



**REPORT**

# 2019 Annual Groundwater Monitoring & Corrective Action Report

*Georgia Power Company - Plant Scherer Ash Pond 1*

Submitted to:



**Georgia Power**

**Georgia Power Company**

241 McGill Boulevard, NE, Atlanta, Georgia 30308

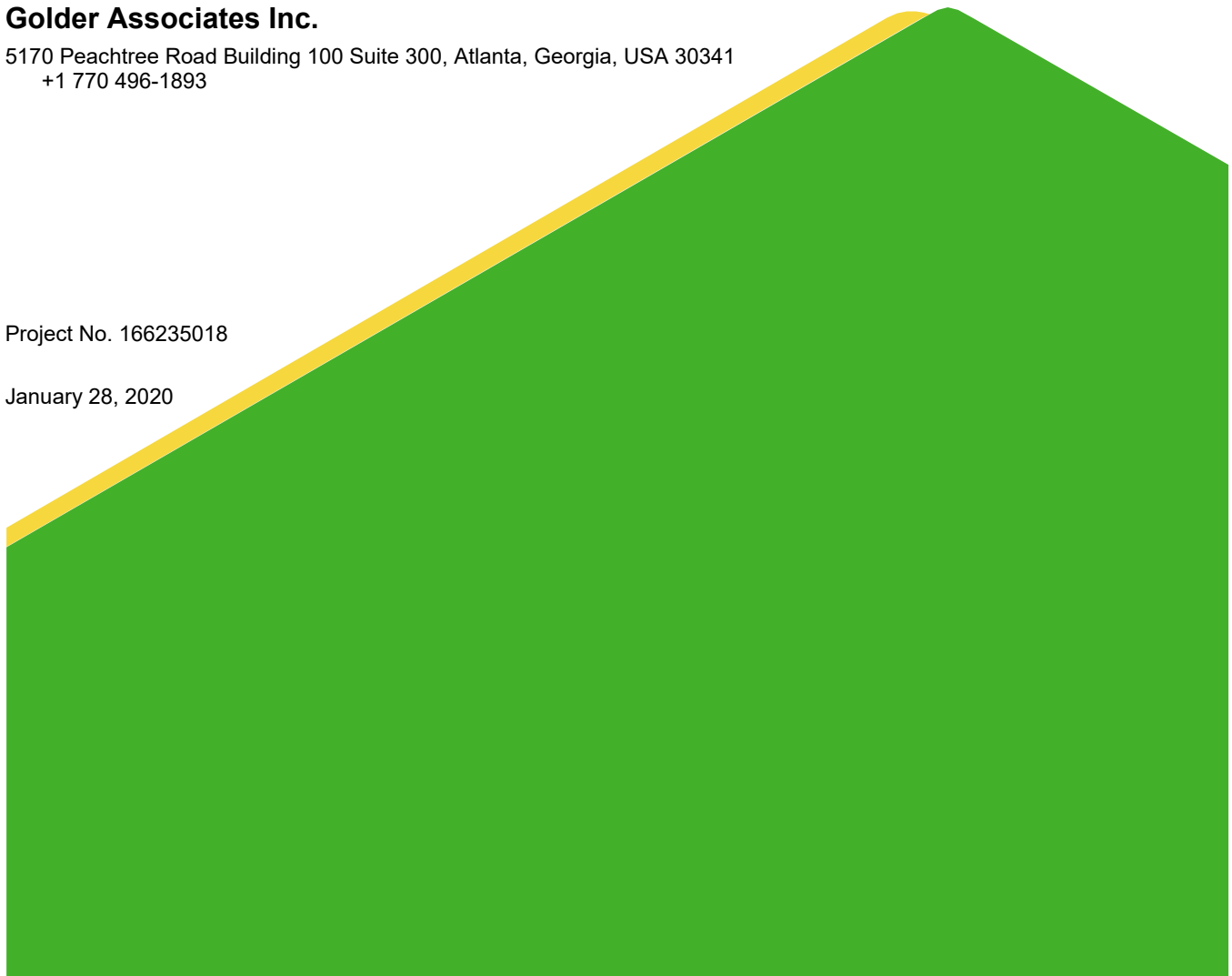
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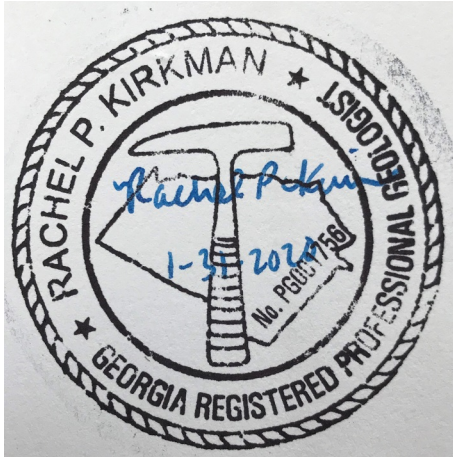
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## Certification Statement

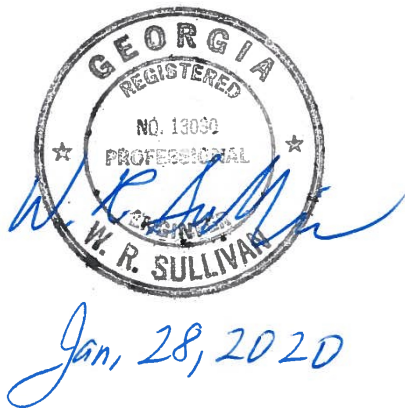
This 2019 Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company - Plant Scherer Ash Pond 1 (AP-1) has been prepared in compliance with the United States Environmental Protection Agency coal combustion residual rule [40 Code of Federal Regulations (CFR) 257 Subpart D] and the Georgia Environmental Protection Division Rules for Solid Waste Management 391-3-4-.10 by a qualified groundwater scientist or engineer with Golder Associates.

### Golder Associates Inc.



Rachel P. Kirkman, PG  
Georgia Registered Professional Geologist No. 1756

I hereby certify that this 2019 Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company Plant Scherer-Ash Pond (AP-1) located at 10986 Georgia 87, Juliette, Georgia 31046, has been prepared to meet the requirements of 40 CFR §257.90(e).



W. Randall Sullivan, PE  
Georgia Registered Professional Engineer No. 13030

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[https://golderassociates.sharepoint.com/sites/24912g/project files/200 reports/annual gw monitoring & corrective action report/2019 annual gwmcar/ap-1/final v.2/fn\\_scherer 2sa.2019 agwmcar v.2\\_1.27.2020.docx](https://golderassociates.sharepoint.com/sites/24912g/project%20files/200%20reports/annual%20gw%20monitoring%20&%20corrective%20action%20report/2019%20annual%20gwmcar/ap-1/final%20v.2/fn_scherer%202sa.2019%20agwmcar%20v.2_1.27.2020.docx)

## 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (US EPA) Coal Combustion Residuals (CCR) Rule 40 Code of Federal Regulations (CFR) 257 Subpart D and the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management 391-3-4-.10, Golder Associates Inc. (Golder) has prepared this Semiannual Groundwater Monitoring Report to document groundwater monitoring activities conducted during the first half of 2019 at Georgia Power's Plant Scherer (Scherer) Ash Pond 1 (AP-1). This report includes the results of the annual monitoring for Appendix IV of 40 CFR 257 conducted in February 2019 and the first and second semi-annual monitoring events conducted in March/April and September 2019 for AP-1.

A permit application for AP-1 was submitted to GA EPD in November 2018 and is currently under review. Although a permit has not yet been issued for AP-1, semi-annual monitoring and reporting for Plant Scherer is proactively performed in accordance with the monitoring program requirements of the GAEPD) Chapter 391-3-4 Solid Waste Management; Solid Waste Program; and the Groundwater Monitoring Plan for Plant Scherer Ash Pond 1, prepared by Golder, November 2018.

The following sections describe the site setting and monitoring program, analytical data collected from the most recent sampling events, statistical analysis of the data, a description of groundwater flow direction and rate, and a discussion of the current findings with relevant conclusions and recommendations for future monitoring activities at the site.

### 1.1 Site Description & Background

Plant Scherer is a coal-fired power generation facility located in northeast Monroe County, GA, approximately 5 miles south of Juliette, GA. The property occupies approximately 12,000 acres and is bounded on the south by Lake Juliette. The plant is primarily surrounded by agricultural and residential use. Figure 1, Site Location Map, depicts the location of Plant Scherer relative to the surrounding area.

CCR resulting from power generation has historically been stored at AP-1. Figure 2, Site Plan and Monitoring Well Location Map depicts the general configuration of AP-1 and site monitoring wells.

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 south toward Lake Juliette and east toward the Ocmulgee River (Figure 1). The ash pond is located on a topographically high area, with several relatively small, intermittent and perennial creeks and streams surrounding the pond. Several isolated hilltops occur west of the pond and represent topographic high points on the site. Topographic relief across the site is greater than 200 feet, with a natural topographic high of over 570 feet above mean sea level (ft msl) occurring along the ridge west of the ash pond, and a topographic low of less than 380 ft msl in the eastern portion of the site near Berry Creek.

### 1.2 Regional & Site Geology & 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 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.

Near surface conditions were determined based upon available boring and monitoring well installation logs. Based on review of this information, residual soils, consisting of primarily sandy silt, silty sand, sandy clay and silty clay, occur as a variably thick blanket overlying bedrock across most of the site. The thickness of the residual soil encountered in the borings is variable, ranging from approximately 17 feet to 168 feet, with an average residual soil thickness of about 57 feet. Saprolitic soils and/or saprolitic rock vary in thickness across the site but were generally encountered at or near ground surface. Saprolitic rock is considered to be partially weathered rock (PWR) as defined by blow counts, where available. Material overlying the top of rock surface, including residual soils, saprolite, and saprolitic rock, is collectively referred to as overburden or regolith.

Field hydraulic conductivity tests (i.e., slug tests) performed in a variety of geologic materials onsite indicate an average horizontal hydraulic conductivity on the order of  $10^{-4}$  centimeters per second (cm/s). Site data include 58 slug test measurements across the site with an average of 2.36 feet/day (ft/day); median 1.31 ft/day. This hydraulic conductivity is generally consistent with regional measurements within Piedmont overburden (Heath, 1982). In general, groundwater flow is potentially faster through the transitionally weathered zone; however, the magnitude of difference is nominal enough to not be considered relevant at this site.

### 1.3 Groundwater Monitoring Well Network

A groundwater monitoring system was installed within the uppermost aquifer at Plant Scherer's AP-1. The monitoring system is intended to monitor groundwater passing the waste boundary of AP-1 within the uppermost aquifer. Wells are located to serve as upgradient, and downgradient wells based on groundwater flow direction as determined by the potentiometric surface elevation contour maps.

A network of 25 wells was installed for groundwater monitoring near AP-1. Table 1A, Monitoring Well Network Summary, includes the pertinent construction details for the AP-1 monitoring well network at Plant Scherer. Additionally, a series of groundwater piezometers have been installed for gauging groundwater elevations. Table 1B, Piezometer Network Summary includes pertinent construction details for the AP-1 piezometer network at Plant Scherer. The detection monitoring well network has been certified by a Registered Professional Engineer in Georgia with notice of that certification in the Operating Record.

## 2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with 40 CFR §257.90(e), the following describes monitoring-related activities performed during 2019 and presents the status of the monitoring program. Groundwater sampling was performed in accordance with 40 CFR §257.93. Samples were collected from each well in the certified monitoring system. The location of each of these monitoring wells is shown on Figure 2. Table 2, Groundwater Sampling Event Summary, presents a summary of groundwater sampling events completed for AP-1 in 2019.

### 2.1 Monitoring Well Installation and Maintenance

There was no change to the certified groundwater monitoring system in 2019; the network remained the same as in 2018. Monitoring well related activities were limited to visual inspection of well conditions prior to sampling, recording the site conditions, and performing exterior maintenance to provide safe access for sampling.

## 2.2 Assessment Monitoring

Pursuant to §257.94(e)(3), an assessment monitoring program has been established for AP-1 at Plant Scherer based on statistically significant increases documented in the *2017 Annual Groundwater Monitoring and Corrective Action Report*, (Golder 2018). A notice of assessment monitoring was placed in the operation record on May 15, 2018.

Groundwater sampling events were conducted for AP-1 during February, March/April, and September 2019. During the February 2019 sampling event, groundwater samples were collected and analyzed for Appendix IV to meet the requirement of §257.95(b). During the March/April and September 2019 semi-annual sampling events, groundwater samples were collected for both Appendix III and the Appendix IV constituents detected during the February 2019 event at each detection monitoring well. Results of sampling activities conducted in 2019 are presented in Appendix A, Analytical Results, Field Data Forms, and Data Validation Summaries.

## 3.0 SAMPLE METHODOLOGY AND ANALYSIS

Sampling events completed during 2019 for AP-1 represent both the annual Appendix IV monitoring event as well as the first and second semi-annual assessment monitoring events for AP-1 at Plant Scherer. Groundwater analytical data and chain of custody records are presented in Appendix A.

### 3.1 Groundwater Elevation Measurement

Prior to each sampling event, groundwater elevations were recorded from each well and piezometer. Groundwater elevation data are summarized on Table 3, Summary of Groundwater Elevations. The recorded water level data were used to develop Figure 3A, AP-1 Potentiometric Surface Elevation Contour Map - March 25, 2019 and Figure 3B, AP-1 Potentiometric Surface Elevation Contour Map – September 9, 2019. Review of Figures 3A and 3B shows that groundwater generally flows east-southeast across the site and is consistent with historical 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 of approximately 1.31 to 2.36 feet per day, which are used in the flow calculations. The hydraulic gradient was calculated between well pairs shown on Table 4A, Horizontal Groundwater Velocity Calculations – March 2019 and Table 4B, Horizontal Groundwater Velocity Calculations – September 2019. An effective porosity of 0.2 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:

$$V = \frac{K * i}{n_e}$$

Where:

$V$  = Groundwater flow velocity  $\left(\frac{\text{feet}}{\text{day}}\right)$

$K$  = Average Hydraulic Conductivity of the aquifer  $\left(\frac{\text{feet}}{\text{day}}\right)$

$i$  = Horizontal hydraulic gradient  $\left(\frac{\text{feet}}{\text{feet}}\right)$

$n_e$  = Effective porosity

Using this equation and groundwater elevation data from this sampling event, horizontal groundwater velocities are calculated for various areas of the site and are tabulated on Tables 4A and 4B.

As presented on Tables 4A and 4B groundwater flow velocity at the site ranges from approximately 0.07 ft/day to 0.29 ft/day (approximately 25 to 104 ft/year) across AP-1 and are generally consistent with expected velocities in the regolith-upper bedrock aquifers and confirm the groundwater monitoring system as properly located to monitor the uppermost aquifer for AP-1 at Plant Scherer.

### 3.3 Groundwater Sampling

Groundwater samples were collected in accordance with §257.93(a). Monitoring wells were purged and sampled using low-flow sampling procedures. Dedicated and/or non-dedicated peristaltic and low-flow pneumatic bladder 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 data forms generated directly from the SmarTroll® as well as chain-of-custody records are included in Appendix A.

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.

Environmental monitoring field data sheets are included with the analytical reports in Appendix A. Field data and sampling notes for each monitoring well are recorded on the field information forms, which contains a description of the sampling equipment, sampling method, purge rate, field observations, and depth to water measurements at each monitoring location.



### 3.4 Laboratory Analyses

Groundwater samples were collected during three groundwater monitoring events in 2019. During the February 2019 sampling event, wells were sampled and analyzed for Appendix IV monitoring parameters pursuant to 40 CFR §257.95(b). The March/April and September 2019 sampling event represents the first and second semi-annual sampling events in 2019 for AP-1 at Plant Scherer. Since AP-1 is currently in assessment monitoring, groundwater samples from wells in the detection monitoring program were analyzed for Appendix III and the detected Appendix IV monitoring parameters per 40 CFR Parts 257 and 261. Tables 5A, 5B and 5C, Analytical Data Summary, presents a tabulated summary of the 2019 sample results.

The required laboratory analyses were performed by Eurofins TestAmerica Laboratory (TAL) located in Pittsburgh, Pennsylvania. TAL is accredited by National Environmental Laboratory Accreditation Program (NELAP) and maintain a NELAP certification for all parameters analyzed for this project. Groundwater data and chain of custody records for the monitoring events are presented in Appendix A.

### 3.5 Quality Assurance & Quality Control Summary

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 A.

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 A. Flagged data are identified in the statistical analysis reports described in the following section.

Following review of analytical results, verification samples were collected at SGWC-3 and SGWC-4 to confirm the initial mercury results. A verification sample was also collected for combined radium at SGWA-25. In each instance, the initial reported result was not verified through resampling. As a result, the resample results were maintained in the site record and utilized for statistical analyses.

## 4.0 STATISTICAL ANALYSES

Statistical analysis of Appendix III and Appendix IV groundwater monitoring data was performed pursuant to §257.93-95 following the established statistical method for AP-1.

### 4.1 Statistical Method

The selected statistical method for AP-1 was developed in accordance with § 257.93(f) using methodology presented in Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance, March 2009, USEPA 530/R-09-007 (Unified Guidance). 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 Unified Guidance (2009) document.

### 4.1.1 Appendix III Statistical Methods

Groundwater quality data were evaluated through use of interwell tolerance limits for Appendix III parameters. Using this method, upgradient well data was pooled to establish a background statistical limit. Data from the March-April 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 Scherer AP-1 Statistical Method Summary provides a summary of the statistical methodology used at AP-1 for the detection monitoring conducted in March 2019 and will be used for any routine detection monitoring in the future.

Table 4.1.1: PLANT SCHERER AP-1 STATISTICAL METHOD SUMMARY		
Monitoring Well Network	Upgradient Wells	SGWA-1, SGWA-2, SGWA-3, SGWA-4, SGWA-5, SGWA-24, SGWA-25
	Downgradient Wells	SGWC-6, SGWC-7, SGWC-8, SGWC-9, SGWC-10, SGWC-11, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23
CCR Monitoring Parameters	Appendix III (Detection Monitoring)	Boron, Calcium, Chloride, Fluoride, pH, Sulfate, and TDS
	Appendix IV (Assessment Monitoring)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, combined Radium 226 + 228, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, and Thallium
Statistical Methodology	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

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.

#### 4.1.2 Assessment Monitoring Statistical Methods

For the Assessment Monitoring Program (Appendix IV constituents), parametric tolerance limits were used to calculate site specific background limits from pooled upgradient well data for Appendix IV parameters with a target of 95% confidence and 95% coverage. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. The background limits were then used when determining the groundwater protection standard (GWPS) under 40 CFR §257.95(h) and Georgia EPD Rule 391-3-4-.10(6)(a).

As described in 40 CFR 257.95(h)(1-3), the GWPS is:

- The maximum contaminant level (MCL) established under §§141.62 and 141.66 of this title
- Where an MCL has not been established, Risk Based Screening Levels (RBSLs) have been specified for cobalt (0.006 mg/L), lead (0.015 mg/L), lithium (0.040 mg/L), or molybdenum (0.100 mg/L)
- The respective background level for a constituent when the background level is higher than the MCL or rule identified GWPS.

USEPA revised the Federal CCR Rule on July 30, 2018, updating GWPS for cobalt, lead, lithium, and molybdenum as described above in 40 CFR §257.95(h)(2). Presently those updated GWPS have not yet been incorporated in the current Georgia EPD Rules for Solid Waste Management 391-3-4-.10(6)(a); therefore, background concentrations are considered when determining the GWPS for constituents where an MCL has not been established (or where background is higher than the MCL). Under the existing EPD rules, the GWPS is:

- The MCL or
- The background concentration when an MCL is not established or when the background concentration is higher than the MCL.

Following the above federal and state rule requirements, GWPSs were established for statistical comparison of Appendix IV constituents. Table 4.1.2, Summary of Background Levels and GWPSs, presented below, summarizes the background limit established at each monitoring well and the GWPS established under State and Federal rules.

To complete the statistical comparison to GWPS, confidence intervals were constructed for each of the Appendix IV parameters in each downgradient well. Those confidence intervals were compared to the GWPS established for both the State and Federal rules. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. If there is an exceedance of the established standard, a statistically significant level (SSL) exceedance is identified.

