019 semi-annual sampling event, groundwater samples from each detection monitoring well were collected for analysis of Appendix III, and the Appendix IV constituents detected during the August 2019 event. Results of sampling activities conducted in 2019 are presented in Appendix B, Analytical Results, Field Data Forms, and Data Validation Summaries. Due to laboratory error, resampling of selected wells and constituents were completed during November and December 2019.

3.0 SAMPLE METHODOLOGY AND ANALYSIS

Two monitoring events (and resampling) were conducted during this monitoring period: (1) an initial assessment monitoring event was conducted in August 2019 as a result of statistical exceedances during the first detection monitoring event, and (2) the subsequent assessment event conducted in October 2019, which served as the semi-annual compliance monitoring event for the year. Limited resampling was also performed in November and December. The following sections describe the methods used to conduct groundwater monitoring at the Site.

3.1 Groundwater Elevation Measurement

Prior to each sampling event, groundwater elevations were recorded from the monitoring well network. Groundwater elevations are summarized in Table 3, Summary of Groundwater Elevations. The October 2019 elevation data were used to develop potentiometric surface elevation contour map (Figure 3, AP-E Potentiometric Surface Elevation Contour Map – October 2019). The general direction of groundwater flow across AP-E is to the east-northeast and east-southeast towards Beaverdam Creek and other natural streams onsite. This groundwater flow pattern is consistent with previous observations.

3.2 Groundwater Gradient and Flow Velocity

Groundwater flow rates at the site were calculated based on hydraulic gradients, hydraulic conductivity from previous slug test results, and an estimated effective porosity of the screened horizon. Based on slug test data at the site, hydraulic conductivity ranges from 2.7 to 5.5 feet per day, which is used in the flow calculations. The hydraulic gradient was calculated between well pairs shown on Table 4, Groundwater Flow Velocity Calculations – October 2019. An effective porosity of 0.20 was used based on the default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996).

Horizontal flow velocity was calculated using the commonly used derivative of Darcy's Law:

Where:

$V =$	Groundwater flow velocity
$K =$	Average hydraulic conductivity of the aquifer $\left(\frac{\text{foot}}{\text{day}}\right)$
$i =$	Horizontal hydraulic gradient $\left(\frac{\text{foot}}{\text{day}}\right)$
$n_e =$	Effective porosity

Using this equation, groundwater flow velocities are calculated for various areas of the site and are tabulated on Table 4. Table 4 presents the velocities calculated using groundwater elevation data from the October 2019 sampling event.

As presented on Table 4 groundwater flow velocity at the site ranges from approximately 0.07 to 0.29 feet per day (or approximately 25 to 107 feet per year) across AP-E. The observed groundwater flow velocities calculated for this monitoring event are also generally consistent with expected velocities in the regolith-upper bedrock aquifers of Georgia Piedmont and confirm the groundwater monitoring system as properly located to monitor the uppermost aquifer for AP-E at Plant Branch.

3.3 Groundwater Sampling

Groundwater samples were collected during August and October with resampling events conducted in November and December 2019 in accordance with §257.93(a) and 391-3-4-.10(6). Monitoring wells were purged and sampled using low-flow sampling procedures. Dedicated and/or non-dedicated low-flow pneumatic bladder pumps or peristaltic pumps were used to purge and sample the wells. During the purging of each well, field measurements of temperature, specific conductance, dissolved oxygen (DO), pH, and oxidation-reduction potential (ORP), were recorded using a SmarTroll (In-Situ field instrument) along with a separate turbidity meter to verify stabilization.

Groundwater samples were collected when the following general stabilization criteria were met:

- 0.1 standard units for pH
- 5% for specific conductance
- $\pm 10\%$ for DO where $DO > 0.5$ mg/L; if $DO < 0.5$ milligrams per liter (mg/L), no stabilization criteria apply
- Turbidity measurements less than 5 nephelometric turbidity units (NTU)

Any deviation from stabilization criteria, if applicable, is identified on field sampling forms. Following well stabilization, unfiltered samples were collected directly into appropriately preserved laboratory supplied sample containers, placed in iced coolers, and submitted to the laboratory following standard chain-of-custody protocol. Field information forms generated directly from the SmarTroll® as well as chain-of-custody records are included in Appendix B.

Where sample turbidity was greater than 5 NTU and all other stabilization criteria were met, samplers continued purging for up to 3 additional hours in order to reduce the turbidity to 5 NTU or less. When turbidity remained above 5 NTU but was less than 10 NTU, and all other parameters are stabilized, the well was sampled. Where turbidity remained above 10 NTU, an additional unfiltered sample was collected followed by a filtered sample that has passed through an in-line 0.45-micron filter attached to the discharge (sample collection) tube. The unfiltered sample data are used for compliance monitoring and in the statistical analysis database. Filtered sample data are

used to assess the impacts of turbidity on groundwater quality. Additional details regarding filtered samples are recorded on the field information form and filtered samples are clearly identified as “filtered” on the laboratory reports.

3.4 Laboratory Analyses

Groundwater samples were collected in August and analyzed for Appendix IV monitoring parameters only. Samples collected during October, November and December 2019 were submitted for analysis of Appendix III and detected Appendix IV parameters. Analytical methods used for groundwater monitoring parameters can be found on the attached analytical data reports in Appendix B.

Laboratory analyses for these assessment monitoring events were performed by Pace Analytical (Pace) in Atlanta, Georgia and Greensburg, Pennsylvania. Pace is accredited by National Environmental Laboratory Accreditation Program (NELAP) and maintain a NELAP certification for all parameters analyzed for this project. NELAP certification for Pace from 2016 through 2019 are provided in Appendix B. Groundwater data and chain of custody records for the monitoring events are presented in Appendix B.

3.5 Quality Assurance and Quality Control

During each sampling event, quality assurance/quality control samples (QA/QC) are collected at a rate of one sample per every 10 samples. Equipment blanks (where non-dedicated sampling equipment is used), field blanks, and duplicate samples were also collected during each sampling event. QA/QC sample data was evaluated during data validation and is included in Appendix B.

Groundwater quality data in this report was independently validated in accordance with USEPA guidance (USEPA, 2011) and the analytical methods. Data validation generally consisted of reviewing sample integrity, holding times, laboratory method blanks, laboratory control samples, matrix spikes/matrix spike duplicate recoveries and relative percent differences, post digestions spikes, laboratory and field duplicate relative percent difference (RPDs), field and equipment blanks, and reporting limits. Where appropriate, validation qualifiers and flags are applied to the data using USEPA procedures as guidance (USEPA, 2017). Data validation summary reports prepared by Environmental Standards and Golder are included in Appendix B. Flagged data are identified in the statistical analysis reports described in the following section.

4.0 STATISTICAL ANALYSES

Statistical analysis of Appendix III groundwater monitoring data was performed pursuant to § 257.93 following the established statistical method for AP-E. Pursuant to § 257.95(d)(2) GPC will establish groundwater protection standards for the Appendix IV monitoring parameters and complete statistical analysis of the Appendix IV groundwater monitoring data obtained during the first semi-annual assessment monitoring event within 90 days of obtaining the results. GPC will complete the assessment monitoring and statistical analysis in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

Sanitas groundwater statistical software was used to perform the statistical analyses at the site. Sanitas is a decision support software package that incorporates the statistical tests required of Subtitle C and D facilities by US EPA regulations and guidance as recommended in the Unified Guidance (USEPA, 2009) document.

4.1 Statistical Method

The selected statistical method for AP-E was developed in accordance with § 257.93(f) and 391-3-4-.10(6) using methodology presented in Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance (USEPA, 2009). The Sanitas Groundwater statistical software was used to perform the statistical analyses. Sanitas is a decision-support software package that incorporates the statistical tests required of Subtitle C and D facilities by USEPA regulations and guidance as recommended in the USEPA (2009) document.

Groundwater quality data were evaluated through use of interwell prediction limits for Appendix III parameters. Using this method, upgradient well data was pooled to establish a background statistical limit. Data from the March 2019 detection monitoring event are compared to the statistical limit to determine whether any concentrations exceed background levels. The selected statistical method uses an optional 1-of-2 verification resample plan. When an initial statistically significant increase (SSI) or questionable result occurs, a second sample may be collected to verify the initial result or determine if the result was an outlier.

If resampling is performed and the initial finding is not verified by resampling, the resampled value replaced the initial finding. When the resample confirms the initial finding, both values remain in the database and an SSI is declared. The Sen’s Slope/Mann Kendall trend test was used to statistically evaluate concentration levels over time and determine whether concentrations are increasing, decreasing, or stabilizing.

Table 4.1.1 Plant Branch AP-E Statistical Method Summary provides a summary of the statistical methodology used at AP-E for the first detection monitoring conducted in March 2019 and will be used for any routine detection monitoring in the future.

TABLE 4.1.1 PLANT BRANCH AP-E STATISTICAL METHOD SUMMARY		
Monitoring Well Network	Upgradient Wells	BRGWA-2S, BRGWA-2I, BRGWA-5S, BRGWA-5I, BRGWA-6S
	Downgradient Wells	BRGWC-17S, BRGWC-33S, BRGWC- 34S, BRGWC-35S, BRGWC-36S, BRGWC-37S, and BRGWC-38S
CCR Monitoring Parameters	Appendix III (Detection Monitoring)	Boron, Calcium, Chloride, Fluoride, pH, Sulfate, Total Dissolved Solids (TDS)
	Appendix IV (Assessment Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Radium (226+228)
	Data Screening on Proposed Background	Evaluate outliers, trends, and seasonality when sufficient data are available
	Statistical Limits	Interwell statistical limits will be applied on a constituent basis, depending on the appropriateness of the method as determined by the Analysis of Variance.
	Prediction Limits	Parametric when data follow a normal or transformed normal distribution and when less than 50% non-detects, utilizing Kaplan Meier non-detect adjustment when applicable; nonparametric when data sets contain greater than 50% non-detects or when data are not normally or transformed-normally distributed.

TABLE 4.1.1 PLANT BRANCH AP-E STATISTICAL METHOD SUMMARY		
	Confidence Intervals	Used in Assessment and Corrective Action monitoring.
	No Statistical Testing	Statistical testing is not required for parameters with 100% non-detects.
	Verification Resample Plan	1-of-2 with minimum of 8 samples per well for interwell testing.
	Optional	<ul style="list-style-type: none"> ▪ Initial statistical exceedance warrants independent resampling within 90 days. ▪ If resample passes, well/parameter is not a confirmed statistically significant increase (SSI). ▪ If resample exceeds, well/parameter has a confirmed SSI. ▪ If no resample is collected, the original result is deemed verified.

The following guidance is also applicable to the statistical analysis method:

- Statistical analyses are not performed on analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain less than or equal to 15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantitation limit (PQL) as reported by the laboratory.
- When data contain between 15-50% non-detects, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

4.2 Statistical Analysis Results – Appendix III

Analytical data from the semi-annual assessment monitoring event in October 2019 at AP-E have been statistically analyzed in accordance with the site's Statistical Analysis Plan. Resampling was conducted in November and December 2019 due to laboratory error. The statistical results of the October 2019 monitoring event and resampling events are included in Appendix C, Statistical Analyses.

The verified SSIs are presented in Table 4.2.1 AP-E Inter-Well Prediction Limit Statistically Significant Increase Summary.

TABLE 4.2.1 AP-E Inter-Well Prediction Limit Statistically Significant Increase Summary	
Appendix III Parameter	AP-E Monitoring Wells
Boron	BRGWC-33S, BRGWC-34S, BRGWC-35S, BRGWC-36S, BRGWC-38S
Calcium	BRGWC-17S, BRGWC-33S, BRGWC-34S, BRGWC-35S, BRGWC-36S, BRGWC-38S
Chloride	BRGWC-33S, BRGWC-34S, BRGWC-35S, BRGWC-36S, BRGWC-38S

Fluoride	BRGWC-38S
pH	BRGWC-33S, BRGWC-34S, BRGWC-36S, BRGWC-38S
Sulfate	BRGWC-17S, BRGWC-33S, BRGWC-34S, BRGWC-35S, BRGWC-36S, BRGWC-38S
Total Dissolved Solids	BRGWC-17S, BRGWC-34S, BRGWC-35S, BRGWC-36S, BRGWC-38S

Pursuant to §257.94(e)(3), an assessment monitoring program was established for AP-BCD at Plant Branch based on statistically significant increases documented in the *2019 Annual Groundwater Monitoring and Corrective Action Report*, (Golder 2019). A notice of assessment monitoring was placed in the operation record on November 13, 2019.

4.3 Appendix IV Statistical Analyses

Pursuant to §257.95 and Georgia EPD rule 391-3-4-.10(6)(a), Appendix IV groundwater quality data will be statistically analyzed and compared to groundwater protection standards within 90 days of receiving data from the first (October 2019) assessment monitoring event. GPC will complete the assessment monitoring and statistical analysis in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

5.0 MONITORING PROGRAM STATUS

GPC has initiated assessment monitoring at Plant Branch AP-E in accordance with the requirements of § 257.94(e)(1-3) and Georgia EPD rule 391-3-4-.10(6)(a). Table 2 presents the status of each well within the certified monitoring network for AP-E.

6.0 CONCLUSIONS AND FUTURE ACTIONS

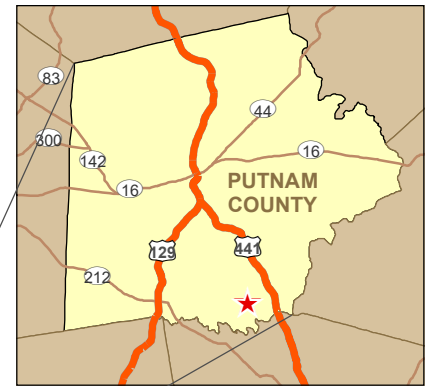
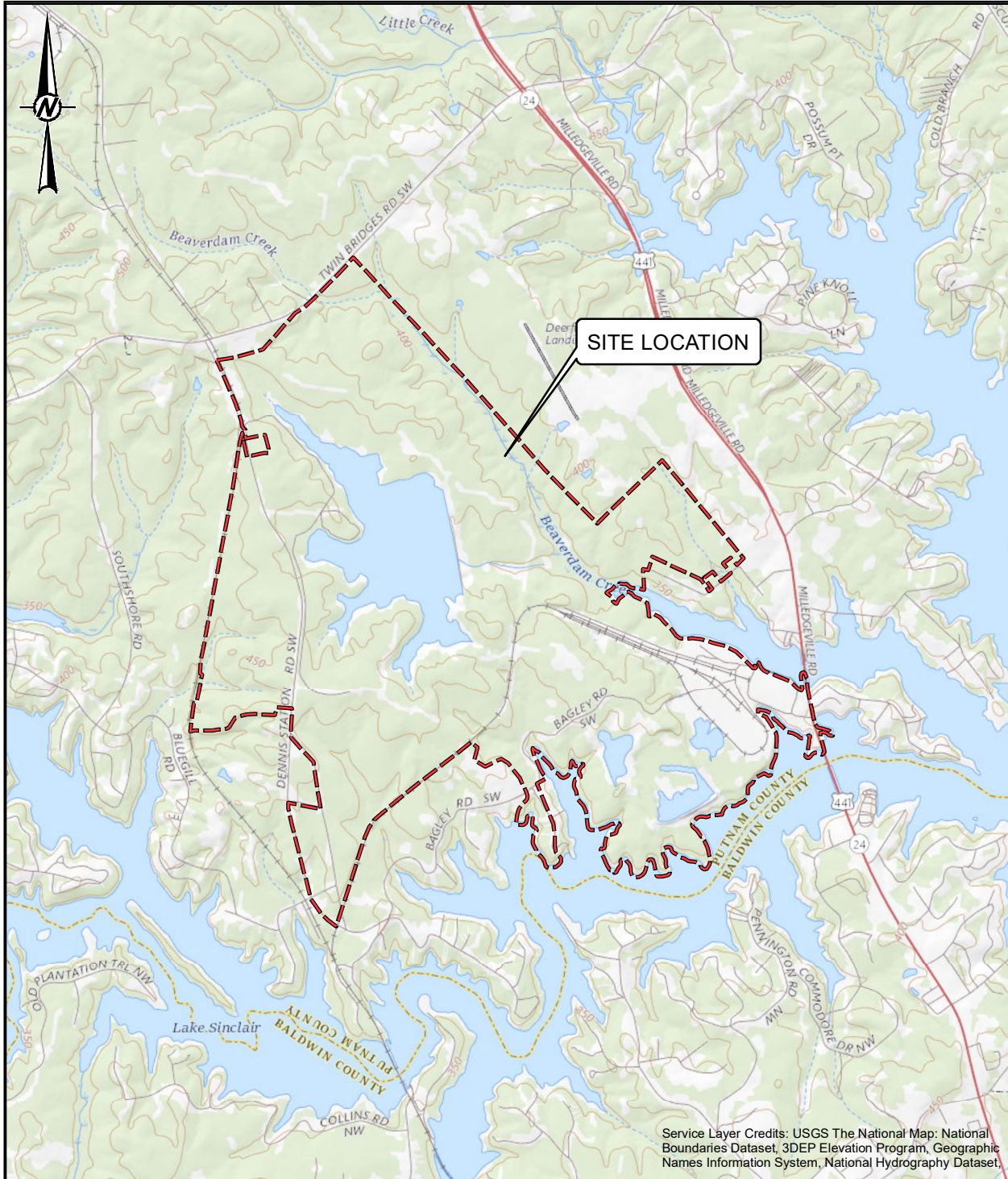
This *2019 Semi-Annual Groundwater Monitoring and Corrective Action Report, Georgia Power Plant Branch AP-E* has been prepared to fulfill the requirements of Georgia EPD Rules of Solid Waste Management 391-3-4-.10(6).

Statistical evaluations of the groundwater monitoring data for AP-E identified SSIs of Appendix III groundwater monitoring parameters. GPC has initiated assessment monitoring in accordance with the requirements of § 257.95 and Georgia EPD rule 391-3-4-.10(6)(a). The next scheduled sampling event is scheduled for March 2020. During the next semi-annual reporting period of 2020, GPC will establish groundwater protection standards for Appendix IV constituents in accordance with § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

7.0 REFERENCES

- Golder Associates, 2018. Geologic and Hydrogeologic Summary Report, Georgia Power – Plant Branch, Putnam County, Georgia, October 2018.
- Golder Associates, 2018. CCR Pond E Site Acceptability and Hydrogeologic Assessment Report, Georgia Power – Plant Branch, Putnam County, Georgia, Geosyntec, November 2018.
- USEPA, 1996. Soil Guidance Manual,
- USEPA, 2001, Data Validation Standard Operating Procedures and Quality Assurance Manual, November.
- USEPA, 2009, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. EPA 530-R-09-007.
- USEPA. 2015. Federal Register. Volume 80. No. 74 Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. [EPA-HQ-RCRA-2009-0640; FRL-9919-44- OSWER]. RIN-2050-AE81.
- USEPA. 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation. OLEM 9355.0-135 [EPA-540-R-2017-001]. Washington. DC. January.

FIGURES & TABLES



CLIENT
GEORGIA POWER COMPANY
 PLANT BRANCH



PROJECT
GROUNDWATER MONITORING

TITLE
SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2019-03-15

PREPARED DJC

DESIGN DLP

REVIEW DLP

APPROVED RPK

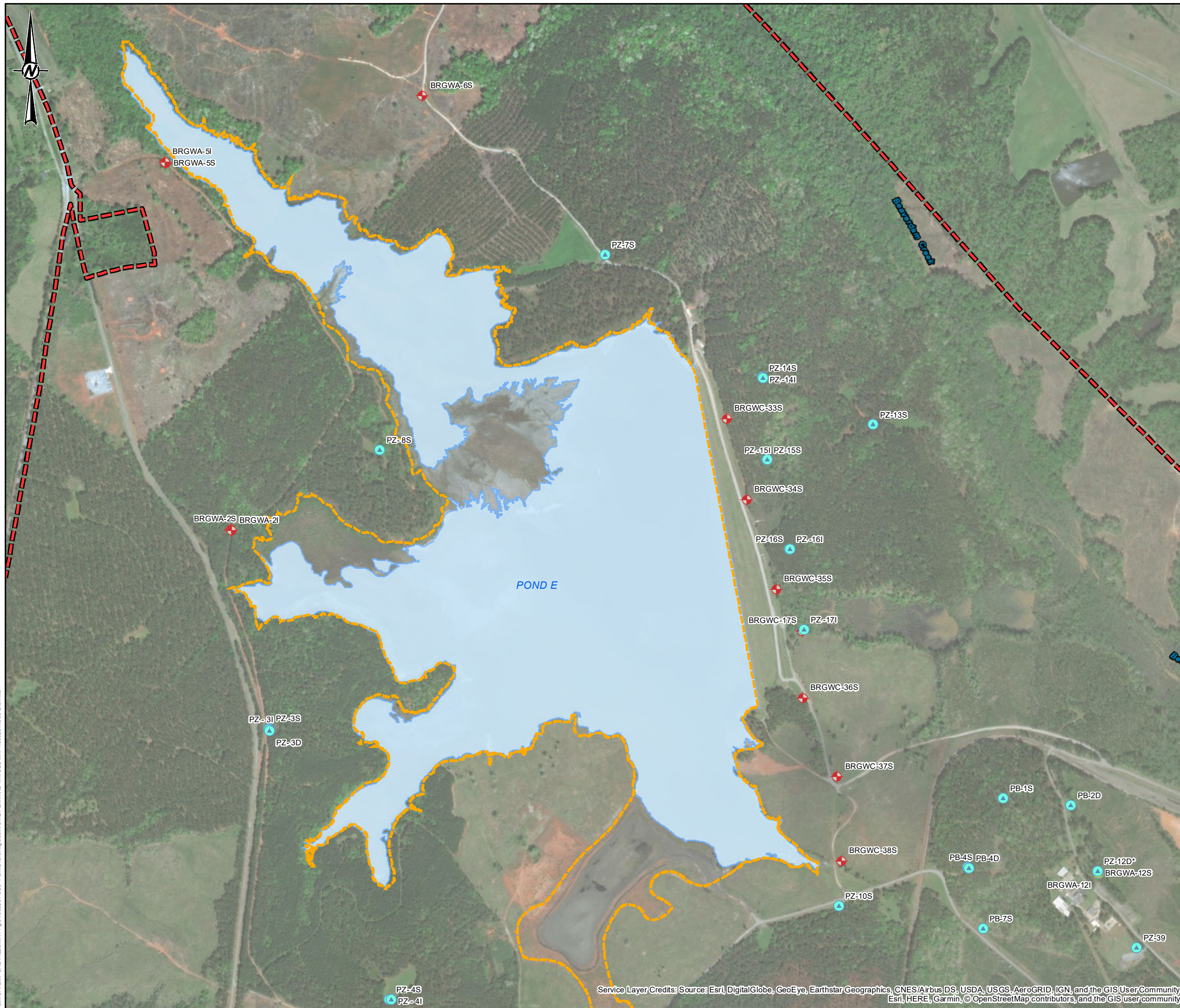
PROJECT No.
 1666254

CONTROL
 1666254A000-GIS.mxd

Rev.
 0

FIGURE
 1

Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset.



- LEGEND**
- PROPERTY BOUNDARY
 - APPROXIMATE ASH POND BOUNDARY
 - APPROXIMATE SURFACE WATER LIMITS
 - POND E MONITORING WELL
 - PIEZOMETER

- REFERENCE**
1. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY ESRI, HERE, GARMIN, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 2. COORDINATE SYSTEM: NAD 1983 STATE PLAN GEORGIA WEST (U.S. FEET).
 3. BORING/PIEZOMETER LOCATIONS AND PROPERTY LINE PROVIDED BY SOUTHERN COMPANY SERVICES.



CLIENT
GEORGIA POWER COMPANY
 PLANT BRANCH

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE PLAN AND MONITORING WELL LOCATION MAP

CONSULTANT	YYYY-MM-DD	2019-07-01
	PREPARED	DJC
	DESIGN	DLP
	REVIEW	DLP
	APPROVED	RPK

Path: C:\TEMP\CAD FILES\MAY 19\166625418\SCS - Plant Branch\figure\site plan and MWL loc map\1666254N003-GIS.mxd

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS B

TABLE 1 MONITORING WELL NETWORK SUMMARY (AP-E)

Georgia Power - Plant Branch
Milledgeville, GA

Well-ID	Location	Geologic Unit Screened ^[3]	Latitude	Longitude	Ground Surface Elevation (feet msl) ^[1]	Top of Casing Elevation (feet msl) ^[1]	Total Depth (feet bgs) ^[2]	Top of Screen Elevation (feet msl) ^[1]	Screen Tip Elevation (feet msl) ^[1]	Screen Length	Installed By	PG/PE Oversight	Bond Certification Number	Date of Installation
POND E														
BRGWA-2S	Upgradient E	Saprolite	33.205938	-83.338280	454.94	458.02	44.6	420.34	410.34	10.0	SCS	W.Shaughnessy	4993104	4/2/2014
BRGWA-2I	Upgradient E	Amphibolite Gneiss	33.205916	-83.338260	454.89	457.85	64.3	400.59	390.59	10.0	SCS	W.Shaughnessy	4993104	3/14/2014
BRGWA-5S	Upgradient E	Saprolite	33.214293	-83.339970	445.23	448.53	40.0	415.23	405.23	10.0	SCS	W.Shaughnessy	4993104	4/3/2014
BRGWA-5I	Upgradient E	Amphibolite Gneiss	33.214313	-83.339989	445.51	448.44	61.2	394.31	384.31	10.0	SCS	W.Shaughnessy	4993104	4/3/2014
BRGWA-6S	Upgradient E	Saprolite	33.215775	-83.333001	460.16	463.631	49.7	420.46	410.46	10.0	SCS	W.Shaughnessy	4993104	4/1/2014
BRGWC-17S	Downgradient E	Alluvium	33.203526	-83.322836	366.57	370.25	7.1	364.47	359.47	5.0	SCS	W.Shaughnessy	4993104	3/13/2014
BRGWC-33S	Downgradient E	Saprolite/TWR/Biotite Gneiss	33.208371	-83.324829	414.14	416.92	26.0	398.14	388.14	10.0	Cascade	R.Kirkman	K08315607	7/26/2016
BRGWC-34S	Downgradient E	Saprolite	33.206518	-83.324304	389.04	392.06	23.0	376.04	366.04	10.0	Cascade	R.Kirkman	K08315607	7/25/2016
BRGWC-35S	Downgradient E	Saprolite	33.204484	-83.323523	363.68	366.54	27.0	346.68	336.68	10.0	Cascade	R.Kirkman	K08315607	7/23/2016
BRGWC-36S	Downgradient E	Saprolite	33.201997	-83.322831	382.94	386.00	28.7	364.24	354.24	10.0	Cascade	R.Kirkman	K08315607	7/26/2016
BRGWC-37S	Downgradient E	Saprolite/TWR	33.200202	-83.321916	444.2	447.23	63.6	390.60	380.60	10.0	Cascade	R.Kirkman	K08315607	7/24/2016
BRGWC-38S	Downgradient E	Saprolite/TWR	33.198278	-83.321817	429.55	432.33	37.8	401.75	391.75	10.0	Cascade	R.Kirkman	K08315607	7/22/2016

Notes:

1. feet msl = feet mean sea level
2. feet bgs = feet below ground surface
3. TWR = Transitionally Weathered Rock

6/5/2019
166625418



TABLE 2
GROUNDWATER SAMPLING EVENT SUMMARY
Georgia Power Company - Plant Branch Pond E
Milledgeville, GA

Well ID	Hydraulic Location	Summary of Sampling Events		Status of Monitoring Well
		August 2019	October 2019	
Purpose of Sampling Event		Assessment	Assessment	
ASH POND E (AP-E)				
BRGWA-2S	Upgradient	A01	A02	Assessment
BRGWA-2I	Upgradient	A01	A02	Assessment
BRGWA-5S	Upgradient	A01	A02	Assessment
BRGWA-5I	Upgradient	A01	A02	Assessment
BRGWA-6S	Upgradient	A01	A02	Assessment
BRGWC-17S	Downgradient	A01	A02	Assessment
BRGWC-33S	Downgradient	A01	A02	Assessment
BRGWC-34S	Downgradient	A01	A02	Assessment
BRGWC-35S	Downgradient	A01	A02	Assessment
BRGWC-36S	Downgradient	A01	A02	Assessment
BRGWC-37S	Downgradient	A01	A02	Assessment
BRGWC-38S	Downgradient	A01	A02	Assessment

Notes:

BG## = Background Event Number

D## = Detection Event Number

A## = Assessment Event Number

TABLE 3
Summary of Groundwater Elevations
 Georgia Power Company- Plant Branch
 Milledgeville, Georgia

Well-ID	Top of Casing Elevation (feet msl) ^[1]	GROUNDWATER ELEVATIONS (FEET MSL)												
		8/30/2016	11/21/2016	2/17/2017	6/12/2017	9/25/2017	2/7/2018	2/13/2018	6/25/2018	9/18/2018	12/17/2018	3/18/2019	8/26/2019	10/14/2019
POND BCD														
BRGWA-12S	439.69	391.26	341.94	389.54	388.88	388.42	387.14	387.43	387.01	DRY	386.87	DRY	DRY	386.99
BRGWA-12I	439.43	390.64	341.60	389.57	388.80	388.47	425.03	387.40	386.99	386.50	386.14	381.53	385.78	386.18
BRGWA-23S	428.42	395.74	361.06	394.05	392.90	392.61	390.71	390.74	390.08	389.57	389.28	392.22	392.17	391.48
BRGWC-25I	357.46	348.30	338.59	349.86	349.53	349.01	349.60	349.75	348.57	347.66	349.45	350.46	348.56	348.03
BRGWC-27I	367.99	363.35	357.29	364.60	364.91	364.63	364.40	364.23	362.54	360.67	362.95	365.40	364.59	364.04
BRGWC-29I	353.30	343.46	333.29	344.15	344.30	343.72	343.73	344.06	343.48	343.05	343.94	344.48	343.58	341.20
BRGWC-30I	352.33	347.85	343.69	348.42	348.13	348.36	348.11	348.16	347.63	347.61	348.09	348.24	348.24	348.28
BRGWC-32S	406.51	372.01	335.50	370.37	371.86	372.10	371.12	371.05	370.65	369.37	368.58	371.71	371.31	370.24
BRGWC-45	384.61	NA	NA	NA	NA	NA	373.67	373.55	374.86	372.77	374.49	374.96	373.31	372.74
BRGWC-47	411.32	NA	NA	NA	NA	NA	385.72	385.59	385.68	384.27	384.52	388.07	386.23	385.45
BRGWC-50	381.53	NA	NA	NA	NA	NA	343.47	346.10	343.70	343.45	343.73	344.48	343.73	344.56
BRGWC-52I	383.83	NA	NA	NA	NA	NA	NA	NA	NA	344.6	344.9	345.8	344.81	344.40

TABLE 3
Summary of Groundwater Elevations
 Georgia Power Company- Plant Branch
 Milledgeville, Georgia

Well-ID	Top of Casing Elevation (feet msl) ^[1]	GROUNDWATER ELEVATIONS (FEET MSL)												
		8/30/2016	11/21/2016	2/17/2017	6/12/2017	9/25/2017	2/7/2018	2/13/2018	6/25/2018	9/18/2018	12/17/2018	3/18/2019	8/26/2019	10/14/2019
POND E														
BRGWA-2S	458.02	439.6	419.5	442.40	443.20	442.31	443.65	443.75	442.82	440.63	443.97	445.12	442.58	440.90
BRGWA-2I	457.85	439.7	419.6	442.15	443.00	442.14	443.45	443.61	442.74	440.63	443.67	445.00	442.16	440.85
BRGWA-5S	448.53	436.0	422.5	436.76	436.18	435.44	435.91	435.87	436.30	435.22	436.42	438.23	435.92	435.22
BRGWA-5I	448.44	435.9	422.5	436.74	436.17	435.49	435.91	435.86	436.32	435.24	436.42	438.24	435.93	435.25
BRGWA-6S	463.63	438.5	411.0	439.65	437.92	437.74	435.11	437.60	438.12	436.36	438.74	441.74	436.81	435.87
BRGWC-17S	370.25	364.7	358.8	364.60	364.17	364.11	364.05	364.39	363.66	363.95	364.52	364.13	364.44	363.87
BRGWC-33S	416.92	408.7	400.9	410.10	409.30	408.84	409.32	409.39	409.35	408.87	410.39	410.59	409.02	408.40
BRGWC-34S	392.06	389.3	386.7	389.68	389.52	389.36	389.59	389.67	389.32	389.36	389.80	389.73	389.51	389.27
BRGWC-35S	366.54	364.4	362.2	364.44	364.40	364.34	364.44	364.51	364.39	364.37	364.79	364.75	364.58	364.33
BRGWC-36S	386.00	384.3	382.4	384.20	383.94	383.80	383.42	383.47	383.30	383.30	383.64	383.75	383.57	383.12
BRGWC-37S	447.23	400.6	352.9	398.18	399.72	396.98	395.84	395.82	395.88	395.79	395.33	397.01	396.06	396.53
BRGWC-38S	432.33	412.2	391.0	413.61	412.05	411.47	411.78	411.69	412.15	410.79	412.53	413.93	410.92	410.43

TABLE 3
Summary of Groundwater Elevations
 Georgia Power Company- Plant Branch
 Milledgeville, Georgia

Well-ID	Top of Casing Elevation (feet msl) ^[1]	GROUNDWATER ELEVATIONS (FEET MSL)												
		8/30/2016	11/21/2016	2/17/2017	6/12/2017	9/25/2017	2/7/2018	2/13/2018	6/25/2018	9/18/2018	12/17/2018	3/18/2019	8/26/2019	10/14/2019
PIEZOMETERS														
PZ-1S	470.22	431.8	392.5	430.72	431.72	431.53	431.25	431.12	432.68	NA	432.04	434.45	433.23	432.33
PZ-1I	469.85	431.4	391.9	430.16	431.11	430.22	430.47	430.53	431.88	NA	431.19	433.56	432.30	431.50
PZ-1D	468.56	429.1	389.1	428.71	429.58	429.30	429.13	429.05	430.39	NA	429.93	432.13	430.91	429.94
PZ-3S	494.63	DRY	DRY	DRY	451.05	451.09	DRY	DRY	DRY	NA	DRY	DRY	DRY	451.08
PZ-3I	493.60	469.4	418.1	441.46	440.69	440.11	439.38	439.54	439.21	NA	439.00	438.86	439.27	439.28
PZ-3D	491.59	442.1	393.5	441.91	441.55	441.18	440.60	440.76	440.36	NA	440.09	440.04	440.09	440.06
PZ-4S	487.08	DRY	DRY	DRY	451.90	433.88	DRY	DRY	DRY	NA	DRY	DRY	DRY	453.88
PZ-4I	487.22	451.6	414.6	449.32	449.23	449.01	449.90	449.61	450.89	NA	451.14	453.22	452.67	452.29
PZ-7S	456.87	429.6	400.0	428.15	428.69	427.97	428.24	428.03	429.93	NA	429.46	432.79	429.67	428.74
PZ-8S	457.37	428.4	397.4	429.74	430.30	429.89	431.33	431.15	431.38	NA	431.13	433.43	429.68	428.68
PZ-9S	474.02	438.9	402.8	437.06	436.32	435.67	434.42	434.50	451.84	NA	433.48	434.89	434.78	434.39
PZ-10S	438.95	412.3	384.5	412.83	411.85	411.41	411.31	411.24	411.72	NA	411.87	413.17	411.79	410.70
PZ-11S	398.97	381.1	361.6	381.14	379.68	378.74	377.73	377.46	376.47	NA	375.11	377.64	375.86	386.32
PZ-12D	439.17	361.2	282.0	362.18	359.97	351.36	349.45	348.93	360.34	NA	355.20	356.36	359.96	356.83
PZ-13S	415.13	387.0	356.7	387.14	387.37	386.42	387.03	386.92	388.25	NA	387.62	390.76	387.09	386.33
PZ-14S	435.51	415.5	395.8	418.16	417.20	416.53	417.17	417.24	417.41	NA	418.68	419.11	416.35	415.73
PZ-14I	434.91	416.3	397.8	416.78	417.26	416.76	417.37	417.55	417.12	NA	417.49	418.15	418.23	418.09
PZ-15S	415.77	405.6	395.7	406.37	406.08	405.88	406.21	406.36	405.82	NA	406.52	406.51	405.99	405.65
PZ-15I	415.90	406.1	396.6	406.86	406.56	406.36	406.70	406.82	406.34	NA	407.01	407.02	406.53	406.10
PZ-16S	386.97	373.9	360.6	375.04	374.59	374.20	374.84	374.99	374.43	NA	370.39	375.97	374.61	373.78
PZ-16I	386.89	374.0	360.7	375.12	374.66	374.25	374.90	375.09	374.49	NA	375.45	376.05	374.68	373.84
PZ-17I	370.07	366.4	362.8	367.34	366.98	366.57	366.95	367.27	366.44	NA	367.33	367.48	366.96	366.12
PZ-18S	367.27	346.6	325.1	347.09	346.99	346.53	346.86	346.85	346.43	NA	346.72	347.38	345.88	345.56
PZ-18I	366.75	346.2	324.9	346.71	346.92	346.19	346.47	346.51	346.07	NA	346.38	346.99	345.52	344.94
PZ-19S	376.31	360.3	342.6	361.89	362.04	361.15	362.41	362.33	361.13	NA	359.91	364.24	360.01	358.91
PZ-19I	376.73	360.1	341.8	361.69	362.02	362.24	362.20	362.09	360.95	NA	359.77	364.04	359.73	358.66
PZ-20S	370.71	355.1	339.1	357.44	356.69	356.17	356.68	356.79	355.46	NA	356.84	357.90	355.63	355.56
PZ-20I	370.64	355.3	339.6	357.63	356.89	356.35	356.86	356.97	355.63	NA	357.03	358.05	355.78	355.24
PZ-21S	358.60	353.4	342.7	355.09	354.71	354.22	354.81	354.99	353.73	NA	354.64	355.73	353.05	348.00

TABLE 3
Summary of Groundwater Elevations
 Georgia Power Company- Plant Branch
 Milledgeville, Georgia

Well-ID	Top of Casing Elevation (feet msl) ^[1]	GROUNDWATER ELEVATIONS (FEET MSL)												
		8/30/2016	11/21/2016	2/17/2017	6/12/2017	9/25/2017	2/7/2018	2/13/2018	6/25/2018	9/18/2018	12/17/2018	3/18/2019	8/26/2019	10/14/2019
PIEZOMETERS														
PZ-211	359.20	353.3	342.1	354.93	354.57	354.05	354.67	354.84	353.56	NA	354.49	355.57	353.94	348.14
PZ-231	427.90	395.2	361.0	393.75	392.87	392.40	390.70	388.76	390.02	NA	389.17	391.95	392.19	391.36
BRGWC-24S	354.00	339.5	324.6	339.81	340.08	339.76	339.93	340.10	339.79	339.36	NA	340.16	339.39	339.02
PZ-261	370.93	348.6	325.4	349.21	349.02	348.82	349.09	348.98	348.83	NA	348.95	350.56	348.68	348.21
PZ-281	364.88	350.0	334.7	352.36	351.62	351.06	351.58	351.73	350.36	NA	351.76	352.79	350.48	350.02
PZ-31S	376.94	352.8	326.9	352.38	352.42	352.12	352.16	352.13	351.77	NA	350.81	353.04	350.96	348.44
PZ-39	434.70	388.3	340.3	385.77	DRY	385.79	385.76	385.77	385.77	NA	385.75	385.74	385.79	385.74
PZ-40S	356.06	NA	NA	340.18	340.33	340.11	340.17	340.25	340.66	339.80	NA	340.56	339.77	339.44
PZ-41S	357.23	NA	NA	340.13	340.22	340.07	340.10	340.15	340.04	339.77	NA	340.50	339.75	339.45
PZ-42S	361.69	NA	NA	340.90	340.40	340.58	340.45	340.66	341.06	340.75	NA	341.53	340.45	340.21
PZ-43	383.75	NA	NA	NA	NA	NA	353.02	NA	353.78	NA	353.75	358.05	354.35	354.30
PZ-44	383.12	NA	NA	NA	NA	NA	358.14	NA	358.83	NA	358.90	360.97	358.97	358.60
PZ-46	384.70	NA	NA	NA	NA	NA	375.58	375.61	375.52	NA	376.09	376.15	375.80	374.77
PZ-48	421.05	NA	NA	NA	NA	NA	390.41	390.37	390.09	NA	390.14	392.79	390.89	389.90
PZ-49	385.06	NA	NA	NA	NA	NA	377.17	380.58	376.47	NA	376.85	376.26	371.96	370.58
PZ-51S	380.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	341.6	342.3	341.79	341.49
PZ-511	380.60	NA	NA	NA	NA	NA	NA	NA	NA	NA	342.5	343.2	342.39	342.10

TABLE 3
Summary of Groundwater Elevations
 Georgia Power Company- Plant Branch
 Milledgeville, Georgia

Well-ID	Top of Casing Elevation (feet msl) ^[1]	GROUNDWATER ELEVATIONS (FEET MSL)												
		8/30/2016	11/21/2016	2/17/2017	6/12/2017	9/25/2017	2/7/2018	2/13/2018	6/25/2018	9/18/2018	12/17/2018	3/18/2019	8/26/2019	10/14/2019
Temporary Landfill Piezometers														
PB-1S	403.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	377.5	403.06	374.52
PB-2D	416.76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	375.9	416.76	375.36
PB-4S	411.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	379.0	411.06	377.27
PB-4D	412.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	380.6	412.18	377.90
PB-7S	402.86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	375.9	402.86	372.06
PB-8S	401.69	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	377.4	401.69	374.87
PB-8D	401.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	377.0	401.77	374.32
PB-10S	400.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	388.0	400.94	385.90
PB-10D	400.33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	387.8	400.33	384.94
PB-13S	373.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	363.7	373.38	361.16
PB-13D	373.83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	363.3	373.8	360.90

Notes:

1. Feet msl = feet mean sea level
2. Survey data for PZ-21S and PZ-21I were updated in January 2020.

TABLE 4.
GROUNDWATER VELOCITY CALCULATIONS - 2019
Georgia Power - Plant Branch Ash Pond AP-E
Milledgeville, GA

Flow Paths	Groundwater Elevation (feet msl)	Δh (feet) ¹	Δl (feet) ²	Hydraulic Gradient ($\Delta h/\Delta l$)	Average Hydraulic Conductivity, K (feet per day) ⁵	Assumed Effective Porosity (n_e) ⁶	Average Linear Groundwater Velocity	
							(feet per day) ⁴	(feet per year) ⁴
Pond E August 26, 2019								
BRGWA-5S / BRGWC-33S	435.92	26.90	5108.0	0.005	2.73 to 5.47	0.2	0.07 to 0.14	26.2 to 52.6
	409.02							
PZ-4I / BRGWC-38S	452.67	41.75	3904.0	0.011	2.73 to 5.47	0.2	0.15 to 0.29	53.3 to 106.8
	410.92							
Pond E October 14, 2019								
BRGWA-5S / BRGWC-33S	435.22	26.82	5108.0	0.005	2.73 to 5.47	0.2	0.07 to 0.14	26.2 to 52.4
	408.40							
PZ-4I / BRGWC-38S	452.29	41.86	3904.0	0.011	2.73 to 5.47	0.2	0.15 to 0.29	53.4 to 107.0
	410.43							

Notes:

1. ΔH = Change in groundwater elevation.
2. ΔL = Distance along flow path.
3. $I = \Delta H / \Delta L$.
4. Velocity = $(I * K)/n_e$.
5. Hydraulic conductivity range based on historic aquifer performance tests (revised 4/2019).
6. Effective porosity based on default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996)

TABLE 5
ANALYTICAL DATA SUMMARY - POND E (August 2019)
GPC PLANT BRANCH
MILLDEGEVILLE, GEORGIA

Analyte	Units	PQL/RL	MDL	GROUNDWATER MONITORING WELLS											
				BRGWA-6S	BRGWA-5S	BRGWA-5I	BRGWA-2S	BRGWA-2I	BRGWC-33S	BRGWC-34S	BRGWC-35S	BRGWC-17S	BRGWC-36S	BRGWC-37S	BRGWC-38S
				Sample Date:				8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/27/2019	8/28/2019	8/28/2019
Appendix III															
BORON, TOTAL	mg/L	0.04	0.0039	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM, TOTAL	mg/L	25	0.69	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLORIDE, TOTAL	mg/L	0.3	0.024	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORIDE, TOTAL	mg/L	0.3	0.029	ND	ND	ND	ND	ND	ND (0.11 J)	ND (0.057 J)	ND (0.056 J)	ND (0.085 J)	ND	ND	0.90
pH	S.U.	N/R	N/R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SULFATE, TOTAL	mg/L	1.0	0.017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	mg/L	25.0	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Appendix IV															
ANTIMONY, TOTAL	mg/L	0.003	0.00078	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.085 J)	ND (0.00035 J)	ND	ND
ARSENIC, TOTAL	mg/L	0.005	0.00057	ND	ND	ND	ND	ND	ND	ND	ND (0.00044 J)	ND (0.00073 J)	ND (0.00045 J)	ND (0.00038 J)	ND (0.0013 J)
BARIUM, TOTAL	mg/L	0.01	0.00078	0.013	0.056	0.028	ND (0.0095 J)	0.012	0.02	0.026	0.039	0.044	0.034	0.027	0.016
BERYLLIUM, TOTAL	mg/L	0.003	0.00005	ND	ND	ND	ND	ND	ND (0.0019 J)	ND (0.00014 J)	ND (0.00016 J)	ND	ND (0.00011 J)	ND	0.0088
CADMIUM, TOTAL	mg/L	0.001	0.00009	ND	ND	ND	ND	ND	ND (0.00032 J)	ND (0.00025 J)	ND	ND	ND	ND	ND (0.00053 J)
CHROMIUM, TOTAL	mg/L	0.01	0.0016	0.015	ND (0.0043 J)	ND (0.0055 J)	ND (0.0083 J)	ND (0.0004 J)	ND	ND	ND (0.0071 J)	0.013	ND (0.0078 J)	ND (0.0017 J)	ND (0.0044 J)
COBALT, TOTAL	mg/L	0.01	0.00052	ND	ND (0.00042 J)	ND (0.00068 J)	ND (0.0012 J)	ND	0.045	ND (0.0037 J)	ND	ND	ND	ND	0.21
LEAD, TOTAL	mg/L	0.005	0.00027	ND	ND (0.00036 J)	ND	ND (0.000058 J)	ND	ND (0.00013 J)	ND	ND	ND	ND	ND	ND (0.00035 J)
LITHIUM, TOTAL	mg/L	0.005	0.00095	ND (0.0028 J)	ND	ND (0.0019 J)	ND	ND (0.035 J)	ND (0.01 J)	ND (0.0009 J)	ND (0.0021 J)	ND (0.00097 J)	ND (0.0025 J)	ND	ND (0.00018 J)
MERCURY, TOTAL	mg/L	0.01	0.0014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.005	0.00095	ND	ND	ND (0.0028 J)	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	1	varies	0.650 U	1.44	1.19	1.47	1.11	1.38	0.811 U	0.995 U	0.240 U	0.866 U	0.809 U	3.68
SELENIUM, TOTAL	mg/L	0.001	0.00014	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.003 J)	ND (0.0041 J)	ND	0.036
THALLIUM, TOTAL	mg/L	0.01	0.0019	ND	ND	ND	ND	ND	ND (0.00016 J)	ND	ND	ND	ND	ND	ND (0.00021 J)

NOTES:

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
4. ND - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect.
5. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed as less than the MDC. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. NA - Constituent was not analyzed pursuant to 257.95(d)(1)

TABLE 6
ANALYTICAL DATA SUMMARY - POND E (October 2019)
GPC PLANT BRANCH
MILLDEGEVILLE, GEORGIA

Analyte	Units	PQL/RL	MDL	GROUNDWATER MONITORING WELLS													
				BRGWA-6S	BRGWA-5S	BRGWA-5I	BRGWA-2S	BRGWA-2I	BRGWC-33S	BRGWC-34S	BRGWC-35S	BRGWC-17S	BRGWC-17S	BRGWC-36S	BRGWC-36S	BRGWC-37S	BRGWC-38S
				Sample Date:	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/15/2019	10/16/2019	10/16/2019	10/16/2019	10/17/2019	12/3/2019 ⁽⁷⁾	10/17/2019	12/3/2019	10/16/2019
Appendix III																	
BORON, TOTAL	mg/L	0.04	0.0049	ND (0.01 J)	ND (0.006 J)	ND	ND	ND (0.0067 J)	1.1	2.3	2.2	ND	ND (0.0063 J)	1.1	1	ND (0.0055 J)	1.5
CALCIUM, TOTAL	mg/L	5	0.55	3.5	20	14.4	3.7	15.1	46.5	78.2	61.2	NA	37.7	NA	47.8	3.4	38.4
CHLORIDE, TOTAL	mg/L	1.0	0.024	2.4	3.7	4.2	1.9	2.2	5.4	7.3	6.6	NA	4.8	NA	7.7	2.3	6.4
FLUORIDE, TOTAL	mg/L	0.3	0.029	ND	ND (0.045 J)	ND	ND	ND	ND (0.17 J)	ND (0.13 J)	ND (0.08 J)	NA	ND (0.2 J)	NA	ND (0.15 J)	ND (0.059 J)	0.61
pH	S.U.	N/R	N/R	6.36	7.01	6.77	6.06	6.57	4.78	5.85	6.08	NA	6.3	NA	5.61	5.81	4.21
SULFATE, TOTAL	mg/L	1.0	0.017	ND (0.48 J)	ND (0.68 J)	3.8	ND (0.47 J)	5.2	226	325	277	NA	180	NA	256	ND (0.29 J)	432
TOTAL DISSOLVED SOLIDS	mg/L	10.0	10	63	144	175	66	140	281	473	481	NA	378	NA	498	49	630
Appendix IV																	
ANTIMONY, TOTAL	mg/L	0.003	0.00027	ND	ND	ND	ND	ND (0.00047 J)	ND	ND	ND	NA	ND	NA	ND (0.00049 J)	ND	ND
ARSENIC, TOTAL	mg/L	0.005	0.00035	ND	ND (0.00039 J)	ND (0.00058 J)	ND (0.00063 J)	ND (0.0008 J)	ND (0.00056 J)	ND	ND (0.0004 J)	NA	ND (0.00058 J)	NA	ND (0.001 J)	ND (0.00078 J)	ND (0.0024 J)
BARIUM, TOTAL	mg/L	0.01	0.00049	0.013	0.049	0.032	ND (0.0091 J)	0.013	0.019	0.022	0.037	NA	0.043	NA	0.031	0.024	0.015
BERYLLIUM, TOTAL	mg/L	0.003	0.000074	ND	ND	ND	ND	ND	ND (0.0018 J)	ND (0.00014 J)	ND (0.00015 J)	ND	ND	ND	ND (0.000097 J)	ND	0.0079
CADMIUM, TOTAL	mg/L	0.0025	0.00011	ND	ND	ND	ND	ND	ND (0.00039 J)	ND (0.0004 J)	ND	ND	ND	ND	ND	ND	ND (0.00057 J)
CHROMIUM, TOTAL	mg/L	0.01	0.00039	0.014	ND (0.0055 J)	ND (0.0047 J)	ND (0.0083 J)	ND	ND (0.00049 J)	ND	ND (0.0064 J)	NA	0.011	NA	ND (0.007 J)	ND (0.0014 J)	ND (0.0038 J)
COBALT, TOTAL	mg/L	0.0025	0.0003	ND	ND	ND (0.00083 J)	ND (0.00097 J)	ND	0.042	0.0043	ND	ND	ND	ND	ND	ND	0.21
LEAD, TOTAL	mg/L	0.005	0.000046	ND	ND (0.000079 J)	ND	ND	ND	ND (0.000088 J)	ND	ND	NA	ND	NA	ND	ND	ND (0.00035 J)
LITHIUM, TOTAL	mg/L	0.01	0.00078	ND (0.0024 J)	ND	ND (0.002 J)	ND	0.028	ND (0.0098 J)	ND (0.00078 J)	ND (0.0022 J)	NA	ND (0.001 J)	NA	ND (0.0024 J)	ND	0.02
MERCURY, TOTAL	mg/L	0.01	0.0014	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MOLYBDENUM, TOTAL	mg/L	0.01	0.00095	ND	ND	ND (0.0035 J)	ND	ND	ND	ND	ND	NA	ND	NA	ND	ND	ND
RADIUM (226 + 228)	pCi/L	1	varies	0.402 U	0.467 U	0.714 U	0.807 U	1.02 U	1.16 U	0.561 U	1.69	NA	1.163 U	NA	1.912	0.815 U	2.66
SELENIUM, TOTAL	mg/L	0.01	0.0013	ND	ND	ND	ND	ND	ND (0.0028 J)	ND	ND	NA	ND (0.0041 J)	NA	ND (0.0035 J)	ND	0.033
THALLIUM, TOTAL	mg/L	0.001	0.000052	ND	ND	ND	ND	ND	ND (0.00019 J)	ND	ND	NA	ND (0.000066 J)	NA	ND	ND	ND (0.0002 J)

- NOTES:
1. mg/L - Milligrams per Liter
 2. pCi/L - picocuries per Liter
 3. J - Result is an estimated value. The result is greater than or equal to the Method Detection Limit (MDL) and less than the Practical Quantitation Limit (PQL). Values are displayed as less than the PQL with a J.
 4. ND - Constituent was analyzed for, but was not detected above the MDL and is considered a non-detect.
 5. Radium data is a combination of radium isotopes 226 and 228. When results are reported below the MDC (Minimum Detectable Concentration), data is displayed as less than the MDC. The MDC varies depending upon the sample amount and elapsed time of the measurement.
 6. NA - Constituent was not analyzed pursuant to 257.95(d)(1); orr was Not sampled on the specified date.
 7. Samples for BRGWC-17S and BRGWC-36S were not analyzed within holding time on the original sample date of 10/17/2019 and therefore were resampled on 12/3/2019.

APPENDIX A

WELL/PIEZOMETER INSTALLATION REPORTS

October 2, 2018

Project No. 166625403

Mr. Joju Abraham, PG

Southern Company Services
241 Ralph McGill Blvd NE
Atlanta, GA 30308
jabraham@southernco.com

**PIEZOMETER INSTALLATION REPORT
GEORGIA POWER COMPANY – PLANT BRANCH, MILLEDGEVILLE, GEORGIA**

Dear Mr. Abraham

Golder Associates Inc. (Golder) is submitting this Piezometer Installation Report to Southern Company Services, Inc. (SCS) and Georgia Power Company (GPC), which documents the construction of piezometers at Plant Branch in Milledgeville, Georgia. Piezometer construction activities were performed in general accordance with the standards described in the RCRA Technical Enforcement Guidance Document (1986) and the Georgia Water Wells Standards Act of 1985. The installation of the piezometers was conducted under the oversight and direction of Rachel Kirkman, a Georgia registered Professional Geologist (PG).

The field activities for this investigation were performed in August 2018. The field work consisted of the installation and development of three (3) piezometers. SCS conducted a survey of the recently installed piezometers. A summary of the activities is presented below. Figure 1, Piezometer Location Map (in Attachment A, Figure & Tables) presents the location of each of the newly installed piezometers.

Piezometer Drilling and Construction Activities

Piezometers PZ-51S, PZ-51I, and PZ-52I/BRGWC-52I were drilled and installed by Cascade Drilling, LP, who was contracted through SCS, at the facility in August 2018. Cascade has a current and valid bond with the Water Wells Standards Advisory Council for the state of Georgia (in Attachment B, Boring Logs & Piezometer Construction Logs). The driller's name is provided on the boring/construction diagrams presented in Attachment B.

An experienced Golder geologist was present on site to oversee and record the drilling and piezometer construction under the supervision of a professional geologist registered to practice in Georgia (Rachel Kirkman). Drilling methods employed for borehole advancement were rotasonic drilling techniques with continuous core collected. The drilling equipment consisted of a full-sized Prosonic track mounted drilling rig, equipped with 4-inch sonic rods with an outer-casing sleeve. During the drilling, continuous core samples were logged in the field for lithologic and geotechnical properties.

Prior to use, and between boreholes, downhole equipment was steam cleaned. The boring (lithologic) logs and piezometer construction records for the newly installed piezometers are included in Attachment B. The

construction data are summarized in Table 1, Summary of Piezometer Construction Details, and the locations of the piezometers are provided on Figure 1.

Piezometers were constructed within the borehole using factory-cleaned and sealed Schedule 40 polyvinyl chloride (PVC) products with flush-threaded fittings. Specifically, piezometers were constructed with a 10-foot section of 4-inch outer diameter (OD) and 2-inch inner diameter (ID), flush-threaded, 0.010-inch factory-slotted PVC pre-packed screens. The drillers filled the annulus of each pre-pack screen section with No. 10 filter sand. In each case, the screen was placed near the bottom of the borehole, with the remainder of the piezometer constructed from 10-foot sections of 2-inch ID, flush-threaded, PVC casing riser. A flush-threaded PVC end cap placed on the bottom of each piezometer to provide a 0.4-foot sump/sediment trap, and the top of the piezometers extend approximately 30 inches above grade. The PVC products used were American Society for Testing and Materials (ASTM) and National Sanitation Foundation (NSF) rated.

Following placement of the screen and casing, the annular space in each borehole adjacent to the screen was filled with U.S. Standard Sieve size No. 20-40 filter pack sand as appropriate for the formation. The filter pack sand was placed into the borehole and extends approximately 2 feet above the screen. Immediately following placement of the filter pack, each piezometer was pumped using a portable submersible pump until visibly clear water was discharged. If settling occurred during pumping, additional sand was placed so that the filter sand thickness was approximately 2 feet above the screen. A filter pack seal, composed of approximately 5 feet of hydrated time-release coated bentonite pellets, was then placed on top of the filter pack by slowly pouring the material down the borehole and tamping it into place with a tremie pipe. The bentonite was hydrated using potable water and allowed to cure for two hours prior to grouting the piezometer.

Following hydration of the bentonite, the remaining annular space was grouted with a Portland cement / Quick Gel mixture consisting of approximately 5% bentonite, and approximately 10 pounds per gallon, to 3 feet below ground surface using a tremie method. Each piezometer surface completion consists of a locked, aluminum protective casing and a 4-foot by 4-foot by 4-inch concrete pad.

Piezometer Development Activities

The newly installed piezometers were developed in August 2018 in accordance with the Monitoring Well Development Procedures prepared by Southern Company Services, Inc. (March 2016). The piezometers were surged using a Reclaimer pump system. During development, water quality measurements of pH, temperature, specific conductance, and turbidity were periodically collected using field-calibrated water quality equipment after the piezometer responded to improving conditions. Development activities were conducted utilizing an In-Situ SmarTroll and a Lamotte 2020 turbidimeter for monitoring water quality measurements. Development forms are included in Attachment C, Piezometer Development Logs, and summarized on Table 2, Summary of Piezometer Development.

As presented on the development forms, 112.5 gallons (PZ-51S), 105 gallons (PZ- 51I), and 65 gallons (PZ-52I/BRGWC-52I) of water were removed from each piezometer during development. During development, attempts were made for each piezometer to achieve a turbidity value below 10 nephelometric turbidity units (NTUs). Water levels for the newly installed and developed piezometers was collected following development and included on the well construction diagrams. The measurements were collected using a decontaminated electronic water level indicator. The surveyed point on the top of the casing was used as reference, and the measurements were recorded to within 0.01 foot.

Piezometer Survey

The newly installed piezometers were surveyed on August 10, 2018 by SCS's Engineering and Civil Field Services group. The survey was completed using LEICA GS14 Antenna and CS15 Sensor with a positional tolerance of 0.10'H:V. Surveyed locations and elevations are presented on the boring/construction diagrams and a site map showing the locations of the newly installed piezometers is presented in Figure 1.

We appreciate the opportunity to assist SCS and GPC with this project. Should you have any questions or require additional information, please contact the undersigned at (770) 496-1893.

Golder Associates Inc.



Rachel P. Kirkman, PG
Associate and Senior Consultant

A handwritten signature in black ink, appearing to read "Dawn L. Prell".

Dawn L. Prell
Senior Hydrogeologist

dlp/rpk

CC: Georgia Power Company - Plant Branch
Tyler J. Boyles, Georgia Power Company

Attachments: Attachment A Figure & Tables
Attachment B Boring Logs/Piezometer Construction Diagrams
Attachment C Well Development Forms

[https://golderassociates.sharepoint.com/sites/11952g/shared documents/200 reports/1666254-03 pz50 investigation and well installation/report/1666254.03 well installation report pond b piezo_final10.2.2018.docx](https://golderassociates.sharepoint.com/sites/11952g/shared%20documents/200%20reports/1666254-03%20pz50%20investigation%20and%20well%20installation/report/1666254.03%20well%20installation%20report%20pond%20b%20piezo_final10.2.2018.docx)

ATTACHMENT A

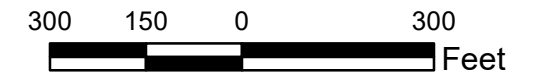
FIGURE & TABLES



- LEGEND**
- MONITORING WELL (ELEVATION feet AMSL)
 - PIEZOMETER (ELEVATION feet AMSL)
 - ESTIMATED GROUNDWATER SURFACE CONTOUR (feet AMSL)
 - PROPERTY BOUNDARY
 - APPROXIMATE SURFACE WATER LIMITS
 - APPROXIMATE ASH POND BOUNDARY

- NOTES**
1. GROUNDWATER SURFACE CONTOUR INTERVAL = 10 FEET
 2. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, AND TOPOGRAPHIC CONTOURS. THEREFORE, CONTOURS MAY NOT REFLECT ACTUAL CONDITIONS.
 3. AMSL=ABOVE MEAN SEA LEVEL.
 4. GROUNDWATER CONTOURS BASED ON ELEVATIONS MEASURED ON JUNE 25, 2018.

- REFERENCE**
1. SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
 2. COORDINATE SYSTEM: NAD 1983 STATE PLAN GEORGIA WEST (U.S. FEET).
 3. BORING/WELL/PIEZOMETER LOCATIONS AND PROPERTY LINE PROVIDED BY SOUTHERN COMPANY SERVICES, INC.
 4. TOPOGRAPHY OBTAINED BY NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION WEBSITE, WWW.COAST.NOAA.GOV, JUNE 2016.



CLIENT
GEORGIA POWER COMPANY
 PLANT BRANCH



PROJECT
GROUNDWATER MONITORING PLAN

TITLE
PIEZOMETER LOCATION MAP

CONSULTANT	YYYY-MM-DD	2018-07-15
	PREPARED	DJC
	DESIGN	DLP
	REVIEW	dlp
	APPROVED	rpk

PROJECT No. 1666254 CONTROL 1666254F002-GIS.mxd Rev. 0 FIGURE 1

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar

Path: H:\1666254-SCS-Plant Branch\GIS\MapF-Piezometer Locations\1666254F002-GIS.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSB

TABLE 1.
PIEZOMETER CONSTRUCTION DETAILS
Georgia Power Company - Plant Branch
Milledgeville, Georgia

BOREHOLE ID	LATITUDE	LONGITUDE	NAD 83 NORTHING	NAD 83 EASTING	ELEVATION TOP OF PVC (feet msl)	ELEVATION GROUND SURFACE (feet msl)	ROCK TYPE	TOTAL DEPTH (feet bgs)	DEPTH TO BEDROCK (feet bgs)	SCREENED INTERVAL (feet bgs)	FORMATION SCREENED	CORE AVAILABLE	WATER LEVEL (feet bTOC) (9/18/2018) ^[1]	DATE INSTALLED
PZ-51S	33.1904759	-83.2976469	1161613.91	2562432.18	380.19	377.63	N/A	50.0	Not Encountered	40.0-45.0	Overburden	Yes	38.90	8/2/2018
PZ-511	33.1905240	-83.2976265	1161631.46	2562438.27	380.60	377.79	Biotite Gneiss	65.0	58.0	54.9-64.9	Weathered Rock	Yes	35.40	8/1/2018
BRGWC / PZ-52I	33.1895523	-83.2985957	1161275.44	2562144.69	383.83	380.93	Biotite Gneiss	75.0	50.0	63.9-73.9	Weathered Rock	Yes	39.26	8/6/2018

Notes:

MSL - mean sea level

NAD - North American Datum

NAVD - North American Vertical Datum

NA - Not Available

bgs - Below ground surface

bTOC - Below Top of Casing

[1] Depth to water recorded 9/18/2018 during sampling event

Table 2
Summary of Piezometer Development Data
Georgia Power Company - Plant Branch
Milledgeville, Georgia

Piezometer ID	Date Started	Time Started (hr:min)	Elapsed Time (hr:min)	Development Method	Measured Total Depth of Well (ft. bTOC)	Initial Water level (ft. bTOC)	Final Water Level (ft. bTOC)	Volume of Casing (gal)	Total Volume Removed (gal)	pH (S.U.)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)	Comments
PZ-51S	8/2/2018	9:25	5:31	Reclaimer	45.26	36.53	37.15	1.42	112.5	6.18	180.04	23.04	8.50	97.11	4.43	Well Purged dry 3 times during development. Field parameters recorded during 1of flow sampling immediately following development.
PZ-51I	8/3/2018	8:50	3:00	Reclaimer	65.00	35.18	35.80	4.86	67.5	5.47	1940.69	24.32	4.98	155.39	1.21	Field parameters recorded during 1of flow sampling immediately following development.
BRGWC-52I / PZ-52I	8/9/2018	12:10	3:00	Reclaimer	73.60	35.88	36.23	6.15	65.0	6.28	503.21	23.12	4.86	30.12	0.21	Field parameters recorded during 1of flow sampling immediately following development.
	8/23/2018	8:25	1:23	Reclaimer	76.60	39.11	39.65	6.11	40.0	6.75	421.03	23.70	3.20	-1.41	8.84	Well Redeveloped Particulate matter observed in discharge, despite the low turbidity (<2 NTU)

Notes:

Recorded field parameter data was taken from SmarTroll Logs.

hr:min - hours:minutes

ft bTOC - feet below Top of Casing

gal - gallons

SU - Standard Units

mS/cm - millisiemens per centimeter

oC - degrees Celcius

NTU - nephelometric turbidity units

mV - millivolts

mg/L - milligrams per liter

ORP - oxygen reduction potential

DO - dissolved oxygen

ATTACHMENT B

**BORING LOGS & PIEZOMETER
CONSTRUCTION LOGS**

RECORD OF BOREHOLE PZ-511

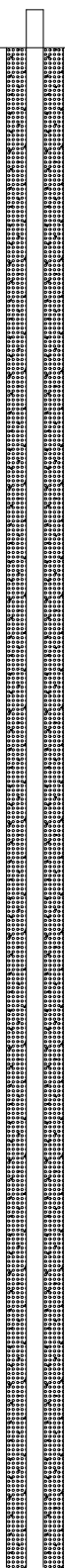
SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 65.00 ft

DRILL RIG: 8140LC
 DATE STARTED: 8/1/18
 DATE COMPLETED: 8/1/18

NORTHING: 1,161,631.46
 EASTING: 2,562,438.27
 GS ELEVATION: 377.79 ft
 TOC ELEVATION: 380.60 ft

DEPTH W.L.: 35.20 ft
 ELEVATION W.L.: 345.40 ft
 DATE W.L.: 8/3/18
 TIME W.L.: 08:33:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE		
0		0.00 - 10.00 Soil was hydrovacuumed to 10 feet.							PZ-511 	PZ-511 Borehole Diameter: 6 WELL CASING Interval: 0-65' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 54.9-64.9' Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen Diameter: 2 Slot Size: 0.010 End Cap: 65.3 FILTER PACK Interval: 52.5-65.0 Type: FilterSil Quantity: 5 - 50 lb bags FILTER PACK SEAL Interval: 49.2-52.5' Type: 3/8" PEL-PLUG Quantity: 5 gallons ANNULUS SEAL Interval: 0-49.2 Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 6 - 94lb bags Water: 75 gallons
375										
5										
370										
10		10.00 - 20.00 silty SAND, reddish brown with white mottling, fine to coarse, some relic structure, non-cohesive, dy, loose	SM	[Graphic Log]	367.79 10.00	No Data	S - 1	ROTO SONIC		
15										
365										
20		20.00 - 25.00 silty SAND with trace gravel, fine to coarse	SM	[Graphic Log]	357.79 20.00	No Data	S - 2	ROTO SONIC	4.00 5.00	
25		25.00 - 35.00 silty SAND with some boulders > 3inches, dark brown fine to coarse, non-cohesive, dry, loose to compact	SM	[Graphic Log]	352.79 25.00	No Data	S - 3	ROTO SONIC	8.40 10.00	
30										
35		35.00 - 45.00 silty SAND, fine to coarse, relic granitic structure, micaceous, non-cohesive, moist, loose to compact	SM	[Graphic Log]	342.79 35.00	No Data	S - 4	ROTO SONIC	5.50 10.00	
40		Log continued on next page								

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDBER NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade Environmental, LLC
 DRILLER: M. Rodriguez

GA INSPECTOR: Ben Hodges
 CHECKED BY: Rachel Kirkman, PG
 DATE: 9/6/18



RECORD OF BOREHOLE PZ-511

SHEET 2 of 2

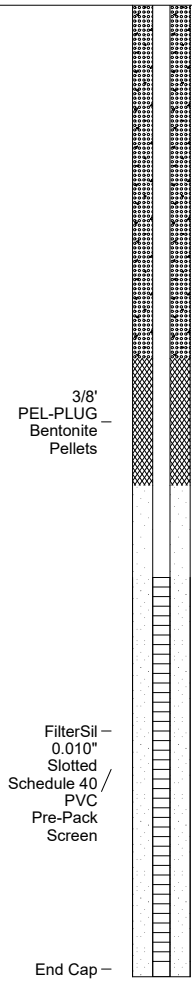
PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 65.00 ft

DRILL RIG: 8140LC
 DATE STARTED: 8/1/18
 DATE COMPLETED: 8/1/18

NORTHING: 1,161,631.46
 EASTING: 2,562,438.27
 GS ELEVATION: 377.79 ft
 TOC ELEVATION: 380.60 ft

DEPTH W.L.: 35.20 ft
 ELEVATION W.L.: 345.40 ft
 DATE W.L.: 8/3/18
 TIME W.L.: 08:33:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER		
40		35.00 - 45.00 silty SAND, fine to coarse, relic granitic structure, micaceous, non-cohesive, moist, loose to compact <i>(Continued)</i>	SM		332.79 45.00	No Data	S - 4	ROTO SONIC	5.50 10.00
45		45.00 - 53.50 high plastic CLAY, clay with some sand, sand fine to medium, light reddish brown, cohesive, moist to wet, stiff	CH		324.29 53.50	No Data	S - 5	ROTO SONIC	8.50 8.50
50		53.50 - 55.00 silty Sand, reddish brown, relic foliation, micaceous, moist, loose to compact	SM		322.79 55.00	No Data	S - 6	ROTO SONIC	- 6.50
55		55.00 - 58.00 Saprolite, silty SAND with some gravel, sand and gravel fine to coarse	SM		319.79 58.00	No Data	S - 7	ROTO SONIC	3.10 5.00
60		58.00 - 60.00 BIOTITE GNEISS, gravel, highly weathered, very weak dry	BR		317.79 60.00	No Data	S - 7	ROTO SONIC	3.10 5.00
65		60.00 - 65.00 BIOTITE GNEISS, banded white with dark brown, large grained, highly weathered, strong	BR		312.79	No Data	S - 7	ROTO SONIC	3.10 5.00
65		Boring completed at 65.00 ft							



PZ-511
 Borehole Diameter: 6

WELL CASING
 Interval: 0-65'
 Material: Schedule 40 PVC
 Diameter: 2"
 Joint Type: Flush/Screen

WELL SCREEN
 Interval: 54.9-64.9'
 Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen
 Diameter: 2"
 Slot Size: 0.010
 End Cap: 65.3

FILTER PACK
 Interval: 52.5-65.0
 Type: FilterSil
 Quantity: 5 - 50 lb bags

FILTER PACK SEAL
 Interval: 49.2-52.5'
 Type: 3/8" PEL-PLUG
 Quantity: 5 gallons

ANNULUS SEAL
 Interval: 0-49.2
 Type: Portland Cement and Quick Gel Bentonite Mix
 Quantity: Cement: 6 - 94lb bags
 Water: 75 gallons

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDR NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade Environmental, LLC
 DRILLER: M. Rodriguez

GA INSPECTOR: Ben Hodges
 CHECKED BY: Rachel Kirkman, PG
 DATE: 9/6/18



RECORD OF BOREHOLE PZ-51S

SHEET 1 of 2

PROJECT: Plant Branch
PROJECT NUMBER: 1666254-01
DRILLED DEPTH: 50.00 ft

DRILL RIG: 8140LC
DATE STARTED: 8/2/18
DATE COMPLETED: 8/2/18

NORTHING: 1,161,613.91
EASTING: 2,562,432.18
GS ELEVATION: 377.63 ft
TOC ELEVATION: 380.19 ft

DEPTH W.L.: 35.60 ft
ELEVATION W.L.: 344.59 ft
DATE W.L.: 8/1/18
TIME W.L.: 14:56:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS		
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER			TYPE	REC / ATT
0		0.00 - 10.00 Soil was hydrovacuumed to 10 feet.							<p style="text-align: center;">PZ-51S</p> <p style="text-align: center;">2.56 ft-ags Stick up</p> <p style="text-align: center;">Portland Cement and Quick Gel Bentonite Mix</p> <p style="text-align: center;">3/8' PEL-PLUG Bentonite Pellets</p>	<p>PZ-51S Borehole Diameter: 6</p> <p>WELL CASING Interval: 0-50' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 40.0-45.0' Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen Diameter: 2 Slot Size: 0.10 End Cap: 45.4</p> <p>FILTER PACK Interval: 35.7-47 Type: FilterSil Quantity: 4 - 50lb bags</p> <p>FILTER PACK SEAL Interval: 45.4-47.0' Type: 3/8" PEL-PLUG Quantity: 5 gallons</p> <p>ANNULUS SEAL Interval: 0-33.2' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 4 - 94lb bags Water: 20 gallons</p>	
10		10.00 - 20.00 Silty SAND, reddish brown, fine to medium grained, some relic structure, micaceous, cohesive, w>PL, dry, loose	SM	[Vertical line]	367.63 10.00	No Data	S - 1	ROTO SONIC			$\frac{3.70}{10.00}$
20		20.00 - 30.00 Silty SAND, reddish brown with black sand intrusions, fine to medium grained, micaceous, non-cohesive, moist, loose	SM	[Vertical line]	357.63 20.00	No Data	S - 2	ROTO SONIC			$\frac{9.10}{10.00}$
30		30.00 - 35.00 silty to clayey SAND, reddish brown w/ black sand intrusions, fine to medium grain, micaceous, non-cohesive, moist to wet	SC-SM	[Hatched pattern]	347.63 30.00	No Data	S - 3	ROTO SONIC			$\frac{5.00}{5.00}$
35		35.00 - 45.00 silty SAND, reddish brown, fine to medium grained, micaceous, non-cohesive, moist to wet	SM	[Vertical line]	342.63 35.00	No Data	S - 4	ROTO SONIC			$\frac{10.00}{10.00}$
40		Log continued on next page									

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDR NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
DRILLING COMPANY: Cascade Environmental, LLC
DRILLER: M.Rodriguez

GA INSPECTOR: Ben Hodges
CHECKED BY: Rachel Kirkman, PG
DATE: 9/6/18



RECORD OF BOREHOLE PZ-51S

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 50.00 ft

DRILL RIG: 8140LC
 DATE STARTED: 8/2/18
 DATE COMPLETED: 8/2/18

NORTHING: 1,161,613.91
 EASTING: 2,562,432.18
 GS ELEVATION: 377.63 ft
 TOC ELEVATION: 380.19 ft

DEPTH W.L.: 35.60 ft
 ELEVATION W.L.: 344.59 ft
 DATE W.L.: 8/1/18
 TIME W.L.: 14:56:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE			REC / ATT
40		35.00 - 45.00 silty SAND, reddish brown, fine to medium grained, micaeous, non-cohesive, moist to wet <i>(Continued)</i>	SM		332.63 45.00	No Data	S - 4	ROTO SONIC	10.00 10.00	<p style="text-align: center;">PZ-51S</p>	<p>PZ-51S Borehole Diameter: 6</p> <p>WELL CASING Interval: 0-50' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 40.0-45.0' Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen Diameter: 2 Slot Size: 0.10 End Cap: 45.4</p> <p>FILTER PACK Interval: 35.7-47 Type: FilterSil Quantity: 4 - 50lb bags</p> <p>FILTER PACK SEAL Interval: 45.4-47.0' Type: 3/8" PEL-PLUG Quantity: 5 gallons</p> <p>ANNULUS SEAL Interval: 0-33.2' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 4 - 94lb bags Water: 20 gallons</p>
45		45.00 - 50.00 high plastic CLAY with some sand, dark brown, fine to coarse sand, dark brown, cohesive, dry, firm to stiff	CH		327.63	No Data	S - 5	ROTO SONIC	5.00 5.00		
50		Boring completed at 50.00 ft									

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDR NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade Environmental, LLC
 DRILLER: M.Rodriguez

GA INSPECTOR: Ben Hodges
 CHECKED BY: Rachel Kirkman, PG
 DATE: 9/6/18



RECORD OF BOREHOLE BRGWC-52I/PZ-52I

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 75.00 ft

DRILL RIG: 8140LC
 DATE STARTED: 8/6/18
 DATE COMPLETED: 8/6/18

NORTHING: 1,161,275.44
 EASTING: 2,562,144.69
 GS ELEVATION: 380.93 ft
 TOC ELEVATION: 383.83 ft

DEPTH W.L.: 35.99 ft
 ELEVATION W.L.: 347.84 ft
 DATE W.L.: 8/9/18
 TIME W.L.: 11:45:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE			REC / ATT
0	380	0.00 - 8.00 Soil was hydrovacuum to 8 feet								<p style="text-align: center;">PZ-52I</p> <p>2.9 ft-ags Stick up</p>	<p>PZ-52I Borehole Diameter: 6</p> <p>WELL CASING Interval: 0-73.9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen</p> <p>WELL SCREEN Interval: 63.9-73.9' Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen Diameter: 2 Slot Size: 0.010 End Cap: 73.9</p> <p>FILTER PACK Interval: 59.7-73.9 Type: FilterSil Quantity: 5 - 50lb bags</p> <p>FILTER PACK SEAL Interval: 50.4-59.7 Type: 3/8" PEL-PLUG Quantity: 10 gallons</p> <p>ANNULUS SEAL Interval: 0.50.4' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 6 - 94lb bags Water: 75 gallons</p>
		8.00 - 10.00 Loss of material			372.93 8.00						
		10.00 - 18.00 sandy SILT w/ trace gravel, fine to coarse, weathered, micaceous, fill, moist to dry, loose to compact, non-cohesive	MLS		370.93 10.00	No Data	S - 1	ROTO SONIC	4.00 10.00		
		18.00 - 20.00 sandy SILT, fine to coarse, weathered, dry, loose, non-cohesive, trace gravel at bottom	MLS		362.93 18.00						
		20.00 - 26.00 sandy SILT with trace gravel, dark brown, micaceous, sand/gravel fine to coarse, loose to compact	MLS		360.93 20.00						
		26.00 - 30.00 sandy SILT with trace gravel, grey to brown, less micaceous, sand/gravel fine to coarse, moist, compact	MLS		354.93 26.00	No Data	S - 2	ROTO SONIC	7.00 10.00		
		30.00 - 32.50 sandy SILT with trace gravel, red, sand/gravel fine to coarse, moist, compact, non-cohesive, high plasticity	MLS		350.93 30.00						
		32.50 - 37.00 CLAY with some sand, RED, cohesive, w>PL, stiff to very stiff, sand fine to coarse, high plasticity	CH		348.43 32.50	No Data	S - 3	ROTO SONIC	10.00 10.00		
		37.00 - 40.00 sandy SILT, red, w>PL, soft to firm, sand fine to coarse, cohesive, high plasticity	MLS		343.93 37.00						
		Log continued on next page			340.93						

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDBER NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade Environmental, LLC
 DRILLER: M.Rodriguez

GA INSPECTOR: Ben Hodges
 CHECKED BY: Rachel Kirkman, PG
 DATE: 9/6/18



RECORD OF BOREHOLE BRGWC-521/PZ-521

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 75.00 ft

DRILL RIG: 8140LC
 DATE STARTED: 8/6/18
 DATE COMPLETED: 8/6/18

NORTHING: 1,161,275.44
 EASTING: 2,562,144.69
 GS ELEVATION: 380.93 ft
 TOC ELEVATION: 383.83 ft

DEPTH W.L.: 35.99 ft
 ELEVATION W.L.: 347.84 ft
 DATE W.L.: 8/9/18
 TIME W.L.: 11:45:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES				DIAGRAM and NOTES MONITORING WELL/ PIEZOMETER	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	PID (ppm)	NUMBER	TYPE		
40	340	40.00 - 45.00 silty SAND with trace gravel and clay, light grey to brown, sand/gravel fine to coarse, non-cohesive, compact to dense, wet	GM		40.00	No Data	S - 4	ROTO SONIC		PZ-521 Borehole Diameter: 6 WELL CASING Interval: 0-73.9' Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Screen WELL SCREEN Interval: 63.9-73.9' Material: 0.010" Slotted Schedule 40 PVC Pre-Pack Screen Diameter: 2 Slot Size: 0.010 End Cap: 73.9 FILTER PACK Interval: 59.7-73.9 Type: FilterSil Quantity: 5 - 50lb bags FILTER PACK SEAL Interval: 50.4-59.7 Type: 3/8" PEL-PLUG Quantity: 10 gallons ANNULUS SEAL Interval: 0.50.4' Type: Portland Cement and Quick Gel Bentonite Mix Quantity: Cement: 6 - 94lb bags Water: 75 gallons
45	335	45.00 - 47.50 Sandy Clay, red, cohesive, very stiff w> PL, sand, fine, high plasticity	SC		335.93 45.00	No Data	S - 4	ROTO SONIC	10.00 10.00	
		47.50 - 50.00 Sandy Clay with trace gravel, red, fine to coarse, cohesive, very firm to stiff, w > PL to w ~ PL, high plasticity	SC		333.43 47.50					
50	330	50.00 - 60.00 BIOTITE GNEISS, fresh to weathered, medium to coarse, banding, black/white, weak to strong	BR		330.93 50.00	No Data	S - 5	ROTO SONIC	3.00 3.00	
55	325		BR			No Data	S - 6	ROTO SONIC	2.30 7.00	
60	320	60.00 - 70.00 BIOTITE GNEISS, fresh, banded coarse and fine grain, black/white, very strong	BR		320.93 60.00	No Data	S - 7	ROTO SONIC	6.00 10.00	
65	315		BR			No Data	S - 8	ROTO SONIC	0.00 5.00	
70	310	70.00 - 75.00 BIOTITE GNEISS, fresh, banded coarse and fine grain, black/white, very strong	BR		310.93 70.00	No Data	S - 8	ROTO SONIC	0.00 5.00	
75	305	Boring completed at 75.00 ft			305.93					

AA BOREHOLE RECORD PLANT_BRANCH_20181002.GPJ GOLDR NJ-PA 05-24-06.GDT 10/2/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade Environmental, LLC
 DRILLER: M.Rodriguez

GA INSPECTOR: Ben Hodges
 CHECKED BY: Rachel Kirkman, PG
 DATE: 9/6/18



ATTACHMENT C

PIEZOMETER DEVELOPMENT LOGS



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>Plant Branch Pond B</u> DEVELOPED BY <u>K. Minkara</u> STARTED DEVEL. <u>8-2-18 / 0920</u> DATE TIME W.L. BEFORE DEVEL. <u>35.76 / 8-2-18 0923</u> DEPTH DATE TIME WELL DEPTH: BEFORE DEVEL. <u>45.28</u> STANDING WATER COLUMN (FT.) <u>9.52</u> SCREEN LENGTH <u>5' (40-45)</u>	JOB NO. <u>1666254.04</u> WELL NO. <u>PZ-515</u> DATE OF INSTALL. <u>8-1-18</u> SHEET ___ OF ___ COMPLETED DEVEL. <u>8-2-18 / 1456</u> DATE TIME AFTER DEVEL. <u>DRY</u> / / DEPTH DATE TIME AFTER DEVEL. <u>526 DRY</u> WELL DIA. (in) <u>2"</u> STANDING WELL VOLUME _____ gal. DRILLING WATER LOSS _____ gal.
--	---

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS				REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER	
8-2-18/0925	5					pump @ 41.5', WL = 41.5
0945	25					pump @ 41', WL > 41'
		222.1	23.90	8.749	71000	pump @ 42', WL =
0950	30					generator dead @ 0948 0950
1015	30					resumed dev @ 1015
1030	45	204.2	23.24	7.49	139	pump @ 42', WL = 41.85
1045	60					pump @ 42', WL = 42
1130	60					pump @ 43', WL = DRY
1125	65	199.30	24.47	7.63	71000	pump @ 43', WL = 36.24
1200	90					1:43' WL = 27.49
1300						DRY
1310	95					continued dev @ 0.5 gal/min WL = 36.34
1330	105	186.1	23.93	8.47	67140	pump @ 42', WL = 42.56
1430	105	184.8	23.56	7.43	83.9	recharge @ 42', WL > TOP @ 42'
1445	112.5					WL = 36.27, pump @ 42'
						stopped low flow development eye
						to low (<100 NTU) & reduced flow.
						see pump form for sample info
	112.5	= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: Reclaimer

- well went dry 3 times (60 gal, 40 gal, & 105 gal)
- completed dev then went to low-flow w/ bladder pump.

NOTES: TOP of casing @ ground surface

WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>Plan + Branch Pond B</u> DEVELOPED BY <u>K. Minkam / B. Hodges</u> STARTED DEVEL. <u>8-3-18 / 0850</u> DATE TIME W.L. BEFORE DEVEL. <u>35.20' / 8-3-18 0833</u> DEPTH DATE TIME WELL DEPTH: BEFORE DEVEL. <u>65.00</u> STANDING WATER COLUMN (FT.) <u>29.8</u> SCREEN LENGTH <u>10 (55-65)</u>	JOB NO. <u>1666254.04</u> WELL NO. <u>PZ-51F</u> DATE OF INSTALL. <u>8-2-18</u> SHEET <u>1</u> OF <u>1</u> COMPLETED DEVEL. <u>8-3-18 / 1110</u> DATE TIME AFTER DEVEL. <u>35.60 / 8-2-18 1132</u> DEPTH DATE TIME AFTER DEVEL. <u>65.00</u> WELL DIA. (In) <u>2</u> STANDING WELL VOLUME <u>29.4</u> gal. DRILLING WATER LOSS _____ gal.
--	---

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER		
<u>8-3-18/0850</u>	<u>-</u>	<u>pump rate = 1/2 gal/min</u>					<u>pump @ 65' (bottom)</u>
<u>0915</u>	<u>12.5</u>	<u>963.1</u>	<u>23.55</u>	<u>6.79</u>	<u>5.99</u>	<u>pump @ 65', wL = 44.51</u>	
<u>0945</u>	<u>27.5</u>	<u>1269.6</u>	<u>22.93</u>	<u>5.70</u>	<u>58.6</u>	<u>pump @ 62', wL = 45.32</u>	
<u>1010</u>	<u>40</u>	<u>1570.1</u>	<u>23.37</u>	<u>5.52</u>	<u>63.5</u>	<u>pump @ 61', wL = 45.65</u>	
<u>1045</u>	<u>55</u>	<u>1867.8</u>	<u>23.39</u>	<u>5.40</u>	<u>48.1</u>	<u>pump @ 59', wL = 45.90</u>	
<u>1100</u>	<u>67.5</u>	<u>1952.7</u>	<u>23.30</u>	<u>5.36</u>	<u>51.3</u>	<u>pump @ 57', wL = 45.95</u>	
		<u>← completed development</u>					
	<u>67.5</u>	= TOTAL VOLUME REMOVED (gal.)					

DEVELOPMENT METHOD: Reclaimer
-pump moved 2' throughout screen after each reading if clogging

NOTES: stick-up 3ft from ground surface



WELL DEVELOPMENT FIELD RECORD

JOB NAME <u>Burch Pond B</u>	JOB NO. <u>1666254.04</u>	WELL NO. <u>P252I</u>			
DEVELOPED BY <u>K. Priskin</u>	DATE OF INSTALL. <u>8-8-18</u>	SHEET <u>1</u> OF <u>1</u>			
STARTED DEVEL. <u>8-9-18 1210</u>	COMPLETED DEVEL. <u>8-9-18 1500</u>				
DATE	TIME	DATE	TIME		
W.L. BEFORE DEVEL. <u>35.99</u>	<u>8-9-18 1145</u>	AFTER DEVEL. <u>36.15</u>	<u>8-9-18 1531</u>		
DEPTH	DATE	TIME	DEPTH	DATE	TIME
WELL DEPTH: BEFORE DEVEL. <u>73.55</u>			AFTER DEVEL. <u>73.6</u>	WELL DIA. (In) <u>2</u>	
STANDING WATER COLUMN (FT.)			STANDING WELL VOLUME _____ gal.		
SCREEN LENGTH <u>10' (64-74)</u>			DRILLING WATER LOSS _____ gal.		

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER		
<u>8-9-18/1310</u>	<u>0</u>	<u>0</u>	<u>42</u>	<u>7.6</u>	<u>59.8</u>	<u>1000 @ 74 (bottom)</u> <u>1000 @ 74, WL=37.80</u> <u>@ 72, WL=37.85</u> <u>@ 70, WL=37.90</u>	
<u>1340</u>	<u>20</u>	<u>38.6</u>	<u>25.1</u>	<u>6.76</u>			
<u>1300</u>	<u>30</u>	<u>500</u>	<u>25.5</u>	<u>6.94</u>	<u>19.3</u>		
<u>1320</u>	<u>40</u>						
		<u>Development paused @ 1330</u> <u>due to severe weather</u>					
		<u>re-sum @ 1420</u>					
<u>1430</u>	<u>50</u>	<u>467.8</u>	<u>24.25</u>	<u>6.34</u>	<u>13.42</u>	<u>@ 68', WL=38.50</u> <u>" "</u>	
<u>1500</u>	<u>65</u>	<u>468.4</u>	<u>24.24</u>	<u>6.32</u>	<u>15.7</u>	<u>@ 66', WL=38.15</u>	
	<u>↓</u>						
	<u>65</u>	= TOTAL VOLUME REMOVED (gal.)					

DEVELOPMENT METHOD: Reclaimer

NOTES: ~~30'~~ 5'-2' up from ground surface.



WELL DEVELOPMENT FIELD RECORD

JOB NAME Plant Branch Pond B JOB NO. 166625418 WELL NO. PZ-52I
 DEVELOPED BY K. McKem DATE OF INSTALL. 8/9/18 SHEET 1 OF 1
 STARTED LEVEL. 8/23/18 / 0825 COMPLETED LEVEL. 8/23/18 / 0948
DATE TIME
 W.L. BEFORE DEVEL. 39.02 (btoc) 8/23/18 / 0753 AFTER DEVEL. 39.30 / 8/23/18 / 1003
DEPTH DATE TIME
 WELL DEPTH: BEFORE DEVEL. 76.60 (btoc) AFTER DEVEL. 76.60 WELL DIA. (In) 2"
 STANDING WATER COLUMN (FT.) 37.58 STANDING WELL VOLUME _____ gal.
 SCREEN LENGTH 10' DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS					REMARKS
		SPEC. COND. (umhos/cm)	TEMP. (°F)	pH (s.u.)	NTU OTHER		
<u>8/23/18 / 0825</u>	<u>-</u>	<u>pump @ 76' btoc</u>			<u>36.5</u>	<u>pump rate @ 0.5 gal/min</u>	
<u>0925</u>	<u>5</u>				<u>36.5</u>	<u>DTW = 40.95</u>	
<u>0955</u>	<u>15</u>				<u>6.22</u>	<u>DTW = 46.60</u>	
<u>0908</u>	<u>20</u>	<u>500.5</u>	<u>21.05</u>	<u>6.51</u>	<u>6.83</u>	<u>DTW = 46.60, pump @ 76'</u>	
<u>0915</u>	<u>25</u>	<u>484.6</u>	<u>20.52</u>	<u>6.45</u>	<u>1.57</u>	<u>DTW = 46.90, pump @ 74'</u>	
<u>0935</u>	<u>35</u>	<u>491.9</u>	<u>20.43</u>	<u>6.40</u>	<u>1.49</u>	<u>DTW = 46.25, pump @ 72'</u>	
				<u>6.36</u>			
<u>0945</u>	<u>40</u>	<u>477</u>	<u>21.55</u>	<u>6.35</u>	<u>1.94</u>	<u>DTW = 46.35, pump @ 72'</u>	
	<u>40</u>	<u>= TOTAL VOLUME REMOVED (gal.)</u>					

DEVELOPMENT METHOD: Reclaimer

NOTES: White particulates observed in water, despite very low NTU (<2).
Lamotte calibrated turbine.

Product Name: Low-Flow System

Date: 2018-08-02 16:02:59

Project Information:

Operator Name K. Minkara
Company Name Golder Associates
Project Name 1666254.04
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter .170 in
Tubing Length 42.5 ft

Pump placement from TOC 42.5 ft

Well Information:

Well ID PZ-51S
Well diameter 2 in
Well Total Depth 45.26 ft
Screen Length 5 ft
Depth to Water 36.53 ft

Pumping Information:

Final Pumping Rate 100 mL/min
Total System Volume 0.4046955 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 7.44 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	15:41:04	600.05	23.91	6.22	178.27	17.20	36.95	5.04	93.55
Last 5	15:46:04	900.03	23.30	6.19	178.54	15.60	37.02	4.85	96.80
Last 5	15:51:04	1200.00	23.07	6.18	179.01	13.40	37.05	4.70	97.78
Last 5	15:56:05	1500.99	23.03	6.18	180.05	9.39	37.12	4.66	97.46
Last 5	16:01:08	1803.98	23.04	6.18	180.04	8.50	37.15	4.43	97.11
Variance 0			-0.22	-0.00	0.47			-0.14	0.97
Variance 1			-0.05	-0.00	1.05			-0.04	-0.32
Variance 2			0.01	-0.01	-0.01			-0.23	-0.35

Notes

Sampled PZ-51S at 1600

Grab Samples

Product Name: Low-Flow System

Date: 2018-08-03 12:13:01

Project Information:

Operator Name K. Minkara
Company Name Golder Associates
Project Name 1666254.04
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter .170 in
Tubing Length 60 ft

Pump placement from TOC 60 ft

Well Information:

Well ID PZ-51I
Well diameter 2 in
Well Total Depth 65 ft
Screen Length 10 ft
Depth to Water 35.18 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.4828054 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 7.44 in
Total Volume Pumped 3.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	11:45:05	300.04	28.35	6.14	969.00	17.60	35.75	5.33	153.20
Last 5	11:55:05	900.01	25.01	5.49	1896.21	9.46	35.80	1.50	171.93
Last 5	12:00:05	1200.00	24.67	5.48	1905.40	8.14	35.80	1.36	169.03
Last 5	12:05:05	1499.99	24.38	5.48	1929.57	5.82	35.80	1.29	162.44
Last 5	12:10:06	1800.98	24.32	5.47	1940.69	4.98	35.80	1.21	155.39
Variance 0			-0.34	-0.00	9.19			-0.14	-2.90
Variance 1			-0.29	-0.01	24.18			-0.08	-6.59
Variance 2			-0.06	-0.00	11.12			-0.08	-7.05

Notes

Sampled PZ-51I at 1210

Grab Samples

Product Name: Low-Flow System

Date: 2018-08-10 08:53:39

Project Information:

Operator Name K. Minkara
Company Name Golder Associates
Project Name 1666254.04
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463453
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter .170 in
Tubing Length 69 ft

Pump placement from TOC 69 ft

Well Information:

Well ID PZ-52I
Well diameter 2 in
Well Total Depth 73.6 ft
Screen Length 10 ft
Depth to Water 35.88 ft

Pumping Information:

Final Pumping Rate 150 mL/min
Total System Volume 0.5229762 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.2 in
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	08:30:07	1200.00	23.23	6.28	496.12	6.85	36.23	1.13	33.59
Last 5	08:35:09	1501.99	23.21	6.28	494.78	5.87	36.23	0.94	32.96
Last 5	08:40:09	1801.98	23.15	6.28	498.32	5.36	36.23	0.81	30.50
Last 5	08:45:14	2106.97	23.13	6.28	502.56	5.05	36.23	0.65	29.24
Last 5	08:50:15	2407.96	23.12	6.28	503.21	4.86	36.23	0.21	30.12
Variance 0			-0.05	0.00	3.54			-0.13	-2.46
Variance 1			-0.03	0.00	4.24			-0.16	-1.26
Variance 2			-0.01	-0.01	0.66			-0.44	0.88

Notes

Sampled PZ-52I at 0850. WL readings reflect ft below ground surface

Grab Samples

Product Name: Low-Flow System

Date: 2018-08-23 14:24:47

Project Information:

Operator Name K. Minkara
Company Name Golder Associates
Project Name 1666154
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 465016
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type SamplePro
Tubing Type polyethylene
Tubing Diameter .17 in
Tubing Length 71 ft

Pump placement from TOC 71 ft

Well Information:

Well ID PZ-52I
Well diameter 2 in
Well Total Depth 76.6 ft
Screen Length 10 ft
Depth to Water 39.11 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.5319031 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 6.48 in
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:00:59	600.03	24.26	6.50	455.74	4.86	39.43	9.07	34.91
Last 5	14:05:59	900.03	23.92	6.63	447.68	2.99	39.43	9.50	20.71
Last 5	14:10:59	1200.03	23.79	6.70	433.09	3.07	39.45	8.92	10.18
Last 5	14:16:00	1501.03	23.71	6.74	430.09	3.05	39.60	9.00	3.21
Last 5	14:21:00	1801.03	23.70	6.75	421.03	3.20	39.65	8.84	-1.41
Variance 0			-0.13	0.07	-14.59			-0.58	-10.53
Variance 1			-0.08	0.04	-3.00			0.08	-6.97
Variance 2			-0.01	0.01	-9.07			-0.16	-4.62

Notes

Sampled PZ-52I at 1420

Grab Samples

May 31, 2018

Project No. 1666254-02

Mr. Joju Abraham, PG

Southern Company Services, Inc.
241 Ralph McGill Blvd NE
Atlanta, GA 30308
jabraham@southerco.com

**PIEZOMETER INSTALLATION REPORT FOR SURFACE IMPOUNDMENT GEORGIA POWER PLANT
BRANCH, MILLEDGEVILLE, GEORGIA**

Dear Joju:

Golder Associates Inc. (Golder) is submitting this *Piezometer Installation Report to Southern Company Services, Inc. (SCS) and Georgia Power Company (GPC)*, which documents the construction of piezometers at Plant Branch in Milledgeville, Georgia. Piezometer construction activities were performed in general accordance with the standards described in the *RCRA Technical Enforcement Guidance Document (1986)* and the *Georgia Water Wells Standards Act of 1985*. The installation of the piezometers was conducted under the oversight and direction of Timothy Richards and Rachel Kirkman, Georgia registered Professional Geologists (PGs).

The field activities for this investigation were performed in January and February 2018. The field work consisted of the installation, development, and water level gauging of eight (8) piezometers; SCS conducted a survey of the recently installed piezometers. A summary of the activities is presented below.

Piezometer drilling and Construction Activities

Piezometers PZ-43, PZ-44, PZ-45, PZ-46, PZ-47, PZ-48, PZ-49, and PZ-50 were drilled and installed by Cascade Drilling, LP, who was contracted through SCS, at the facility in January/February 2018. Cascade has a current and valid bond with the Water Wells Standards Advisory Council for the state of Georgia (Appendix A). The driller's name is provided on the boring/construction diagrams presented in Appendix B.

An experienced Golder geologist was present on site to oversee and record the drilling and piezometer construction under the supervision of professional geologists registered to practice in Georgia (Timothy Richards and Rachel Kirkman). Drilling methods employed for borehole advancement were roto-sonic drilling techniques with continuous core collected. The drilling equipment consisted of a full-sized Prosonic track mounted drilling rig, equipped with 4-inch sonic rods with an outer-casing sleeve. During the drilling, continuous core samples were logged in the field for lithologic and geotechnical properties.

Prior to use, and between boreholes, downhole equipment was steam cleaned. The boring (lithologic) logs and piezometer construction records for the newly installed piezometers are included in Appendix B. The construction data are summarized in Table 1, and the locations of the piezometers are provided on Figure 1.

Piezometers were constructed within the borehole using factory-cleaned and sealed Schedule 40 polyvinyl chloride (PVC) products with flush-threaded fittings. Specifically, piezometers were constructed with a 10 foot section of 4-inch outer diameter (OD) and 2-inch inner diameter (ID), flush-threaded, 0.010-inch factory-slotted PVC pre-packed screen with the exception of PZ-43. PZ-43 was installed using a 10-foot section of 1-inch diameter, flush threaded, 0.010-inch factory-slotted PVC. The drillers filled the annulus of each pre-pack screen section with No. 10 filter sand, and the screen interval of PZ-43 was filled with sand down hole. In each case, the screen was placed near the bottom of the borehole, with the remainder of the piezometer constructed from 10-foot sections of 2-inch ID, flush-threaded, PVC casing riser. PZ-43 was completed using similar materials, but with 1-inch diameter pipe. A flush-threaded PVC end cap placed on the bottom of each piezometer to provide a 0.4-foot sump/sediment trap, and the top of the piezometers extend approximately 30 inches above grade. Construction details for the piezometer are shown on the boring/construction logs in Appendix B. The PVC products used were American Society for Testing and Materials (ASTM) and National Sanitation Foundation (NSF) rated.

Following placement of the screen and casing, the annular space in each borehole adjacent to the screen was filled with U.S. Standard Sieve size No. 20-40 filter pack sand as appropriate for the formation. The filter pack sand was placed into the borehole and extends approximately 2 feet above the screen. Immediately following placement of the filter pack, each piezometer was pumped using a portable submersible pump until visibly clear water was discharged. If settling occurred during pumping, additional sand was placed so that the filter sand thickness was approximately 2 feet above the screen. A filter pack seal, composed of approximately 5 feet of hydrated time-release coated bentonite pellets, was then placed on top of the filter pack by slowly pouring the material down the borehole and tamping it into place with a tremie pipe. The bentonite was hydrated using potable water and allowed to cure for two hours prior to grouting the piezometer.

Following hydration of the bentonite, the remaining annular space was grouted with a Portland cement / Quick Gel mixture consisting of approximately 5% bentonite, and approximately 10 pounds per gallon, to 3 feet below ground surface using a tremie method. Each piezometer surface completion consists of a locked, aluminum protective casing and a 4-foot by 4-foot by 4-inch concrete pad with the exception of PZ-43, which has a pad only and no protective casing.

Piezometer Development Activities

The newly installed piezometers were developed in February 2018 in accordance with the Monitoring Well Development Procedures prepared by Southern Company Services, Inc. (March 2016) except for PZ-43, due to its small diameter. The piezometer were surged using a Reclaimer pump system. During development, water quality measurements of pH, temperature, specific conductance, and turbidity were periodically collected using field-calibrated water quality equipment after the piezometer responded to improving conditions. Development activities were conducted utilizing an In-Situ SmarTroll and a Lamotte 2020 turbidimeter for monitoring water quality measurements. Development forms are included in Appendix B and summarized on Table 2.

As presented on the development forms, a minimum of 80.5 gallons (PZ-49) and a maximum of 184 gallons (PZ-50) of water were removed from each piezometer during development. During development, attempts were made for each piezometer to achieve a turbidity value below 10 nephelometric turbidity units (NTUs). A full round of water levels for the newly installed and developed piezometers was collected on February 21, 2018 (Table 3). The measurements were collected using a decontaminated electronic water level indicator. The surveyed point on the top of the casing was used as reference, and the measurements were recorded to within 0.01 foot.

Aquifer Testing Activities

Aquifer tests (slug tests) were performed on February 21, 2018 for all newly installed piezometers during the field investigation by experienced Golder representatives (Table 4). The purpose of the testing was to estimate the horizontal hydraulic conductivity of aquifer materials encountered at the site. In situ rising- and falling-head slug tests were chosen for the assessment due to the relatively low yields noted during installation and development.

Falling and rising-head tests were performed on the seven newly installed piezometers (PZ-44, PZ-45, PZ-46, PZ-47, PZ-48, PZ-49, and PZ-50). PZ-43 was not slug tested due to its one-inch diameter. Prior to slug testing, the wells were opened and groundwater levels were allowed to equilibrate. Groundwater levels were then measured using an electronic water level indicator referenced to a surveyed point on the top of the casing. A 100 pounds per square inch (psi) pressure transducer was lowered inside the well casing and placed approximately 2 feet above the bottom of the well. A PVC slug measuring 5 feet in length was then used to displace water inside the well.

The first portion of the test was a falling-head test that measured the rate water levels fell back to static levels after the insertion of the PVC slug. The pressure transducer was programmed to record changes in groundwater level at fast linear time intervals. Changes in groundwater levels were also measured with hand-held electronic water level indicators to field-verify the data collected by the transducer. Falling-head tests were terminated after water levels had recovered to within at least 90% of their pre-test level. A rising-head test was performed on each piezometer after the falling-head test was completed. The rising-head test was performed with the same methodology as the falling-head test, with the exception that the PVC slug was removed simultaneously with the start of the test.

In situ rising- and falling-head tests provide a quantitative estimate of horizontal hydraulic conductivity and a qualitative estimate of aquifer anisotropy in water-bearing units. The slug test data were analyzed using the Bouwer and Rice (1976 and 1989) equation which is applicable to fully or partially penetrating piezometers in unconfined or confined aquifers. Piezometer-specific aquifer thicknesses of approximately 11 (PZ-49) to 71 feet (PZ-47) were assumed based on unconfined aquifer water column thickness.

The computer software program AQTESOLV, produced by HydroSOLVE, Inc., was used to assist in the analysis and plotting of data. The best fit lines were initially calculated by the computer software and were then adjusted manually, where necessary, to ignore skin effects typically found at the start of aquifer tests and/or to ignore stabilized water levels at the end of the tests or fluctuations in the water level as they approached stabilization. Professional judgement was used to distinguish skin effects with the fact that during many tests, there is faster recovery near the beginning of an aquifer test than when water levels approach stabilization. The individual data points and computer plots of time versus groundwater displacement are presented in Appendix C. A summary of the aquifer testing and the calculated geometric mean for hydraulic conductivity for each of the hydrogeologic units are presented in Table 4.

Piezometer Survey

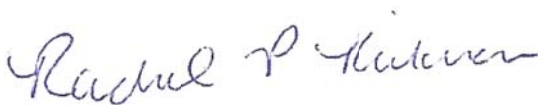
The newly installed piezometers were surveyed on February 14, 2018 by SCS's Engineering and Civil Field Services group. The survey was completed using LEICA GS14 Antenna and CS15 Sensor with a positional tolerance of 0.10'H:V. Surveyed locations and elevations are presented on the boring/construction diagrams and a site map showing the locations of the newly installed piezometers is presented in Figure 1.

Closing

We appreciate the opportunity to assist SCS and GPC with this project. Should you have any questions or require additional information, please contact the undersigned at (770) 496-1893.

Sincerely,

Golder Associates Inc.



Rachel Kirkman, P.G.
Senior Consultant & Associate



Timothy Richards, P.G.
Associate, Senior Consultant

jbh\tir\dlp

Attachments:

Figure 1 Piezometer Location Map

Table 1 Piezometer Installation Summary

Table 2 Summary of Piezometer Development Data

Table 3 Summary of Post-Development Water Level and Survey Data

Table 4 Summary of Aquifer Test Data

Appendix A Cascade Drilling Bond

Appendix B Boring Logs/Construction Diagrams and Development Forms

Appendix C Aquifer (Slug) Test Results

[https://golderassociates.sharepoint.com/sites/1894240/reference information/1666254-02 - branch pond b piezo installation/166625402 well installation report/branch pond b piezometer installation report_final 5.2018.docx](https://golderassociates.sharepoint.com/sites/1894240/reference%20information/1666254-02%20-%20branch%20pond%20b%20piezo%20installation/166625402%20well%20installation%20report/branch%20pond%20b%20piezometer%20installation%20report_final%205.2018.docx)

FIGURE

TABLES

**Table 1
Piezometer Installation Summary
Plant Branch**

Borehole ID	Latitude	Longitude	Elevation Top of PVC (feet)	Bedrock or Overburden	Rock Type	Total Depth (feet bgs)	Screen Interval (feet bgs)	Depth to Bedrock (feet bgs)	Core Available	Water Levels (ft bgs) 2/14/2018
PZ-43	33.1919852	-83.2989422	383.75	Bedrock/Soil Interface	Biotite Gneiss	41.5	30.0 - 40.0	39.5	Yes	30.6
PZ-44	33.1907972	-83.3004071	383.12	Bedrock/Soil Interface	Biotite Gneiss	57	46.6 - 56.6	51	Yes	24.83
PZ-45	33.1921976	-83.3020666	384.61	Bedrock/Soil Interface	Biotite Gneiss	57	46.6 - 56.6	52	Yes	11.41
PZ-46	33.1936560	-83.3037406	384.70	Bedrock/Soil Interface	Biotite Gneiss	47	35.6 - 45.6	39	Yes	8.85
PZ-47	33.1935310	-83.3073442	411.32	Bedrock/Soil Interface	Biotite Gneiss	97	81.6 - 91.6	92	Yes	25.93
PZ-48	33.1945066	-83.3106408	421.05	Bedrock/Soil Interface	Biotite Gneiss	67	56.6 - 66.6	65.5	Yes	30.55
PZ-49	33.1951996	-83.3018735	385.06	Bedrock/Soil Interface	Biotite Gneiss	27	6.6 - 16.6	7	Yes	8.1
PZ-50	33.1904217	-83.2978441	381.53	Bedrock/Soil Interface	Biotite Gneiss	67	54.6 - 64.6	60	Yes	37.68

Notes:

NAD - North American Datum; NAVD - North American Vertical Datum; NA - Not available; bgs - below ground surface; TOR - Top of Rock

Table 2
Summary of Piezometer Development Data
Plant Branch

Well / Piezometer Name	Date Started	Time Started (hr:min)	Date Completed	Elapsed Time (hr:min)	Development Method	Measured Depth of Well (ft. btoc)	Initial Water Level (ft. btoc)	Final Water Level (ft. btoc)	Volume of Casing (gal)	Total Volume Removed (gal)	pH (SU)	Specific Cond (ms/cm)	Temp (°C)	Turb (NTU)	ORP (mV)	DO (mg/L)
PZ-43	1-inch Piezometer for Water Levels only - Not Developed															
PZ-44	2/12/2018	11:45	2/12/2018	4:20	Reclaimer	60.89	24.96	25.04	5.6	114.3	6.07	251.02	20.3	0.94	91.99	2.06
PZ-45	2/9/2018	9:56	2/9/2018	5:22	Reclaimer	60.48	11.12	11.49	8.0	166	5.83	501.23	19.01	4.62	123.94	0.77
PZ-46	2/8/2018	10:13	2/8/2018	4:51	Reclaimer	49.10	8.95	8.95	6.6	138	5.77	2018.19	17.81	2.90	393.00	2.54
PZ-47	2/9/2018	8:45	2/9/2018	6:15	Reclaimer	97.35	25.85	36.32	10.0	174.1	5.72	2414.53	18.75	1.48	104.81	1.66
PZ-48	2/8/2018	8:40	2/8/2018	9:00	Reclaimer	69.80	30.55	32.26	6.1	145.1	5.67	2373.43	17.89	1.55	88.54	2.08
PZ-49	2/8/2018	16:04	2/9/2018	2:41	Reclaimer	19.31	7.97	7.99	1.8	80.5	5.9	152.85	15.71	3.13	133.29	3.24
PZ-50	2/12/2018	11:22	2/12/2018	6:28	Reclaimer	69.42	38.23	38.36	5.0	184	5.49	2400.81	19.59	7.67	167.13	8.89

Notes:
 hr:min - hours:minutes; ft. btoc - feet below top of casing; gal - gallons; SU - Standard Units; mS/cm - millisiemens per centimeter; °C - degrees Celsius; NTU - nephelometric turbidity units; mv - millivolts; mg/L - milligrams per liter; Cond - conductivity; Temp - temperature; Turb - turbidity; ORP - oxygen reduction potential; DO - dissolved oxygen

**Table 3
Summary of Post-Development Piezometer Water Level and Survey Data
Plant Branch**

Well / Piezometer Name	Survey Date	Survey Time	Water Level (ft. btoc) (2/21/18)	Water Elevation (ft. msl)	NAD 83 Northing (ft.)	NAD 83 Easting (ft.)	Latitude (dd)	Longitude (dd)	Elevation Top of Casing (ft. msl)	Ground Surface Elevation (ft. msl)
PZ-43	2/14/2018	NA	30.73	353.02	1162159.80	2562031.35	33.1919852	-83.2989422	383.75	NA
PZ-44	2/14/2018	NA	24.98	358.14	1161723.84	2561586.79	33.1907972	-83.3004071	383.12	380.49
PZ-45	2/14/2018	NA	10.94	373.67	1162229.18	2561074.89	33.1921976	-83.3020666	384.61	381.69
PZ-46	2/14/2018	NA	9.12	375.58	1162755.59	2560558.42	33.1936560	-83.3037406	384.70	382.11
PZ-47	2/14/2018	NA	25.60	385.72	1162701.04	2559456.38	33.1935310	-83.3073442	411.32	408.87
PZ-48	2/14/2018	NA	30.64	390.41	1163047.72	2558444.99	33.1945066	-83.3106408	421.05	418.30
PZ-49	2/14/2018	NA	7.89	377.17	1163321.94	2561124.93	33.1951996	-83.3018735	385.06	382.10
PZ-50	2/14/2018	NA	38.06	343.47	1161593.68	2562372.00	33.1904217	-83.2978441	381.53	378.79

Notes:

NA = Not Available; ft. BTOC = feet below top of casing; ft. MSL = feet mean sea level; NAD = North American Datum; dd = decimal degrees
Survey data collected by Southern Company Services, Inc. ; Georgia NAD83 West Zone

Table 4
Summary of Aquifer Test Data
Plant Branch

PIEZOMETER IDENTIFICATION	SATURATED AQUIFER THICKNESS VALUE (feet)	SCREEN LENGTH (feet)	PIEZOMETER DIAMETER (inches)	AQUIFER ANALYSIS METHOD	AQUIFER TEST TYPE	HYDRAULIC CONDUCTIVITY (cm/sec)	SCREENED LITHOLOGY
PZ-44	35	10	2	Bouwer-Rice	Falling	5.27E-04	Sand/Gneiss
					Rising	5.44E-04	
PZ-45	50	10	2	Bouwer-Rice	Falling	4.53E-04	Sand/Gneiss
					Rising	4.11E-04	
PZ-46	40	10	2	Bouwer-Rice	Falling	1.50E-03	Silty Sand/Gneiss
					Rising	1.47E-03	
PZ-47	71	10	2	Bouwer-Rice	Falling	1.41E-04	TWR/Gneiss
					Rising	1.37E-04	
PZ-48	39	10	2	Bouwer-Rice	Falling	8.54E-05	Sand/Gneiss
					Rising	8.48E-05	
PZ-49	11	10	2	Bouwer-Rice	Falling	7.42E-03	Sand/Gneiss
					Rising	7.21E-03	
PZ-50	31	10	2	Bouwer-Rice	Falling	1.85E-03	Sand/Gneiss
					Rising	1.89E-03	
					Geomean	6.61E-04	

NOTES:

1. Geomean = geometric mean
2. cm/sec = centimeter per second

APPENDIX A

Cascade Drilling Bond

SURETY RIDER

To be attached to and form a part of

Bond No. 800031223

Type of

Bond: Performance Bond for Water Well Contractors

dated

effective June 30, 2017
(MONTH-DAY-YEAR)

executed by Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

. as Principal,

and by Atlantic Specialty Insurance Company

. as Surety,

in favor of State of Georgia
(OBLIGEE)

in consideration of the mutual agreements herein contained the Principal and the Surety hereby consent to changing

Coverage under the bond to include:
Michael Coleman

Nothing herein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly stated.

This rider

is effective December 21, 2017
(MONTH-DAY-YEAR)

Signed and Sealed December 21, 2017
(MONTH-DAY-YEAR)

Michael C. Rice/Cascade Drilling, L.P.
(PRINCIPAL)

By: _____
(PRINCIPAL)

Atlantic Specialty Insurance Company

By: 
Elizabeth R. Hahn, Attorney-in-Fact



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Deanna M. French, Jill A. Wallace, Susan B. Larson, Elizabeth R. Hahn, Jana M. Roy, Scott McGilvray, Mindee L. Rankin, Ronald J. Lange, John R. Claeys, Roger Kaltenbach, Guy Armfield, Scott Fisher**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **sixty million dollars (\$60,000,000)** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.


Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

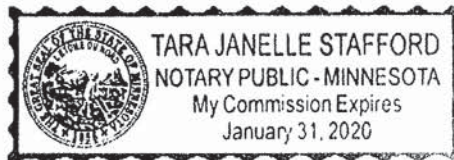
IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this eighth day of December, 2014.



By 
Paul J. Brehm, Senior Vice President

STATE OF MINNESOTA
HENNEPIN COUNTY

On this eighth day of December, 2014, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.





Notary Public

I, the undersigned, Assistant Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 21 day of December, 2017

This Power of Attorney expires
October 1, 2019




James G. Jordan, Assistant Secretary

APPENDIX B

**Boring Logs/Construction Diagrams
and Development Forms**

RECORD OF BOREHOLE PZ-43

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 41.50 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/6/18
 DATE COMPLETED: 2/7/18

NORTHING: 1,162,159.80
 EASTING: 2,562,031.35
 GS ELEVATION: NA
 TOC ELEVATION: 383.75 ft

DEPTH W.L.: 30.60
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 8.50 Soil was removed by Hydorvac to 8.5 ft bgs							WELL CASING Interval: 0-30 Material: Schedule 40 PVC Diameter: 1 inch Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 30.0-40.0 Material: .010 Slotted Screen Diameter: 1 inch Slot Size: .010" End Cap: 40-40.4 FILTER PACK Interval: 28.0-41.5 Type: FilterSil FILTER PACK SEAL Interval: 23.0-28.0 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-23.0 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: Protective Casing: DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
5									
10		8.50 - 17.00 FILL, Silty SAND, sands fine to medium, reddish brown, micaceous, non-cohesive, moist, loose.	SM	8.50					
15									
20		17.00 - 39.50 RESIDUUM, Silty SAND, sands fine to coarse, grayish brown, micaceous, non-cohesive, moist to wet, loose. Final three inches is transitionally weathered rock.		17.00					
25									
30			SM						
35									
40			BR	39.50					

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: Ben Hodges
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-43



SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 41.50 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/6/18
 DATE COMPLETED: 2/7/18

NORTHING: 1,162,159.80
 EASTING: 2,562,031.35
 GS ELEVATION: NA
 TOC ELEVATION: 383.75 ft

DEPTH W.L.: 30.60
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
45		39.50 - 41.50 BIOTITE GNEISS, slightly weathered to fresh, very thin layer of saprolite, thinly banded, white and black, phaneritic. <i>(Continued)</i> Boring completed at 41.50 ft	BR						WELL CASING Interval: 0-30 Material: Schedule 40 PVC Diameter: 1 inch Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 30.0-40.0 Material: .010 Slotted Screen Diameter: 1 inch Slot Size: .010" End Cap: 40-40.4 FILTER PACK Interval: 28.0-41.5 Type: FilterSil FILTER PACK SEAL Interval: 23.0-28.0 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-23.0 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: Protective Casing: DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
50									
55									
60									
65									
70									
75									
80									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: Ben Hodges
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-44

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 57.00 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/1/18
 DATE COMPLETED: 2/2/18

NORTHING: 1,161,723.84
 EASTING: 2,561,586.79
 GS ELEVATION: 380.49
 TOC ELEVATION: 383.12 ft

DEPTH W.L.: 24.83
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0	380	0.00 - 8.00 Soil was removed by Hydrovac from 0-8 ft bgs						Grout Mix and Stainless Steel Casing	WELL CASING Interval: 0-47 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 46.6-56.6 Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" Slotted End Cap: 56.6-57 FILTER PACK Interval: 45-57 Type: FilterSil FILTER PACK SEAL Interval: 40-45 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-40 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5" DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
5	375								
10	370	8.00 - 29.00 FILL, SAND with trace silt and trace gravel, reddish brown, non-cohesive, moist.		372.49 8.00				Portland Cement and Quick Gel Bentonite Mix	
15	365				R1	ROTO SONIC	6.00 10.00		
20	360		SP-SM						
25	355				R2	ROTO SONIC	9.00 10.00		
30	350	29.00 - 48.00 RESIDUUM, SAND with trace silt and trace gravel, grayish brown, micaceous, non-cohesive, moist.		351.49 29.00					
35	345				R3	ROTO SONIC	9.00 10.00		
40	340		SP						
					R4	ROTO SONIC	10.00 10.00		

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-44

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 57.00 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/1/18
 DATE COMPLETED: 2/2/18

NORTHING: 1,161,723.84
 EASTING: 2,561,586.79
 GS ELEVATION: 380.49
 TOC ELEVATION: 383.12 ft

DEPTH W.L.: 24.83
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
45	335	29.00 - 48.00 RESIDUUM, SAND with trace silt and trace gravel, grayish brown, micaceous, non-cohesive, moist. <i>(Continued)</i>	SP		332.49 48.00	R4	ROTO SONIC	10.00 10.00		<p>WELL CASING Interval: 0-47 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 46.6-56.6 Material: Schedule 40 PVC Diameter: 2" Slot Size: 0.010" Slotted End Cap: 56.6-57</p> <p>FILTER PACK Interval: 45-57 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 40-45 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-40 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>
50	330	48.00 - 51.00 TRANSITIONALLY WEATHERED ROCK, recovered as rock flour, gravel, and cobbles.	TWR		329.49 51.00					
55	325	51.00 - 57.00 BIOTITE GNEISS, slightly weathered to fresh, white/black, phaneritic, strong, oxide staining on discontinuities.	BR		323.49					
		Boring completed at 57.00 ft								

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-45

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 57.00 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/3/18
 DATE COMPLETED: 2/3/18

NORTHING: 1,162,229.18
 EASTING: 2,561,074.89
 GS ELEVATION: 381.69
 TOC ELEVATION: 384.61 ft

DEPTH W.L.: 11.41
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0	380	0.00 - 8.00 Soils removed by Hydrovac from 0-8 feet bgs.						Grout mix with stainless steel casing	WELL CASING Interval: 0-46.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 46.6-56.6 Material: 0.010 Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 56.6-57 FILTER PACK Interval: 45-57 Type: FilterSil FILTER PACK SEAL Interval: 40-45 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-40 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5' DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
5	375			373.69					
10	370	8.00 - 33.00 FILL, silty SAND, orangish brown, non-cohesive, moist.		8.00				Portland Cement and Quick Gel Bentonite Mix	
15	365				R1	ROTO SONIC	6.00 10.00		
20	360		SM						
25	355				R2	ROTO SONIC	10.00 10.00		
30	350								
35	345	33.00 - 52.00 SAPROLITE, SAND, reddish brown with white and black relic foliation, non cohesive, moist.		348.69 33.00					
40	340		SP		R3	ROTO SONIC	10.00 10.00		
		Log continued on next page			R4	ROTO	10.00		

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-45

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 57.00 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/3/18
 DATE COMPLETED: 2/3/18

NORTHING: 1,162,229.18
 EASTING: 2,561,074.89
 GS ELEVATION: 381.69
 TOC ELEVATION: 384.61 ft

DEPTH W.L.: 11.41
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
340		33.00 - 52.00 SAPROLITE, SAND, reddish brown with white and black relic foliation, non cohesive, moist. <i>(Continued)</i>	SP	[Graphic Log]				3/8" PEL-PLUG Bentonite Pellets	<p>WELL CASING Interval: 0-46.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 46.6-56.6 Material: 0.010 Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 56.6-57</p> <p>FILTER PACK Interval: 45-57 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 40-45 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-40 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>
45							R4		
335								0.010" Slotted Schedule 40 PVC	
50									
330		52.00 - 57.00 TRANSITIONALLY WEATHERED ROCK (BIOTITE GNEISS), moderately weathered to fresh, oxide staining, thinly bedded, black and white, phaneritic, extremely weak to medium strong.	TWR	[Graphic Log]	329.69				
55					52.00	R5	ROTO SONIC	.5.00 10.00	
325		Boring completed at 57.00 ft			324.69				
60									
320									
65									
315									
70									
310									
75									
305									
80									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-46

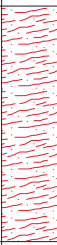
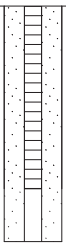
SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 47.00 ft
 LOCATION: Former Coal Pile

DRILL RIG: Pro Sonic 150
 DATE STARTED: 2/5/18
 DATE COMPLETED: 2/5/18

NORTHING: 1,162,755.59
 EASTING: 2,560,558.42
 GS ELEVATION: 382.11
 TOC ELEVATION: 384.70 ft

DEPTH W.L.: 8.85
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
340		39.00 - 47.00 BIOTITE GNEISS, slightly weathered to fresh, thickly banded, white and black, phaneritic, very strong. <i>(Continued)</i>	BR						WELL CASING Interval: 0-35.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 35.6-45.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 45.6-47 FILTER PACK Interval: 34-46 Type: FilterSil FILTER PACK SEAL Interval: 29-34 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-29 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5' DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
		Boring completed at 47.00 ft			335.11				
45									
335									
50									
330									
55									
325									
60									
320									
65									
315									
70									
310									
75									
305									
80									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: Ben Hodges
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-47

SHEET 1 of 3

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 97.00 ft
 LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/25/18
 DATE COMPLETED: 1/26/18

NORTHING: 1,162,701.04
 EASTING: 2,559,456.38
 GS ELEVATION: 408.87
 TOC ELEVATION: 411.32 ft

DEPTH W.L.: 25.93
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 0.50 Ash as sand, fine, dark gray, moist, non-cohesive.	SP		408.37 0.50				WELL CASING Interval: 0-81.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 81.6-91.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 91.6-92 FILTER PACK Interval: 80-93 Type: FilterSil FILTER PACK SEAL Interval: 75-80 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-75 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5" DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
405		0.50 - 15.00 RESIDUUM, silty SAND, sands fine to medium, reddish brown, micaceous, moist, non-cohesive.							
5			SM						
10					R1	ROTO SONIC	9.00		
15		15.00 - 75.00 SAPROLITE, silty SAND, reddish brown to grayish brown with intermediate white mottling, relic structure, micaceous, dry to moist, non							
395									
15									
390					R2	ROTO SONIC	10.00		
20									
385									
25			SM						
380					R3	ROTO SONIC	10.00	Portland Cement and Quick Gel Bentonite Mix	
30									
375									
35									
370					R4	ROTO SONIC	10.00		
40									

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-47

SHEET 2 of 3

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 97.00 ft
 LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/25/18
 DATE COMPLETED: 1/26/18

NORTHING: 1,162,701.04
 EASTING: 2,559,456.38
 GS ELEVATION: 408.87
 TOC ELEVATION: 411.32 ft

DEPTH W.L.: 25.93
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV.	SAMPLE NO.	TYPE	REC		
					DEPTH (ft)					
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;">365</div> <div style="margin-bottom: 20px;">45</div> <div style="margin-bottom: 20px;">360</div> <div style="margin-bottom: 20px;">50</div> <div style="margin-bottom: 20px;">355</div> <div style="margin-bottom: 20px;">55</div> <div style="margin-bottom: 20px;">350</div> <div style="margin-bottom: 20px;">60</div> <div style="margin-bottom: 20px;">345</div> <div style="margin-bottom: 20px;">65</div> <div style="margin-bottom: 20px;">340</div> <div style="margin-bottom: 20px;">70</div> <div style="margin-bottom: 20px;">335</div> <div style="margin-bottom: 20px;">75</div> <div style="margin-bottom: 20px;">330</div> <div style="margin-bottom: 20px;">80</div> </div>	<p>15.00 - 75.00 SAPROLITE, silty SAND, reddish brown to grayish brown with intermediate white mottling, relic structure, micaceous, dry to moist, non (Continued)</p>	SM		<p style="text-align: center;">333.87</p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">75.00</p>	<p>R5 ROTO SONIC 10.00</p> <p>R6 ROTO SONIC 10.00</p> <p>R7 ROTO SONIC 10.00</p> <p>R8 ROTO SONIC 10.00</p>	<p>3/8" PEL-PLUG Bentonite Pellets</p> <p>FilterSil -</p>	<p>WELL CASING Interval: 0-81.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 81.6-91.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 91.6-92</p> <p>FILTER PACK Interval: 80-93 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 75-80 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-75 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>			
<p>75.00 - 92.00 TRANSITIONALLY WEATHERED ROCK, shows in sample as Sand with trace gravel and trace silt, grayish brown with white mottling, micaceous, relic foliation where preserved, dry to wet, non-cohesive.</p>		TWR								

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ, PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-47

SHEET 3 of 3

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 97.00 ft
 LOCATION: Between Pond B

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/25/18
 DATE COMPLETED: 1/26/18

NORTHING: 1,162,701.04
 EASTING: 2,559,456.38
 GS ELEVATION: 408.87
 TOC ELEVATION: 411.32 ft

DEPTH W.L.: 25.93
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
85	325	75.00 - 92.00 TRANSITIONALLY WEATHERED ROCK, shows in sample as Sand with trace gravel and trace silt, grayish brown with white mottling, micaceous, relic foliation where preserved, dry to wet, non-cohesive. <i>(Continued)</i>	TWR	[Symbolic Log]				<p style="font-size: small;">0.010" Slotted Schedule 40 PVC</p> <p style="font-size: small;">3/8" PEL-PLUG Bentonite Pellets</p>	<p>WELL CASING Interval: 0-81.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 81.6-91.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 91.6-92</p> <p>FILTER PACK Interval: 80-93 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 75-80 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-75 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>
90	320				R9	ROTO SONIC	40.00		
95	315	92.00 - 97.00 BIOTITE GNEISS, sample recovered as rock flour, cobbles, and gravel. Slightly weathered to fresh, white and black, thinly bedded, phaneritic, strong, oxide staining in discontinuities.	BR	[Symbolic Log]	316.87				
					92.00				
		Boring completed at 97.00 ft			311.87				

BOREHOLE RECORD 1666254-01.GPJ, PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-48

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 67.00 ft
 LOCATION: South of Skills Center

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/24/18
 DATE COMPLETED: 1/25/18

NORTHING: 1,163,047.72
 EASTING: 2,558,444.99
 GS ELEVATION: 418.30
 TOC ELEVATION: 421.05 ft

DEPTH W.L.: 30.55
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 8.00 Soil removed by Hydrovac from 0-8 ft bgs.						Grout mix with stainless steel casing	WELL CASING Interval: 0-56.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 56.6-66.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 66.6-67 FILTER PACK Interval: 55-67 Type: FilterSil FILTER PACK SEAL Interval: 50-55 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-50 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5' DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
415									
410		8.00 - 17.00 FILL, silty SAND, reddish brown, micaceous, moist, non-cohesive.			410.3 8.00			Portland Cement and Quick Gel Bentonite Mix	
405			SM		R1	ROTO SONIC	10.00 10.00		
400		17.00 - 64.50 RESIDUUM, SAND with some silt, grayish brown with white mottling, occasional relic structure, micaceous, dry, non-cohesive.			401.3 17.00				
395					R2	ROTO SONIC	10.00 10.00		
390			SM						
385					R3	ROTO SONIC	10.00 10.00		
380					R4	ROTO SONIC	10.00 10.00		
40									

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-48

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 67.00 ft
 LOCATION: South of Skills Center

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/24/18
 DATE COMPLETED: 1/25/18

NORTHING: 1,163,047.72
 EASTING: 2,558,444.99
 GS ELEVATION: 418.30
 TOC ELEVATION: 421.05 ft

DEPTH W.L.: 30.55
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
375		17.00 - 64.50 RESIDUUM, SAND with some silt, grayish brown with white mottling, occasional relic structure, micaceous, dry, non-cohesive. <i>(Continued)</i>							<p>WELL CASING Interval: 0-56.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 56.6-66.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 66.6-67</p> <p>FILTER PACK Interval: 55-67 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 50-55 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-50 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>
45					R4	ROTO SONIC	10.00 10.00		
370								3/8" PEL-PLUG Bentonite Pellets	
50									
365			SM		R5	ROTO SONIC	10.00 10.00		
55								FilterSil	
360								0.010" Slotted Schedule 40 PVC	
60									
355					R6	ROTO SONIC	10.00 10.00		
65		64.50 - 65.50 TRANSITIONALLY WEATHERED ROCK, sampled as sand and gravel with trace silt, grayish brown, subangular, non-cohesive.	TWR	▲▼▲▼	353.8 64.50 352.8				
		65.50 - 67.00 BIOTITE GNEISS, fresh, with biotite/muscovite/feldspar/quartz, white/black, weak foliation near horizontal, phaneritic, strong.	BR	~ ~ ~ ~	65.50 351.3				
		Boring completed at 67.00 ft							
350									
70									
345									
75									
340									
80									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-49

SHEET 1 of 1

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 27.00 ft
 LOCATION: Near former pyrite pit

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/30/18
 DATE COMPLETED: 1/30/18

NORTHING: 1,163,321.94
 EASTING: 2,561,124.93
 GS ELEVATION: 382.10
 TOC ELEVATION: 385.06 ft

DEPTH W.L.: 8.10
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE		
0		0.00 - 2.00 FILL, silty SAND with trace gravel, reddish brown, micaceous, moist, non-cohesive.	SM		380.1			Grout mix and stainless steel casing Portland Cement and Quick Gel Bentonite Mix FilterSil 0.010" Slotted Schedule 40 PVC 3/8" PEL-PLUG Bentonite Pellets	WELL CASING Interval: 0-6.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 6.6-16.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 16.6-17 FILTER PACK Interval: 5-18 Type: FilterSil FILTER PACK SEAL Interval: 2-5 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-2 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5' DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
380		2.00 - 7.00 RESIDUUM, SAND, reddish brown, micaceous, moist, non-cohesive.	SP		2.00				
5									
375		7.00 - 27.00 BIOTITE GNEISS, slightly weathered to fresh, thinly bedded, white/black, phaneritic, strong.	BR		375.1				
10									
370						R1	ROTO SONIC	6.00 10.00	
15									
365									
20									
360						R2	ROTO SONIC	8.00 10.00	
25									
355		Boring completed at 27.00 ft			355.1				
30									
350									
35									
345									
40									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-50

SHEET 1 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 67.00 ft
 LOCATION: South boundary of site

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/31/18
 DATE COMPLETED: 1/31/18

NORTHING: 1,161,593.68
 EASTING: 2,562,372.00
 GS ELEVATION: 378.79
 TOC ELEVATION: 381.53 ft

DEPTH W.L.: 37.68
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE				SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE	REC		
0		0.00 - 7.00 Soil removed by Hydrovac from 0-7 ft bgs. Logged by sight. silty SAND, reddish brown, micaceous, moist, non-cohesive.	SM						Grout mix and stainless steel casing	WELL CASING Interval: 0-54.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread SURFACE CASING Interval: Material: Diameter: WELL SCREEN Interval: 54.6-64.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 64.6-65 FILTER PACK Interval: 53-66 Type: FilterSil FILTER PACK SEAL Interval: 48-53 Type: 3/8" PEL-PLUG Bentonite Pellets ANNULUS SEAL Interval: 0-48 Type: Portland Cement and Quick Gel Bentonite Mix WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5" DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core
375										
5										
10		7.00 - 47.00 RESIDUUM, silty SAND, reddish brown, micaceous, non-cohesive, moist.			371.79 7.00					
15						R1	ROTO SONIC	10.00 10.00		
20										
25			SM			R2	ROTO SONIC	10.00 10.00		
30									Portland Cement and Quick Gel Bentonite Mix	
35						R3	ROTO SONIC	10.00 10.00		
40						R4	ROTO SONIC	10.00 10.00		

Log continued on next page

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



RECORD OF BOREHOLE PZ-50

SHEET 2 of 2

PROJECT: Plant Branch
 PROJECT NUMBER: 1666254-01
 DRILLED DEPTH: 67.00 ft
 LOCATION: South boundary of site

DRILL RIG: Pro Sonic 150
 DATE STARTED: 1/31/18
 DATE COMPLETED: 1/31/18

NORTHING: 1,161,593.68
 EASTING: 2,562,372.00
 GS ELEVATION: 378.79
 TOC ELEVATION: 381.53 ft

DEPTH W.L.: 37.68
 DATE W.L.: 2/14/18
 TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE			SAMPLES			MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS	
		DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH (ft)	SAMPLE NO.	TYPE			REC
45	335	7.00 - 47.00 RESIDUUM, silty SAND, reddish brown, micaceous, non-cohesive, moist. <i>(Continued)</i>	SM		331.79	R4	ROTO SONIC	10.00	<p style="font-size: small;">3/8" PEL-PLUG Bentonite Pellets</p> <p style="font-size: small;">FilterSil</p> <p style="font-size: small;">0.010" Slotted Schedule 40 PVC</p> <p style="font-size: small;">3/8" PEL-PLUG Bentonite Pellets</p>	<p>WELL CASING Interval: 0-54.6 Material: Schedule 40 PVC Diameter: 2" Joint Type: Flush/Thread</p> <p>SURFACE CASING Interval: Material: Diameter:</p> <p>WELL SCREEN Interval: 54.6-64.6 Material: 0.010" Slotted Schedule 40 PVC Diameter: 2" Slot Size: 0.010" End Cap: 64.6-65</p> <p>FILTER PACK Interval: 53-66 Type: FilterSil</p> <p>FILTER PACK SEAL Interval: 48-53 Type: 3/8" PEL-PLUG Bentonite Pellets</p> <p>ANNULUS SEAL Interval: 0-48 Type: Portland Cement and Quick Gel Bentonite Mix</p> <p>WELL COMPLETION Pad: 4'x4' Protective Casing: 4"x4"x5'</p> <p>DRILLING METHODS Soil Drill: Rotosonic Rock Drill: Core</p>
50	330	47.00 - 55.00 RESIDUUM, SAND with trace gravel, some relic structure, light reddish brown, moist, non-cohesive.	SP		47.00	R5	ROTO SONIC	10.00		
55	325	55.00 - 60.00 TRANSITIONALLY WEATHERED ROCK (BIOTITE GNEISS), SAND with trace gravel, some relic structure, light reddish brown, moist, non-cohesive.	TWR		323.79					
60	320	60.00 - 67.00 BIOTITE GNEISS, slightly weathered to fresh, subhorizontal foliation, white/black, phaneritic, moderately strong to strong.	BR		318.79	R6	ROTO SONIC	10.00		
		Boring completed at 67.00 ft								
70	310									
75	305									
80	300									

BOREHOLE RECORD 1666254-01.GPJ PIEDMONT.GDT 5/30/18

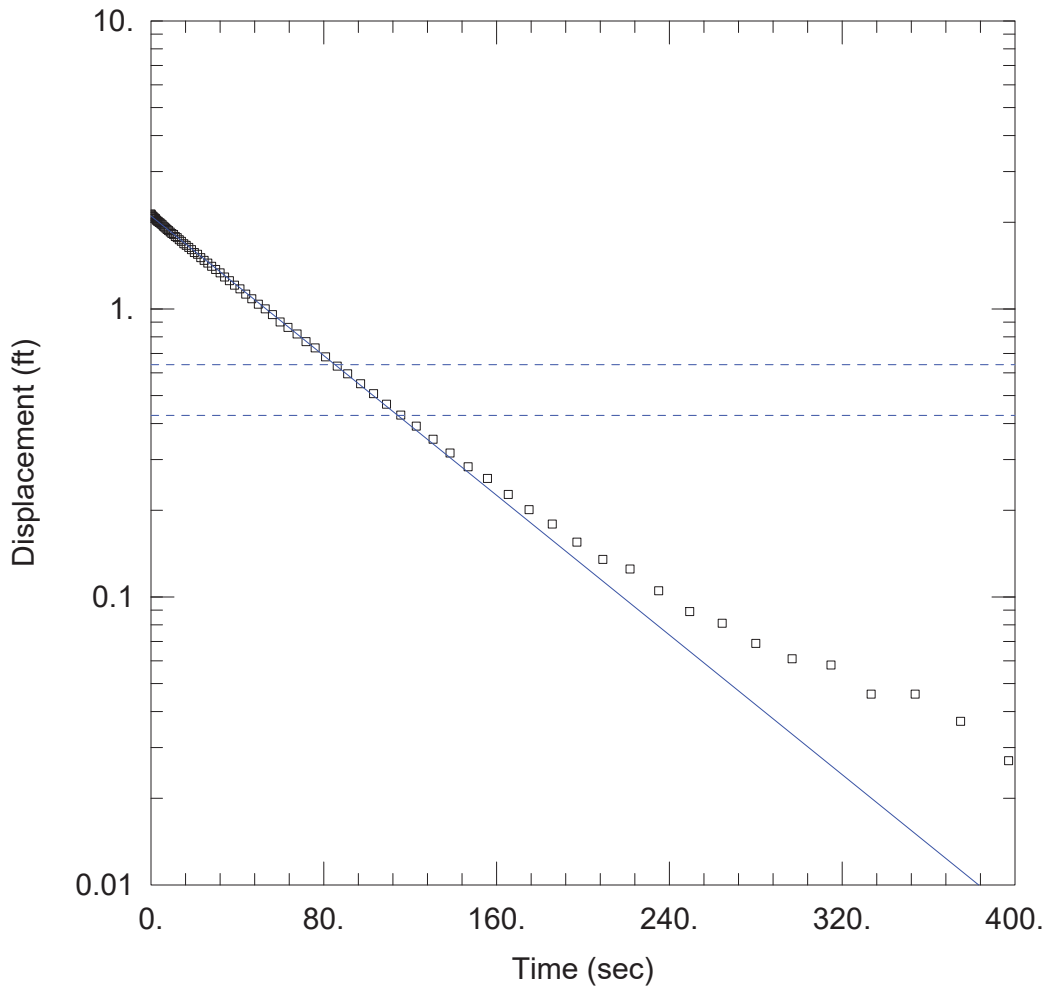
LOG SCALE: 1 in = 5 ft
 DRILLING COMPANY: Cascade
 DRILLER: Matt Pope

GA INSPECTOR: David Hannam
 CHECKED BY: TIR
 DATE: 2/15/18



APPENDIX C

Aquifer (Slug) Test Results



WELL TEST ANALYSIS

Data Set: C:\...\PZ-44 Slug In.aqt
 Date: 03/08/18

Time: 10:08:48

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-44
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 34.64 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-44)

Initial Displacement: 2.134 ft
 Total Well Penetration Depth: 59.55 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 34.64 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

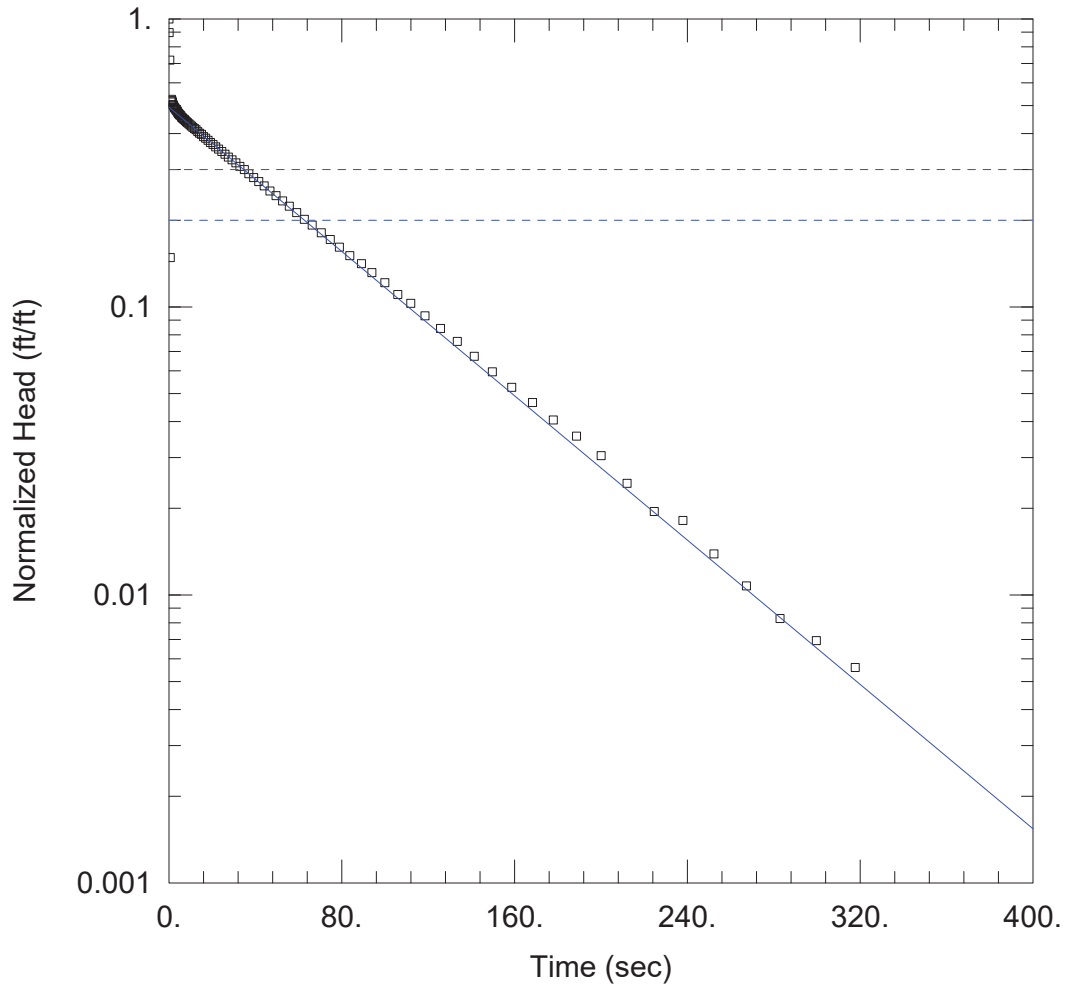
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bower-Rice

K = 0.0005268 cm/sec

y_0 = 2.102 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-44 Slug Out.aqt
 Date: 03/08/18

Time: 10:09:27

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-44
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 34.66 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-44)

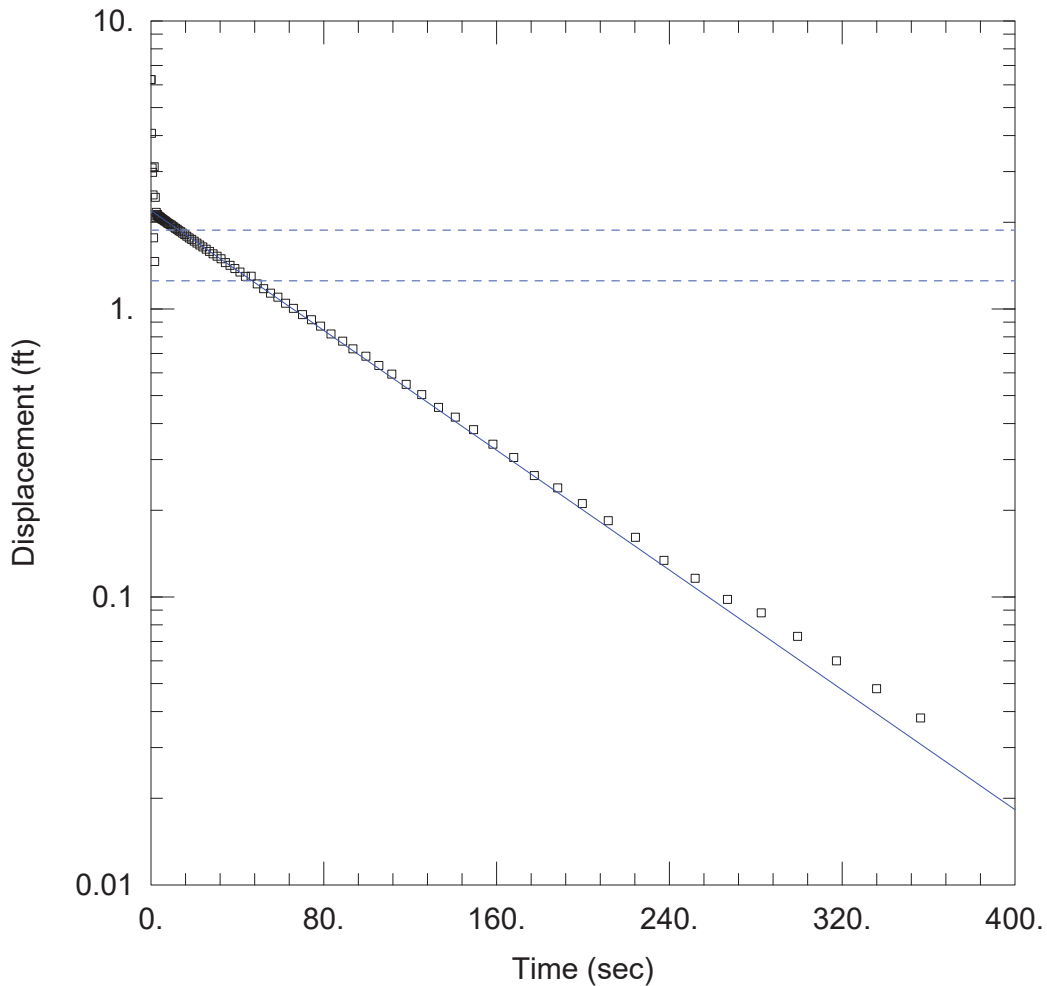
Initial Displacement: -4.467 ft
 Total Well Penetration Depth: 59.55 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 34.66 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 0.0005443$ cm/sec

Solution Method: Bower-Rice
 $y_0 = -2.205$ ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-45 Slug In.aqt
 Date: 03/08/18

Time: 10:02:28

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-45
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 49.54 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-45)

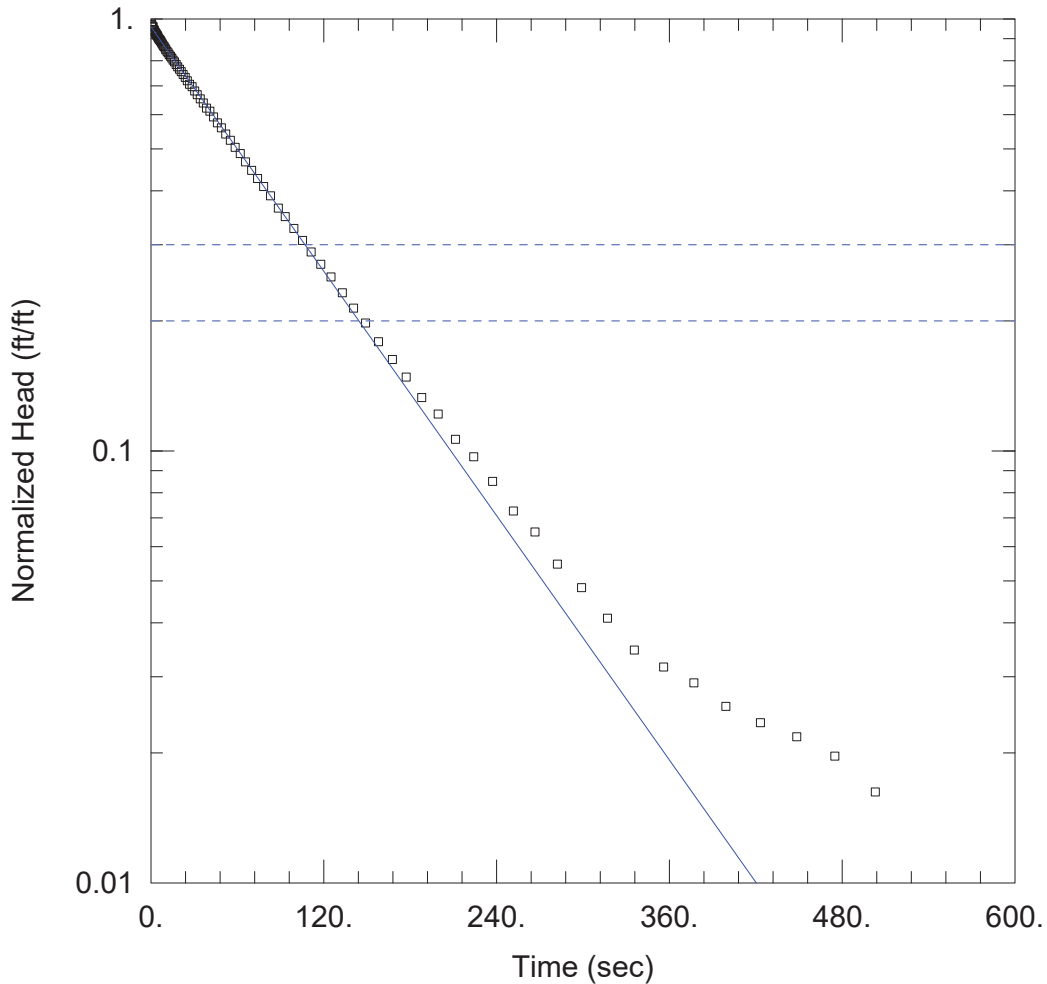
Initial Displacement: 6.259 ft
 Total Well Penetration Depth: 60.45 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 49.54 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.0004529 cm/sec

Solution Method: Bower-Rice
 y_0 = 2.194 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-45 Slug Out.aqt
 Date: 03/08/18

Time: 10:10:33

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-45
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 49.58 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-45)

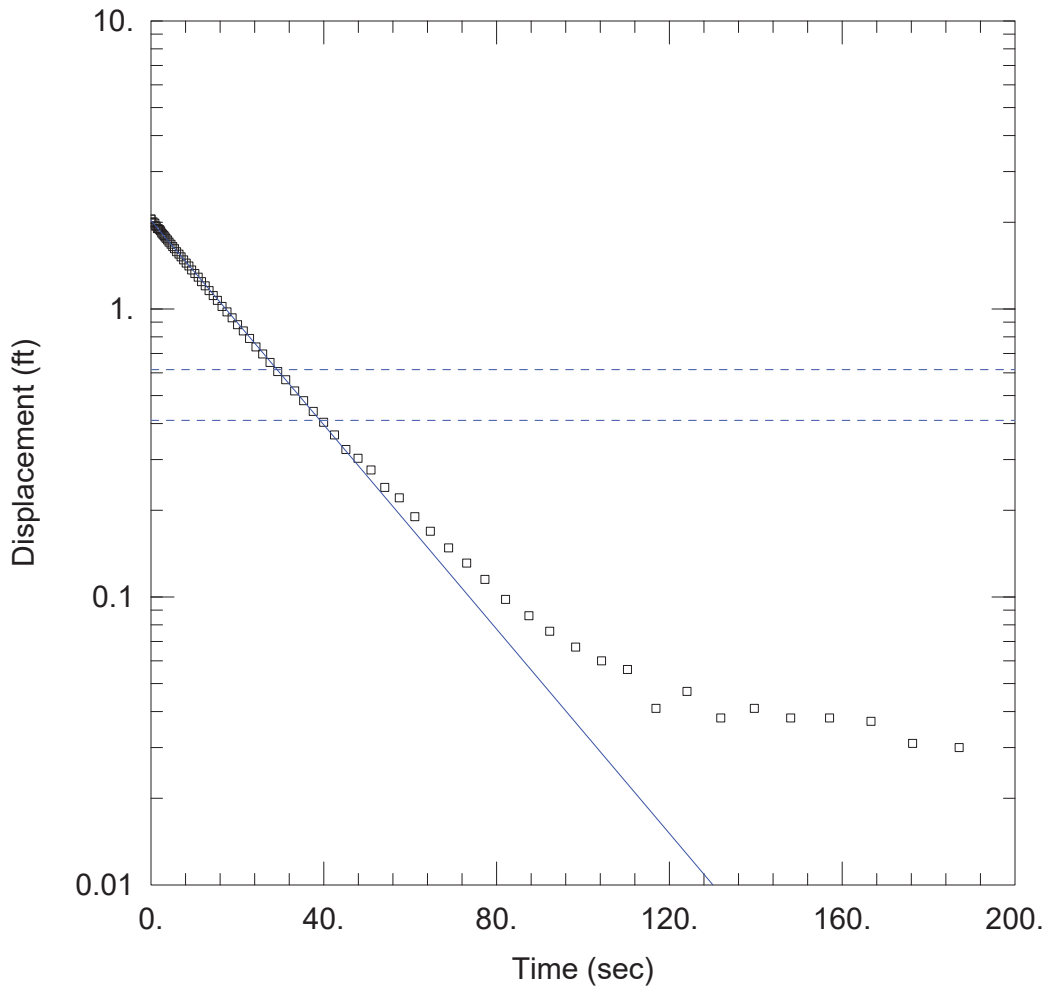
Initial Displacement: -2.341 ft
 Total Well Penetration Depth: 60.45 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 49.58 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.0004106 cm/sec