**Table 4.1.2 SUMMARY OF BACKGROUND LEVELS AND GWPSs**

Analyte	Units	Site Specific Background March-April 2019 <sup>[1]</sup>	Site Specific Background September 2019 <sup>[1]</sup>	Federally-Derived GWPS <sup>[2]</sup>	State-Derived GWPS <sup>[3]</sup>
Antimony	mg/L	0.0021	0.0021	0.006	0.006
Arsenic	mg/L	0.0015	0.0025	0.01	0.01
Barium	mg/L	0.06349	0.06392	2	2
Beryllium	mg/L	0.0002	0.0015	0.004	0.004
Cadmium	mg/L	0.0011	0.00125	0.005	0.005
Chromium	mg/L	0.016	0.019	0.1	0.1
Cobalt	mg/L	0.02	0.02	0.02	0.02
Fluoride	mg/L	0.108	0.15	4	4
Lead	mg/L	0.0013 <sup>[4]</sup>	0.0025	0.015 <sup>[5]</sup>	0.0025
Lithium	mg/L	0.005 <sup>[4]</sup>	0.025	0.04	0.025
Mercury	mg/L	0.00012	0.00025	0.002	0.002
Molybdenum	mg/L	0.00278	0.0075	0.1	0.0075
Radium (226 + 228)	pCi/L	1.2	1.2	5	5
Selenium	mg/L	0.00041	0.005	0.05	0.05
Thallium	mg/L	0.0001	0.0005	0.002	0.002

Notes:

Mg/L = milligrams per liter; pCi/L = picocuries per liter; NA = Not Available

- [1] The background limits are used when determining the groundwater protection standard (GWPS) under 40 CFR §257.95(h) and Georgia Environmental Protection Division (EPD) Rule 391-3-4-.10(6)(a).
- [2] Under 40 CFR §257(h)(1-3) the GWPS is: (i) the MCL/RBSL, (ii) where the MCL is not established, the background concentration, or (iii) background levels for constituents where the background level is higher than the MCL or rule-specified GWPS.
- [3] Under existing EPD rules, the GWPS is: (i) the MCL, (ii) where the MCL is not established, the background concentration, or (iii) background levels for constituents where the background level is higher than the MCL.
- [4] The background tolerance limit (TL) used to evaluate GWPS for this analyte equals the laboratory specified reporting limit (RL). Per the SAP, and in accordance with the Unified Guidance, a non-parametric limit approach was used since the data set contains greater than 50% non-detect results for this analyte. Under this approach, the TL equals the highest value reported, for which is the laboratory RL. We also note that the values reported herein have been updated from the previously established GWPS which was determined based on estimated data. The modified GWPS also reflects additional outlier identification.
- [5] Currently, there is no Environmental Protection Agency (EPA) MCL established for lead. The value listed as GWPS is the established EPA Action Level for drinking water.

A summary table of the statistical results accompanies the prediction limits for Appendix III and confidence intervals for Appendix IV in Appendix B, Statistical Analyses. The background period for statistical analyses included data through June 2017. Tolerance limits for confidence interval calculations are updated to include current data. Due to varying reporting limits in background, the most recent reporting limit is used when data is not reported above detection limits. This results in a more appropriate statistical test.

## 4.2 Statistical Analysis Results

Analytical data from the first semi-annual monitoring event in March/April 2019 at AP-1 have been statistically analyzed in accordance with the site's Statistical Analysis Plan. Verification resampling to confirm initial SSIs was not performed; therefore, initial SSIs are considered verified. The statistical results of the March/April 2019 monitoring event are included in Appendix B.

### 4.2.1 First Semi-Annual 2019 Appendix III Statistical Results

Review of the Sanitas results presented in Table 4.2.1 AP-1 Inter-Well Prediction Limit Statistically Significant Increase Summary and in Appendix B indicates that the following verified SSIs were noted following the March/April 2019 sampling event:

TABLE 4.2.1 AP-1 Inter-Well Prediction Limit Statistically Significant Increase Summary	
Appendix III Parameter	AP-1 Monitoring Wells
Boron	SGWC-8, SGWC-9, SGWC-10, SGWC-11, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22,
Calcium	SGWC-8, SGWC-9, SGWC-12, SGWC-14, SGWC-17, SGWC-18, SGWC-19, SGWC-21, SGWC-22, SGWC-23
Chloride	SGWC-7, SGWC-8, SGWC-9, SGWC-10, SGWC-11, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23
Fluoride	SGWC-8
pH	SGWC-15, SGWC-18, SGWC-20
Sulfate	SGWC-7, SGWC-8, SGWC-9, SGWC-10, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21,
Total Dissolved Solids	SGWC-7, SGWC-8, SGWC-9, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23

Based on review of the Appendix III statistical analysis presented in Appendix B, Appendix III constituents have not returned to background levels and assessment monitoring should continue pursuant to 40 CFR 257.95(f)

### 4.2.2 First Semi-Annual 2019 Assessment Monitoring Statistical Results

Analytical data from the March/April 2019 monitoring event at AP-1 have been statistically analyzed in accordance with the site's certified statistical analysis method. Review of the Sanitas results indicates that using the GWPS established according to both 40 CFR §257.95(h) and 391-3-4-.10(6)(a), the following SSLs were identified:

TABLE 4.2.2 AP-1 Confidence Interval Statistically Significant Level Exceedances	
Appendix IV Parameter	AP-1 Monitoring Well
Cobalt	SGWC-10, SGWC-11, SGWC-15, SGWC-18, SGWC-20

### 4.2.3 Second Semi-Annual 2019 Appendix III Statistical Results

Review of the Sanitas results presented in Table 4.2.3 AP-1 Interwell Prediction Limit Statistically Significant Increase Summary and in Appendix B indicates that the following verified SSIs were noted following the September 2019 sampling event:

TABLE 4.2.3 AP-1 Inter-Well Prediction Limit Statistically Significant Increase Summary	
Appendix III Parameter	AP-1 Monitoring Wells
Boron	SGWC-8, SGWC-9, , SGWC-11, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23
Calcium	SGWC-8, SGWC-9, SGWC-12, SGWC-14, SGWC-17, SGWC-18, SGWC-19, SGWC-21, SGWC-22, SGWC-23
Chloride	SGWC-7, SGWC-8, SGWC-9, SGWC-10, SGWC-11, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23
Fluoride	SGWC-7, SGWC-8
pH	SGWC-15, SGWC-18, SGWC-20
Sulfate	SGWC-7, SGWC-8, SGWC-9, SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22,
Total Dissolved Solids	SGWC-8, SGWC-9, SGWC-14, SGWC-15, SGWC-17, SGWC-18, SGWC-19, SGWC-20, SGWC-21, SGWC-22, SGWC-23

### 4.2.4 Second Semi-Annual 2019 Assessment Monitoring Statistical Results

Analytical data from the September 2019 monitoring event at AP-1 have been statistically analyzed in accordance with the site's certified statistical analysis method. Review of the Sanitas results indicates that using the GWPS established according to both 40 CFR §257.95(h) and 391-3-4-.10(6)(a), the following SSLs were identified:

TABLE 4.2.4 AP-1 Confidence Interval Statistically Significant Level Exceedances	
Appendix IV Parameter	AP-1 Monitoring Well
Cobalt	SGWC-11, SGWC-15, SGWC-18, SGWC-20

### 4.3 Alternate Source Demonstration

In accordance with 40 CFR §257.95, an alternate source demonstration (ASD) was prepared for cobalt at AP-1 (Golder, 2019)(See Appendix C, Alternate Source Demonstration). In summary, there are multiple lines of evidence that support the conclusion that the SSLs of cobalt present in compliance monitoring wells are not the result of impact by AP-1, but rather are from an alternate, naturally occurring source. The following lines of evidence support an ASD for concentrations of cobalt in groundwater downgradient of AP-1:

- Absence of cobalt in porewater samples collected from AP-1.
- Presence of naturally occurring cobalt in soils/sediment, saprolite, and bedrock at Plant Scherer.
- Occurrence of cobalt in on-site upgradient groundwater at concentrations above the RBSL.

- Natural dissolution of cobalt into groundwater at low pH under natural aquifer environment based on site-specific mineralogical data and geochemical conditions.
- Published sources of naturally occurring cobalt in regional groundwater.

Review of groundwater quality data since monitoring began at AP-1 in 2016, demonstrate a spatial variability in cobalt concentrations across the site including upgradient of AP-1.

## 5.0 MONITORING PROGRAM STATUS

Review of analytical results shows that concentrations of target constituents are below the primary maximum contaminant levels (MCLs) in groundwater samples collected during the March/April 2019 and September sampling events. Statistical evaluations of the groundwater monitoring data for AP-1 confirms SSIs of Appendix III groundwater monitoring parameters above background and SSLs of Appendix IV groundwater monitoring parameter (cobalt) above the established GWPS. In accordance with 40 CFR §257.95(g)(3), an ASD was previously submitted for cobalt. Based on the results of the March/April 2019 and September sampling events, AP-1 will remain in assessment monitoring.

## 6.0 CONCLUSIONS AND FUTURE ACTIONS

This 2019 *Annual Groundwater Monitoring & Corrective Action Report*, Georgia Power Plant Scherer Ash Pond 1 was prepared to fulfill the requirements of US EPA's 40 CFR §257.95 and Georgia EPD's 391-3-4-.10. The groundwater flow direction interpreted during the 2019 monitoring events is consistent with historical evaluations.

Review of analytical results and statistical analyses developed for the site indicates that statistical exceedances identified during the first and second semi-annual 2019 events can be addressed by the previously submitted ASD and can be attributed to natural variability in groundwater chemistry. The monitoring well network continues to effectively monitor the uppermost aquifer beneath AP-1.

Based on the findings presented herein, Plant Scherer will continue with assessment groundwater monitoring and reporting. The next scheduled sampling event is tentatively scheduled for February 2020.

## 7.0 REFERENCES

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## TABLES & FIGURES

**TABLE 1A.**  
**MONITORING WELL NETWORK SUMMARY**  
**Georgia Power - Plant Scherer**  
**Juliette, GA**

Well ID	Former Designation(s)	Hydraulic Location	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
<b>ASH POND MONITORING WELL NETWORK</b>												
SGWA-1	APA-1/PZ-8S	Upgradient	Saprolite	33.07657	-83.82937	546.81	544.3	50.9	503.8	493.8	10.0	2/11/2015
SGWA-2	APA-11/PZ-8I	Upgradient	Bedrock	33.07658	-83.82935	546.81	588.1	95.8	502.7	492.7	10.0	2/17/2015
SGWA-3	APA-2	Upgradient	Saprolite	33.07930	-83.83133	545.65	542.47	50	502.5	492.5	10.0	11/18/2015
SGWA-4	APA-3	Upgradient	Saprolite	33.08273	-83.82535	547.27	544.25	67	493.8	483.8	10.0	11/17/2015
SGWA-5	APA-4	Upgradient	Saprolite	33.07344	-83.83746	508.11	505.32	30	485.3	475.3	10.0	11/18/2015
SGWC-6	APC-1	Downgradient	Saprolite	33.08462	-83.82255	510.57	507.94	25	492.9	482.9	10.0	11/12/2015
SGWC-7	APC-2	Downgradient	Bedrock	33.08599	-83.82163	506.05	503.32	35	478.3	468.3	10.0	11/11/2015
SGWC-8	APC-3	Downgradient	Bedrock	33.08653	-83.81928	513.93	511.05	40	481.1	471.1	10.0	11/10/2015
SGWC-9	APC-4	Downgradient	Saprolite	33.08589	-83.81773	510.37	507.61	35	482.6	472.6	10.0	11/6/2015
SGWC-10	APC-5	Downgradient	Saprolite	33.08385	-83.81580	509.22	506.3	32.6	486.3	476.3	10.0	11/5/2015
SGWC-11	APC-6	Downgradient	Saprolite	33.08288	-83.81488	511.28	508.3	40.5	478.3	468.3	10.0	10/29/2015
SGWC-12	APC-7	Downgradient	Saprolite	33.08296	-83.81267	500.29	497.5	47.6	460.4	450.4	10.0	10/30/2015
SGWC-13	APC-8	Downgradient	Saprolite	33.08213	-83.81022	482.58	479.75	35	454.8	444.8	10.0	11/4/2015
SGWC-14	APC-9/PZ-16S	Downgradient	Saprolite	33.08127	-83.80836	476.48	473.3	38.5	448.5	438.5	10.0	2/24/2015
SGWC-15	APC-10/PZ-17S	Downgradient	Saprolite	33.07914	-83.80588	483.27	480.3	45.2	445.5	435.5	10.0	2/26/2015
SGWC-16	APC-11/PZ-18S	Downgradient	Saprolite	33.07647	-83.80569	460.03	456.9	40.2	428.1	418.1	10.0	3/3/2015
SGWC-17	APC-12/PZ-20S	Downgradient	Saprolite	33.07396	-83.80533	417.96	414.8	24.5	400.7	390.7	10.0	3/11/2015
SGWC-18	APC-13/PZ-22S	Downgradient	Saprolite	33.07022	-83.80644	513.18	510.3	44.5	476.2	466.2	10.0	3/17/2015
SGWC-19	APC-14/PZ-23S	Downgradient	Saprolite	33.06769	-83.80918	478.67	475.8	34.6	451.6	441.6	10.0	3/18/2015
SGWC-20	APC-15	Downgradient	Saprolite	33.06769	-83.81175	504.44	501.12	25	486.1	476.1	10.0	11/19/2015
SGWC-21	APC-16/PZ-1S	Downgradient	Saprolite	33.06602	-83.81538	487.54	484.8	24.9	470.3	460.3	10.0	5/6/2015
SGWC-22	APC-17/PZ-2S	Downgradient	Saprolite	33.06639	-83.81928	518.07	515.6	50.1	479.1	469.1	10.0	1/22/2015
SGWC-23	APC-18/PZ-4I	Downgradient	Bedrock	33.06957	-83.82211	523.07	520.1	49.7	480.8	470.8	10.0	2/3/2015
SGWA-24	APA-5/PZ-7S	Upgradient	Saprolite	33.07352	-83.82663	503.86	500.9	40	473.2	463.2	10.0	2/10/2015
SGWA-25	APA-6/PZ-9S	Upgradient	Saprolite	33.08020	-83.82623	526.39	523.4	45.0	488.8	478.8	10.0	2/18/2015

**Notes:**

1. feet msl = feet mean sea level
2. feet bgs = feet below ground surface

**TABLE 1B.  
PIEZOMETER NETWORK SUMMARY  
Georgia Power - Plant Scherer  
Juliette, GA**

Well ID	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
<b>ASH POND PIEZOMETERS</b>										
PZ-2I	Bedrock	33.06640517	83.81931975	517.61	515.1	84.3	441.2	431.2	10	1/27/2015
PZ-3S	Saprolite	33.067894	-83.820805	517.29	514.6	50	475	465	10	1/28/2015
PZ-5I	Saprolite	33.07174453	83.82312963	523.24	520.7	49.8	484.1	474.1	10	2/4/2015
PZ-6S	Saprolite/PWR	33.07291573	83.82273659	531.48	529.2	54.8	484.8	474.8	10	2/4/2015
PZ-9I	Bedrock	33.08021581	83.82621624	527.49	523.5	80.2	453.7	443.7	10	2/19/2015
PZ-10S	Saprolite	33.08508695	83.82323921	516.81	514.2	34.9	489.7	479.7	10	5/5/2015
PZ-11S	Saprolite	33.0873611	83.81996837	529.21	526.1	45.9	490.6	480.6	10	4/6/2015
PZ-12S	Saprolite	33.08602396	83.81719277	517.65	514.7	44.4	480.7	470.7	10	4/1/2015
PZ-13S	Saprolite	33.08401471	83.81521209	520.21	517.4	45.3	482.5	472.5	10	4/1/2015
PZ-14S	Saprolite	33.08372361	83.81327948	511.86	508.8	44.9	474.3	464.3	10	3/26/2015
PZ-15S	Saprolite	33.0827095	83.81087103	499.06	496.1	40.1	466.4	456.4	10	4/28/2015
PZ-17I	Bedrock	33.07913383	83.80583497	483.23	480.4	97.3	393.7	383.7	10	2/27/2015
PZ-19I	Bedrock	33.07473161	83.805379	417.48	414.5	71.9	353	343	10	3/4/2015
PZ-19S	Saprolite	33.07472776	83.80541209	417.67	414.7	25	400.1	390.1	10	3/4/2015
PZ-20I	Bedrock	33.07398602	83.80531396	417.11	414.1	79.6	344.9	334.9	10	3/10/2015
PZ-21S	Saprolite	33.07212133	83.80618598	473.42	470.5	25	457.5	447.5	10	3/12/2015
PZ-25S	Saprolite	33.08371	-83.8141	527.91	525.5	56	480.5	470.5	10	5/24/2016
PZ-25I	Saprolite	33.08368	-83.814	528.09	525.7	126	410.7	400.7	10	5/24/2016
PZ-26S	Saprolite	33.08328	-83.8103	491.36	488.9	46	453.9	443.9	10	6/1/2016
PZ-27S	PWR	33.08291	-83.8093	475.57	473	46	438	427	11	5/26/2016
PZ-27D	Bedrock	33.0829	-83.8093	475.18	472.4	126	367.4	347.4	20	6/17/2016
PZ-28I	Bedrock	33.08244	-83.8082	483.91	481.3	70	422.3	412.3	10	6/3/2016
PZ-29S	Saprolite	33.08209	-83.8074	491.02	488.4	46	453.4	443.4	10	5/26/2016
PZ-30I	Bedrock	33.08155	-83.8059	478.03	475.4	87	400.4	390.4	10	6/2/2016
PZ-31I	Bedrock	33.08191	-83.8047	466.56	463.8	77	398.8	388.8	10	6/2/2016
PZ-32S	Saprolite/PWR	33.0816	-83.8038	464.82	462.3	57	417.3	407.3	10	6/1/2016
PZ-32D	Bedrock	33.08159	-83.8038	465.18	462.3	126.5	367.3	337.3	30	6/1/2016
PZ-33I	Saprolite/PWR	33.08201	-83.7994	469.08	466.3	76.5	401.3	391.3	10	6/8/2016
PZ-34S	PWR	33.08224	-83.7986	443.37	440.8	46	405.8	395.8	10	6/4/2016
PZ-35I	Saprolite/PWR	33.083012	-83.809238	474.17	474.5	56	428.5	418.5	10	6/22/2016
PZ-36I	Saprolite	33.07973	-83.8053	482.19	479.21	56	434.21	424.21	10	6/5/2016

**TABLE 1B.  
PIEZOMETER NETWORK SUMMARY  
Georgia Power - Plant Scherer  
Juliette, GA**

Well ID	Geologic Unit Screened	Latitude	Longitude	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)	Date of Installation
PZ-37I	TWR/Bedrock	33.08183	-83.8015	482.02	479.5	72.5	418.5	408.34	10	6/2/2016
PZ-38I	Bedrock	33.082673	-83.808276	481.96	482.1	76	416.1	406.1	10	6/23/2016
PZ-39S	Saprolite	33.07909393	-8380464	474.49	471.87	76	405.87	395.87	10	8/21/2018
PZ-40I	Bedrock	33.07025497	-83.80634	512.22	509.76	83	436.76	426.76	10	8/15/2018
PZ-41S	Saprolite	33.06981269	-83.80581	491.35	488.44	45	415.44	405.44	10	8/16/2018
PZ-42I	Bedrock	33.06767245	-83.81180	502.97	500.38	96	427.38	417.38	10	8/21/2018
PZ-43S	Saprolite	33.06652778	-83.1110	504	501.27	50.5	428.27	418.27	10	8/17/2018
PZ-44I	Bedrock	33.08280082	-83.81488	510.19	507.69	114	434.69	424.69	10	9/5/2018
LPZ-01	PWR/Bedrock	33.070446	-83.833923	553.16	549.84	65.8	495.84	485.84	10	11/10/2015
LPZ-02	Saprolite	33.078618	-83.835549	513.96	510.46	20	500.46	490.46	10	11/20/2015
LPZ-03	Saprolite	33.072872	-83.833445	515.11	511.48	35	486.48	476.48	10	11/17/2015
LPZ-04	Saprolite	33.067606	-83.838599	461.06	457.83	40	439.06	429.06	10	11/18/2015
LPZ-05	Saprolite	33.065842	-83.830069	524.28	520.97	103.4	478.87	468.87	10	11/3/2015

**Notes:**

1. feet msl = feet mean sea level
2. feet bgs = feet below ground surface

**TABLE 2.**  
**GROUNDWATER SAMPLING EVENT SUMMARY**  
**Georgia Power Company - Plant Scherer**  
**Juliette, Georgia**

Well ID	Hydraulic Location	Summary of Sampling Events				Status of Monitoring Well
		February 2019	March/April 2019	September 2019	SSL Exceedance	
Purpose of Sampling Event		Annual Appendix IV Scan	Detection / Assessment	Detection / Assessment		
<b>ASH POND (AP-1)</b>						
SGWA-1	Upgradient	Scan 2	A04	A05	No	Assessment
SGWA-2	Upgradient	Scan 2	A04	A05	No	Assessment
SGWA-3	Upgradient	Scan 2	A04	A05	No	Assessment
SGWA-4	Upgradient	Scan 2	A04	A05	No	Assessment
SGWA-5	Upgradient	Scan 2	A04	A05	No	Assessment
SGWC-6	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-7	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-8	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-9	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-10	Downgradient	Scan 2	A04	A05	<b>Yes</b>	Assessment
SGWC-11	Downgradient	Scan 2	A04	A05	<b>Yes</b>	Assessment
SGWC-12	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-13	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-14	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-15	Downgradient	Scan 2	A04	A05	<b>Yes</b>	Assessment
SGWC-16	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-17	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-18	Downgradient	Scan 2	A04	A05	<b>Yes</b>	Assessment
SGWC-19	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-20	Downgradient	Scan 2	A04	A05	<b>Yes</b>	Assessment
SGWC-21	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-22	Downgradient	Scan 2	A04	A05	No	Assessment
SGWC-23	Downgradient	Scan 2	A04	A05	No	Assessment
SGWA-24	Upgradient	Scan 2	A04	A05	No	Assessment
SGWA-25	Upgradient	Scan 2	A04	A05	No	Assessment