Solution Method: Bower-Rice
 $y_0 =$ -2.243 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-46 Slug In (3).aqt
 Date: 03/08/18

Time: 10:15:53

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-46
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 40.09 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-46)

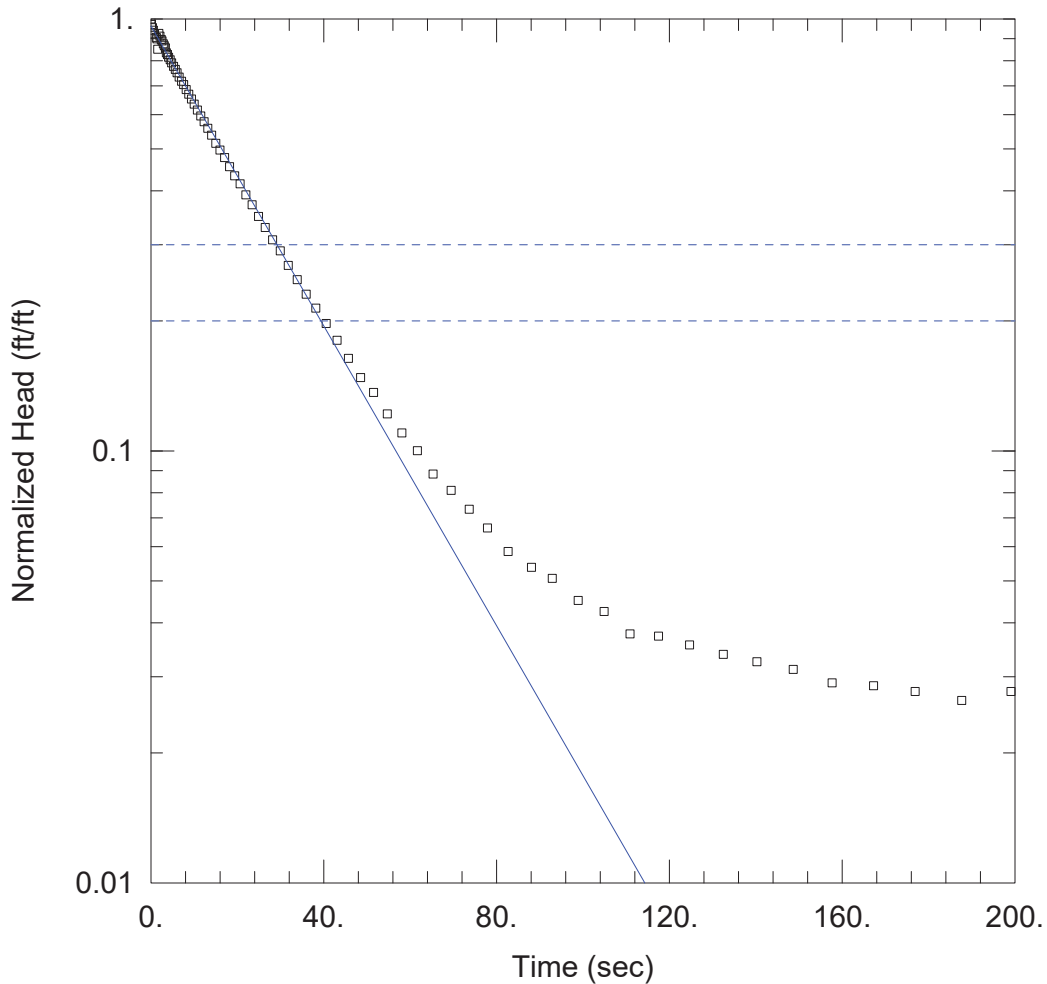
Initial Displacement: 2.052 ft
 Total Well Penetration Depth: 49.08 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 40.09 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.001499 cm/sec

Solution Method: Bower-Rice
 y0 = 2.028 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-46 Slug Out (3).aqt
 Date: 03/08/18

Time: 10:17:15

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-46
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 40.08 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-46)

Initial Displacement: -2.307 ft
 Total Well Penetration Depth: 49.08 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 40.08 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

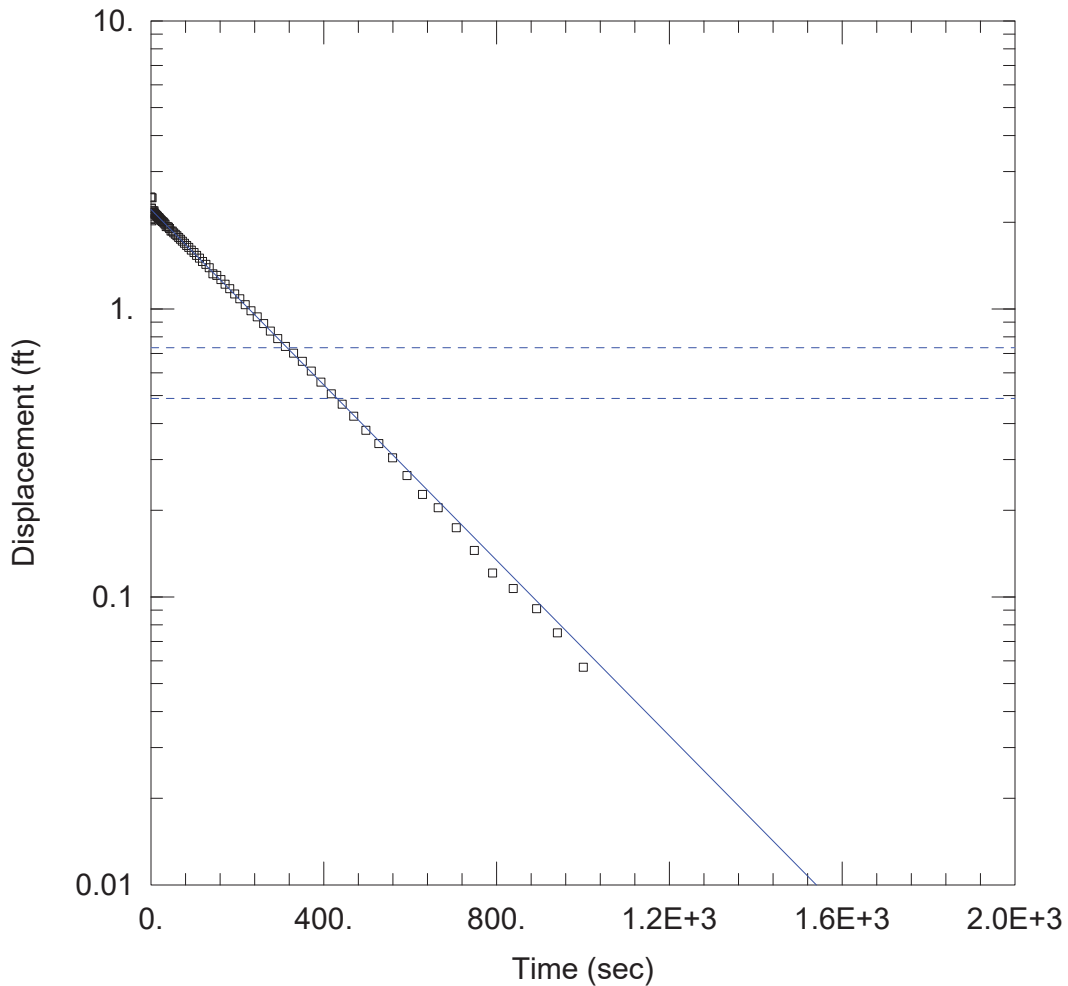
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bower-Rice

$K =$ 0.001467 cm/sec

$y_0 =$ -2.221 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-47 Slug In.aqt
 Date: 03/08/18

Time: 10:18:18

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-47
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 71.49 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-47)

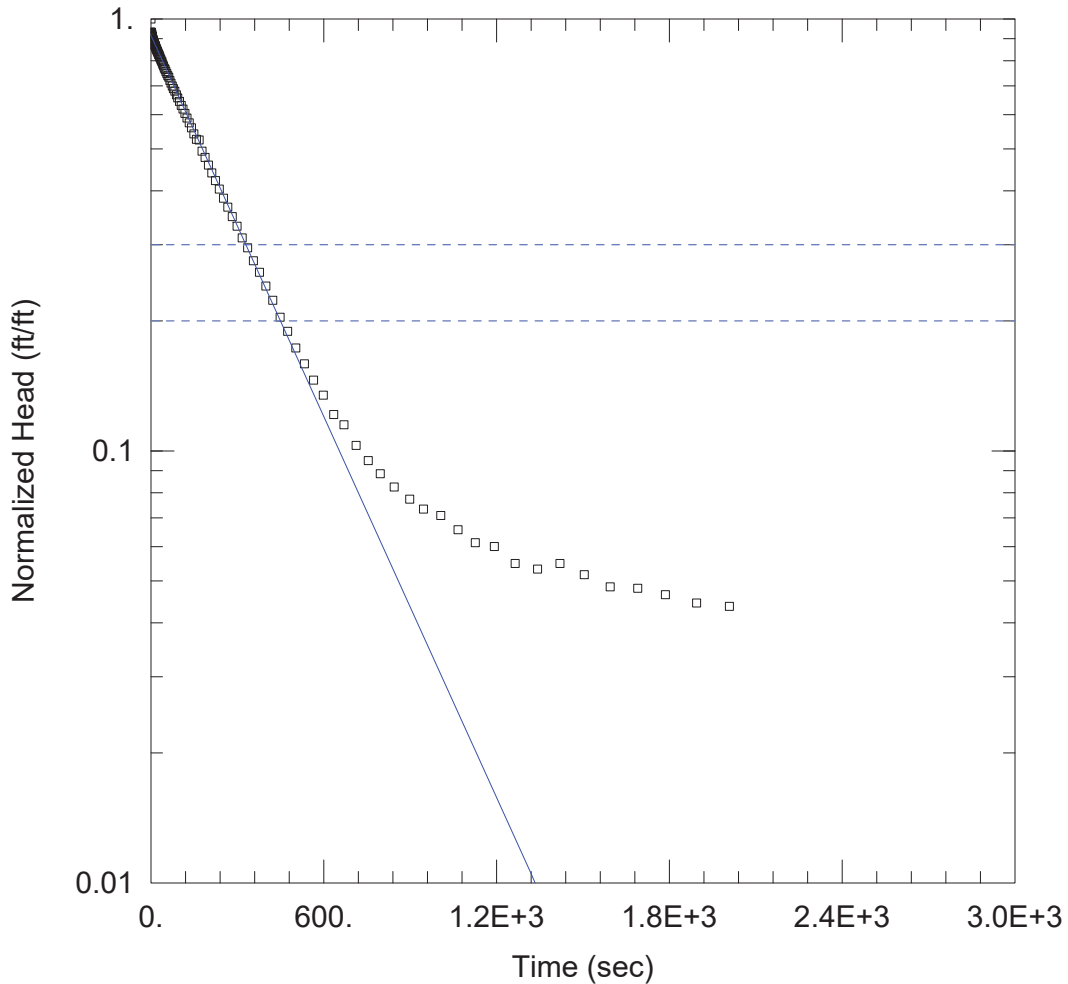
Initial Displacement: 2.443 ft
 Total Well Penetration Depth: 97.08 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 71.49 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.0001414 cm/sec

Solution Method: Bower-Rice
 y_0 = 2.214 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-47 Slug Out.aqt
 Date: 03/08/18

Time: 10:19:46

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-47
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 71.57 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-47)

Initial Displacement: -2.496 ft
 Total Well Penetration Depth: 97.08 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 71.57 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

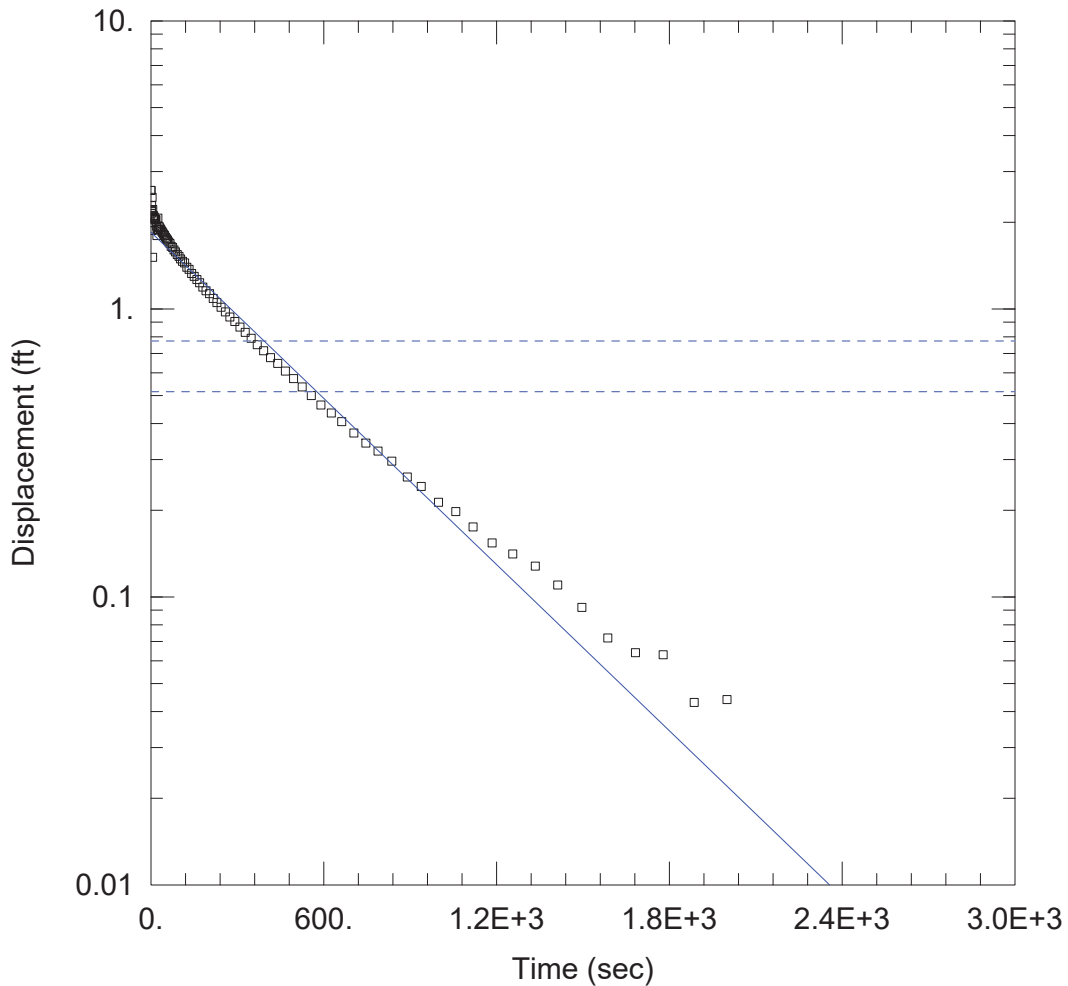
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bower-Rice

$K = 0.0001365$ cm/sec

$y_0 = -2.285$ ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-48 Slug In.aqt
 Date: 03/08/18

Time: 10:22:24

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-48
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 39.01 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-48)

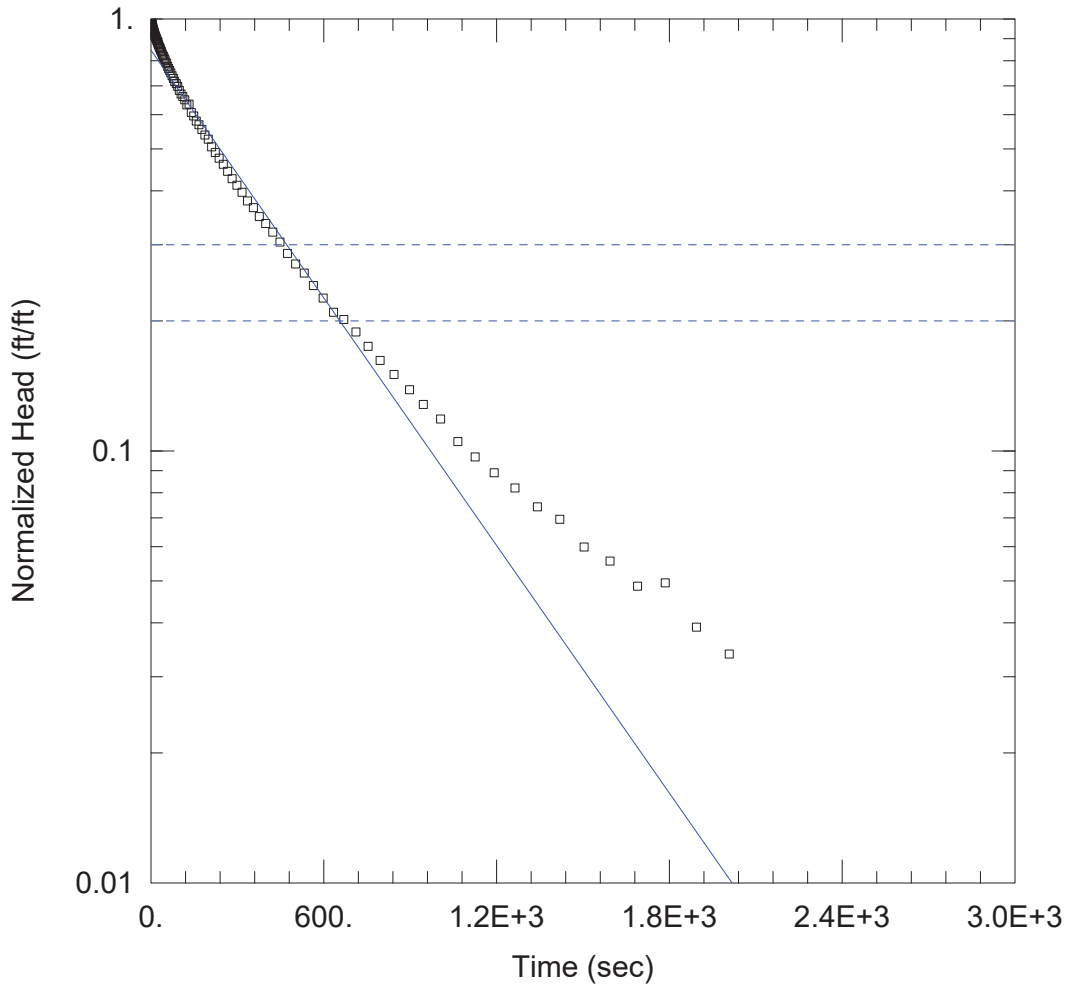
Initial Displacement: 2.58 ft
 Total Well Penetration Depth: 69.65 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 39.01 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 8.544E-5$ cm/sec

Solution Method: Bower-Rice
 $y_0 = 1.846$ ft



WELL TEST ANALYSIS

Data Set: \...\PZ-48 Slug Out.aqt
Date: 05/29/18

Time: 11:28:22

PROJECT INFORMATION

Company: Golder
Client: SCS Plant Branch
Project: 166625402
Test Well: PZ-48
Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 39.11 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-48)

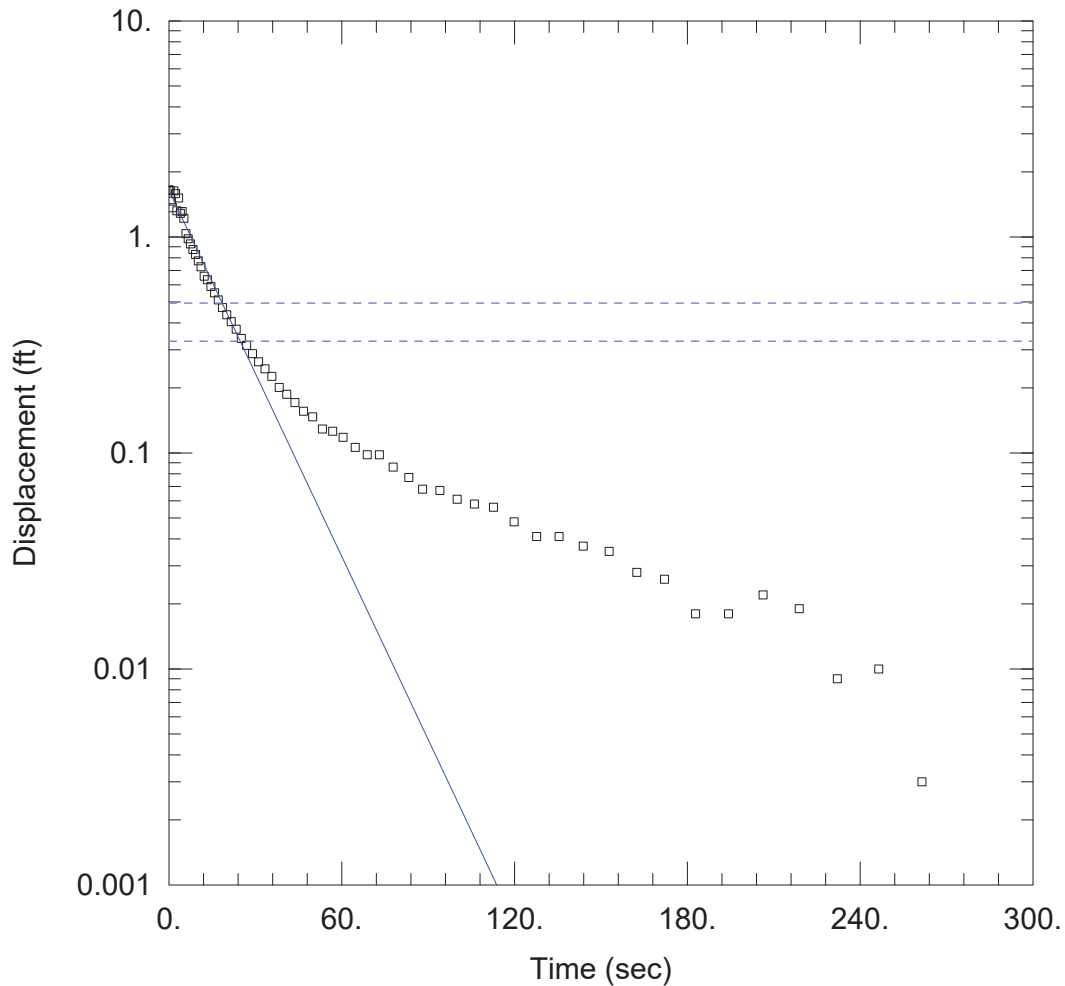
Initial Displacement: -2.303 ft
Total Well Penetration Depth: 69.65 ft
Casing Radius: 0.08 ft

Static Water Column Height: 39.11 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 8.486E-5$ cm/sec

Solution Method: Bower-Rice
 $y_0 = -1.948$ ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-49 Slug In.aqt
 Date: 03/08/18

Time: 10:32:50

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-49
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 11.48 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-49)

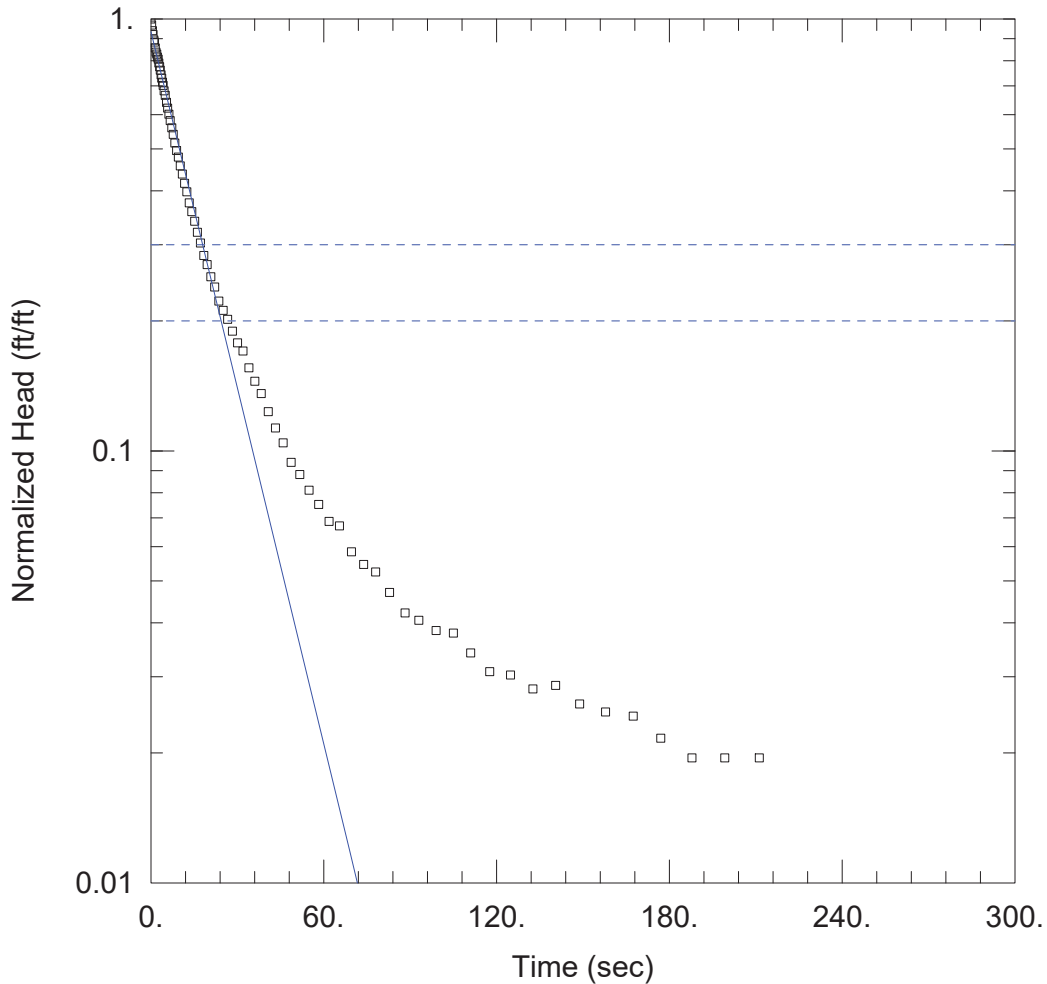
Initial Displacement: 1.646 ft
 Total Well Penetration Depth: 19.3 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 11.48 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K = 0.007417$ cm/sec

Solution Method: Bower-Rice
 $y_0 = 1.642$ ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-49 Slug Out.aqt
 Date: 03/08/18

Time: 10:34:08

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-49
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 11.49 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-49)

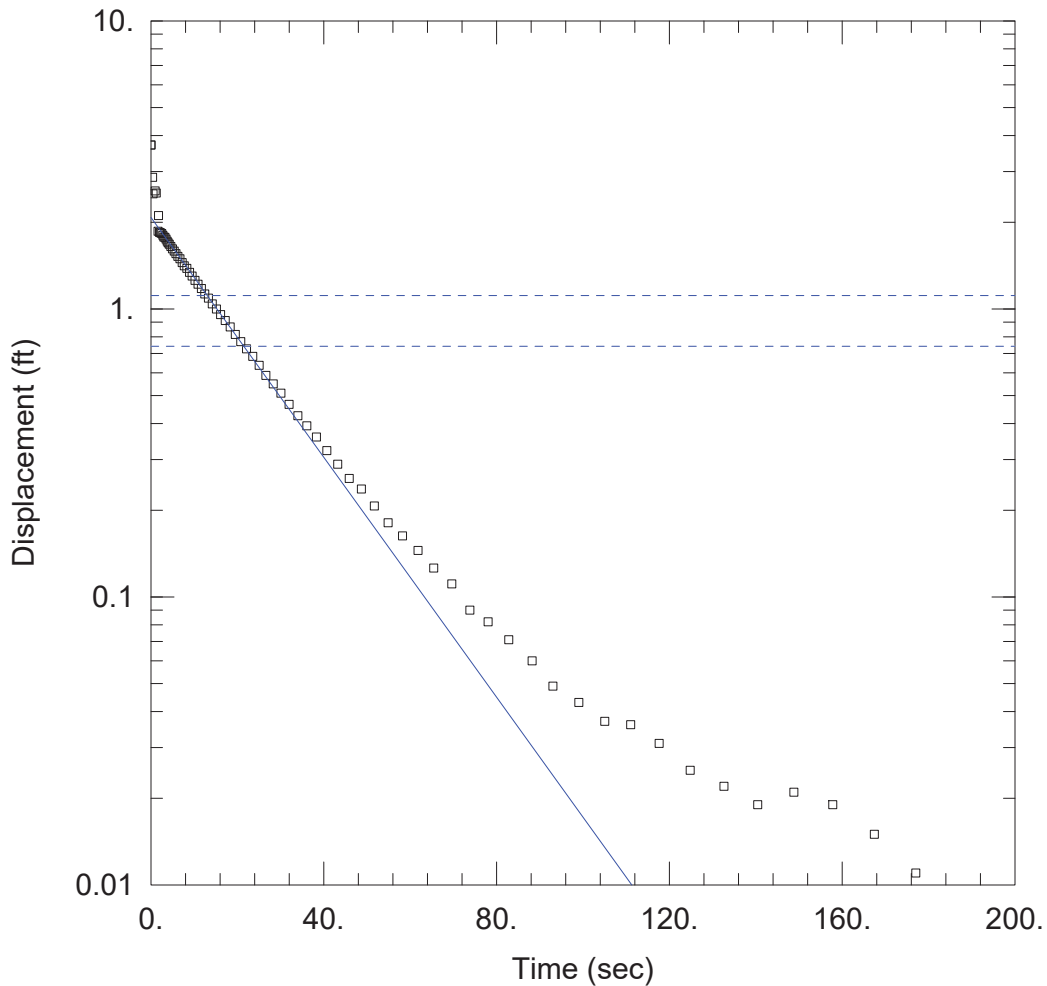
Initial Displacement: -1.849 ft
 Total Well Penetration Depth: 19.3 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 11.49 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 K = 0.007214 cm/sec

Solution Method: Bower-Rice
 y0 = -1.726 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-50 Slug In (2).aqt
 Date: 03/08/18

Time: 10:36:19

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-50
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 30.73 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-50)

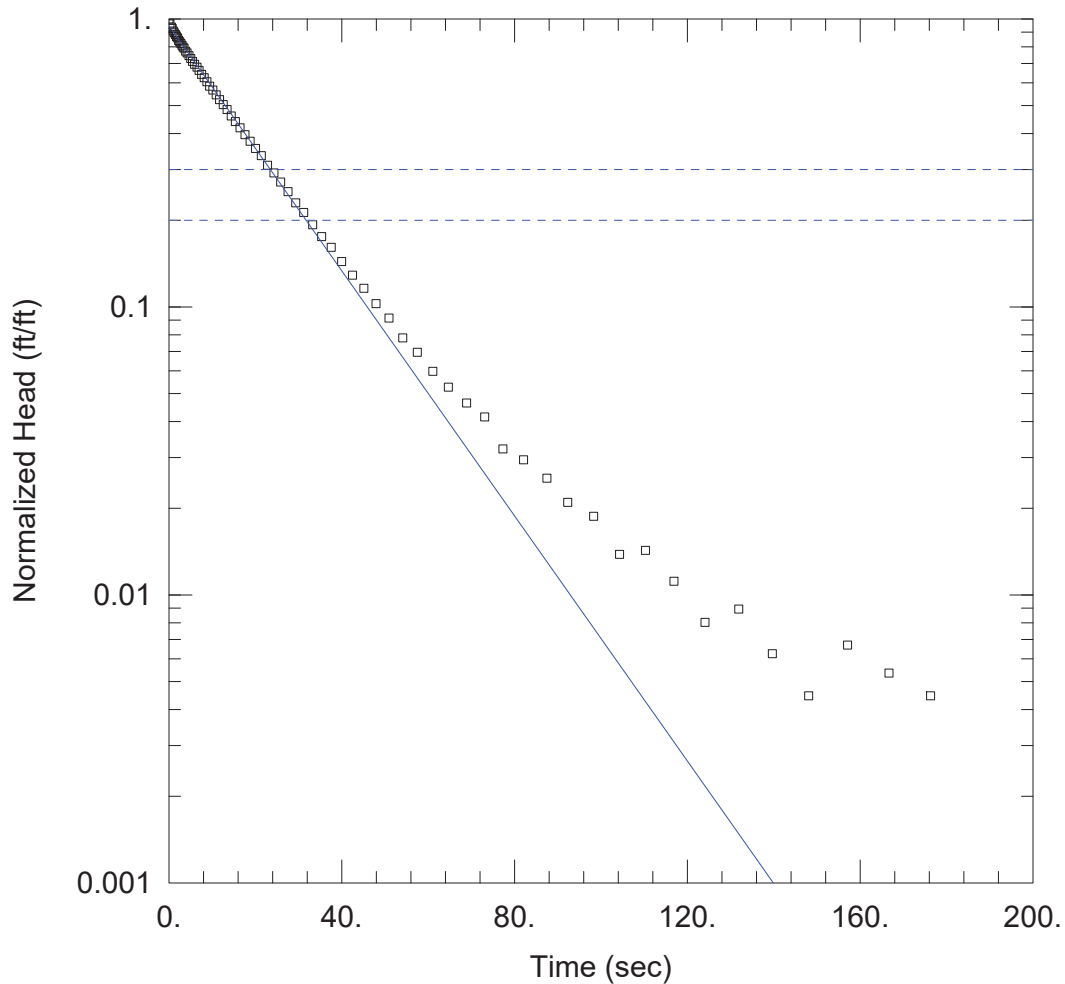
Initial Displacement: 3.709 ft
 Total Well Penetration Depth: 68.75 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 30.73 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
 $K =$ 0.001847 cm/sec

Solution Method: Bower-Rice
 $y_0 =$ 2.078 ft



WELL TEST ANALYSIS

Data Set: C:\...\PZ-50 Slug Out.aqt
 Date: 03/08/18

Time: 10:37:30

PROJECT INFORMATION

Company: Golder
 Client: SCS Plant Branch
 Project: 166625402
 Test Well: PZ-50
 Test Date: 2/21/18

AQUIFER DATA

Saturated Thickness: 30.73 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (PZ-50)

Initial Displacement: -2.241 ft
 Total Well Penetration Depth: 68.75 ft
 Casing Radius: 0.08 ft

Static Water Column Height: 30.73 ft
 Screen Length: 10. ft
 Well Radius: 0.25 ft

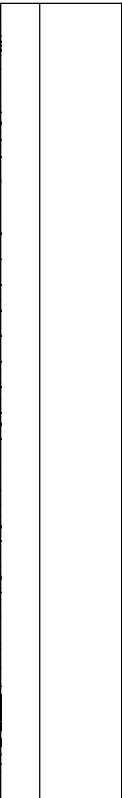
SOLUTION

Aquifer Model: Unconfined
 K = 0.001886 cm/sec

Solution Method: Bower-Rice
 $y_0 =$ -2.121 ft

BORING AND WELL LOG LEGEND

LITHOLOGY	WATER LEVEL	WELL/BORING COMPLETION	SAMPLE TYPE	DESCRIPTION
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ASPHALT
CONCRETE
FILL
TOPSOIL
COBBLES
IGNEOUS Rock
METAMORPHIC Rock
SEDIMENTARY Rock
Well-graded GRAVEL (GW)
Poorly graded GRAVEL (GP)
Silty GRAVEL (GM)
Clayey GRAVEL (GC)
Well-graded GRAVEL with silt (GW-GM)
Poorly graded GRAVEL with silt (GP-GM)
Well-graded GRAVEL with clay (GW-GC)
Poorly graded GRAVEL with clay (GP-GC)
Well-graded SAND (SW)
Poorly graded SAND (SP)
Silty SAND (SM)
Clayey SAND (SC)
Well-graded SAND with silt (SW-SM)
Poorly graded SAND with silt (SP-SM)
Well-graded SAND with clay (SW-SC)
Poorly graded SAND with clay (SP-SC)
SILT (ML)
Lean CLAY (CL)
Organic SOIL (OL)
Elastic SILT (MH)
Fat CLAY (CH)
Organic SOIL (OH)
PEAT (PT)
Volume Descriptors: Trace = <5% Few = 5-10% Little = 15-25% Some = 30-45% Mostly = >=50%
Static Water Level (ft): 31.54/29.62; static water level for shallow and deep well, respectively DTW After Drilling (ft): 31.70/31.00; depth to water after drilling for shallow and deep well, respectively
Cap
Riser
Screen
Cement
Bentonite Grout
Bentonite Seal
Filter Pack
Backfill/Slough
GR Grab
EN Encore
SS Split Spoon
SH Shelby Tube
CO Core Barrel
DP Direct Push
ID Lab Sample and ID

NOTES:

Drilling Start Date: 01/18/2019	Boring Depth (ft): 96	Well Depth (ft): 38/NA
Drilling End Date: 01/22/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.54/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.4/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 403.06/NA	Sanitary Seal: Bentonite Chips/Pellets
Driller: Stan White	Ground Elev. (ft): 400.26/NA	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164916.83, 2556350.54	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
0				SS	0.58	1	2	(0') Clayey SAND (SC); moist, reddish-brown, organic material.	PB-1 (0-2)	400
				SS	1.66	1	7	(2') Sandy lean CLAY (CL); medium plasticity, medium stiff, dry, reddish-brown, micaceous, some quartz gravel in lenses.	PB-1 (2-4)	
				SS	2	3	13		PB-1 (4-6)	
5				SS	2	3	8	(6') Clayey SAND (SC); mostly medium grained sand, few coarse gravel, few clay, medium dense, dry, light reddish-brown, some coarse quartz sand lenses.	PB-1 (6-8)	395
				SS	1.84	2	7	(8') SILT (ML); mostly silt, nonplastic, medium stiff, dry, yellowish-brown, small iron oxide concretions throughout (10 mm).	PB-1 (8-10)	
10				SS	1.84	3	9	(10') SILT (ML); mostly silt, nonplastic, medium stiff, dry, yellowish-brown, small iron oxide concretions throughout (10 mm), more fine sand and mica.	PB-1 (10-12)	390
				SS	2	3	9	(12') Silty SAND (SM); medium dense, dry, pale reddish-brown, weak relict structure, micaceous, some gravel quartz lenses.	PB-1 (12-14)	
15				SS	2	4	8		PB-1 (14-16)	
				SS	1.66	3	12	(16') Silty SAND (SM); dense, moist, pale reddish-brown, relict rock structure more evident, micaceous, some gravel quartz lenses.	PB-1 (16-18)	385
20				SS	2	4	10		PB-1 (18-20)	

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Drilling Start Date: 01/18/2019	Boring Depth (ft): 96	Well Depth (ft): 38/NA
Drilling End Date: 01/22/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.54/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.4/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 403.06/NA	Sanitary Seal: Bentonite Chips/Pellets
Driller: Stan White	Ground Elev. (ft): 400.26/NA	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164916.83, 2556350.54	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
20			SH	2					PB-1 (20-22)	380
			SS	2	4	13		(22') Silty SAND (SM); dense, moist, pale reddish-brown, micaceous with relict rock fabric.	PB-1 (22-24)	
			SS	2	6					
			SS	2	7					
			SS	2	8					
			SS	2	5	19		(24') Silty SAND (SM); dense, wet, pale reddish-brown, micaceous with relict rock fabric, weathered quartz lens at 25.5 ft.	PB-1 (24-26)	
25			SS	2	8					375
			SS	2	11					
			SS	2	15					
			SS	2	6	31			PB-1 (26-28)	
			SS	2	11					
			SS	2	20					
			SS	2	24					
			SS	1.34	17	86		(28') Silty SAND (SM); dense, wet, pale reddish-brown, material becoming harder, more rock like, highly weathered Gneiss. (28') Top of PWR.	PB-1 (28-30)	
			SS	1.34	36					
			SS	1.26	50/4					
30			SS	1.26	11	87			PB-1 (30-32)	370
					37					
					50			(32') Switched to 5ft-center for SPT (SS) sampling due to PWR.		
35			SS	1.58	16	77		(35') Weathered Gneiss, abundant quartz, mica with biotite.	PB-1 (35-37)	365
					37					
					40					
					38					
40										

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Drilling Start Date: 01/18/2019	Boring Depth (ft): 96	Well Depth (ft): 38/NA
Drilling End Date: 01/22/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.54/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.4/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 403.06/NA	Sanitary Seal: Bentonite Chips/Pellets
Driller: Stan White	Ground Elev. (ft): 400.26/NA	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164916.83, 2556350.54	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40				SS	0	19 39 50/5	89		PB-1 (40-42)	360
45				SS	0.92	15 45 50/4	95	(45') Silty SAND (SM); very dense, wet, mottled, weathered Gneiss with quartz, biotite, and feldspar.	PB-1 (45-47)	355
50				SS	0.34	31 50/5	50		PB-1 (50-52)	350
55				SS	0.5	50/5		(55') No bag sample collected.		345
60										

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Drilling Start Date: 01/18/2019	Boring Depth (ft): 96	Well Depth (ft): 38/NA
Drilling End Date: 01/22/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.54/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.4/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 403.06/NA	Sanitary Seal: Bentonite Chips/Pellets
Driller: Stan White	Ground Elev. (ft): 400.26/NA	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164916.83, 2556350.54	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
60				SS	0.16	44 50/4	50	(60') No bag sample collected.		340
65				SS	5.5	50/2		(65') Silty SAND (SM); very dense, wet, some coarse quartz sand, weathered Gneiss with relict banding, quartz, feldspar, and biotite. PWR becomes more competent. Very slow drilling, effective auger refusal at 67ft. (67') Began mud rotary drilling.		335
70								(72') No bag sample collected.		330
75								(79') Very hard drilling.		325
80										

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Drilling Start Date: 01/18/2019	Boring Depth (ft): 96	Well Depth (ft): 38/NA
Drilling End Date: 01/22/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.54/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.4/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 403.06/NA	Sanitary Seal: Bentonite Chips/Pellets
Driller: Stan White	Ground Elev. (ft): 400.26/NA	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164916.83, 2556350.54	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
80										320
				CO	4.5		100	Top of competent rock at 81.5 (81.5') MET ROCK (GNEISS); coarse grained, moderately bedded, fresh, hard, slightly fractured, dark gray to white, poorly jointed, few low angle fractures, abundant qtz, feldspar phenocrysts or augen, biotite, pyroxene, little evidence of water flow in fractures at 82.3, 82.7, 84.5, and 87 ft. Cable tool (rock coring) started at 81.5 ft below ground surface. Fractures at 82.3 and 82.7 Fracture at 84.5		
85				CO	4.5		100	Fracture at 87		
90				CO	1.3		100			
95										305
100								(96') Boring terminated. Well installed on 01/24/2019		

NOTES: PB-1S is a stickup well located ~10ft away from PB-1 borehole.
NA = Not Applicable

Drilling Start Date: 11/29/2018	Boring Depth (ft): 61	Well Depth (ft): 57
Drilling End Date: 12/04/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 39.50	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 12.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 416.76	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 414.86	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1164853.32, 2556913.92	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
0				SS	2	3	7	(0') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.		
				SS	2	1	2	(2') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.	PB-2 (2-4)	
				SH	1					410
				SS	2	2	8	(6') Elastic SILT (MH); few medium sand, mostly silt, low plasticity, soft, moist, reddish, abundant mica.		
				SS	2	2	10		PB-2 (8-10)	
				SS	2	3	8	(10') Lean CLAY with sand (CL); few fine sand, some silt, mostly clay, medium plasticity, soft, moist, yellowish-brown to red.		405
				SS	2	3	5	(12') Elastic SILT with sand (MH); trace fine sand, mostly silt, few clay, soft, moist, yellow brown to red.	PB-2 (12-14)	
				SS	2	4	11			
				SS	2	6	11	(15') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, medium dense, dry, brownish-white, weathered rock fragments, black mottles.	PB-2 (15-16)	400
				SS	2	5	11			
20										395

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Drilling Start Date: 11/29/2018	Boring Depth (ft): 61	Well Depth (ft): 57
Drilling End Date: 12/04/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 39.50	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 12.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 416.76	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 414.86	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1164853.32, 2556913.92	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
20				SS	2	7	8			
				SS	2	5	11	(21.5') SILT (ML); trace fine sand, mostly silt, few clay, nonplastic, soft, dry, reddish-brown, abundant mica.		
				SS	2	5	13	(22') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white, black mottles, abundant mica.		
				SS	2	5	10	(24') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white to light gray, abundant mica.	PB-2 (24-26)	390
				SS	2	5	16	(26') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, soft, dry, white to yellow brown.		
				SS	1.5	6	21	(28') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, dry, brownish-white.		
				SS	1.5	7	47	(30') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, yellow brown to brownish-white, black mottles, abundant laminated mica.	PB-2 (30-32)	385
				SS	2	9	28	(32') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, hard, moist, brown to yellow brown to white, black mottles, mica, laminated, weathered white quartz rock fragments.		
				SS	2	13	38	(34') SILT (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, gray to white.		
				SS	2	18	50	(36') SILT with sand (ML); few fine-coarse sand, mostly silt, trace clay, nonplastic, stiff, moist, yellowish-brown to white, abundant mica, quartz, laminated.	PB-2 (36-38)	
				SS	1	30		(38') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, moist, brown to dark gray, black mottles, quartz.	PB-2 (38-40)	
40						50/5.5		(39') Top of PWR.		375

NOTES: PB-2D is a stickup well.
NA = Not Applicable




Drilling Start Date: 11/29/2018	Boring Depth (ft): 61	Well Depth (ft): 57
Drilling End Date: 12/04/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 39.50	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 12.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 416.76	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 414.86	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1164853.32, 2556913.92	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40				SS	0.2	50/2.5				
64				CO	2.75		(42.9') Auger refusal.			
45				CO	4.3		(43') MET ROCK (GNEISS); moderately bedded, fresh, hard, slightly fractured, dark gray to white, dark biotite and white feldspar minerals, strong, dark and light banding, trace red, flow banding, slightly decomposed near top, competent, fine to medium grain. Cable tool (rock coring) started at 43 ft below ground surface.			370
87				CO	4.3		(46.5') MET ROCK (GNEISS); moderately bedded, fresh, hard, unfractured, dark gray to white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain.			
50				CO	3.3		Couldn't retrieve core, redrilled with new core catcher and bit, then retrieved core, as a result Run 3 has several mechanical fractures.			365
66				CO	3.3		(51') MET ROCK (GNEISS); fresh, hard, unfractured, dark white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain, several mechanical breaks from redrilling. 51-52 ft was drilled (not cored) due to a weathered layer (mostly sand) jamming core bit.			360
55				CO	4.75		(56') MET ROCK (GNEISS); fresh, hard, unfractured, dark white, dark biotite and white feldspar minerals, strong, dark and light banding, flow banding, competent, medium to coarse grain.			355
60										

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Drilling Start Date: 11/29/2018	Boring Depth (ft): 61	Well Depth (ft): 57
Drilling End Date: 12/04/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 39.50	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 12.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 416.76	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 414.86	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1164853.32, 2556913.92	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	

60								(61') Boring terminated. Well installed on 12/05/2018		350
65										

NOTES: PB-2D is a stickup well.
NA = Not Applicable

Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
0				SS	1.34	1	4	(0') Clayey SAND (SC); some fine-coarse grained sand, some silt, little clay, moist, reddish.	PB-4 (0-2)	
				SS	1.76	1	14	(2') Lean CLAY (CL); trace fine sand, mostly clay, medium plasticity, stiff, moist, dark reddish, micaceous with trace quartz fragments.	PB-4 (2-4)	
				SS	1.76	3	13		PB-4 (4-6)	405
5				SS	1.66	5	11	(6') Elastic SILT (MH); little fine sand, mostly silt, trace clay, low plasticity, stiff, moist, dark reddish, more micaceous.	PB-4 (6-8)	
				SS	1.5	2	8		PB-4 (8-10)	400
10				SS	1.76	3	9		PB-4 (10-12)	
				SS	2	2	8	(11') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, dense, dry, mottled red to pink brown, trace quartz gravel.	PB-4 (12-14)	
				SS	1.58	3	9	(12') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, moist, yellowish-white, 1 inch thick clay lens 14.6 to 14.7.		
15								Attempted Shelby Tube, only 10 in recovery, discarded.		395
				SH	1.92					390
20										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

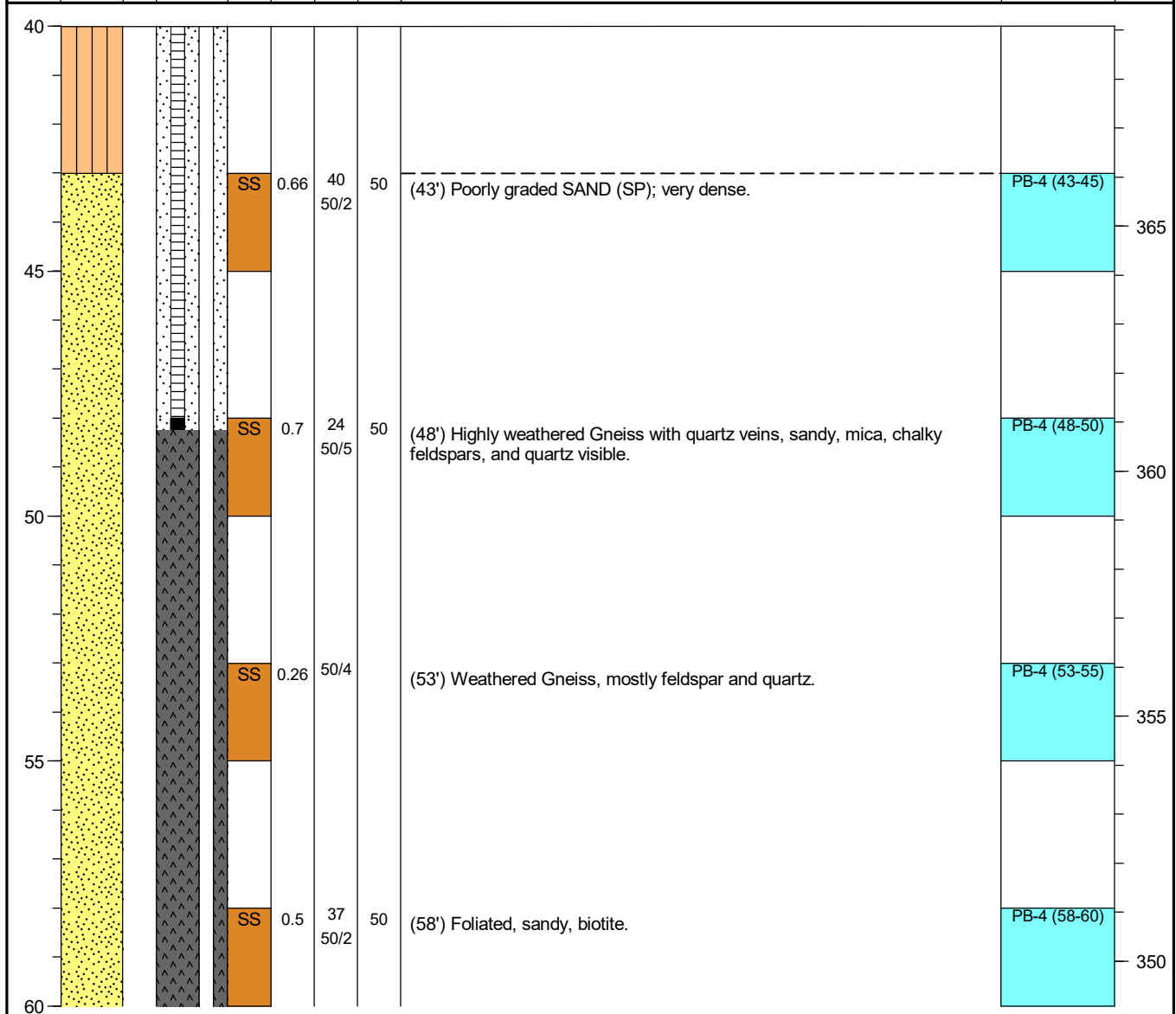
Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
20				SS	2	3	14	(20') Silty SAND (SM); mostly fine grained sand, trace coarse gravel, some silt, trace clay, moist, yellowish-white, relict structure more pronounced.	PB-4 (20-22)	
				SS	2	6	15		PB-4 (22-24)	
				SS	2	7	15		PB-4 (24-26)	385
25				SS	2	5	15	(24.5') SILT from 24.5 to 25 ft.		
				SS	2	7	17	(25') SILT with sand (ML); trace coarse gravel, some fine-coarse sand, mostly silt, nonplastic, very stiff, moist, mottled pale brown to gray to white, relict rock fabric.	PB-4 (26-28)	
				SS	2	10	24		PB-4 (28-30)	
				SS	2	11	24		PB-4 (30-32)	380
30				SS	2	7	24	(31') SILT with sand (ML); trace coarse gravel, some fine-coarse sand, mostly silt, nonplastic, very stiff, wet, pale brown, rock fabric becoming stronger.	PB-4 (32-34)	
				SS	2	10	25		PB-4 (32-34)	
				SS	2	15	26	(34') Sandy zone of weathered rock at 33.7 ft.	PB-4 (34-36)	375
35				SS	2	8	26		PB-4 (34-36)	
				SS	1.58	8	34	(36') Very stiff, grading to PWR.	PB-4 (36-38)	
				SS	1.66	15	80		PB-4 (36-38)	
				SS	1.66	12	80		PB-4 (38-40)	
40				SS	1.66	30	50/5	(39') Top of PWR.	PB-4 (38-40)	370

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			



NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
60	[Yellow dotted pattern]	[Grey hatched pattern]	[Grey hatched pattern]	SS	0.3	50/3.5		(63') Biotite, foliated, sandy, mostly feldspar.	PB-4 (63-65)	345
65				SS	0.62	17 50/5	50	(68') Moderately weathered biotite gneiss foliated, mostly feldspars.	PB-4 (68-70)	340
70				SS	0.38	50/5		(73') Poorly graded SAND (SP); very dense, mostly felsic minerals, sandy texture.	PB-4 (73-75)	335
75				SS	0.2	50/3		(78') Biotite, sandy texture.	PB-4 (78-80)	330
80										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
80	[Yellow dotted pattern]	[Grey hatched pattern]	[Grey hatched pattern]	SS	0.58	44	50	(83') Biotite, sandy, predominately mafic minerals.	PB-4 (83-85)	325
85				SS	0.16	50/4	(88') Mostly felsic minerals, sandy.		PB-4 (88-90)	320
90				SS	0.04	50/0.5	(94') Hard, mostly quartz and feldspar.		PB-4 (93-95)	315
95							(96') Began mud rotary drilling.			
100										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable




Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
100										
105				CO	2		55	(104') MET ROCK (GNEISS); fresh, hard, very slightly fractured, dark gray, some quartz and feldspar, phenocrysts, weak banding, low angle fractures at 104.5 and 106 ft.		305
				CO	9.7		89			
110								(110') Low angle fractures, some healed high angle fractures, very few fractures, very hard, fractures at 110, 111, and 113.5 ft.		300
115				CO	5		100	(116') No natural fractures from 116 to 121 ft.		295
120										290

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Drilling Start Date: 01/14/2019	Boring Depth (ft): 121	Well Depth (ft): 48/114.5
Drilling End Date: 01/16/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 31.54/29.62	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 31.70/31.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: CME-550	Top of Casing Elev. (ft) 411.06/412.18	Sanitary Seal: Bentonite Pellets
Driller: Stan White	Ground Elev. (ft): 409.26/409.08	Filter Pack: Sand
Logged By: Joseph Ivanowski	Location (X,Y): 1164335.02, 2556069.22	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	

120								(121') Boring terminated. Well installed on 01/17/2019		285
125										

NOTES: PB-4S and PB-4D are stickup wells, PB-4S is ~10ft away from PB-4D well.
NA = Not Applicable

Drilling Start Date: 01/10/2019	Boring Depth (ft): 59.6	Well Depth (ft): 33
Drilling End Date: 01/14/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.51/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.60/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 402.86/NA	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 399.86/399.55	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163831.32, 2556176.27	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
0				SS	1.5	1	4	(0') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, very soft, moist, reddish, few roots and organic matter.	PB-7 (0-2)	
				SS	2	3	11	(2') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, stiff, moist, reddish, trace mica.	PB-7 (2-4)	
				SS	2	3	7	(4') Lean CLAY (CL); few fine-coarse sand, few silt, mostly clay, medium plasticity, soft, moist, reddish, abundant mica.	PB-7 (4-6)	395
5				SS	2	3	7	(6') Lean CLAY (CL); few fine-coarse sand, few silt, medium plasticity, soft, moist, yellowish-red, abundant mica.	PB-7 (6-8)	
				SS	2	2	5	(8') Lean CLAY (CL); few fine-medium sand, some silt, mostly clay, medium plasticity, soft, moist, yellow to yellowish-brown, black mottles, abundant mica.	PB-7 (8-10)	390
10				SH	1.76	4		(12') CEC		
				SS	1.5	2	6	(12') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (12-14)	
15				SS	1.6	3	10	(14') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (14-16)	385
				SS	2	3	11	(16') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica, more sand.	PB-7 (16-18)	
20				SS	1.5	4	8	(18') SILT (ML); some fine-coarse sand, mostly silt, trace clay, soft, moist, yellowish-brown, black mottles, abundant mica.	PB-7 (18-20)	380

NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Drilling Start Date: 01/10/2019	Boring Depth (ft): 59.6	Well Depth (ft): 33
Drilling End Date: 01/14/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.51/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.60/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 402.86/NA	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 399.86/399.55	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163831.32, 2556176.27	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
20			SH	1.84				(20') Silty SAND (SM); 5-gallon bucket soil sample collected from approximately 15 to 20 feet below ground surface.		
			SS	1.6	5	11		(22') CEC (22') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, moist, white to gray, abundant mica and quartz.	PB-7 (22-24)	
			SS	1.7	6	17		(24') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, moist, white to gray, abundant mica and quartz.	PB-7 (24-26)	375
25			SS	1.4	7	31		(25') 5-gallon bucket soil sample collected from approximately 20 to 25 feet below ground surface.	PB-7 (26-28)	
			SS	1.4	14			(26') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, dense, wet, white to gray, abundant mica and quartz.		
			SS	1	3	41		(28') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, dense, wet, white to light brown to whitish-gray, abundant mica and quartz.	PB-7 (28-30)	370
30			SS	1	14	50		(30') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, white to light brown to whitish-gray, abundant mica and quartz.	PB-7 (30-32)	
			SS	0.1	37	50/5		(32') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, white to light brown to whitish-gray, abundant mica and quartz.	PB-7 (32-34)	
			CO	3	50/2.5	100		(37') MET ROCK (GNEISS); coarse grained, slightly weathered, hard, slightly fractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, fracture at ~37.8 and ~38.5 ft (not healed, narrow, clean, rough). Auger refusal at 37 feet below ground surface, cable tool (rock coring) started. Fractures at 37.8 and 38.5		365
40										360

NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Drilling Start Date: 01/10/2019	Boring Depth (ft): 59.6	Well Depth (ft): 33
Drilling End Date: 01/14/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 24.51/NA	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 24.60/NA	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 402.86/NA	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 399.86/399.55	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163831.32, 2556176.27	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40				CO	5		100	(40') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		355
45				CO	4.5		90	(45') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		350
50				CO	5		100	(50') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		345
55				CO	4.6		100	(55') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite, light feldspar minerals, strong, light and dark banding, competent, mechanical break.		340
60							(59.6') Boring terminated. Well installed on 01/14/2019			

NOTES: PB-7S is a stickup well located ~10ft away from PB-7 borehole.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
0				SS	2	3	7	(0') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish, few roots and mica.		
				SS	2	3	10	(2') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish, abundant mica.	PB-8 (2-4)	395
				SS	2	5	19	(4') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, stiff, moist, reddish, black mottles.		
5				SS	2	11	11	(5') 5-gallon bucket soil sample collected from approximately 0 to 5 feet below ground surface		
				SS	2	4	11	(6') Elastic SILT (MH); trace fine-coarse sand, mostly silt, few clay, low plasticity, stiff, moist, reddish, black mottles.		
				SS	2	3	8	(8') Elastic SILT with sand (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, yellowish-brown, abundant mica.	PB-8 (8-10)	390
10				SH	0.84			Switched from 4 1/4 auger to 3 1/4 auger. Shelby tube discarded.		
				SS	2	3	6	(12.5') SILT (ML); few fine-coarse sand, mostly silt, few clay, nonplastic, soft, moist, yellowish-brown, abundant mica.	PB-8 (12-12.5) PB-8 (12.5-14)	385
15				SH	1.58					
				SS	1.8	4	19	(16') Well-graded SAND (SW); mostly fine-coarse grained sand, some silt, trace clay, medium dense, wet, yellowish-brown, abundant mica and quartz.	PB-8 (16-18)	
				SS	1.5	7	19	(18') Well-graded SAND (SW); mostly fine-coarse grained sand, some silt, trace clay, medium dense, wet, yellowish-brown, abundant mica and quartz.	PB-8 (18-22)	380

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
20	[Yellow dotted pattern]	▽	[Hatched pattern]	SS	1.5	5	17	(20') Poorly graded SAND (SP); mostly fine-medium grained sand, some silt, few clay, medium dense, wet, gray to white, abundant mica and quartz.	PB-8 (20-22)	375
6				6	11					
11				17						
14				36						
16				20						
25	[Yellow dotted pattern]	▽	[Hatched pattern]	SS	1.2	14	36	(22') Poorly graded SAND (SP); mostly fine-medium grained sand, some silt, few clay, dense, wet, gray to white, some quartz.	PB-8 (26-28)	370
27				20						
27				27						
25				40						
23				32						
30	[Yellow dotted pattern]	▽	[Hatched pattern]	SS	1	17	81	(26') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz. (27') Top of PWR	PB-8 (26-28)	365
31				50/2						
30				63						
25				25						
23				40						
35	[Yellow dotted pattern]	▽	[Hatched pattern]	SS	1.5	25	63	(28') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.	PB-8 (26-28)	360
34				50/5.5						
35				50						
34				34						
35				50/5.5						
40	[Yellow dotted pattern]	▽	[Hatched pattern]	SS	0.8	34	50	(33') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.	PB-8 (26-28)	360
44				50/5						
40				50						
44				44						
40				50/5						

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40										
43				SS	0.2	50/3.5		(43') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		355
45										
48				SS	0.3	50/3		(48') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		350
50										
53				SS	0.3	50/3.5		(53') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		345
55										
58				SS	0	50/2		(58') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		340
60										

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
60										
63				SS	0.3	50/4		(63') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		335
65										
68				SS	0.2	50/2.5		(68') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz, trace rock fragments .		330
70										
73				SS	0.3	50/3		(73') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray to white, some quartz.		325
75								(75') Began mud rotary drilling		
78				SS	0	50/1.5		(78') No recovery, hard drilling		320
80										

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
80										
83				SS	0.8	39	50	(83') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, very dense, moist, greenish-white.	PB-8 (83-85)	315
83.5				CO	6	50/3.5	100	(83.5') Clayey SAND (SC); mostly fine-coarse grained sand, trace silt, some clay, well-graded, very dense, wet, green to white, some quartz.		
86								(86') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and light feldspar minerals, dark gray and white banding, competent. Cable tool (rock coring) started.		310
91				CO	5		100	(91') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and light feldspar minerals, dark gray and white banding, competent. Cable tool (rock coring) started.		305
96				CO	4.5		66	(96') MET ROCK (GNEISS); coarse grained, fresh, hard, slightly fractured, dark biotite and light feldspar minerals, dark gray and white banding, competent, slightly decomposed and integrated near fracture, fracture at ~98 ft and fracture zone from 99 to 100 ft (fractures are not healed, narrow, stained/decomposed, and rough). (97') Lost some drilling fluid. Fracture at 98 ft bgs with weathering around fracture,		300
100										

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/06/2019	Boring Depth (ft): 106	Well Depth (ft): 35/106
Drilling End Date: 01/08/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 22.05/22.11	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 22.60/14.00	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 401.69/401.77	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.69/398.47	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163024.59, 2556786.55	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)

100				CO	4.7		88	(101') MET ROCK (GNEISS); coarse grained, fresh, hard, slightly fractured, dark biotite and light feldspar minerals, dark gray and white banding, competent, slightly decomposed and integrated near fracture, fracture at ~103, 104.5, and 104.7 ft (fractures are not healed, narrow, stained/decomposed, and rough) . (102') Lost some drilling fluid Fracture at 103, 104.5, and 104.7 ft bgs.		295
105								(106') Boring terminated.		290
110										

NOTES: PB-8S and PB-8D are stickup wells, PB-8S is ~10ft away from PB-8D well. Depth to water at PB-8S is 22.6 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/16/2019	Boring Depth (ft): 91	Well Depth (ft): 33/85
Drilling End Date: 01/17/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 9.91/10.04	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 9.70/9.70	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 400.94/400.33	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.04/397.98	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163593.00, 2558546.51	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
0				SS	2	3	3	(0') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, very soft, moist, reddish, some roots.	PB-10 (0-2)	
				SS	2	2	7	(2') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish.	PB-10 (2-4)	395
				SS	2	3	10	(4') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, yellowish-brown. (5') 5-gallon bucket soil sample collected from approximately 0 to 5 feet below ground surface.	PB-10 (4-6)	
				SS	2	8	26	(6') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, medium stiff, moist, yellowish-brown, black mottles.	PB-10 (6-8)	390
				SH	2			(10') CEC		
				SS	2	4	14	(10') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, medium stiff, wet, yellowish-brown, few mica.	PB-10 (10-12)	
				SS	1.6	3	11	(12') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, low plasticity, medium stiff, wet, yellowish-brown, abundant mica.	PB-10 (12-14)	385
				SS	2	6	23	(14') Elastic SILT (MH); few fine-coarse sand, mostly silt, few clay, medium plasticity, medium stiff, wet, light gray to light brown, abundant mica.	PB-10 (14-16)	
				SS	2	8	17	(15') 5-gallon bucket soil sample collected from approximately 10 to 15 feet below ground surface.	PB-10 (16-18)	
				SH	1.66	8		(16') Clayey SAND (SC); mostly fine grained sand, trace silt, some clay, medium dense, wet, greenish-gray, abundant mica.		380
20								(20') CEC		

NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/16/2019	Boring Depth (ft): 91	Well Depth (ft): 33/85
Drilling End Date: 01/17/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 9.91/10.04	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 9.70/9.70	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 400.94/400.33	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.04/397.98	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163593.00, 2558546.51	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
20				SS	2	4	19	(20') Clayey SAND (SC); mostly fine grained sand, trace silt, some clay, medium dense, wet, greenish-gray to light brown, black mottles, abundant mica. 5-gallon bucket soil sample collected from approximately 15 to 20 feet below ground surface.	PB-10 (20-22)	
				SS	1.6	3	37	(22') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, dense, wet, light brown, abundant mica.	PB-10 (22-24)	375
				SS	1.4	41	72	(24') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, light brown, abundant mica.	PB-10 (24-26)	
25				SS	0.3	50/3		(26') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, light brown, abundant mica.	PB-10 (26-28)	370
						50/5				
30				SS	0.3	50/3		(30') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica.	PB-10 (30-32)	
										365
35				SS	0.3	50/3		(35') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica, soft drilling (30-35).	PB-10 (35-37)	
										360

NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/16/2019	Boring Depth (ft): 91	Well Depth (ft): 33/85
Drilling End Date: 01/17/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 9.91/10.04	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 9.70/9.70	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 400.94/400.33	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.04/397.98	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163593.00, 2558546.51	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40				SS	0	50/1.5		(40') No Recovery.		355
45				SS	0.2	50/2		(45') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica.	PB-10 (45-47)	350
50				SS	0.1	50/2		(50') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica.	PB-10 (50-52)	345
55				SS	0	50/1		(55') No Recovery.		340
60										

NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

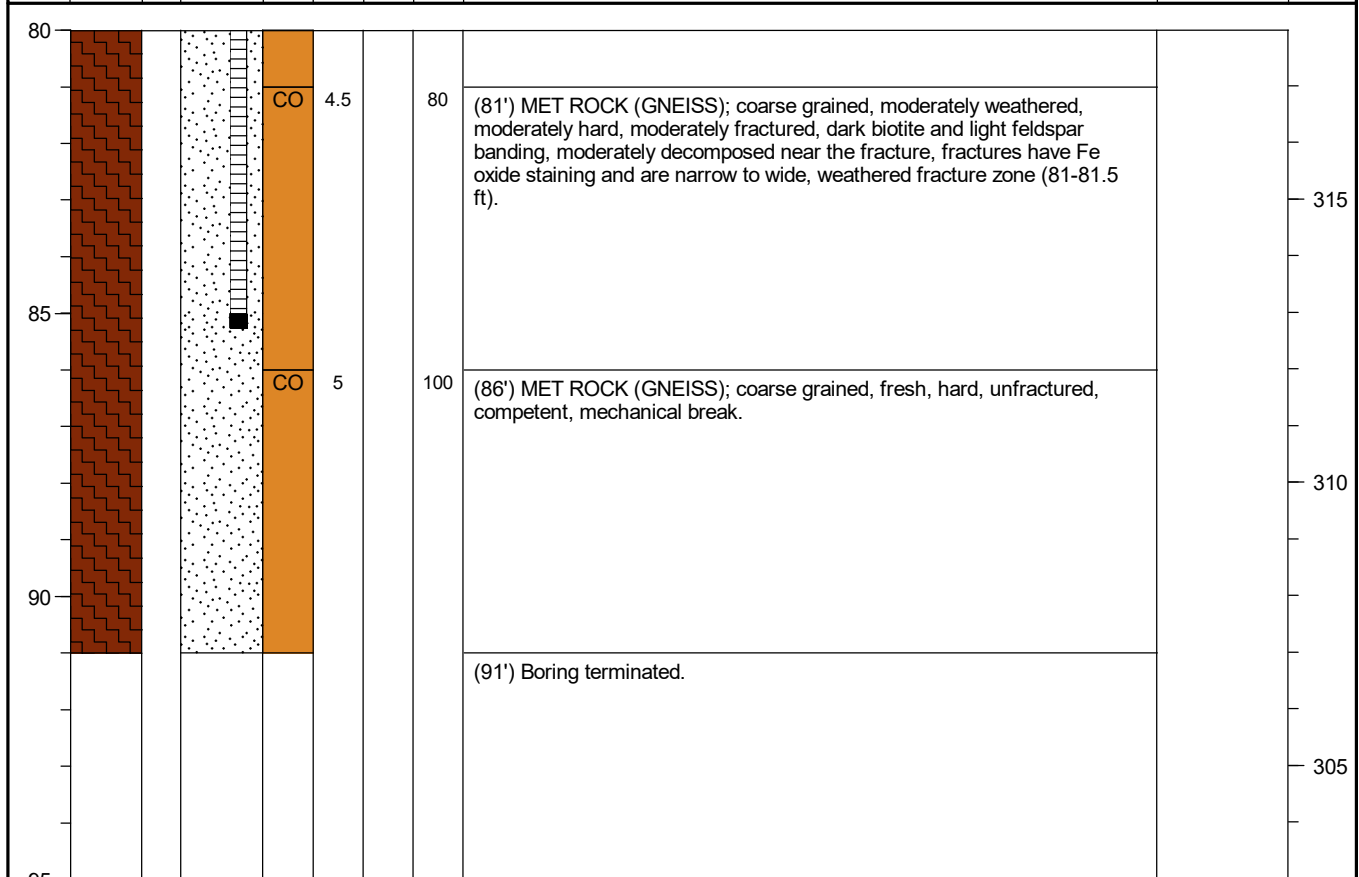
Drilling Start Date: 01/16/2019	Boring Depth (ft): 91	Well Depth (ft): 33/85
Drilling End Date: 01/17/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 9.91/10.04	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 9.70/9.70	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 400.94/400.33	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.04/397.98	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163593.00, 2558546.51	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
60				SS	0.2	50/2		(60') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, few clay, very dense, wet, dark brown, abundant mica.	PB-10 (60-62)	
								(62') Began mud rotary drilling.		
				SS	1.3	20 38 50/4	88	(63') Poorly graded SAND (SP); mostly fine-coarse grained sand, very dense, wet, light gray to white, weathered rock fragments (gneiss), abundant mica and quartz.	PB-10 (63-65)	335
65										
				CO	2.5		14	(67.5') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, intensely fractured, dark biotite and light feldspar banding, moderately decomposed near the top, fractures have Fe oxide staining and are narrow to wide. Cable tool (rock coring) started.		330
70				CO	3.5		20	(71') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, moderately fractured, dark biotite and light feldspar banding, moderately decomposed near fracture, fractures have clay filling and are narrow to wide.		325
75				CO	4.75		54	(76') MET ROCK (GNEISS); coarse grained, moderately weathered, moderately hard, moderately fractured, dark biotite and light feldspar banding, fractures have clay filling and Fe oxide staining and are narrow to wide.		320
80										

NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 01/16/2019	Boring Depth (ft): 91	Well Depth (ft): 33/85
Drilling End Date: 01/17/2019	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 9.91/10.04	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 9.70/9.70	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 400.94/400.33	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 398.04/397.98	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1163593.00, 2558546.51	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)



NOTES: PB-10S and PB-10D are stickup wells, PB-10S is ~10ft away from PB-10D well. Depth to water at PB-10S is 9.7 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
0				SS	2	2	10	(0') Sandy elastic SILT (MH); some fine-coarse sand, mostly silt, few clay, low plasticity, soft, moist, reddish, some organic matter.		370
5				SS	2	6	16	(2') Sandy elastic SILT (MH); some fine-coarse sand, mostly silt, few clay, low plasticity, medium stiff, moist, yellowish-red to red, mica.	PB-13 (2-4)	
10				SS	2	4	15	(4') Sandy elastic SILT (MH); some fine-coarse sand, mostly silt, few clay, low plasticity, medium stiff, moist, yellowish-red to red, mica.		
15				SS	2	2	10	(5') Elastic SILT with sand (MH); little fine sand, mostly silt, few clay, low plasticity, medium stiff, moist, yellowish-brown, 5-gallon bucket soil sample collected from approximately 0 to 5 feet below ground surface.	PB-13 (6-8)	365
20				SS	2	2	8	(6') Elastic SILT with sand (MH); little fine sand, mostly silt, few clay, low plasticity, medium stiff, moist, yellowish-brown.		
25				SS	2	3	14	(8') Sandy lean CLAY (CL); some fine sand, trace silt, mostly clay, medium plasticity, medium stiff, moist, light greenish.		
30				SS	2	3	18	(10') Lean CLAY (CL); some fine-coarse sand, trace silt, mostly clay, medium plasticity, stiff, moist, light greenish.	PB-13 (10-12)	360
35				SH	2	10	10.5	(10.5') Clayey SAND (SC); mostly fine-coarse grained sand, trace silt, some clay, well-graded, medium dense, moist, light greenish.		
40				SH	2	12	12	(12') Clayey SAND (SC).		
45				SS	2	2	7	(14') Clayey SAND (SC); mostly fine-coarse grained sand, trace silt, some clay, well-graded, loose, moist, light green to light brown.		
50				SS	1.5	3	7	(15') 5-gallon bucket soil sample collected from approximately 10 to 15 feet below ground surface.		
55				SS	2	2	7	(16') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, loose, wet, dark gray to grayish-white, abundant mica and quartz.	PB-13 (16-18)	355
60				SH	2	6			PB-13 (18-20)	

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
20				SS	1.5	3	12	(20') Silty SAND (SM); mostly fine-medium grained sand, some silt, trace clay, poorly graded, medium dense, wet, light gray.		350
				SS	1.2	4	14	(22') Silty SAND (SM); mostly fine-medium grained sand, some silt, trace clay, poorly graded, medium dense, wet, light gray.		
				SS	0.8	4	16	(24') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white, abundant mica, 5-gallon bucket soil sample collected from approximately 20 to 24 feet below ground surface.		
25				SS	1	5	15	(26') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to yellow gray.		345
				SS	0.8	2	12	(28') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, few clay, medium dense, wet, grayish-white to yellowish-gray, abundant mica and quartz.	PB-13 (28-30)	
30				SH	2	5			PB-13 (30-32)	340
				SS	0.7	9	28	(32') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		
				SS	0.8	5	23	(34') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz, laminated.		
35				SS	0.8	6	17	(36') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz, laminated.		335
				SS	1	6	17	(38') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		
40										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
40				SS	0.8	8	23	(40') Well-graded SAND (SW); mostly fine-coarse grained sand, trace silt, trace clay, medium dense, wet, grayish-white to white, abundant mica and quartz.		330
				SS	1.3	7	16	(42') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, wet, green to white, abundant mica and quartz.	PB-13 (42-44)	
				SS	1	10	47	(44') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, dense, wet, greenish, abundant mica and quartz.		
45				SS	0.3	5	22	(46') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, medium dense, wet, green to white, abundant mica and quartz, laminated.		325
				SS	1.1	32	57	(48') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, well-graded, very dense, wet, dark gray to dark brown to white, abundant mica and quartz, laminated.		
50				SS	0.4	21	50	(53') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, grayish-white, abundant mica and quartz, laminated, black mottles. (54') Top of PWR.		320
55				SS	0.3	50/5				315
60				SS	0.3	50/4		(58') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, grayish-white, abundant mica and quartz, laminated, black mottles.		

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)		Lab Sample	ELEV. (ft msl)
60										310
63				SS	0.3	50/3.5		(63') Silty SAND (SM); mostly fine-coarse grained sand, some silt, trace clay, very dense, wet, grayish-white, abundant mica and quartz, laminated, black mottles.		
65										305
68				SS	0.7	38 50/5	50	(68') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, very dense, wet, gray, abundant mica, quartz, black mottles.	PB-13 (68-70)	
70								(70') Began mud rotary drilling.		300
73				SS	0.2	50/2		(73') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, well-graded, very dense, wet, gray, abundant mica, quartz, black mottles.		
75										295
78				SS	0.2	50/2		(78') Well-graded SAND (SW); mostly fine-coarse grained sand, few silt, trace clay, well-graded, very dense, wet, gray, abundant mica, quartz, black mottles. Cable tool (rock coring) started at 78.1 ft below ground surface.		
80								(78.1') No Recovery.		


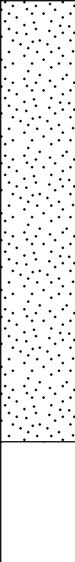

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
80										290
				CO	0			(82') No Recovery.		
85										285
				CO	3		8	(87') MET ROCK (GNEISS); coarse grained, moderately weathered, hard, intensely fractured, wet, dark biotite and white feldspar minerals, competent, iron oxidation on fracture surface, fractures not healed. Coring recovery from 78 to 87 feet below ground surface (ft bgs) was zero, top of competent rock could be at 87 ft bgs.		
90										280
				CO	2.2		0	(92') MET ROCK (GNEISS); coarse grained, moderately weathered, hard, intensely fractured, wet, dark biotite and white feldspar minerals, competent, iron oxidation on fracture surface, fractures not healed.		
95										275
				CO	5		100	(97') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and white feldspar minerals, competent, strong, flow banding.		
100										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

Drilling Start Date: 12/10/2018	Boring Depth (ft): 107.8	Well Depth (ft): 50/97
Drilling End Date: 12/18/2018	Boring Diameter (in): 6.50	Well Diam. (in)/Screen Slot (in): 2.0/0.010
Drilling Company: Thompson Engineering	Static Water Level (ft): 7.19/7.74	Riser Material: Sch 40 PVC
Drilling Method: Hollow Stem Auger	DTW After Drilling (ft): 7.40/7.40	Screen Material: Sch 40 PVC Slotted
Drilling Equipment: D-50	Top of Casing Elev. (ft) 373.38/373.83	Sanitary Seal: Bentonite Pellets
Driller: Phil Pitts	Ground Elev. (ft): 370.88/371.13	Filter Pack: Sand
Logged By: Nardos Tilahun	Location (X,Y): 1162084.45, 2556638.75	Sampling Method(s): SS/SH/CO

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE Lab Sample	ELEV. (ft msl)
				Sample Type	Recovery (ft)	Blow Counts	N Value RQD (%)			
100				CO	5		100	(102') MET ROCK (GNEISS); coarse grained, fresh, hard, unfractured, dark biotite and white feldspar minerals, competent, strong, flow banding.		270
105					0.8					100
110										

NOTES: PB-13S and PB-13D are stickup wells, PB-13S is ~10ft away from PB-13D well. Depth to water at PB-13S is 7.4 feet below ground surface.
NA = Not Applicable

APPENDIX B

**ANALYTICAL RESULTS, FIELD DATA
FORMS & DATA VALIDATION SUMMARIES**

APPENDIX A

ANALYTICAL RESULTS

December 17, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2622483

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch

Pace Project No.: 2622483

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

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SAMPLE SUMMARY

Project: Plant Branch

Pace Project No.: 2622483

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622483001	BRGWA-6S	Water	08/27/19 10:02	08/28/19 11:00
2622483002	BRGWA-5S	Water	08/27/19 10:57	08/28/19 11:00
2622483003	BRGWA-5I	Water	08/27/19 12:07	08/28/19 11:00
2622483004	BRGWA-2S	Water	08/27/19 11:53	08/28/19 11:00
2622483005	BRGWA-2I	Water	08/27/19 11:59	08/28/19 11:00
2622483006	BRGWC-33S	Water	08/27/19 16:10	08/28/19 11:00
2622483007	DUP-1	Water	08/27/19 00:00	08/28/19 11:00
2622483008	FB-1	Water	08/27/19 16:00	08/28/19 11:00
2622483009	EB-1	Water	08/27/19 16:29	08/28/19 11:00

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2622483

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622483001	BRGWA-6S	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483002	BRGWA-5S	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483003	BRGWA-5I	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483004	BRGWA-2S	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483005	BRGWA-2I	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483006	BRGWC-33S	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483007	DUP-1	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483008	FB-1	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622483009	EB-1	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: BRGWA-6S		Lab ID: 2622483001		Collected: 08/27/19 10:02		Received: 08/28/19 11:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 20:51	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 20:51	7440-38-2	
Barium	0.013	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 20:51	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 20:51	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 20:51	7440-43-9	
Chromium	0.015	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 20:51	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 20:51	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 20:51	7439-92-1	
Lithium	0.0028J	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 20:51	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 20:51	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 20:51	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 20:51	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:33	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 04:45	16984-48-8	1A

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ANALYTICAL RESULTS

Project: Plant Branch

Pace Project No.: 2622483

Sample: BRGWA-5S		Lab ID: 2622483002		Collected: 08/27/19 10:57		Received: 08/28/19 11:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 20:57	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 20:57	7440-38-2	
Barium	0.056	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 20:57	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 20:57	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 20:57	7440-43-9	
Chromium	0.0043J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 20:57	7440-47-3	
Cobalt	0.00042J	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 20:57	7440-48-4	
Lead	0.00036J	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 20:57	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 20:57	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 20:57	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 20:57	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 20:57	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:36	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 16:31	16984-48-8	1A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: BRGWA-5I		Lab ID: 2622483003		Collected: 08/27/19 12:07		Received: 08/28/19 11:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:03	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:03	7440-38-2		
Barium	0.028	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:03	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:03	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:03	7440-43-9		
Chromium	0.0055J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:03	7440-47-3		
Cobalt	0.00068J	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:03	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:03	7439-92-1		
Lithium	0.0019J	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:03	7439-93-2		
Molybdenum	0.0028J	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:03	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:03	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:03	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 09:13	08/29/19 12:38	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 16:54	16984-48-8	1A	

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: BRGWA-2S		Lab ID: 2622483004		Collected: 08/27/19 11:53		Received: 08/28/19 11:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:20	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:20	7440-38-2	
Barium	0.0095J	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:20	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:20	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:20	7440-43-9	
Chromium	0.0083J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:20	7440-47-3	
Cobalt	0.0012J	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:20	7440-48-4	
Lead	0.000058J	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:20	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:20	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:20	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:20	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:20	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:23	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		09/01/19 17:17	16984-48-8	1A

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: BRGWA-2I		Lab ID: 2622483005		Collected: 08/27/19 11:59		Received: 08/28/19 11:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:25	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:25	7440-38-2		
Barium	0.012	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:25	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:25	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:25	7440-43-9		
Chromium	0.00040J	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:25	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:25	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:25	7439-92-1		
Lithium	0.035	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:25	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:25	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:25	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:25	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:32	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		09/03/19 23:36	16984-48-8		

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: BRGWC-33S		Lab ID: 2622483006		Collected: 08/27/19 16:10		Received: 08/28/19 11:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:31	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:31	7440-38-2	
Barium	0.020	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:31	7440-39-3	
Beryllium	0.0019J	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:31	7440-41-7	
Cadmium	0.00032J	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:31	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:31	7440-47-3	
Cobalt	0.045	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:31	7440-48-4	
Lead	0.00013J	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:31	7439-92-1	
Lithium	0.010J	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:31	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:31	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:31	7782-49-2	
Thallium	0.00016J	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:31	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:34	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	0.11J	mg/L	0.30	0.029	1		09/03/19 23:59	16984-48-8	

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: DUP-1		Lab ID: 2622483007		Collected: 08/27/19 00:00		Received: 08/28/19 11:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:37	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:37	7440-38-2		
Barium	0.021	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:37	7440-39-3		
Beryllium	0.0020J	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:37	7440-41-7		
Cadmium	0.00033J	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:37	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:37	7440-47-3		
Cobalt	0.047	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:37	7440-48-4		
Lead	0.00010J	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:37	7439-92-1		
Lithium	0.010J	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:37	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:37	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:37	7782-49-2		
Thallium	0.00017J	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:37	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:37	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	0.22J	mg/L	0.30	0.029	1		09/04/19 00:22	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: FB-1		Lab ID: 2622483008		Collected: 08/27/19 16:00		Received: 08/28/19 11:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:43	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:43	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:43	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:43	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:43	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:43	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:43	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:43	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:43	7439-93-2		
Molybdenum	0.0020J	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:43	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:43	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:43	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:44	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		09/04/19 00:44	16984-48-8		

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622483

Sample: EB-1		Lab ID: 2622483009		Collected: 08/27/19 16:29		Received: 08/28/19 11:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	09/03/19 21:48	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	09/03/19 21:48	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/29/19 18:05	09/03/19 21:48	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	09/03/19 21:48	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	09/03/19 21:48	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	09/03/19 21:48	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	09/03/19 21:48	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	09/03/19 21:48	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	09/03/19 21:48	7439-93-2		
Molybdenum	0.0020J	mg/L	0.010	0.00095	1	08/29/19 18:05	09/03/19 21:48	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	09/03/19 21:48	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	09/03/19 21:48	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/29/19 10:01	08/29/19 15:46	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		09/04/19 01:07	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622483

QC Batch: 34475 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622483004, 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

METHOD BLANK: 155051 Matrix: Water
Associated Lab Samples: 2622483004, 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/29/19 15:18	

LABORATORY CONTROL SAMPLE: 155052

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155053 155054

Parameter	Units	2622483004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0024	99	96	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622483

QC Batch: 34528 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622483001, 2622483002, 2622483003, 2622483004, 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

METHOD BLANK: 155360 Matrix: Water
Associated Lab Samples: 2622483001, 2622483002, 2622483003, 2622483004, 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/03/19 20:11	
Arsenic	mg/L	ND	0.0050	0.00035	09/03/19 20:11	
Barium	mg/L	ND	0.010	0.00049	09/03/19 20:11	
Beryllium	mg/L	ND	0.0030	0.000074	09/03/19 20:11	
Cadmium	mg/L	ND	0.0025	0.00011	09/03/19 20:11	
Chromium	mg/L	ND	0.010	0.00039	09/03/19 20:11	
Cobalt	mg/L	ND	0.0050	0.00030	09/03/19 20:11	
Lead	mg/L	ND	0.0050	0.000046	09/03/19 20:11	
Lithium	mg/L	ND	0.030	0.00078	09/03/19 20:11	
Molybdenum	mg/L	ND	0.010	0.00095	09/03/19 20:11	
Selenium	mg/L	ND	0.010	0.0013	09/03/19 20:11	
Thallium	mg/L	ND	0.0010	0.000052	09/03/19 20:11	

LABORATORY CONTROL SAMPLE: 155361

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.12	118	80-120	
Arsenic	mg/L	0.1	0.10	105	80-120	
Barium	mg/L	0.1	0.11	105	80-120	
Beryllium	mg/L	0.1	0.11	109	80-120	
Cadmium	mg/L	0.1	0.11	108	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.11	106	80-120	
Lead	mg/L	0.1	0.10	105	80-120	
Lithium	mg/L	0.1	0.11	107	80-120	
Molybdenum	mg/L	0.1	0.11	108	80-120	
Selenium	mg/L	0.1	0.11	107	80-120	
Thallium	mg/L	0.1	0.10	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155362 155363

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622481002 Result	Spike Conc.	Spike Conc.	MS Result								
Antimony	mg/L	ND	0.1	0.1	0.11	0.12	114	117	75-125	2	20		
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20		
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	101	107	75-125	4	20		
Beryllium	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	1	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622483

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155362		155363		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622481002 Result	MS Spike Conc.	MSD Spike Conc.									
Cadmium	mg/L	ND	0.1	0.1	0.10	0.11	103	106	75-125	2	20		
Chromium	mg/L	0.0018J	0.1	0.1	0.11	0.11	104	107	75-125	3	20		
Cobalt	mg/L	ND	0.1	0.1	0.10	0.11	103	107	75-125	4	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.10	101	104	75-125	3	20		
Lithium	mg/L	0.0014J	0.1	0.1	0.10	0.10	100	103	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	106	110	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.11	103	106	75-125	4	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	102	104	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622483

QC Batch: 34680 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

METHOD BLANK: 156099 Matrix: Water
Associated Lab Samples: 2622483005, 2622483006, 2622483007, 2622483008, 2622483009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	09/03/19 20:58	

LABORATORY CONTROL SAMPLE: 156100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.4	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156101 156102

Parameter	Units	2622398001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.11J	10	10	9.4	9.2	92	91	90-110	1	15	

MATRIX SPIKE SAMPLE: 156103

Parameter	Units	2622402001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	10	9.6	96	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Branch

Pace Project No.: 2622483

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 34615

[1] Batch accepted based on laboratory control sample (LCS) recovery.

ANALYTE QUALIFIERS

1A Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2622483

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622483001	BRGWA-6S	EPA 3005A	34528	EPA 6020B	34560
2622483002	BRGWA-5S	EPA 3005A	34528	EPA 6020B	34560
2622483003	BRGWA-5I	EPA 3005A	34528	EPA 6020B	34560
2622483004	BRGWA-2S	EPA 3005A	34528	EPA 6020B	34560
2622483005	BRGWA-2I	EPA 3005A	34528	EPA 6020B	34560
2622483006	BRGWC-33S	EPA 3005A	34528	EPA 6020B	34560
2622483007	DUP-1	EPA 3005A	34528	EPA 6020B	34560
2622483008	FB-1	EPA 3005A	34528	EPA 6020B	34560
2622483009	EB-1	EPA 3005A	34528	EPA 6020B	34560
2622483001	BRGWA-6S	EPA 7470A	34472	EPA 7470A	34485
2622483002	BRGWA-5S	EPA 7470A	34472	EPA 7470A	34485
2622483003	BRGWA-5I	EPA 7470A	34472	EPA 7470A	34485
2622483004	BRGWA-2S	EPA 7470A	34475	EPA 7470A	34513
2622483005	BRGWA-2I	EPA 7470A	34475	EPA 7470A	34513
2622483006	BRGWC-33S	EPA 7470A	34475	EPA 7470A	34513
2622483007	DUP-1	EPA 7470A	34475	EPA 7470A	34513
2622483008	FB-1	EPA 7470A	34475	EPA 7470A	34513
2622483009	EB-1	EPA 7470A	34475	EPA 7470A	34513
2622483001	BRGWA-6S	EPA 300.0	34615		
2622483002	BRGWA-5S	EPA 300.0	34615		
2622483003	BRGWA-5I	EPA 300.0	34615		
2622483004	BRGWA-2S	EPA 300.0	34615		
2622483005	BRGWA-2I	EPA 300.0	34680		
2622483006	BRGWC-33S	EPA 300.0	34680		
2622483007	DUP-1	EPA 300.0	34680		
2622483008	FB-1	EPA 300.0	34680		
2622483009	EB-1	EPA 300.0	34680		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joku Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road Atlanta, GA 30339	Copy To:	Golder + Associates 14 Burch Ct Spartanburg, SC 29583	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775 / Southernco.com	Address:	
Phone:	(404)506-7239	Project Name:	Plant Branch E	Pace Project Manager:	belsy.modaniel@pacelabs.com
Requested Due Date:		Project #:	CCR	Pace Quote:	
				State/Location:	GA

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES						ANALYSES TEST	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)
			START DATE	END DATE				H2SO4	HNO3	HCl	Na2S2O3	Methanol	Other			
1	Drinking Water	DW	8-27-19	1002	G	WT6	4	1	3					1		
2	Waste Water	WW	8-27-19	1057	G	WT6	4	1	3					1		
3	Product	P	8-27-19	1207	G	WT6	4	1	3					1		
4	Sol/Solid	SL	8-27-19	1153	G	WT6	4	1	3					1		
5	Oil	OL	8-27-19	1159	G	WT6	4	1	3					1		
6	Wipe	WP	8-27-19	1610	G	WT6	6	1	5					1		
7	Air	AR	8-27-19	-	G	WT6	4	1	3					1		+2 Rsd
8	Other	OT	8-27-19	1600	G	WT6	4	1	3					1		
9	Tissue	TS	8-27-19	1629	G	WT6	4	1	3					1		
10																
11																
12																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	RECEIVED ON	TEMP °C	Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
TE 12/6/2019	TE 12/6/2019	8-28-19	0800	Charles Parker	8/28/19	1100		1.3	Y	Y	Y
<p>SAMPLER NAME AND SIGNATURE</p> <p>PRINT Name of SAMPLER: Paul Matthew</p> <p>SIGNATURE of SAMPLER: [Signature]</p> <p>DATE Signed: 8-27-19</p>											

WO#: 2622483

2622483



Sample Condition Upon Receipt

WO#: 2622483

Client Name: GA Power

PM: BM

Due Date: 09/05/19

CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Proj. Due Date: _____
Proj. Name: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used _____ Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 214 1.3°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/28/19 CDW

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water) <u>Rads</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

September 26, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

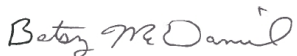
RE: Project: Plant Branch
Pace Project No.: 2622484

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta
Dominic Weatherhill, Georgia Power



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch

Pace Project No.: 2622484

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant Branch

Pace Project No.: 2622484

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622484001	BRGWA-6S	Water	08/27/19 10:02	08/28/19 11:00
2622484002	BRGWA-5S	Water	08/27/19 10:57	08/28/19 11:00
2622484003	BRGWA-5I	Water	08/27/19 12:07	08/28/19 11:00
2622484004	BRGWA-2S	Water	08/27/19 11:53	08/28/19 11:00
2622484005	BRGWA-2I	Water	08/27/19 11:59	08/28/19 11:00
2622484006	BRGWC-33S	Water	08/27/19 16:10	08/28/19 11:00
2622484007	DUP-1	Water	08/27/19 00:00	08/28/19 11:00
2622484008	FB-1	Water	08/27/19 16:00	08/28/19 11:00
2622484009	EB-1	Water	08/27/19 16:29	08/28/19 11:00

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SAMPLE ANALYTE COUNT

Project: Plant Branch

Pace Project No.: 2622484

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622484001	BRGWA-6S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484002	BRGWA-5S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484003	BRGWA-5I	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484004	BRGWA-2S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484005	BRGWA-2I	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484006	BRGWC-33S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484007	DUP-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484008	FB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622484009	EB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWA-6S **Lab ID: 2622484001** Collected: 08/27/19 10:02 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.315 ± 0.258 (0.439) C:79% T:NA	pCi/L	09/20/19 07:18	13982-63-3	
Radium-228	EPA 9320	0.335 ± 0.394 (0.832) C:80% T:86%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	0.650 ± 0.652 (1.27)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWA-5S **Lab ID: 2622484002** Collected: 08/27/19 10:57 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.520 ± 0.288 (0.370) C:87% T:NA	pCi/L	09/20/19 07:19	13982-63-3	
Radium-228	EPA 9320	0.922 ± 0.410 (0.676) C:80% T:91%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	1.44 ± 0.698 (1.05)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWA-5I **Lab ID: 2622484003** Collected: 08/27/19 12:07 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.512 ± 0.297 (0.372) C:76% T:NA	pCi/L	09/20/19 07:19	13982-63-3	
Radium-228	EPA 9320	0.679 ± 0.377 (0.683) C:83% T:89%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	1.19 ± 0.674 (1.06)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWA-2S **Lab ID: 2622484004** Collected: 08/27/19 11:53 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.950 ± 0.400 (0.410) C:78% T:NA	pCi/L	09/20/19 07:19	13982-63-3	
Radium-228	EPA 9320	0.515 ± 0.403 (0.800) C:81% T:81%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	1.47 ± 0.803 (1.21)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWA-2I **Lab ID: 2622484005** Collected: 08/27/19 11:59 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.596 ± 0.302 (0.375) C:94% T:NA	pCi/L	09/20/19 08:57	13982-63-3	
Radium-228	EPA 9320	0.512 ± 0.371 (0.725) C:81% T:87%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	1.11 ± 0.673 (1.10)	pCi/L	09/24/19 10:31	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: BRGWC-33S **Lab ID: 2622484006** Collected: 08/27/19 16:10 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.433 ± 0.290 (0.446) C:78% T:NA	pCi/L	09/20/19 07:19	13982-63-3	
Radium-228	EPA 9320	0.947 ± 0.445 (0.756) C:81% T:76%	pCi/L	09/23/19 10:55	15262-20-1	
Total Radium	Total Radium Calculation	1.38 ± 0.735 (1.20)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: DUP-1 **Lab ID: 2622484007** Collected: 08/27/19 00:00 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.534 ± 0.285 (0.309) C:86% T:NA	pCi/L	09/20/19 07:18	13982-63-3	
Radium-228	EPA 9320	0.549 ± 0.437 (0.872) C:78% T:80%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	1.08 ± 0.722 (1.18)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: FB-1 **Lab ID: 2622484008** Collected: 08/27/19 16:00 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.592 ± 0.325 (0.397) C:73% T:NA	pCi/L	09/20/19 07:20	13982-63-3	
Radium-228	EPA 9320	0.321 ± 0.282 (0.564) C:81% T:92%	pCi/L	09/23/19 14:07	15262-20-1	
Total Radium	Total Radium Calculation	0.913 ± 0.607 (0.961)	pCi/L	09/24/19 10:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

Sample: EB-1 **Lab ID: 2622484009** Collected: 08/27/19 16:29 Received: 08/28/19 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.494 ± 0.273 (0.310) C:85% T:NA	pCi/L	09/20/19 07:20	13982-63-3	
Radium-228	EPA 9320	0.502 ± 0.390 (0.780) C:79% T:87%	pCi/L	09/23/19 10:55	15262-20-1	
Total Radium	Total Radium Calculation	0.996 ± 0.663 (1.09)	pCi/L	09/24/19 10:31	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

QC Batch:	359967	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2622484001, 2622484002, 2622484003, 2622484004, 2622484005, 2622484006, 2622484007, 2622484008, 2622484009		

METHOD BLANK:	1747391	Matrix:	Water
Associated Lab Samples:	2622484001, 2622484002, 2622484003, 2622484004, 2622484005, 2622484006, 2622484007, 2622484008, 2622484009		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.763 ± 0.364 (0.510) C:93% T:NA	pCi/L	09/20/19 07:14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622484

QC Batch:	359968	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2622484001, 2622484002, 2622484003, 2622484004, 2622484005, 2622484006, 2622484007, 2622484008, 2622484009		

METHOD BLANK:	1747392	Matrix:	Water
Associated Lab Samples:	2622484001, 2622484002, 2622484003, 2622484004, 2622484005, 2622484006, 2622484007, 2622484008, 2622484009		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.921 ± 0.439 (0.755) C:82% T:78%	pCi/L	09/23/19 10:55	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Branch
Pace Project No.: 2622484

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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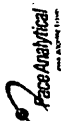
QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2622484

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622484001	BRGWA-6S	EPA 9315	359967		
2622484002	BRGWA-5S	EPA 9315	359967		
2622484003	BRGWA-5I	EPA 9315	359967		
2622484004	BRGWA-2S	EPA 9315	359967		
2622484005	BRGWA-2I	EPA 9315	359967		
2622484006	BRGWC-33S	EPA 9315	359967		
2622484007	DUP-1	EPA 9315	359967		
2622484008	FB-1	EPA 9315	359967		
2622484009	EB-1	EPA 9315	359967		
2622484001	BRGWA-6S	EPA 9320	359968		
2622484002	BRGWA-5S	EPA 9320	359968		
2622484003	BRGWA-5I	EPA 9320	359968		
2622484004	BRGWA-2S	EPA 9320	359968		
2622484005	BRGWA-2I	EPA 9320	359968		
2622484006	BRGWC-33S	EPA 9320	359968		
2622484007	DUP-1	EPA 9320	359968		
2622484008	FB-1	EPA 9320	359968		
2622484009	EB-1	EPA 9320	359968		
2622484001	BRGWA-6S	Total Radium Calculation	362817		
2622484002	BRGWA-5S	Total Radium Calculation	362817		
2622484003	BRGWA-5I	Total Radium Calculation	362817		
2622484004	BRGWA-2S	Total Radium Calculation	362817		
2622484005	BRGWA-2I	Total Radium Calculation	362817		
2622484006	BRGWC-33S	Total Radium Calculation	362817		
2622484007	DUP-1	Total Radium Calculation	362817		
2622484008	FB-1	Total Radium Calculation	362817		
2622484009	EB-1	Total Radium Calculation	362817		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:
 Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Manner Road
 Atlanta, GA 30339
 Email: jabraham@southernco.com
 Phone: (404)506-7239
 Fax:
 Requested Due Date:

Section B
Required Project Information:
 Report To: Joju Abraham
 Copy To: Golden Packer Holdings
 Address: 1600 Park Street
 Atlanta, GA 30339
 Project Name: Plant Branch E
 Project #: CCR
 Purchase Order #: SCS10382775 / SouthernCo.com
 Pace Project Manager: betsy.mcdaniel@paceanalabs.com
 Pace Profile #: 326.11.2

Section C
Invoice Information:
 Attention: scsinvoices@southernco.com
 Company Name:
 Regulatory Agency:
 State VI Location: GA

#	ITEM	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	# OF CONTAINERS	PRESERVATIVES										ANALYSES TEST	Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)										
				START DATE	END DATE			H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Metals (App. W)	Fluoride by 300	Radium 226/228														
1	BRGWA-6S	Drinking Water	DW	8-27-19	1002	G	4	1	3																						
2	BRGWA-5S	Waste Water	WT	8-27-19	1057	G	4	1	3																						
3	BRGWA-5I	Waste Water	WW	8-27-19	1207	G	4	1	3																						
4	BRGWA-2S	Product	P	8-27-19	1153	G	4	1	3																						
5	BRGWA-2I	Solid/Semi	SL	8-27-19	1159	G	4	1	3																						
6	BRGWC-33S	Oil	OL	8-27-19	1610	G	6	1	5																						
7	DUP-1	Wipe	WP	8-27-19	-	G	4	1	3																						
8	FB-1	Air	AR	8-27-19	1600	G	4	1	3																						
9	EB-1	Other	OT	8-27-19	1629	G	4	1	3																						
10		Tissue	TS																												
11																															
12																															

ADDITIONAL COMMENTS:
 RE: 27/holder
 8-28-19 0800 Charles Hunter
 8/28/19 1100 1.3 Y Y Y
 SAMPLE CONDITIONS:
 Received on: (Y/N)
 Custody: (Y/N)
 Sealed: (Y/N)
 Cooled: (Y/N)
 Interact Samples: (Y/N)

SAMPLER NAME AND SIGNATURE:
 PRINT Name of SAMPLER: Travis Matthee
 SIGNATURE of SAMPLER: [Signature]
 DATE Signed: 8-27-19

WO#: 2622484



2622484



Sample Condition Upon Receipt

Client Name: GA Power

WO#: **2622484**

PM: **BM** Due Date: **09/26/19**
CLIENT: **GAPower-CCR**

Courier: Fed Ex UPS USPS Client Commercial Pace

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 214 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.3°C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/28/19 CW

Temp should be above freezing to 6°C Comments: _____

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes date/time/ID/Analysis Matrix: <u>W</u>			
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water) <u>Rads</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

January 03, 2020

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2622563

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch

Pace Project No.: 2622563

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

Pace Analytical Services Asheville

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: Plant Branch
Pace Project No.: 2622563

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622563001	BRGWC-17S	Water	08/28/19 12:35	08/29/19 11:15
2622563002	BRGWC-34S	Water	08/28/19 13:21	08/29/19 11:15
2622563003	BRGWC-35S	Water	08/28/19 12:08	08/29/19 11:15
2622563004	BRGWC-36S	Water	08/28/19 11:36	08/29/19 11:15
2622563005	BRGWC-37S	Water	08/28/19 14:32	08/29/19 11:15
2622563006	EB-2	Water	08/28/19 12:59	08/29/19 11:15
2622563007	FB-2	Water	08/28/19 11:50	08/29/19 11:15

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2622563

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622563001	BRGWC-17S	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563002	BRGWC-34S	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563003	BRGWC-35S	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563004	BRGWC-36S	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563005	BRGWC-37S	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563006	EB-2	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A
2622563007	FB-2	EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: BRGWC-17S		Lab ID: 2622563001		Collected: 08/28/19 12:35		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 20:57	7440-36-0		
Arsenic	0.00073J	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 20:57	7440-38-2		
Barium	0.044	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 20:57	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 20:57	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 20:57	7440-43-9		
Chromium	0.013	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 20:57	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 20:57	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 20:57	7439-92-1		
Lithium	0.00097J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 20:57	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 20:57	7439-98-7		
Selenium	0.0030J	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 20:57	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 20:57	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:21	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.085J	mg/L	0.30	0.050	1		09/05/19 10:21	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: BRGWC-34S		Lab ID: 2622563002		Collected: 08/28/19 13:21		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 21:03	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 21:03	7440-38-2		
Barium	0.026	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 21:03	7440-39-3		
Beryllium	0.00014J	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 21:03	7440-41-7		
Cadmium	0.00025J	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 21:03	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 21:03	7440-47-3		
Cobalt	0.0037J	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 21:03	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 21:03	7439-92-1		
Lithium	0.00090J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 21:03	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 21:03	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 21:03	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 21:03	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:24	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.057J	mg/L	0.30	0.050	1		09/05/19 10:50	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: BRGWC-35S		Lab ID: 2622563003		Collected: 08/28/19 12:08		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 21:37	7440-36-0		
Arsenic	0.00044J	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 21:37	7440-38-2		
Barium	0.039	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 21:37	7440-39-3		
Beryllium	0.00016J	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 21:37	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 21:37	7440-43-9		
Chromium	0.0071J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 21:37	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 21:37	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 21:37	7439-92-1		
Lithium	0.0021J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 21:37	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 21:37	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 21:37	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 21:37	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:26	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	0.056J	mg/L	0.30	0.050	1		09/05/19 10:07	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch

Pace Project No.: 2622563

Sample: BRGWC-36S		Lab ID: 2622563004		Collected: 08/28/19 11:36		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	0.00035J	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 22:00	7440-36-0		
Arsenic	0.00045J	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 22:00	7440-38-2		
Barium	0.034	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 22:00	7440-39-3		
Beryllium	0.00011J	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 22:00	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 22:00	7440-43-9		
Chromium	0.0078J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 22:00	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 22:00	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 22:00	7439-92-1		
Lithium	0.0025J	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 22:00	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 22:00	7439-98-7		
Selenium	0.0041J	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 22:00	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 22:00	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:29	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 08:25	16984-48-8		

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: BRGWC-37S		Lab ID: 2622563005		Collected: 08/28/19 14:32		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 22:06	7440-36-0		
Arsenic	0.00038J	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 22:06	7440-38-2		
Barium	0.027	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 22:06	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 22:06	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 22:06	7440-43-9		
Chromium	0.0017J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 22:06	7440-47-3	B	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 22:06	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 22:06	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 22:06	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 22:06	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 22:06	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 22:06	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:31	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 11:05	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: EB-2		Lab ID: 2622563006		Collected: 08/28/19 12:59		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 22:11	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 22:11	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 22:11	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 22:11	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 22:11	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 22:11	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 22:11	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 22:11	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 22:11	7439-93-2		
Molybdenum	0.0021J	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 22:11	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 22:11	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 22:11	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:33	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 10:36	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2622563

Sample: FB-2		Lab ID: 2622563007		Collected: 08/28/19 11:50		Received: 08/29/19 11:15		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/30/19 16:08	09/04/19 22:17	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/30/19 16:08	09/04/19 22:17	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	08/30/19 16:08	09/04/19 22:17	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/30/19 16:08	09/04/19 22:17	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/30/19 16:08	09/04/19 22:17	7440-43-9		
Chromium	0.00045J	mg/L	0.010	0.00039	1	08/30/19 16:08	09/04/19 22:17	7440-47-3	B	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/30/19 16:08	09/04/19 22:17	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/30/19 16:08	09/04/19 22:17	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	08/30/19 16:08	09/04/19 22:17	7439-93-2		
Molybdenum	0.0021J	mg/L	0.010	0.00095	1	08/30/19 16:08	09/04/19 22:17	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/30/19 16:08	09/04/19 22:17	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/30/19 16:08	09/04/19 22:17	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	09/03/19 11:46	09/03/19 17:40	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993								
Fluoride	ND	mg/L	0.30	0.050	1		09/05/19 09:52	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622563

QC Batch: 34630

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2622563001, 2622563002, 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

METHOD BLANK: 155919

Matrix: Water

Associated Lab Samples: 2622563001, 2622563002, 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/03/19 16:46	

LABORATORY CONTROL SAMPLE: 155920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0027	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155921 155922

Parameter	Units	2622561001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	100	105	75-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622563

QC Batch: 34569 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622563001, 2622563002

METHOD BLANK: 155676 Matrix: Water
Associated Lab Samples: 2622563001, 2622563002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/04/19 18:22	
Arsenic	mg/L	ND	0.0050	0.00035	09/04/19 18:22	
Barium	mg/L	ND	0.010	0.00049	09/04/19 18:22	
Beryllium	mg/L	ND	0.0030	0.000074	09/04/19 18:22	
Cadmium	mg/L	ND	0.0025	0.00011	09/04/19 18:22	
Chromium	mg/L	ND	0.010	0.00039	09/04/19 18:22	
Cobalt	mg/L	ND	0.0050	0.00030	09/04/19 18:22	
Lead	mg/L	ND	0.0050	0.000046	09/04/19 18:22	
Lithium	mg/L	ND	0.030	0.00078	09/04/19 18:22	
Molybdenum	mg/L	ND	0.010	0.00095	09/04/19 18:22	
Selenium	mg/L	ND	0.010	0.0013	09/04/19 18:22	
Thallium	mg/L	ND	0.0010	0.000052	09/04/19 18:22	

LABORATORY CONTROL SAMPLE: 155677

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	112	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	105	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	104	80-120	
Chromium	mg/L	0.1	0.10	104	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.099	99	80-120	
Molybdenum	mg/L	0.1	0.10	103	80-120	
Selenium	mg/L	0.1	0.10	104	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155678 155679

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622524009	Spike Conc.	Spike Conc.	Result								
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	110	111	75-125	1	20		
Arsenic	mg/L	0.0011J	0.1	0.1	0.10	0.10	101	99	75-125	2	20		
Barium	mg/L	0.14	0.1	0.1	0.23	0.23	90	91	75-125	0	20		
Beryllium	mg/L	0.00090J	0.1	0.1	0.093	0.090	92	90	75-125	3	20		
Cadmium	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20		

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622563

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155678		155679		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622524009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chromium	mg/L	0.0056J	0.1	0.1	0.11	0.11	101	100	75-125	0	20		
Cobalt	mg/L	0.00070J	0.1	0.1	0.10	0.10	99	99	75-125	0	20		
Lead	mg/L	0.00022J	0.1	0.1	0.095	0.093	95	93	75-125	2	20		
Lithium	mg/L	0.012J	0.1	0.1	0.11	0.11	93	94	75-125	0	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	104	103	75-125	1	20		
Selenium	mg/L	0.0019J	0.1	0.1	0.10	0.099	100	97	75-125	3	20		
Thallium	mg/L	ND	0.1	0.1	0.096	0.094	96	94	75-125	1	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622563

QC Batch: 34570 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

METHOD BLANK: 155680 Matrix: Water
Associated Lab Samples: 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/04/19 21:26	
Arsenic	mg/L	ND	0.0050	0.00035	09/04/19 21:26	
Barium	mg/L	ND	0.010	0.00049	09/04/19 21:26	
Beryllium	mg/L	ND	0.0030	0.000074	09/04/19 21:26	
Cadmium	mg/L	ND	0.0025	0.00011	09/04/19 21:26	
Chromium	mg/L	0.00055J	0.010	0.00039	09/04/19 21:26	
Cobalt	mg/L	ND	0.0050	0.00030	09/04/19 21:26	
Lead	mg/L	ND	0.0050	0.000046	09/04/19 21:26	
Lithium	mg/L	ND	0.030	0.00078	09/04/19 21:26	
Molybdenum	mg/L	ND	0.010	0.00095	09/04/19 21:26	
Selenium	mg/L	ND	0.010	0.0013	09/04/19 21:26	
Thallium	mg/L	ND	0.0010	0.000052	09/04/19 21:26	

LABORATORY CONTROL SAMPLE: 155681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	113	80-120	
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Cadmium	mg/L	0.1	0.10	103	80-120	
Chromium	mg/L	0.1	0.10	104	80-120	
Cobalt	mg/L	0.1	0.10	103	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.11	105	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.10	102	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155682 155683

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622563003 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	114	114	75-125	0	20	
Arsenic	mg/L	0.00044J	0.1	0.1	0.10	0.10	101	101	75-125	0	20	
Barium	mg/L	0.039	0.1	0.1	0.14	0.14	103	104	75-125	0	20	
Beryllium	mg/L	0.00016J	0.1	0.1	0.10	0.099	101	99	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	104	102	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622563

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155682		155683		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2622563003 Result	MS Spike Conc.	MSD Spike Conc.								
Chromium	mg/L	0.0071J	0.1	0.1	0.11	0.11	105	106	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.11	0.10	106	104	75-125	2	20	
Lead	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	1	20	
Lithium	mg/L	0.0021J	0.1	0.1	0.10	0.098	98	96	75-125	2	20	
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	108	107	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622563

QC Batch: 496024 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622563001, 2622563002, 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

METHOD BLANK: 2672026 Matrix: Water
Associated Lab Samples: 2622563001, 2622563002, 2622563003, 2622563004, 2622563005, 2622563006, 2622563007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/05/19 07:56	

LABORATORY CONTROL SAMPLE: 2672027

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672028 2672029

Parameter	Units	2622563004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	2.5	2.7	100	105	90-110	4	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672030 2672031

Parameter	Units	2622561002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.055J	2.5	2.5	3.2	3.2	125	127	90-110	1	10	M1

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QUALIFIERS

Project: Plant Branch
Pace Project No.: 2622563

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2622563

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622563001	BRGWC-17S	EPA 3005A	34569	EPA 6020B	34600
2622563002	BRGWC-34S	EPA 3005A	34569	EPA 6020B	34600
2622563003	BRGWC-35S	EPA 3005A	34570	EPA 6020B	34601
2622563004	BRGWC-36S	EPA 3005A	34570	EPA 6020B	34601
2622563005	BRGWC-37S	EPA 3005A	34570	EPA 6020B	34601
2622563006	EB-2	EPA 3005A	34570	EPA 6020B	34601
2622563007	FB-2	EPA 3005A	34570	EPA 6020B	34601
2622563001	BRGWC-17S	EPA 7470A	34630	EPA 7470A	34665
2622563002	BRGWC-34S	EPA 7470A	34630	EPA 7470A	34665
2622563003	BRGWC-35S	EPA 7470A	34630	EPA 7470A	34665
2622563004	BRGWC-36S	EPA 7470A	34630	EPA 7470A	34665
2622563005	BRGWC-37S	EPA 7470A	34630	EPA 7470A	34665
2622563006	EB-2	EPA 7470A	34630	EPA 7470A	34665
2622563007	FB-2	EPA 7470A	34630	EPA 7470A	34665
2622563001	BRGWC-17S	EPA 300.0 Rev 2.1 1993	496024		
2622563002	BRGWC-34S	EPA 300.0 Rev 2.1 1993	496024		
2622563003	BRGWC-35S	EPA 300.0 Rev 2.1 1993	496024		
2622563004	BRGWC-36S	EPA 300.0 Rev 2.1 1993	496024		
2622563005	BRGWC-37S	EPA 300.0 Rev 2.1 1993	496024		
2622563006	EB-2	EPA 300.0 Rev 2.1 1993	496024		
2622563007	FB-2	EPA 300.0 Rev 2.1 1993	496024		

REPORT OF LABORATORY ANALYSIS

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W0#: 2622563 W0#: 2622563

PM: 8M Due Date: 09/06/19
CLIENT: GAPower-CCR



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields
Billing Information:

Company: Georgia Power - Coal Combustion Residuals
Address: 2480 Maner Road
Atlanta, GA 30339
Report To: Joju Abraham

Copy To: Golder
Email To: scsinvoices@southernco.com
Site Collection Info/Address: Plant Branch
State: Georgia City: Milledgeville Time Zone Collected:
Project Name: Plant Branch E Project Pace Profile# 326.11.2
Pace Project Manager: betsy.mcdaniel@pacelabs.com
Quote #: Immediately Packed on Ice:
Turnaround Date Required: [X] Yes [] No
Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)
Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Water (WT), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date		Composite End Date		Res Cl	# of Ctns
			Date	Time	Date	Time		
BRGWC-17S	GW	G	8/28/2019	12:35	8/28/2019	12:35		6
BRGWC-34S	GW	G	8/28/2019	13:21	8/28/2019	13:21		4
BRGWC-35S	GW	G	8/28/2019	12:08	8/28/2019	12:08		4
BRGWC-36S	GW	G	8/28/2019	11:36	8/28/2019	11:36		4
BRGWC-37S	GW	G	8/28/2019	14:32	8/28/2019	14:32		4
EB-2	WT	G	8/28/2019	12:59	8/28/2019	12:59		4
FB-2	WT	G	8/28/2019	11:50	8/28/2019	11:50		4

Customer Remarks / Special Conditions / Possible Hazards:
Metals: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl
Rad-2 collected at BRGWC-17S

Type of Ice Used: Wet Blue Dry None
Packing Material Used: N/A
Radchem sample(s) screened (<500 cpm): Y N NA

Relinquished by/Company: (Signature) *Joju Abraham*
Date/Time: 8-29-19 08:25
Received by/Company: (Signature) *M. Malman*
Date/Time: 8/29/19 11:11
Relinquished by/Company: (Signature)
Date/Time:
Received by/Company: (Signature)
Date/Time:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Lab Profile/Line:	Analyses
Lab Sample Receipt Checklist: Custody Seals Present/Intact: N NA Custody Signatures Present: N NA Collector Signatures Present: N NA Bottles Intact: N NA Correct Bottles: N NA Sufficient Volume: N NA Samples Received on Ice: N NA VOA - Headspace Acceptable: Y N NA USDA-Regulated Solids: Y N NA Samples in Holding Time: Y N NA Residual Chlorine Present: Y N NA Cl Strips: N NA Sample pH Acceptable: N NA pH Strips: N NA Sulfide Present: Y N NA Lead Acetate Strips: N NA LAB USE ONLY: Lab Sample # / Comments:	Fluoride by 300.0 Metals app IV Radium 226,228

LAB Sample Temperature Info:
Temp Blank Received: N
Therm ID#: N
Cooler 1 Temp Upon Receipt: 0.3
Cooler 1 Therm Corr. Factor: 0C
Cooler 1 Corrected Temp: 0C
Comments:

Table #:
Account #:
Template #:
Prelogin:
PM:
PB:
Date/Time:
Date/Time:
Date/Time:
Trip Blank Received: Y N
HCL MeOH TSP Other
Non Conformance(s): Page: of:
YES/ NO

September 24, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2622564

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch

Pace Project No.: 2622564

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant Branch

Pace Project No.: 2622564

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622564001	BRGWC-17S	Water	08/28/19 12:35	08/29/19 11:15
2622564002	BRGWC-34S	Water	08/28/19 13:21	08/29/19 11:15
2622564003	BRGWC-35S	Water	08/28/19 12:08	08/29/19 11:15
2622564004	BRGWC-36S	Water	08/28/19 11:36	08/29/19 11:15
2622564005	BRGWC-37S	Water	08/28/19 14:32	08/29/19 11:15
2622564006	EB-2	Water	08/28/19 12:59	08/29/19 11:15
2622564007	FB-2	Water	08/28/19 11:50	08/29/19 11:15

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SAMPLE ANALYTE COUNT

Project: Plant Branch

Pace Project No.: 2622564

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622564001	BRGWC-17S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564002	BRGWC-34S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564003	BRGWC-35S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564004	BRGWC-36S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564005	BRGWC-37S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564006	EB-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622564007	FB-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: BRGWC-17S **Lab ID: 2622564001** Collected: 08/28/19 12:35 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.240 ± 0.244 (0.495) C:89% T:NA	pCi/L	09/12/19 08:18	13982-63-3	
Radium-228	EPA 9320	-0.314 ± 0.544 (1.32) C:68% T:88%	pCi/L	09/19/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	0.240 ± 0.788 (1.82)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: BRGWC-34S **Lab ID: 2622564002** Collected: 08/28/19 13:21 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.364 ± 0.222 (0.320) C:92% T:NA	pCi/L	09/12/19 08:25	13982-63-3	
Radium-228	EPA 9320	0.447 ± 0.574 (1.22) C:67% T:84%	pCi/L	09/19/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	0.811 ± 0.796 (1.54)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: BRGWC-35S **Lab ID: 2622564003** Collected: 08/28/19 12:08 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.294 ± 0.231 (0.408) C:85% T:NA	pCi/L	09/12/19 08:18	13982-63-3	
Radium-228	EPA 9320	0.701 ± 0.658 (1.35) C:60% T:89%	pCi/L	09/19/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	0.995 ± 0.889 (1.76)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: BRGWC-36S **Lab ID: 2622564004** Collected: 08/28/19 11:36 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.541 ± 0.277 (0.359) C:79% T:NA	pCi/L	09/12/19 08:17	13982-63-3	
Radium-228	EPA 9320	0.325 ± 0.564 (1.23) C:68% T:87%	pCi/L	09/19/19 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.866 ± 0.841 (1.59)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: BRGWC-37S **Lab ID: 2622564005** Collected: 08/28/19 14:32 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.435 ± 0.295 (0.514) C:88% T:NA	pCi/L	09/12/19 08:26	13982-63-3	
Radium-228	EPA 9320	0.374 ± 0.517 (1.11) C:69% T:83%	pCi/L	09/19/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	0.809 ± 0.812 (1.62)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: EB-2 **Lab ID: 2622564006** Collected: 08/28/19 12:59 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.196 ± 0.202 (0.389) C:78% T:NA	pCi/L	09/12/19 08:25	13982-63-3	
Radium-228	EPA 9320	0.778 ± 0.588 (1.16) C:67% T:90%	pCi/L	09/19/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	0.974 ± 0.790 (1.55)	pCi/L	09/23/19 11:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

Sample: FB-2 **Lab ID: 2622564007** Collected: 08/28/19 11:50 Received: 08/29/19 11:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.362 ± 0.235 (0.382) C:93% T:NA	pCi/L	09/12/19 08:17	13982-63-3	
Radium-228	EPA 9320	0.545 ± 0.582 (1.21) C:67% T:84%	pCi/L	09/19/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	0.907 ± 0.817 (1.59)	pCi/L	09/23/19 11:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

QC Batch: 359954

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622564001, 2622564002, 2622564003, 2622564004, 2622564005, 2622564006, 2622564007

METHOD BLANK: 1747365

Matrix: Water

Associated Lab Samples: 2622564001, 2622564002, 2622564003, 2622564004, 2622564005, 2622564006, 2622564007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0188 ± 0.324 (0.758) C:68% T:80%	pCi/L	09/19/19 15:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622564

QC Batch: 359953

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622564001, 2622564002, 2622564003, 2622564004, 2622564005, 2622564006, 2622564007

METHOD BLANK: 1747363

Matrix: Water

Associated Lab Samples: 2622564001, 2622564002, 2622564003, 2622564004, 2622564005, 2622564006, 2622564007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.412 ± 0.223 (0.263) C:94% T:NA	pCi/L	09/12/19 08:42	

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QUALIFIERS

Project: Plant Branch
Pace Project No.: 2622564

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2622564

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622564001	BRGWC-17S	EPA 9315	359953		
2622564002	BRGWC-34S	EPA 9315	359953		
2622564003	BRGWC-35S	EPA 9315	359953		
2622564004	BRGWC-36S	EPA 9315	359953		
2622564005	BRGWC-37S	EPA 9315	359953		
2622564006	EB-2	EPA 9315	359953		
2622564007	FB-2	EPA 9315	359953		
2622564001	BRGWC-17S	EPA 9320	359954		
2622564002	BRGWC-34S	EPA 9320	359954		
2622564003	BRGWC-35S	EPA 9320	359954		
2622564004	BRGWC-36S	EPA 9320	359954		
2622564005	BRGWC-37S	EPA 9320	359954		
2622564006	EB-2	EPA 9320	359954		
2622564007	FB-2	EPA 9320	359954		
2622564001	BRGWC-17S	Total Radium Calculation	362616		
2622564002	BRGWC-34S	Total Radium Calculation	362616		
2622564003	BRGWC-35S	Total Radium Calculation	362616		
2622564004	BRGWC-36S	Total Radium Calculation	362616		
2622564005	BRGWC-37S	Total Radium Calculation	362616		
2622564006	EB-2	Total Radium Calculation	362616		
2622564007	FB-2	Total Radium Calculation	362616		

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CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Billing Information:

WO#: 2622564 **WO#: 2622564** **Due Date: 09/27/19**

PH: BM **CLIENT: GAPower-CCR**

2622564

Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Maner Road
 Atlanta, GA 30339
 Report To: Joju Abraham
 Copy To: Golder

Email To: scsinvoices@southernco.com
 Site Collection Info/Address: Plant Branch

State: Georgia City: Milledgeville Time Zone Collected:
 Project Name: Plant Branch E Project Pace Profile# 326.11.2
 Project Pace Profile# 326.11.2
 Purchase Order #: SCS10382775
 Quote #:
 Turnaround Date Required:
 Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
 (Expedite Charges Apply)

Matrix *
 Matrix *
 Matrix *
 Matrix *
 Matrix *
 Matrix *
 Matrix *
 Matrix *

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Cns
			Date	Time	Date	Time		
BRGWC-17S	GW	G	8/28/2019	12:35	8/28/2019	12:35		6
BRGWC-34S	GW	G	8/28/2019	13:21	8/28/2019	13:21		4
BRGWC-35S	GW	G	8/28/2019	12:08	8/28/2019	12:08		4
BRGWC-36S	GW	G	8/28/2019	11:36	8/28/2019	11:36		4
BRGWC-37S	GW	G	8/28/2019	14:32	8/28/2019	14:32		4
EB-2	WT	G	8/28/2019	12:59	8/28/2019	12:59		4
FB-2	WT	G	8/28/2019	11:50	8/28/2019	11:50		4

Customer Remarks / Special Conditions / Possible Hazards:
 Metals : Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl
 Rad-2 collected at BRGWC-17S

Type of Ice Used: Wet Blue Dry None
 Packing Material Used: N/A
 Radchem sample(s) screened (<500 qpm): Y N NA

Date/Time: 8-29-19/08:25
 Received by/Company: (Signature)
 Date/Time: 8/29/19 11:15
 Received by/Company: (Signature)
 Date/Time:
 Received by/Company: (Signature)

Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses	Fluoride by 300.0	Metals app IV	Radium 226,228
	1	1	4
	1	1	2
	1	1	2
	1	1	2
	1	1	2
	1	1	2
	1	1	2
	1	1	2

Lab Profile/Line:
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact: N/NA
 Custody Signatures Present: N/NA
 Collector Signature Present: N/NA
 Bottles Intact: N/NA
 Correct Bottles: N/NA
 Sufficient Volume: N/NA
 Samples Received on Ice: N/NA
 VOA - Headspace Acceptable: Y/N/NA
 USDA Regulated Solids: Y/N/NA
 Samples in Holding Time: Y/N/NA
 Residual Chlorine Present: Y/N/NA
 Cl Strips: N/NA
 Sample pH Acceptable: N/NA
 pH Strips: Y/N/NA
 Sulfide Present: Y/N/NA
 Lead Acetate Strips: N/NA
 LAB USE ONLY:
 Lab Sample # / Comments:

LAB Sample Temperature Info:
 Temp Blank Received: 85 N NA
 Thermo ID#: 85 N NA
 Cooler 1 Temp. Upon Receipt: 85 N NA
 Cooler 1 Thermo Corr. Factor: 0C
 Cooler 1 Corrected Temp: 0C
 Comments:

LAB Sample Temperature Info:
 Trip Blank Received: Y/N/NA
 HCl, MeOH, TSP, Other

Non Compliance(s): Page: of:
 YES / NO

December 17, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2622604

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 30, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch

Pace Project No.: 2622604

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

Pace Analytical Services Asheville

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Branch
Pace Project No.: 2622604

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622604001	BRGWC-38S	Water	08/29/19 15:29	08/30/19 08:00

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2622604

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622604001	BRGWC-38S	EPA 6020B	KLH	12	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	1	PASI-A

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch

Pace Project No.: 2622604

Sample: BRGWC-38S		Lab ID: 2622604001		Collected: 08/29/19 15:29		Received: 08/30/19 08:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	09/04/19 14:00	09/06/19 15:38	7440-36-0	
Arsenic	0.0013J	mg/L	0.0050	0.00035	1	09/04/19 14:00	09/06/19 15:38	7440-38-2	
Barium	0.016	mg/L	0.010	0.00049	1	09/04/19 14:00	09/06/19 15:38	7440-39-3	
Beryllium	0.0088	mg/L	0.0030	0.000074	1	09/04/19 14:00	09/06/19 15:38	7440-41-7	
Cadmium	0.00053J	mg/L	0.0025	0.00011	1	09/04/19 14:00	09/06/19 15:38	7440-43-9	
Chromium	0.0044J	mg/L	0.010	0.00039	1	09/04/19 14:00	09/06/19 15:38	7440-47-3	
Cobalt	0.21	mg/L	0.0050	0.00030	1	09/04/19 14:00	09/06/19 15:38	7440-48-4	
Lead	0.00035J	mg/L	0.0050	0.000046	1	09/04/19 14:00	09/06/19 15:38	7439-92-1	
Lithium	0.021J	mg/L	0.030	0.00078	1	09/04/19 14:00	09/06/19 15:38	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	09/04/19 14:00	09/06/19 15:38	7439-98-7	
Selenium	0.036	mg/L	0.010	0.0013	1	09/04/19 14:00	09/06/19 15:38	7782-49-2	
Thallium	0.00021J	mg/L	0.0010	0.000052	1	09/04/19 14:00	09/06/19 15:38	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	0.00018J	mg/L	0.00050	0.00014	1	09/05/19 09:07	09/05/19 13:44	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Rev 2.1 1993							
Fluoride	0.90	mg/L	0.10	0.050	1		09/06/19 20:21	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622604

QC Batch: 34720

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2622604001

METHOD BLANK: 156270

Matrix: Water

Associated Lab Samples: 2622604001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	09/05/19 12:57	

LABORATORY CONTROL SAMPLE: 156271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156272 156273

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		2622587001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0023	91	92	75-125	2	20		

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622604

QC Batch: 34718 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622604001

METHOD BLANK: 156264 Matrix: Water
Associated Lab Samples: 2622604001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	09/06/19 14:47	
Arsenic	mg/L	ND	0.0050	0.00035	09/06/19 14:47	
Barium	mg/L	ND	0.010	0.00049	09/06/19 14:47	
Beryllium	mg/L	ND	0.0030	0.000074	09/06/19 14:47	
Cadmium	mg/L	ND	0.0025	0.00011	09/06/19 14:47	
Chromium	mg/L	ND	0.010	0.00039	09/06/19 14:47	
Cobalt	mg/L	ND	0.0050	0.00030	09/06/19 14:47	
Lead	mg/L	ND	0.0050	0.000046	09/06/19 14:47	
Lithium	mg/L	ND	0.030	0.00078	09/06/19 14:47	
Molybdenum	mg/L	ND	0.010	0.00095	09/06/19 14:47	
Selenium	mg/L	ND	0.010	0.0013	09/06/19 14:47	
Thallium	mg/L	ND	0.0010	0.000052	09/06/19 14:47	

LABORATORY CONTROL SAMPLE: 156265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	106	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Cadmium	mg/L	0.1	0.10	101	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.097	97	80-120	
Lithium	mg/L	0.1	0.10	101	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.098	98	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156266 156267

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622596001 Result	Spike Conc.	Spike Conc.	MS Result								
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	107	106	75-125	2	20		
Arsenic	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	4	20		
Barium	mg/L	0.076	0.1	0.1	0.18	0.17	102	98	75-125	2	20		
Beryllium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.099	101	98	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2622604

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156266		156267		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622596001 Result	MS Spike Conc.	MSD Spike Conc.									
Chromium	mg/L	0.0016J	0.1	0.1	0.10	0.10	101	101	75-125	0	20		
Cobalt	mg/L	0.0015J	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Lead	mg/L	0.000070J	0.1	0.1	0.10	0.10	101	100	75-125	0	20		
Lithium	mg/L	0.0070J	0.1	0.1	0.11	0.10	98	97	75-125	2	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	0	20		
Selenium	mg/L	0.0023J	0.1	0.1	0.098	0.099	96	97	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2622604

QC Batch: 496440 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622604001

METHOD BLANK: 2673683 Matrix: Water
Associated Lab Samples: 2622604001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.10	0.050	09/06/19 13:48	

LABORATORY CONTROL SAMPLE: 2673684

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2673685 2673686

Parameter	Units	2622572001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Fluoride	mg/L	0.78	2.5	2.5	4.9	4.8	164	160	90-110	2	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2673687 2673688

Parameter	Units	2622502009 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Fluoride	mg/L	ND	2.5	2.5	3.1	2.7	124	106	90-110	16	10	M1,R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Branch
Pace Project No.: 2622604

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2622604

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622604001	BRGWC-38S	EPA 3005A	34718	EPA 6020B	34727
2622604001	BRGWC-38S	EPA 7470A	34720	EPA 7470A	34792
2622604001	BRGWC-38S	EPA 300.0 Rev 2.1 1993	496440		

REPORT OF LABORATORY ANALYSIS

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September 24, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2622605

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on August 30, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Kristen Jurinko, Golder Associates Inc.
Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch
Pace Project No.: 2622605

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Branch
Pace Project No.: 2622605

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622605001	BRGWC-38S	Water	08/29/19 15:29	08/30/19 08:00

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2622605

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622605001	BRGWC-38S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622605

Sample: BRGWC-38S **Lab ID: 2622605001** Collected: 08/29/19 15:29 Received: 08/30/19 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	1.37 ± 0.424 (0.311) C:91% T:NA	pCi/L	09/12/19 08:42	13982-63-3	
Radium-228	EPA 9320	2.31 ± 0.668 (0.756) C:67% T:84%	pCi/L	09/19/19 15:18	15262-20-1	
Total Radium	Total Radium Calculation	3.68 ± 1.09 (1.07)	pCi/L	09/23/19 11:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622605

QC Batch: 359954

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622605001

METHOD BLANK: 1747365

Matrix: Water

Associated Lab Samples: 2622605001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0188 ± 0.324 (0.758) C:68% T:80%	pCi/L	09/19/19 15:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2622605

QC Batch: 359953

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622605001

METHOD BLANK: 1747363

Matrix: Water

Associated Lab Samples: 2622605001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.412 ± 0.223 (0.263) C:94% T:NA	pCi/L	09/12/19 08:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Branch
Pace Project No.: 2622605

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch

Pace Project No.: 2622605

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622605001	BRGWC-38S	EPA 9315	359953		
2622605001	BRGWC-38S	EPA 9320	359954		
2622605001	BRGWC-38S	Total Radium Calculation	362615		

REPORT OF LABORATORY ANALYSIS

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December 17, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch E
Pace Project No.: 2624389

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch E
Pace Project No.: 2624389

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Branch E
Pace Project No.: 2624389

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624389001	BRGWA-6S	Water	10/15/19 08:45	10/16/19 12:30
2624389002	BRGWA-5S	Water	10/15/19 09:00	10/16/19 12:30
2624389003	BRGWA-5I	Water	10/15/19 10:20	10/16/19 12:30
2624389004	BRGWA-2S	Water	10/15/19 09:55	10/16/19 12:30
2624389005	BRGWA-2I	Water	10/15/19 11:17	10/16/19 12:30

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SAMPLE ANALYTE COUNT

Project: Plant Branch E

Pace Project No.: 2624389

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624389001	BRGWA-6S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624389002	BRGWA-5S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624389003	BRGWA-5I	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624389004	BRGWA-2S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624389005	BRGWA-2I	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch E
Pace Project No.: 2624389

Sample: BRGWA-6S		Lab ID: 2624389001		Collected: 10/15/19 08:45	Received: 10/16/19 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 19:43	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 19:43	7440-38-2	
Barium	0.013	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 19:43	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 19:43	7440-41-7	
Boron	0.010J	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 19:43	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 19:43	7440-43-9	
Calcium	3.5	mg/L	0.10	0.011	1	10/20/19 16:44	10/22/19 19:43	7440-70-2	
Chromium	0.014	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 19:43	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 19:43	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 19:43	7439-92-1	
Lithium	0.0024J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 19:43	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 19:43	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 19:43	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 19:43	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	63.0	mg/L	10.0	10.0	1		10/18/19 10:45		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	2.4	mg/L	1.0	0.024	1		10/21/19 19:30	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/21/19 19:30	16984-48-8	
Sulfate	0.48J	mg/L	1.0	0.017	1		10/21/19 19:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch E
Pace Project No.: 2624389

Sample: BRGWA-5S Lab ID: 2624389002 Collected: 10/15/19 09:00 Received: 10/16/19 12:30 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 19:55	7440-36-0	
Arsenic	0.00039J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 19:55	7440-38-2	B
Barium	0.049	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 19:55	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 19:55	7440-41-7	
Boron	0.0060J	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 19:55	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 19:55	7440-43-9	
Calcium	20.0	mg/L	5.0	0.55	50	10/20/19 16:44	10/22/19 20:00	7440-70-2	
Chromium	0.0055J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 19:55	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 19:55	7440-48-4	
Lead	0.000079J	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 19:55	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 19:55	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 19:55	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 19:55	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 19:55	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	144	mg/L	10.0	10.0	1		10/18/19 10:46		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	3.7	mg/L	1.0	0.024	1		10/21/19 19:52	16887-00-6	
Fluoride	0.045J	mg/L	0.30	0.029	1		10/21/19 19:52	16984-48-8	
Sulfate	0.68J	mg/L	1.0	0.017	1		10/21/19 19:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch E
Pace Project No.: 2624389

Sample: BRGWA-5I		Lab ID: 2624389003		Collected: 10/15/19 10:20		Received: 10/16/19 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 20:06	7440-36-0	
Arsenic	0.00058J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 20:06	7440-38-2	B
Barium	0.032	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 20:06	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 20:06	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 20:06	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 20:06	7440-43-9	
Calcium	14.4	mg/L	5.0	0.55	50	10/20/19 16:44	10/22/19 20:12	7440-70-2	
Chromium	0.0047J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 20:06	7440-47-3	
Cobalt	0.00083J	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 20:06	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 20:06	7439-92-1	
Lithium	0.0020J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 20:06	7439-93-2	
Molybdenum	0.0035J	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 20:06	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 20:06	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 20:06	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	175	mg/L	10.0	10.0	1		10/18/19 10:46		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	4.2	mg/L	1.0	0.024	1		10/21/19 20:14	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/21/19 20:14	16984-48-8	
Sulfate	3.8	mg/L	1.0	0.017	1		10/21/19 20:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch E
Pace Project No.: 2624389

Sample: BRGWA-2S		Lab ID: 2624389004		Collected: 10/15/19 09:55	Received: 10/16/19 12:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 20:18	7440-36-0		
Arsenic	0.00063J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 20:18	7440-38-2	B	
Barium	0.0091J	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 20:18	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 20:18	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 20:18	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 20:18	7440-43-9		
Calcium	3.7	mg/L	0.10	0.011	1	10/20/19 16:44	10/22/19 20:18	7440-70-2		
Chromium	0.0083J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 20:18	7440-47-3		
Cobalt	0.00097J	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 20:18	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 20:18	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 20:18	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 20:18	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 20:18	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 20:18	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	66.0	mg/L	10.0	10.0	1		10/18/19 10:46			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	1.9	mg/L	1.0	0.024	1		10/21/19 21:42	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		10/21/19 21:42	16984-48-8		
Sulfate	0.47J	mg/L	1.0	0.017	1		10/21/19 21:42	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch E
Pace Project No.: 2624389

Sample: BRGWA-2I Lab ID: 2624389005 Collected: 10/15/19 11:17 Received: 10/16/19 12:30 Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS Analytical Method: EPA 6020B Preparation Method: EPA 3005A									
Antimony	0.00047J	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 21:09	7440-36-0	
Arsenic	0.00080J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 21:09	7440-38-2	B
Barium	0.013	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 21:09	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 21:09	7440-41-7	
Boron	0.0067J	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 21:09	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 21:09	7440-43-9	
Calcium	15.1	mg/L	5.0	0.55	50	10/20/19 16:44	10/22/19 21:15	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 21:09	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 21:09	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 21:09	7439-92-1	
Lithium	0.028J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 21:09	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 21:09	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 21:09	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 21:09	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	140	mg/L	10.0	10.0	1		10/18/19 10:46		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Chloride	2.2	mg/L	1.0	0.024	1		10/21/19 22:04	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/21/19 22:04	16984-48-8	
Sulfate	5.2	mg/L	1.0	0.017	1		10/21/19 22:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch E
Pace Project No.: 2624389

QC Batch: 37136 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624389001, 2624389002, 2624389003, 2624389004, 2624389005

METHOD BLANK: 167849 Matrix: Water
Associated Lab Samples: 2624389001, 2624389002, 2624389003, 2624389004, 2624389005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/22/19 18:23	
Arsenic	mg/L	0.00059J	0.0050	0.00035	10/22/19 18:23	
Barium	mg/L	ND	0.010	0.00049	10/22/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000074	10/22/19 18:23	
Boron	mg/L	ND	0.040	0.0049	10/22/19 18:23	
Cadmium	mg/L	ND	0.0025	0.00011	10/22/19 18:23	
Calcium	mg/L	ND	0.10	0.011	10/22/19 18:23	
Chromium	mg/L	ND	0.010	0.00039	10/22/19 18:23	
Cobalt	mg/L	ND	0.0050	0.00030	10/22/19 18:23	
Lead	mg/L	ND	0.0050	0.000046	10/22/19 18:23	
Lithium	mg/L	ND	0.030	0.00078	10/22/19 18:23	
Molybdenum	mg/L	ND	0.010	0.00095	10/22/19 18:23	
Selenium	mg/L	ND	0.010	0.0013	10/22/19 18:23	
Thallium	mg/L	ND	0.0010	0.000052	10/22/19 18:23	

LABORATORY CONTROL SAMPLE: 167850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.098	98	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	0.96	96	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	0.96	96	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.095	95	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476 168477

Parameter	Units	2624389004 Result	MS		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.								
Antimony	mg/L	ND	0.1	0.1	0.098	0.097	97	97	75-125	0	20	

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QUALITY CONTROL DATA

Project: Plant Branch E
Pace Project No.: 2624389

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476		168477		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624389004 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00063J	0.1	0.1	0.095	0.098	95	97	75-125	3	20		
Barium	mg/L	0.0091J	0.1	0.1	0.11	0.11	100	103	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.092	0.094	92	94	75-125	2	20		
Boron	mg/L	ND	1	1	0.89	0.94	88	93	75-125	6	20		
Cadmium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	0	20		
Calcium	mg/L	3.7	1	1	4.5	4.5	88	82	75-125	1	20		
Chromium	mg/L	0.0083J	0.1	0.1	0.11	0.11	97	100	75-125	2	20		
Cobalt	mg/L	0.00097J	0.1	0.1	0.096	0.096	95	95	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		
Lithium	mg/L	ND	0.1	0.1	0.092	0.094	91	93	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.093	0.10	93	100	75-125	7	20		
Thallium	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant Branch E
Pace Project No.: 2624389

QC Batch: 37138 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624389001, 2624389002, 2624389003, 2624389004, 2624389005

METHOD BLANK: 167857 Matrix: Water
Associated Lab Samples: 2624389001, 2624389002, 2624389003, 2624389004, 2624389005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/21/19 16:11	
Fluoride	mg/L	ND	0.30	0.029	10/21/19 16:11	
Sulfate	mg/L	ND	1.0	0.017	10/21/19 16:11	

LABORATORY CONTROL SAMPLE: 167858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	9.9	99	90-110	
Fluoride	mg/L	10	10.2	102	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 167859 167860

Parameter	Units	2624388001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	20.9	10	10	28.1	28.1	72	72	90-110	0	15	M1
Fluoride	mg/L	ND	10	10	10.0	10.1	100	101	90-110	1	15	

MATRIX SPIKE SAMPLE: 167861

Parameter	Units	2624389005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		2.2	10	12.2	100	90-110
Fluoride	mg/L		ND	10	10.3	103	90-110
Sulfate	mg/L		5.2	10	14.8	96	90-110

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QUALIFIERS

Project: Plant Branch E

Pace Project No.: 2624389

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch E
Pace Project No.: 2624389

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624389001	BRGWA-6S	EPA 3005A	37136	EPA 6020B	37255
2624389002	BRGWA-5S	EPA 3005A	37136	EPA 6020B	37255
2624389003	BRGWA-5I	EPA 3005A	37136	EPA 6020B	37255
2624389004	BRGWA-2S	EPA 3005A	37136	EPA 6020B	37255
2624389005	BRGWA-2I	EPA 3005A	37136	EPA 6020B	37255
2624389001	BRGWA-6S	SM 2540C	37181		
2624389002	BRGWA-5S	SM 2540C	37181		
2624389003	BRGWA-5I	SM 2540C	37181		
2624389004	BRGWA-2S	SM 2540C	37181		
2624389005	BRGWA-2I	SM 2540C	37181		
2624389001	BRGWA-6S	EPA 300.0	37138		
2624389002	BRGWA-5S	EPA 300.0	37138		
2624389003	BRGWA-5I	EPA 300.0	37138		
2624389004	BRGWA-2S	EPA 300.0	37138		
2624389005	BRGWA-2I	EPA 300.0	37138		

REPORT OF LABORATORY ANALYSIS

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November 14, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch E
Pace Project No.: 2624391

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch E
Pace Project No.: 2624391

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant Branch E

Pace Project No.: 2624391

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624391001	BRGWA-6S	Water	10/15/19 08:45	10/16/19 12:30
2624391002	BRGWA-5S	Water	10/15/19 09:00	10/16/19 12:30
2624391003	BRGWA-5I	Water	10/15/19 10:20	10/16/19 12:30
2624391004	BRGWA-2S	Water	10/15/19 09:55	10/16/19 12:30
2624391005	BRGWA-2I	Water	10/15/19 11:17	10/16/19 12:30

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SAMPLE ANALYTE COUNT

Project: Plant Branch E

Pace Project No.: 2624391

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624391001	BRGWA-6S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624391002	BRGWA-5S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624391003	BRGWA-5I	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624391004	BRGWA-2S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624391005	BRGWA-2I	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

Sample: BRGWA-6S **Lab ID: 2624391001** Collected: 10/15/19 08:45 Received: 10/16/19 12:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.402 ± 0.284 (0.490) C:95% T:NA	pCi/L	11/07/19 07:47	13982-63-3	
Radium-228	EPA 9320	-0.226 ± 0.787 (1.88) C:63% T:84%	pCi/L	11/07/19 20:09	15262-20-1	
Total Radium	Total Radium Calculation	0.402 ± 1.07 (2.37)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

Sample: BRGWA-5S **Lab ID: 2624391002** Collected: 10/15/19 09:00 Received: 10/16/19 12:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.467 ± 0.301 (0.486) C:92% T:NA	pCi/L	11/07/19 07:47	13982-63-3	
Radium-228	EPA 9320	-0.362 ± 0.637 (1.56) C:68% T:90%	pCi/L	11/07/19 20:09	15262-20-1	
Total Radium	Total Radium Calculation	0.467 ± 0.938 (2.05)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

Sample: BRGWA-5I **Lab ID: 2624391003** Collected: 10/15/19 10:20 Received: 10/16/19 12:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.651 ± 0.319 (0.390) C:93% T:NA	pCi/L	11/07/19 07:47	13982-63-3	
Radium-228	EPA 9320	0.0627 ± 1.06 (2.41) C:62% T:81%	pCi/L	11/07/19 20:09	15262-20-1	
Total Radium	Total Radium Calculation	0.714 ± 1.38 (2.80)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

Sample: BRGWA-2S **Lab ID: 2624391004** Collected: 10/15/19 09:55 Received: 10/16/19 12:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.212 ± 0.208 (0.385) C:90% T:NA	pCi/L	11/07/19 07:47	13982-63-3	
Radium-228	EPA 9320	0.595 ± 0.995 (2.17) C:64% T:69%	pCi/L	11/07/19 20:09	15262-20-1	
Total Radium	Total Radium Calculation	0.807 ± 1.20 (2.56)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

Sample: BRGWA-2I **Lab ID: 2624391005** Collected: 10/15/19 11:17 Received: 10/16/19 12:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.184 ± 0.199 (0.381) C:94% T:NA	pCi/L	11/07/19 07:16	13982-63-3	
Radium-228	EPA 9320	0.831 ± 0.868 (1.80) C:64% T:76%	pCi/L	11/07/19 20:10	15262-20-1	
Total Radium	Total Radium Calculation	1.02 ± 1.07 (2.18)	pCi/L	11/12/19 10:42	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

QC Batch: 368367 Analysis Method: EPA 9315

QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624391001, 2624391002, 2624391003, 2624391004, 2624391005

METHOD BLANK: 1787254 Matrix: Water

Associated Lab Samples: 2624391001, 2624391002, 2624391003, 2624391004, 2624391005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.416 ± 0.262 (0.396) C:98% T:NA	pCi/L	11/07/19 07:47	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch E

Pace Project No.: 2624391

QC Batch: 368368

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624391001, 2624391002, 2624391003, 2624391004, 2624391005

METHOD BLANK: 1787255

Matrix: Water

Associated Lab Samples: 2624391001, 2624391002, 2624391003, 2624391004, 2624391005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.536 ± 0.405 (0.790) C:74% T:76%	pCi/L	11/07/19 14:59	

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QUALIFIERS

Project: Plant Branch E

Pace Project No.: 2624391

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch E
Pace Project No.: 2624391

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624391001	BRGWA-6S	EPA 9315	368367		
2624391002	BRGWA-5S	EPA 9315	368367		
2624391003	BRGWA-5I	EPA 9315	368367		
2624391004	BRGWA-2S	EPA 9315	368367		
2624391005	BRGWA-2I	EPA 9315	368367		
2624391001	BRGWA-6S	EPA 9320	368368		
2624391002	BRGWA-5S	EPA 9320	368368		
2624391003	BRGWA-5I	EPA 9320	368368		
2624391004	BRGWA-2S	EPA 9320	368368		
2624391005	BRGWA-2I	EPA 9320	368368		
2624391001	BRGWA-6S	Total Radium Calculation	370511		
2624391002	BRGWA-5S	Total Radium Calculation	370511		
2624391003	BRGWA-5I	Total Radium Calculation	370511		
2624391004	BRGWA-2S	Total Radium Calculation	370512		
2624391005	BRGWA-2I	Total Radium Calculation	370512		

REPORT OF LABORATORY ANALYSIS

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December 17, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2624484

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring for
Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch
Pace Project No.: 2624484

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Branch

Pace Project No.: 2624484

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624484001	BRGWC-33S	Water	10/16/19 09:48	10/17/19 11:35
2624484002	BRGWC-34S	Water	10/16/19 10:46	10/17/19 11:35
2624484003	BRGWC-35S	Water	10/16/19 12:02	10/17/19 11:35
2624484004	BRGWC-37S	Water	10/16/19 13:10	10/17/19 11:35
2624484005	BRGWC-38S	Water	10/16/19 14:45	10/17/19 11:35
2624484006	Dup-1	Water	10/16/19 00:00	10/17/19 11:35
2624484007	EB-1	Water	10/16/19 11:00	10/17/19 11:35
2624484008	FB-2	Water	10/16/19 13:05	10/17/19 11:35

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2624484

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624484001	BRGWC-33S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484002	BRGWC-34S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484003	BRGWC-35S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484004	BRGWC-37S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484005	BRGWC-38S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484006	Dup-1	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2624484007	EB-1	EPA 6020B	CSW	14
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624484008	FB-2	EPA 6020B	CSW	14
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: BRGWC-33S		Lab ID: 2624484001		Collected: 10/16/19 09:48		Received: 10/17/19 11:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 23:04	7440-36-0		
Arsenic	0.00056J	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 23:04	7440-38-2	B	
Barium	0.019	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 23:04	7440-39-3		
Beryllium	0.0018J	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 23:04	7440-41-7		
Boron	1.1	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 23:04	7440-42-8		
Cadmium	0.00039J	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 23:04	7440-43-9		
Calcium	46.5	mg/L	5.0	0.55	50	10/20/19 16:44	10/22/19 23:09	7440-70-2		
Chromium	0.00049J	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 23:04	7440-47-3		
Cobalt	0.042	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 23:04	7440-48-4		
Lead	0.000088J	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 23:04	7439-92-1		
Lithium	0.0098J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 23:04	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 23:04	7439-98-7		
Selenium	0.0028J	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 23:04	7782-49-2		
Thallium	0.00019J	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 23:04	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	281	mg/L	10.0	10.0	1		10/22/19 13:14			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	5.4	mg/L	1.0	0.024	1		10/24/19 17:04	16887-00-6		
Fluoride	0.17J	mg/L	0.30	0.029	1		10/24/19 17:04	16984-48-8		
Sulfate	226	mg/L	20.0	0.34	20		10/25/19 03:29	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: BRGWC-34S		Lab ID: 2624484002		Collected: 10/16/19 10:46		Received: 10/17/19 11:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/20/19 16:44	10/22/19 23:15	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	10/20/19 16:44	10/22/19 23:15	7440-38-2		
Barium	0.022	mg/L	0.010	0.00049	1	10/20/19 16:44	10/22/19 23:15	7440-39-3		
Beryllium	0.00014J	mg/L	0.0030	0.000074	1	10/20/19 16:44	10/22/19 23:15	7440-41-7		
Boron	2.3	mg/L	0.040	0.0049	1	10/20/19 16:44	10/22/19 23:15	7440-42-8		
Cadmium	0.00040J	mg/L	0.0025	0.00011	1	10/20/19 16:44	10/22/19 23:15	7440-43-9		
Calcium	78.2	mg/L	5.0	0.55	50	10/20/19 16:44	10/22/19 23:21	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/20/19 16:44	10/22/19 23:15	7440-47-3		
Cobalt	0.0043J	mg/L	0.0050	0.00030	1	10/20/19 16:44	10/22/19 23:15	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/20/19 16:44	10/22/19 23:15	7439-92-1		
Lithium	0.00078J	mg/L	0.030	0.00078	1	10/20/19 16:44	10/22/19 23:15	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/20/19 16:44	10/22/19 23:15	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/20/19 16:44	10/22/19 23:15	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/20/19 16:44	10/22/19 23:15	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	473	mg/L	10.0	10.0	1		10/22/19 13:14			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	7.3	mg/L	1.0	0.024	1		10/24/19 18:08	16887-00-6		
Fluoride	0.13J	mg/L	0.30	0.029	1		10/24/19 18:08	16984-48-8		
Sulfate	325	mg/L	20.0	0.34	20		10/25/19 03:51	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: BRGWC-35S		Lab ID: 2624484003		Collected: 10/16/19 12:02		Received: 10/17/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 18:43	7440-36-0	
Arsenic	0.00040J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 18:43	7440-38-2	
Barium	0.037	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 18:43	7440-39-3	
Beryllium	0.00015J	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 18:43	7440-41-7	
Boron	2.2	mg/L	2.0	0.25	50	10/21/19 16:03	10/23/19 18:49	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 18:43	7440-43-9	
Calcium	61.2	mg/L	5.0	0.55	50	10/21/19 16:03	10/23/19 18:49	7440-70-2	M6
Chromium	0.0064J	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 18:43	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 18:43	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 18:43	7439-92-1	
Lithium	0.0022J	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 18:43	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 18:43	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 18:43	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 18:43	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	481	mg/L	10.0	10.0	1		10/22/19 13:15		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	6.6	mg/L	1.0	0.024	1		10/24/19 18:29	16887-00-6	
Fluoride	0.080J	mg/L	0.30	0.029	1		10/24/19 18:29	16984-48-8	
Sulfate	277	mg/L	20.0	0.34	20		10/25/19 04:13	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: BRGWC-37S		Lab ID: 2624484004		Collected: 10/16/19 13:10	Received: 10/17/19 11:35	Matrix: Water			
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 19:34	7440-36-0	
Arsenic	0.00078J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 19:34	7440-38-2	
Barium	0.024	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 19:34	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 19:34	7440-41-7	
Boron	0.0055J	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 19:34	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 19:34	7440-43-9	
Calcium	3.4	mg/L	0.10	0.011	1	10/21/19 16:03	10/23/19 19:34	7440-70-2	
Chromium	0.0014J	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 19:34	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 19:34	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 19:34	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 19:34	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 19:34	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 19:34	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 19:34	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	49.0	mg/L	10.0	10.0	1		10/22/19 13:15		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	2.3	mg/L	1.0	0.024	1		10/24/19 18:50	16887-00-6	
Fluoride	0.059J	mg/L	0.30	0.029	1		10/24/19 18:50	16984-48-8	
Sulfate	0.29J	mg/L	1.0	0.017	1		10/24/19 18:50	14808-79-8	