**Notes:**

Axx - Assessment Monitoring Event Number

**TABLE 3.**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**Georgia Power - Plant Scherer**  
**Juliette, GA**

Well ID	Top of Casing Elevation (feet/MSL)	GROUNDWATER ELEVATIONS (FEET MSL)															
		4/19/2016	5/10/2016	6/16/2017	8/8/2016	10/3/2016	11/28/2016	2/6/2017	4/4/2017	6/19/2017	10/3/2017	3/19/2018	6/4/2018	10/1/2018	2/19/2019	3/25/2019	9/9/2019
<b>ASH POND</b>																	
SGWA-1	546.81	512.11	512.13	510.06	508.14	506.12	504.30	506.52	507.33	506.31	503.43	502.31	505.46	504.93	509.76	510.50	505.56
SGWA-2	546.81	518.24	512.58	509.47	508.00	505.92	504.08	507.39	508.02	506.61	503.48	503.31	506.67	505.05	510.71	511.27	505.45
SGWA-3	545.65	497.83	515.95	510.64	512.92	511.40	509.93	512.90	512.40	511.21	509.26	509.15	512.16	509.28	513.85	514.05	510.16
SGWA-4	547.27	532.81	500.12	498.97	500.63	500.07	499.11	498.22	497.81	499.57	496.76	495.76	495.26	495.12	495.46	496.19	497.39
SGWA-5	508.11	494.97	493.56	492.75	492.01	490.93	489.71	490.85	490.99	490.68	489.23	488.39	489.97	489.22	492.43	493.19	491.19
SGWC-6	510.57	497.84	497.34	494.31	495.95	495.33	494.65	495.33	495.64	495.47	494.65	495.12	495.33	494.05	495.52	496.17	494.41
SGWC-7	506.05	485.67	493.51	493.08	492.60	492.01	491.30	491.60	491.84	491.91	491.18	491.38	491.64	490.80	491.56	492.23	491.20
SGWC-8	513.93	494.89	493.70	493.07	492.51	491.97	491.23	491.82	492.05	491.86	491.05	491.42	491.41	490.63	491.79	492.48	490.98
SGWC-9	510.37	495.07	491.16	490.02	489.93	489.39	488.94	490.07	490.14	489.77	489.13	489.43	489.82	488.77	490.48	490.72	488.92
SGWC-10	509.22	492.89	493.46	491.46	491.77	491.29	490.87	492.81	492.81	492.27	491.58	492.35	492.16	490.32	492.43	492.71	490.29
SGWC-11	511.28	477.69	494.01	490.99	492.19	491.75	491.47	493.65	493.44	492.76	492.08	492.93	492.86	490.55	492.97	493.37	490.52
SGWC-12	500.29	496.74	486.89	483.19	485.09	484.58	484.18	486.12	485.89	485.33	485.67	485.39	485.73	483.82	485.75	486.23	482.54
SGWC-13	482.58	472.38	478.62	477.44	478.17	478.12	478.21	478.79	478.67	478.31	478.30	478.58	478.47	477.82	478.23	478.48	477.17
SGWC-14	476.48	449.59	465.83	465.31	465.34	465.27	465.49	466.08	465.97	465.54	465.60	460.08	466.02	465.58	466.15	466.13	464.99
SGWC-15	483.27	462.51	455.73	454.16	453.44	453.04	452.64	455.61	455.65	454.70	453.64	454.45	454.93	452.86	456.27	455.57	452.49
SGWC-16	460.03	459.6	436.54	434.83	434.19	433.80	433.61	437.75	436.53	435.08	434.41	435.47	437.20	434.08	437.49	436.48	433.43
SGWC-17	417.96	385.98	417.38	416.91	417.31	417.42	417.38	417.56	417.54	417.46	417.96	417.37	417.16	417.96	417.16	416.76	416.86
SGWC-18	513.18	499.19	480.73	478.94	477.91	476.71	475.89	478.65	477.77	476.68	476.81	476.65	477.39	478.82	480.83	480.58	477.16
SGWC-19	478.67	467.16	463.21	461.28	461.85	461.74	461.46	463.47	462.92	462.47	462.65	462.96	463.73	462.29	463.65	463.11	462.18
SGWC-20	504.44	504.26	491.58	490.18	490.65	490.04	489.55	492.01	491.09	490.76	490.44	490.71	492.43	490.49	491.64	491.11	489.56
SGWC-21	487.54	463.53	486.92	486.16	486.04	485.58	485.61	486.85	486.61	486.17	485.79	486.49	486.97	487.14	487.44	486.64	485.42
SGWC-22	518.07	486.62	493.11	489.87	491.15	490.71	490.18	492.82	492.47	492.25	491.23	492.27	493.35	491.71	494.23	494.08	491.48
SGWC-23	523.07	510.38	492.36	491.72	491.26	490.73	490.02	491.27	491.91	492.06	491.86	492.19	493.25	493.02	495.62	495.70	493.14
SGWA-24	503.86	479.06	490.24	489.11	488.54	487.96	487.44	490.05	489.46	488.61	487.66	488.96	490.17	488.18	490.16	490.05	487.67
SGWA-25	526.39	NM	500.99	498.99	497.47	496.44	495.19	497.91	498.16	497.14	495.44	496.84	497.67	495.36	499.49	499.71	495.56

**TABLE 3.**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**Georgia Power - Plant Scherer**  
**Juliette, GA**

Well ID	Top of Casing Elevation (feet/MSL)	GROUNDWATER ELEVATIONS (FEET MSL)															
		4/19/2016	5/10/2016	6/16/2017	8/8/2016	10/3/2016	11/28/2016	2/6/2017	4/4/2017	6/19/2017	10/3/2017	3/19/2018	6/4/2018	10/1/2018	2/19/2019	3/25/2019	9/9/2019
<b>PIEZOMETERS</b>																	
PZ-2I	517.61	NM	NM	NM	NM	NM	NM	492.25	491.88	491.86	490.70	491.72	492.80	491.14	493.56	493.45	490.98
PZ-3	517.29	NM	NM	NM	NM	NM	NM	489.75	489.78	489.89	489.30	489.95	490.84	489.81	492.07	491.81	489.47
PZ-5I	523.24	NM	NM	NM	NM	NM	NM	484.42	484.44	483.93	482.95	483.97	484.68	482.88	485.61	485.92	483.03
PZ-6S	531.48	NM	NM	NM	NM	NM	NM	494.94	495.39	495.38	494.75	494.72	494.97	494.44	495.88	496.03	494.79
PZ-9I	527.49	NM	NM	NM	NM	NM	NM	498.96	499.33	498.35	496.74	497.67	498.46	496.64	500.49	500.91	497.19
PZ-10S	516.81	NM	NM	NM	NM	NM	NM	493.38	493.79	493.35	492.25	492.74	493.19	491.80	493.83	494.31	492.13
PZ-11S	529.21	NM	NM	NM	NM	NM	NM	490.45	490.70	490.51	489.80	489.99	490.25	489.60	491.00	491.34	490.03
PZ-12S	517.65	NM	NM	NM	NM	NM	NM	488.93	489.14	488.82	488.12	488.45	488.79	487.91	489.56	489.81	488.17
PZ-13S	520.21	NM	NM	NM	NM	NM	NM	491.16	491.51	490.83	489.70	490.86	491.17	488.91	491.72	491.88	488.82
PZ-14S	511.86	NM	NM	NM	NM	NM	NM	489.43	489.26	488.42	487.24	488.31	489.40	486.46	489.57	489.59	486.26
PZ-14I	512.61	NM	NM	NM	NM	NM	NM	NM	489.30	488.46	487.27	488.33	489.37	486.49	489.66	489.75	486.30
PZ-15S	499.06	NM	NM	NM	NM	NM	NM	NM	NM	488.52	480.34	480.56	480.61	479.65	480.32	481.16	479.32
PZ-17I	483.23	NM	NM	NM	NM	NM	NM	455.77	455.74	454.71	453.58	454.53	455.02	453.08	456.21	455.78	452.45
PZ-19I	417.48	NM	NM	NM	NM	NM	NM	414.56	414.38	413.69	413.18	414.07	414.66	413.08	414.87	414.54	414.45
PZ-19S	417.67	NM	NM	NM	NM	NM	NM	414.00	413.87	413.12	412.92	413.71	414.19	412.80	414.38	413.86	411.96
PZ-20I	417.11	NM	NM	NM	NM	NM	NM	415.18	415.10	414.91	414.78	415.02	415.09	414.68	415.88	414.65	414.09
PZ-21S	473.42	NM	NM	NM	NM	NM	NM	466.12	465.77	465.23	465.00	465.50	466.40	465.36	466.65	466.37	464.57
PZ-25S	527.91	NM	NM	NM	NM	NM	NM	491.12	491.20	490.35	489.11	490.30	491.10	488.34	491.91	491.79	487.23
PZ-25I	528.09	NM	NM	NM	NM	NM	NM	491.42	491.13	490.26	489.09	490.30	491.63	488.24	491.83	491.67	488.07
PZ-26S	491.36	NM	NM	NM	NM	NM	NM	476.08	475.46	474.95	474.49	475.38	476.35	474.34	476.15	475.98	473.86
PZ-27S	475.57	NM	NM	NM	NM	NM	NM	471.18	470.91	469.73	469.42	470.77	471.45	469.22	471.36	471.12	468.37
PZ-27D	475.18	NM	NM	NM	NM	NM	NM	474.47	474.17	473.54	473.06	473.98	474.79	472.69	474.39	474.48	472.09
PZ-28I	483.91	NM	NM	NM	NM	NM	NM	466.60	466.21	465.40	464.85	466.26	466.74	464.73	466.98	466.77	463.93
PZ-29S	491.02	NM	NM	NM	NM	NM	NM	460.93	461.07	NM	459.84	461.03	461.37	459.94	462.10	461.96	459.44
PZ-30I	478.03	NM	NM	NM	NM	NM	NM	447.87	448.45	448.04	446.59	447.52	448.71	447.01	450.24	450.42	446.54
PZ-31I	466.56	NM	NM	NM	NM	NM	NM	436.13	436.53	435.96	434.54	435.47	437.01	435.28	439.04	439.20	435.10
PZ-32S	464.82	NM	NM	NM	NM	NM	NM	437.52	438.68	438.33	436.36	437.49	438.88	437.17	441.27	441.54	436.80
PZ-32D	465.18	NM	NM	NM	NM	NM	NM	435.64	436.03	435.46	433.98	435.16	436.38	434.86	438.44	438.75	434.83
PZ-33I	469.08	NM	NM	NM	NM	NM	NM	423.93	424.28	423.67	422.44	422.41	423.32	422.88	425.71	426.43	424.54

**TABLE 3.**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**Georgia Power - Plant Scherer**  
**Juliette, GA**

Well ID	Top of Casing Elevation (feet/MSL)	GROUNDWATER ELEVATIONS (FEET MSL)															
		4/19/2016	5/10/2016	6/16/2017	8/8/2016	10/3/2016	11/28/2016	2/6/2017	4/4/2017	6/19/2017	10/3/2017	3/19/2018	6/4/2018	10/1/2018	2/19/2019	3/25/2019	9/9/2019
<b>PIEZOMETERS</b>																	
PZ-34S	443.37	NM	NM	NM	NM	NM	NM	424.01	423.79	NM	NM	421.98	424.09	421.27	426.48	426.59	421.58
PZ-35I	474.17	NM	NM	NM	NM	NM	NM	471.02	470.71	469.56	469.25	470.53	471.31	468.97	471.25	470.97	468.16
PZ-36S	482.19	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	445.46	449.79	452.07	444.51
PZ-36I	481.42	NM	NM	NM	NM	NM	NM	450.91	451.30	NM	448.22	449.17	450.32	447.67	451.77	448.72	446.67
PZ-37I	482.02	NM	NM	NM	NM	NM	NM	432.29	432.13	432.04	431.42	430.62	430.73	431.17	431.81	432.42	433.21
PZ-38I	481.96	NM	NM	NM	NM	NM	NM	467.06	466.95	466.06	465.48	466.90	467.40	465.36	467.58	467.44	464.57
PZ-39S	474.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	437.01	441.83	441.64	436.06
PZ-40I	512.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	479.50	480.70	481.31	477.75
PZ-41S	491.35	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	463.28	465.29	465.78	463.34
PZ-42I	502.97	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	492.12	493.32	492.85	491.55
PZ-43S	504.00	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	480.25	483.20	482.86	478.69
PZ-44I	510.19	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	490.11	492.85	493.14	490.14
LPZ-01	553.16	NM	NM	NM	NM	NM	NM	493.81	493.78	493.66	492.36	492.49	492.36	492.52	493.28	493.87	494.79
LPZ-02	513.96	NM	NM	NM	NM	NM	NM	509.73	509.97	508.75	507.50	508.98	509.79	507.79	510.60	510.66	506.96
LPZ-03	515.11	NM	NM	NM	NM	NM	NM	507.03	506.55	505.26	503.61	504.06	507.42	504.23	508.08	507.93	504.13
LPZ-04	461.06	NM	NM	NM	NM	NM	NM	446.13	446.60	445.87	444.20	445.50	447.10	445.50	448.45	448.69	445.29
LPZ-05	524.28	NM	NM	NM	NM	NM	NM	476.31	476.38	476.06	474.96	474.40	474.64	475.57	477.09	478.07	477.57

Notes:

Feet MSL = feet above mean sea level

NM = Not Measured



**TABLE 4A.**  
**HORIZONTAL GROUNDWATER VELOCITY CALCULATIONS -March 2019**  
**Georgia Power - Plant Scherer Ash Pond**  
**Juliette, GA**

Flow Paths	Groundwater Elevation (feet msl)	$\Delta h$ (feet) <sup>2</sup>	$\Delta l$ (feet) <sup>3</sup>	Hydraulic Gradient ( $\Delta h/\Delta l$ )	Average Hydraulic Conductivity, K (feet per day) <sup>5</sup>	Assumed Effective Porosity ( $n_e$ )	Average Linear Groundwater Velocity	
							(feet per day) <sup>4</sup>	(feet per year) <sup>4</sup>
<b>AP-1 March 2019</b>								
SGWC-14/PZ-29S	466.13	4.17	400	0.010	1.31 to 2.36	0.2	0.07 to 0.12	25 to 45
	461.96							
SGWC-13/PZ-35I	478.48	7.51	400	0.019	1.31 to 2.36	0.2	0.12 to 0.22	45 to 81
	470.97							
LPZ-3/LPZ-4	507.93	59.24	2450	0.024	1.31 to 2.36	0.2	0.16 to 0.29	58 to 104
	448.69							

Notes:

1.  $\Delta H$  = Change in groundwater elevation
2.  $\Delta L$  = 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 3/2017)
6. Effective porosity based on default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996)

**TABLE 4B.**  
**HORIZONTAL GROUNDWATER VELOCITY CALCULATIONS - September 2019**  
**Georgia Power - Plant Scherer Ash Pond**  
**Juliette, GA**

Flow Paths	Groundwater Elevation (feet msl)	$\Delta h$ (feet) <sup>2</sup>	$\Delta l$ (feet) <sup>3</sup>	Hydraulic Gradient ( $\Delta h/\Delta l$ )	Average Hydraulic Conductivity, K (feet per day) <sup>5</sup>	Assumed Effective Porosity ( $n_e$ )	Average Linear Groundwater Velocity	
							(feet per day) <sup>4</sup>	(feet per year) <sup>4</sup>
<b>AP-1 September 2019</b>								
SGWC-14/PZ-29S	464.99	5.55	400	0.014	1.31 to 2.36	0.2	0.09 to 0.16	33 to 60
	459.44							
SGWC-13/PZ-35I	477.17	9.01	400	0.023	1.31 to 2.36	0.2	0.15 to 0.27	54 to 97
	468.16							
LPZ-3/LPZ-4	504.13	58.84	2450	0.024	1.31 to 2.36	0.2	0.16 to 0.28	57 to 103
	445.29							

Notes:

1.  $\Delta H$  = Change in groundwater elevation
2.  $\Delta L$  = 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 3/2017)
6. Effective porosity based on default values for effective porosity recommended by USEPA for a silty sand-type soil (USEPA, 1996)

**TABLE 5A.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (February 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**



Analyte	Units	SCREENING LEVELS		GROUNDWATER MONITORING WELLS														
		PQL/RL	MDL	SGWA-1	SGWA-2	SGWA-3	SGWA-4	SGWA-5	SGWA-24	SGWA-25	SGWC-6	SGWC-7	SGWC-8	SGWC-9	SGWC-10	SGWC-11	SGWC-12	SGWC-13
		Sample Date:		2/18/2019	2/18/2019	2/19/2019	2/18/2019	2/19/2019	2/19/2019	2/19/2019	2/19/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019
<b>Appendix III</b>																		
BORON, TOTAL	mg/L	0.05	0.021	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CALCIUM, TOTAL	mg/L	0.23	0.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHLORIDE, TOTAL	mg/L	1.0	0.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FLUORIDE, TOTAL	mg/L	0.2	0.026	ND	ND (0.05 J)	ND	ND (0.066 J)	ND	ND (0.06 J)	ND (0.044 J)	ND (0.092 J)	0.2	0.32	ND (0.074 J)	ND	ND	ND (0.052 J)	ND
pH	S.U.	N/R	N/R	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SULFATE, TOTAL	mg/L	1.0	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL DISSOLVED SOLIDS	mg/L	5.0	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>Appendix IV</b>																		
ANTIMONY, TOTAL	mg/L	0.0025	0.00038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC, TOTAL	mg/L	0.0013	0.00032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BARIUM, TOTAL	mg/L	0.0025	0.0015	0.046	0.035	0.033	0.057	0.0094	0.019	0.022	0.052	0.28	0.2	0.077	0.036	0.044	0.054	0.041
BERYLLIUM, TOTAL	mg/L	0.0025	0.00016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0025	0.00013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.0025	0.0015	ND (0.0017 J)	0.012	0.014	0.0059	ND	0.0038	ND	ND	ND	ND (0.0021 J)	ND	ND	ND	ND	ND
COBALT, TOTAL	mg/L	0.0025	0.000075	ND (0.0008 J)	ND	ND	ND	ND	ND	0.005	ND (0.00011 J)	0.0057	ND (0.00014 J)	0.01	0.034	0.024	0.0032	0.004
LEAD, TOTAL	mg/L	0.001	0.00013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.005	0.0031	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND	ND	ND	ND	ND (0.0031 J)	ND
MERCURY, TOTAL	mg/L	0.0002	0.0001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.015	0.00061	ND	ND	ND	ND (0.00085 J)	ND	ND	ND	ND	ND (0.0013 J)	ND	ND (0.00075 J)	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	5	varies	0.362	0.250 U	0.231 U	0.0112 U	0.044 U	0.140 U	0.32 U	0.25 U	0.433	2.5	0.425	0.0159 U	0.708	0.161 U	0.222 U
SELENIUM, TOTAL	mg/L	0.0013	0.00008	ND	ND (0.00017 J)	ND (0.00012 J)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THALLIUM, TOTAL	mg/L	0.0005	6.0E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. Annual sampling for Appendix IV constituents only was completed following initiation of assessment monitoring. Appendix III constituents were not required during this monitoring event.

**TABLE 5A.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (February 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**

Analyte	Units	SCREENING/TARGET LEVELS					GROUNDWATER MONITORING WELLS									
		BkGnd	RBSL	MCL	PQL/RL	MDL	SGWC-14	SGWC-15	SGWC-16	SGWC-17	SGWC-18	SGWC-19	SGWC-20	SGWC-21	SGWC-22	SGWC-23
		Sample Date:					2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/20/2019	2/19/2019	2/19/2019
<b>Appendix III</b>																
BORON, TOTAL	mg/L	--	--	N/R	0.05	0.021	--	--	--	--	--	--	--	--	--	--
CALCIUM, TOTAL	mg/L	--	--	N/R	0.23	0.13	--	--	--	--	--	--	--	--	--	--
CHLORIDE, TOTAL	mg/L	--	--	N/R	1.0	0.89	--	--	--	--	--	--	--	--	--	--
FLUORIDE, TOTAL	mg/L	--	--	4	0.2	0.082	ND	0.33	ND	ND (0.034 J)	ND	ND	0.2	ND (0.051 J)	ND	ND (0.055 J)
pH	S.U.	--	--	N/R	N/R	N/R	--	--	--	--	--	--	--	--	--	--
SULFATE, TOTAL	mg/L	--	--	N/R	1.0	0.7	--	--	--	--	--	--	--	--	--	--
TOTAL DISSOLVED SOLIDS	mg/L	--	--	N/R	5.0	3.4	--	--	--	--	--	--	--	--	--	--
<b>Appendix IV</b>																
ANTIMONY, TOTAL	mg/L	0.0021	--	0.006	0.0025	0.00038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC, TOTAL	mg/L	0.0015	--	0.01	0.0013	0.00032	ND	ND (0.00075 J)	ND	ND	0.003	ND	ND	ND	ND	ND
BARIUM, TOTAL	mg/L	0.06407	--	2	0.0025	0.0015	0.053	0.036	0.027	0.023	0.034	0.036	0.03	0.1	0.075	0.064
BERYLLIUM, TOTAL	mg/L	0.0002	--	0.004	0.0025	0.00016	ND	ND (0.00042 J)	ND	ND	ND (0.00033 J)	ND (0.00016 J)	ND (0.00077 J)	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0011	--	0.005	0.0025	0.00013	ND	ND (0.00033 J)	ND	ND	ND (0.00023 J)	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.016	--	0.1	0.0025	0.0015	ND (0.0016 J)	0.038	0.013	0.0061	0.011	0.017	ND	ND (0.0015 J)	ND	ND
COBALT, TOTAL	mg/L	0.02	0.006	N/R	0.0025	7.5E-05	0.011	0.26	0.0038	ND (0.00035 J)	0.19	ND (0.00012 J)	0.18	ND (0.00011 J)	ND (0.0018 J)	ND
LEAD, TOTAL	mg/L	0.00018	0.015	0.015	0.001	0.00013	ND	ND	ND	ND	ND	ND	ND (0.00027 J)	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.00235	0.04	N/R	0.005	0.0031	ND	ND (0.0038 J)	ND	ND	0.0054	ND	ND (0.0048 J)	ND	ND	ND
MERCURY, TOTAL	mg/L	0.00012	--	0.002	0.0002	0.0001	ND	ND	ND	ND	0.00026	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.00278	0.1	N/R	0.015	0.00061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	1.2	--	5	5	varies	0.147 U	0.573	0.0684 U	0.278 U	0.139 U	0.114 U	0.353	0.239 U	0.532	0.301 U
SELENIUM, TOTAL	mg/L	0.00041	--	0.05	0.0013	0.00008	ND	0.0034	ND (0.0012 J)	ND	0.027	ND	ND (0.0011 J)	ND	ND	ND (0.00021 J)
THALLIUM, TOTAL	mg/L	0.0001	--	0.002	0.0005	6.0E-05	ND	ND (0.000098 J)	ND	ND	ND (0.00021 J)	ND	ND (0.00018 J)	ND	ND	ND

**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. Annual sampling for Appendix IV constituents only was completed following initiation of assessment monitoring. Appendix III constituents were not required during this monitoring event.

**TABLE 5B.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (March/April 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**



Analyte	Units	SCREENING LEVELS		GROUNDWATER MONITORING WELLS														
		PQL/RL	MDL	SGWA-1	SGWA-2	SGWA-3	SGWA-4	SGWA-5	SGWA-24	SGWA-25	SGWC-6	SGWC-7	SGWC-8	SGWC-9	SGWC-10	SGWC-11	SGWC-12	SGWC-13
		Sample Date:		3/29/2019	3/29/2019	3/28/2019	3/28/2019	3/28/2019	3/29/2019	3/28/2019	4/2/2019	4/1/2019	4/1/2019	4/1/2019	4/1/2019	4/1/2019	4/1/2019	4/1/2019
<b>Appendix III</b>																		
BORON, TOTAL	mg/L	0.05	0.021	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.025 J)	0.076	1.7	0.16	0.46	ND	0.57
CALCIUM, TOTAL	mg/L	0.23	0.13	2	11	4.8	17	1.4	12	8.7	6.7	18	45	50	4.2	1.7	20	17
CHLORIDE, TOTAL	mg/L	1.0	0.89	1.5	1.2	2	1.2	1.7	1.8	2.2	2	4.6	10	13	7.8	7.4	9	7.7
FLUORIDE, TOTAL	mg/L	0.2	0.082	ND	ND (0.053 J)	ND (0.026 J)	ND (0.052 J)	ND	ND (0.056 J)	ND (0.037 J)	ND (0.1 J)	ND (0.12 J)	0.21	ND (0.041 J)	ND	ND	ND (0.048 J)	ND
pH	S.U.	N/R	N/R	5.22	6.81	5.88	6.53	5.67	6.31	6.15	6.25	6.57	6.41	6.11	5.46	5.24	6.14	6.06
SULFATE, TOTAL	mg/L	1.0	0.7	ND	ND (0.65 J)	1.9	1.2	ND	ND	ND	1.3	16	67	310	21	ND (0.81 J)	48	82
TOTAL DISSOLVED SOLIDS	mg/L	5.0	3.4	ND	72	43	110	58	110	79	91	200	370	580	82	33	200	190
<b>Appendix IV</b>																		
ANTIMONY, TOTAL	mg/L	0.0025	0.001	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
ARSENIC, TOTAL	mg/L	0.0013	0.00046	ND	ND	ND	ND	ND	ND	ND (0.00048 J)	ND	ND	ND (0.001 J)	ND	ND (0.00059 J)	ND (0.0011 J)	ND (0.0012 J)	0.0014
BARIUM, TOTAL	mg/L	0.0025	0.00049	0.044	0.039	0.036	0.061	0.0097	0.021	0.022	0.069	0.24	0.19	0.071	0.039	0.041	0.051	0.038
BERYLLIUM, TOTAL	mg/L	0.0025	0.00034	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0025	0.00034	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.0025	0.0011	ND (0.0017 J)	0.014	0.013	0.0046	ND	0.0043	ND	ND	ND	ND (0.0013 J)	ND	ND	ND	ND	ND
COBALT, TOTAL	mg/L	0.0025	0.0004	ND (0.00072 J)	ND	ND	ND	ND	ND	0.0042	ND	0.0046	ND	0.01	0.025	0.021	0.0029	0.003
LEAD, TOTAL	mg/L	0.0013	0.00035	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.005	0.0011	ND	ND	ND	ND	ND	ND	ND	ND	0.0058	ND (0.0021 J)	ND	ND	ND (0.0017 J)	ND (0.0011 J)	ND
MERCURY, TOTAL	mg/L	0.0002	0.00007	ND (0.00007 J)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.015	0.00085	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	5	varies	0.311 U	-0.0232 U	0.31 U	0.0974 U	0.115 U	0.0992 U	0.0254 U	0.3 U	0.675	1.91	-0.0113 U	0.452	0.173 U	0.372	0.36
SELENIUM, TOTAL	mg/L	0.0013	0.00024	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THALLIUM, TOTAL	mg/L	0.0005	8.5E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. "Not Sampled" - Appendix IV constituents were not detected during the March 2019 monitoring event and therefore are not required to be analyzed.

**TABLE 5B.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (March/April 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**

Analyte	Units	SCREENING LEVELS		GROUNDWATER MONITORING WELLS									
		PQL/RL	MDL	SGWC-14	SGWC-15	SGWC-16	SGWC-17	SGWC-18	SGWC-19	SGWC-20	SGWC-21	SGWC-22	SGWC-23
		Sample Date:		4/1/2019	4/1/2019	4/2/2019	4/2/2019	4/2/2019	4/2/2019	4/2/2019	4/2/2019	4/2/2019	4/2/2019
<b>Appendix III</b>													
BORON, TOTAL	mg/L	0.05	0.021	1.7	1.6	0.53	0.32	5.3	2	2	1.2	0.44	0.52
CALCIUM, TOTAL	mg/L	0.23	0.13	39	16	0.92	46	89	38	14	27	26	23
CHLORIDE, TOTAL	mg/L	1.0	0.89	9.9	9.2	8.2	8.2	15	7.3	11	9.3	10	8.9
FLUORIDE, TOTAL	mg/L	0.2	0.082	ND	ND (0.072 J)	ND	ND (0.045 J)	ND (0.05 J)	ND	ND (0.15 J)	ND (0.066 J)	ND	ND (0.036 J)
pH	S.U.	N/R	N/R	5.89	4.72	5.27	6.26	4.72	5.5	4.33	6.09	5.65	5.87
SULFATE, TOTAL	mg/L	1.0	0.7	180	190	31	180	1100	240	220	92	100.00	95
TOTAL DISSOLVED SOLIDS	mg/L	5.0	3.4	330	330	73	400	1700	420	370	300	240.00	250
<b>Appendix IV</b>													
ANTIMONY, TOTAL	mg/L	0.0025	0.001	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
ARSENIC, TOTAL	mg/L	0.0013	0.00046	ND (0.0012 J)	0.0016	ND	ND	0.0027	ND	ND	ND	ND	ND
BARIUM, TOTAL	mg/L	0.0025	0.00049	0.054	0.034	0.023	0.02	0.028	0.03	0.023	0.087	0.076	0.068
BERYLLIUM, TOTAL	mg/L	0.0025	0.00034	ND	ND (0.00034 J)	ND	ND	ND	ND	ND (0.00043 J)	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0025	0.00034	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.0025	0.0011	ND	0.032	0.01	0.004	0.0092	0.014	ND	ND	ND (0.0012 J)	ND (0.0011 J)
COBALT, TOTAL	mg/L	0.0025	0.0004	0.014	0.26	0.0041	ND	0.18	ND	0.13	ND	ND (0.0018 J)	ND
LEAD, TOTAL	mg/L	0.0013	0.00035	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.005	0.0032	ND	ND (0.0025 J)	ND	ND	ND (0.0041 J)	ND (0.0021 J)	ND (0.0046 J)	ND (0.0027 J)	ND (0.0026 J)	ND (0.0041 J)
MERCURY, TOTAL	mg/L	0.0002	0.00007	ND	ND	ND	ND	0.0002	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.015	0.00085	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	5	varies	-0.138 U	0.0499 U	0.167 U	-0.0476 U	0.336 U	0.11 U	0.271 U	0.218 U	0.313 U	0.516
SELENIUM, TOTAL	mg/L	0.0013	0.00024	ND	ND	0.0021	ND	0.0075	ND	ND	ND	ND	ND
THALLIUM, TOTAL	mg/L	0.0005	8.5E-05	ND	ND (0.000095 J)	ND	ND	ND (0.00016 J)	ND	ND (0.00017 J)	ND	ND	ND

**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed
6. "Not Sampled" - Appendix IV constituents were not detected during the March 2019 monitoring event and therefore are not required to be analyzed.

**TABLE 5C.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (September 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**



Analyte	Units	SCREENING/TARGET LEVELS		GROUNDWATER MONITORING WELLS														
		PQL/RL	MDL	SGWA-1	SGWA-2	SGWA-3	SGWA-4	SGWA-5	SGWA-24	SGWA-25	SGWC-6	SGWC-7	SGWC-8	SGWC-9	SGWC-10	SGWC-11	SGWC-12	SGWC-13
		Sample Date:		9/16/2019	9/16/2019	9/16/2019	9/16/2019	9/12/2019	9/13/2019	9/16/2019	9/16/2019	9/17/2019	9/17/2019	9/16/2019	9/17/2019	9/16/2019	9/16/2019	9/17/2019
<b>Appendix III</b>																		
BORON, TOTAL	mg/L	0.05	0.039	0.13	0.089	0.05	ND	ND	ND	ND	ND (0.04 J)	ND	0.11	1.6	0.077	0.39	ND	0.43
CALCIUM, TOTAL	mg/L	0.25	0.13	1.7	12	5.9	18	1.6	14	9.5	8.9	16	52	56	0.8	1.9	23	17
CHLORIDE, TOTAL	mg/L	1.0	0.71	1.8	1.3	2.2	1.2	1.5	1.7	1.9	1.9	3.8	12	14	9.7	7.9	9.3	8.4
FLUORIDE, TOTAL	mg/L	0.1	0.026	ND	ND (0.054 J)	ND (0.026 J)	ND (0.055 J)	ND	ND (0.049 J)	ND (0.04 J)	ND (0.099 J)	0.2	0.47	ND (0.057 J)	ND	ND	ND (0.065 J)	ND (0.04 J)
pH	S.U.	N/R	N/R	5.22	6.82	5.8	6.44	5.59	6.36	6.05	6.26	6.41	6.5	6.11	5.31	5.32	6.18	5.98
SULFATE, TOTAL	mg/L	1.0	0.38	ND (0.98 J)	ND (0.68 J)	ND (0.92 J)	1.1	ND	ND	ND	ND (0.53 J)	8.7	77	310	2.3	ND (0.72 J)	44	79
TOTAL DISSOLVED SOLIDS	mg/L	10.0	10.0	17	91	19	57	22	200	42	76	140	380	550	17	ND	200	170
<b>Appendix IV</b>																		
ANTIMONY, TOTAL	mg/L	0.0025	0.001	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
ARSENIC, TOTAL	mg/L	0.0013	0.00032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.00035 J)	ND	ND	ND	ND	ND
BARIUM, TOTAL	mg/L	0.01	0.0016	0.048	0.045	0.041	0.068	0.012	0.025	0.028	0.13	0.23	0.19	0.077	0.029	0.045	0.052	0.036
BERYLLIUM, TOTAL	mg/L	0.0025	0.00018	ND (0.00028 J)	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.00019 J)	ND	ND	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0025	0.00013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.0025	0.0015	ND (0.0017 J)	0.014	0.019	0.0064	ND (0.0023 J)	0.0056	ND (0.0015 J)	ND	ND	0.0031	ND	ND	ND	ND	ND (0.0017 J)
COBALT, TOTAL	mg/L	0.0025	0.000075	ND (0.0014 J)	ND	ND	ND	ND	ND (0.00018 J)	0.0045	ND (0.00013 J)	0.0039	ND (0.00013 J)	ND (0.001 J)	0.022	0.022	0.003	ND (0.0024 J)
LEAD, TOTAL	mg/L	0.001	0.00013	ND	ND	ND (0.00017 J)	ND	ND	ND (0.00014 J)	ND	ND	ND	ND	ND	ND (0.00013 J)	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.002	0.0034	0.0034	ND	ND	ND	ND	ND	ND	ND	0.0049	ND	ND	ND	ND	ND	ND
MERCURY, TOTAL	mg/L	0.0002	0.0001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.015	0.00061	ND	ND	ND	ND (0.00069 J)	ND	ND	ND	ND	ND (0.0014 J)	ND	ND (0.00067 J)	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	5	varies	0.157 U	-0.245 U	0.333 U	0.0843 U	0.102 U	0.339 U	-0.0712 U	0.0805 U	0.341 U	2.04	-0.116 U	0.226 U	0.251 U	0.569 U	0.143 U
SELENIUM, TOTAL	mg/L	0.0025	0.0015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
THALLIUM, TOTAL	mg/L	0.0005	1.5E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.00023 J)	ND	ND	ND	ND	ND

**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed time of the measurement.
6. SGWC-18 samples collected 10/18/2018 required dilution for analyses. As a result, the reporting limit has been increased. The reported result is not detected at 0.41 mg/L.
7. "Not Sampled" - Appendix IV constituents were not detected during the March 2019 monitoring event and therefore are not required to be analyzed.

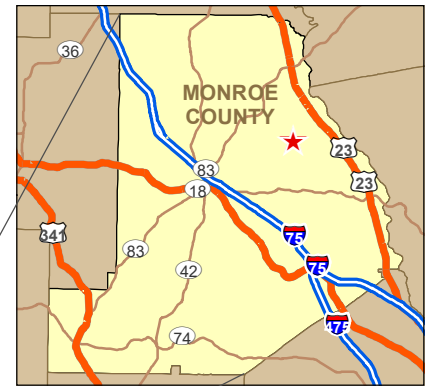
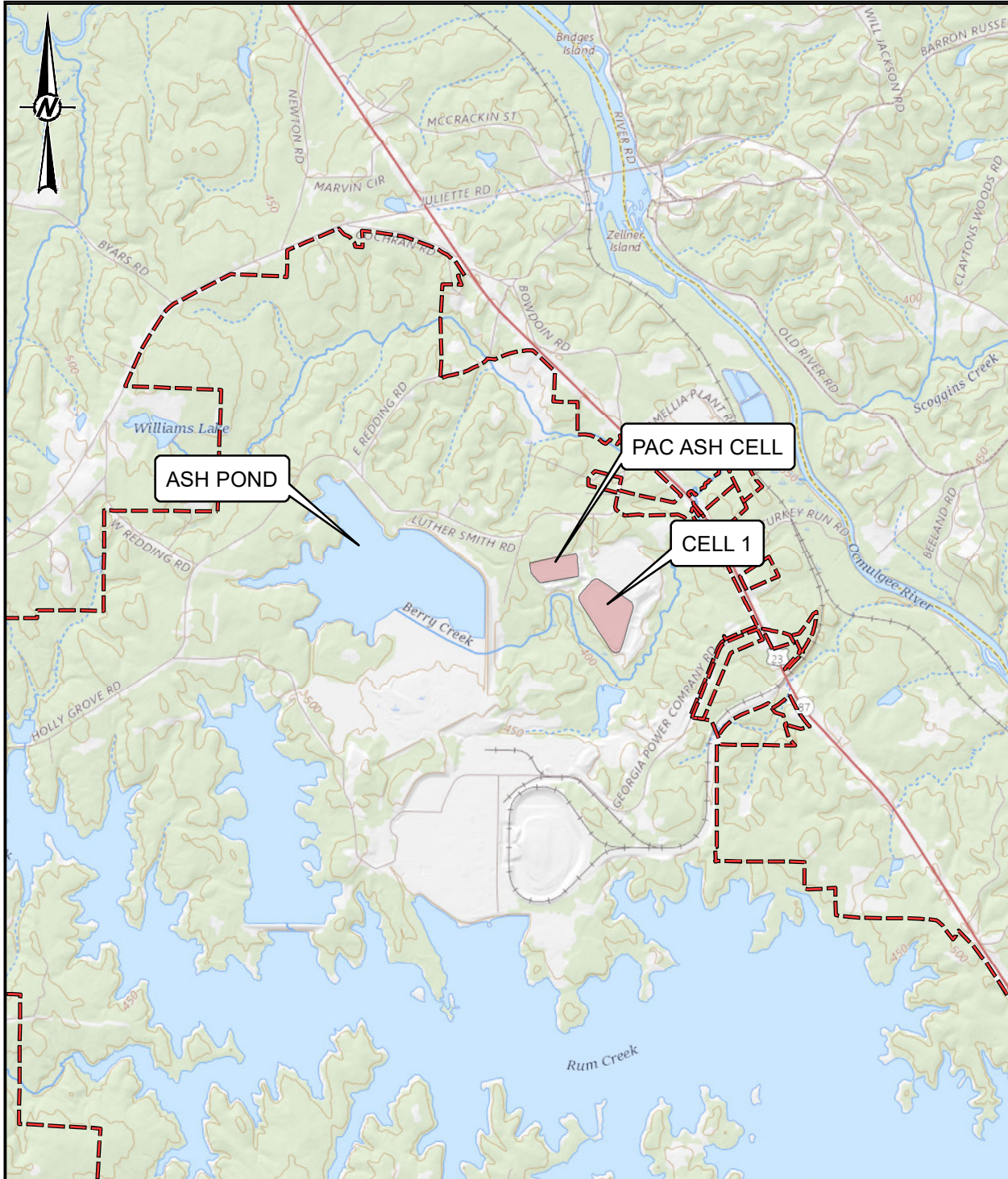
**TABLE 5C.**  
**ANALYTICAL DATA SUMMARY**  
**Ash Pond - (September 2019)**  
**GPC PLANT SCHERER**  
**JULIETTE, GEORGIA**

Analyte	Units	SCREENING/TARGET LEVELS		GROUNDWATER MONITORING WELLS									
		PQL/RL	MDL	SGWC-14	SGWC-15	SGWC-16	SGWC-17	SGWC-18	SGWC-19	SGWC-20	SGWC-21	SGWC-22	SGWC-23
		Sample Date:		9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/17/2019	9/18/2019	9/18/2019
<b>Appendix III</b>													
BORON, TOTAL	mg/L	0.05	0.039	1.4	1.4	0.55	0.43	5	1.8	1.8	1.1	0.52	0.54
CALCIUM, TOTAL	mg/L	0.25	0.13	38	17	1	51	87	44	14	30	27	26
CHLORIDE, TOTAL	mg/L	1.0	0.71	11	10	8.4	8.3	13	7.4	11	10	10	9.7
FLUORIDE, TOTAL	mg/L	0.1	0.026	ND (0.028 J)	0.1	ND	ND (0.047 J)	ND (0.034 J)	ND	0.14	ND (0.077 J)	ND (0.028 J)	ND (0.044 J)
pH	S.U.	N/R	N/R	5.78	4.65	5.26	6.23	4.77	5.55	4.37	6.27	5.66	5.97
SULFATE, TOTAL	mg/L	1.0	0.38	200	220	33	200	1100	260	220	99	100	95
TOTAL DISSOLVED SOLIDS	mg/L	10.0	10.0	310	320	59	380	1600	400	320	290	470	490
<b>Appendix IV</b>													
ANTIMONY, TOTAL	mg/L	0.0025	0.001	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled
ARSENIC, TOTAL	mg/L	0.0013	0.00032	ND	ND (0.0008 J)	ND	ND	0.0029	ND	ND (0.00037 J)	ND	ND (0.00035 J)	ND
BARIUM, TOTAL	mg/L	0.01	0.0016	0.048	0.034	0.029	0.025	0.026	0.035	0.025	0.097	0.078	0.068
BERYLLIUM, TOTAL	mg/L	0.0025	0.00018	ND	ND (0.00046 J)	ND	ND	ND (0.00035 J)	ND	ND (0.00057 J)	ND	ND	ND
CADMIUM, TOTAL	mg/L	0.0025	0.00013	ND	ND (0.00034 J)	ND	ND	ND (0.00018 J)	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	mg/L	0.0025	0.0015	0.0026	0.037	0.013	0.0078	0.011	0.017	ND (0.0022 J)	ND (0.0016 J)	ND (0.0024 J)	ND (0.0024 J)
COBALT, TOTAL	mg/L	0.0025	7.5E-05	0.0096	0.27	0.0042	ND (0.00048 J)	0.16	ND (0.00013 J)	0.13	ND (0.000087 J)	ND (0.002 J)	ND (0.00013 J)
LEAD, TOTAL	mg/L	0.001	0.00013	ND (0.00016 J)	ND	ND	ND	ND	ND	ND (0.00025 J)	ND	ND	ND
LITHIUM, TOTAL	mg/L	0.002	0.0034	ND	0.0037	ND	ND	0.005	ND	0.0042	ND	ND	0.0043
MERCURY, TOTAL	mg/L	0.0002	0.0001	ND	ND	ND	ND	ND (0.00014 J)	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	mg/L	0.015	0.00061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RADIUM (226 + 228)	pCi/L	5	varies	0.264 U	0.441 U	0.558	0.235 U	0.449	0.302 U	0.591	-0.04 U	0.101 U	0.285 U
SELENIUM, TOTAL	mg/L	0.0025	0.0015	ND	ND	ND	ND	0.0036	ND	ND	ND	ND	ND
THALLIUM, TOTAL	mg/L	0.0005	1.5E-04	ND	ND (0.00016 J)	ND	ND	ND (0.00025 J)	ND	ND (0.00021 J)	ND	ND	ND

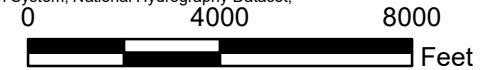
**NOTES:**

1. mg/L - Milligrams per Liter
2. pCi/L - picocuries per Liter
3. N/R - Indicates constituent is not regulated by Hazardous Site Response Act
4. 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.
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 with an accompanying U. The MDC varies depending upon the sample amount and elapsed
6. SGWC-18 samples collected 10/18/2018 required dilution for analyses. As a result, the reporting limit has been increased. The reported result is not detected at 0.41 mg/L.
7. "Not Sampled" - Appendix IV constituents were not detected during the March 2019 monitoring event and therefore are not required to be analyzed.