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: BRGWC-38S		Lab ID: 2624484005		Collected: 10/16/19 14:45		Received: 10/17/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 19:46	7440-36-0	
Arsenic	0.0024J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 19:46	7440-38-2	
Barium	0.015	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 19:46	7440-39-3	
Beryllium	0.0079	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 19:46	7440-41-7	
Boron	1.5	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 19:46	7440-42-8	
Cadmium	0.00057J	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 19:46	7440-43-9	
Calcium	38.4	mg/L	5.0	0.55	50	10/21/19 16:03	10/23/19 19:52	7440-70-2	
Chromium	0.0038J	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 19:46	7440-47-3	
Cobalt	0.21	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 19:46	7440-48-4	
Lead	0.00035J	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 19:46	7439-92-1	
Lithium	0.020J	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 19:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 19:46	7439-98-7	
Selenium	0.033	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 19:46	7782-49-2	
Thallium	0.00020J	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 19:46	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	630	mg/L	10.0	10.0	1		10/22/19 13:15		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	6.4	mg/L	1.0	0.024	1		10/24/19 19:11	16887-00-6	
Fluoride	0.61	mg/L	0.30	0.029	1		10/24/19 19:11	16984-48-8	
Sulfate	432	mg/L	20.0	0.34	20		10/25/19 04:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: Dup-1		Lab ID: 2624484006		Collected: 10/16/19 00:00		Received: 10/17/19 11:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 19:57	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 19:57	7440-38-2	
Barium	0.023	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 19:57	7440-39-3	
Beryllium	0.00013J	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 19:57	7440-41-7	
Boron	2.4	mg/L	2.0	0.25	50	10/21/19 16:03	10/23/19 20:03	7440-42-8	
Cadmium	0.00040J	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 19:57	7440-43-9	
Calcium	81.4	mg/L	5.0	0.55	50	10/21/19 16:03	10/23/19 20:03	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 19:57	7440-47-3	
Cobalt	0.0043J	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 19:57	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 19:57	7439-92-1	
Lithium	0.00079J	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 19:57	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 19:57	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 19:57	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 19:57	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/22/19 13:15		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	7.5	mg/L	1.0	0.024	1		10/24/19 19:33	16887-00-6	
Fluoride	0.13J	mg/L	0.30	0.029	1		10/24/19 19:33	16984-48-8	
Sulfate	317	mg/L	20.0	0.34	20		10/25/19 04:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: EB-1		Lab ID: 2624484007		Collected: 10/16/19 11:00	Received: 10/17/19 11:35	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 20:09	7440-36-0		
Arsenic	0.00079J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 20:09	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 20:09	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 20:09	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 20:09	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 20:09	7440-43-9		
Calcium	0.018J	mg/L	0.10	0.011	1	10/21/19 16:03	10/23/19 20:09	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 20:09	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 20:09	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 20:09	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 20:09	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 20:09	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 20:09	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 20:09	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/23/19 15:46			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	0.059J	mg/L	1.0	0.024	1		10/24/19 19:54	16887-00-6	B	
Fluoride	ND	mg/L	0.30	0.029	1		10/24/19 19:54	16984-48-8		
Sulfate	0.042J	mg/L	1.0	0.017	1		10/24/19 19:54	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Branch
Pace Project No.: 2624484

Sample: FB-2		Lab ID: 2624484008		Collected: 10/16/19 13:05		Received: 10/17/19 11:35		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	10/21/19 16:03	10/23/19 20:15	7440-36-0		
Arsenic	0.0011J	mg/L	0.0050	0.00035	1	10/21/19 16:03	10/23/19 20:15	7440-38-2		
Barium	ND	mg/L	0.010	0.00049	1	10/21/19 16:03	10/23/19 20:15	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	10/21/19 16:03	10/23/19 20:15	7440-41-7		
Boron	ND	mg/L	0.040	0.0049	1	10/21/19 16:03	10/23/19 20:15	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	10/21/19 16:03	10/23/19 20:15	7440-43-9		
Calcium	0.019J	mg/L	0.10	0.011	1	10/21/19 16:03	10/23/19 20:15	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/21/19 16:03	10/23/19 20:15	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/21/19 16:03	10/23/19 20:15	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/21/19 16:03	10/23/19 20:15	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/21/19 16:03	10/23/19 20:15	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/21/19 16:03	10/23/19 20:15	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	10/21/19 16:03	10/23/19 20:15	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	10/21/19 16:03	10/23/19 20:15	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	16.0	mg/L	10.0	10.0	1		10/23/19 15:47			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	0.034J	mg/L	1.0	0.024	1		10/24/19 21:21	16887-00-6	B	
Fluoride	ND	mg/L	0.30	0.029	1		10/24/19 21:21	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		10/24/19 21:21	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2624484

QC Batch: 37136 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624484001, 2624484002

METHOD BLANK: 167849 Matrix: Water
Associated Lab Samples: 2624484001, 2624484002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/22/19 18:23	
Arsenic	mg/L	0.00059J	0.0050	0.00035	10/22/19 18:23	
Barium	mg/L	ND	0.010	0.00049	10/22/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000074	10/22/19 18:23	
Boron	mg/L	ND	0.040	0.0049	10/22/19 18:23	
Cadmium	mg/L	ND	0.0025	0.00011	10/22/19 18:23	
Calcium	mg/L	ND	0.10	0.011	10/22/19 18:23	
Chromium	mg/L	ND	0.010	0.00039	10/22/19 18:23	
Cobalt	mg/L	ND	0.0050	0.00030	10/22/19 18:23	
Lead	mg/L	ND	0.0050	0.000046	10/22/19 18:23	
Lithium	mg/L	ND	0.030	0.00078	10/22/19 18:23	
Molybdenum	mg/L	ND	0.010	0.00095	10/22/19 18:23	
Selenium	mg/L	ND	0.010	0.0013	10/22/19 18:23	
Thallium	mg/L	ND	0.0010	0.000052	10/22/19 18:23	

LABORATORY CONTROL SAMPLE: 167850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.098	98	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	0.96	96	80-120	
Cadmium	mg/L	0.1	0.097	97	80-120	
Calcium	mg/L	1	0.96	96	80-120	
Chromium	mg/L	0.1	0.098	98	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.095	95	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476 168477

Parameter	Units	2624389004 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	Spike Conc.							
Antimony	mg/L	ND	0.1	0.1	0.098	0.097	97	97	75-125	0	20

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2624484

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168476		168477		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624389004 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00063J	0.1	0.1	0.095	0.098	95	97	75-125	3	20		
Barium	mg/L	0.0091J	0.1	0.1	0.11	0.11	100	103	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.092	0.094	92	94	75-125	2	20		
Boron	mg/L	ND	1	1	0.89	0.94	88	93	75-125	6	20		
Cadmium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	0	20		
Calcium	mg/L	3.7	1	1	4.5	4.5	88	82	75-125	1	20		
Chromium	mg/L	0.0083J	0.1	0.1	0.11	0.11	97	100	75-125	2	20		
Cobalt	mg/L	0.00097J	0.1	0.1	0.096	0.096	95	95	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		
Lithium	mg/L	ND	0.1	0.1	0.092	0.094	91	93	75-125	3	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.093	0.10	93	100	75-125	7	20		
Thallium	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20		

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2624484

QC Batch: 37286 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624484003, 2624484004, 2624484005, 2624484006, 2624484007, 2624484008

METHOD BLANK: 168679 Matrix: Water
Associated Lab Samples: 2624484003, 2624484004, 2624484005, 2624484006, 2624484007, 2624484008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	10/23/19 18:31	
Arsenic	mg/L	ND	0.0050	0.00035	10/23/19 18:31	
Barium	mg/L	ND	0.010	0.00049	10/23/19 18:31	
Beryllium	mg/L	ND	0.0030	0.000074	10/23/19 18:31	
Boron	mg/L	ND	0.040	0.0049	10/23/19 18:31	
Cadmium	mg/L	ND	0.0025	0.00011	10/23/19 18:31	
Calcium	mg/L	ND	0.10	0.011	10/23/19 18:31	
Chromium	mg/L	ND	0.010	0.00039	10/23/19 18:31	
Cobalt	mg/L	ND	0.0050	0.00030	10/23/19 18:31	
Lead	mg/L	ND	0.0050	0.000046	10/23/19 18:31	
Lithium	mg/L	ND	0.030	0.00078	10/23/19 18:31	
Molybdenum	mg/L	ND	0.010	0.00095	10/23/19 18:31	
Selenium	mg/L	ND	0.010	0.0013	10/23/19 18:31	
Thallium	mg/L	ND	0.0010	0.000052	10/23/19 18:31	

LABORATORY CONTROL SAMPLE: 168680

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	102	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	0.99	99	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.099	99	80-120	
Cobalt	mg/L	0.1	0.098	98	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.10	101	80-120	
Selenium	mg/L	0.1	0.095	95	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681 168682

Parameter	Units	2624484003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2624484

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 168681		168682		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2624484003 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00040J	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Barium	mg/L	0.037	0.1	0.1	0.15	0.14	109	107	75-125	1	20		
Beryllium	mg/L	0.00015J	0.1	0.1	0.095	0.094	95	94	75-125	0	20		
Boron	mg/L	2.2	1	1	3.1	3.1	90	90	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	1	20		
Calcium	mg/L	61.2	1	1	62.7	66.1	145	485	75-125	5	20	M6	
Chromium	mg/L	0.0064J	0.1	0.1	0.11	0.10	100	98	75-125	2	20		
Cobalt	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lead	mg/L	ND	0.1	0.1	0.097	0.097	97	97	75-125	0	20		
Lithium	mg/L	0.0022J	0.1	0.1	0.096	0.095	94	93	75-125	1	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20		
Selenium	mg/L	ND	0.1	0.1	0.096	0.096	96	95	75-125	0	20		
Thallium	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	0	20		

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2624484

QC Batch: 37331 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624484001, 2624484002, 2624484003, 2624484004, 2624484005, 2624484006

LABORATORY CONTROL SAMPLE: 168856

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	399	100	84-108	

SAMPLE DUPLICATE: 168857

Parameter	Units	2624541001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	237	249	5	10	

SAMPLE DUPLICATE: 168858

Parameter	Units	2624432004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	67.0	69.0	3	10	

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QUALITY CONTROL DATA

Project: Plant Branch

Pace Project No.: 2624484

QC Batch:	37419	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples:	2624484007, 2624484008		

LABORATORY CONTROL SAMPLE: 169291

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	391	98	84-108	

SAMPLE DUPLICATE: 169292

Parameter	Units	2624484007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 169293

Parameter	Units	2624491004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	500	501	0	10	

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QUALITY CONTROL DATA

Project: Plant Branch
Pace Project No.: 2624484

QC Batch: 37461 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624484001, 2624484002, 2624484003, 2624484004, 2624484005, 2624484006, 2624484007, 2624484008

METHOD BLANK: 169631 Matrix: Water
Associated Lab Samples: 2624484001, 2624484002, 2624484003, 2624484004, 2624484005, 2624484006, 2624484007, 2624484008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.043J	1.0	0.024	10/24/19 16:21	
Fluoride	mg/L	ND	0.30	0.029	10/24/19 16:21	
Sulfate	mg/L	ND	1.0	0.017	10/24/19 16:21	

LABORATORY CONTROL SAMPLE: 169632

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.6	106	90-110	
Fluoride	mg/L	10	10.9	109	90-110	
Sulfate	mg/L	10	10.4	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 169633 169634

Parameter	Units	2624484001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.4	10	10	15.3	15.3	99	100	90-110	0	15	
Fluoride	mg/L	0.17J	10	10	11.1	11.1	110	110	90-110	0	15	

MATRIX SPIKE SAMPLE: 169635

Parameter	Units	2624487002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.6	10	14.7	101	90-110	
Fluoride	mg/L	0.076J	10	10.6	106	90-110	

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QUALIFIERS

Project: Plant Branch

Pace Project No.: 2624484

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2624484

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624484001	BRGWC-33S	EPA 3005A	37136	EPA 6020B	37255
2624484002	BRGWC-34S	EPA 3005A	37136	EPA 6020B	37255
2624484003	BRGWC-35S	EPA 3005A	37286	EPA 6020B	37308
2624484004	BRGWC-37S	EPA 3005A	37286	EPA 6020B	37308
2624484005	BRGWC-38S	EPA 3005A	37286	EPA 6020B	37308
2624484006	Dup-1	EPA 3005A	37286	EPA 6020B	37308
2624484007	EB-1	EPA 3005A	37286	EPA 6020B	37308
2624484008	FB-2	EPA 3005A	37286	EPA 6020B	37308
2624484001	BRGWC-33S	SM 2540C	37331		
2624484002	BRGWC-34S	SM 2540C	37331		
2624484003	BRGWC-35S	SM 2540C	37331		
2624484004	BRGWC-37S	SM 2540C	37331		
2624484005	BRGWC-38S	SM 2540C	37331		
2624484006	Dup-1	SM 2540C	37331		
2624484007	EB-1	SM 2540C	37419		
2624484008	FB-2	SM 2540C	37419		
2624484001	BRGWC-33S	EPA 300.0	37461		
2624484002	BRGWC-34S	EPA 300.0	37461		
2624484003	BRGWC-35S	EPA 300.0	37461		
2624484004	BRGWC-37S	EPA 300.0	37461		
2624484005	BRGWC-38S	EPA 300.0	37461		
2624484006	Dup-1	EPA 300.0	37461		
2624484007	EB-1	EPA 300.0	37461		
2624484008	FB-2	EPA 300.0	37461		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields
Billing Information:

Company: Georgia Power - Coal Combustion Residuals
Address: 2480 Maner Road
Atlanta, GA 30339
Report To: Joju Abraham

Email To: scsinvoices@southernco.com

Site Collection Info/Address: Plant Branch

State: Georgia City: Milledgeville Time Zone Collected:

Project Name: Plant Branch E Project # CCR Pace Profile#

Purchase Order # :
Quote # :
Turnaround Date Required:

Pace Project Manager:
betsy.mcdaniel@pacelabs.com

Immediately Packed on Ice:
 Yes No

Field Filtered (if applicable):
 Yes No

Rush:
 Same Day Next Day
 1-2 Day 3-4 Day 5 Day
(Expedite Charges Apply)

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Water (WT), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Crns
			Date	Time	Date	Time		
BRGWC-33S	GW	G	10/16/2019	9:48			4	
BRGWC-34S	GW	G	10/16/2019	10:46			6	
BRGWC-35S	GW	G	10/16/2019	12:02			4	
BRGWC-37S	GW	G	10/16/2019	13:10			4	
BRGWC-38S	GW	G	10/16/2019	14:45			4	
DUP-1	GW	G	10/16/2019	--			4	
EB-1	W	G	10/16/2019	11:00			4	
FB-2	W	G	10/16/2019	13:05			4	

(App III Metals): B, Ca, (App IV Metals): Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl

Type of Ice Used: Wet Blue Dry None

Packing Material Used: N/A

Radiation sample(s) screened (<500 cpm): Y N NA

Received by/Company: (Signature) [Signature]

Date/Time: 10-17-19 / 0815

Received by/Company: (Signature) [Signature]

Date/Time: _____

Received by/Company: (Signature) _____

Date/Time: _____

WO#: 2624484

2624484

Container Preservative Type: 1
LAB USE ONLY
Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Metals App III/IV - see comments	1	1
Chloride, Fluoride, Sulfate, TDS	1	1
Radium 226,228	2	2
	4	4
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2
	2	2

SHORT HOLDS PRESENT (<72 hours) : Y N N/A
Lab Tracking #:
Samples received via: FEDEX UPS Client Courier Pace Courier
Date/Time: 10/17/19 0815
Date/Time: _____
Date/Time: _____
Date/Time: _____

Lab Sample Receipt Checklist:
Custody Seals Present/Intact: Y N NA
Custody Signatures Present: Y N NA
Collector Signature Present: Y N NA
Bottles Intact: Y N NA
Correct Bottles: Y N NA
Sufficient Volume: Y N NA
Samples Received on Ice: Y N NA
VDA - Headspace Acceptable: Y N NA
USDA Regulated Soils: Y N NA
Samples in Holding Time: Y N NA
Residual Chlorine Present: Y N NA
Cl Strips: _____
Sample pH Acceptable: Y N NA
pH Strips: _____
Sulfide Present: Y N NA
Lead Acetate Strips: _____
LAB USE ONLY:
Lab Sample # / Comments:

LAB Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 08
Cooler 1 Therm Corr. Factor: 0C
Cooler 1 Corrected Temp: 0C
Comments:
Trip Blank Received: Y N NA
HCL MeOH TSP Other
Non Conformance(s): YES / NO
Page: 1 of 1



Sample Condition Upon Receipt

Client Name: Glawyer Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Optional	
Proj. Due Date:	
Proj. Name:	

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.8 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 10/17/19

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

November 14, 2019

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: Plant Branch
Pace Project No.: 2624486

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Betsy McDaniel
betsy.mcdaniel@pacelabs.com
(770)734-4200
Project Manager

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Branch
Pace Project No.: 2624486

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Branch
Pace Project No.: 2624486

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624486001	BRGWC-33S	Water	10/16/19 09:48	10/17/19 11:35
2624486002	BRGWC-34S	Water	10/16/19 10:46	10/17/19 11:35
2624486003	BRGWC-35S	Water	10/16/19 12:02	10/17/19 11:35
2624486004	BRGWC-37S	Water	10/16/19 13:10	10/17/19 11:35
2624486005	BRGWC-38S	Water	10/16/19 14:45	10/17/19 11:35
2624486006	Dup-1	Water	10/16/19 00:00	10/17/19 11:35
2624486007	EB-1	Water	10/16/19 11:00	10/17/19 11:35
2624486008	FB-2	Water	10/16/19 13:05	10/17/19 11:35

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SAMPLE ANALYTE COUNT

Project: Plant Branch
Pace Project No.: 2624486

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624486001	BRGWC-33S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486002	BRGWC-34S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486003	BRGWC-35S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486004	BRGWC-37S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486005	BRGWC-38S	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486006	Dup-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486007	EB-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624486008	FB-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: BRGWC-33S **Lab ID: 2624486001** Collected: 10/16/19 09:48 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.474 ± 0.268 (0.357) C:95% T:NA	pCi/L	11/06/19 07:22	13982-63-3	
Radium-228	EPA 9320	0.682 ± 0.524 (1.03) C:76% T:74%	pCi/L	11/06/19 17:28	15262-20-1	
Total Radium	Total Radium Calculation	1.16 ± 0.792 (1.39)	pCi/L	11/12/19 10:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: BRGWC-34S **Lab ID: 2624486002** Collected: 10/16/19 10:46 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.192 ± 0.231 (0.473) C:91% T:NA	pCi/L	11/06/19 07:22	13982-63-3	
Radium-228	EPA 9320	0.369 ± 0.405 (0.846) C:75% T:92%	pCi/L	11/06/19 17:29	15262-20-1	
Total Radium	Total Radium Calculation	0.561 ± 0.636 (1.32)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: BRGWC-35S **Lab ID: 2624486003** Collected: 10/16/19 12:02 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.523 ± 0.306 (0.453) C:94% T:NA	pCi/L	11/06/19 07:22	13982-63-3	
Radium-228	EPA 9320	1.17 ± 0.548 (0.942) C:76% T:87%	pCi/L	11/06/19 17:31	15262-20-1	
Total Radium	Total Radium Calculation	1.69 ± 0.854 (1.40)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: BRGWC-37S **Lab ID: 2624486004** Collected: 10/16/19 13:10 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.403 ± 0.313 (0.576) C:96% T:NA	pCi/L	11/06/19 07:22	13982-63-3	
Radium-228	EPA 9320	0.412 ± 0.399 (0.818) C:73% T:94%	pCi/L	11/06/19 17:31	15262-20-1	
Total Radium	Total Radium Calculation	0.815 ± 0.712 (1.39)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: BRGWC-38S **Lab ID: 2624486005** Collected: 10/16/19 14:45 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.539 ± 0.306 (0.446) C:92% T:NA	pCi/L	11/06/19 08:52	13982-63-3	
Radium-228	EPA 9320	2.12 ± 0.687 (0.928) C:77% T:86%	pCi/L	11/06/19 17:31	15262-20-1	
Total Radium	Total Radium Calculation	2.66 ± 0.993 (1.37)	pCi/L	11/12/19 10:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: Dup-1 **Lab ID: 2624486006** Collected: 10/16/19 00:00 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.698 ± 0.332 (0.404) C:95% T:NA	pCi/L	11/06/19 07:33	13982-63-3	
Radium-228	EPA 9320	1.34 ± 0.495 (0.721) C:77% T:94%	pCi/L	11/06/19 17:31	15262-20-1	
Total Radium	Total Radium Calculation	2.04 ± 0.827 (1.13)	pCi/L	11/12/19 10:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: EB-1 **Lab ID: 2624486007** Collected: 10/16/19 11:00 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.414 ± 0.255 (0.296) C:88% T:NA	pCi/L	11/06/19 07:34	13982-63-3	
Radium-228	EPA 9320	2.21 ± 0.691 (0.922) C:86% T:68%	pCi/L	11/11/19 11:03	15262-20-1	
Total Radium	Total Radium Calculation	2.62 ± 0.946 (1.22)	pCi/L	11/12/19 10:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

Sample: FB-2 **Lab ID: 2624486008** Collected: 10/16/19 13:05 Received: 10/17/19 11:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.473 ± 0.298 (0.428) C:87% T:NA	pCi/L	11/06/19 07:34	13982-63-3	
Radium-228	EPA 9320	0.455 ± 0.495 (1.03) C:75% T:80%	pCi/L	11/06/19 17:29	15262-20-1	
Total Radium	Total Radium Calculation	0.928 ± 0.793 (1.46)	pCi/L	11/12/19 10:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

QC Batch: 368259 Analysis Method: EPA 9315

QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624486001, 2624486002, 2624486003, 2624486004, 2624486005, 2624486006, 2624486007, 2624486008

METHOD BLANK: 1786863 Matrix: Water

Associated Lab Samples: 2624486001, 2624486002, 2624486003, 2624486004, 2624486005, 2624486006, 2624486007, 2624486008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.306 ± 0.244 (0.419) C:96% T:NA	pCi/L	11/06/19 08:02	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Branch

Pace Project No.: 2624486

QC Batch: 368258

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624486001, 2624486002, 2624486003, 2624486004, 2624486005, 2624486006, 2624486007, 2624486008

METHOD BLANK: 1786861

Matrix: Water

Associated Lab Samples: 2624486001, 2624486002, 2624486003, 2624486004, 2624486005, 2624486006, 2624486007, 2624486008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0170 ± 0.384 (0.894) C:77% T:79%	pCi/L	11/06/19 17:17	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Branch

Pace Project No.: 2624486

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Branch
Pace Project No.: 2624486

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624486001	BRGWC-33S	EPA 9315	368259		
2624486002	BRGWC-34S	EPA 9315	368259		
2624486003	BRGWC-35S	EPA 9315	368259		
2624486004	BRGWC-37S	EPA 9315	368259		
2624486005	BRGWC-38S	EPA 9315	368259		
2624486006	Dup-1	EPA 9315	368259		
2624486007	EB-1	EPA 9315	368259		
2624486008	FB-2	EPA 9315	368259		
2624486001	BRGWC-33S	EPA 9320	368258		
2624486002	BRGWC-34S	EPA 9320	368258		
2624486003	BRGWC-35S	EPA 9320	368258		
2624486004	BRGWC-37S	EPA 9320	368258		
2624486005	BRGWC-38S	EPA 9320	368258		
2624486006	Dup-1	EPA 9320	368258		
2624486007	EB-1	EPA 9320	368258		
2624486008	FB-2	EPA 9320	368258		
2624486001	BRGWC-33S	Total Radium Calculation	370511		
2624486002	BRGWC-34S	Total Radium Calculation	370511		
2624486003	BRGWC-35S	Total Radium Calculation	370511		
2624486004	BRGWC-37S	Total Radium Calculation	370511		
2624486005	BRGWC-38S	Total Radium Calculation	370511		
2624486006	Dup-1	Total Radium Calculation	370511		
2624486007	EB-1	Total Radium Calculation	370511		
2624486008	FB-2	Total Radium Calculation	370511		

REPORT OF LABORATORY ANALYSIS

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LAB USE ONLY
 2624486
 Lab Project Manager: _____

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields
 Billing Information:

Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Maner Road
 Atlanta, GA 30339
 Report To: Joju Abraham
 Copy To: Golder

State: Georgia City: Milledgeville Time Zone Collected:
 () PT () MT () CT () ET

Project Name: Plant Branch E Project # CCR Pace Profiles#

Purchase Order #: _____
 Quote #: _____
 Turnaround Date Required: _____
 Rush: () Same Day () Next Day () 2 Day () 3 Day () 4 Day () 5 Day (Expedite Charges Apply)

Pace Project Manager: betsy.mcdaniel@paceclabs.com
 Immediately Packed on Ice: () Yes () No
 Field Filtered (if applicable): () Yes () No
 Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Water (WT), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
BRGWC-33S	GW	G	10/16/2019	9:48			4	1
BRGWC-34S	GW	G	10/16/2019	10:46			6	1
BRGWC-35S	GW	G	10/16/2019	12:02			4	1
BRGWC-37S	GW	G	10/16/2019	13:10			4	1
BRGWC-38S	GW	G	10/16/2019	14:45			4	1
DUP-1	GW	G	10/16/2019	--			4	1
EB-1	W	G	10/16/2019	11:00			4	1
FB-2	W	G	10/16/2019	13:05			4	1

Type of Ice Used: Dry Blue None
 Packing Material Used: N/A
 Radchem sample(s) screened (<500 ppm): Y N NA

Received by/Company: (Signature) *[Signature]*
 Date/Time: 10-17-19 / 0815
 Received by/Company: (Signature) *[Signature]*
 Date/Time: _____
 Received by/Company: (Signature) _____
 Date/Time: _____

Lab Sample Receipt Checklist:
 Custody Seal Present/Intact: Y N NA
 Custody Signatures Present: Y N NA
 Collector Signature Present: Y N NA
 Bottles Intact: Y N NA
 Correct Bottles: Y N NA
 Sufficient Volumes: Y N NA
 Samples Received on Ice: Y N NA
 VOA - Headspace Acceptable: Y N NA
 USDA Regulated Soils: Y N NA
 Samples in Holding Time: Y N NA
 Residual Chlorine Present: Y N NA
 CI Strips: _____
 Sample pH Acceptable: Y N NA
 pH Strips: _____
 Sulfide Present: Y N NA
 Lead Acetate Strips: _____
 LAB USE ONLY:
 Lab Sample # / Comments: _____

Analyses	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Metals App III/IV - see comments	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chloride, Fluoride, Sulfate, TDS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Radium 226,228	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

LAB Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: _____
 Cooler 1 Temp Upon Receipt: _____
 Cooler 1 Therm Corr. Factor: _____
 Cooler 1 Corrected Temp: _____
 Comments: _____
 Trip Blank Received: Y N NA
 Trip Blank Media: _____
 Non Conformance(s): YES / NO of: 1
 Page: 1 of: 1



Sample Condition Upon Receipt

Client Name: Grafower Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Original _____
Proj. Date: _____
Proj. Name: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.8 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 10/17/19

Comments: _____

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes date/time/ID/Analysis Matrix:	<u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

January 03, 2020

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT BRANCH
Pace Project No.: 2626394

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT BRANCH

Pace Project No.: 2626394

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT BRANCH
Pace Project No.: 2626394

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2626394001	BRGWC-17S	Water	12/03/19 15:15	12/04/19 13:02
2626394002	BRGWC-36S	Water	12/03/19 14:06	12/04/19 13:02

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SAMPLE ANALYTE COUNT

Project: PLANT BRANCH

Pace Project No.: 2626394

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2626394001	BRGWC-17S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3
2626394002	BRGWC-36S	EPA 6020B	CSW	14
		SM 2540C	ALW	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT BRANCH
Pace Project No.: 2626394

Sample: BRGWC-17S		Lab ID: 2626394001		Collected: 12/03/19 15:15		Received: 12/04/19 13:02		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	12/06/19 16:36	12/09/19 18:35	7440-36-0		
Arsenic	0.00058J	mg/L	0.0050	0.00035	1	12/06/19 16:36	12/09/19 18:35	7440-38-2		
Barium	0.043	mg/L	0.010	0.00049	1	12/06/19 16:36	12/09/19 18:35	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	12/06/19 16:36	12/09/19 18:35	7440-41-7		
Boron	0.0063J	mg/L	0.040	0.0049	1	12/06/19 16:36	12/09/19 18:35	7440-42-8		
Cadmium	ND	mg/L	0.0025	0.00011	1	12/06/19 16:36	12/09/19 18:35	7440-43-9		
Calcium	37.7	mg/L	1.0	0.11	10	12/06/19 16:36	12/10/19 13:10	7440-70-2		
Chromium	0.011	mg/L	0.010	0.00039	1	12/06/19 16:36	12/09/19 18:35	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	12/06/19 16:36	12/09/19 18:35	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	12/06/19 16:36	12/09/19 18:35	7439-92-1		
Lithium	0.0010J	mg/L	0.030	0.00078	1	12/06/19 16:36	12/09/19 18:35	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	12/06/19 16:36	12/09/19 18:35	7439-98-7		
Selenium	0.0041J	mg/L	0.010	0.0013	1	12/06/19 16:36	12/09/19 18:35	7782-49-2		
Thallium	0.000066J	mg/L	0.0010	0.000052	1	12/06/19 16:36	12/09/19 18:35	7440-28-0		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	378	mg/L	10.0	10.0	1		12/06/19 12:52			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	4.8	mg/L	1.0	0.024	1		12/10/19 06:02	16887-00-6		
Fluoride	0.20J	mg/L	0.30	0.029	1		12/10/19 06:02	16984-48-8	M1	
Sulfate	180	mg/L	10.0	0.17	10		12/10/19 17:05	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT BRANCH

Pace Project No.: 2626394

Sample: BRGWC-36S		Lab ID: 2626394002		Collected: 12/03/19 14:06		Received: 12/04/19 13:02		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	0.00049J	mg/L	0.0030	0.00027	1	12/06/19 16:36	12/09/19 18:58	7440-36-0	
Arsenic	0.0010J	mg/L	0.0050	0.00035	1	12/06/19 16:36	12/09/19 18:58	7440-38-2	
Barium	0.031	mg/L	0.010	0.00049	1	12/06/19 16:36	12/09/19 18:58	7440-39-3	
Beryllium	0.000097J	mg/L	0.0030	0.000074	1	12/06/19 16:36	12/09/19 18:58	7440-41-7	
Boron	1.0	mg/L	0.040	0.0049	1	12/06/19 16:36	12/09/19 18:58	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	12/06/19 16:36	12/09/19 18:58	7440-43-9	
Calcium	47.8	mg/L	1.0	0.11	10	12/06/19 16:36	12/10/19 13:27	7440-70-2	
Chromium	0.0070J	mg/L	0.010	0.00039	1	12/06/19 16:36	12/09/19 18:58	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	12/06/19 16:36	12/09/19 18:58	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	12/06/19 16:36	12/09/19 18:58	7439-92-1	
Lithium	0.0024J	mg/L	0.030	0.00078	1	12/06/19 16:36	12/09/19 18:58	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	12/06/19 16:36	12/09/19 18:58	7439-98-7	
Selenium	0.0035J	mg/L	0.010	0.0013	1	12/06/19 16:36	12/09/19 18:58	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	12/06/19 16:36	12/09/19 18:58	7440-28-0	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	498	mg/L	10.0	10.0	1		12/06/19 12:52		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	7.7	mg/L	1.0	0.024	1		12/10/19 07:08	16887-00-6	M1
Fluoride	0.15J	mg/L	0.30	0.029	1		12/10/19 07:08	16984-48-8	
Sulfate	256	mg/L	10.0	0.17	10		12/10/19 17:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT BRANCH
Pace Project No.: 2626394

QC Batch: 40094 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2626394001, 2626394002

METHOD BLANK: 182248 Matrix: Water
Associated Lab Samples: 2626394001, 2626394002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	12/09/19 18:24	
Arsenic	mg/L	ND	0.0050	0.00035	12/09/19 18:24	
Barium	mg/L	ND	0.010	0.00049	12/09/19 18:24	
Beryllium	mg/L	ND	0.0030	0.000074	12/09/19 18:24	
Boron	mg/L	ND	0.040	0.0049	12/09/19 18:24	
Cadmium	mg/L	ND	0.0025	0.00011	12/09/19 18:24	
Calcium	mg/L	ND	0.10	0.011	12/09/19 18:24	
Chromium	mg/L	ND	0.010	0.00039	12/09/19 18:24	
Cobalt	mg/L	ND	0.0050	0.00030	12/09/19 18:24	
Lead	mg/L	ND	0.0050	0.000046	12/09/19 18:24	
Lithium	mg/L	ND	0.030	0.00078	12/09/19 18:24	
Molybdenum	mg/L	ND	0.010	0.00095	12/09/19 18:24	
Selenium	mg/L	ND	0.010	0.0013	12/09/19 18:24	
Thallium	mg/L	ND	0.0010	0.000052	12/09/19 18:24	

LABORATORY CONTROL SAMPLE: 182249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.098	98	80-120	
Arsenic	mg/L	0.1	0.094	94	80-120	
Barium	mg/L	0.1	0.095	95	80-120	
Beryllium	mg/L	0.1	0.10	100	80-120	
Boron	mg/L	1	1.0	100	80-120	
Cadmium	mg/L	0.1	0.096	96	80-120	
Calcium	mg/L	1	0.94	94	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.099	99	80-120	
Lead	mg/L	0.1	0.097	97	80-120	
Lithium	mg/L	0.1	0.096	96	80-120	
Molybdenum	mg/L	0.1	0.099	99	80-120	
Selenium	mg/L	0.1	0.097	97	80-120	
Thallium	mg/L	0.1	0.099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 182250 182251

Parameter	Units	2626394001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Antimony	mg/L	ND	0.1	0.1	0.097	0.10	97	100	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT BRANCH

Pace Project No.: 2626394

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 182250		182251		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2626394001 Result	MS Spike Conc.	MSD Spike Conc.									
Arsenic	mg/L	0.00058J	0.1	0.1	0.096	0.098	95	97	75-125	2	20		
Barium	mg/L	0.043	0.1	0.1	0.13	0.13	87	91	75-125	3	20		
Beryllium	mg/L	ND	0.1	0.1	0.091	0.097	91	97	75-125	7	20		
Boron	mg/L	0.0063J	1	1	0.90	0.96	90	96	75-125	6	20		
Cadmium	mg/L	ND	0.1	0.1	0.096	0.10	96	100	75-125	4	20		
Calcium	mg/L	37.7	1	1	36.4	38.8	-129	115	75-125	7	20		
Chromium	mg/L	0.011	0.1	0.1	0.11	0.11	96	103	75-125	7	20		
Cobalt	mg/L	ND	0.1	0.1	0.096	0.10	96	101	75-125	5	20		
Lead	mg/L	ND	0.1	0.1	0.092	0.097	92	97	75-125	5	20		
Lithium	mg/L	0.0010J	0.1	0.1	0.086	0.094	85	93	75-125	9	20		
Molybdenum	mg/L	ND	0.1	0.1	0.097	0.099	97	98	75-125	2	20		
Selenium	mg/L	0.0041J	0.1	0.1	0.099	0.099	95	95	75-125	0	20		
Thallium	mg/L	0.000066J	0.1	0.1	0.096	0.098	96	98	75-125	2	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT BRANCH

Pace Project No.: 2626394

QC Batch: 40059	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2626394001, 2626394002	

LABORATORY CONTROL SAMPLE: 182120

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	405	101	84-108	

SAMPLE DUPLICATE: 182121

Parameter	Units	2626394001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	378	352	7	10	

SAMPLE DUPLICATE: 182122

Parameter	Units	2626443001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	66.0	70.0	6	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT BRANCH
Pace Project No.: 2626394

QC Batch: 40125 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2626394001, 2626394002

METHOD BLANK: 182354 Matrix: Water
Associated Lab Samples: 2626394001, 2626394002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.040J	1.0	0.024	12/10/19 04:56	
Fluoride	mg/L	ND	0.30	0.029	12/10/19 04:56	
Sulfate	mg/L	ND	1.0	0.017	12/10/19 04:56	

LABORATORY CONTROL SAMPLE: 182355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 182356 182357

Parameter	Units	2626394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.8	10	10	13.9	13.8	91	90	90-110	1	15	
Fluoride	mg/L	0.20J	10	10	9.3	9.1	91	89	90-110	2	15	M1
Sulfate	mg/L	180	10	10	120	120	-594	-593	90-110	0	15	

MATRIX SPIKE SAMPLE: 182358

Parameter	Units	2626394002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7.7	10	16.6	89	90-110	M1
Fluoride	mg/L	0.15J	10	9.7	96	90-110	
Sulfate	mg/L	256	10	188	-673	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PLANT BRANCH

Pace Project No.: 2626394

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT BRANCH
Pace Project No.: 2626394

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2626394001	BRGWC-17S	EPA 3005A	40094	EPA 6020B	40112
2626394002	BRGWC-36S	EPA 3005A	40094	EPA 6020B	40112
2626394001	BRGWC-17S	SM 2540C	40059		
2626394002	BRGWC-36S	SM 2540C	40059		
2626394001	BRGWC-17S	EPA 300.0	40125		
2626394002	BRGWC-36S	EPA 300.0	40125		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: Georgia Power - Coal Combustion Residuals

Billing Information:

Address: 2480 Maner Road
Atlanta, GA 30339

Report To: Joju Abraham

Email To: scslinvoices@southernco.com

Copy To: Golder

Site Collection Info/Address: Plant Branch

Phone: (404) 506-7239

State: Georgia City: Milledgeville Time Zone Collected: | PT | MT | CT | ET

Email: jbraham@southernco.com

Project Name: Plant Branch E Project # CCR Pace Profile#

Collected By (print): Travis Martinez

Purchase Order #: Pace Project Manager: kevin.herring@pacelabs.com

Turnaround Date Required:

Quote #: Immediately Packed on Ice: [X] Yes [] No

Collected By (signature):

Field Filtered (if applicable): [] Yes [] No

Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [] 5 Day (Expedite Charges Apply)

Analysis: _____

* Matrix Codes (insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Biossary (B), Water (WT), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res C	# of Cns
			Date	Time	Date	Time		
BRGWC-175	GW	G	12/3/2019	15:15				3
BRGWC-365	GW	G	12/3/2019	14:06				3

LAB USE ONLY - Affix Workorder/Login Label Here or List Pace Workorder Number or MTL Log-In Number Here

ALL SHADED AREAS are for LAB USE ONLY

Container Preservative Type **

1

LAB Project Manager:

LAB Profile/Line:

Lab Sample Receipt Checklist: Custody Seals Present/Intact Y N NA
Custody Signatures Present Y N NA
Collector Signature Present Y N NA
Bottles Intact Y N NA
Correct bottles Y N NA
Sufficient Volume Y N NA
Samples Received on Ice Y N NA
VOA - Headspace Acceptable Y N NA
USDA Regulated Soils Y N NA
Samples in Holding Time Y N NA
Residual Chlorine Present Y N NA
Cl Strips: _____
Sample pH Acceptable Y N NA
pH Strips: _____
Sulfide Present Y N NA
Lead Acetate Strips: _____

LAB USE ONLY: Lab Sample # / Comments:

Metals App III/IV - see comments

Chloride, Fluoride, Sulfate, TDS

Radium 226.228

LAB Sample Temperature Info: Temp Blank Received: Y N NA
Therm ID: TH2083
Cooler 1 Temp Upon Receipt: oc 1.9
Cooler 1 Therm Corr. Factor: oc
Cooler 1 Corrected Temp: oc
Comments:

MTL LAB USE ONLY

Tip Blank Received: Y N NA
HCl MeOH TSP Other

Non Conformance(s): YES / NO Page: 1 of 1



Client Name: _____

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other plastic bags

Thermometer Used THRO83 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.9 Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: _____

Temp should be above freezing to 6°C Comments: _____

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>GW</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)



Document Name:
Bottle Identification Form (BIF)
 Document No.:
F-CAR-CS-043-Rev.00

Document Issued: March 14, 2019
 Page 1 of 1
 Issuing Authority:
 Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH4)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	AG0L-50 mL Scintillation vials (N/A)	
	1																											
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Of Out of hold, incorrect preservative, out of temp, incorrect containers.

January 08, 2020

Joju Abraham
Georgia Power - Coal Combustion Residuals
2480 Maner Road
Atlanta, GA 30339

RE: Project: PLANT BRANCH RADIUM RESAMPLE
Pace Project No.: 2627067

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Julie Lehrman, Golder Associates Inc.
Dawn Prell, Golder Associates Inc.
Eric Rolle, Georgia Power - Coal Combustion Residuals
Rebecca Thornton, Pace Analytical Atlanta



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT BRANCH RADIUM RESAMPLE
Pace Project No.: 2627067

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2627067001	BRGWC-17S	Water	12/18/19 10:25	12/18/19 14:24
2627067002	BRGWC-36S	Water	12/18/19 11:45	12/18/19 14:24

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SAMPLE ANALYTE COUNT

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2627067001	BRGWC-17S	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2627067002	BRGWC-36S	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

Sample: BRGWC-17S **Lab ID: 2627067001** Collected: 12/18/19 10:25 Received: 12/18/19 14:24 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.513 ± 0.274 (0.353) C:104% T:NA	pCi/L	12/31/19 08:34	13982-63-3	
Radium-228	EPA 9320	0.650 ± 0.571 (1.16) C:67% T:85%	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium	Total Radium Calculation	1.16 ± 0.845 (1.51)	pCi/L	01/03/20 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

Sample: BRGWC-36S **Lab ID: 2627067002** Collected: 12/18/19 11:45 Received: 12/18/19 14:24 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.712 ± 0.326 (0.287) C:89% T:NA	pCi/L	12/31/19 08:34	13982-63-3	
Radium-228	EPA 9320	1.20 ± 0.571 (0.968) C:67% T:95%	pCi/L	01/02/20 15:04	15262-20-1	
Total Radium	Total Radium Calculation	1.91 ± 0.897 (1.26)	pCi/L	01/03/20 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

QC Batch:	377002	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2627067001, 2627067002		

METHOD BLANK:	1828861	Matrix:	Water
Associated Lab Samples:	2627067001, 2627067002		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.249 ± 0.216 (0.370) C:94% T:NA	pCi/L	12/31/19 08:33	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT BRANCH RADIUM RESAMPLE

Pace Project No.: 2627067

QC Batch: 376994

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2627067001, 2627067002

METHOD BLANK: 1828831

Matrix: Water

Associated Lab Samples: 2627067001, 2627067002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.605 ± 0.407 (0.773) C:65% T:84%	pCi/L	01/02/20 11:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PLANT BRANCH RADIUM RESAMPLE
Pace Project No.: 2627067

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT BRANCH RADIUM RESAMPLE
Pace Project No.: 2627067

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2627067001	BRGWC-17S	EPA 9315	377002		
2627067002	BRGWC-36S	EPA 9315	377002		
2627067001	BRGWC-17S	EPA 9320	376994		
2627067002	BRGWC-36S	EPA 9320	376994		
2627067001	BRGWC-17S	Total Radium Calculation	377979		
2627067002	BRGWC-36S	Total Radium Calculation	377979		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt



Client Name: Bolder Associates

WO#: **2627067**

PM: MZP

Due Date: 01/17/20

CLIENT: Geosyntec

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals Intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used THR214 Type of Ice: Water Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.4°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 12/18

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>12.19.10</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)



State of Florida

Department of Health, Bureau of Public Health Laboratories
This is to certify that



E87315

**ANALYTICAL SERVICES, INC.
110 TECHNOLOGY PARKWAY
NORCROSS, GA 30092**


**has complied with Florida Administrative Code 64E-1,
for the examination of environmental samples in the following categories**

DRINKING WATER - MICROBIOLOGY, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - MICROBIOLOGY, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Public Health Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

Date Issued: July 01, 2015 Expiration Date: June 30, 2016




Carina Blackmore, DVM, PhD, Dipl. ACVPM, CPM
Chief, Bureau of Public Health Laboratories
DH Form 1697, 7/04
NON-TRANSFERABLE E87315-31-07/01/2015
Supersedes all previously issued certificates



State of Florida
 Department of Health, Bureau of Public Health Laboratories
 This is to certify that



E87315

PACE ANALYTICAL SERVICES, INC. - ATLANTA
 110 TECHNOLOGY PARKWAY
 PEACHTREE CORNERS, GA 30092

has complied with Florida Administrative Code 64E-1,
 for the examination of environmental samples in the following categories

DRINKING WATER - MICROBIOLOGY, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - MICROBIOLOGY, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

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Date Issued: July 01, 2016 Expiration Date: June 30, 2017



Susanne Crowe

Susanne Crowe, MHA
 Acting Chief, Bureau of Public Health Laboratories
 DH Form 1697, 7/04

NON-TRANSFERABLE E87315-33-07/01/2016
 Supersedes all previously issued certificates



State of Florida
 Department of Health, Bureau of Public Health Laboratories
 This is to certify that



E87315

PACE ANALYTICAL SERVICES, LLC- ATLANTA GA
 110 TECHNOLOGY PARKWAY
 PEACHTREE CORNERS, GA 30092

has complied with Florida Administrative Code 64E-1,
 for the examination of environmental samples in the following categories

DRINKING WATER - MICROBIOLOGY, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - MICROBIOLOGY, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

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Date Issued: July 01, 2017 Expiration Date: June 30, 2018



Susanne Crowe

Susanne Crowe, MHA
 Acting Chief, Bureau of Public Health Laboratories
 DH Form 1697, 7/04
 NON-TRANSFERABLE E87315-37-07/01/2017
 Supersedes all previously issued certificates



State of Florida
 Department of Health, Bureau of Public Health Laboratories
 This is to certify that



E87315

PACE ANALYTICAL SERVICES, LLC- ATLANTA GA
 110 TECHNOLOGY PARKWAY
 PEACHTREE CORNERS, GA 30092

has complied with Florida Administrative Code 64E-1,
 for the examination of environmental samples in the following categories

DRINKING WATER - MICROBIOLOGY, DRINKING WATER - PRIMARY INORGANIC CONTAMINANTS, DRINKING WATER - SECONDARY INORGANIC CONTAMINANTS, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - MICROBIOLOGY, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - MICROBIOLOGY, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Public Health Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

Date Issued: July 01, 2018 Expiration Date: June 30, 2019



Patty A. Lewandowski, MBA, MT(ASCP)
 Chief Bureau of Public Health Laboratories
 DH Form 1697, 7/04

NON-TRANSFERABLE E87315-39-07/01/2018
 Supersedes all previously issued certificates

APPENDIX B

FIELD DATA FORMS

Product Name: Low-Flow System

Date: 2019-08-27 11:57:11

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 642531
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 44.60 ft

Pump placement from TOC 39.60 ft

Well Information:

Well ID BRGWA-2S
Well diameter 2 in
Well Total Depth 44.60 ft
Screen Length 10 ft
Depth to Water 15.35 ft

Pumping Information:

Final Pumping Rate 180 mL/min
Total System Volume 0.4840687 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.13 in
Total Volume Pumped 3.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	11:38:21	300.03	20.57	6.11	62.72	0.40	15.45	3.03	8.27
Last 5	11:43:21	600.03	19.41	6.07	63.60	0.23	15.48	3.13	9.52
Last 5	11:48:21	900.02	19.38	6.07	63.58	0.34	15.48	3.31	10.44
Last 5	11:53:21	1200.02	19.47	6.09	63.68	0.33	15.48	3.20	9.33
Last 5									
Variance 0			-1.16	-0.04	0.88			0.11	1.24
Variance 1			-0.03	-0.00	-0.02			0.18	0.92
Variance 2			0.09	0.02	0.10			-0.11	-1.11

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 12:01:25

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 646777
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 5 ft

Pump placement from TOC 59.3 ft

Well Information:

Well ID BRGWA-2I
Well diameter 2 in
Well Total Depth 64.3 ft
Screen Length 10 ft
Depth to Water 17.4 ft

Pumping Information:

Final Pumping Rate 140 mL/min
Total System Volume 0.3073171 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0 in
Total Volume Pumped 3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	11:39:07	300.03	20.24	6.92	223.07	1.11	17.41	0.43	-25.99
Last 5	11:44:07	600.03	20.26	6.88	214.23	0.93	17.42	0.39	-18.44
Last 5	11:49:07	900.03	20.44	6.84	208.61	0.92	17.42	0.34	-13.56
Last 5	11:54:07	1200.03	20.48	6.82	203.72	0.74	17.40	0.31	-9.32
Last 5	11:59:07	1500.03	20.39	6.79	200.30	0.81	17.40	0.28	-5.70
Variance 0			0.18	-0.03	-5.62			-0.05	4.88
Variance 1			0.05	-0.02	-4.90			-0.02	4.24
Variance 2			-0.09	-0.03	-3.42			-0.03	3.62

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 10:59:29

Project Information:

Operator Name D.Thomas
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463072
Turbidity Make/Model LaMotte 2020 we

Pump Information:

Pump Model/Type QED
Tubing Type Poly
Tubing Diameter 0.17 in
Tubing Length 43.01 ft

Pump placement from TOC 43.01 ft

Well Information:

Well ID BRGWA-5S
Well diameter 2 in
Well Total Depth 43.01 ft
Screen Length 10 ft
Depth to Water 12.5 ft

Pumping Information:

Final Pumping Rate 150 mL/min
Total System Volume 0.4769718 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0 in
Total Volume Pumped 0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	10:37:43	1200.02	20.39	6.42	186.02	1.24	12.60	2.12	94.79
Last 5	10:42:43	1500.02	20.43	6.44	188.90	2.23	12.60	1.97	95.15
Last 5	10:47:43	1800.02	20.77	6.47	191.61	2.54	12.60	1.88	64.94
Last 5	10:52:44	2101.02	20.79	6.48	192.31	2.49	12.60	1.85	56.03
Last 5	10:57:44	2401.02	20.52	6.49	193.08	2.56	12.60	1.79	53.54
Variance 0			0.34	0.03	2.71			-0.09	-30.21
Variance 1			0.02	0.01	0.70			-0.03	-8.91
Variance 2			-0.27	0.01	0.77			-0.06	-2.49

Notes

Started purging at 1017
Began sampling at 1057

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 12:09:51

Project Information:

Operator Name D.Thomas
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 463072
Turbidity Make/Model LaMotte 2020 we

Pump Information:

Pump Model/Type QED
Tubing Type Poly
Tubing Diameter 0.17 in
Tubing Length 63.82 ft

Pump placement from TOC 63.82 ft

Well Information:

Well ID BRGWA-5I
Well diameter 2 in
Well Total Depth 63.82 ft
Screen Length 10 ft
Depth to Water 12.40 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.5698556 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.6 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	11:46:56	300.02	20.30	6.37	162.25	0.56	12.45	3.40	45.76
Last 5	11:51:56	600.02	20.07	6.36	162.41	0.12	12.45	3.64	44.07
Last 5	11:56:56	900.02	20.17	6.37	161.78	0.32	12.45	3.74	43.10
Last 5	12:01:56	1200.02	20.00	6.36	163.12	0.38	12.45	3.89	42.19
Last 5	12:06:56	1500.02	19.70	6.37	163.28	0.24	12.45	3.96	41.47
Variance 0			0.10	0.00	-0.62			0.11	-0.97
Variance 1			-0.17	-0.00	1.33			0.15	-0.91
Variance 2			-0.29	0.00	0.16			0.06	-0.72

Notes

Started purging at 1141
Stopped purging and began sampling at 1207

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 10:04:56

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 642531
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 52.90 ft

Pump placement from TOC 47.90 ft

Well Information:

Well ID BRGWA-6S
Well diameter 2 in
Well Total Depth 52.90 ft
Screen Length 10 ft
Depth to Water 26.81 ft

Pumping Information:

Final Pumping Rate 150 mL/min
Total System Volume 0.5211151 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.6 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	09:42:45	300.09	21.82	6.24	56.87	1.80	27.30	7.41	32.30
Last 5	09:47:45	600.02	20.48	6.24	55.72	2.04	27.40	7.69	23.05
Last 5	09:52:45	900.02	20.30	6.35	55.32	1.48	27.46	7.71	18.06
Last 5	09:57:45	1200.01	20.13	6.36	54.48	1.17	27.42	7.73	17.61
Last 5	10:02:45	1500.01	20.21	6.35	54.76	1.36	27.41	7.64	18.30
Variance 0			-0.18	0.11	-0.39			0.01	-4.99
Variance 1			-0.18	0.02	-0.84			0.02	-0.45
Variance 2			0.08	-0.01	0.28			-0.09	0.68

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 12:36:56

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 642531
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 7.40 ft

Pump placement from TOC 7.00 ft

Well Information:

Well ID BRGWC-17S
Well diameter 2 in
Well Total Depth 7.40 ft
Screen Length 5 ft
Depth to Water 5.88 ft

Pumping Information:

Final Pumping Rate 155 mL/min
Total System Volume 0.1230293 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.34 in
Total Volume Pumped 3.1 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	12:20:09	300.03	22.22	6.24	450.56	48.10	6.20	1.44	29.84
Last 5	12:25:09	600.02	22.33	6.24	449.88	4.92	6.20	1.22	26.94
Last 5	12:30:09	900.02	22.33	6.25	449.69	2.03	6.21	1.19	26.58
Last 5	12:35:09	1200.01	22.38	6.25	449.47	1.48	6.22	1.15	24.83
Last 5									
Variance 0			0.11	0.00	-0.68			-0.21	-2.90
Variance 1			-0.00	0.00	-0.19			-0.03	-0.36
Variance 2			0.05	-0.00	-0.22			-0.04	-1.75

Notes

Purged three well volumes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-27 16:12:46

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 642531
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 31.66 ft

Pump placement from TOC 26.66 ft

Well Information:

Well ID BRGWC-33S
Well diameter 2 in
Well Total Depth 31.66 ft
Screen Length 10 ft
Depth to Water 7.88 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.4263119 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.01 in
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	15:56:00	300.03	21.28	4.69	453.34	1.08	7.88	0.15	92.82
Last 5	16:01:00	600.01	20.75	4.77	448.21	1.28	7.89	0.06	93.52
Last 5	16:06:00	900.02	20.61	4.78	447.65	0.81	7.89	0.05	93.93
Last 5	16:11:00	1200.02	20.66	4.78	447.89	0.51	7.89	0.04	93.96
Last 5									
Variance 0			-0.54	0.09	-5.12			-0.09	0.69
Variance 1			-0.13	0.00	-0.56			-0.01	0.41
Variance 2			0.04	-0.00	0.24			-0.01	0.03

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 13:24:21

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 646777
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 5 ft

Pump placement from TOC 47.64 ft

Well Information:

Well ID BRGWC-34S
Well diameter 2 in
Well Total Depth 52.64 ft
Screen Length 10 ft
Depth to Water 2.56 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.3073171 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.04 in
Total Volume Pumped 7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	13:01:15	900.03	23.78	5.80	709.79	0.76	2.60	1.05	66.56
Last 5	13:06:15	1200.03	23.43	5.80	708.51	0.28	2.59	0.99	70.40
Last 5	13:11:15	1500.03	23.88	5.80	705.90	0.20	2.61	0.85	72.85
Last 5	13:16:15	1800.04	23.20	5.80	708.36	0.15	2.60	0.65	74.97
Last 5	13:21:15	2100.04	23.25	5.80	704.23	0.22	2.60	0.71	76.51
Variance 0			0.45	-0.00	-2.61			-0.14	2.45
Variance 1			-0.68	-0.00	2.46			-0.19	2.12
Variance 2			0.04	-0.01	-4.13			0.05	1.54

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 12:10:40

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 646777
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 5 ft

Pump placement from TOC 30.34 ft

Well Information:

Well ID BRGWC-35S
Well diameter 2 in
Well Total Depth 35.34 ft
Screen Length 10 ft
Depth to Water 2.01 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.3073171 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.05 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	11:48:28	300.04	21.77	5.94	656.49	1.78	2.02	0.95	64.10
Last 5	11:53:28	600.03	21.51	5.94	659.52	2.35	2.05	0.45	71.51
Last 5	11:58:28	900.03	21.53	5.94	661.38	1.30	2.05	0.23	75.12
Last 5	12:03:28	1200.03	21.45	5.95	662.43	0.83	2.03	0.17	77.70
Last 5	12:08:28	1500.03	21.31	5.95	661.24	0.79	2.06	0.13	79.41
Variance 0			0.02	0.00	1.86			-0.23	3.61
Variance 1			-0.08	0.00	1.06			-0.06	2.58
Variance 2			-0.14	-0.00	-1.19			-0.04	1.72

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 11:37:27

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 642531
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 34.02 ft

Pump placement from TOC 29.02 ft

Well Information:

Well ID BRGWC-36S
Well diameter 2 in
Well Total Depth 34.02 ft
Screen Length 10 ft
Depth to Water 2.38 ft

Pumping Information:

Final Pumping Rate 250 mL/min
Total System Volume 0.2418457 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.16 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	11:21:36	300.11	22.80	5.51	634.20	1.36	2.52	2.14	72.76
Last 5	11:26:36	600.02	22.35	5.51	631.55	1.00	2.54	2.02	66.94
Last 5	11:31:36	900.02	22.13	5.51	627.01	0.69	2.54	1.97	63.49
Last 5	11:36:36	1200.01	22.22	5.52	616.44	0.83	2.54	1.95	60.21
Last 5									
Variance 0			-0.45	-0.00	-2.65			-0.11	-5.82
Variance 1			-0.22	0.00	-4.54			-0.05	-3.44
Variance 2			0.09	0.01	-10.58			-0.02	-3.28

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-28 14:33:14

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 646777
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 5 ft

Pump placement from TOC 63.78 ft

Well Information:

Well ID BRGWc-37S
Well diameter 2 in
Well Total Depth 68.73 ft
Screen Length 10 ft
Depth to Water 50.18 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.3073171 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.7 in
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	14:16:41	300.10	22.14	5.79	55.06	0.33	50.90	8.10	98.19
Last 5	14:21:41	600.05	22.13	5.80	55.13	0.64	50.89	8.14	97.75
Last 5	14:26:41	900.03	21.67	5.79	55.07	0.32	50.86	8.19	97.48
Last 5	14:31:41	1200.03	21.52	5.80	54.54	0.24	50.88	8.08	95.71
Last 5									
Variance 0			-0.01	0.00	0.08			0.03	-0.44
Variance 1			-0.46	-0.01	-0.06			0.05	-0.27
Variance 2			-0.15	0.01	-0.53			-0.11	-1.77

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-08-29 15:30:29

Project Information:

Operator Name J. Quenneville
Company Name Golder
Project Name Branch
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 646777
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 5 ft

Pump placement from TOC 38.66 ft

Well Information:

Well ID BRGWC-38S
Well diameter 2 in
Well Total Depth 43.66 ft
Screen Length 10 ft
Depth to Water 21.3 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.3073171 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.23 in
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 0.2	+/- 0
Last 5	15:13:46	300.07	21.78	3.98	854.65	0.48	22.56	1.48	160.79
Last 5	15:18:46	600.03	21.95	4.00	848.77	0.66	22.58	1.38	163.82
Last 5	15:23:46	900.03	22.03	4.01	852.06	0.48	22.60	1.30	170.52
Last 5	15:28:46	1200.03	21.99	4.01	854.34	0.89	22.58	1.24	173.54
Last 5									
Variance 0			0.18	0.02	-5.88			-0.11	3.03
Variance 1			0.07	0.01	3.29			-0.08	6.70
Variance 2			-0.04	0.00	2.28			-0.06	3.02

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 09:56:47

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 47.39 ft

Pump placement from TOC 42.39 ft

Well Information:

Well ID BRGWA-2S
Well diameter 2 in
Well Total Depth 47.39 ft
Screen Length 10 ft
Depth to Water 17.14 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.4955216 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 1.68 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	09:35:21	300.03	18.56	5.73	68.54	1.46	17.21	2.52	76.83
Last 5	09:40:21	600.02	18.28	5.92	67.65	1.13	17.30	2.17	75.21
Last 5	09:45:21	900.02	18.26	6.02	66.51	0.68	17.28	1.80	75.28
Last 5	09:50:21	1200.02	18.28	6.04	65.88	0.61	17.28	1.80	75.32
Last 5	09:55:24	1503.02	18.31	6.06	65.89	0.66	17.28	1.82	73.23
Variance 0			-0.02	0.10	-1.14			-0.37	0.07
Variance 1			0.03	0.02	-0.63			-0.00	0.04
Variance 2			0.03	0.02	0.01			0.02	-2.09

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 11:19:42

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 66.96 ft

Pump placement from TOC 61.96 ft

Well Information:

Well ID BRGWA-2I
Well diameter 2 in
Well Total Depth 66.96 ft
Screen Length 10 ft
Depth to Water 17.03 ft

Pumping Information:

Final Pumping Rate 155 mL/min
Total System Volume 0.5828708 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 27.6 in
Total Volume Pumped 9.3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	10:56:57	2402.99	18.64	6.73	226.99	0.41	19.36	0.35	63.55
Last 5	11:02:00	2705.99	18.59	6.67	208.97	0.55	19.40	0.29	59.44
Last 5	11:07:00	3005.99	18.64	6.61	200.02	0.69	19.33	0.24	56.69
Last 5	11:12:00	3305.99	18.64	6.58	193.10	0.41	19.33	0.22	52.90
Last 5	11:17:16	3621.99	18.68	6.57	189.99	0.54	19.33	0.20	50.42
Variance 0			0.04	-0.05	-8.95			-0.05	-2.76
Variance 1			0.01	-0.03	-6.92			-0.02	-3.79
Variance 2			0.04	-0.01	-3.11			-0.01	-2.48

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 09:02:03

Project Information:

Operator Name D.Thomas
Company Name Golder Associates
Project Name 166625418
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 541714
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard
Tubing Type poly
Tubing Diameter .170 in
Tubing Length 38.01 ft

Pump placement from TOC 38.01 ft

Well Information:

Well ID BRGWA-5S
Well diameter 2 in
Well Total Depth 43.01 ft
Screen Length 10 ft
Depth to Water 13.25 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.6546547 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 2.16 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:38:22	300.08	18.94	7.01	169.39	2.13	13.43	3.25	54.89
Last 5	08:43:22	600.01	18.90	7.02	173.40	2.34	13.43	3.09	51.56
Last 5	08:48:22	900.01	18.85	7.03	177.79	2.21	13.43	2.98	49.11
Last 5	08:53:22	1200.00	18.85	7.03	180.57	2.16	13.43	2.87	47.85
Last 5	08:58:22	1499.99	18.83	7.01	182.55	1.97	13.43	2.82	47.96
Variance 0			-0.04	0.02	4.40			-0.11	-2.45
Variance 1			-0.01	-0.01	2.77			-0.10	-1.26
Variance 2			-0.02	-0.01	1.98			-0.05	0.12

Notes

Began purging at 0833
Stopped purging and began sampling at 0900

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 10:22:32

Project Information:

Operator Name D.Thomas
Company Name Golder Associates
Project Name 166625418
Site Name Plant Branch
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 541714
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard
Tubing Type poly
Tubing Diameter .170 in
Tubing Length 58 ft

Pump placement from TOC 58 ft

Well Information:

Well ID BRGWA-5I
Well diameter 2 in
Well Total Depth 63.82 ft
Screen Length 10 ft
Depth to Water 13.10 ft

Pumping Information:

Final Pumping Rate 180 mL/min
Total System Volume 0.7438785 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 2.4 in
Total Volume Pumped 7.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Stabilization									
Last 5	10:00:00	1200.00	20.10	6.74	171.79	0.42	13.30	3.06	59.38
Last 5	10:05:00	1499.99	20.27	6.76	170.72	0.45	13.30	3.21	60.05
Last 5	10:10:00	1799.98	20.00	6.76	169.78	0.40	13.30	3.29	60.58
Last 5	10:15:00	2099.98	19.77	6.76	169.02	0.37	13.30	3.39	60.56
Last 5	10:20:00	2399.97	19.55	6.77	168.91	0.34	13.30	3.50	60.57
Variance 0			-0.27	0.00	-0.95			0.08	0.53
Variance 1			-0.23	0.00	-0.75			0.11	-0.02
Variance 2			-0.21	0.00	-0.11			0.11	0.00

Notes

Started purging at 0940
Stopped purging and began sampling at 1020

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-15 08:46:16

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 52.90 ft

Pump placement from TOC 47.90 ft

Well Information:

Well ID BRGWA-6S
Well diameter 2 in
Well Total Depth 52.90 ft
Screen Length 10 ft
Depth to Water 27.79 ft

Pumping Information:

Final Pumping Rate 190 mL/min
Total System Volume 0.5201151 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 7.68 in
Total Volume Pumped 6.65 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	08:25:02	900.57	19.04	6.10	58.77	0.75	28.35	6.92	68.78
Last 5	08:30:02	1200.56	19.04	6.22	58.74	0.79	28.38	6.77	68.97
Last 5	08:35:02	1500.56	18.99	6.30	58.43	0.93	28.45	6.66	68.58
Last 5	08:40:02	1800.56	18.97	6.32	58.82	0.83	28.50	6.79	69.74
Last 5	08:45:02	2100.56	19.00	6.36	59.38	1.16	28.43	6.55	69.62
Variance 0			-0.04	0.08	-0.30			-0.11	-0.39
Variance 1			-0.02	0.02	0.38			0.13	1.16
Variance 2			0.02	0.04	0.57			-0.24	-0.13

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-17 10:48:09

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 9.88 ft

Pump placement from TOC 7.88 ft

Well Information:

Well ID BRGWC-17S
Well diameter 2 in
Well Total Depth 9.88 ft
Screen Length 5 ft
Depth to Water 6.22 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.1340986 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 13.56 in
Total Volume Pumped 9.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	10:25:48	3616.13	18.86	6.30	458.43	0.09	7.35	1.74	85.70
Last 5	10:30:48	3916.13	18.82	6.30	458.32	0.33	7.35	1.33	84.94
Last 5	10:35:54	4222.13	18.81	6.30	459.16	0.25	7.35	1.15	84.73
Last 5	10:40:53	4522.04	18.81	6.30	460.75	0.52	7.35	1.12	84.50
Last 5	10:45:53	4822.04	18.97	6.30	461.23	0.44	7.35	1.12	84.30
Variance 0			-0.01	-0.00	0.84			-0.18	-0.21
Variance 1			0.00	0.00	1.60			-0.03	-0.23
Variance 2			0.16	0.00	0.48			-0.01	-0.20

Notes

Purged three well volumes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 09:49:05

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 31.66 ft

Pump placement from TOC 27.66 ft

Well Information:

Well ID BRGWC-33S
Well diameter 2 in
Well Total Depth 31.66 ft
Screen Length 10 ft
Depth to Water 8.48 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.425312 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	09:28:08	300.16	20.22	4.56	462.22	0.16	8.48	0.37	113.32
Last 5	09:33:08	600.02	20.06	4.73	458.45	0.42	8.48	0.13	114.78
Last 5	09:38:08	900.02	20.02	4.76	458.42	0.31	8.48	0.10	114.84
Last 5	09:43:08	1200.02	20.02	4.78	458.10	0.23	8.48	0.08	115.52
Last 5	09:48:08	1500.02	20.04	4.78	457.87	0.23	8.48	0.07	116.58
Variance 0			-0.04	0.03	-0.02			-0.04	0.06
Variance 1			0.01	0.02	-0.32			-0.01	0.67
Variance 2			0.01	0.00	-0.23			-0.01	1.06

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 10:49:40

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 54.64 ft

Pump placement from TOC 49.64 ft

Well Information:

Well ID BRGWC-34S
Well diameter 2 in
Well Total Depth 54.64 ft
Screen Length 10 ft
Depth to Water 2.67 ft

Pumping Information:

Final Pumping Rate 300 mL/min
Total System Volume 0.5278814 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.36 in
Total Volume Pumped 7.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	10:26:04	300.03	21.03	5.83	728.14	0.51	2.70	0.16	94.35
Last 5	10:31:04	600.02	20.95	5.85	723.71	0.48	2.70	0.11	95.36
Last 5	10:36:05	900.68	20.97	5.86	720.84	0.18	2.70	0.07	95.41
Last 5	10:41:05	1200.68	20.95	5.86	716.14	0.42	2.70	0.05	95.46
Last 5	10:46:05	1500.68	20.81	5.85	710.22	0.17	2.70	0.04	95.64
Variance 0			0.02	0.02	-2.87			-0.04	0.05
Variance 1			-0.02	0.00	-4.69			-0.02	0.05
Variance 2			-0.14	-0.01	-5.93			-0.01	0.18

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 12:03:57

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 35.34 ft

Pump placement from TOC 30.34 ft

Well Information:

Well ID BRGWC-35S
Well diameter 2 in
Well Total Depth 35.34 ft
Screen Length 10 ft
Depth to Water 2.15 ft

Pumping Information:

Final Pumping Rate 275 mL/min
Total System Volume 0.4417374 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 0.36 in
Total Volume Pumped 6.875 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	11:42:42	300.02	20.76	5.98	670.58	3.63	2.17	0.39	98.32
Last 5	11:47:42	600.02	20.63	6.02	671.93	4.00	2.17	0.16	98.56
Last 5	11:52:42	900.02	20.53	6.02	674.75	2.35	2.17	0.11	98.70
Last 5	11:57:42	1200.02	20.56	6.02	677.25	1.21	2.17	0.08	98.92
Last 5	12:02:42	1500.02	20.55	6.03	680.75	0.86	2.18	0.07	98.39
Variance 0			-0.10	0.00	2.82			-0.05	0.14
Variance 1			0.03	-0.00	2.50			-0.03	0.21
Variance 2			-0.01	0.01	3.50			-0.01	-0.53

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-17 12:41:52

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 34.02 ft

Pump placement from TOC 29.02 ft

Well Information:

Well ID BRGWC-36S
Well diameter 2 in
Well Total Depth 34.02 ft
Screen Length 10 ft
Depth to Water 2.80 ft

Pumping Information:

Final Pumping Rate 180 mL/min
Total System Volume 0.2418457 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 1.68 in
Total Volume Pumped 4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	12:18:56	300.02	18.01	5.62	683.36	0.26	2.95	2.05	114.65
Last 5	12:23:56	600.02	18.19	5.63	678.26	0.63	2.94	2.60	113.27
Last 5	12:28:56	900.02	18.23	5.62	658.57	0.77	2.94	2.07	111.80
Last 5	12:33:57	1201.02	18.26	5.61	644.49	0.50	2.94	2.06	110.66
Last 5	12:38:59	1503.02	18.28	5.61	636.74	0.79	2.94	2.05	109.79
Variance 0			0.04	-0.01	-19.70			-0.53	-1.47
Variance 1			0.03	-0.01	-14.08			-0.01	-1.14
Variance 2			0.01	0.01	-7.75			-0.01	-0.87

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 13:13:59

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 68.73 ft

Pump placement from TOC 63.73 ft

Well Information:

Well ID BRGWC-37S
Well diameter 2 in
Well Total Depth 68.73 ft
Screen Length 10 ft
Depth to Water 50.70 ft

Pumping Information:

Final Pumping Rate 120 mL/min
Total System Volume 0.5907711 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 4.44 in
Total Volume Pumped 4.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	12:50:51	900.60	21.62	5.61	56.55	0.31	51.19	7.86	85.27
Last 5	12:55:51	1200.60	21.93	5.67	56.12	0.24	51.18	7.93	85.91
Last 5	13:00:51	1500.60	21.82	5.75	56.05	0.71	51.12	7.94	86.03
Last 5	13:06:01	1810.60	22.29	5.80	55.80	0.56	51.08	7.93	85.60
Last 5	13:11:05	2114.61	22.69	5.81	55.78	0.23	51.07	7.90	85.96
Variance 0			-0.11	0.08	-0.07			0.01	0.13
Variance 1			0.47	0.05	-0.25			-0.01	-0.43
Variance 2			0.40	0.01	-0.02			-0.03	0.36

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-10-16 14:46:54

Project Information:

Operator Name Travis Martinez
Company Name Golder
Project Name Plant Branch
Site Name Default Site
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 647057
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED
Tubing Type poly
Tubing Diameter 0.17 in
Tubing Length 43.66 ft

Pump placement from TOC 38.66 ft

Well Information:

Well ID BRGWC-38S
Well diameter 2 in
Well Total Depth 43.66 ft
Screen Length 10 ft
Depth to Water 21.90 ft

Pumping Information:

Final Pumping Rate 150 mL/min
Total System Volume 0.478873 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 9.00 in
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	14:25:34	1200.02	22.11	4.20	856.52	1.08	22.68	2.35	133.95
Last 5	14:30:43	1509.02	22.25	4.21	852.74	0.43	22.68	2.20	134.09
Last 5	14:35:43	1809.02	21.62	4.20	855.45	0.52	22.67	2.09	134.52
Last 5	14:40:44	2109.42	21.49	4.21	856.01	0.66	22.67	1.99	134.27
Last 5	14:45:52	2417.42	21.35	4.21	855.66	0.33	22.65	1.93	134.39
Variance 0			-0.62	-0.00	2.71			-0.11	0.43
Variance 1			-0.13	0.01	0.56			-0.10	-0.25
Variance 2			-0.13	-0.00	-0.36			-0.06	0.12

Notes

Grab Samples

APPENDIX B

DATA VALIDATION SUMMARIES

Quality Control Review of Analytical Data- Ash Pond E Submitted by Pace Analytical Services August - December 2019

This narrative presents results of the quality control (QC) data review performed on analytical data submitted by Pace Analytical Services, LLC, for groundwater samples collected at Plant Branch CCR Ash Pond E (Site) between August 27, 2019 and December 18, 2019. The chemical data were reviewed to identify quality issues which could affect the use of the data for decision making purposes.

Information regarding the primary sample locations, analytical parameters, QC samples, sampling dates, and laboratory sample delivery group (SDG) designations is summarized in Table 1. In accordance with groundwater monitoring and corrective action procedures discussed in Title 40 CFR, Subpart D - Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, the samples were analyzed for detection monitoring constituents listed in 40 CFR, Part 257, Appendix III and assessment monitoring constituents listed in 40 CFR, Part 257, Appendix IV. Test methods included Inductively Coupled Plasma- Mass Spectrometry (USEPA Method 6020B), Mercury in Liquid Wastes (USEPA Method 7470A), Determination of Inorganic Anions By Ion Chromatography (USEPA Method 300.0), Total Dissolved Solids (Standard Methods 2540C), Radium-226 (USEPA Method 9315) and Radium-228 (USEPA Method 9320).

Data were reviewed in accordance with the US EPA Region IV Data Validation Standard Operating Procedures for Contract Laboratory Program (CLP) Inorganic Data by Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy (September 2011, Rev. 2.0), US EPA Region IV Data Validation Standard Operating Procedures for CLP Mercury Data by Cold Vapor Atomic Absorption (September 2011, Rev. 2.0), the National Functional Guidelines for Inorganic Superfund Methods Data Review (January 2017), and US Department of Energy, Evaluation of Radiochemical Data Usability (April 1997). The review included an assessment of the results for completeness, precision (laboratory duplicates, matrix spike/matrix spike duplicates), accuracy (laboratory control samples and matrix spike samples), and blank contamination (including field, equipment and laboratory blanks). Additionally, sample procedures, holding times and chains-of-custody were reviewed. Where there was a discrepancy between the QC criteria in the guidelines and the QC criterion established in the analytic methodology, method-specific criteria or professional judgment was used.

DATA QUALITY OBJECTIVES

Laboratory Precision:	Laboratory goals for precision were met.
Field Precision:	Field goals for precision were met with the exception of total dissolved solids (TDS) in BRGWC-34S as described in the qualifications section below.
Accuracy:	Laboratory goals for accuracy were met exception of fluoride for BRGWC-17S and chloride for BRGWC-36S as described in the qualifications section below.
Detection Limits:	Project goals for detection limits were met. Certain samples were diluted due to elevated concentrations of target analytes. Dilutions do not require qualifications based on USEPA guidelines. Detection and reporting limits of non-detect compounds are elevated proportional to the dilution when undiluted sample results are not provided by the laboratory. The data usability of diluted results was evaluated by the data user in the context of site-wide characterization.
Completeness:	There were no rejected analytical results for this event, resulting in a completion of 100%.