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



CLIENT



PROJECT  
**GEOLOGICAL AND HYDROGEOLOGICAL SUMMARY REPORT  
 PLANT SCHERER**

TITLE  
**SITE LOCATION MAP**

CONSULTANT



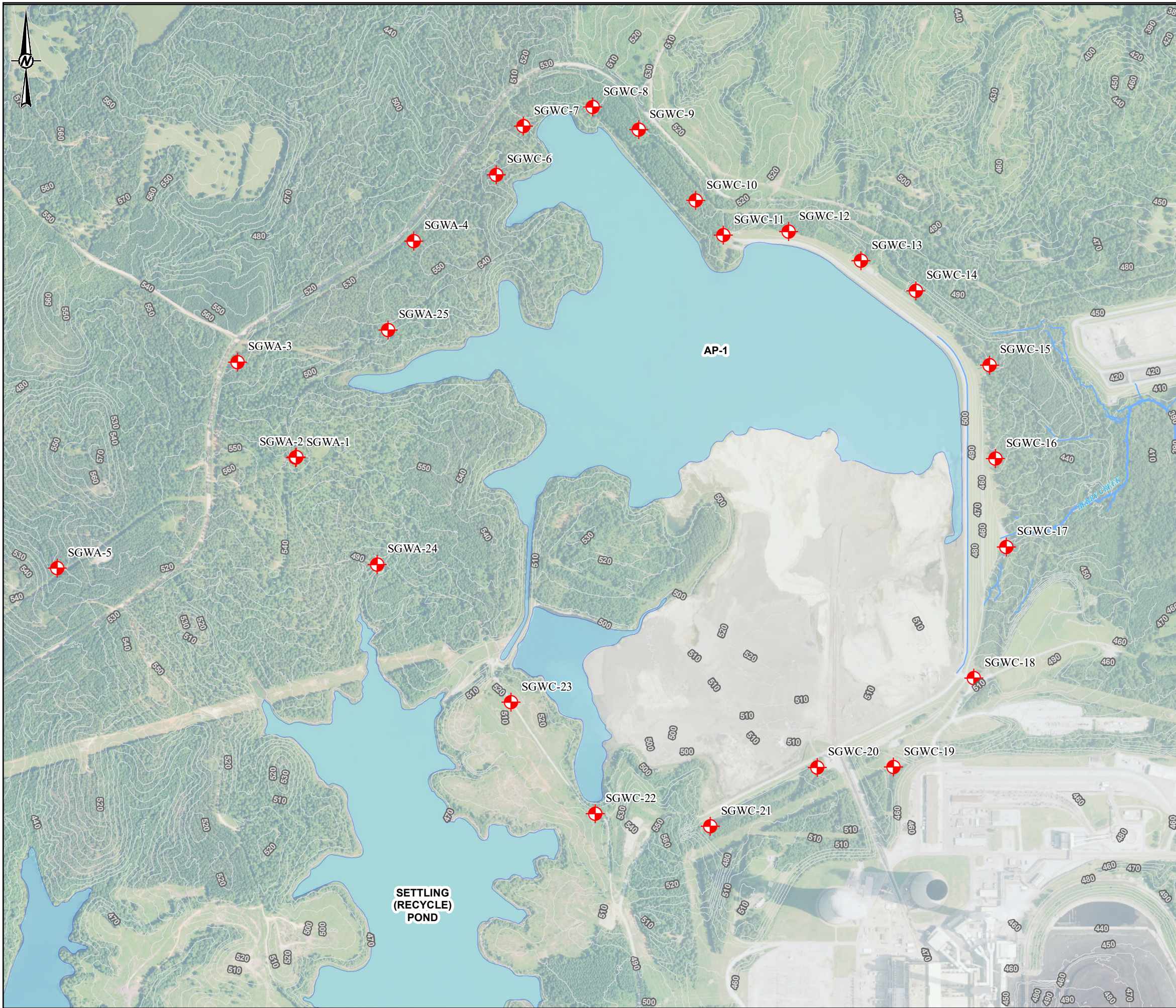
YYYY-MM-DD	2020-01-10
PREPARED	DJC
DESIGN	DLP
REVIEW	DLP
APPROVED	RPK

PROJECT No.  
 1662350

CONTROL  
 1662350\000-GIS.mxd

Rev.  
 0

FIGURE  
 1



**LEGEND**

MONITORING WELL LOCATION

ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

1. COORDINATE SYSTEM: NAD 1983 STATE PLAN GEORGIA WEST (U.S. FEET).

2. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.



CLIENT  
GEORGIA POWER COMPANY



PROJECT  
GROUNDWATER MONITORING PROGRAM

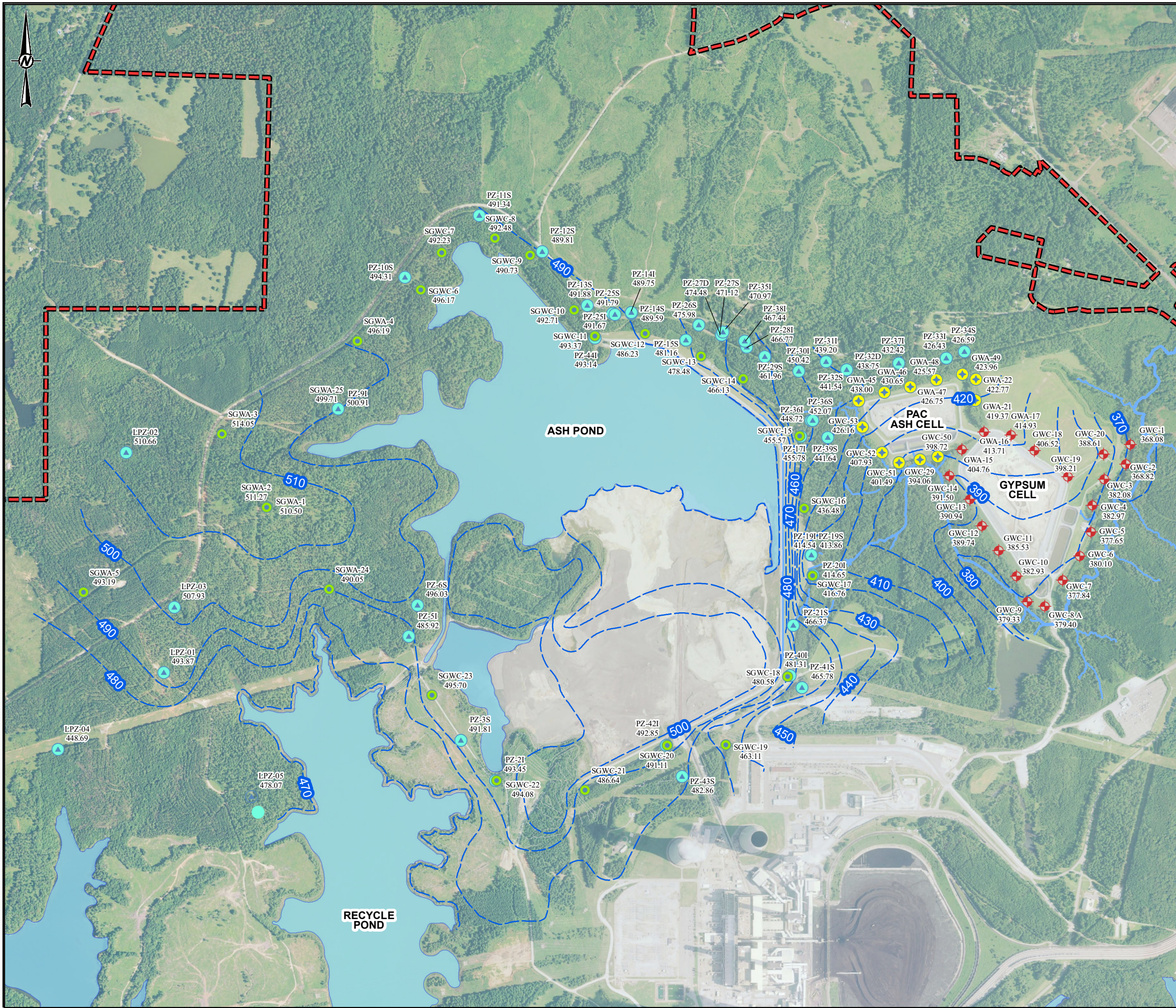
TITLE  
**SITE PLAN AND DETECTION MONITORING  
WELL LOCATION MAP**

CONSULTANT	YYYY-MM-DD	2018-10-24
	PREPARED	DJC
	DESIGN	DLP
	REVIEW	DLP
	APPROVED	RPK

PROJECT No. 1662350 CONTROL 1662350L003-GIS.mxd Rev. 0 FIGURE **A1**

Path: H:\1662350-Project\1662350-Southern Company Services\gumetk SITE PLAN AND MONITORING LOCATION MAP\1662350L003-GIS.mxd

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



**LEGEND**

- SCHERER ASH POND-CCR MONITORING WELL
- ◆ CELL 1 LANDFILL MONITORING WELL
- PAC ASH LANDFILL MONITORING WELL
- ▲ ASH POND PIEZOMETER
- PIEZOMETER
- ⊕ SURFACE WATER SAMPLE
- GROUNDWATER ELEVATION CONTOUR (FAMSL)
- PROPERTY BOUNDARY
- PONDS

- NOTES**
1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
  2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED MARCH 25, 2019 BY GOLDER ASSOCIATES.
  3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FAMSL).
  4. DEEP AND INTERMEDIATE WELL GROUNDWATER ELEVATIONS WERE NOT USED TO GENERATE GROUNDWATER CONTOURS.

- REFERENCE**
1. COORDINATE SYSTEM: NAD 1983 STATE PLAN GEORGIA WEST (U.S. FEET).
  2. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.



CLIENT  
**GEORGIA POWER COMPANY**  
 PLANT SCHERER

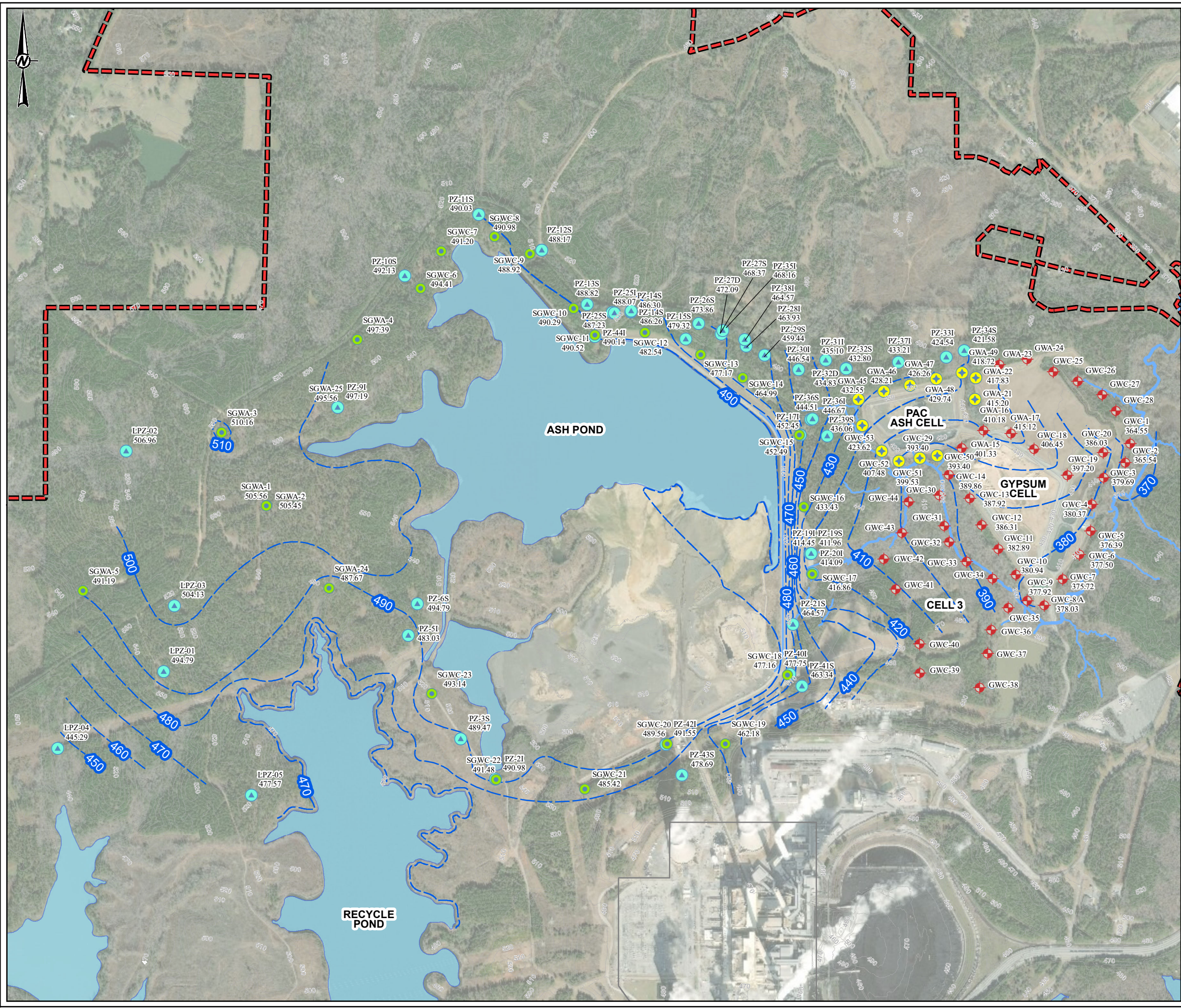
PROJECT  
**GROUNDWATER MONITORING PROGRAM**  
 SEMI-ANNUAL COMPLIANCE EVENT

TITLE  
**ASH POND POTENTIOMETRIC SURFACE MAP**  
 MARCH 25, 2019

CONSULTANT	YYYY-MM-DD	2019-04-22
<b>GOLDER</b>	PREPARED	DJC
	DESIGN	DLP
	REVIEW	DLP
	APPROVED	RPK

Path: H:\166k-Projects\1662350-Southern Company Services\gms\GIS\CONTOUR MAPS\MAR\_2019\_1662350Q001-GIS.mxd

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



**LEGEND**

- SCHERER ASH POND-CCR MONITORING WELL
- ◆ CELL 1 LANDFILL MONITORING WELL
- PAC ASH LANDFILL MONITORING WELL
- ▲ ASH POND PIEZOMETER
- PIEZOMETER
- ⊕ SURFACE WATER SAMPLE
- GROUNDWATER ELEVATION CONTOUR (FAMSL)
- PROPERTY BOUNDARY
- PONDS

- NOTES**
1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
  2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED SEPTEMBER 9, 2019 BY GOLDBER ASSOCIATES.
  3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FAMSL).
  4. DEEP AND INTERMEDIATE WELL GROUNDWATER ELEVATIONS WERE NOT USED TO GENERATE GROUNDWATER CONTOURS.

- REFERENCE**
1. COORDINATE SYSTEM: NAD 1983 STATE PLAN GEORGIA WEST (U.S. FEET).
  2. MONITORING WELL/PIEZOMETER LOCATIONS PROVIDED BY SOUTHERN COMPANY SERVICES.



CLIENT  
**GEORGIA POWER COMPANY**  
 PLANT SCHERER

PROJECT  
**GROUNDWATER MONITORING PROGRAM**  
 SEMI-ANNUAL COMPLIANCE EVENT

TITLE  
**POTENTIOMETRIC SURFACE MAP**  
 SEPTEMBER 9, 2019

CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2019-09-30
	PREPARED	DJC
	DESIGN	DLP
	REVIEW	DLP
	APPROVED	RPK

Path: H:\1662350-Georgia Power Services\GIS\Map\CONTOUR MAPS SEPT 2019\1662350T001-GIS.mxd

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

**APPENDIX A**

# ANALYTICAL RESULTS, FIELD DATA FORMS & DATA VALIDATION SUMMARIES

**APPENDIX A**

# ANALYTICAL RESULTS

February 2019

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-86907-1

TestAmerica Sample Delivery Group: Ash

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

3/18/2019 10:34:31 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416



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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

---

**Job ID: 180-86907-1**

---

**Laboratory: TestAmerica Pittsburgh**

---

## Narrative

**Job Narrative**  
**180-86907-1**

### Comments

No additional comments.

### Receipt

The samples were received on 2/21/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.6° C, 2.7° C, 3.1° C and 3.4° C.