Holding Times: All holding time requirements were met in accordance with specific analytical methods.

QUALIFICATIONS

In general, chemical results for the samples collected at the Site were qualified on the basis of low precision or accuracy, or on the basis of professional judgment. The following definitions provide brief explanations of the qualifiers which may have been assigned to data by the laboratory during the data validation process.

- J** The analyte was positively identified above the method detection limit; however, the associated numerical value is the approximate concentration of the analyte in the sample.
- J-** The analyte was reported above the method detection limit; however, the concentration reported is an estimated value that may be biased low.
- J+** The analyte was reported above the method detection limit; however, the concentration reported is an estimated value that may be biased high.
- U** The analyte was not detected above the method detection limit.

The data generated as part of this sampling event met the QC criteria established in the respective analytical methods and data validation guidelines except as specified below. Although these qualifications were applied to some data from samples collected at the Site and reported in the sample delivery group (SDGs), qualifications may not have been required or applied to all samples collected. A summary of sample qualifications can be found in Table 2.

- Certain arsenic chromium, molybdenum, sulfate, TDS, radium-226, radium-228 and total radium results were qualified as non-detect (U) when the analyte was detected at a similar level in an associated blank sample. As shown in Table 2, if the original sample results were below the reporting limit (RL) or the minimum detectable concentration (MDC), the results were qualified as non-detect (U) and the results were raised to the RL or MDC. If results were above the RL or MDC, the results were qualified U and the RL or MDC was raised to the sample result.
- Total radium was qualified as biased high (J+) in sample BRGWC-38S when one radium isotope was detected above the MDC and the other isotope was U qualified.
- Fluoride for DGWC-17S and chloride for BRGWC-36S were qualified as estimated biased low (J-) as the associated matrix spike/matrix spike duplicate (MS/MSD) recoveries were below the QC criteria.
- TDS for BRGWC-34S was qualified as estimated (J) as the field duplicate relative percent difference was outside QC criteria.

Golder reviewed the data from samples collected at Plant Branch CCR Ash Pond E between August 27, 2019 and December 18, 2019 in accordance with the analytical methods, the laboratory specific QC criteria, and the guidelines. As described above, 100% of the results were acceptable for project use.

REFERENCE

Paar, J.G. & Porterfield, D.R. *Evaluation of Radiochemical Data Usability*. United States Department of Energy, Office of Environmental Restoration and Waste Management, Oak Ridge National Laboratory, April 1997.

USEPA, January 2017, National, Office of Superfund Remediation and Technology Innovation, *National Functional Guidelines for Inorganic Superfund Methods Data Review*, Revision 0.0.

USEPA, September 2011, Region 4, Science and Ecosystem Support Division, Quality Assurance Section, MTSB, *Data Validation Standard Operating Procedures for Contract Laboratory Program Inorganic Data By Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy*, Revision 2.0.

USEPA, September 2011, Region 4, Science and Ecosystem Support Division, Quality Assurance Section, MTSB, *Data Validation Standard Operating Procedures for Contract Laboratory Program Mercury Data By Cold Vapor Atomic Absorption*, Revision 2.0.

TABLE 1

Sample Summary Table
SCS Plant Branch - Pond E

SDGs	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses			
						Total Metals (6020)	Anions (300.0)	TDS (SM 2540C)	Radium 226, Radium 228 (9315, 9320)
2622483/2622484	BRGWA-2I	8/27/2019	2622483005/2622484005	GW	-	X	X	-	X
2622483/2622484	BRGWA-2S	8/27/2019	2622483004/2622484004	GW	-	X	X	-	X
2622483/2622484	BRGWA-5I	8/27/2019	2622483003/2622484003	GW	-	X	X	-	X
2622483/2622484	BRGWA-5S	8/27/2019	2622483002/2622484002	GW	-	X	X	-	X
2622483/2622484	BRGWA-6S	8/27/2019	2622483001/2622484001	GW	-	X	X	-	X
2622483/2622484	BRGWC-33S	8/27/2019	2622483006/2622484006	GW	-	X	X	-	X
2622483/2622484	Dup-1	8/27/2019	2622483007/2622484007	GW	DUP (BRGWC-33S)	X	X	-	X
2622563/2622564	BRGWC-17S	8/28/2019	2622563001/2622564001	GW	-	X	X	-	X
2622563/2622564	BRGWC-34S	8/28/2019	2622563002/2622564002	GW	-	X	X	-	X
2622563/2622564	BRGWC-35S	8/28/2019	2622563003/2622564003	GW	-	X	X	-	X
2622563/2622564	BRGWC-36S	8/28/2019	2622563004/2622564004	GW	-	X	X	-	X
2622563/2622564	BRGWC-37S	8/28/2019	2622563005/2622564005	GW	-	X	X	-	X
2622604/2622605	BRGWC-38S	8/29/2019	2622604001/2622605001	GW	-	X	X	-	X
2624391/2624389	BRGWA-2I	10/15/2019	2624391005/2624389005	GW	-	X	X	X	X
2624391/2624389	BRGWA-2S	10/15/2019	2624391004/2624389004	GW	-	X	X	X	X
2624391/2624389	BRGWA-5I	10/15/2019	2624391003/2624389003	GW	-	X	X	X	X
2624391/2624389	BRGWA-5S	10/15/2019	2624391002/2624389002	GW	-	X	X	X	X
2624391/2624389	BRGWA-6S	10/15/2019	2624391001/2624389001	GW	-	X	X	X	X
2624484/2624486	BRGWC-33S	10/16/2019	2624484001/2624486001	GW	-	X	X	X	X
2624484/2624486	BRGWC-34S	10/16/2019	2624484002/2624486002	GW	-	X	X	X	X
2624484/2624486	BRGWC-35S	10/16/2019	2624484003/2624486003	GW	-	X	X	X	X
2624484/2624486	BRGWC-37S	10/16/2019	2624484004/2624486004	GW	-	X	X	X	X
2624484/2624486	BRGWC-38S	10/16/2019	2624484005/2624486005	GW	-	X	X	X	X
2624484/2624486	Dup-1	10/16/2019	2624484006/2624486006	GW	DUP (BRGWC-34S)	X	X	X	X
2626394	BRGWC-17S	12/3/2019	2626394001	GW	-	X	X	-	X
2626394	BRGWC-36S	12/3/2019	2626394002	GW	-	X	X	-	X
2627067	BRGWC-17S	12/18/2019	2627067001	GW	-	-	-	-	X
2627067	BRGWC-36S	12/18/2019	2627067002	GW	-	-	-	-	X

Abbreviations:

- DUP - Field duplicate
- GW - Groundwater
- TDS - Total Dissolved Solids
- SDG - Sample Delivery Group
- QC - Quality Control

TABLE 2
Qualifier Summary Table
Plant Branch - Pond E

SDG	Sample Name	Constituent	New Result	New RL or MDC	Qualifier	Reason
2622563	BRGWC-17S	Arsenic	0.005	-	U	Blank contamination
2622563	BRGWC-35S	Arsenic	0.005	-	U	Blank contamination
2622563	BRGWC-36S	Arsenic	0.005	-	U	Blank contamination
2622563	BRGWC-37S	Arsenic	0.005	-	U	Blank contamination
2622563	BRGWC-37S	Chromium	0.01	-	U	Blank contamination
2622483	BRGWA-5I	Molybdenum	0.01	-	U	Blank contamination
2622484	BRGWA-2I	Radium-226	-	0.596	U	Blank contamination
2622484	BRGWA-2S	Radium-226	-	0.950	U	Blank contamination
2622484	BRGWA-5I	Radium-226	-	0.512	U	Blank contamination
2622484	BRGWA-5S	Radium-226	-	0.520	U	Blank contamination
2624486	BRGWC-33S	Radium-226	-	0.474	U	Blank contamination
2622564	BRGWC-34S	Radium-226	-	0.364	U	Blank contamination
2624486	BRGWC-35S	Radium-226	-	0.523	U	Blank contamination
2622564	BRGWC-36S	Radium-226	-	0.541	U	Blank contamination
2622605	BRGWC-38S	Radium-226	-	1.370	U	Blank contamination
2624486	BRGWC-38S	Radium-226	-	0.539	U	Blank contamination
2622484	BRGWA-5S	Radium-228	-	0.922	U	Blank contamination
2622484	BRGWC-33S	Radium-228	-	0.947	U	Blank contamination
2624486	BRGWC-35S	Radium-228	-	1.17	U	Blank contamination
2624486	BRGWC-38S	Radium-228	-	2.12	U	Blank contamination
2622484	BRGWA-2I	Total Radium	-	1.11	U	Blank contamination
2622484	BRGWA-2S	Total Radium	-	1.47	U	Blank contamination
2622484	BRGWA-5I	Total Radium	-	1.19	U	Blank contamination
2622484	BRGWA-5S	Total Radium	-	1.44	U	Blank contamination
2622484	BRGWC-33S	Total Radium	-	1.38	U	Blank contamination
2624486	BRGWC-35S	Total Radium	-	1.69	U	Blank contamination
2622605	BRGWC-38S	Total Radium	-	-	J+	Blank contamination
2624486	BRGWC-38S	Total Radium	-	2.66	U	Blank contamination
2624484	BRGWC-37S	Sulfate	1	-	U	Blank contamination
2624484	BRGWC-33S	Arsenic	0.005	-	U	Blank contamination
2624484	BRGWC-35S	Arsenic	0.005	-	U	Blank contamination
2624484	BRGWC-37S	Arsenic	0.005	-	U	Blank contamination
2624484	BRGWC-38S	Arsenic	0.005	-	U	Blank contamination
2624389	BRGWA-5I	Molybdenum	0.01	-	U	Blank contamination
2624389	BRGWA-2I	TDS	-	140	U	Blank contamination
2624389	BRGWA-2S	TDS	-	66	U	Blank contamination
2624389	BRGWA-5I	TDS	-	175	U	Blank contamination
2624389	BRGWA-5S	TDS	-	144	U	Blank contamination
2624389	BRGWA-6S	TDS	-	63	U	Blank contamination
2624484	BRGWC-37S	TDS	-	49	U	Blank contamination
2624389	BRGWA-2I	Arsenic	0.005	-	U	Blank contamination
2624389	BRGWA-2S	Arsenic	0.005	-	U	Blank contamination
2624389	BRGWA-5I	Arsenic	0.005	-	U	Blank contamination
2624389	BRGWA-5S	Arsenic	0.005	-	U	Blank contamination
2624391	BRGWA-5I	Radium-226	-	0.651	U	Blank contamination
2626394	BRGWC-36S	Chloride	-	-	J-	MS and/or MSD recovered below lower limit
2626394	BRGWC-17S	Fluoride	-	-	J-	MS and/or MSD recovered below lower limit
2624487	BRGWC-34S	TDS	-	-	J	RPD exceedance between field duplicate and parent sample
2622484	Dup-1	Radium-226	-	0.534	U	Blank contamination
2624486	Dup-1	Radium-226	-	0.698	U	Blank contamination
2624486	Dup-1	Radium-228	-	1.34	U	Blank contamination
2624486	Dup-1	Total Radium	-	2.04	U	Blank contamination
2624486	Dup-1	TDS	-	-	J	RPD exceedance between field duplicate and parent sample

Abbreviations:

MDC: Minimum detectable concentration

MDL: Method detection limit

RL : Reporting limit

SDG : Sample delivery group

Qualifiers:

J+ : Estimated result, biased high

J- : Estimated result, biased low

J : Estimated result

U : Non-detect result

APPENDIX C

STATISTICAL ANALYSES

Interwell Prediction Limit

Branch Client: Golder Associates Data: Plant Branch Ash Pond Printed 2/7/2020, 11:16 AM

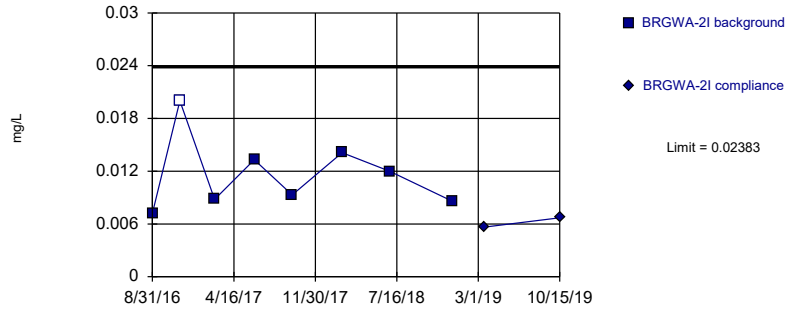
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	BRGWC-33S	0.25	n/a	10/16/2019	1.1	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-34S	0.25	n/a	10/16/2019	2.3	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-35S	0.25	n/a	10/16/2019	2.2	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-36S	0.25	n/a	12/3/2019	1	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-38S	0.25	n/a	10/16/2019	1.5	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Calcium (mg/L)	BRGWC-17S	24	n/a	12/3/2019	37.7	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-33S	24	n/a	10/16/2019	46.5	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-34S	24	n/a	10/16/2019	78.2	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-35S	24	n/a	10/16/2019	61.2	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-36S	24	n/a	12/3/2019	47.8	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-38S	24	n/a	10/16/2019	38.4	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-33S	4.8	n/a	10/16/2019	5.4	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-34S	4.8	n/a	10/16/2019	7.3	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-35S	4.8	n/a	10/16/2019	6.6	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-36S	4.8	n/a	12/3/2019	7.7	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-38S	4.8	n/a	10/16/2019	6.4	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-38S	0.19	n/a	10/16/2019	0.61	Yes	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
pH (S.U)	BRGWC-33S	7.169	5.91	10/16/2019	4.78	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-34S	7.169	5.91	10/16/2019	5.85	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-36S	7.169	5.91	10/17/2019	5.61	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-38S	7.169	5.91	10/16/2019	4.21	Yes	54	0	None	No	0.000...	Param 1 of 2
Sulfate (mg/L)	BRGWC-17S	7.5	n/a	12/3/2019	180	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-33S	7.5	n/a	10/16/2019	226	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-34S	7.5	n/a	10/16/2019	325	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-35S	7.5	n/a	10/16/2019	277	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-36S	7.5	n/a	12/3/2019	256	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-38S	7.5	n/a	10/16/2019	432	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-17S	299	n/a	12/3/2019	378	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-34S	299	n/a	10/16/2019	473	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-35S	299	n/a	10/16/2019	481	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-36S	299	n/a	12/3/2019	498	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-38S	299	n/a	10/16/2019	630	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2

Interwell Prediction Limit

Branch Client: Golder Associates Data: Plant Branch Ash Pond Printed 2/7/2020, 11:16 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	BRGWC-17S	0.25	n/a	12/3/2019	0.0063	No	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-33S	0.25	n/a	10/16/2019	1.1	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-34S	0.25	n/a	10/16/2019	2.3	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-35S	0.25	n/a	10/16/2019	2.2	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-36S	0.25	n/a	12/3/2019	1	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Boron (mg/L)	BRGWC-38S	0.25	n/a	10/16/2019	1.5	Yes	50	64	n/a	n/a	0.000...	NP (NDs) 1 of 2
Calcium (mg/L)	BRGWC-17S	24	n/a	12/3/2019	37.7	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-33S	24	n/a	10/16/2019	46.5	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-34S	24	n/a	10/16/2019	78.2	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-35S	24	n/a	10/16/2019	61.2	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-36S	24	n/a	12/3/2019	47.8	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Calcium (mg/L)	BRGWC-38S	24	n/a	10/16/2019	38.4	Yes	50	6	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-17S	4.8	n/a	12/3/2019	4.8	No	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-33S	4.8	n/a	10/16/2019	5.4	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-34S	4.8	n/a	10/16/2019	7.3	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-35S	4.8	n/a	10/16/2019	6.6	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-36S	4.8	n/a	12/3/2019	7.7	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Chloride (mg/L)	BRGWC-38S	4.8	n/a	10/16/2019	6.4	Yes	50	0	n/a	n/a	0.000...	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-17S	0.19	n/a	12/3/2019	0.2	No	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-33S	0.19	n/a	10/16/2019	0.17	No	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-34S	0.19	n/a	10/16/2019	0.13	No	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-35S	0.19	n/a	10/16/2019	0.08	No	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-36S	0.19	n/a	12/3/2019	0.15	No	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
Fluoride (mg/L)	BRGWC-38S	0.19	n/a	10/16/2019	0.61	Yes	55	49.09	n/a	n/a	0.000631	NP (normality) 1 of 2
pH (S.U)	BRGWC-17S	7.169	5.91	10/17/2019	6.3	No	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-33S	7.169	5.91	10/16/2019	4.78	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-34S	7.169	5.91	10/16/2019	5.85	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-35S	7.169	5.91	10/16/2019	6.03	No	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-36S	7.169	5.91	10/17/2019	5.61	Yes	54	0	None	No	0.000...	Param 1 of 2
pH (S.U)	BRGWC-38S	7.169	5.91	10/16/2019	4.21	Yes	54	0	None	No	0.000...	Param 1 of 2
Sulfate (mg/L)	BRGWC-17S	7.5	n/a	12/3/2019	180	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-33S	7.5	n/a	10/16/2019	226	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-34S	7.5	n/a	10/16/2019	325	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-35S	7.5	n/a	10/16/2019	277	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-36S	7.5	n/a	12/3/2019	256	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Sulfate (mg/L)	BRGWC-38S	7.5	n/a	10/16/2019	432	Yes	50	12	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-17S	299	n/a	12/3/2019	378	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-33S	299	n/a	10/16/2019	281	No	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-34S	299	n/a	10/16/2019	473	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-35S	299	n/a	10/16/2019	481	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-36S	299	n/a	12/3/2019	498	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2
Total Dissolved Solids (mg/L)	BRGWC-38S	299	n/a	10/16/2019	630	Yes	50	10	n/a	n/a	0.000...	NP (normality) 1 of 2

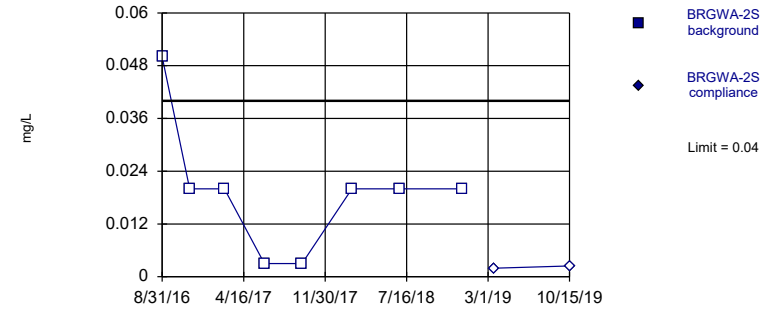
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.01166, Std. Dev.=0.004163, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8954, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

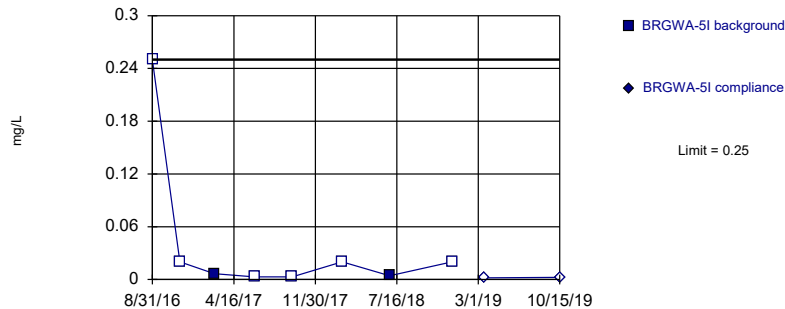
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

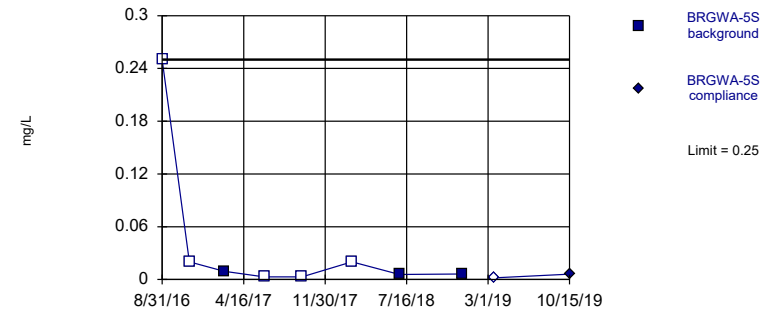
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

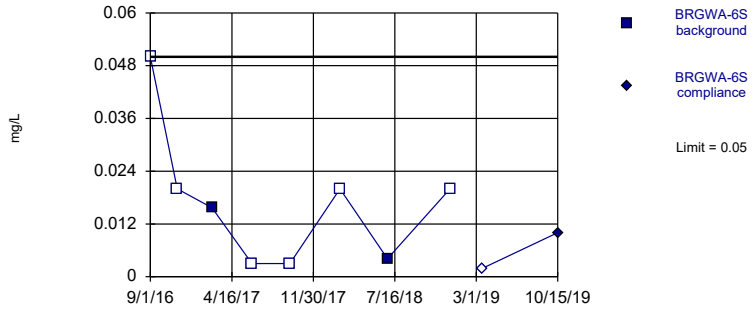
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 62.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

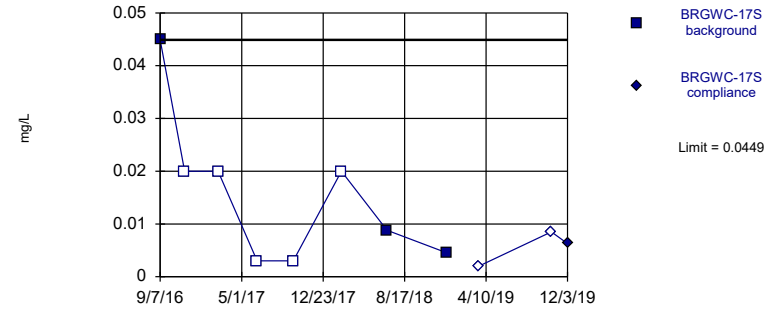
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

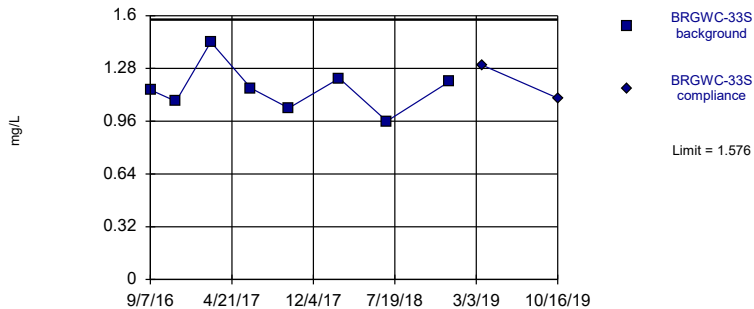
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 62.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

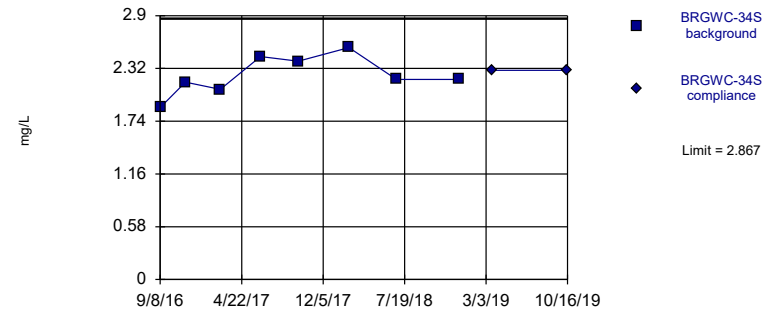
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=1.156, Std. Dev.=0.1436, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9426, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

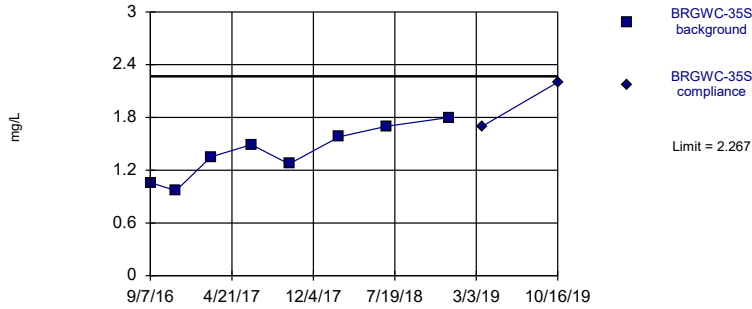
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=2.244, Std. Dev.=0.2134, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9608, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

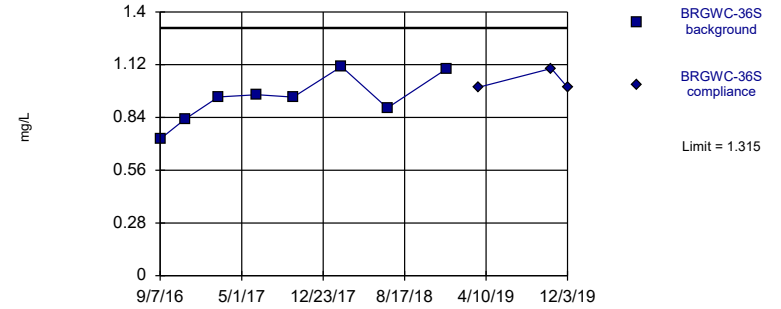
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=1.402, Std. Dev.=0.2959, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9636, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

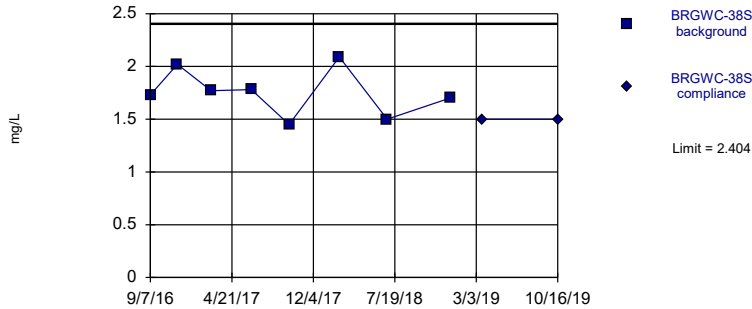
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.9393, Std. Dev.=0.1286, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

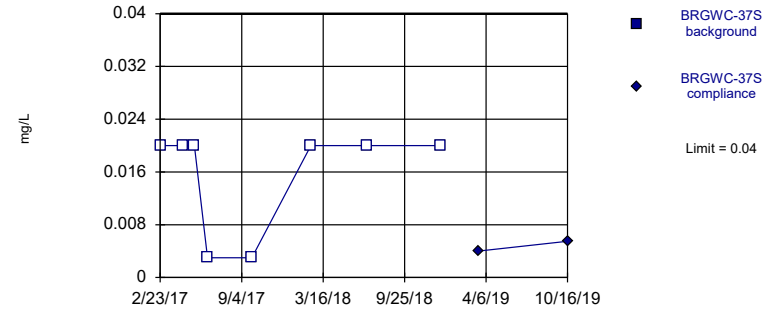
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=1.755, Std. Dev.=0.222, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9353, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

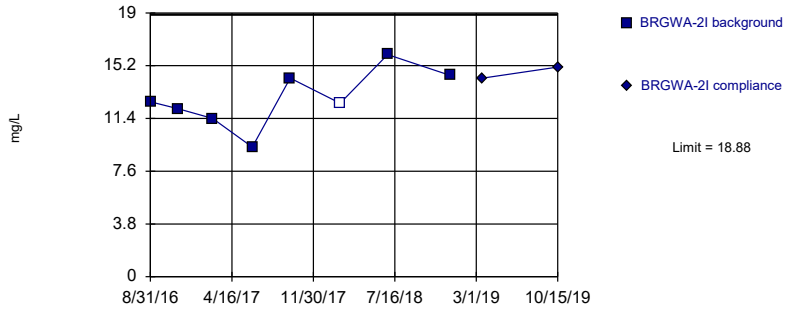
Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Constituent: Boron Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

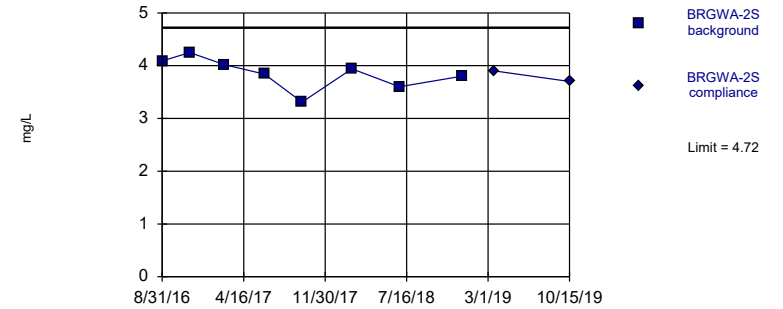
Within Limit Prediction Limit
 Intrawell Parametric



Background Data Summary: Mean=12.84, Std. Dev.=2.067, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9749, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:06 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

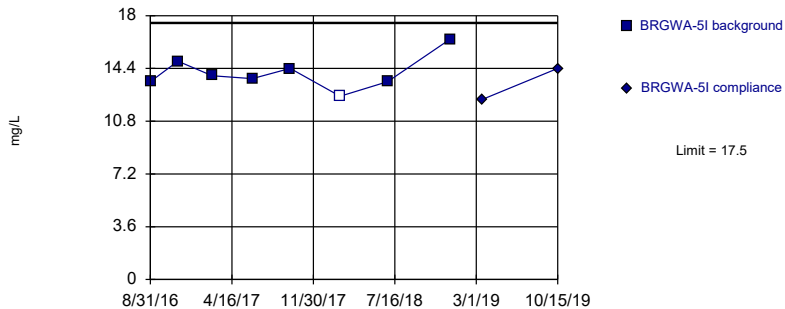
Within Limit Prediction Limit
 Intrawell Parametric



Background Data Summary: Mean=3.856, Std. Dev.=0.2954, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9651, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

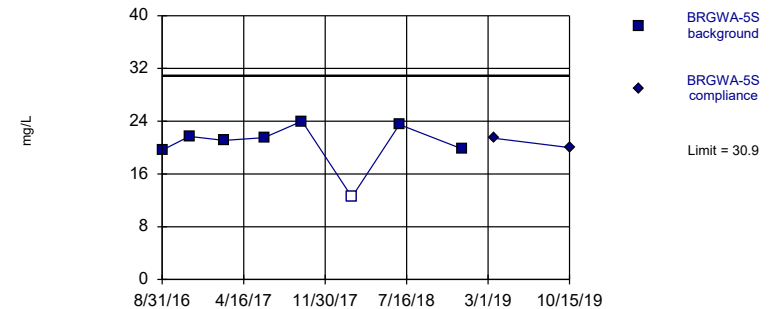
Within Limit Prediction Limit
 Intrawell Parametric



Background Data Summary: Mean=14.1, Std. Dev.=1.165, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9293, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

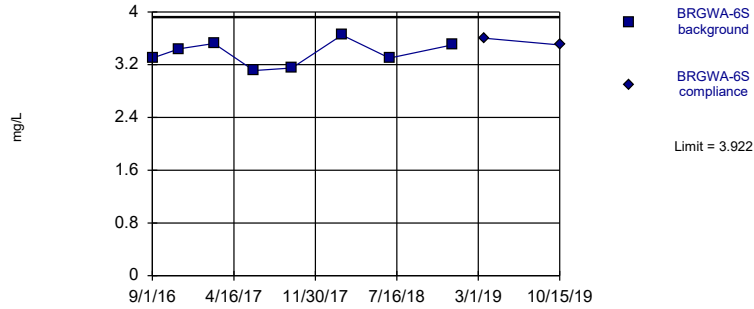
Within Limit Prediction Limit
 Intrawell Parametric



Background Data Summary: Mean=20.46, Std. Dev.=3.572, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8178, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

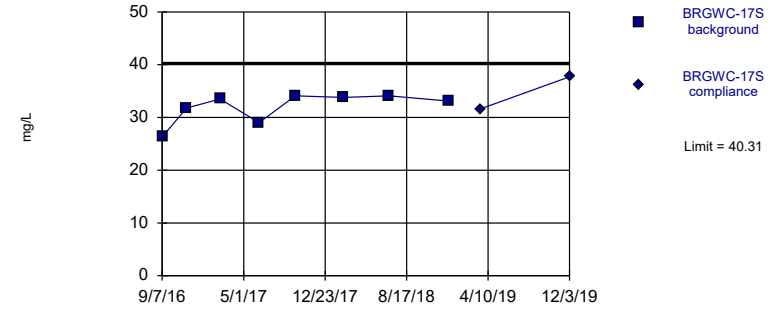
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=3.371, Std. Dev.=0.1884, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9528, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

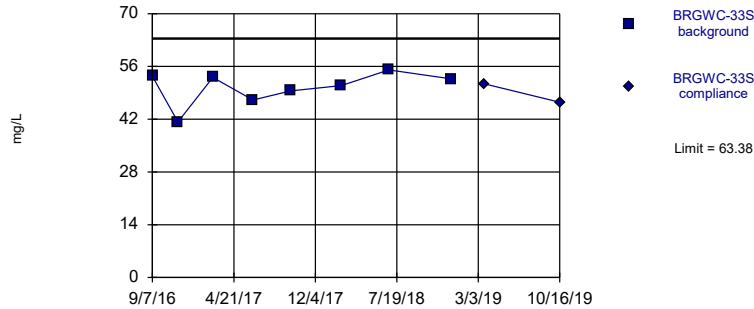
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=31.96, Std. Dev.=2.855, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7882, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

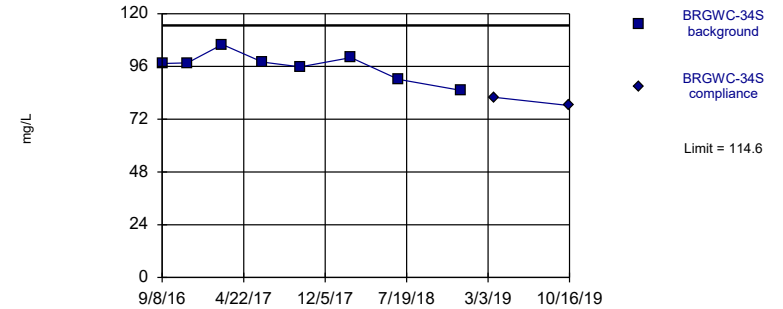
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=50.39, Std. Dev.=4.447, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8858, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

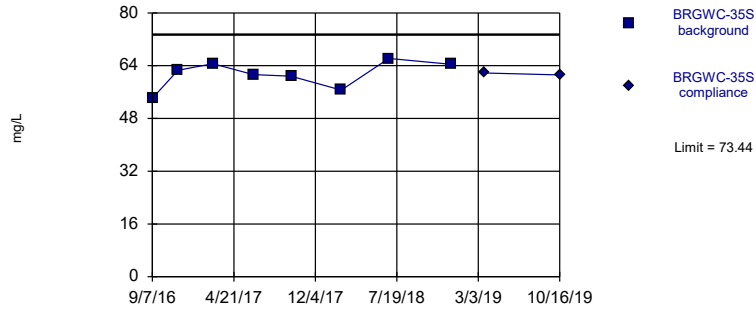
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=96.24, Std. Dev.=6.296, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9437, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

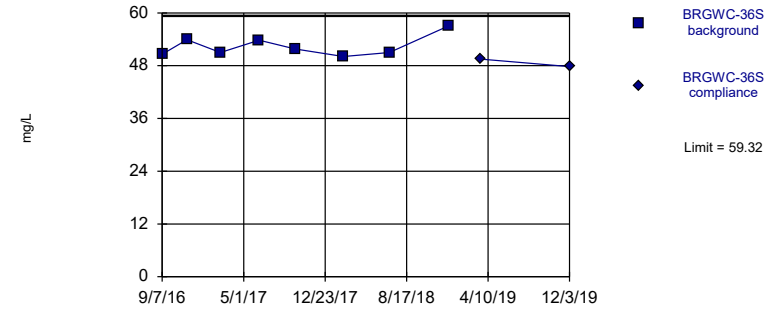
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=61.33, Std. Dev.=4.147, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9254, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

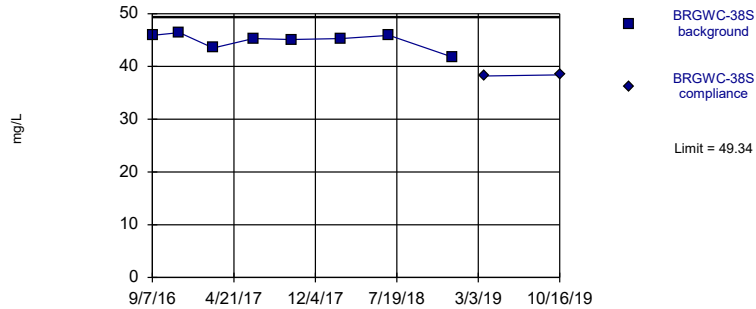
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=52.41, Std. Dev.=2.364, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8642, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

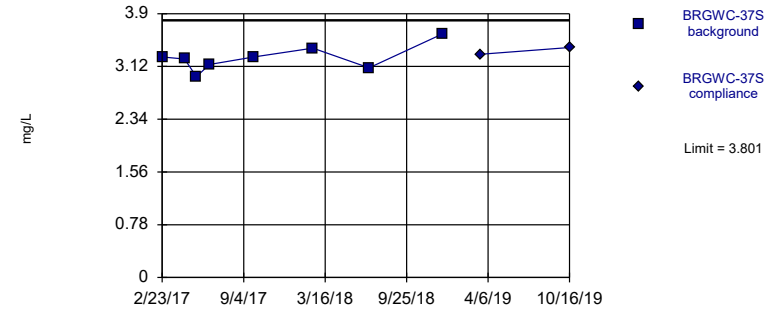
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=44.9, Std. Dev.=1.52, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8382, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

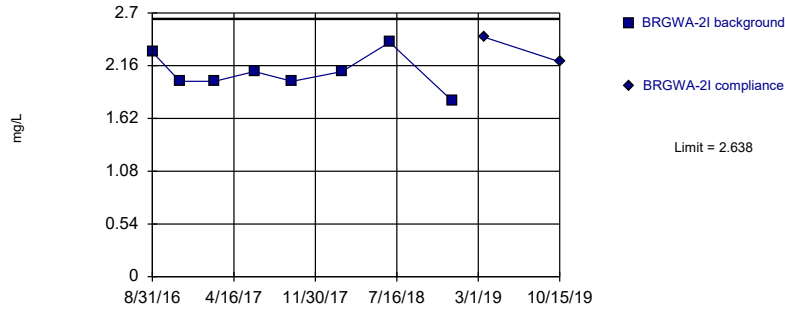
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=3.245, Std. Dev.=0.1903, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9626, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Calcium Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

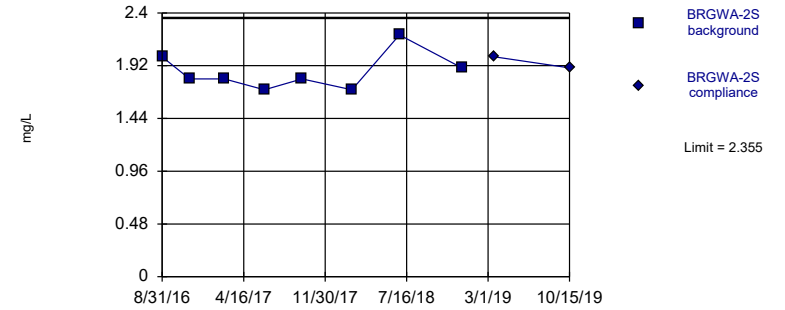
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=2.088, Std. Dev.=0.1885, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9304, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

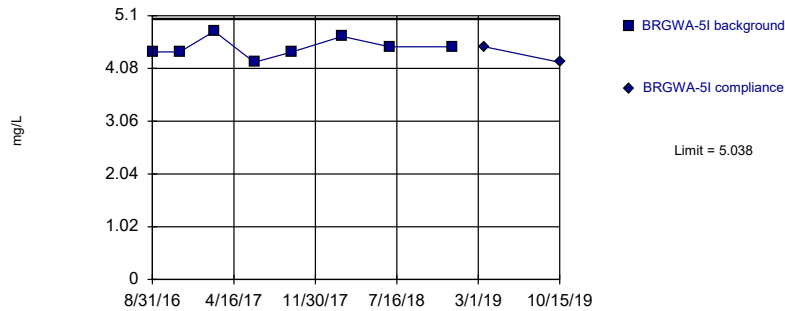
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=1.863, Std. Dev.=0.1685, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8663, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

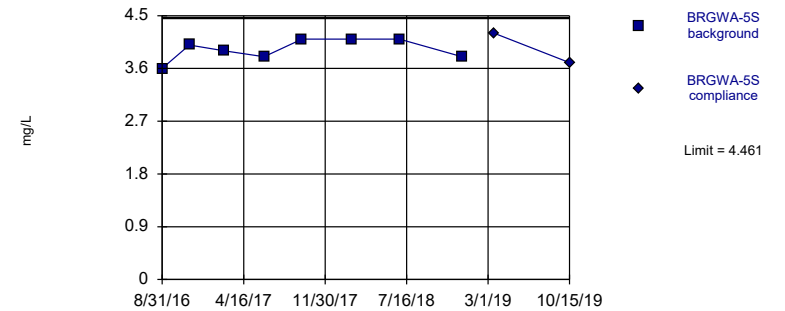
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=4.488, Std. Dev.=0.1885, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9304, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

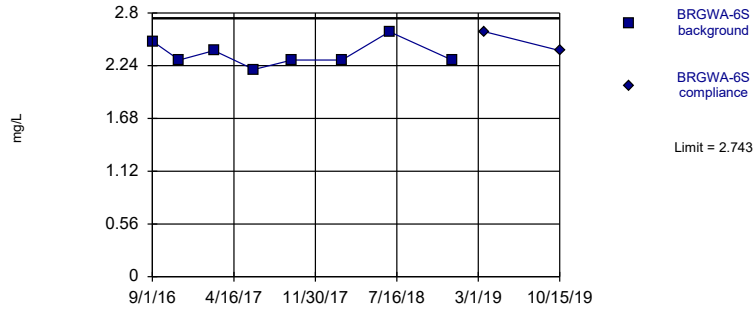
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=3.925, Std. Dev.=0.1832, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8826, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

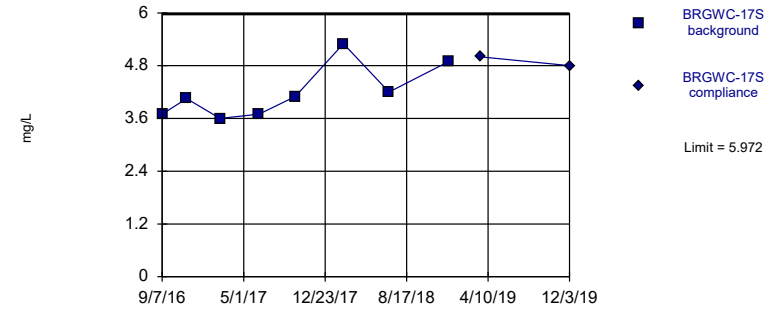
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=2.363, Std. Dev.=0.1302, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8774, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

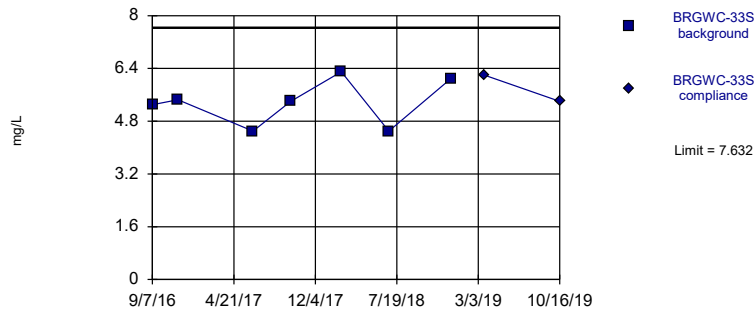
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=4.194, Std. Dev.=0.6085, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8662, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

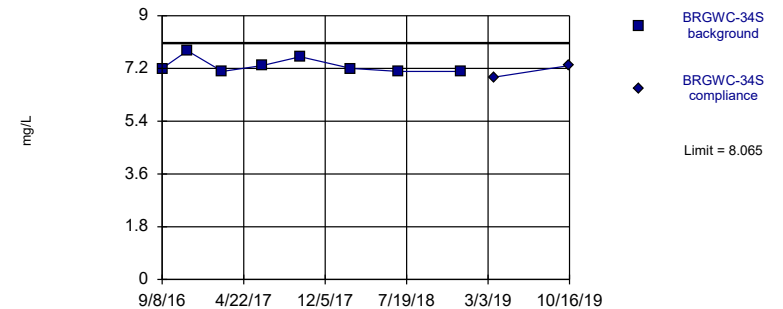
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=5.364, Std. Dev.=0.698, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9065, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

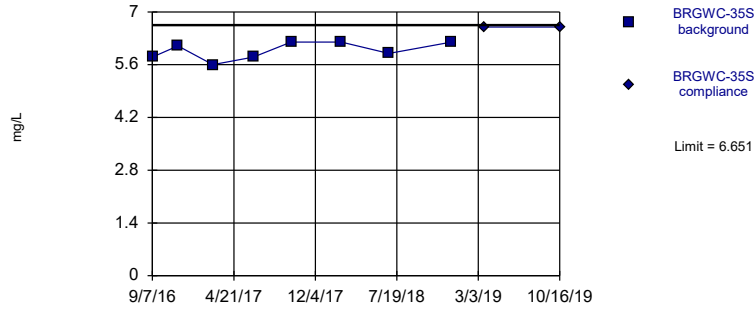
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=7.3, Std. Dev.=0.2619, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7923, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

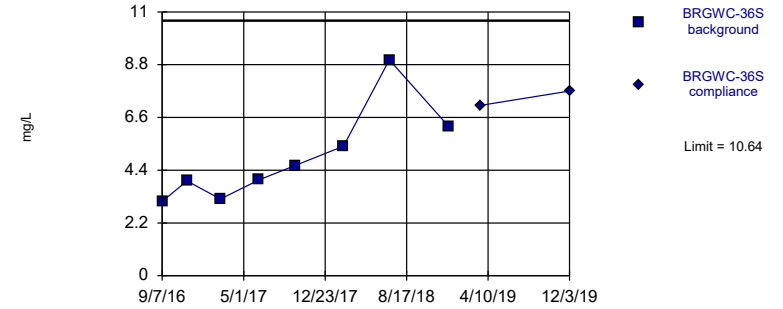
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=5.975, Std. Dev.=0.2315, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8683, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

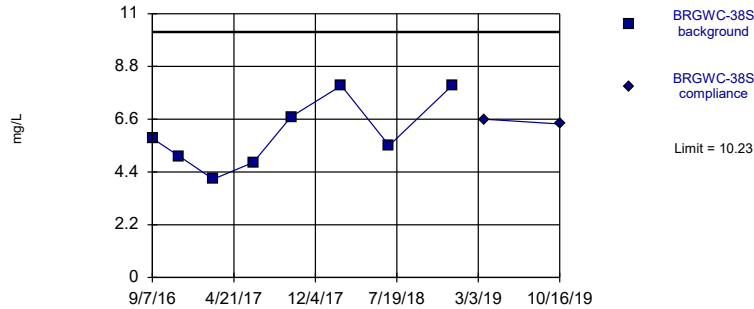
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=4.931, Std. Dev.=1.952, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.866, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

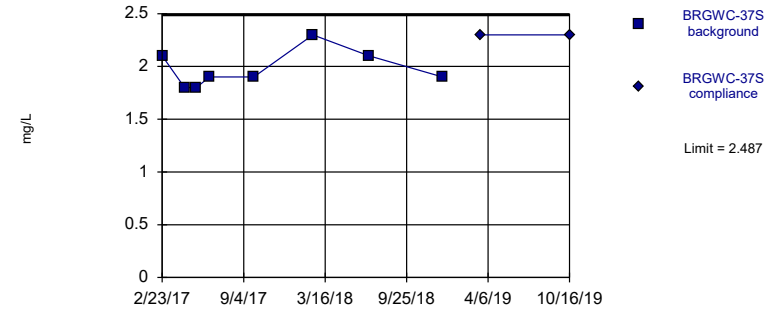
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=5.994, Std. Dev.=1.451, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9178, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

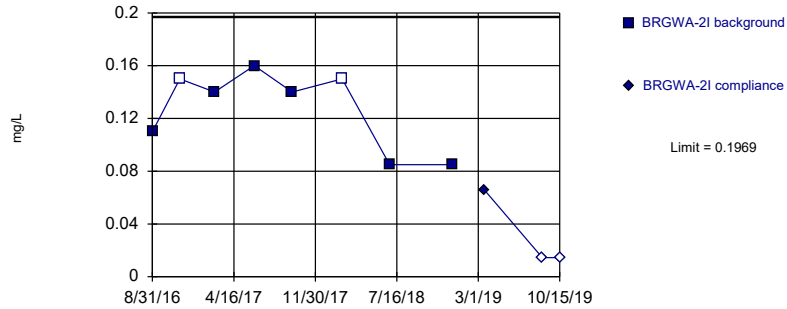
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=1.975, Std. Dev.=0.1753, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8695, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Chloride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

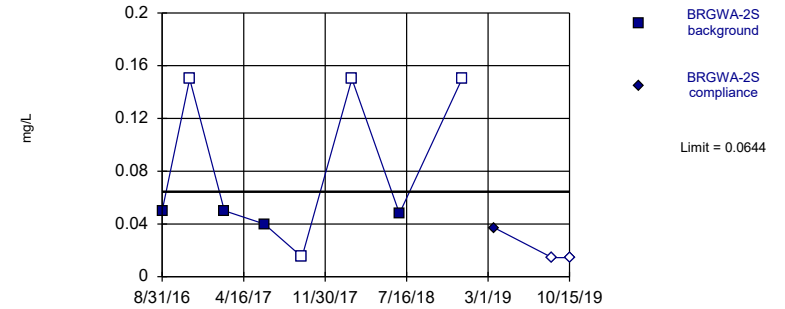
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.1122, Std. Dev.=0.02897, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8442, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

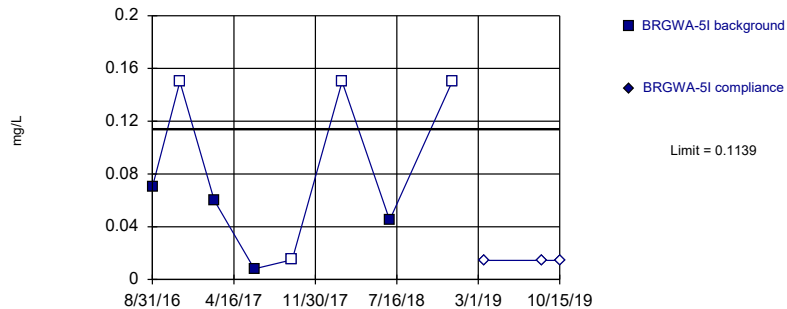
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.04147, Std. Dev.=0.007847, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.773, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

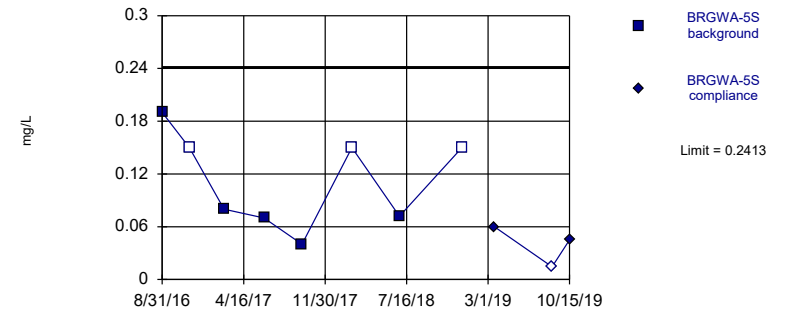
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0382, Std. Dev.=0.02591, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8426, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

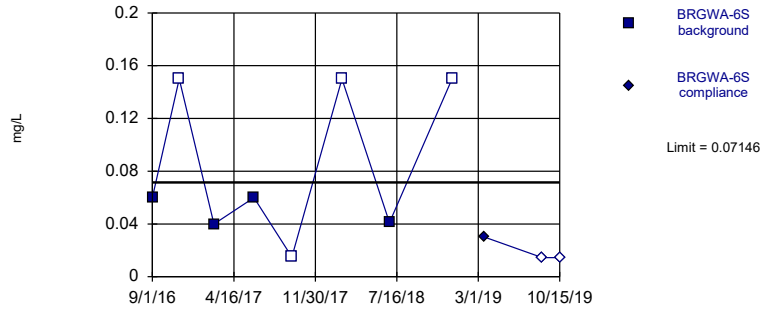
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0904, Std. Dev.=0.05162, n=8, 37.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8934, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

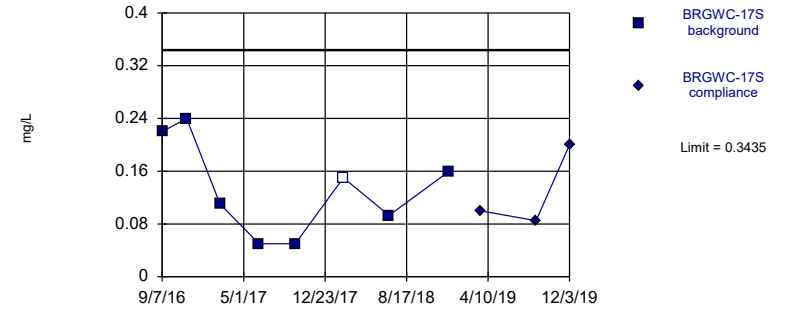
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.0416, Std. Dev.=0.01022, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8067, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

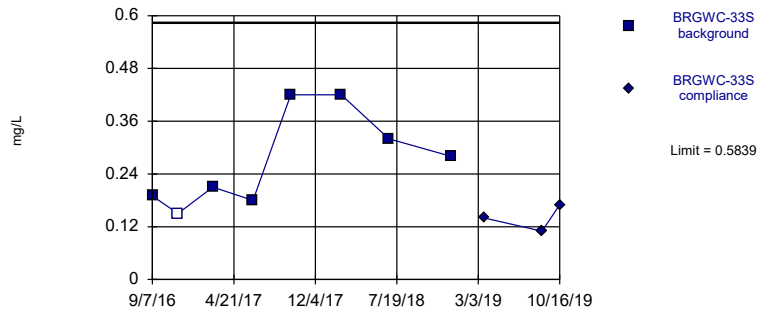
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.1341, Std. Dev.=0.07165, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9289, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

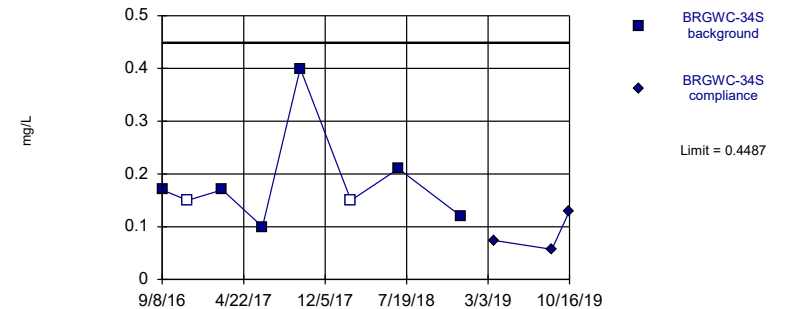
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.2713, Std. Dev.=0.107, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.883, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

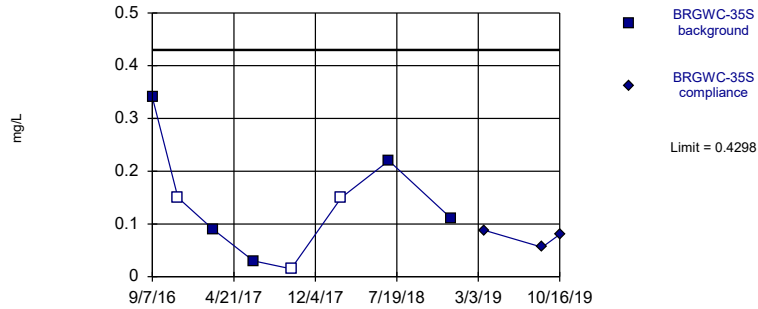
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.1743, Std. Dev.=0.0939, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.753, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

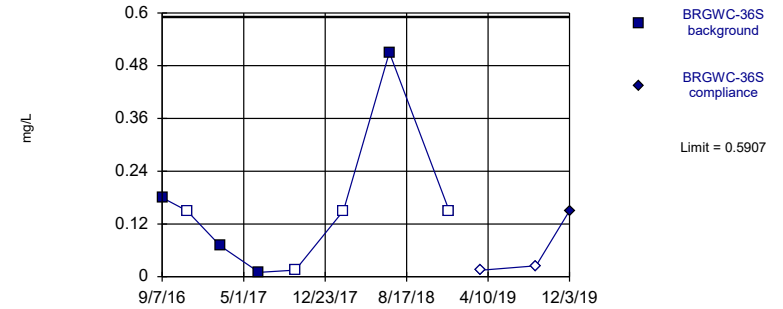
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.1265, Std. Dev.=0.1038, n=8, 37.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9348, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

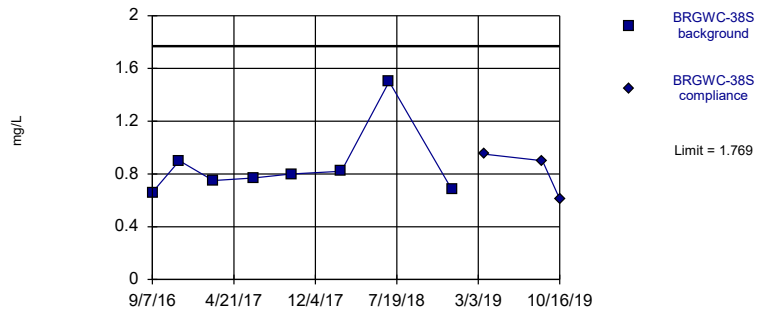
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.1228, Std. Dev.=0.1601, n=8, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7789, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

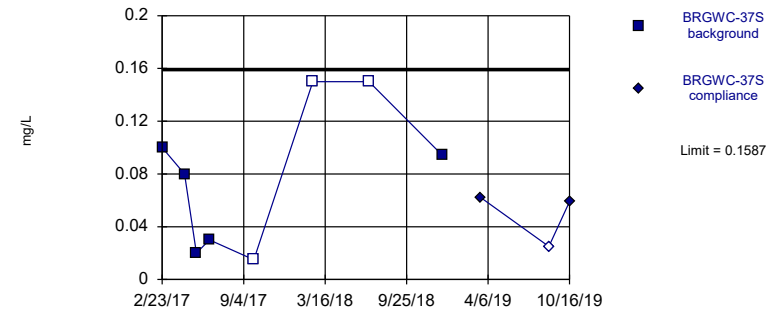
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=0.184, Std. Dev.=0.2581, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7802, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit Prediction Limit
Intrawell Parametric

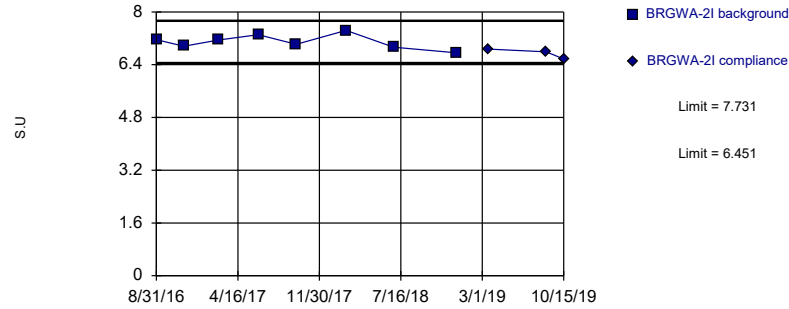


Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.05733, Std. Dev.=0.03467, n=8, 37.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Fluoride Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

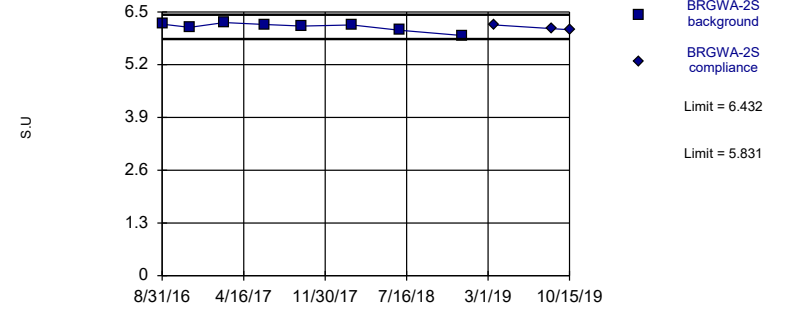


Background Data Summary: Mean=7.091, Std. Dev.=0.219, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9812, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

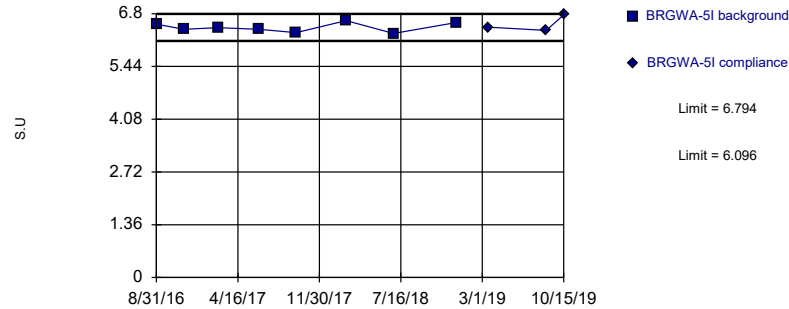


Background Data Summary: Mean=6.131, Std. Dev.=0.1029, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8777, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

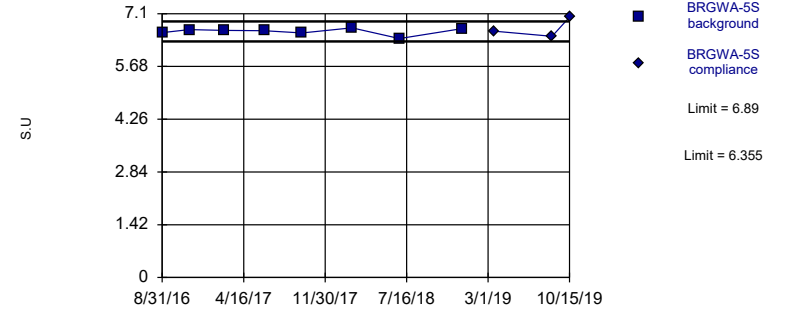


Background Data Summary: Mean=6.445, Std. Dev.=0.1194, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9437, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Exceeds Limits

Prediction Limit
Intrawell Parametric

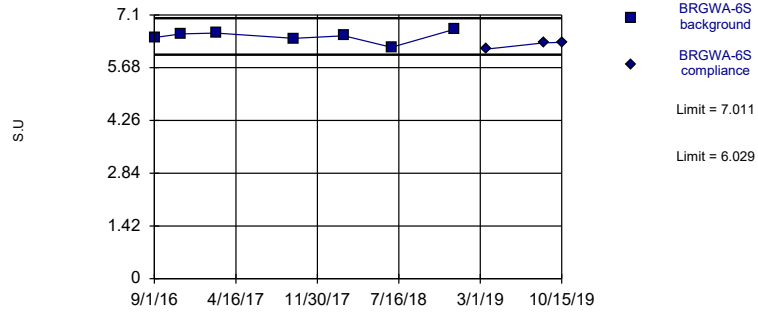


Background Data Summary: Mean=6.623, Std. Dev.=0.09161, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8847, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

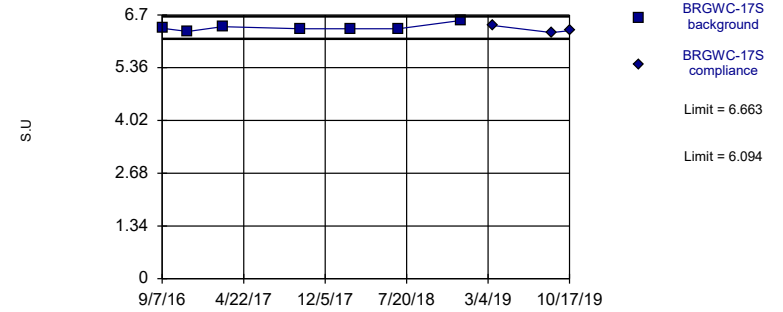


Background Data Summary: Mean=6.52, Std. Dev.=0.1511, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9231, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

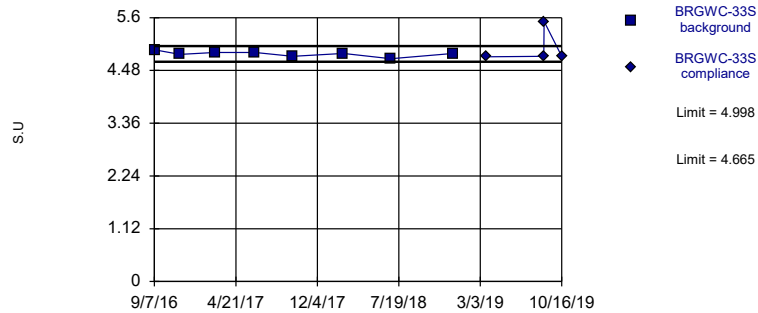


Background Data Summary: Mean=6.379, Std. Dev.=0.08745, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7957, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

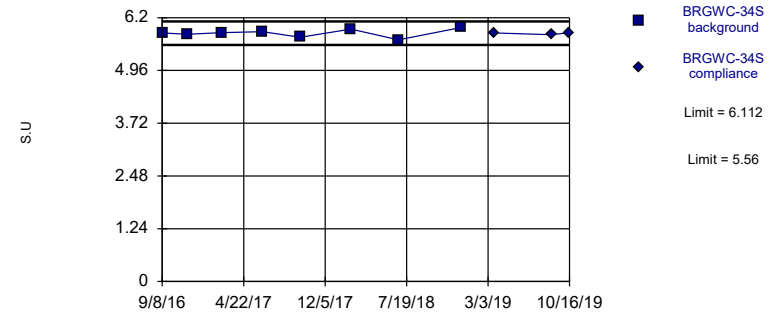


Background Data Summary: Mean=4.831, Std. Dev.=0.05693, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.956, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

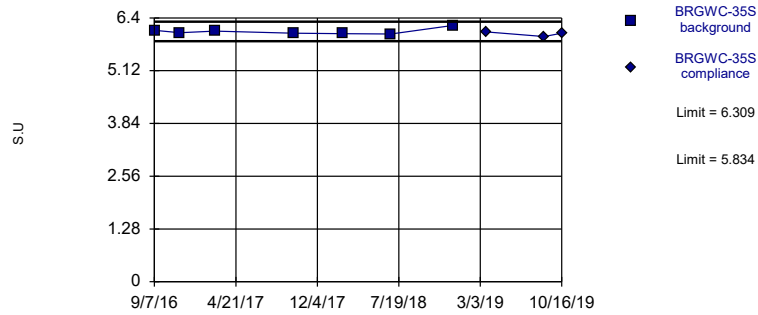


Background Data Summary: Mean=5.836, Std. Dev.=0.09441, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9751, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

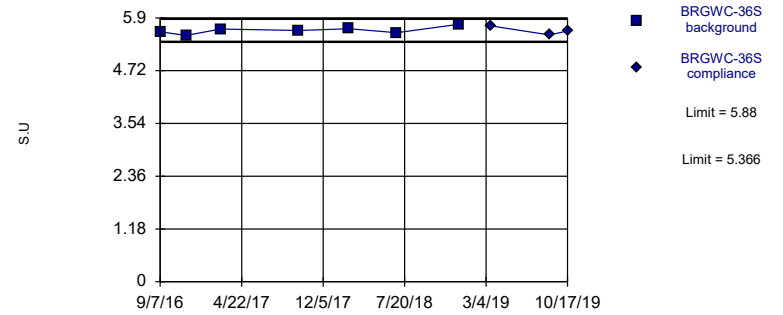


Background Data Summary: Mean=6.071, Std. Dev.=0.07313, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8194, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

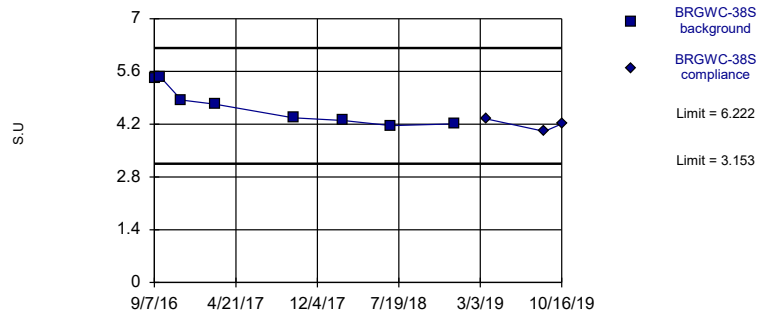


Background Data Summary: Mean=5.623, Std. Dev.=0.0791, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9769, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

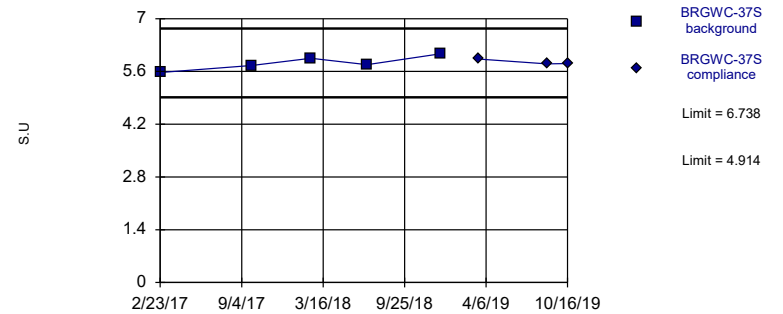


Background Data Summary: Mean=4.688, Std. Dev.=0.5251, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8582, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:07 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limits

Prediction Limit
Intrawell Parametric

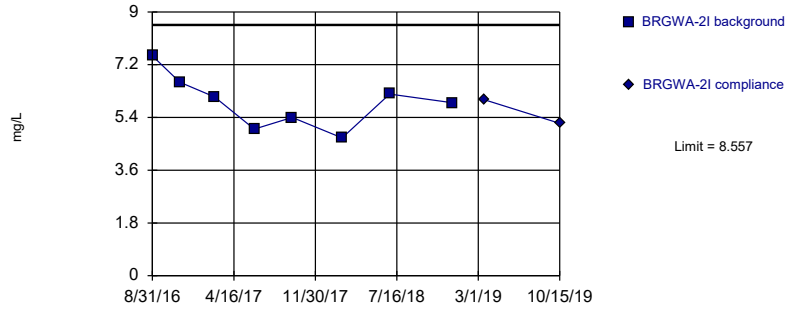


Background Data Summary: Mean=5.826, Std. Dev.=0.1917, n=5. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9733, critical = 0.686. Kappa = 4.761 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: pH Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit

Prediction Limit
Intrawell Parametric

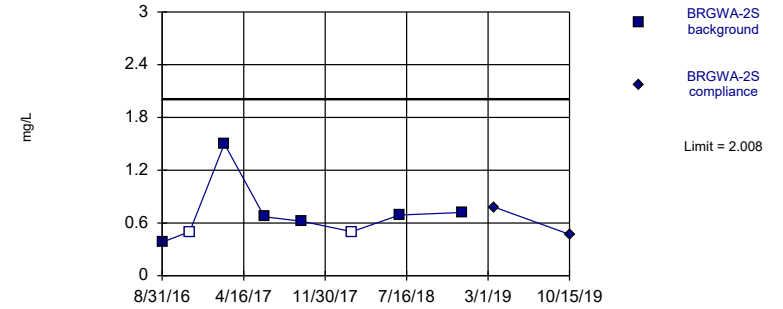


Background Data Summary: Mean=5.925, Std. Dev.=0.9004, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9743, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit

Prediction Limit
Intrawell Parametric

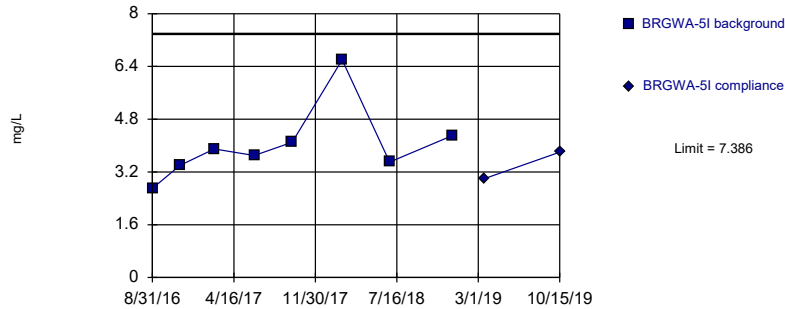


Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-0.3948, Std. Dev.=0.3736, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.888, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit

Prediction Limit
Intrawell Parametric

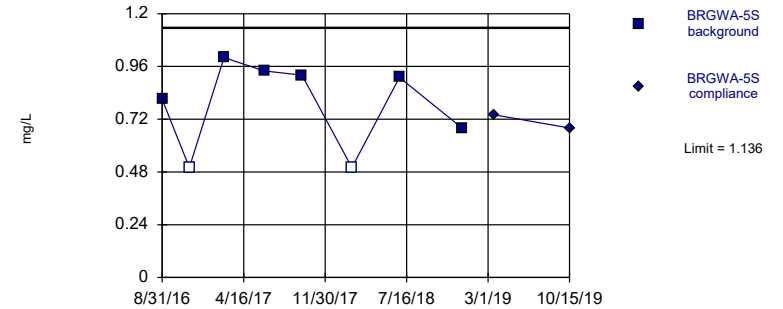


Background Data Summary: Mean=4.025, Std. Dev.=1.15, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8236, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit

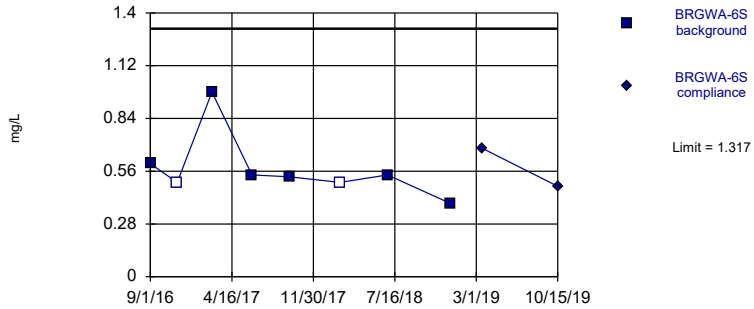
Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.852, Std. Dev.=0.09704, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8606, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

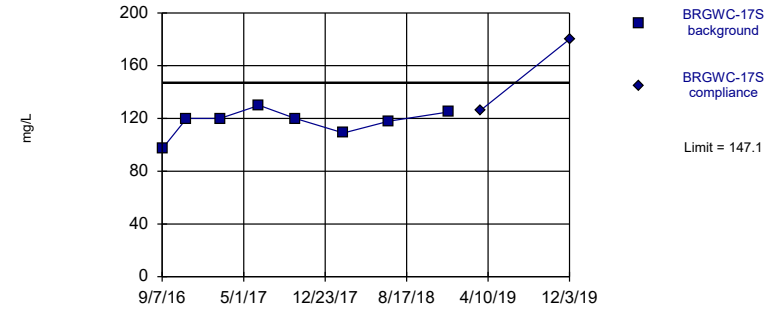
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-0.5853, Std. Dev.=0.2944, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8276, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

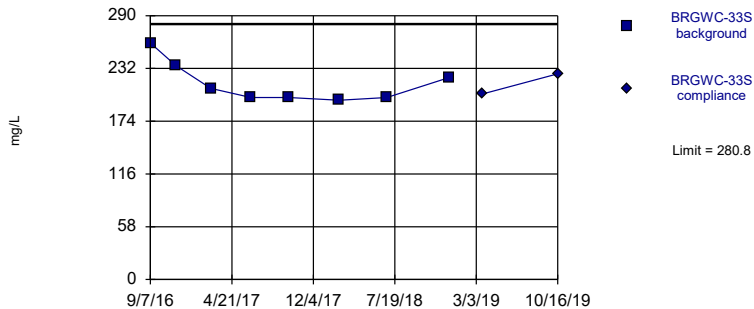
Exceeds Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=117.4, Std. Dev.=10.17, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.89, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

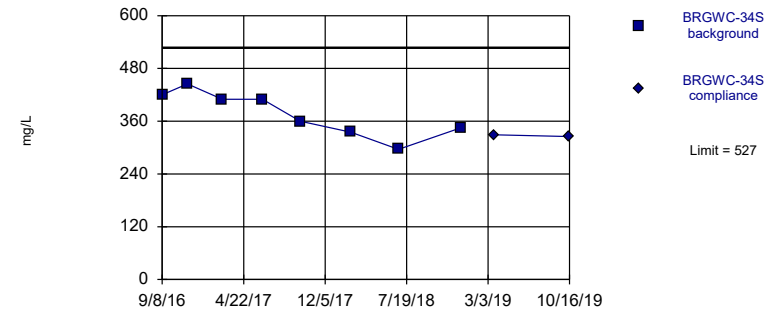
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=215.5, Std. Dev.=22.35, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8217, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

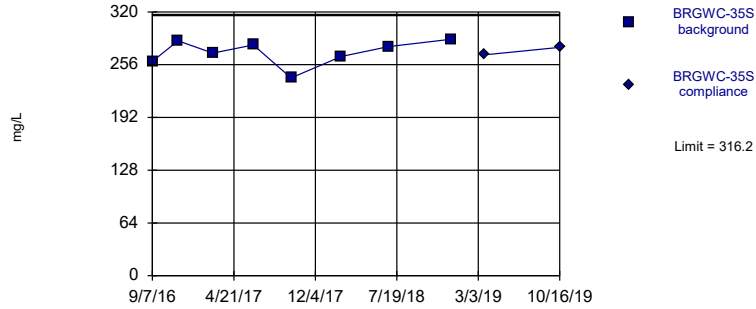
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=377.6, Std. Dev.=51.11, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9414, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

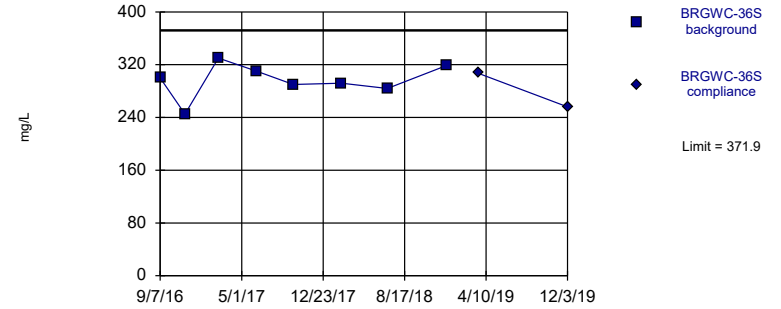
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=270.8, Std. Dev.=15.54, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9115, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

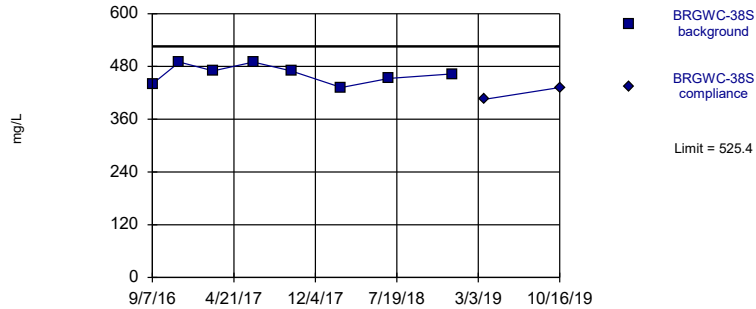
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=296.3, Std. Dev.=25.89, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9408, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit Prediction Limit
Intrawell Parametric

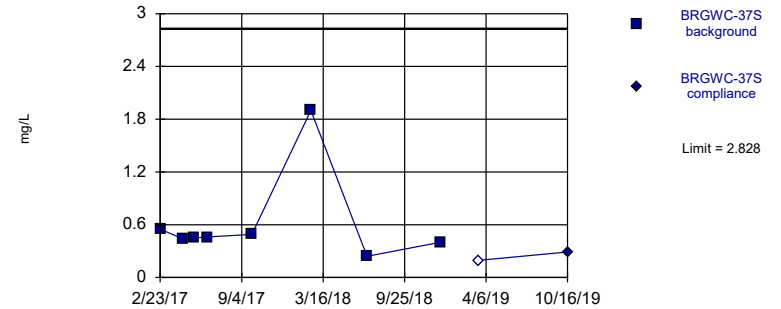


Background Data Summary: Mean=463.5, Std. Dev.=21.19, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.937, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Hollow symbols indicate censored values.

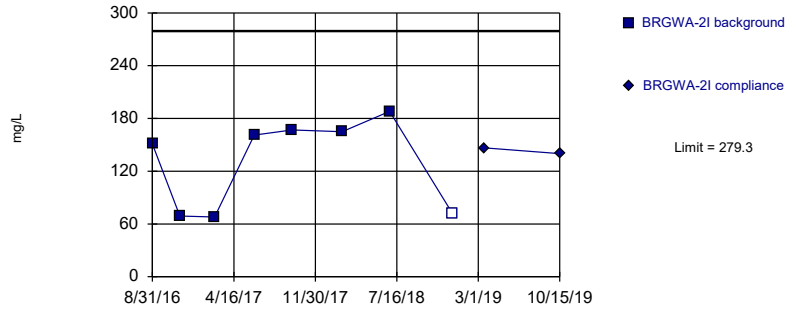
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.6761, Std. Dev.=0.587, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7813, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Sulfate Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

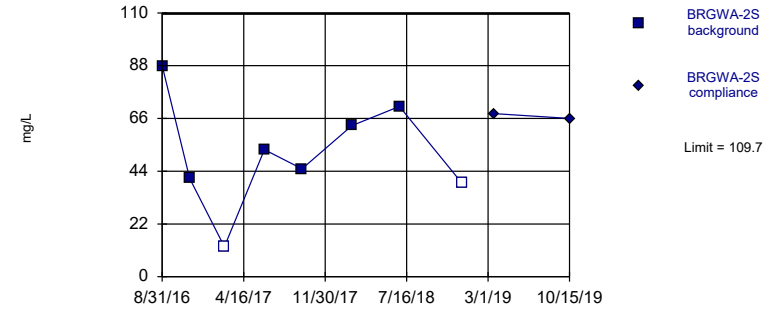
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=130.2, Std. Dev.=51.03, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.794, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

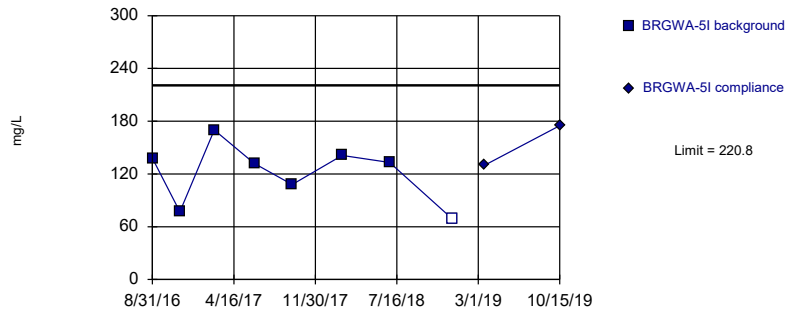
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=54.46, Std. Dev.=18.91, n=8, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9824, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

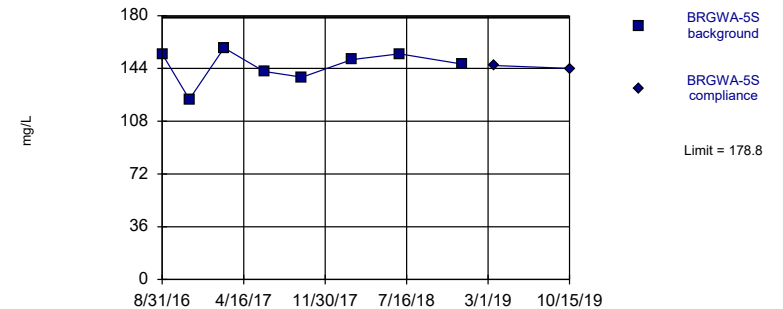
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=121, Std. Dev.=34.15, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9199, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

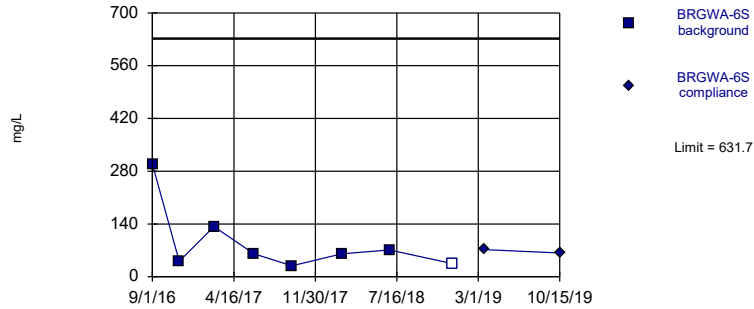
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=145.8, Std. Dev.=11.32, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9053, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

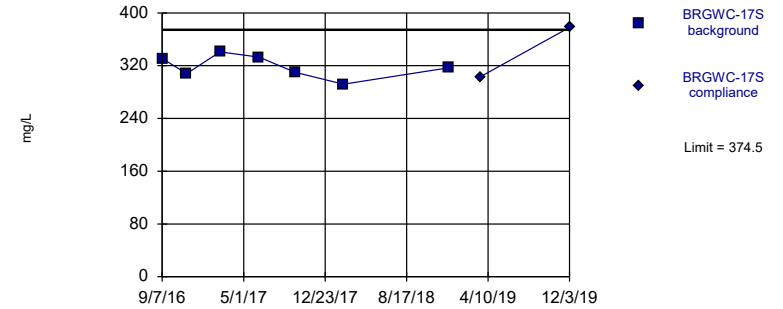
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary (based on natural log transformation): Mean=4.214, Std. Dev.=0.7646, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9105, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

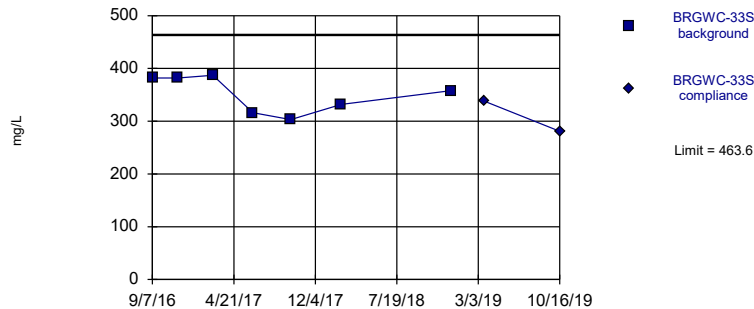
Exceeds Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=318.9, Std. Dev.=17.12, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9586, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

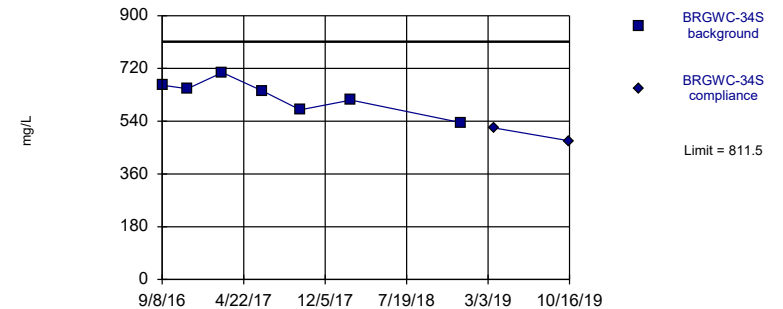
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=351.4, Std. Dev.=34.53, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8803, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

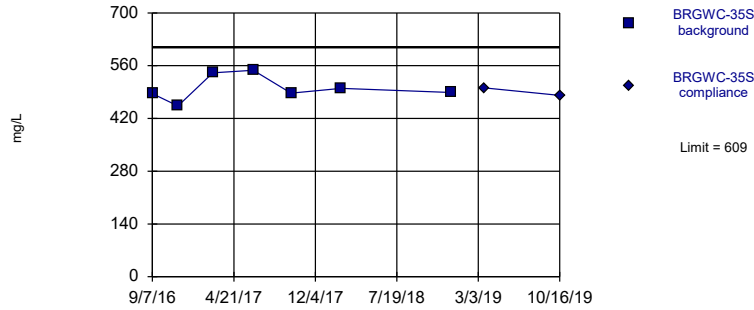
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=627, Std. Dev.=56.81, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9766, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

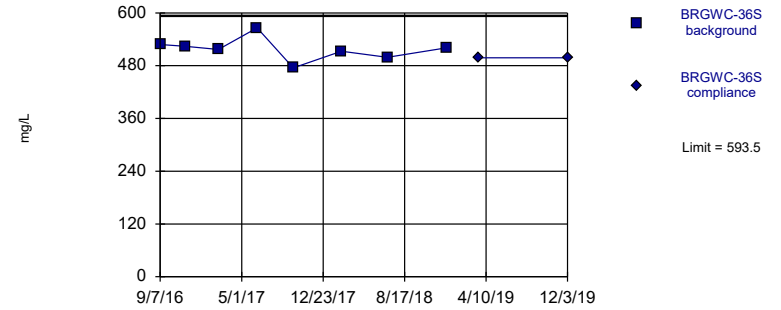
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=500.6, Std. Dev.=33.36, n=7. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9042, critical = 0.73. Kappa = 3.249 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

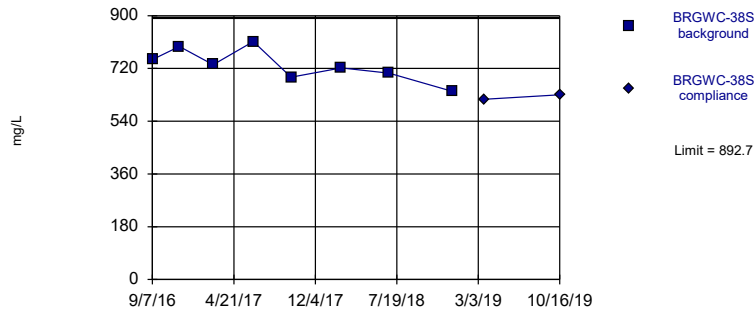
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=517.9, Std. Dev.=25.87, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9408, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Within Limit Prediction Limit
Intrawell Parametric

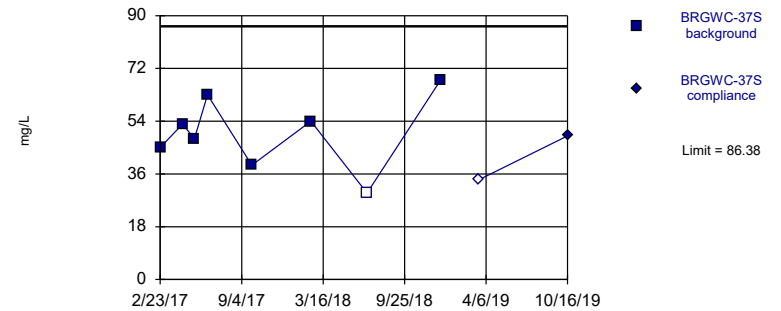


Background Data Summary: Mean=731, Std. Dev.=55.34, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9774, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Hollow symbols indicate censored values.

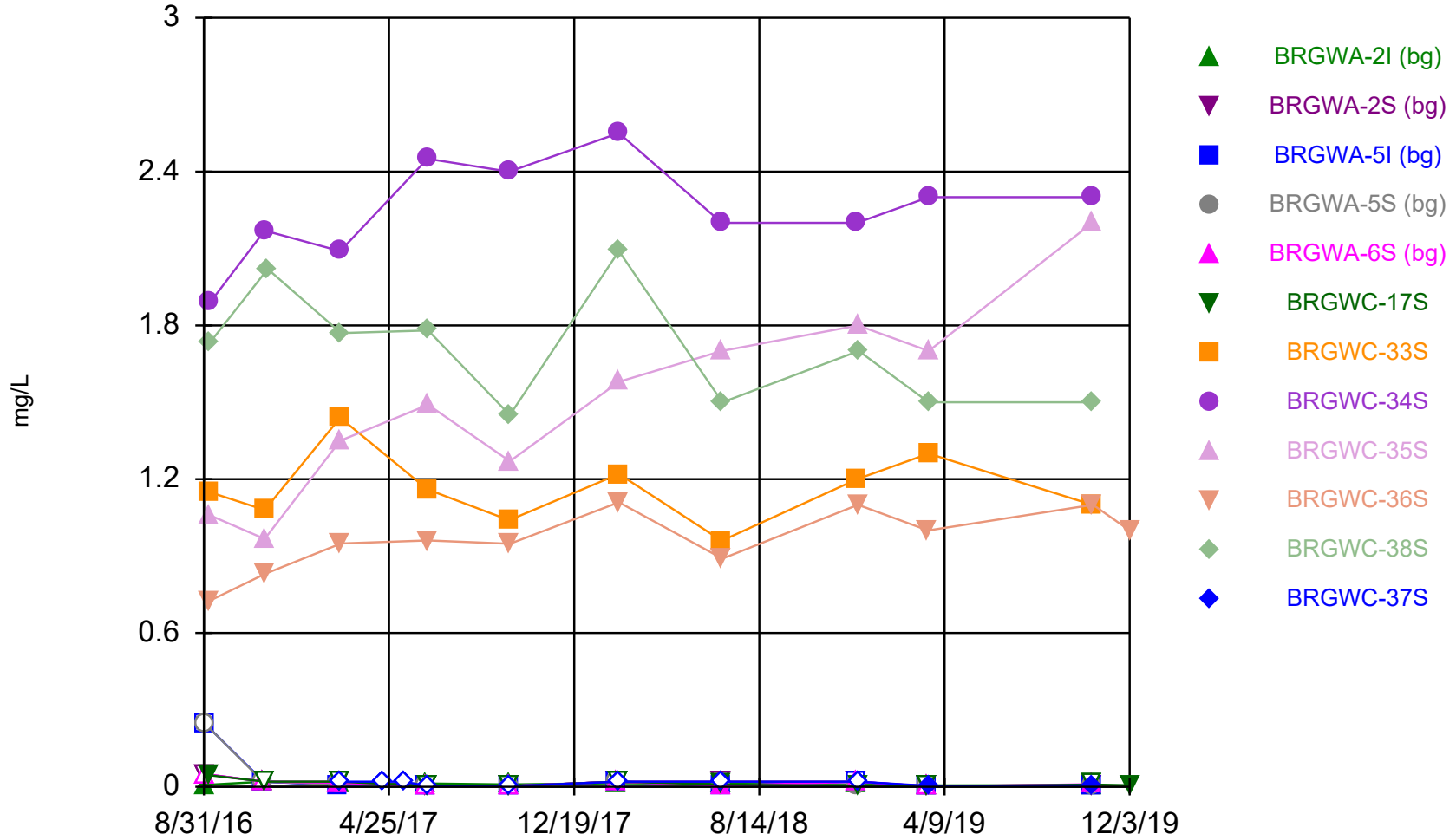
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=49.94, Std. Dev.=12.47, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9852, critical = 0.749. Kappa = 2.923 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.001075.

Constituent: Total Dissolved Solids Analysis Run 2/7/2020 10:08 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

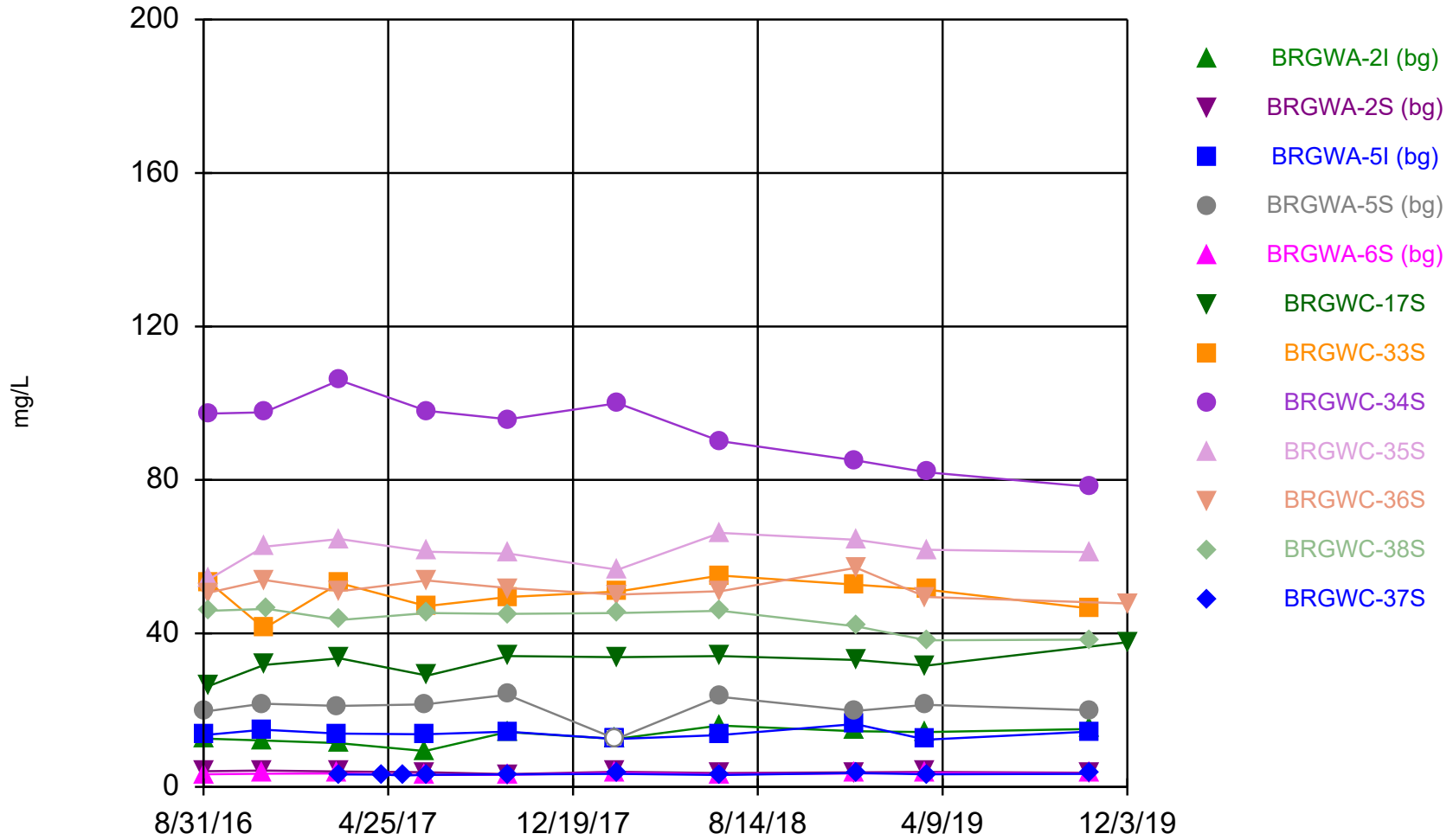
Time Series



Constituent: Boron Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

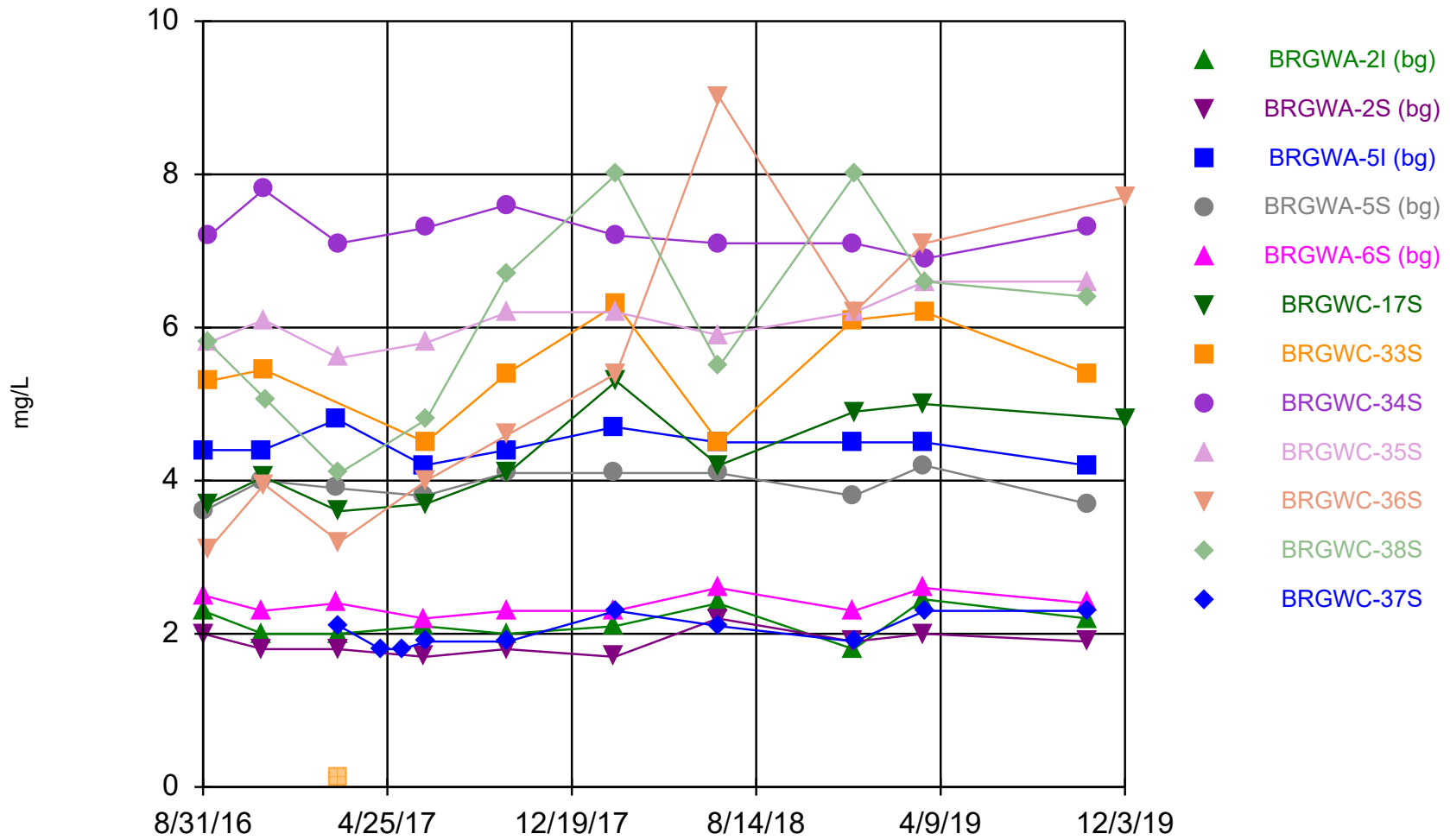
Time Series



Constituent: Calcium Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

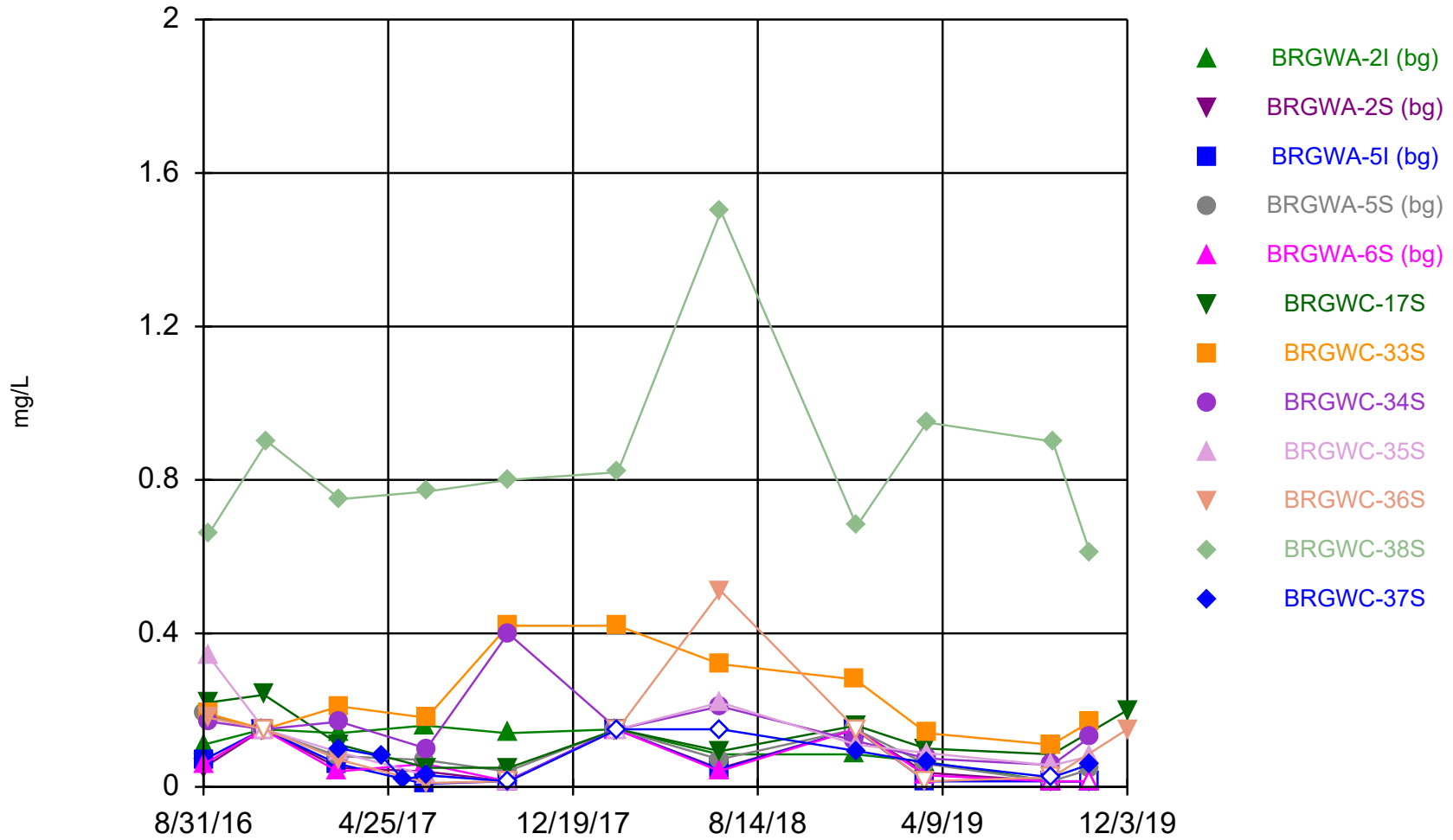
Time Series



Constituent: Chloride Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

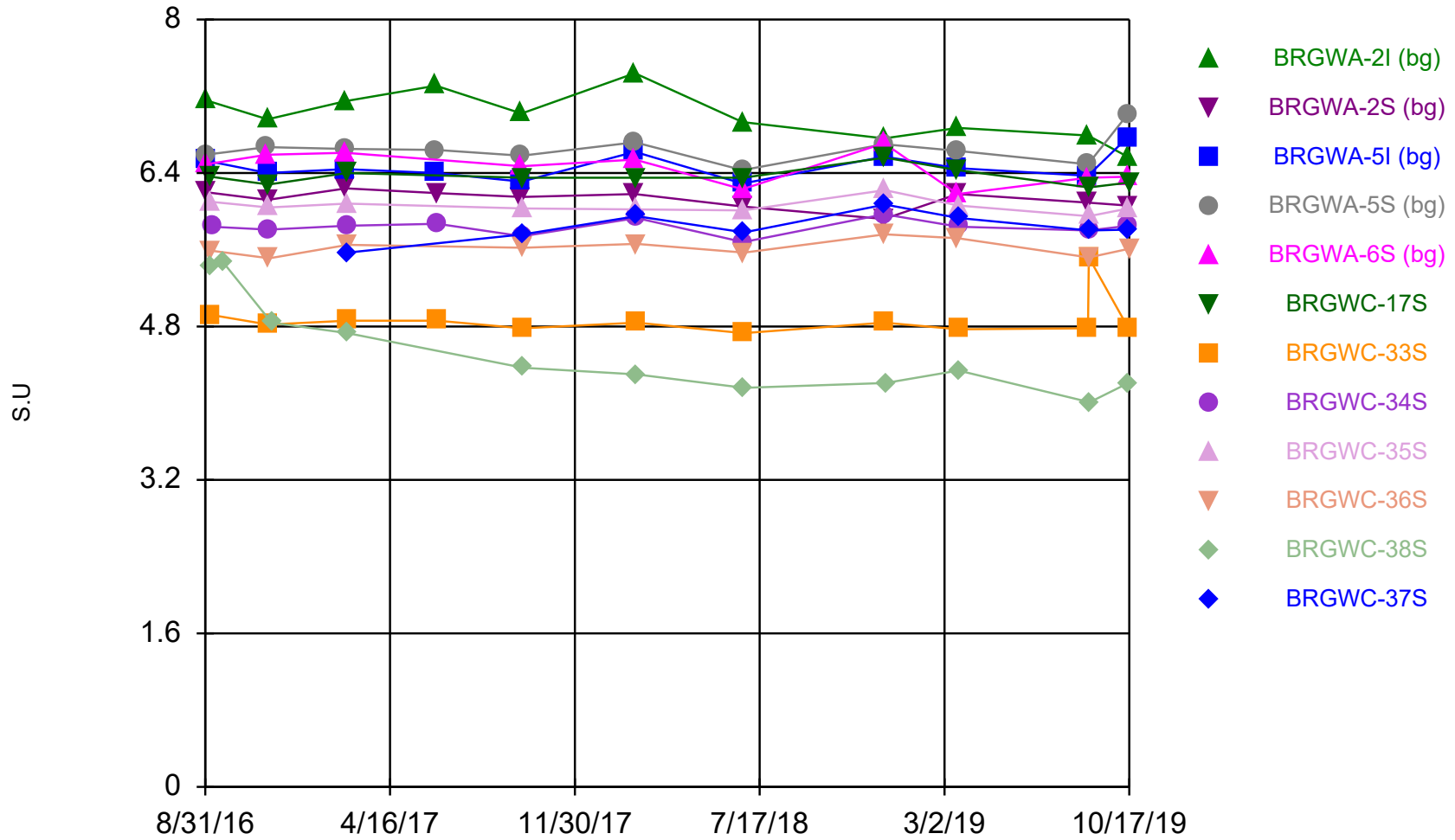
Time Series



Constituent: Fluoride Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

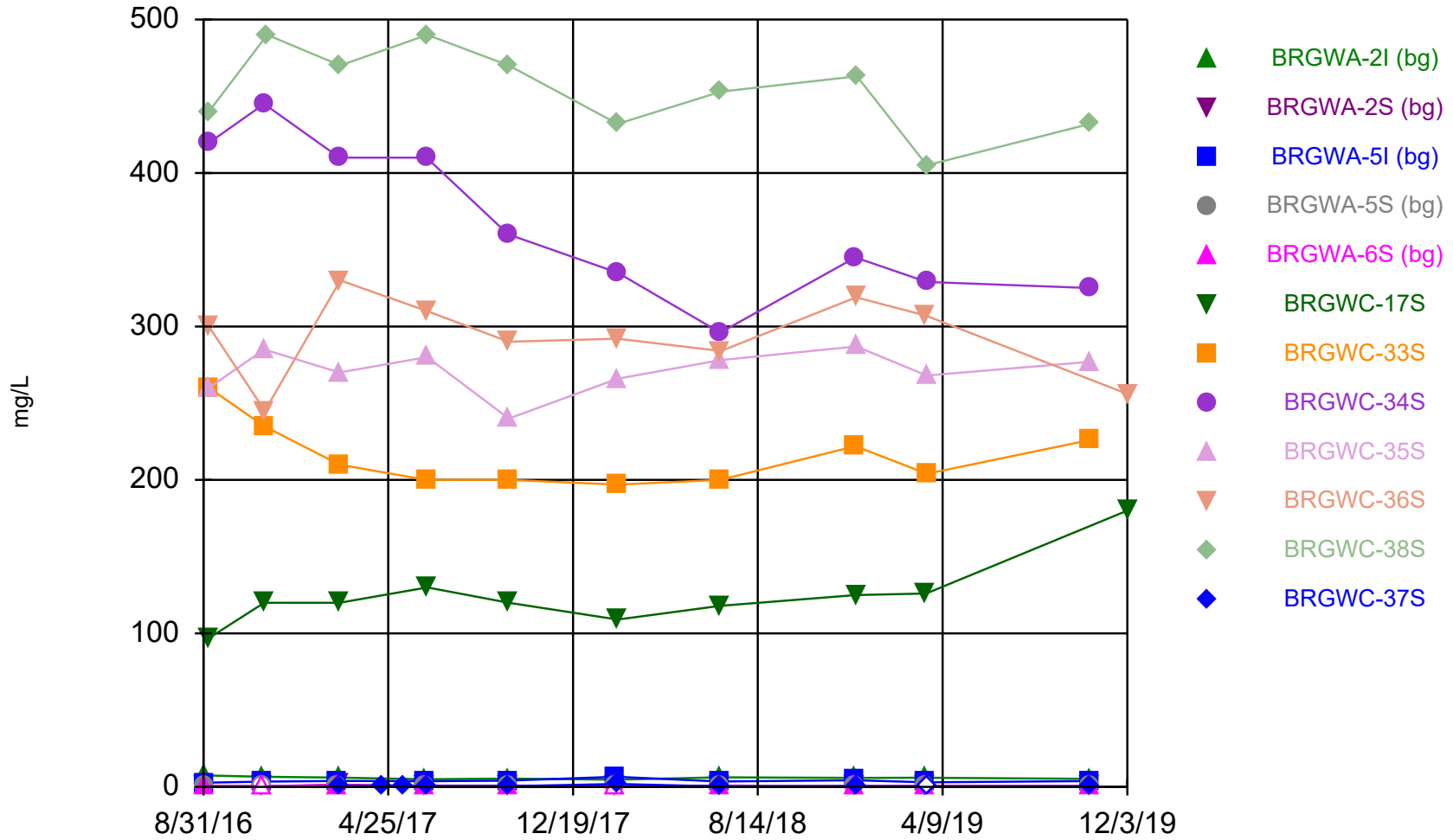
Time Series



Constituent: pH Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

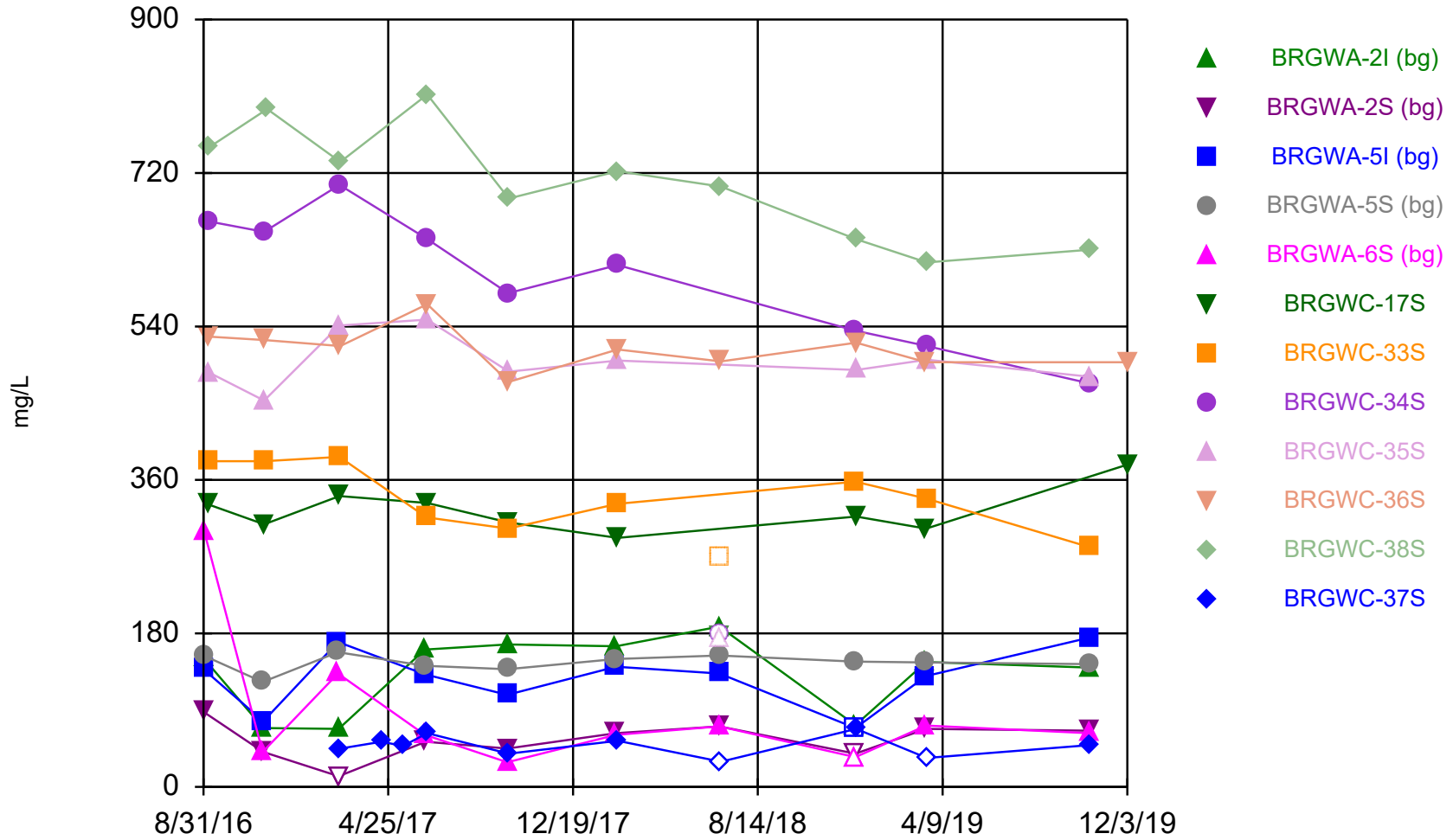
Time Series



Constituent: Sulfate Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

Time Series



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:17 AM View: Pond E Appendix III

Branch Client: Golder Associates Data: Plant Branch Ash Pond

Trend Test

Branch Client: Golder Associates Data: Plant Branch Ash Pond Printed 2/7/2020, 11:25 AM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	BRGWC-35S	0.3242	36	27	Yes	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-35S	0.2575	28	27	Yes	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-36S	1.563	37	27	Yes	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-2I ...	-0.04097	-33	-31	Yes	11	36.36	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-38S	-0.303	-40	-31	Yes	11	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-34S	-41.2	-34	-27	Yes	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-34S	-66.99	-30	-23	Yes	9	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-38S	-55.23	-31	-27	Yes	10	0	n/a	n/a	0.02	NP

Trend Test

Branch Client: Golder Associates Data: Plant Branch Ash Pond Printed 2/7/2020, 11:25 AM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	BRGWA-2I ...	-0.00...	-15	-27	No	10	10	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWA-2S ...	-0.00...	-20	-27	No	10	100	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWA-5I ...	-0.00...	-21	-27	No	10	80	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWA-5S ...	-0.00...	-19	-27	No	10	60	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWA-6S ...	-0.00...	-15	-27	No	10	70	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-17S	-0.00...	-23	-31	No	11	63.64	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-33S	0.006867	1	27	No	10	0	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-34S	0.07935	15	27	No	10	0	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-35S	0.3242	36	27	Yes	10	0	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-36S	0.07407	27	31	No	11	0	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-38S	-0.1021	-14	-27	No	10	0	n/a	n/a	0.02	NP
Boron (mg/L)	BRGWC-37S	0	-7	-27	No	10	80	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWA-2I ...	1.125	20	27	No	10	10	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWA-2S ...	-0.1249	-21	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWA-5I ...	-0.1717	-3	-27	No	10	10	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWA-5S ...	-0.05659	-1	-27	No	10	10	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWA-6S ...	0.08711	13	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-17S	1.604	18	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-33S	-0.2199	-1	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-34S	-7.628	-27	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-35S	0.2838	3	27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-36S	-0.9202	-14	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-38S	-1.949	-23	-27	No	10	0	n/a	n/a	0.02	NP
Calcium (mg/L)	BRGWC-37S	0.08515	18	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWA-2I ...	0.05887	9	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWA-2S ...	0.03434	7	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWA-5I ...	0	0	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWA-5S ...	0.06772	9	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWA-6S ...	0	7	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-17S	0.4179	26	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-33S	0.3163	8	23	No	9	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-34S	-0.1193	-14	-27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-35S	0.2575	28	27	Yes	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-36S	1.563	37	27	Yes	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-38S	0.6846	14	27	No	10	0	n/a	n/a	0.02	NP
Chloride (mg/L)	BRGWC-37S	0.1931	21	27	No	10	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-2I ...	-0.04097	-33	-31	Yes	11	36.36	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-2S ...	-0.01156	-24	-31	No	11	54.55	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-5I ...	-0.01717	-17	-31	No	11	63.64	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-5S ...	-0.0275	-28	-31	No	11	36.36	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWA-6S ...	-0.01509	-22	-31	No	11	54.55	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-17S	-0.00...	-6	-31	No	11	9.091	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-33S	-0.02121	-18	-35	No	12	8.333	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-34S	-0.02196	-21	-31	No	11	18.18	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-35S	-0.03638	-18	-31	No	11	27.27	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-36S	-6.2e-9	-5	-31	No	11	54.55	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-38S	0.05214	8	31	No	11	0	n/a	n/a	0.02	NP
Fluoride (mg/L)	BRGWC-37S	-0.00...	-6	-31	No	11	36.36	n/a	n/a	0.02	NP
pH (S.U)	BRGWA-2I ...	-0.1352	-31	-31	No	11	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWA-2S ...	-0.04482	-26	-31	No	11	0	n/a	n/a	0.02	NP

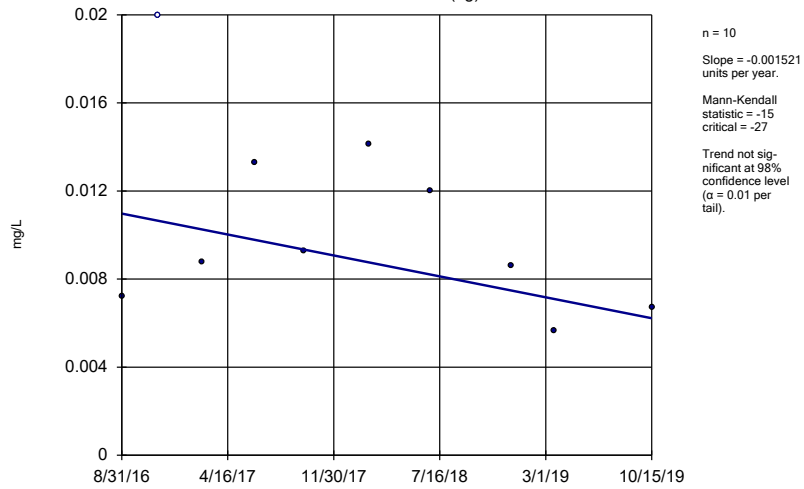
Trend Test

Branch Client: Golder Associates Data: Plant Branch Ash Pond Printed 2/7/2020, 11:25 AM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
pH (S.U)	BRGWA-5I ...	0.0174	4	31	No	11	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWA-5S ...	0.01435	1	31	No	11	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWA-6S ...	-0.06861	-13	-27	No	10	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-17S	-0.00...	-4	-27	No	10	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-33S	-0.02089	-17	-35	No	12	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-34S	0.003222	3	31	No	11	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-35S	-0.02253	-16	-27	No	10	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-36S	0.02837	7	27	No	10	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-38S	-0.303	-40	-31	Yes	11	0	n/a	n/a	0.02	NP
pH (S.U)	BRGWC-37S	0.05061	10	20	No	8	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWA-2I ...	-0.4451	-17	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWA-2S ...	0.06257	10	27	No	10	20	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWA-5I ...	0.2192	11	27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWA-5S ...	-0.05656	-11	-27	No	10	20	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWA-6S ...	-0.03443	-13	-27	No	10	20	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-17S	11.02	20	27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-33S	-4.451	-8	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-34S	-41.2	-34	-27	Yes	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-35S	2.645	5	27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-36S	-6.047	-5	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-38S	-16.14	-20	-27	No	10	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	BRGWC-37S	-0.08245	-17	-27	No	10	10	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWA-2I ...	5.935	5	27	No	10	10	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWA-2S ...	5.556	7	27	No	10	20	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWA-5I ...	0.9631	1	27	No	10	10	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWA-5S ...	-2.974	-4	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWA-6S ...	-6.134	-4	-27	No	10	10	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-17S	-3.45	-2	-23	No	9	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-33S	-21.24	-15	-23	No	9	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-34S	-66.99	-30	-23	Yes	9	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-35S	0.9313	2	23	No	9	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-36S	-9.264	-22	-27	No	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-38S	-55.23	-31	-27	Yes	10	0	n/a	n/a	0.02	NP
Total Dissolved Solids (mg/L)	BRGWC-37S	-1.601	-1	-27	No	10	20	n/a	n/a	0.02	NP

Sen's Slope Estimator

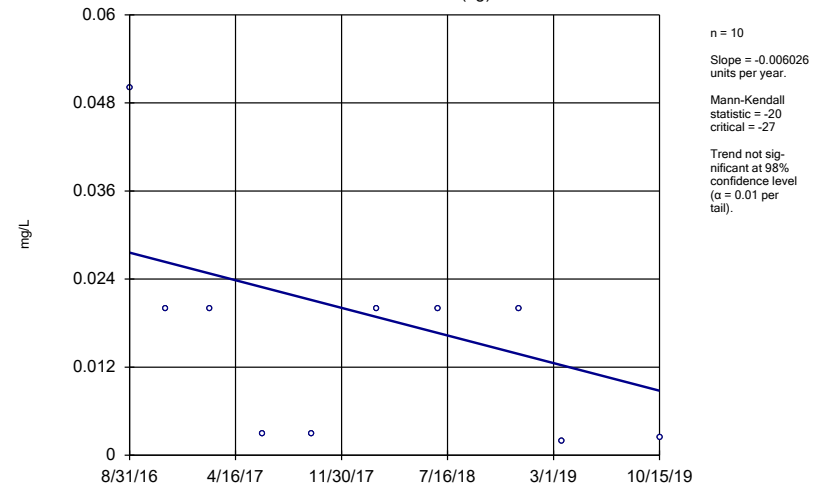
BRGWA-2I (bg)



Constituent: Boron Analysis Run 2/7/2020 11:22 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

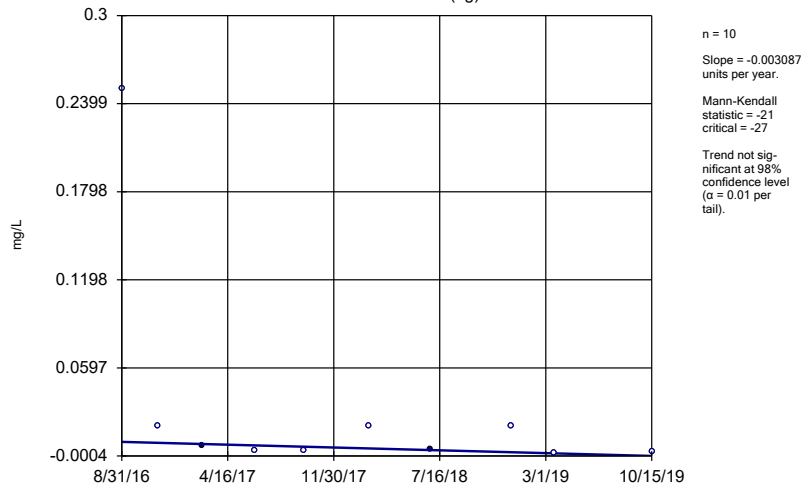
BRGWA-2S (bg)



Constituent: Boron Analysis Run 2/7/2020 11:22 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

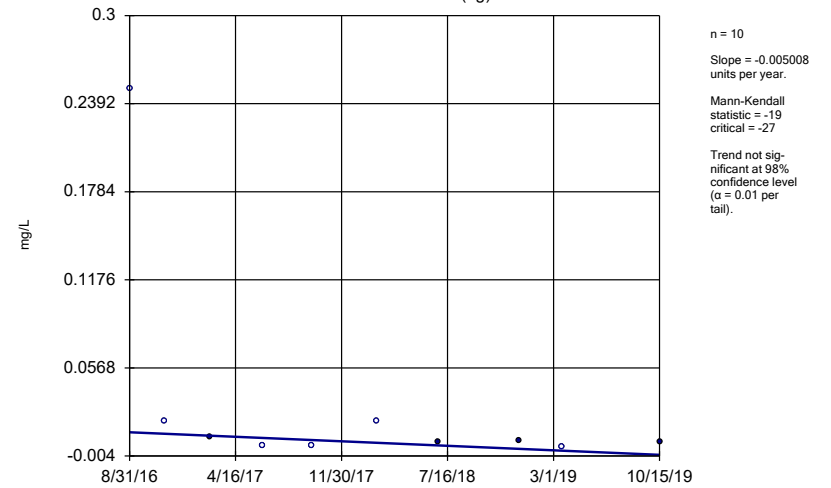
BRGWA-5I (bg)



Constituent: Boron Analysis Run 2/7/2020 11:22 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

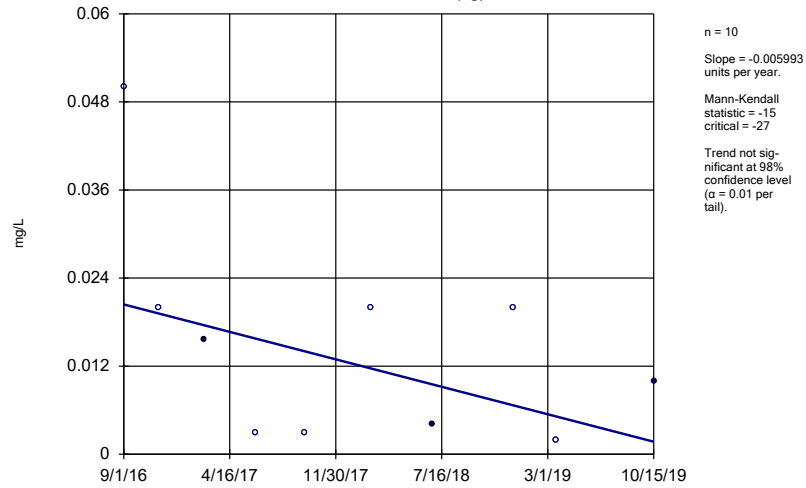
Sen's Slope Estimator

BRGWA-5S (bg)



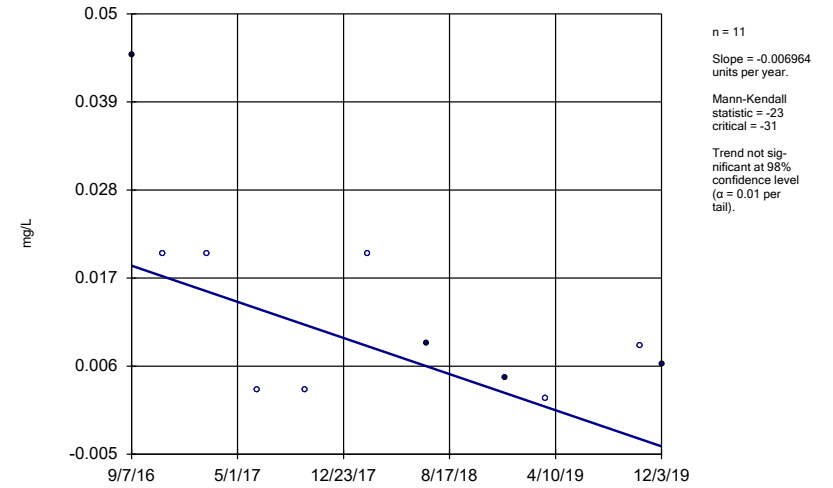
Constituent: Boron Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWA-6S (bg)



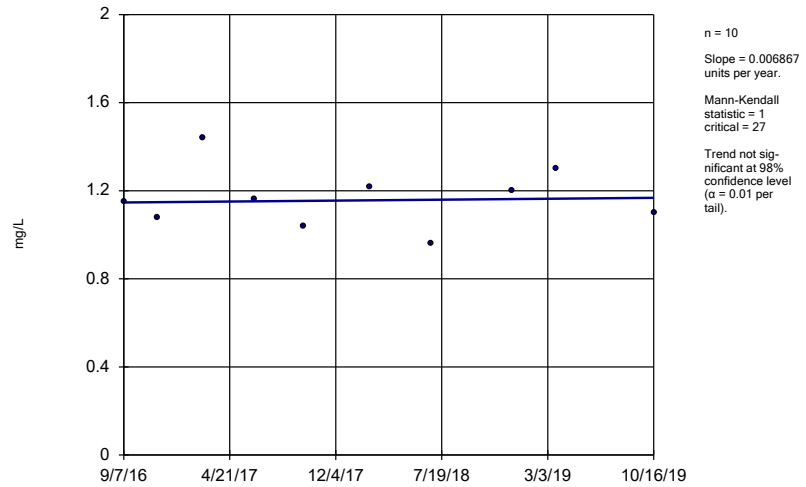
Constituent: Boron Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-17S



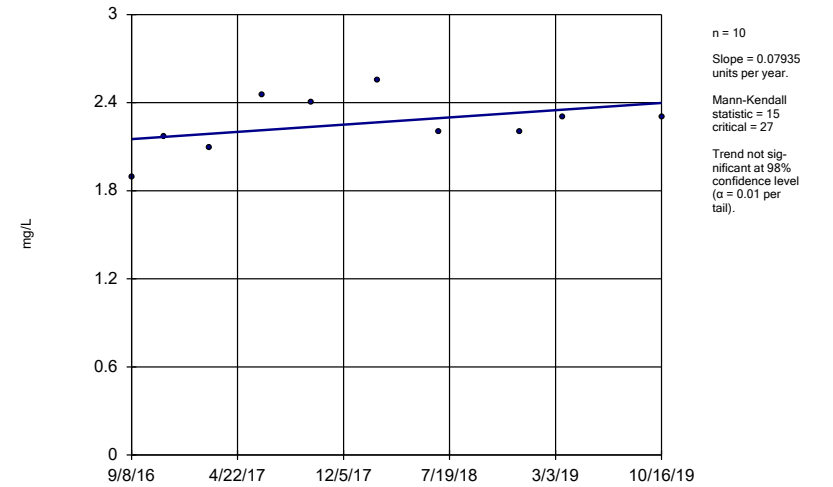
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 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-33S



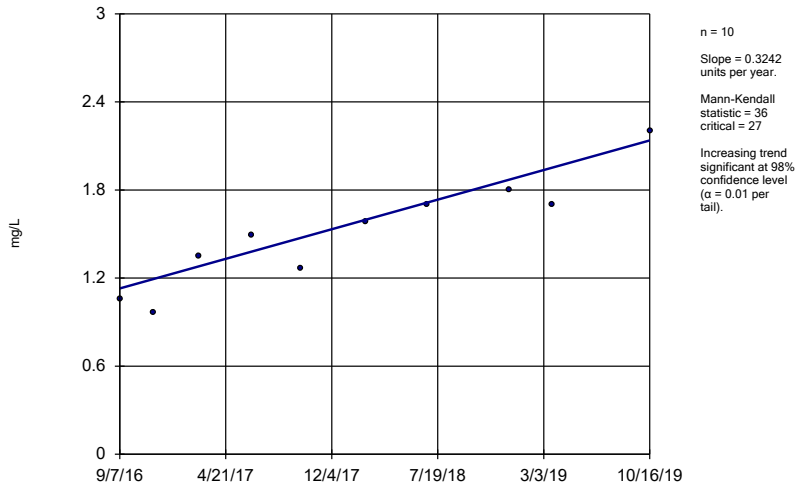
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 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-34S



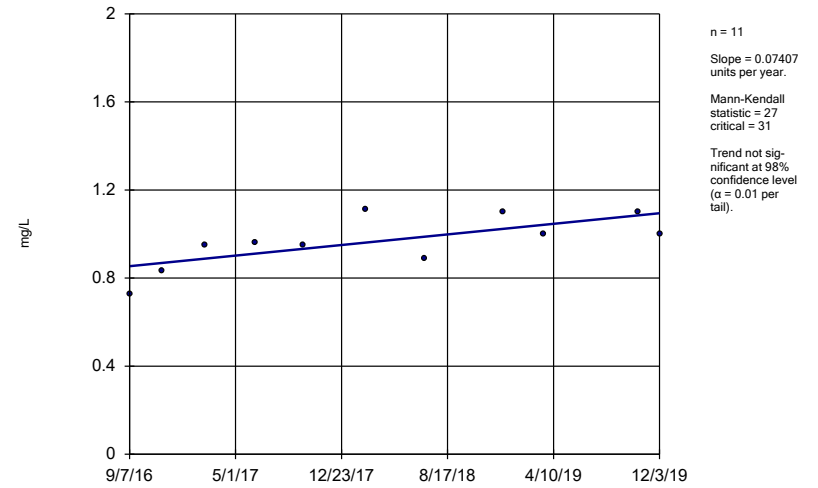
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 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-35S



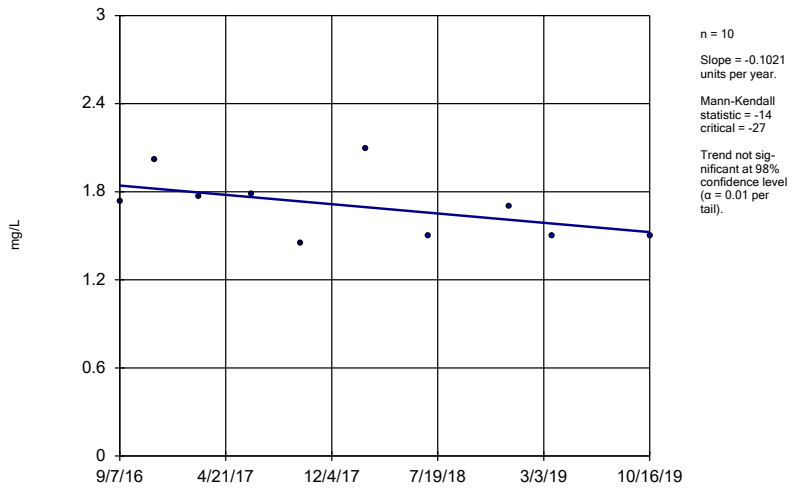
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Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-36S



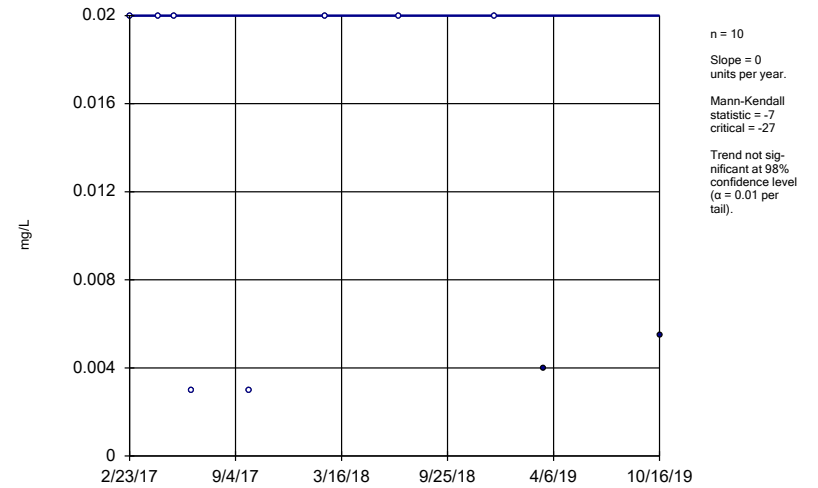
Constituent: Boron Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-38S



Constituent: Boron Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

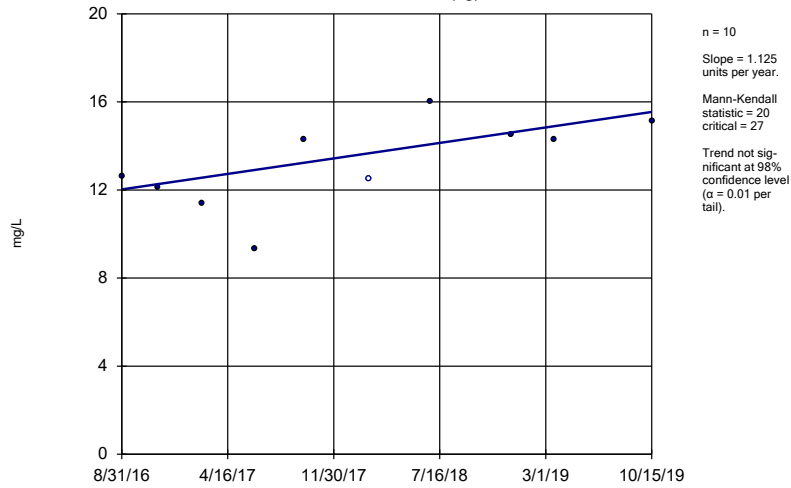
Sen's Slope Estimator
BRGWC-37S



Constituent: Boron Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

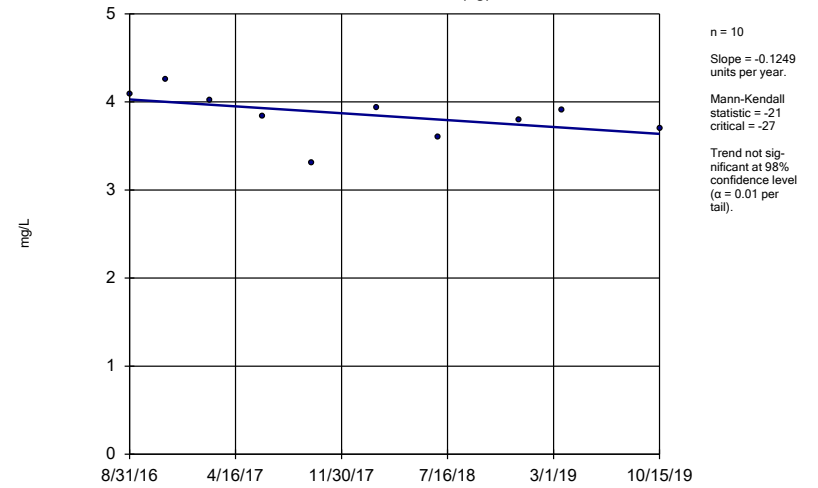
BRGWA-2I (bg)



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

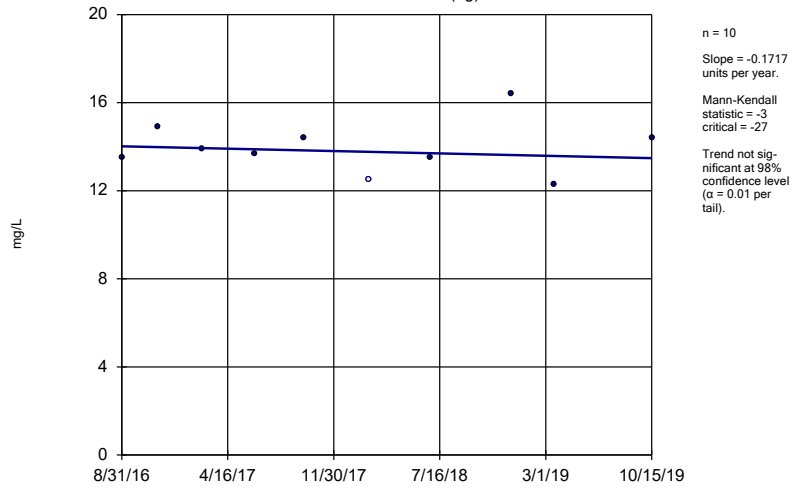
BRGWA-2S (bg)



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

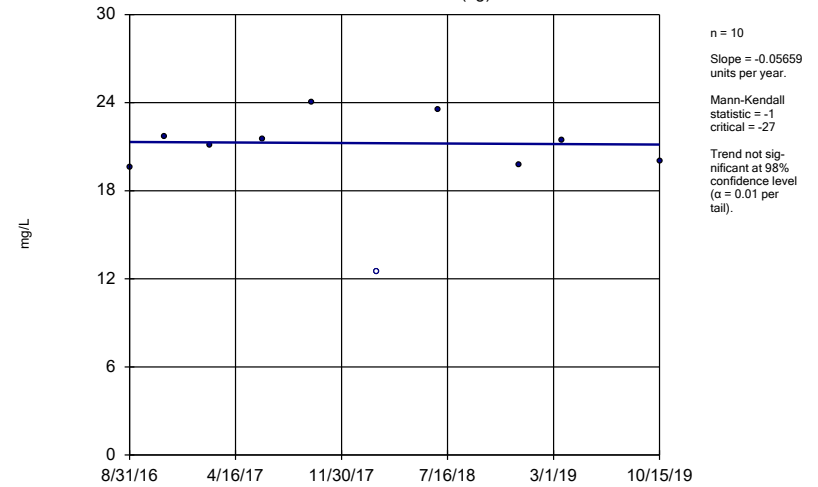
BRGWA-5I (bg)



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

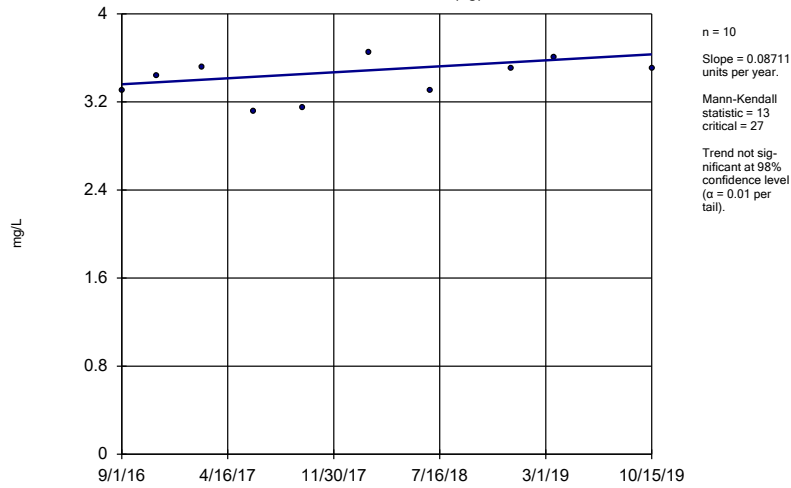
BRGWA-5S (bg)



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

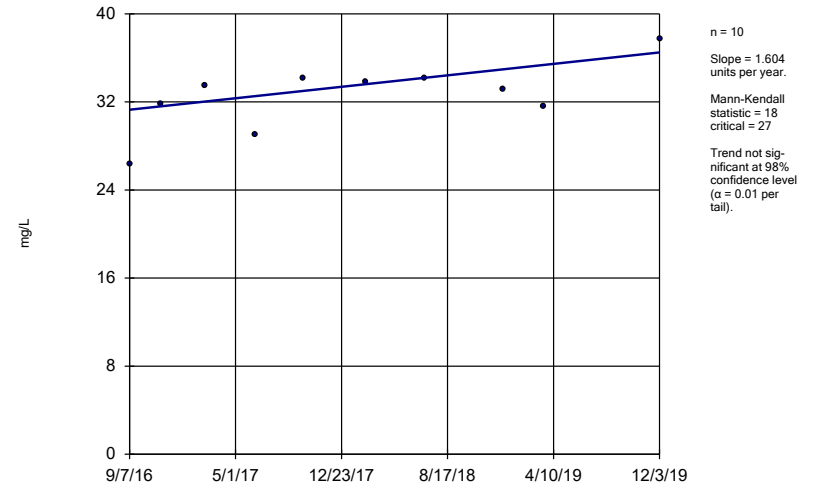
BRGWA-6S (bg)



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

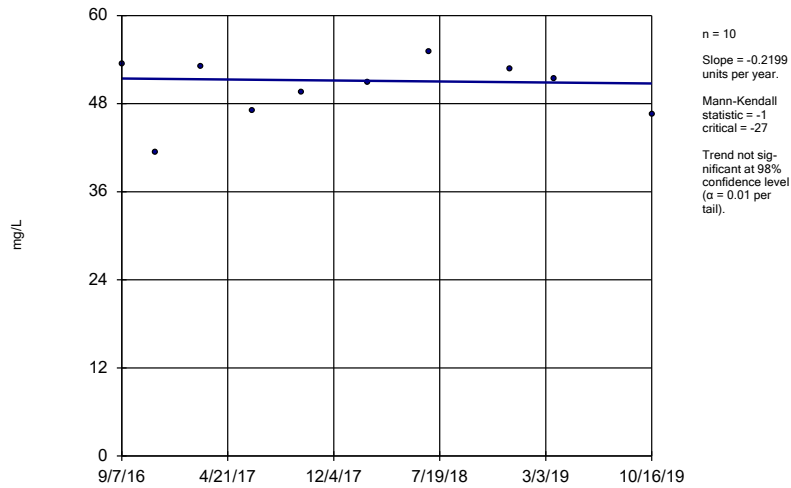
BRGWC-17S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

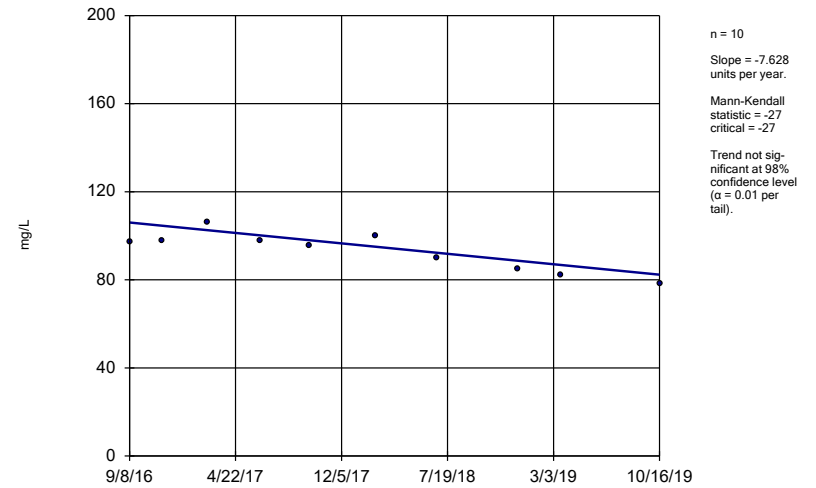
BRGWC-33S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

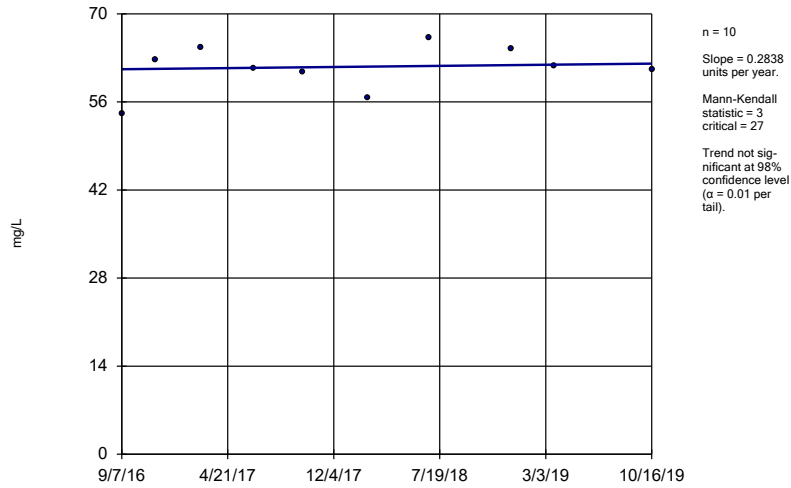
BRGWC-34S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

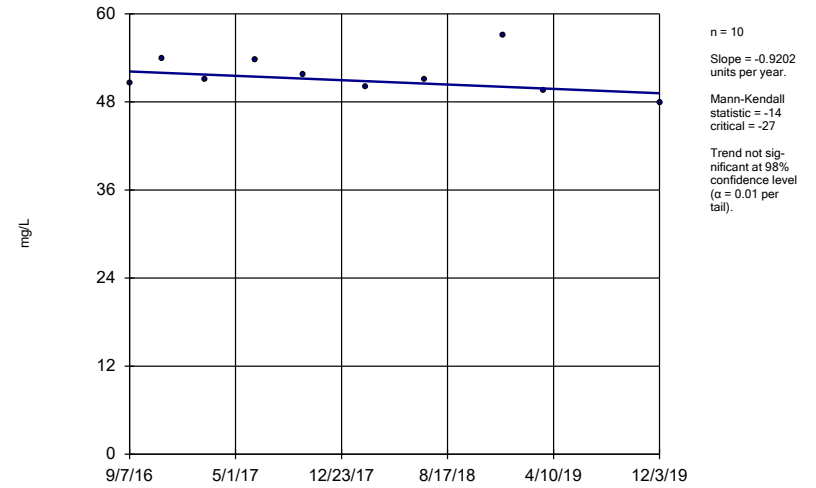
BRGWC-35S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

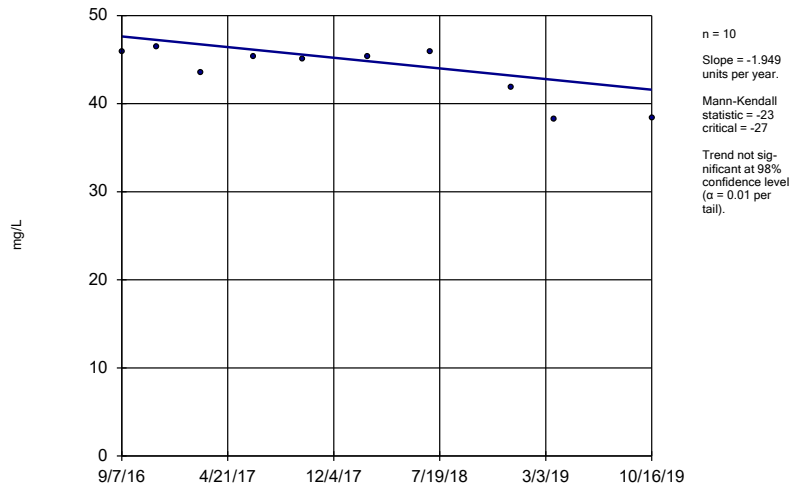
BRGWC-36S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

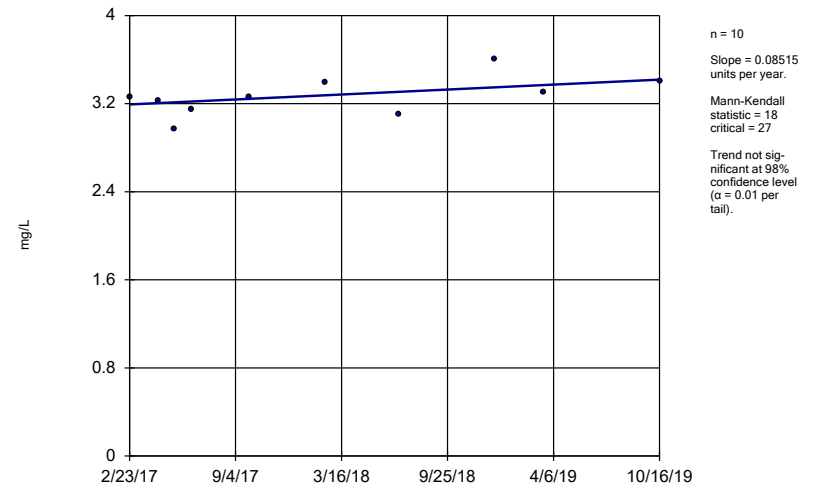
BRGWC-38S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