### Anions

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
 SDG: Ash

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19 *
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19 *
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19 *
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-86907-1	SGWA-1	Water	02/18/19 15:20	02/21/19 09:00
180-86907-2	SGWA-2	Water	02/18/19 15:00	02/21/19 09:00
180-86907-3	SGWA-4	Water	02/18/19 15:48	02/21/19 09:00
180-86907-4	FB-1	Water	02/18/19 16:30	02/21/19 09:00
180-86907-5	SGWA-3	Water	02/19/19 09:35	02/21/19 09:00
180-86907-6	SGWA-5	Water	02/19/19 15:40	02/21/19 09:00
180-86907-7	SGWA-24	Water	02/19/19 09:47	02/21/19 09:00
180-86907-8	SGWA-25	Water	02/19/19 11:35	02/21/19 09:00
180-86907-9	SGWC-22	Water	02/19/19 14:10	02/21/19 09:00
180-86907-10	SGWC-23	Water	02/19/19 12:41	02/21/19 09:00
180-86907-11	EB-1	Water	02/19/19 12:38	02/21/19 09:00
180-86907-12	DUP-1	Water	02/19/19 00:00	02/21/19 09:00



# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	TAL PIT
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT
7470A	Preparation, Mercury	SW846	TAL PIT

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-1**  
**Date Collected: 02/18/19 15:20**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271212	02/25/19 06:33	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: M		1			271755	02/28/19 21:49	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			272056	03/05/19 14:35	KAK	TAL PIT

**Client Sample ID: SGWA-2**  
**Date Collected: 02/18/19 15:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271212	02/25/19 07:21	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: M		1			271755	02/28/19 21:53	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			272056	03/05/19 14:37	KAK	TAL PIT

**Client Sample ID: SGWA-4**  
**Date Collected: 02/18/19 15:48**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271212	02/25/19 07:37	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: M		1			271755	02/28/19 21:58	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			272056	03/05/19 14:38	KAK	TAL PIT

**Client Sample ID: FB-1**  
**Date Collected: 02/18/19 16:30**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 06:13	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: FB-1**

**Lab Sample ID: 180-86907-4**

**Date Collected: 02/18/19 16:30**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 06:13	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:03	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:39	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-86907-5**

**Date Collected: 02/19/19 09:35**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 07:52	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:07	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:40	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-86907-6**

**Date Collected: 02/19/19 15:40**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 08:08	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:12	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:41	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

**Date Collected: 02/19/19 09:47**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:12	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

**Date Collected: 02/19/19 09:47**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:12	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:17	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:42	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-86907-8**

**Date Collected: 02/19/19 11:35**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:27	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:21	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:45	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-86907-9**

**Date Collected: 02/19/19 14:10**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:43	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:26	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:46	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

**Date Collected: 02/19/19 12:41**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:59	MJH	TAL PIT

TestAmerica Pittsburgh



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

**Date Collected: 02/19/19 12:41**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 09:59	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:31	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:47	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: EB-1**

**Lab Sample ID: 180-86907-11**

**Date Collected: 02/19/19 12:38**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 08:56	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:45	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:48	KAK	TAL PIT
Instrument ID: HGZ										

**Client Sample ID: DUP-1**

**Lab Sample ID: 180-86907-12**

**Date Collected: 02/19/19 00:00**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271212	02/25/19 10:15	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271349	02/26/19 12:05	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271755	02/28/19 22:49	WTR	TAL PIT
Instrument ID: M										
Total/NA	Prep	7470A			50 mL	50 mL	271909	03/04/19 13:38	KAK	TAL PIT
Total/NA	Analysis	EPA 7470A		1			272056	03/05/19 14:49	KAK	TAL PIT
Instrument ID: HGZ										

**Laboratory References:**

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## Analyst References:

Lab: TAL PIT

Batch Type: Prep

KAK = Kayla Kalamasz

NAM = Nicole Marfisi

Batch Type: Analysis

KAK = Kayla Kalamasz

MJH = Matthew Hartman

WTR = Bill Reinheimer

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-1**  
**Date Collected: 02/18/19 15:20**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-1**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 06:33	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 21:49	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 21:49	1
<b>Barium</b>	<b>0.046</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:49	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 21:49	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 21:49	1
<b>Chromium</b>	<b>0.0017</b>	<b>J</b>	0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:49	1
<b>Cobalt</b>	<b>0.00080</b>	<b>J</b>	0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 21:49	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 21:49	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 21:49	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 21:49	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 21:49	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 21:49	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:35	1

**Client Sample ID: SGWA-2**  
**Date Collected: 02/18/19 15:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-2**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<b>0.050</b>	<b>J</b>	0.20	0.026	mg/L			02/25/19 07:21	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 21:53	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 21:53	1
<b>Barium</b>	<b>0.035</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:53	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 21:53	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 21:53	1
<b>Chromium</b>	<b>0.012</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:53	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 21:53	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 21:53	1
<b>Selenium</b>	<b>0.00017</b>	<b>J B</b>	0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 21:53	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 21:53	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 21:53	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 21:53	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:37	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-86907-3**

Date Collected: 02/18/19 15:48

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.066	J	0.20	0.026	mg/L			02/25/19 07:37	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 21:58	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 21:58	1
Barium	0.057		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:58	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 21:58	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 21:58	1
Chromium	0.0059		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:58	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 21:58	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 21:58	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 21:58	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 21:58	1
Molybdenum	0.00085	J	0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 21:58	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 21:58	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:38	1

**Client Sample ID: FB-1**

**Lab Sample ID: 180-86907-4**

Date Collected: 02/18/19 16:30

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 06:13	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:03	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:03	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:03	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:03	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:03	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:03	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:03	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:03	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:03	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:03	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:03	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:03	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:39	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-86907-5**

Date Collected: 02/19/19 09:35

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 07:52	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:07	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:07	1
<b>Barium</b>	<b>0.033</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:07	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:07	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:07	1
<b>Chromium</b>	<b>0.014</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:07	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:07	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:07	1
<b>Selenium</b>	<b>0.00012</b>	<b>J B</b>	0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:07	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:07	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:07	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:07	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:40	1

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-86907-6**

Date Collected: 02/19/19 15:40

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 08:08	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:12	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:12	1
<b>Barium</b>	<b>0.0094</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:12	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:12	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:12	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:12	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:12	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:12	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:12	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:12	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:12	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:12	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:41	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

Date Collected: 02/19/19 09:47

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.060	J	0.20	0.026	mg/L			02/25/19 09:12	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:17	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:17	1
Barium	0.019		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:17	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:17	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:17	1
Chromium	0.0038		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:17	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:17	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:17	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:17	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:17	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:17	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:17	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:42	1

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-86907-8**

Date Collected: 02/19/19 11:35

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.044	J	0.20	0.026	mg/L			02/25/19 09:27	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:21	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:21	1
Barium	0.022		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:21	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:21	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:21	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:21	1
Cobalt	0.0050		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:21	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:21	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:21	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:21	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:21	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:21	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:45	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-86907-9**

Date Collected: 02/19/19 14:10

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 09:43	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:26	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:26	1
<b>Barium</b>	<b>0.075</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:26	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:26	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:26	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:26	1
<b>Cobalt</b>	<b>0.0018</b>	<b>J</b>	0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:26	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:26	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:26	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:26	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:26	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:26	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:46	1

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

Date Collected: 02/19/19 12:41

Matrix: Water

Date Received: 02/21/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Fluoride</b>	<b>0.055</b>	<b>J</b>	0.20	0.026	mg/L			02/25/19 09:59	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:31	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:31	1
<b>Barium</b>	<b>0.064</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:31	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:31	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:31	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:31	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:31	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:31	1
<b>Selenium</b>	<b>0.00021</b>	<b>J B</b>	0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:31	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:31	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:31	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:31	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:47	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

**Client Sample ID: EB-1**

**Lab Sample ID: 180-86907-11**

**Date Collected: 02/19/19 12:38**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 08:56	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:45	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:45	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:45	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:45	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:45	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:45	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:45	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:45	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:45	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:45	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:45	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:45	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:48	1

**Client Sample ID: DUP-1**

**Lab Sample ID: 180-86907-12**

**Date Collected: 02/19/19 00:00**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 10:15	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 22:49	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 22:49	1
<b>Barium</b>	<b>0.074</b>		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:49	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 22:49	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 22:49	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 22:49	1
<b>Cobalt</b>	<b>0.0019</b>	<b>J</b>	0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 22:49	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 22:49	1
Selenium	<0.000081		0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 22:49	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 22:49	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 22:49	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 22:49	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:49	1

TestAmerica Pittsburgh



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

**Lab Sample ID: MB 180-271212/6**  
**Matrix: Water**  
**Analysis Batch: 271212**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			02/25/19 05:28	1

**Lab Sample ID: LCS 180-271212/5**  
**Matrix: Water**  
**Analysis Batch: 271212**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.1		mg/L		101	90 - 110
Fluoride	1.25	1.21		mg/L		97	90 - 110
Sulfate	25.0	24.2		mg/L		97	90 - 110

**Lab Sample ID: 180-86907-1 MS**  
**Matrix: Water**  
**Analysis Batch: 271212**

**Client Sample ID: SGWA-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1.8		25.0	26.4		mg/L		99	80 - 120
Fluoride	<0.026		1.25	1.22		mg/L		98	80 - 120
Sulfate	<0.38		25.0	24.5		mg/L		98	80 - 120

**Lab Sample ID: 180-86907-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 271212**

**Client Sample ID: SGWA-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1.8		25.0	26.1		mg/L		97	80 - 120	1	20
Fluoride	<0.026		1.25	1.20		mg/L		96	80 - 120	1	20
Sulfate	<0.38		25.0	24.3		mg/L		97	80 - 120	1	20

## Method: EPA 6020 - Metals (ICP/MS)

**Lab Sample ID: MB 180-271349/1-A**  
**Matrix: Water**  
**Analysis Batch: 271755**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271349**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:05	02/28/19 21:16	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:05	02/28/19 21:16	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:16	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:05	02/28/19 21:16	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:05	02/28/19 21:16	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:05	02/28/19 21:16	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:05	02/28/19 21:16	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:05	02/28/19 21:16	1
Selenium	0.000172	J	0.0013	0.000081	mg/L		02/26/19 12:05	02/28/19 21:16	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:05	02/28/19 21:16	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:05	02/28/19 21:16	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:05	02/28/19 21:16	1

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 180-271349/2-A**  
**Matrix: Water**  
**Analysis Batch: 271755**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271349**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	0.500	0.513		mg/L		103	80 - 120
Arsenic	0.0400	0.0364		mg/L		91	80 - 120
Barium	2.00	1.86		mg/L		93	80 - 120
Beryllium	0.0500	0.0477		mg/L		95	80 - 120
Cadmium	0.0500	0.0506		mg/L		101	80 - 120
Chromium	0.200	0.173		mg/L		87	80 - 120
Cobalt	0.500	0.443		mg/L		89	80 - 120
Lead	0.0200	0.0200		mg/L		100	80 - 120
Selenium	0.0100	0.00884		mg/L		88	80 - 120
Thallium	0.0500	0.0490		mg/L		98	80 - 120
Molybdenum	1.00	1.00		mg/L		100	80 - 120
Lithium	0.0500	0.0501		mg/L		100	80 - 120

**Lab Sample ID: 180-86771-C-32-B MS**  
**Matrix: Water**  
**Analysis Batch: 271755**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271349**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	<0.00038		0.500	0.508		mg/L		102	75 - 125
Arsenic	<0.00032		0.0400	0.0353		mg/L		88	75 - 125
Barium	0.013		2.00	1.83		mg/L		91	75 - 125
Beryllium	<0.00016		0.0500	0.0441		mg/L		88	75 - 125
Cadmium	<0.00013		0.0500	0.0521		mg/L		104	75 - 125
Chromium	<0.0015		0.200	0.164		mg/L		82	75 - 125
Cobalt	<0.000075		0.500	0.407		mg/L		81	75 - 125
Lead	<0.00013		0.0200	0.0198		mg/L		99	75 - 125
Selenium	<0.000081		0.0100	0.00797		mg/L		80	75 - 125
Thallium	<0.000063		0.0500	0.0490		mg/L		98	75 - 125
Molybdenum	0.00086	J	1.00	1.00		mg/L		100	75 - 125
Lithium	<0.0031		0.0500	0.0506		mg/L		101	75 - 125

**Lab Sample ID: 180-86771-C-32-C MSD**  
**Matrix: Water**  
**Analysis Batch: 271755**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271349**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	<0.00038		0.500	0.508		mg/L		102	75 - 125	0	20
Arsenic	<0.00032		0.0400	0.0363		mg/L		91	75 - 125	3	20
Barium	0.013		2.00	1.82		mg/L		90	75 - 125	0	20
Beryllium	<0.00016		0.0500	0.0446		mg/L		89	75 - 125	1	20
Cadmium	<0.00013		0.0500	0.0507		mg/L		101	75 - 125	3	20
Chromium	<0.0015		0.200	0.163		mg/L		81	75 - 125	1	20
Cobalt	<0.000075		0.500	0.410		mg/L		82	75 - 125	1	20
Lead	<0.00013		0.0200	0.0199		mg/L		99	75 - 125	0	20
Selenium	<0.000081		0.0100	0.00867		mg/L		87	75 - 125	8	20
Thallium	<0.000063		0.0500	0.0488		mg/L		98	75 - 125	0	20
Molybdenum	0.00086	J	1.00	1.00		mg/L		100	75 - 125	0	20
Lithium	<0.0031		0.0500	0.0528		mg/L		106	75 - 125	4	20

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
 SDG: Ash

## Method: EPA 7470A - Mercury (CVAA)

**Lab Sample ID: MB 180-271909/1-A**  
**Matrix: Water**  
**Analysis Batch: 272056**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 271909**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		03/04/19 13:38	03/05/19 14:31	1

**Lab Sample ID: LCS 180-271909/2-A**  
**Matrix: Water**  
**Analysis Batch: 272056**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 271909**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00241		mg/L		96	80 - 120

**Lab Sample ID: 180-86907-1 MS**  
**Matrix: Water**  
**Analysis Batch: 272056**

**Client Sample ID: SGWA-1**  
**Prep Type: Total/NA**  
**Prep Batch: 271909**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	<0.00010		0.00100	0.000994		mg/L		99	75 - 125

**Lab Sample ID: 180-86907-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 272056**

**Client Sample ID: SGWA-1**  
**Prep Type: Total/NA**  
**Prep Batch: 271909**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	<0.00010		0.00100	0.00100		mg/L		100	75 - 125	1	20

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## HPLC/IC

### Analysis Batch: 271212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total/NA	Water	EPA 300.0 R2.1	
180-86907-2	SGWA-2	Total/NA	Water	EPA 300.0 R2.1	
180-86907-3	SGWA-4	Total/NA	Water	EPA 300.0 R2.1	
180-86907-4	FB-1	Total/NA	Water	EPA 300.0 R2.1	
180-86907-5	SGWA-3	Total/NA	Water	EPA 300.0 R2.1	
180-86907-6	SGWA-5	Total/NA	Water	EPA 300.0 R2.1	
180-86907-7	SGWA-24	Total/NA	Water	EPA 300.0 R2.1	
180-86907-8	SGWA-25	Total/NA	Water	EPA 300.0 R2.1	
180-86907-9	SGWC-22	Total/NA	Water	EPA 300.0 R2.1	
180-86907-10	SGWC-23	Total/NA	Water	EPA 300.0 R2.1	
180-86907-11	EB-1	Total/NA	Water	EPA 300.0 R2.1	
180-86907-12	DUP-1	Total/NA	Water	EPA 300.0 R2.1	
MB 180-271212/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-271212/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-86907-1 MS	SGWA-1	Total/NA	Water	EPA 300.0 R2.1	
180-86907-1 MSD	SGWA-1	Total/NA	Water	EPA 300.0 R2.1	

## Metals

### Prep Batch: 271349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total Recoverable	Water	3005A	
180-86907-2	SGWA-2	Total Recoverable	Water	3005A	
180-86907-3	SGWA-4	Total Recoverable	Water	3005A	
180-86907-4	FB-1	Total Recoverable	Water	3005A	
180-86907-5	SGWA-3	Total Recoverable	Water	3005A	
180-86907-6	SGWA-5	Total Recoverable	Water	3005A	
180-86907-7	SGWA-24	Total Recoverable	Water	3005A	
180-86907-8	SGWA-25	Total Recoverable	Water	3005A	
180-86907-9	SGWC-22	Total Recoverable	Water	3005A	
180-86907-10	SGWC-23	Total Recoverable	Water	3005A	
180-86907-11	EB-1	Total Recoverable	Water	3005A	
180-86907-12	DUP-1	Total Recoverable	Water	3005A	
MB 180-271349/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-271349/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-86771-C-32-B MS	Matrix Spike	Total Recoverable	Water	3005A	
180-86771-C-32-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

### Analysis Batch: 271755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total Recoverable	Water	EPA 6020	271349
180-86907-2	SGWA-2	Total Recoverable	Water	EPA 6020	271349
180-86907-3	SGWA-4	Total Recoverable	Water	EPA 6020	271349
180-86907-4	FB-1	Total Recoverable	Water	EPA 6020	271349
180-86907-5	SGWA-3	Total Recoverable	Water	EPA 6020	271349
180-86907-6	SGWA-5	Total Recoverable	Water	EPA 6020	271349
180-86907-7	SGWA-24	Total Recoverable	Water	EPA 6020	271349
180-86907-8	SGWA-25	Total Recoverable	Water	EPA 6020	271349
180-86907-9	SGWC-22	Total Recoverable	Water	EPA 6020	271349
180-86907-10	SGWC-23	Total Recoverable	Water	EPA 6020	271349

TestAmerica Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-1  
SDG: Ash

## Metals (Continued)

### Analysis Batch: 271755 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-11	EB-1	Total Recoverable	Water	EPA 6020	271349
180-86907-12	DUP-1	Total Recoverable	Water	EPA 6020	271349
MB 180-271349/1-A	Method Blank	Total Recoverable	Water	EPA 6020	271349
LCS 180-271349/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	271349
180-86771-C-32-B MS	Matrix Spike	Total Recoverable	Water	EPA 6020	271349
180-86771-C-32-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	EPA 6020	271349

### Prep Batch: 271909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total/NA	Water	7470A	
180-86907-2	SGWA-2	Total/NA	Water	7470A	
180-86907-3	SGWA-4	Total/NA	Water	7470A	
180-86907-4	FB-1	Total/NA	Water	7470A	
180-86907-5	SGWA-3	Total/NA	Water	7470A	
180-86907-6	SGWA-5	Total/NA	Water	7470A	
180-86907-7	SGWA-24	Total/NA	Water	7470A	
180-86907-8	SGWA-25	Total/NA	Water	7470A	
180-86907-9	SGWC-22	Total/NA	Water	7470A	
180-86907-10	SGWC-23	Total/NA	Water	7470A	
180-86907-11	EB-1	Total/NA	Water	7470A	
180-86907-12	DUP-1	Total/NA	Water	7470A	
MB 180-271909/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-271909/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-86907-1 MS	SGWA-1	Total/NA	Water	7470A	
180-86907-1 MSD	SGWA-1	Total/NA	Water	7470A	

### Analysis Batch: 272056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total/NA	Water	EPA 7470A	271909
180-86907-2	SGWA-2	Total/NA	Water	EPA 7470A	271909
180-86907-3	SGWA-4	Total/NA	Water	EPA 7470A	271909
180-86907-4	FB-1	Total/NA	Water	EPA 7470A	271909
180-86907-5	SGWA-3	Total/NA	Water	EPA 7470A	271909
180-86907-6	SGWA-5	Total/NA	Water	EPA 7470A	271909
180-86907-7	SGWA-24	Total/NA	Water	EPA 7470A	271909
180-86907-8	SGWA-25	Total/NA	Water	EPA 7470A	271909
180-86907-9	SGWC-22	Total/NA	Water	EPA 7470A	271909
180-86907-10	SGWC-23	Total/NA	Water	EPA 7470A	271909
180-86907-11	EB-1	Total/NA	Water	EPA 7470A	271909
180-86907-12	DUP-1	Total/NA	Water	EPA 7470A	271909
MB 180-271909/1-A	Method Blank	Total/NA	Water	EPA 7470A	271909
LCS 180-271909/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	271909
180-86907-1 MS	SGWA-1	Total/NA	Water	EPA 7470A	271909
180-86907-1 MSD	SGWA-1	Total/NA	Water	EPA 7470A	271909

TestAmerica Pittsburgh

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

Chain of Custody Record



TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445

Client Contact  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX

Site: Ash Pond  
 P O # 166235018

Site Contact: Travis Martinez  
 Lab Contact: Veronica Bortot

Date: \_\_\_\_\_  
 Carrier: \_\_\_\_\_

COC No: \_\_\_\_\_  
 of \_\_\_\_\_ COCs

Sampler: \_\_\_\_\_  
 For Lab Use Only:  
 Walk-in Client: \_\_\_\_\_  
 Lab Sampling: \_\_\_\_\_  
 Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Perform MS / MSD (Y / N)		Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Date	Carrier	Sample Specific Notes:
						300_ORGFM_28D-Fluoride	9315_Ra226, 9320_Ra228					
SGWA-1	02/18/19	15:20	G	GW	3	N		N				1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N		N				1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N		N				
FB-1	02/18/19	16:30	G	W	4	N		N				
SGWA-3	02/19/19	09:35	G	GW	4	N		N				
SGWA-5	02/19/19	15:40	G	GW	4	N		N				
SGWA-24	02/19/19	09:47	G	GW	4	N		N				
SGWA-25	02/19/19	11:35	G	GW	4	N		N				
SGWC-22	02/19/19	14:10	G	GW	4	N		N				
SGWC-23	02/19/19	12:41	G	GW	4	N		N				
EB-1	02/19/19	12:38	G	W	4	N		N				
DUP-1	02/19/19	--	G	GW	4	N		N				



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazardous  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Company	Date/Time	Received by	Cooler Temp. (°C)	Obs'd	Therm ID No.:
Company: <i>Travis</i>	Date/Time: <i>2-20-19 10:30</i>	Received by: <i>Travis</i>			
Company: <i>McAfee 2</i>	Date/Time: <i>2-20-19 11:18</i>	Received by: <i>Pauline Wilson</i>			
Company: <i>RC</i>	Date/Time: <i>2-21-19 9:00</i>	Received in Laboratory by: <i>Pauline Wilson</i>			



**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

**Client Contact**  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O # 166235018

**Project Manager:** Dawn Prell  
**Tel/Fax:** 248-536-5445  
 CALENDAR DAYS  WORKING DAYS  
 Analysis Turnaround Time  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)		Perform MS / MSD (Y / N)		Date:	Carrier:
						6020 - As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	300 ORGFM, 28D-Fluoride	9315, Ra226, 9320, Ra228, Ra226Ra228, GFC	1 x 1/2 gallon radium		
SGWA-1	02/18/19	15:20	G	GW	3	N	N	1	1		
SGWA-2	02/18/19	15:00	G	GW	3	N	N	1	1		
SGWA-4	02/18/19	15:48	G	GW	4	N	N	1	1		
FB-1	02/18/19	16:30	G	W	4	N	N	1	1		
SGWA-3	02/19/19	09:35	G	GW	4	N	N	1	1		
SGWA-5	02/19/19	15:40	G	GW	4	N	N	1	1		
SGWA-24	02/19/19	09:47	G	GW	4	N	N	1	1		
SGWA-25	02/19/19	11:35	G	GW	4	N	N	1	1		
SGWC-22	02/19/19	14:10	G	GW	4	N	N	1	1		
SGWC-23	02/19/19	12:41	G	GW	4	N	N	1	1		
EB-1	02/19/19	12:38	G	W	4	N	N	1	1		
DUP-1	02/19/19	--	G	GW	4	N	N	1	1		
						4	4	1	4		

**Preservation Used:** 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Received by: Travis Martinez  
 Date/Time: 2-20-19  
 Company: Goldco  
 Date/Time: 2-20-19  
 Received by: Dawn Prell  
 Date/Time: 2-20-19  
 Company: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Received in Laboratory by: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_



681-Atlanta

**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**

**TestAmerica**  
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445

Client Contact  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX

Site: Ash Pond  
 P O # 166235018

Site Contact: Travis Martinez  
 Lab Contact: Veronica Bortot

Date: \_\_\_\_\_  
 Carrier: \_\_\_\_\_

COC No. \_\_\_\_\_ of \_\_\_\_\_ COCs

Sampler: \_\_\_\_\_

For Lab Use Only:  
 Walk-in Client: \_\_\_\_\_  
 Lab Sampling: \_\_\_\_\_  
 Job / SDG No.: \_\_\_\_\_

Sample Specific Notes:  
 1 x 1/2 gallon radium  
 1 x 1/2 gallon radium

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time		Filtered Sample (Y/N)	Perform MS/MSD (Y/N)
						CALENDAR DAYS	WORKING DAYS		
SGWA-1	02/18/19	15:20	G	GW	3			N	6020 - Sb,As,Ba,Be,Cd,Cr,Cu,Pb,LI,Mo,Se, I,7470A - Hg
SGWA-2	02/18/19	15:00	G	GW	3			N	9315_Ra226, 9320_Ra228, 300_ORGFM_28D-Fluoride
SGWA-4	02/18/19	15:48	G	GW	4			N	
FB-1	02/18/19	16:30	G	W	4			N	
SGWA-3	02/19/19	09:35	G	GW	4			N	
SGWA-5	02/19/19	15:40	G	GW	4			N	
SGWA-24	02/19/19	09:47	G	GW	4			N	
SGWA-25	02/19/19	11:35	G	GW	4			N	
SGWC-22	02/19/19	14:10	G	GW	4			N	
SGWC-23	02/19/19	12:41	G	GW	4			N	
EB-1	02/19/19	12:38	G	W	4			N	
DUP-1	02/19/19	-	G	GW	4			N	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_  
 Received in Laboratory by: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Corrd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_

Relinquished by: Trans Martinez  
 Relinquished by: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_

Custody Seal No.: \_\_\_\_\_

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018





**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

**Regulatory Program:**  DW  NPDES  RCRA  Other:

**Project Manager:** Dawn Prell **Site Contact:** Travis Martinez **Date:** \_\_\_\_\_

**Tel/Fax:** 248-536-5445 **Lab Contact:** Veronica Bortot **Carrier:** \_\_\_\_\_

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_

2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS/MSD (Y/N)	Sample Specific Notes:
						6020 - Sb,As,Ba,Be,Cd,Cr,Cu,Pb,LI,Mo,Se, I,7470A - Hg	300_ORGFM_28D-Fluoride		
SGWA-1	02/18/19	15:20	G	GW	3	N	N		1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N	N		1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N	N		
FB-1	02/18/19	16:30	G	W	4	N	N		
SGWA-3	02/19/19	09:35	G	GW	4	N	N		
SGWA-5	02/19/19	15:40	G	GW	4	N	N		
SGWA-24	02/19/19	09:47	G	GW	4	N	N		
SGWA-25	02/19/19	11:35	G	GW	4	N	N		
SGWC-22	02/19/19	14:10	G	GW	4	N	N		
SGWC-23	02/19/19	12:41	G	GW	4	N	N		
EB-1	02/19/19	12:38	G	W	4	N	N		
DUP-1	02/19/19	--	G	GW	4	N	N		

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**

Company	Date/Time	Therm ID No.
Received by: <i>Gold</i>	2-20-19 11:18	
Received by: <i>Travis Martinez</i>	2-20-19 0800	
Received in Laboratory by: <i>William Wadon</i>	2-21-19 700	

**Custody Seal No.:** \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_



**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2607  
 phone 412.963.7058 fax 412.963.2458

**Chain of Custody Record**



THE LEADER IN ENVIRONMENTAL SYSTEMS  
 TestAmerica Laboratories, Inc.

**Client Contact**  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O # 166235018

**Regulatory Program:**  DW  NPDES  RCRA  Other:  RCRA  
 Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445  
 Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

**Site Contact:** Travis Martinez  
 Lab Contact: Veronica Borfot  
 Date: \_\_\_\_\_  
 Carrier: \_\_\_\_\_

**COCs**  
 of \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 For Lab Use Only: \_\_\_\_\_  
 Walk-in Client: \_\_\_\_\_  
 Lab Sampling: \_\_\_\_\_  
 Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	8020 - Sr, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, I, T, Zn	300, ORGM, 280-F, fluoride	9315, Ra226, 9320, Ra228, Ra228m, 228, GPC	Sample Specific Notes:
SGWA-1	02/18/19	15:20	G	GW	3	N		1	1	1	1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N		1	1	1	1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N		1	1	2	
FB-1	02/18/19	16:30	G	W	4	N		1	1	2	
SGWA-3	02/19/19	09:35	G	GW	4	N		1	1	2	
SGWA-5	02/19/19	15:40	G	GW	4	N		1	1	2	
SGWA-24	02/19/19	09:47	G	GW	4	N		1	1	2	
SGWA-25	02/19/19	11:35	G	GW	4	N		1	1	2	
SGWC-22	02/19/19	14:10	G	GW	4	N		1	1	2	
SGWC-23	02/19/19	12:41	G	GW	4	N		1	1	2	
EB-1	02/19/19	12:38	G	W	4	N		1	1	2	
DUP-1	02/19/19	-	G	GW	4	N		4	1	4	

**Preservation Used:** 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other  
 Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please list any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Unknown  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Custody Seal No.:** \_\_\_\_\_  
 Relinquished by: Travis Martinez  
 Company: Goldco  
 Date/Time: 2-20-19  
 Relinquished by: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date/Time: 2-21-19  
 Relinquished by: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date/Time: 2-21-19

**Sample Disposal** (A fee may be assessed if samples are retained longer than 1 month)  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018**





180-86907 Waybill

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

59469-434 R112 Exp 10/19

This package conforms to 49 CFR

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

SHIP DATE: 20FEB19  
ACT WGT: 56.15 LB  
CAD: 859116/CAPE3211

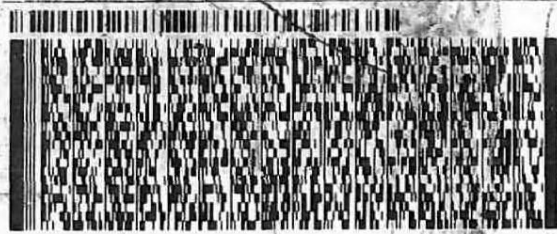
NORCROSS, GA 30093  
UNITED STATES US

RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068

REF: SOUTHERN CO



**FedEx**  
Express



**THU - 21 FEB 3:00P**  
**STANDARD OVERNIGHT**

TRK# 4651 0080 6300  
0201

## NA AGCA

15238  
PA-US PIT

Uncorrected temp \_\_\_\_\_  
Thermometer ID \_\_\_\_\_

CF Q Initials B

PT-WI-SR-001 effective 11/8/18



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# TestAmerica

TELEPHONE  
ENVIRONMENTAL TESTING

PT-WI-SR-001-0010

1215 N IDA MULA (678) 968-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
500 MCCONOUGH DRIVE  
MORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 20FEB19  
ACTWGT: 53.90 LB  
CAD: 859116/CAFE321

TO SAMPLE RECEIVING  
AT PITTSBURGH  
1520 PHA DRIVE  
PITTSBURGH, PA 15206

LB 3.00P  
OVERNIGHT

15206  
PA-US PIT

Uncorrected temp 3.4 °C  
Thermometer ID 10  
CF 0 Initials JB

PT-WI-SR-001 effective 11/8/18



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# TestAmerica

ENVIRONMENTAL TESTING

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING  
722352

UNION LA (67)  
OJIA R  
ATLANTA 91  
UNION DRIVE  
GA 30093  
SUS

SHIP DATE: 20FEB19  
ACTWT: 58.90 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

3001/240/01153

RECEIVED  
PITTSBURGH  
ALPHA DRIVE  
PARK  
PITTSBURGH PA  
THE N CO

**FedEx**  
Express



AN L05090811317

U - 21 FEB 3:00P  
STANDARD OVERNIGHT

15238  
PA-US PIT

Uncol  
Therm

CF  
PT-WI-SR-001 effe



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<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact: Shipping/Receiving		Phone:	Bortot, Veronica		180-355609.1
Company: TestAmerica Laboratories, Inc.		E-Mail:	veronica.bortot@testamericainc.com	State of Origin:	Page 1 of 2
Address: 13715 Ridler Trail North,		Accreditations Required (See note):		Job #:	180-86907-1
City: Earth City		<b>Analysis Requested</b>		<b>Preservation Codes:</b>	
State, Zip: MO, 63045		Due Date Requested: 3/5/2019		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
PO #:		TAT Requested (days): 1		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
WO #:		Field Filtered Sample (Yes or No)		Total Number of Containers	
Project #: 18019884		Perform MS/MSD (Yes or No)			
SSOW#:		9315 Ra226/PreSep_21 Standard Target List			
		9320 Ra228/PreSep_0 Standard Target List			
		Ra226Ra228_GPC			
		Matrix (W=water, S=solid, O=wastefoil, BT=Titrim, A=Al)			
		Sample Type (C=Comp, G=grab)			
		Sample Time			
		Sample Date			
		Preservation Code:			
<b>Sample Identification - Client ID (Lab ID)</b>		Sample Date		Special Instructions/Note:	
SGWA-1 (180-86907-1)	2/18/19	15:20 Eastern	X	X	1
SGWA-2 (180-86907-2)	2/18/19	15:00 Eastern	X	X	1
SGWA-4 (180-86907-3)	2/18/19	15:48 Eastern	X	X	2
FB-1 (180-86907-4)	2/18/19	16:30 Eastern	X	X	2
SGWA-3 (180-86907-5)	2/19/19	09:35 Eastern	X	X	2
SGWA-5 (180-86907-6)	2/19/19	13:40 Eastern	X	X	2
SGWA-24 (180-86907-7)	2/19/19	09:47 Eastern	X	X	2
SGWA-25 (180-86907-8)	2/19/19	11:35 Eastern	X	X	2
SGWC-22 (180-86907-9)	2/19/19	14:10 Eastern	X	X	2

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
Unconfirmed  
Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_ Primary Deliverable Rank: 2  
Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Relinquished by: \_\_\_\_\_ Date: 3/2/19 17:00 Company: JA Birta  
Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
Custody Seals Intact: \_\_\_\_\_ Custody Seal No.: \_\_\_\_\_  
Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_


**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
Special Instructions/QC Requirements: \_\_\_\_\_

Received by: Michael Hum Date/Time: 3-23-19 08:10 Company: JA Birta  
Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_



Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b> Client Contact: <u>Bortot, Veronica</u> Shipping/Receiving: <u>veronica.bortot@testamericainc.com</u> Company: <u>TestAmerica Laboratories, Inc.</u>		Lab PM: <u>Bortot, Veronica</u> E-Mail: <u>veronica.bortot@testamericainc.com</u>	Carrier Tracking No(s): 180-355609.2 State of Origin: Georgia
Address: 13715 Rider Trail North, . City: Earth City State, Zip: MO., 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email: Project Name: CCR - Plant Scherer Site: CCR Plant Scherer		Accreditations Required (See note): Due Date Requested: 3/5/2019 TAT Requested (days):	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
Sample Date 2/19/19	Sample Time 12:41 Eastern 2/19/19 12:38 Eastern 2/19/19 Eastern	Sample Type (C=Comp, G=grab) Preservation Code: Matrix (W=water, S=solid, O=oil) Water Water Water	Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> 9315_Ra226/PreSep_21 Standard Target List 9320_Ra228/PreSep_0 Standard Target List Ra226Ra228_GPC Total Number of Containers: 2 2 2



180-86907 Chain of Custody

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_  
 Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: 2/19/19 12:00  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Custody Seals Intact: \_\_\_\_\_  
 Δ Yes Δ No  
 Custody Seal No.: \_\_\_\_\_

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements: \_\_\_\_\_  
 Method of Shipment: \_\_\_\_\_  
 Received by: Michael Hum Date/Time: 2-23-19 08:20 Company: TA SA  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86907-1

SDG Number: Ash

**Login Number: 86907**

**List Number: 1**

**Creator: Watson, Debbie**

**List Source: TestAmerica Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-86907-2

TestAmerica Sample Delivery Group: Ash

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

3/31/2019 7:56:05 AM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416

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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Job ID: 180-86907-2**

**Laboratory: TestAmerica Pittsburgh**

## Narrative

### Job Narrative 180-86907-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 2/21/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.6° C, 2.7° C, 3.1° C and 3.4° C.

#### Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

#### RAD

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-417029

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-1 (180-86907-1), SGWA-2 (180-86907-2), SGWA-4 (180-86907-3), FB-1 (180-86907-4), SGWA-3 (180-86907-5), SGWA-5 (180-86907-6), SGWA-24 (180-86907-7), SGWA-25 (180-86907-8), (LCS 160-417029/1-A), (MB 160-417029/23-A), (550-117944-F-7-C) and (550-117944-F-7-D DU)

Method(s) 903.0, 9315: Radium-226 Prep Batch 160-417278

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-22 (180-86907-9), SGWC-23 (180-86907-10), EB-1 (180-86907-11), DUP-1 (180-86907-12), (LCS 160-417278/1-A), (MB 160-417278/26-A), (480-149401-C-1-A), (480-149401-D-1-A MS) and (480-149401-D-1-B MSD)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-417068

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

SGWA-1 (180-86907-1), SGWA-2 (180-86907-2), SGWA-4 (180-86907-3), FB-1 (180-86907-4), SGWA-3 (180-86907-5), SGWA-5 (180-86907-6), SGWA-24 (180-86907-7), SGWA-25 (180-86907-8), (LCS 160-417068/1-A), (MB 160-417068/23-A), (550-117944-F-7-E) and (550-117944-F-7-F DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-417068

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-1 (180-86907-1), SGWA-2 (180-86907-2), SGWA-4 (180-86907-3), FB-1 (180-86907-4), SGWA-3 (180-86907-5), SGWA-5 (180-86907-6), SGWA-24 (180-86907-7), SGWA-25 (180-86907-8), (LCS 160-417068/1-A), (MB 160-417068/23-A), (550-117944-F-7-E) and (550-117944-F-7-F DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-417297

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

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## Job ID: 180-86907-2 (Continued)

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### Laboratory: TestAmerica Pittsburgh (Continued)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-22 (180-86907-9), SGWC-23 (180-86907-10), EB-1 (180-86907-11), DUP-1 (180-86907-12), (LCS 160-417297/1-A), (MB 160-417297/26-A), (480-149401-C-1-B), (480-149401-D-1-C MS) and (480-149401-D-1-D MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19 *
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19 *
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-20
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

## Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19 *
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Pittsburgh

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-86907-1	SGWA-1	Water	02/18/19 15:20	02/21/19 09:00
180-86907-2	SGWA-2	Water	02/18/19 15:00	02/21/19 09:00
180-86907-3	SGWA-4	Water	02/18/19 15:48	02/21/19 09:00
180-86907-4	FB-1	Water	02/18/19 16:30	02/21/19 09:00
180-86907-5	SGWA-3	Water	02/19/19 09:35	02/21/19 09:00
180-86907-6	SGWA-5	Water	02/19/19 15:40	02/21/19 09:00
180-86907-7	SGWA-24	Water	02/19/19 09:47	02/21/19 09:00
180-86907-8	SGWA-25	Water	02/19/19 11:35	02/21/19 09:00
180-86907-9	SGWC-22	Water	02/19/19 14:10	02/21/19 09:00
180-86907-10	SGWC-23	Water	02/19/19 12:41	02/21/19 09:00
180-86907-11	EB-1	Water	02/19/19 12:38	02/21/19 09:00
180-86907-12	DUP-1	Water	02/19/19 00:00	02/21/19 09:00



# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

#### Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-1**  
**Date Collected: 02/18/19 15:20**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.44 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.44 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-2**  
**Date Collected: 02/18/19 15:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-4**  
**Date Collected: 02/18/19 15:48**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.44 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.44 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-1**  
**Date Collected: 02/18/19 16:30**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.28 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: FB-1**

**Lab Sample ID: 180-86907-4**

**Date Collected: 02/18/19 16:30**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.28 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-86907-5**

**Date Collected: 02/19/19 09:35**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.77 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.77 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-86907-6**

**Date Collected: 02/19/19 15:40**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.80 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.80 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

**Date Collected: 02/19/19 09:47**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.53 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

**Date Collected: 02/19/19 09:47**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420416	03/21/19 13:23	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.53 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419263	03/14/19 15:48	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-86907-8**

**Date Collected: 02/19/19 11:35**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.84 mL	1.0 g	417029	02/27/19 09:30	LTC	TAL SL
Total/NA	Analysis	9315		1			420408	03/21/19 13:25	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.84 mL	1.0 g	417068	02/27/19 14:24	LTC	TAL SL
Total/NA	Analysis	9320		1			419264	03/14/19 15:43	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-86907-9**

**Date Collected: 02/19/19 14:10**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.56 mL	1.0 g	417278	02/28/19 09:21	LTC	TAL SL
Total/NA	Analysis	9315		1			420715	03/22/19 05:50	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.56 mL	1.0 g	417297	02/28/19 10:21	LTC	TAL SL
Total/NA	Analysis	9320		1			419261	03/14/19 16:19	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

**Date Collected: 02/19/19 12:41**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.10 mL	1.0 g	417278	02/28/19 09:21	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

**Date Collected: 02/19/19 12:41**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420715	03/22/19 05:50	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.10 mL	1.0 g	417297	02/28/19 10:21	LTC	TAL SL
Total/NA	Analysis	9320		1			419261	03/14/19 16:20	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-1**

**Lab Sample ID: 180-86907-11**

**Date Collected: 02/19/19 12:38**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	417278	02/28/19 09:21	LTC	TAL SL
Total/NA	Analysis	9315		1			420715	03/22/19 05:51	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	417297	02/28/19 10:21	LTC	TAL SL
Total/NA	Analysis	9320		1			419261	03/14/19 16:20	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: DUP-1**

**Lab Sample ID: 180-86907-12**

**Date Collected: 02/19/19 00:00**

**Matrix: Water**

**Date Received: 02/21/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.17 mL	1.0 g	417278	02/28/19 09:21	LTC	TAL SL
Total/NA	Analysis	9315		1			420715	03/22/19 05:51	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.17 mL	1.0 g	417297	02/28/19 10:21	LTC	TAL SL
Total/NA	Analysis	9320		1			419261	03/14/19 16:20	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Analyst References:**

Lab: TAL SL

Batch Type: Prep

LTC = Logan Curtright

Batch Type: Analysis

CDR = Conrad Reuscher

KLS = Kody Saulters

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-1**  
**Date Collected: 02/18/19 15:20**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-1**  
**Matrix: Water**

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0885	U	0.0827	0.0831	1.00	0.128	pCi/L	02/27/19 09:30	03/21/19 13:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					02/27/19 09:30	03/21/19 13:23	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.274	U	0.222	0.223	1.00	0.350	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	84.1		40 - 110					02/27/19 14:24	03/14/19 15:48	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.362		0.237	0.238	5.00	0.350	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWA-2**  
**Date Collected: 02/18/19 15:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-2**  
**Matrix: Water**

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0700	U	0.0622	0.0625	1.00	0.0906	pCi/L	02/27/19 09:30	03/21/19 13:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.1		40 - 110					02/27/19 09:30	03/21/19 13:23	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.180	U	0.203	0.204	1.00	0.334	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.1		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	86.7		40 - 110					02/27/19 14:24	03/14/19 15:48	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-2**  
**Date Collected: 02/18/19 15:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-2**  
**Matrix: Water**

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.250	U	0.212	0.213	5.00	0.334	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWA-4**  
**Date Collected: 02/18/19 15:48**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-3**  
**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0112	U	0.0563	0.0563	1.00	0.110	pCi/L	02/27/19 09:30	03/21/19 13:23	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.2		40 - 110					02/27/19 09:30	03/21/19 13:23	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.00859	U	0.211	0.211	1.00	0.380	pCi/L	02/27/19 14:24	03/14/19 15:48	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.2		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	83.7		40 - 110					02/27/19 14:24	03/14/19 15:48	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0112	U	0.218	0.218	5.00	0.380	pCi/L		03/28/19 15:47	1

**Client Sample ID: FB-1**  
**Date Collected: 02/18/19 16:30**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-4**  
**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.0425	0.0425	1.00	0.0929	pCi/L	02/27/19 09:30	03/21/19 13:23	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.8		40 - 110					02/27/19 09:30	03/21/19 13:23	1



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Client Sample ID: FB-1

Date Collected: 02/18/19 16:30

Date Received: 02/21/19 09:00

## Lab Sample ID: 180-86907-4

Matrix: Water

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00891	U	0.207	0.207	1.00	0.372	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	81.1		40 - 110					02/27/19 14:24	03/14/19 15:48	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.00891	U	0.211	0.211	5.00	0.372	pCi/L		03/28/19 15:47	1