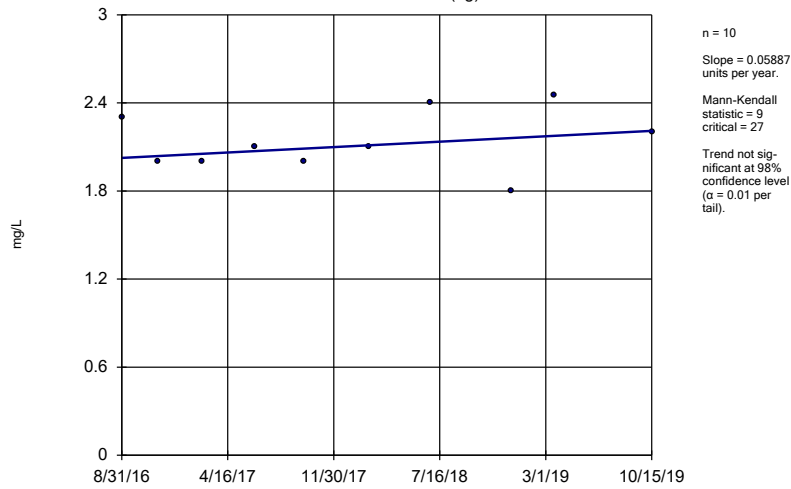
BRGWC-37S



Constituent: Calcium Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

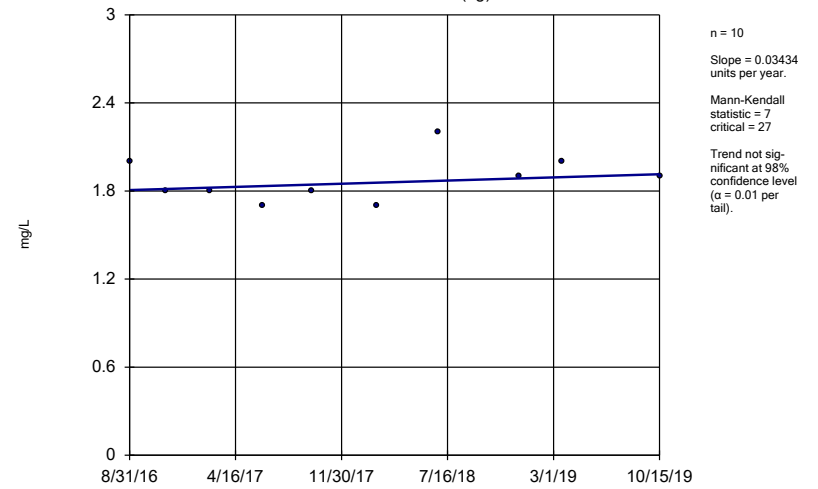
BRGWA-2I (bg)



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

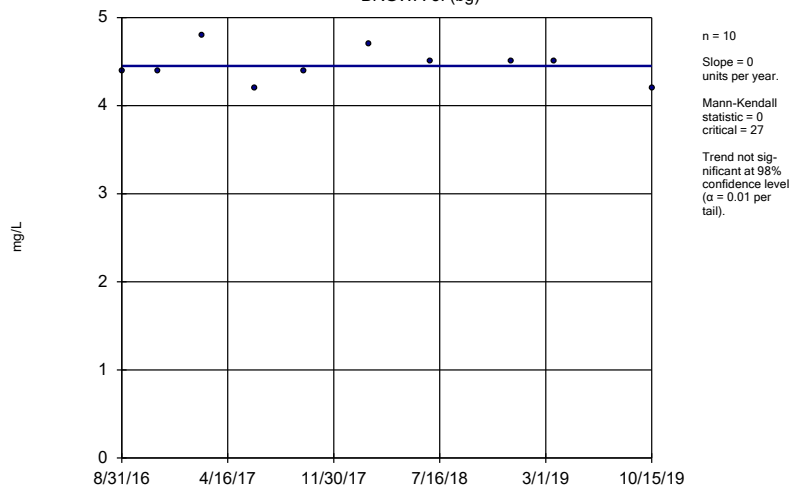
BRGWA-2S (bg)



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

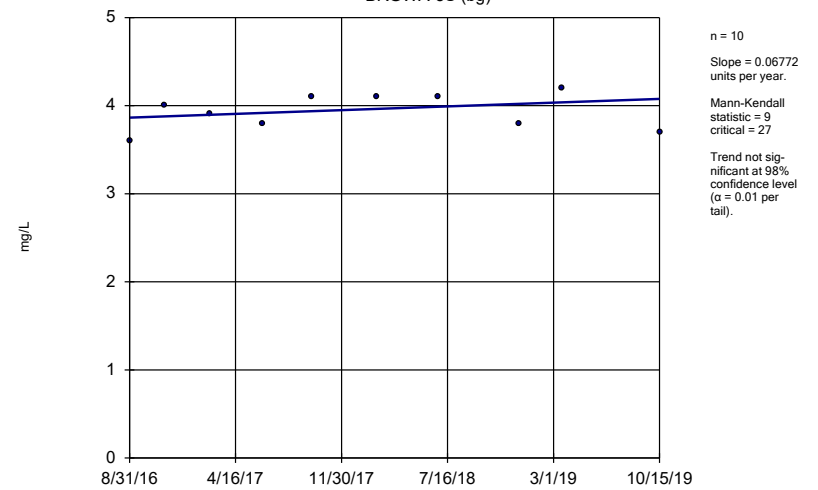
BRGWA-5I (bg)



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

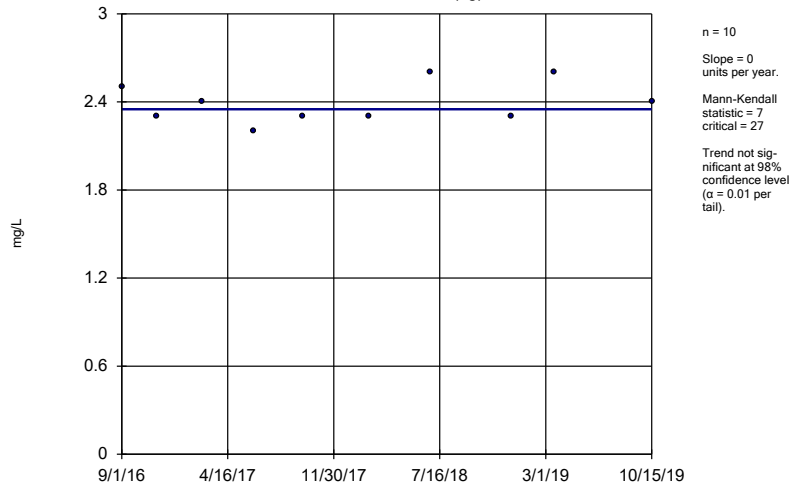
BRGWA-5S (bg)



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

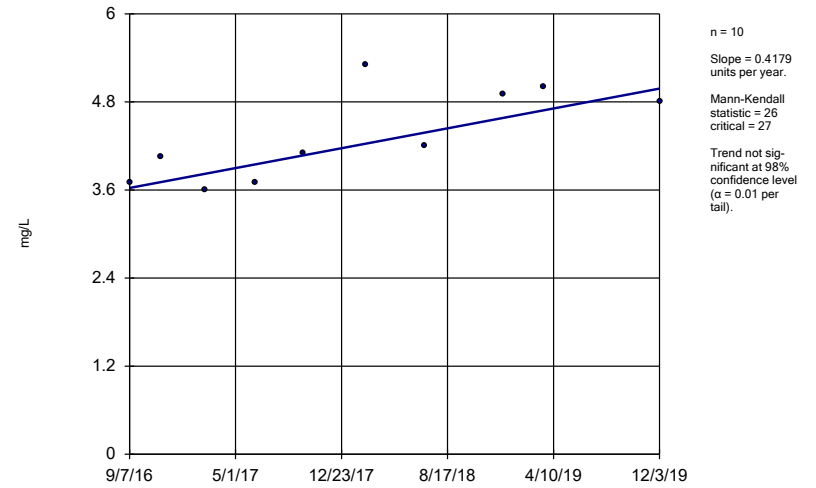
BRGWA-6S (bg)



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

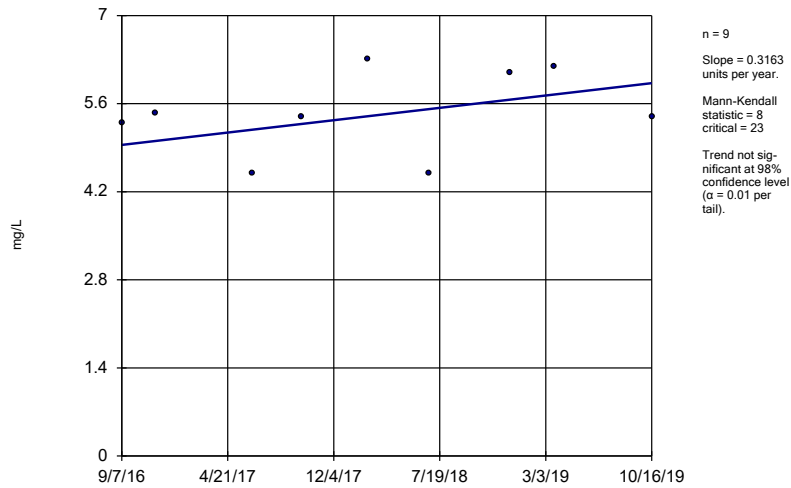
BRGWC-17S



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

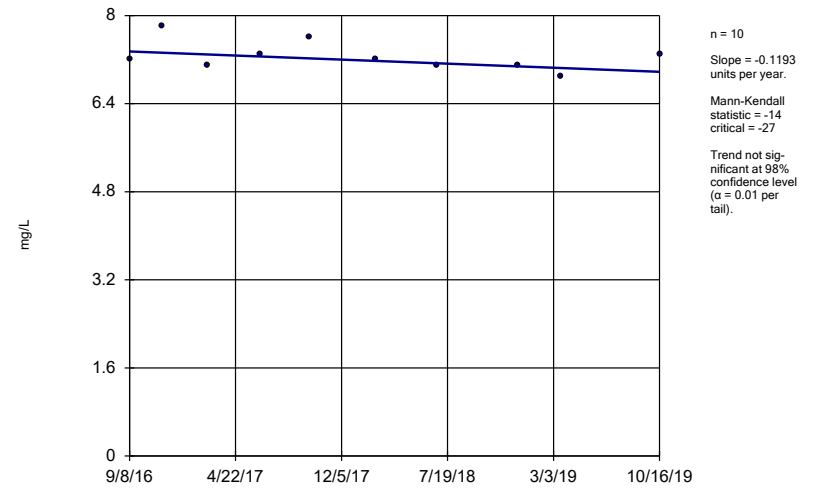
BRGWC-33S



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

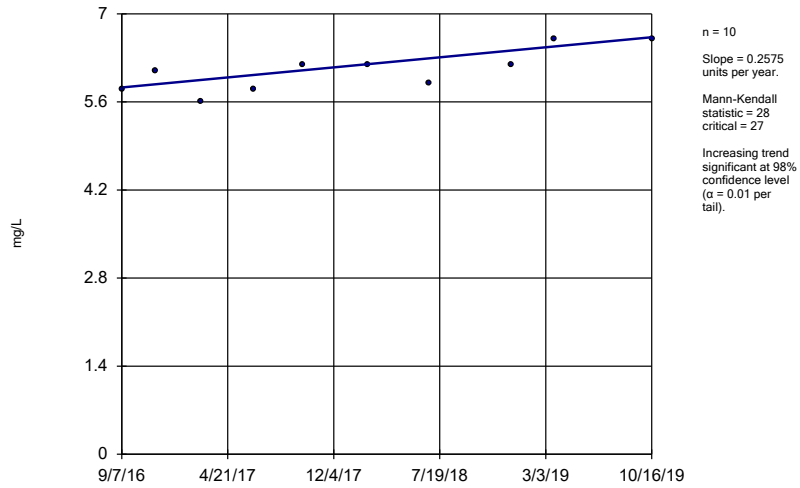
Sen's Slope Estimator

BRGWC-34S



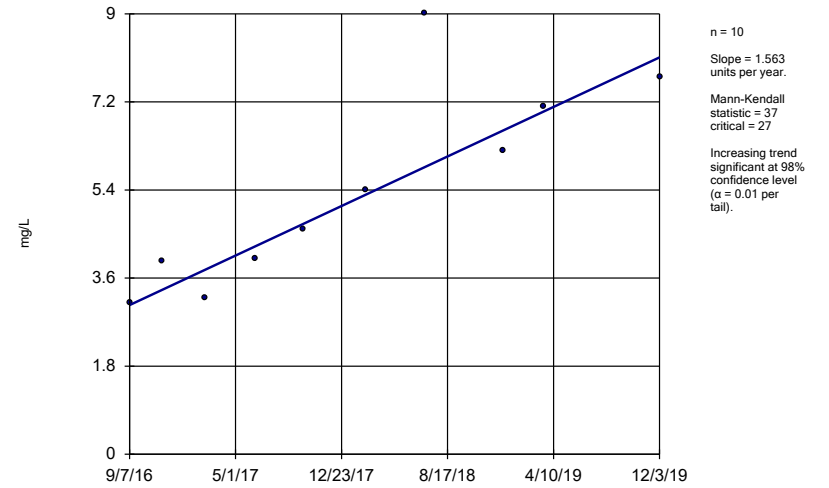
Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-35S



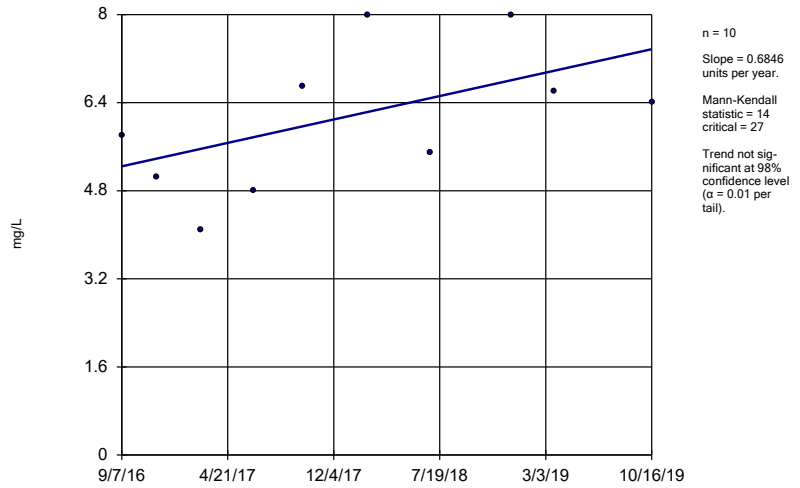
Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-36S



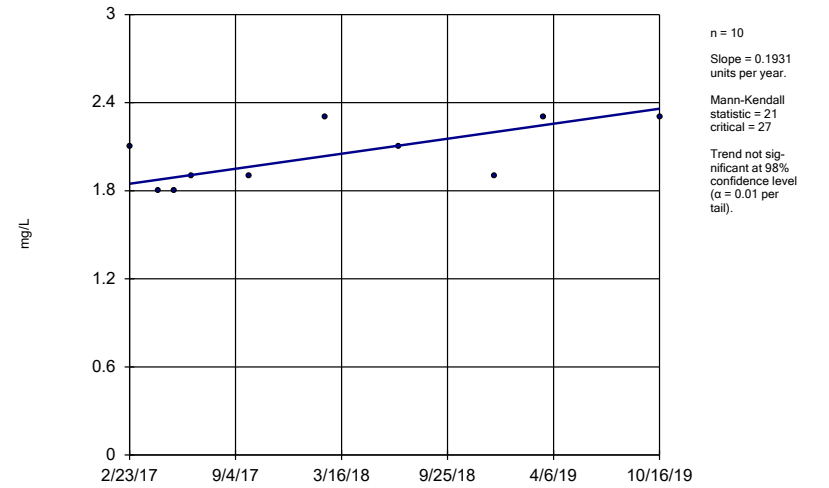
Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-38S



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

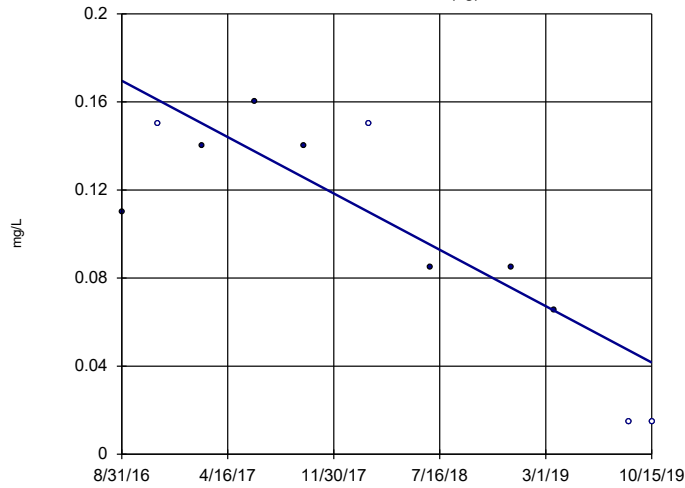
Sen's Slope Estimator
BRGWC-37S



Constituent: Chloride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

BRGWA-2I (bg)

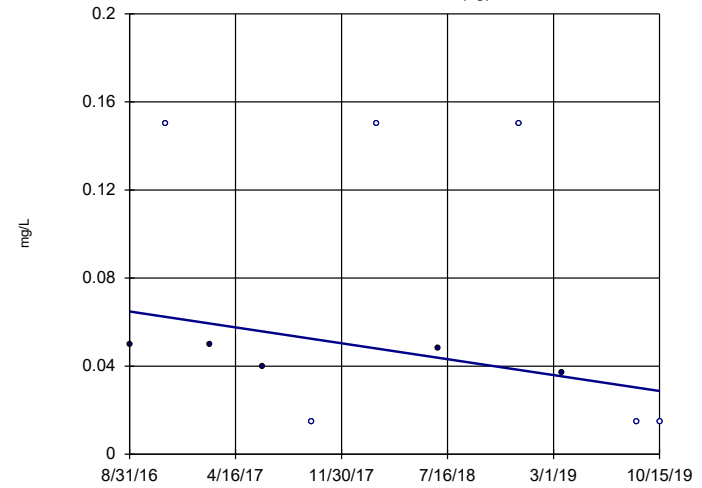


n = 11
Slope = -0.04097
units per year.
Mann-Kendall
statistic = -33
critical = -31
Decreasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

BRGWA-2S (bg)

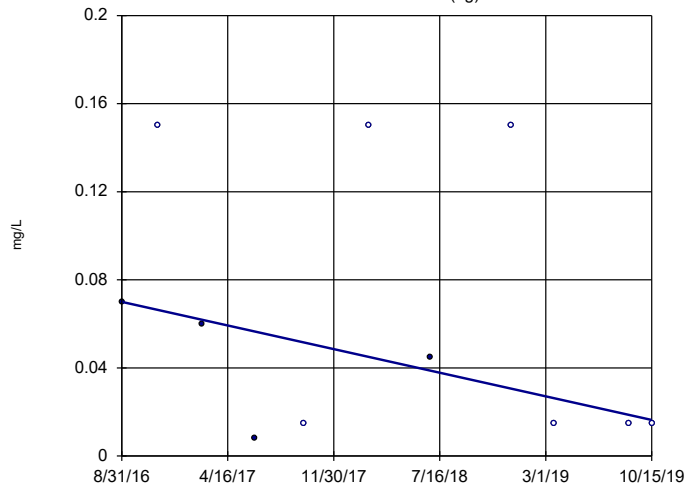


n = 11
Slope = -0.01156
units per year.
Mann-Kendall
statistic = -24
critical = -31
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

BRGWA-5I (bg)

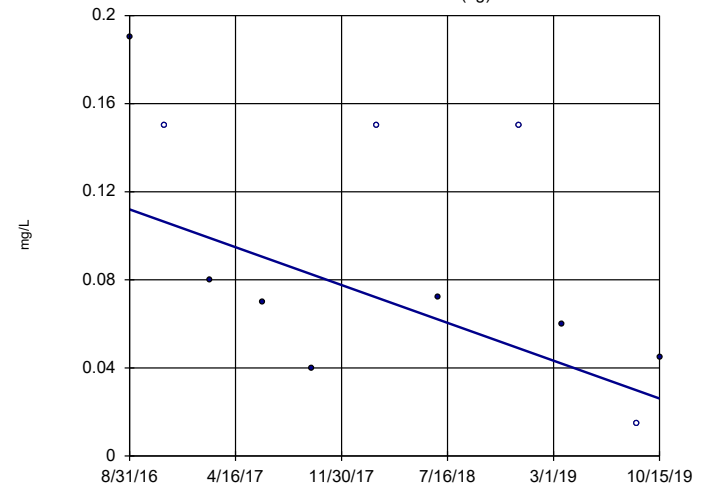


n = 11
Slope = -0.01717
units per year.
Mann-Kendall
statistic = -17
critical = -31
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

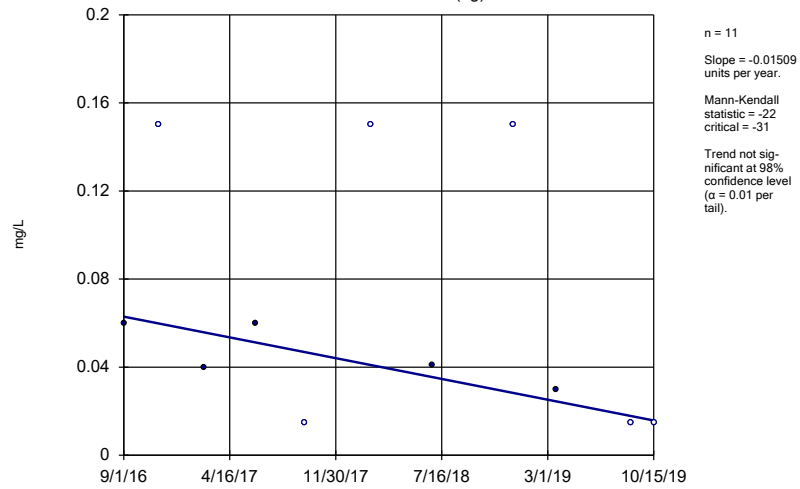
BRGWA-5S (bg)



n = 11
Slope = -0.0275
units per year.
Mann-Kendall
statistic = -28
critical = -31
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

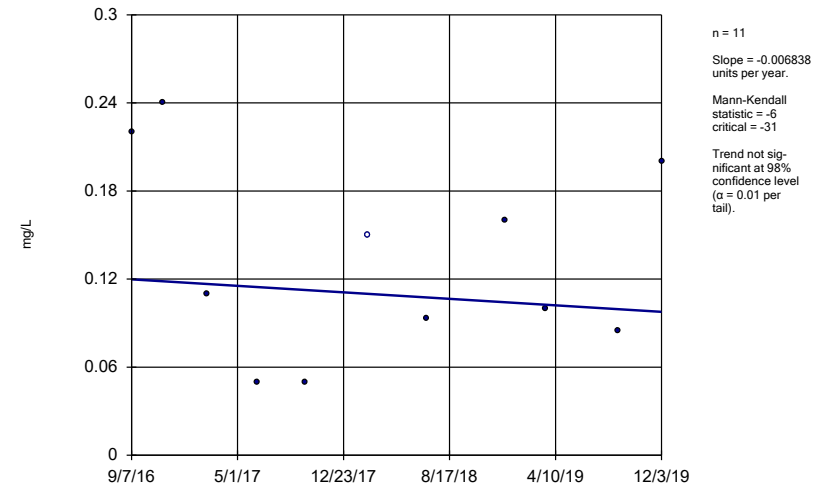
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWA-6S (bg)



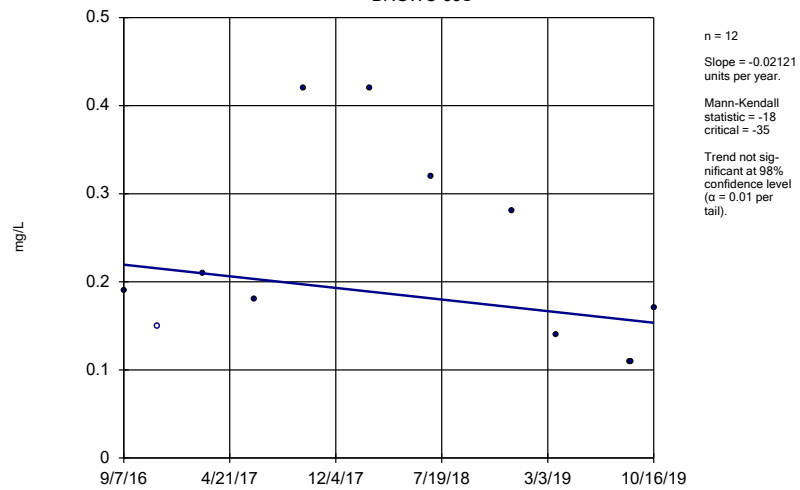
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-17S



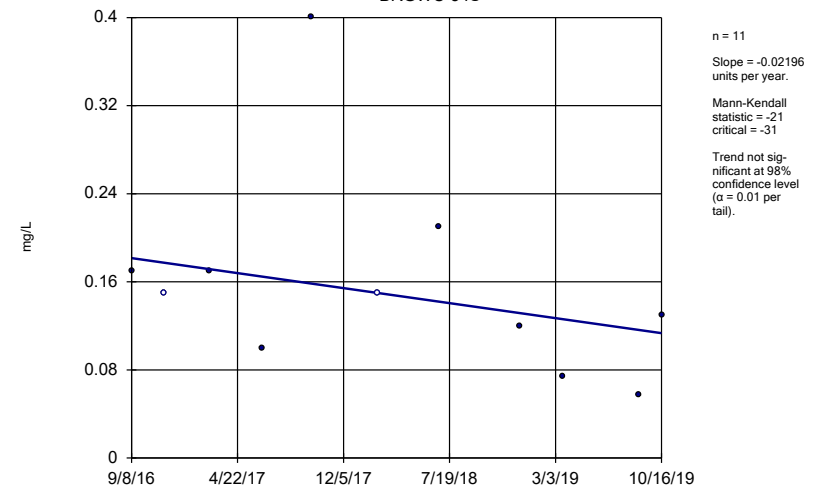
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-33S



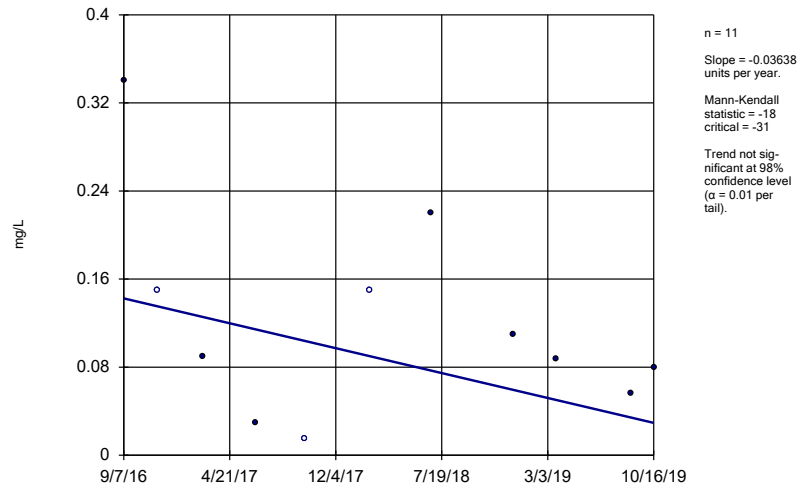
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-34S



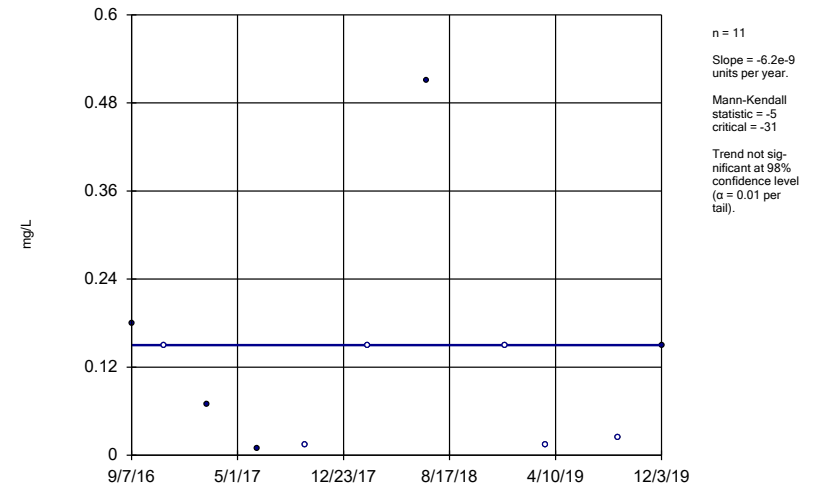
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-35S



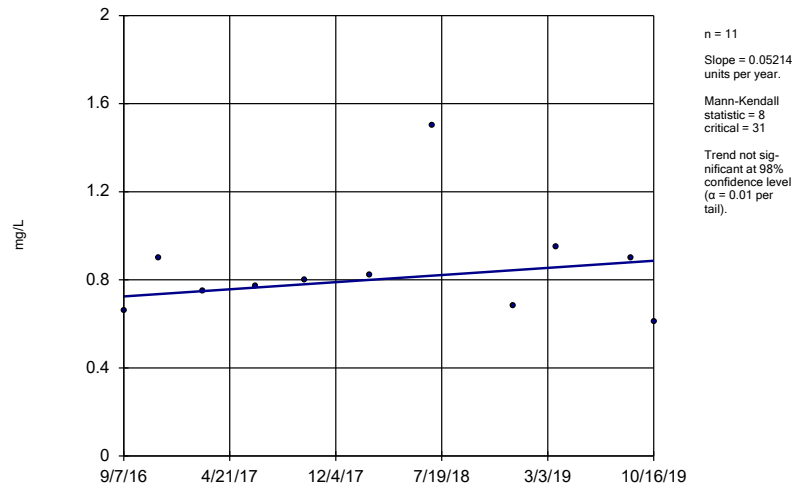
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-36S



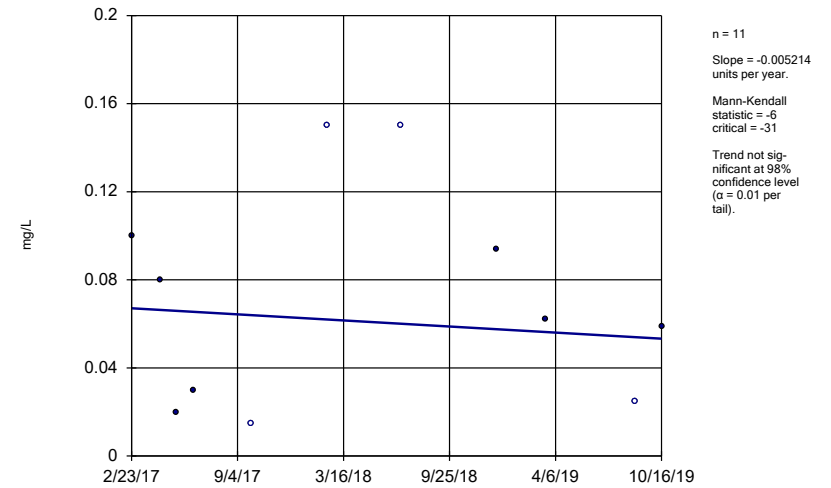
Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-38S



Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

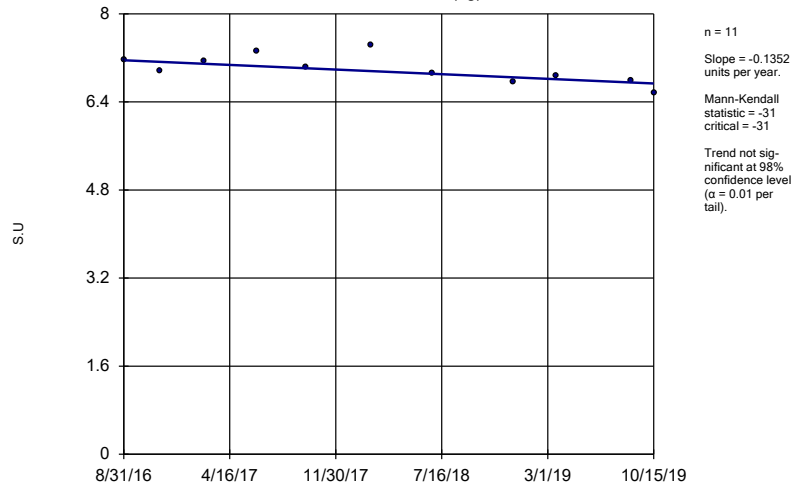
Sen's Slope Estimator
 BRGWC-37S



Constituent: Fluoride Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

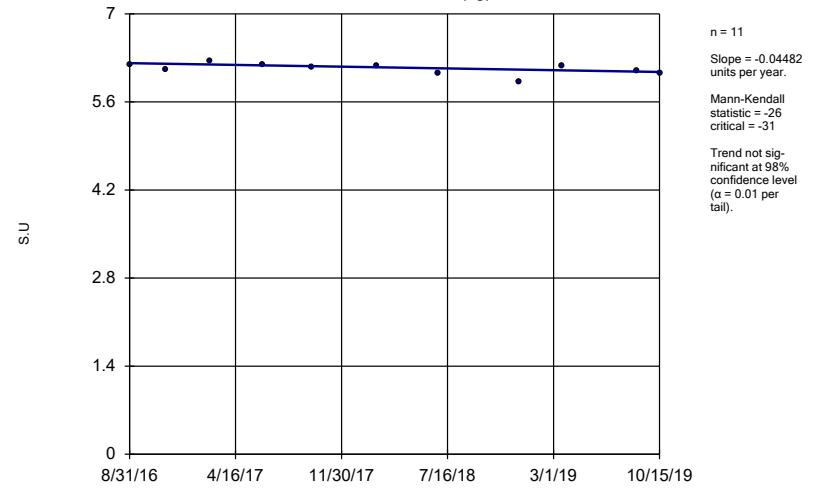
BRGWA-2I (bg)



Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

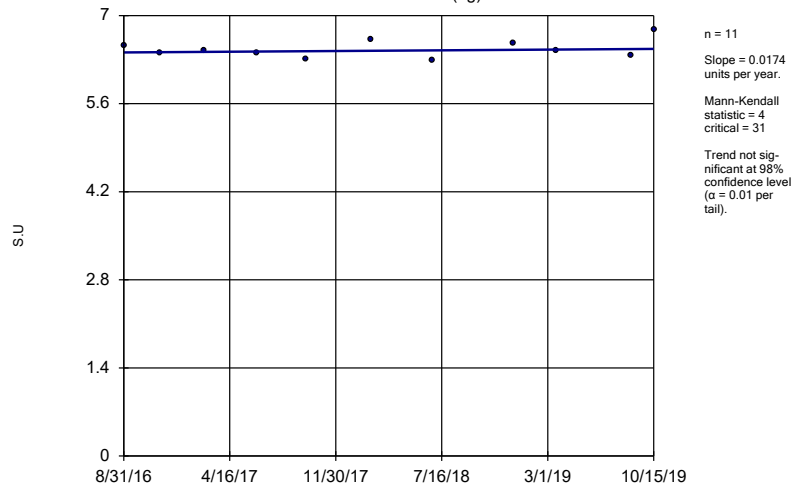
BRGWA-2S (bg)



Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

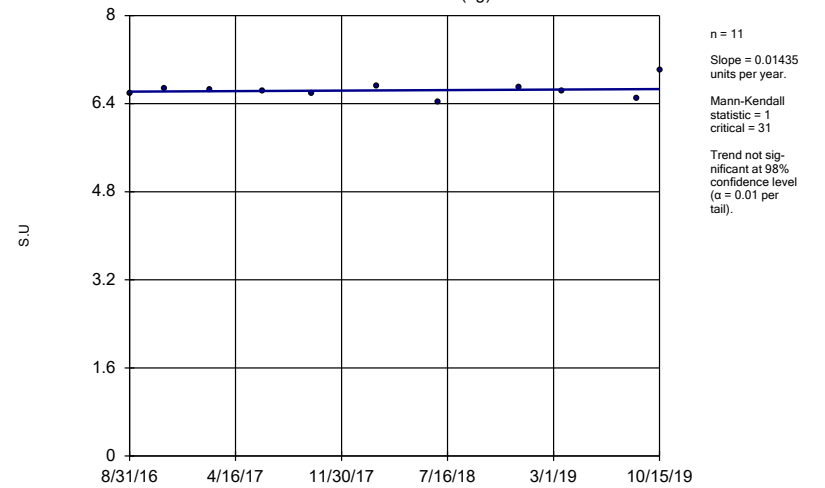
BRGWA-5I (bg)



Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

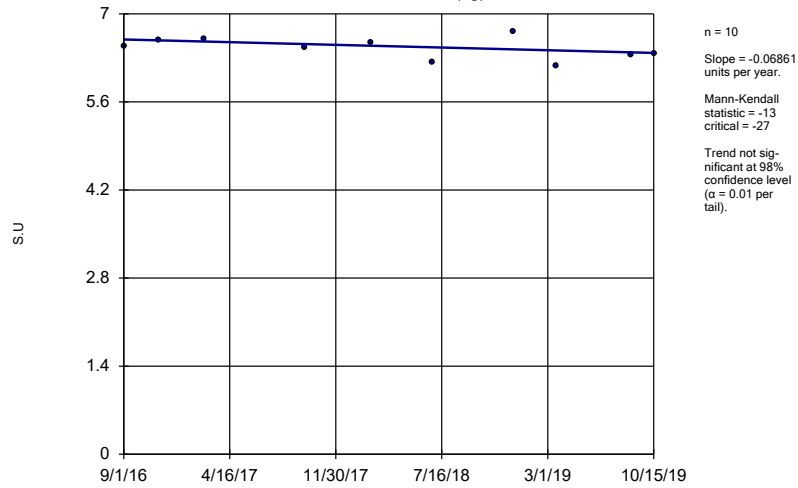
Sen's Slope Estimator

BRGWA-5S (bg)



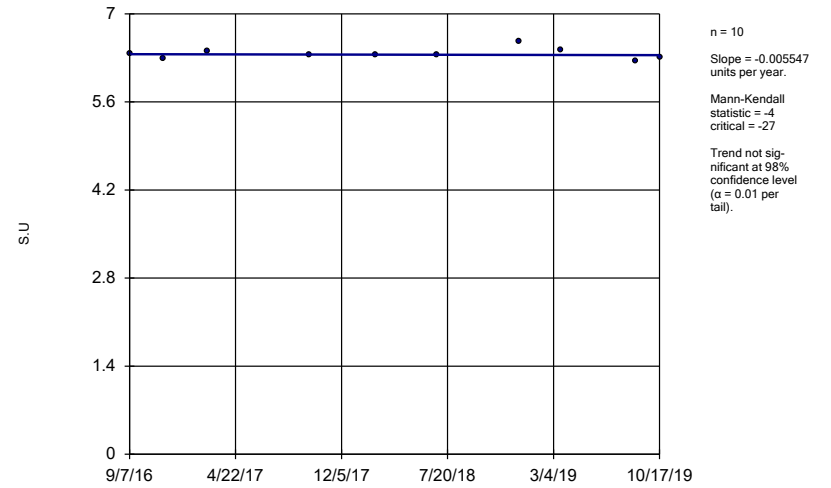
Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWA-6S (bg)



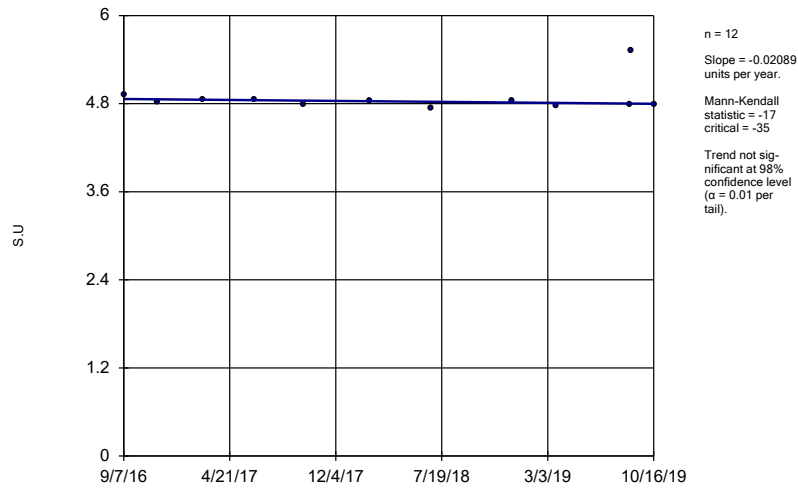
Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-17S



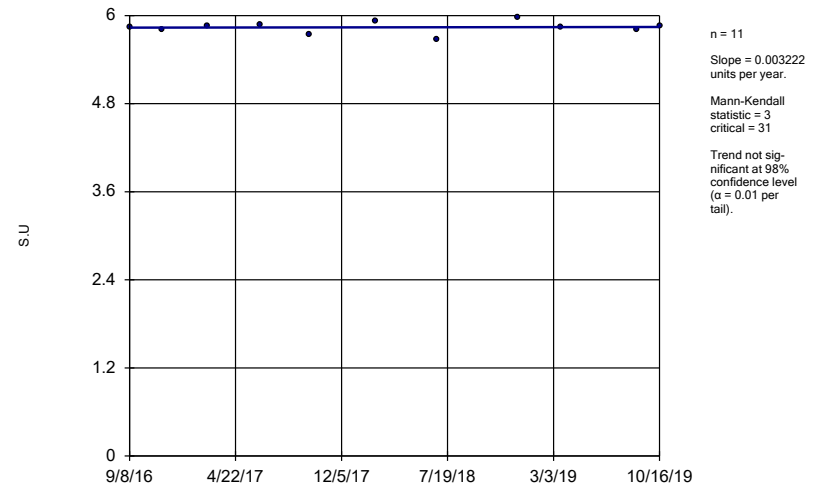
Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-33S



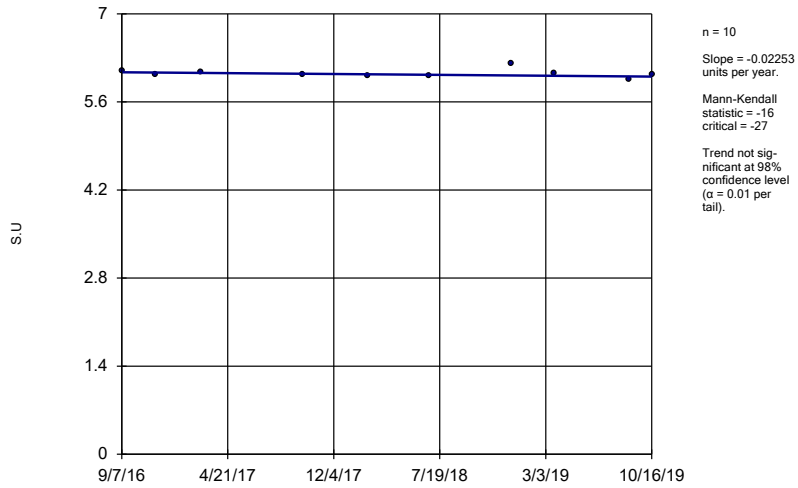
Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-34S



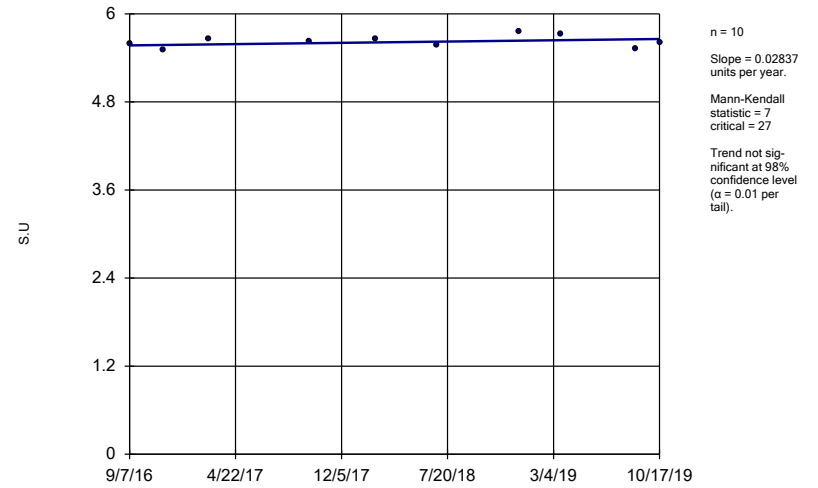
Constituent: pH Analysis Run 2/7/2020 11:23 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator BRGWC-35S



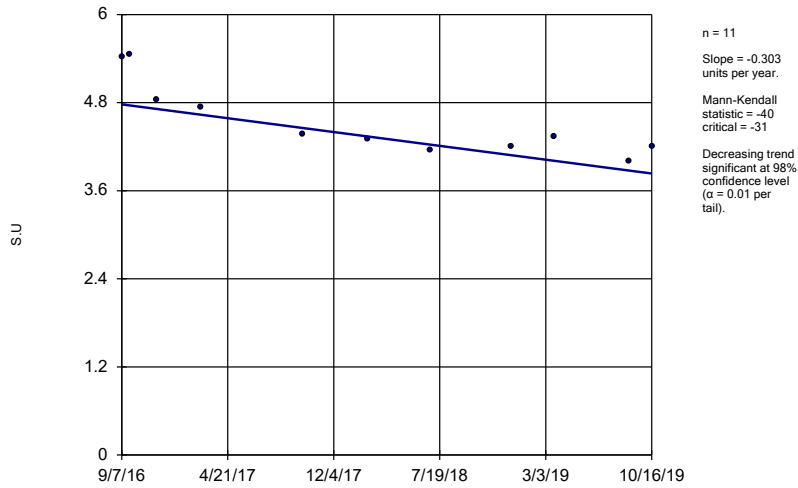
Constituent: pH Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator BRGWC-36S



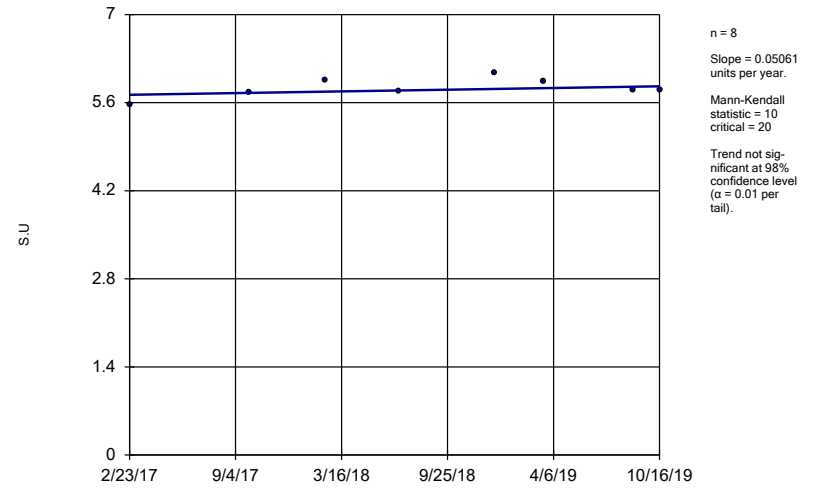
Constituent: pH Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator BRGWC-38S



Constituent: pH Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

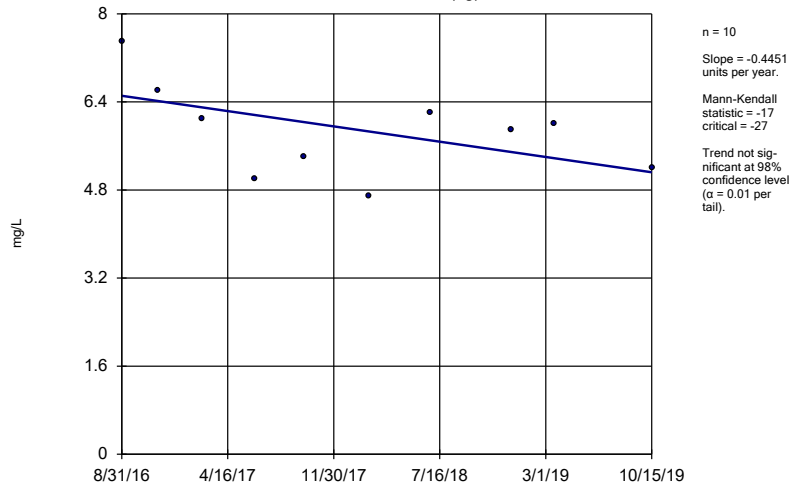
Sen's Slope Estimator BRGWC-37S



Constituent: pH Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

BRGWA-2I (bg)

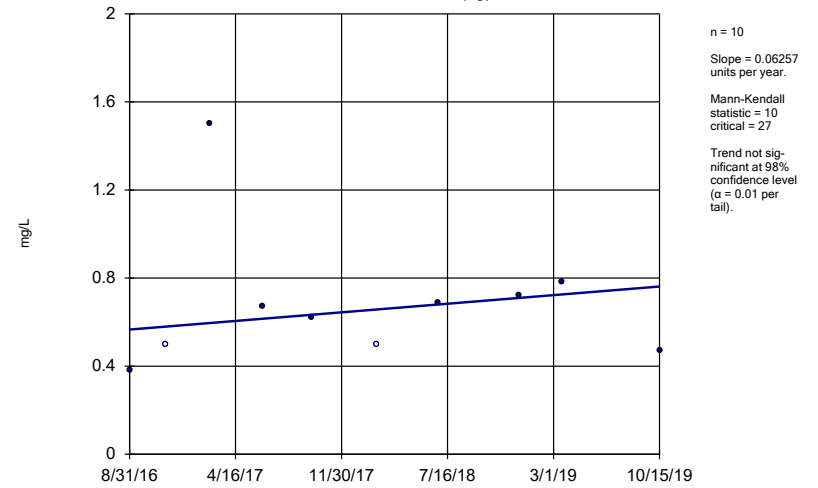


Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Hollow symbols indicate censored values.

Sen's Slope Estimator

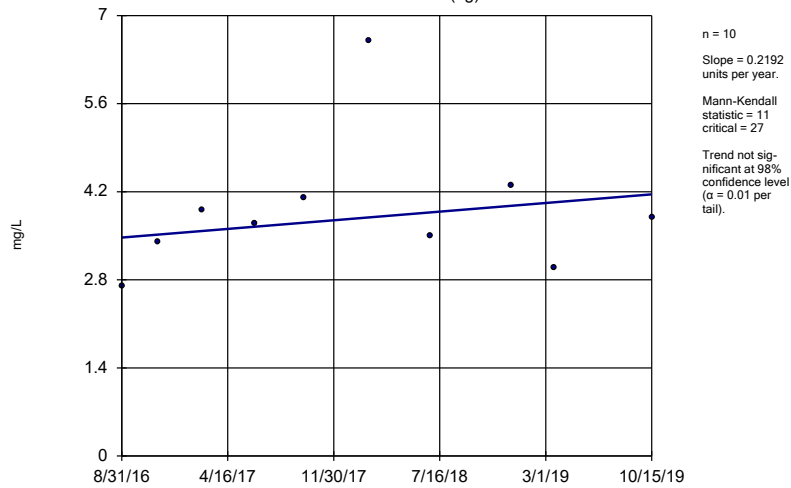
BRGWA-2S (bg)



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

BRGWA-5I (bg)

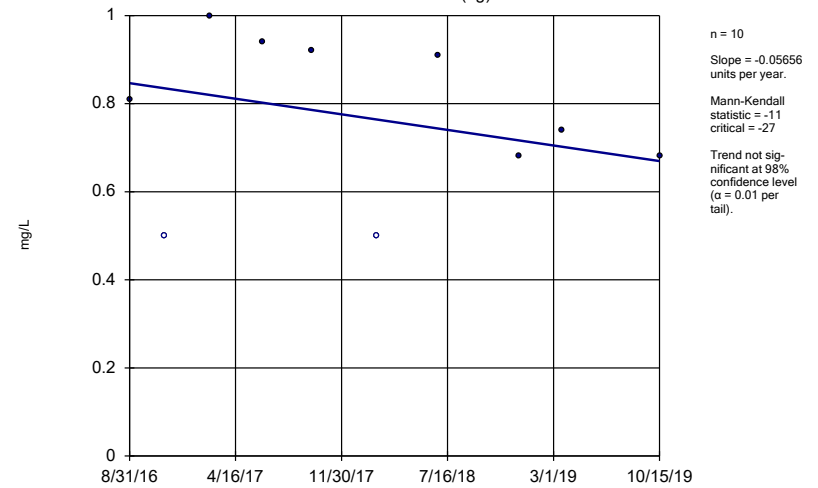


Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Hollow symbols indicate censored values.

Sen's Slope Estimator

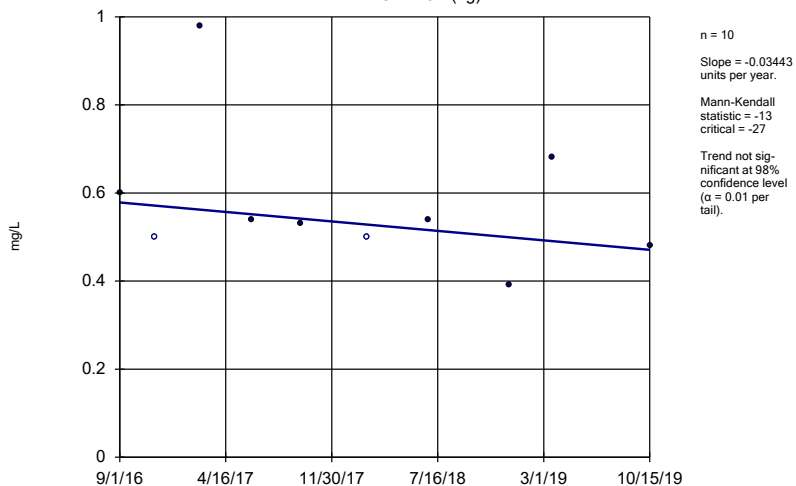
BRGWA-5S (bg)



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

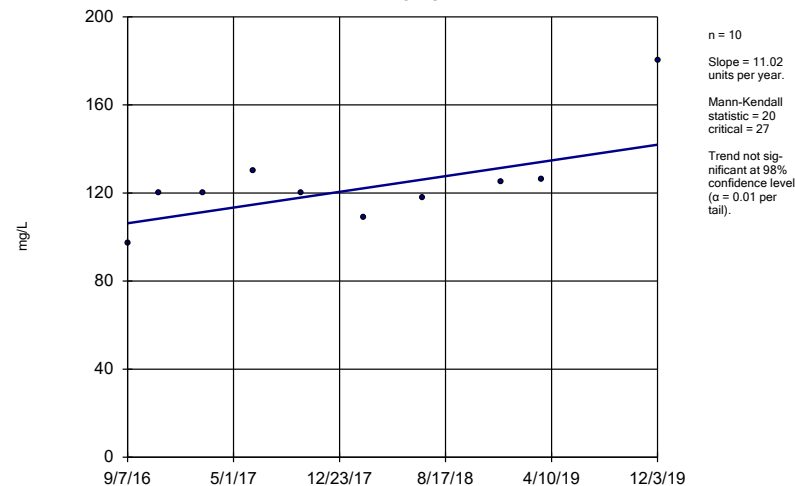
BRGWA-6S (bg)



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

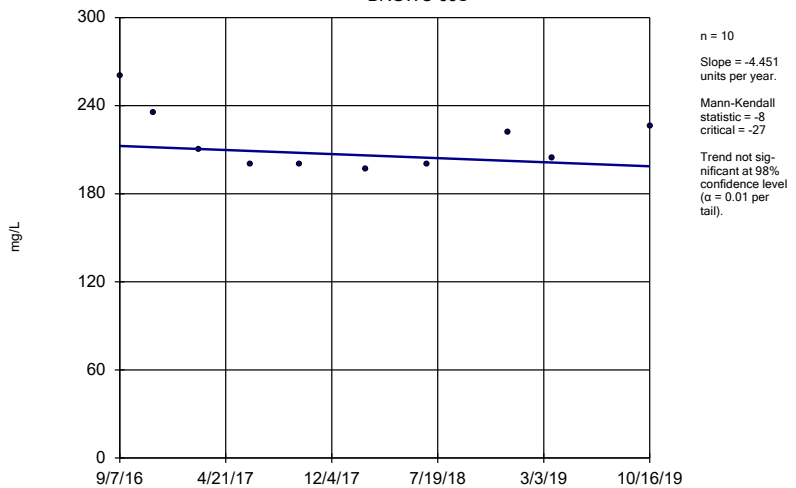
BRGWC-17S



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

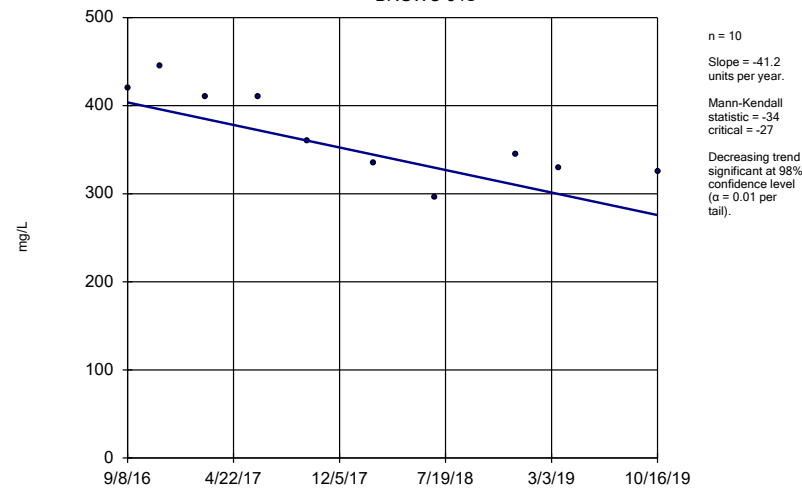
BRGWC-33S



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

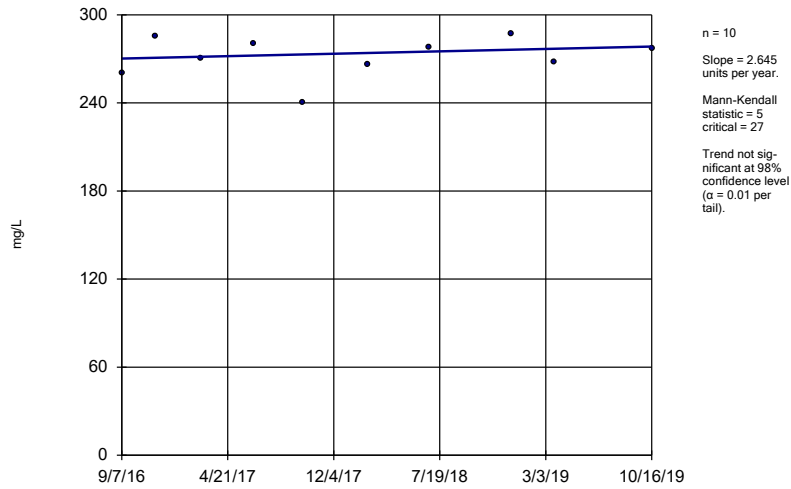
Sen's Slope Estimator

BRGWC-34S



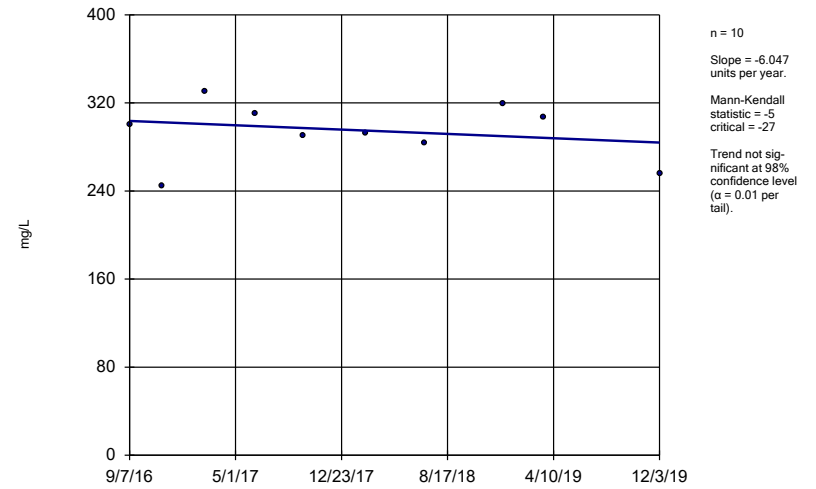
Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-35S



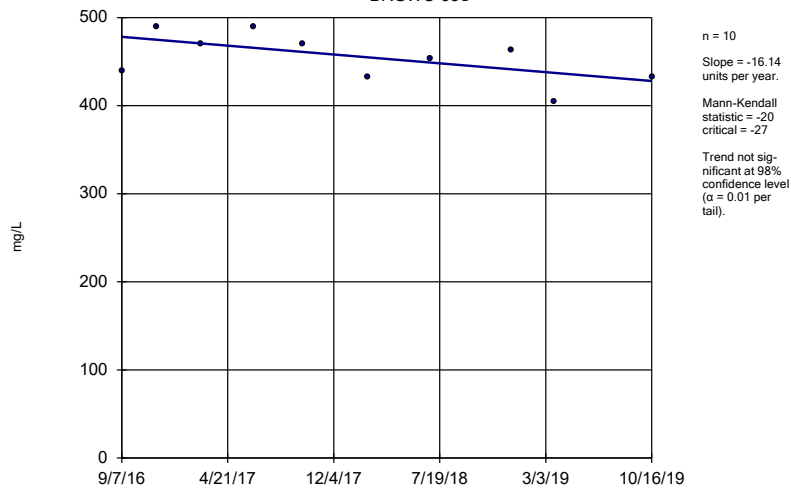
Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-36S



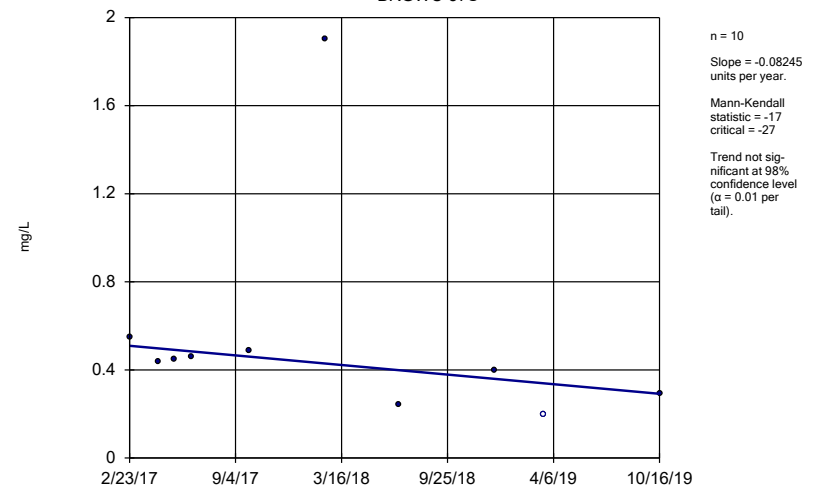
Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-38S



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

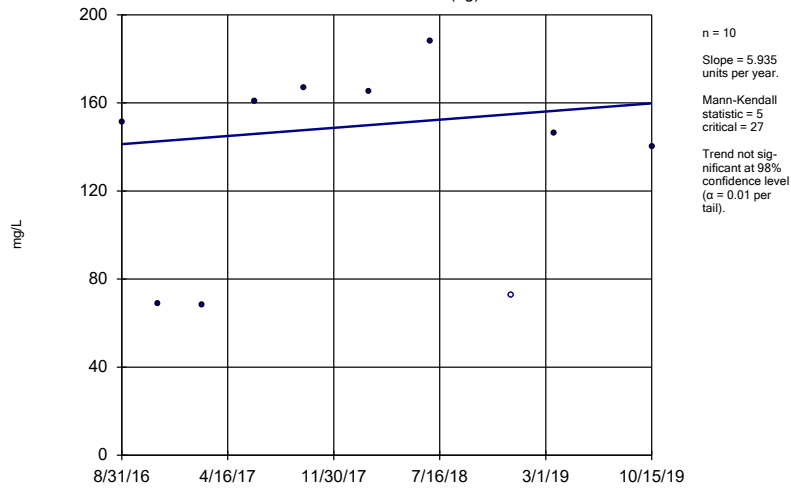
Sen's Slope Estimator
BRGWC-37S



Constituent: Sulfate Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

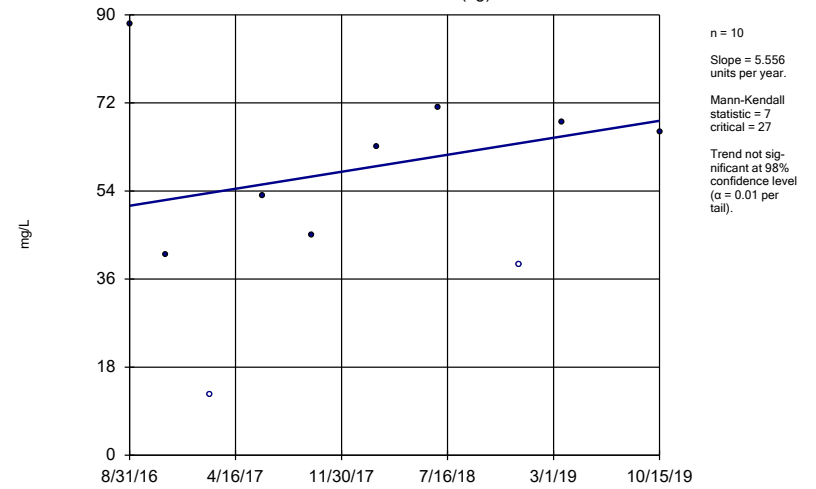
BRGWA-2I (bg)



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

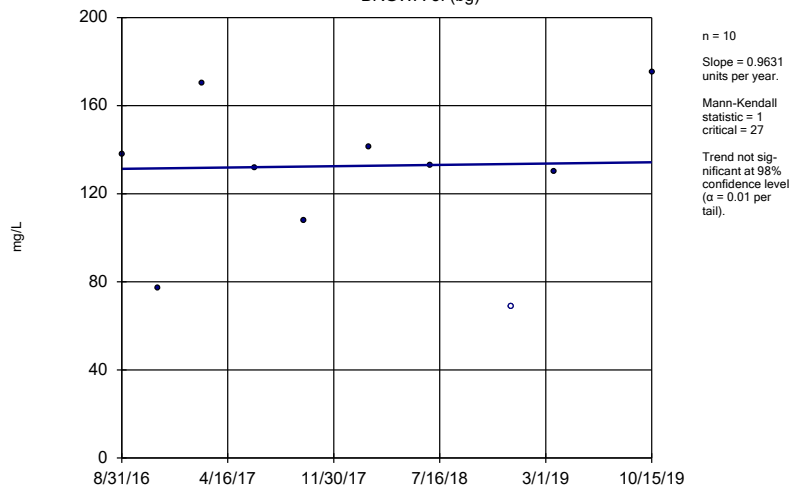
BRGWA-2S (bg)



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator

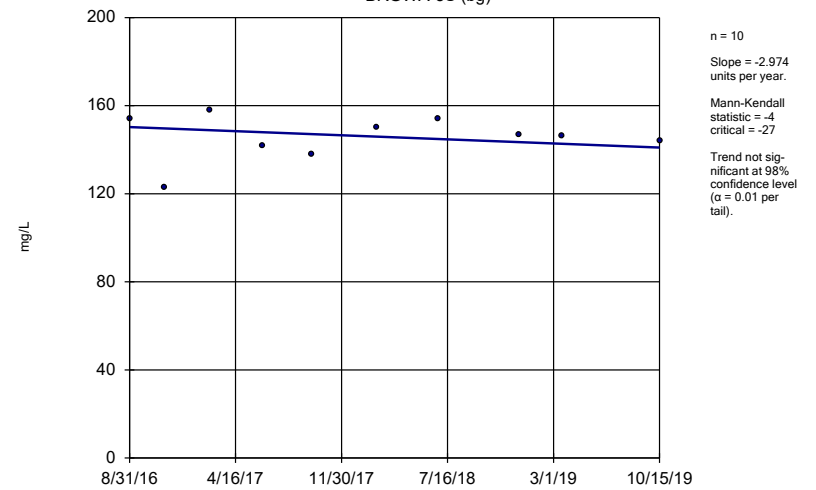
BRGWA-5I (bg)



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

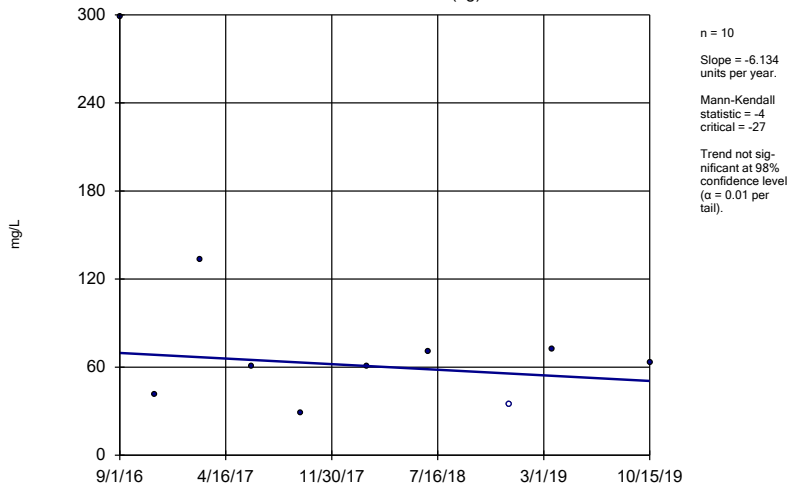
Sen's Slope Estimator

BRGWA-5S (bg)



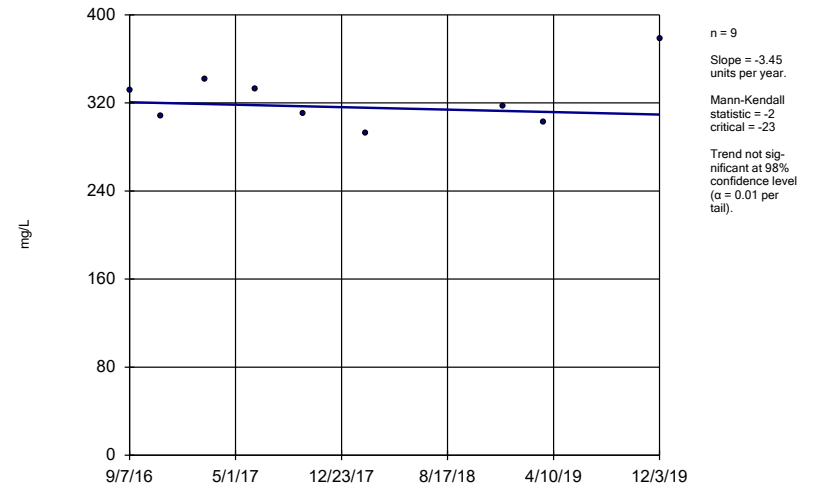
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWA-6S (bg)



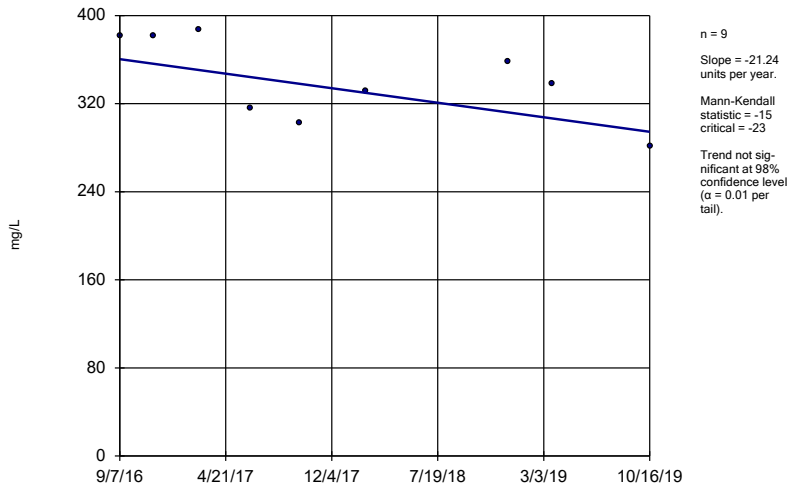
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-17S



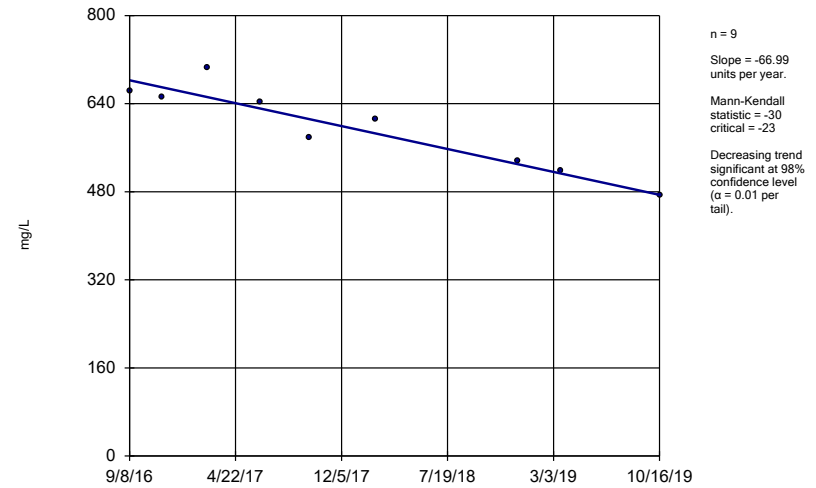
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-33S



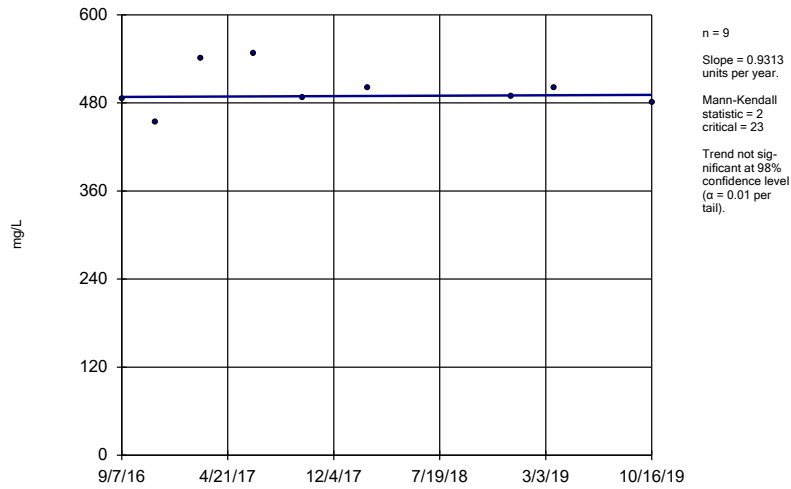
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
 BRGWC-34S



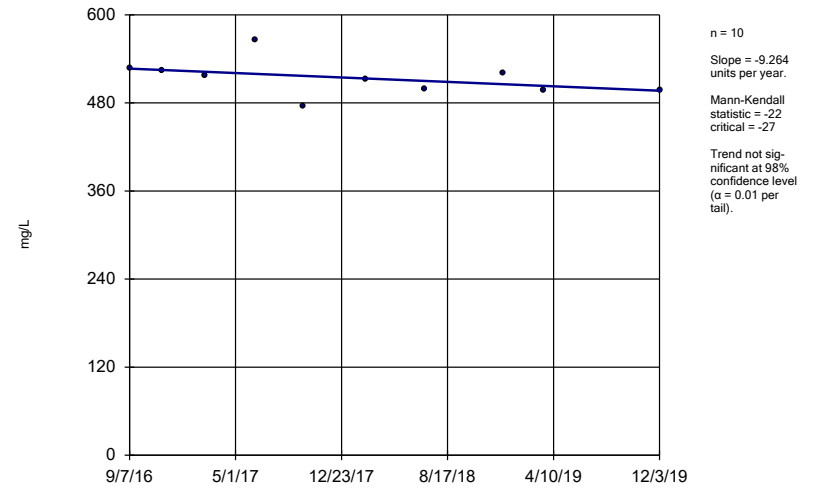
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
 Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-35S



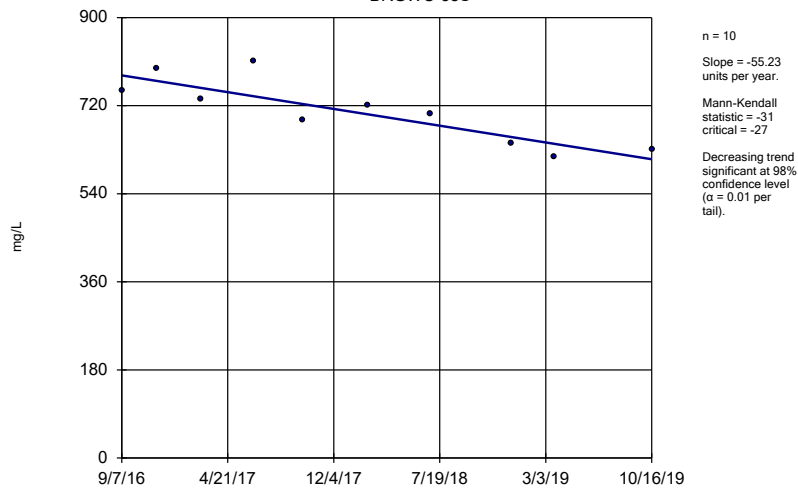
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-36S



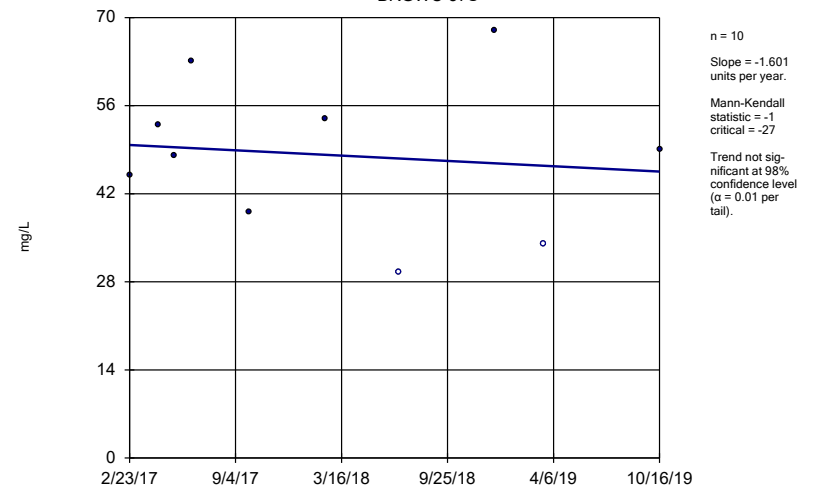
Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-38S



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond

Sen's Slope Estimator
BRGWC-37S



Constituent: Total Dissolved Solids Analysis Run 2/7/2020 11:24 AM View: Pond E Appendix III
Branch Client: Golder Associates Data: Plant Branch Ash Pond



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