## Client Sample ID: SGWA-3

Date Collected: 02/19/19 09:35

Date Received: 02/21/19 09:00

## Lab Sample ID: 180-86907-5

Matrix: Water

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0335	U	0.0521	0.0522	1.00	0.0905	pCi/L	02/27/19 09:30	03/21/19 13:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					02/27/19 09:30	03/21/19 13:23	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.197	U	0.199	0.200	1.00	0.323	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.5		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	85.2		40 - 110					02/27/19 14:24	03/14/19 15:48	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.231	U	0.206	0.207	5.00	0.323	pCi/L		03/28/19 15:47	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-86907-6**

Date Collected: 02/19/19 15:40

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0352	U	0.0592	0.0592	1.00	0.104	pCi/L	02/27/19 09:30	03/21/19 13:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					02/27/19 09:30	03/21/19 13:23	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00883	U	0.208	0.208	1.00	0.373	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	83.0		40 - 110					02/27/19 14:24	03/14/19 15:48	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0440	U	0.216	0.216	5.00	0.373	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

Date Collected: 02/19/19 09:47

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0220	U	0.0540	0.0541	1.00	0.101	pCi/L	02/27/19 09:30	03/21/19 13:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					02/27/19 09:30	03/21/19 13:23	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.118	U	0.235	0.236	1.00	0.401	pCi/L	02/27/19 14:24	03/14/19 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					02/27/19 14:24	03/14/19 15:48	1
Y Carrier	82.2		40 - 110					02/27/19 14:24	03/14/19 15:48	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-86907-7**

Date Collected: 02/19/19 09:47

Matrix: Water

Date Received: 02/21/19 09:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.140	U	0.241	0.242	5.00	0.401	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-86907-8**

Date Collected: 02/19/19 11:35

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0213	U	0.0532	0.0533	1.00	0.0990	pCi/L	02/27/19 09:30	03/21/19 13:25	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.2		40 - 110					02/27/19 09:30	03/21/19 13:25	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.298	U	0.224	0.225	1.00	0.349	pCi/L	02/27/19 14:24	03/14/19 15:43	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.2		40 - 110					02/27/19 14:24	03/14/19 15:43	1
Y Carrier	83.7		40 - 110					02/27/19 14:24	03/14/19 15:43	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.320	U	0.230	0.231	5.00	0.349	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-86907-9**

Date Collected: 02/19/19 14:10

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0643	U	0.0706	0.0708	1.00	0.114	pCi/L	02/28/19 09:21	03/22/19 05:50	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/28/19 09:21	03/22/19 05:50	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-86907-9**

Date Collected: 02/19/19 14:10

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.468		0.278	0.281	1.00	0.420	pCi/L	02/28/19 10:21	03/14/19 16:19	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/28/19 10:21	03/14/19 16:19	1
Y Carrier	75.1		40 - 110					02/28/19 10:21	03/14/19 16:19	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.532		0.287	0.290	5.00	0.420	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-86907-10**

Date Collected: 02/19/19 12:41

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.301		0.100	0.104	1.00	0.0827	pCi/L	02/28/19 09:21	03/22/19 05:50	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					02/28/19 09:21	03/22/19 05:50	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0730	U	0.236	0.236	1.00	0.433	pCi/L	02/28/19 10:21	03/14/19 16:20	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					02/28/19 10:21	03/14/19 16:20	1
Y Carrier	80.4		40 - 110					02/28/19 10:21	03/14/19 16:20	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.301	U	0.256	0.258	5.00	0.433	pCi/L		03/28/19 15:47	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

**Client Sample ID: EB-1**

**Lab Sample ID: 180-86907-11**

Date Collected: 02/19/19 12:38

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00362	U	0.0504	0.0504	1.00	0.106	pCi/L	02/28/19 09:21	03/22/19 05:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					02/28/19 09:21	03/22/19 05:51	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0835	U	0.269	0.269	1.00	0.466	pCi/L	02/28/19 10:21	03/14/19 16:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					02/28/19 10:21	03/14/19 16:20	1
Y Carrier	76.6		40 - 110					02/28/19 10:21	03/14/19 16:20	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0835	U	0.274	0.274	5.00	0.466	pCi/L		03/28/19 15:47	1

**Client Sample ID: DUP-1**

**Lab Sample ID: 180-86907-12**

Date Collected: 02/19/19 00:00

Matrix: Water

Date Received: 02/21/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0710	U	0.0598	0.0601	1.00	0.0861	pCi/L	02/28/19 09:21	03/22/19 05:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					02/28/19 09:21	03/22/19 05:51	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.359	U	0.251	0.253	1.00	0.390	pCi/L	02/28/19 10:21	03/14/19 16:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					02/28/19 10:21	03/14/19 16:20	1
Y Carrier	79.3		40 - 110					02/28/19 10:21	03/14/19 16:20	1

# Client Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
 SDG: Ash

**Client Sample ID: DUP-1**  
**Date Collected: 02/19/19 00:00**  
**Date Received: 02/21/19 09:00**

**Lab Sample ID: 180-86907-12**  
**Matrix: Water**

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.430		0.258	0.260	5.00	0.390	pCi/L		03/28/19 15:47	1

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Method: 9315 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-417029/23-A**  
**Matrix: Water**  
**Analysis Batch: 420408**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417029**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01869	U	0.0490	0.0490	1.00	0.0931	pCi/L	02/27/19 09:30	03/21/19 13:25	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110						
	96.2					02/27/19 09:30	03/21/19 13:25	1		

**Lab Sample ID: LCS 160-417029/1-A**  
**Matrix: Water**  
**Analysis Batch: 420407**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417029**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.737		1.03	1.00	0.0835	pCi/L	86	68 - 137
Carrier	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
Ba Carrier	%Yield	Qualifier		40 - 110					
	96.8					02/27/19 09:30	03/21/19 13:25	1	

**Lab Sample ID: 550-117944-F-7-D DU**  
**Matrix: Water**  
**Analysis Batch: 420416**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 417029**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.687		0.7672		0.259	1.00	0.244	pCi/L	0.16	1
Carrier	DU DU		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110						
	95.0					02/28/19 09:21	03/22/19 05:56	1		

**Lab Sample ID: MB 160-417278/26-A**  
**Matrix: Water**  
**Analysis Batch: 420716**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417278**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03049	U	0.0484	0.0485	1.00	0.0843	pCi/L	02/28/19 09:21	03/22/19 05:56	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110						
	104					02/28/19 09:21	03/22/19 05:56	1		

**Lab Sample ID: LCS 160-417278/1-A**  
**Matrix: Water**  
**Analysis Batch: 420715**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417278**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	10.73		1.11	1.00	0.0897	pCi/L	95	68 - 137

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Method: 9315 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-417278/1-A**  
**Matrix: Water**  
**Analysis Batch: 420715**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417278**

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	104		40 - 110

**Lab Sample ID: 480-149401-D-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 420715**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 417278**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.428		11.3	9.709		1.03	1.00	0.0856	pCi/L	82	75 - 138

	MS	MS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	96.5		40 - 110

**Lab Sample ID: 480-149401-D-1-B MSD**  
**Matrix: Water**  
**Analysis Batch: 420715**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 417278**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.428		11.3	10.67		1.11	1.00	0.101	pCi/L	90	75 - 138	0.45	1

	MSD	MSD	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	99.4		40 - 110

## Method: 9320 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-417068/23-A**  
**Matrix: Water**  
**Analysis Batch: 419264**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417068**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1040	U	0.220	0.220	1.00	0.377	pCi/L	02/27/19 14:24	03/14/19 15:44	1

	MB	MB	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	96.2		40 - 110
Y Carrier	83.0		40 - 110

	Prepared	Analyzed	Dil Fac
Ba Carrier	02/27/19 14:24	03/14/19 15:44	1
Y Carrier	02/27/19 14:24	03/14/19 15:44	1

**Lab Sample ID: LCS 160-417068/1-A**  
**Matrix: Water**  
**Analysis Batch: 419263**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417068**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.40	9.112		1.08	1.00	0.415	pCi/L	97	56 - 140

TestAmerica Pittsburgh



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Method: 9320 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: LCS 160-417068/1-A**  
**Matrix: Water**  
**Analysis Batch: 419263**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417068**

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	96.8		40 - 110
Y Carrier	78.5		40 - 110

**Lab Sample ID: 550-117944-F-7-F DU**  
**Matrix: Water**  
**Analysis Batch: 419263**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 417068**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.847		0.5371	U	0.456	1.00	0.719	pCi/L	0.32	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	95.0		40 - 110
Y Carrier	80.7		40 - 110

**Lab Sample ID: MB 160-417297/26-A**  
**Matrix: Water**  
**Analysis Batch: 419264**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417297**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1855	U	0.202	0.203	1.00	0.331	pCi/L	02/28/19 10:21	03/14/19 15:50	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110	02/28/19 10:21	03/14/19 15:50	1
Y Carrier	84.9		40 - 110	02/28/19 10:21	03/14/19 15:50	1

**Lab Sample ID: LCS 160-417297/1-A**  
**Matrix: Water**  
**Analysis Batch: 419261**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417297**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.40	8.895		1.09	1.00	0.414	pCi/L	95	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	104		40 - 110
Y Carrier	70.3		40 - 110

**Lab Sample ID: 480-149401-D-1-C MS**  
**Matrix: Water**  
**Analysis Batch: 419261**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 417297**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.859		9.39	9.446		1.14	1.00	0.503	pCi/L	91	45 - 150

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
 SDG: Ash

## Method: 9320 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: 480-149401-D-1-C MS**  
**Matrix: Water**  
**Analysis Batch: 419261**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 417297**

	<i>MS</i>	<i>MS</i>	
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Ba Carrier</i>	96.5		40 - 110
<i>Y Carrier</i>	78.1		40 - 110

**Lab Sample ID: 480-149401-D-1-D MSD**  
**Matrix: Water**  
**Analysis Batch: 419261**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 417297**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qual</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>		<i>RER</i>	
													<i>RER</i>	<i>Limit</i>
Radium-228	0.859		9.39	8.976		1.07	1.00	0.408	pCi/L	86	45 - 150	0.21	1	

	<i>MSD</i>	<i>MSD</i>	
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Ba Carrier</i>	99.4		40 - 110
<i>Y Carrier</i>	80.7		40 - 110

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# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86907-2  
SDG: Ash

## Rad

### Prep Batch: 417029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total/NA	Water	PrecSep-21	
180-86907-2	SGWA-2	Total/NA	Water	PrecSep-21	
180-86907-3	SGWA-4	Total/NA	Water	PrecSep-21	
180-86907-4	FB-1	Total/NA	Water	PrecSep-21	
180-86907-5	SGWA-3	Total/NA	Water	PrecSep-21	
180-86907-6	SGWA-5	Total/NA	Water	PrecSep-21	
180-86907-7	SGWA-24	Total/NA	Water	PrecSep-21	
180-86907-8	SGWA-25	Total/NA	Water	PrecSep-21	
MB 160-417029/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417029/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
550-117944-F-7-D DU	Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 417068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-1	SGWA-1	Total/NA	Water	PrecSep_0	
180-86907-2	SGWA-2	Total/NA	Water	PrecSep_0	
180-86907-3	SGWA-4	Total/NA	Water	PrecSep_0	
180-86907-4	FB-1	Total/NA	Water	PrecSep_0	
180-86907-5	SGWA-3	Total/NA	Water	PrecSep_0	
180-86907-6	SGWA-5	Total/NA	Water	PrecSep_0	
180-86907-7	SGWA-24	Total/NA	Water	PrecSep_0	
180-86907-8	SGWA-25	Total/NA	Water	PrecSep_0	
MB 160-417068/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-417068/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
550-117944-F-7-F DU	Duplicate	Total/NA	Water	PrecSep_0	

### Prep Batch: 417278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-9	SGWC-22	Total/NA	Water	PrecSep-21	
180-86907-10	SGWC-23	Total/NA	Water	PrecSep-21	
180-86907-11	EB-1	Total/NA	Water	PrecSep-21	
180-86907-12	DUP-1	Total/NA	Water	PrecSep-21	
MB 160-417278/26-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417278/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-149401-D-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
480-149401-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

### Prep Batch: 417297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86907-9	SGWC-22	Total/NA	Water	PrecSep_0	
180-86907-10	SGWC-23	Total/NA	Water	PrecSep_0	
180-86907-11	EB-1	Total/NA	Water	PrecSep_0	
180-86907-12	DUP-1	Total/NA	Water	PrecSep_0	
MB 160-417297/26-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-417297/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-149401-D-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
480-149401-D-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

TestAmerica Pittsburgh

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445

Client Contact  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX

Site: Ash Pond  
 P O # 166235018

Site Contact: Travis Martinez  
 Lab Contact: Veronica Bortot

COCC No: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 COCs

For Lab Use Only:  
 Walk-in Client:  
 Lab Sampling:  
 Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time		Perform MS / MSD (Y / N)	Filtered Sample (Y / N)	Date	Carrier	Sample Specific Notes:
						CALENDAR DAYS	WORKING DAYS					
SGWA-1	02/18/19	15:20	G	GW	3							1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3							1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4							
FB-1	02/18/19	16:30	G	W	4							
SGWA-3	02/19/19	09:35	G	GW	4							
SGWA-5	02/19/19	15:40	G	GW	4							
SGWA-24	02/19/19	09:47	G	GW	4							
SGWA-25	02/19/19	11:35	G	GW	4							
SGWC-22	02/19/19	14:10	G	GW	4							
SGWC-23	02/19/19	12:41	G	GW	4							
EB-1	02/19/19	12:38	G	W	4							
DUP-1	02/19/19	--	G	GW	4							



180-86907 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazardous  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Received by: <i>Travis</i>	Received by: <i>Pauline Wilson</i>	Received by: <i>Pauline Wilson</i>
Company: <i>McAire 2</i>	Company: <i>Pauline Wilson</i>	Company: <i>Pauline Wilson</i>
Date/Time: <i>2-20-19 11:18</i>	Date/Time: <i>2-20-19 08:00</i>	Date/Time: <i>2-21-19 9:00</i>

Custody Seal No.: \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Therm ID No.: \_\_\_\_\_



**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

**Client Contact**  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O # 166235018

**Project Manager:** Dawn Prell  
**Tel/Fax:** 248-536-5445  
 CALENDAR DAYS  WORKING DAYS  
 Analysis Turnaround Time  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

**Site Contact:** Travis Martinez  
**Lab Contact:** Veronica Bortot

**Date:** \_\_\_\_\_  
**Carrier:** \_\_\_\_\_

**COC No:** \_\_\_\_\_ of \_\_\_\_\_ COCs

**Sampler:** \_\_\_\_\_  
**For Lab Use Only:** \_\_\_\_\_  
**Walk-in Client:** \_\_\_\_\_  
**Lab Sampling:** \_\_\_\_\_  
**Job / SDG No.:** \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	6020 - As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl		300 ORGFM, 28D-Fluoride	9315, Ra226, 9320, Ra228, Ra226Ra228, GFC	Sample Specific Notes:
								1	2			
SGWA-1	02/18/19	15:20	G	GW	3	N		1	1	1	1	1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N		1	1	1	1	1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N		1	1	2	2	
FB-1	02/18/19	16:30	G	W	4	N		1	1	2	2	
SGWA-3	02/19/19	09:35	G	GW	4	N		1	1	2	2	
SGWA-5	02/19/19	15:40	G	GW	4	N		1	1	2	2	
SGWA-24	02/19/19	09:47	G	GW	4	N		1	1	2	2	
SGWA-25	02/19/19	11:35	G	GW	4	N		1	1	2	2	
SGWC-22	02/19/19	14:10	G	GW	4	N		1	1	2	2	
SGWC-23	02/19/19	12:41	G	GW	4	N		1	1	2	2	
EB-1	02/19/19	12:38	G	W	4	N		1	1	2	2	
DUP-1	02/19/19	--	G	GW	4	N		1	1	2	2	
								4	1	4		

**Preservation Used:** 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Custody Seal No.:** \_\_\_\_\_  
 Relinquished by: Travis Martinez Company: Goldo Date/Time: 2-20-19/0900  
 Relinquished by: [Signature] Company: 2-20-19 Date/Time: 1118  
 Relinquished by: [Signature] Company: [Signature] Date/Time: [Signature]

**Received by:** [Signature] Company: 2-20-19 Date/Time: 0800  
**Received by:** [Signature] Company: APIT Date/Time: 2-21-19  
**Received in Laboratory by:** [Signature] Company: [Signature] Date/Time: 900

**Therm ID No.:** \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Cor'd: \_\_\_\_\_  
 Company: \_\_\_\_\_

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018



681-Atlanta

**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**

**TestAmerica**  
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445

Site Contact: Travis Martinez  
 Lab Contact: Veronica Bortot

Client Contact  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O # 166235018

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Perform MS / MSD (Y / N)		Sample Specific Notes:
						Filtered Sample (Y / N)	6020 - Sb,As,Ba,Be,Cd,Cr,Cu,Pb,LI,Mo,Se, I,7470A - Hg	
SGWA-1	02/18/19	15:20	G	GW	3	N	1	1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N	1	1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N	1	
FB-1	02/18/19	16:30	G	W	4	N	1	
SGWA-3	02/19/19	09:35	G	GW	4	N	1	
SGWA-5	02/19/19	15:40	G	GW	4	N	1	
SGWA-24	02/19/19	09:47	G	GW	4	N	1	
SGWA-25	02/19/19	11:35	G	GW	4	N	1	
SGWC-22	02/19/19	14:10	G	GW	4	N	1	
SGWC-23	02/19/19	12:41	G	GW	4	N	1	
EB-1	02/19/19	12:38	G	W	4	N	1	
DUP-1	02/19/19	--	G	GW	4	N	1	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

4 1 4

Received by: *Trans Martinez* Date/Time: 2-20-19  
 Received by: *Michelle Western* Date/Time: 2-21-19  
 Received in Laboratory by: *MC* Date/Time: 2-21-19

Custody Seal No.: \_\_\_\_\_  
 Relinquished by: *Trans Martinez* Company: *Goldco*  
 Relinquished by: *MC* Company: *Goldco*  
 Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018



**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

**Regulatory Program:**  DW  NPDES  RCRA  Other: \_\_\_\_\_

**Project Manager:** Dawn Prell **Site Contact:** Travis Martinez **Date:** \_\_\_\_\_

**Tel/Fax:** 248-536-5445 **Lab Contact:** Veronica Bortot **Carrier:** \_\_\_\_\_

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_

2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Cont, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform. MS/MSD (Y/N)	Sample Specific Notes:
						6020 - Sb,As,Ba,Be,Cd,Cr,Cu,Pb,LI,Mo,Se,1	9315_Ra226, 9320_Ra228, 300_ORGFM_28D-Fluoride		
SGWA-1	02/18/19	15:20	G	GW	3	N	N		1 x 1/2 gallon radium
SGWA-2	02/18/19	15:00	G	GW	3	N	N		1 x 1/2 gallon radium
SGWA-4	02/18/19	15:48	G	GW	4	N	N		
FB-1	02/18/19	16:30	G	W	4	N	N		
SGWA-3	02/19/19	09:35	G	GW	4	N	N		
SGWA-5	02/19/19	15:40	G	GW	4	N	N		
SGWA-24	02/19/19	09:47	G	GW	4	N	N		
SGWA-25	02/19/19	11:35	G	GW	4	N	N		
SGWC-22	02/19/19	14:10	G	GW	4	N	N		
SGWC-23	02/19/19	12:41	G	GW	4	N	N		
EB-1	02/19/19	12:38	G	W	4	N	N		
DUP-1	02/19/19	--	G	GW	4	N	N		

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

**Possible Hazard Identification:**  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**

Company	Date/Time	Therm ID No.
Received by: <i>Gold</i>	2-20-19 11:18	
Received by: <i>Travis Martinez</i>	2-20-19 0800	
Received in Laboratory by: <i>William Wadon</i>	2-21-19 700	

**Custody Seal No.:** \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_



**TestAmerica Pittsburgh**

301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15236-2607  
 phone 412.963.7058 fax 412.963.2458

**Chain of Custody Record**

**TestAmerica**  
 THE LEADER IN ENVIRONMENTAL SYSTEMS

TestAmerica Laboratories, Inc.

**Client Contact**  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 (404) 506-7239 Phone  
 FAX  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O # 166235018

**Regulatory Program:**  DW  NPDES  RCRA  Other:

**Project Manager:** Dawn Prell  
 Tel/Fax: 248-536-5445

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
 2 weeks  
 1 week  
 2 days  
 1 day  
 TAT if different from Below \_\_\_\_\_

**Site Contact:** Travis Martinez  
**Lab Contact:** Veronica Borfot

**Date:** \_\_\_\_\_ **Carrier:** \_\_\_\_\_

Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	8020 - Sr, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, I, Tl, Zn, Hg	300, ORGM, 280-F, fluoride	9315, Ra226, 9320, Ra228, Ra228m, 228, GPC
02/18/19	15:20	G	GW	3	N		1	1	1
02/18/19	15:00	G	GW	3	N		1	1	1
02/18/19	15:48	G	GW	4	N		1	1	2
02/18/19	16:30	G	W	4	N		1	1	2
02/19/19	09:35	G	GW	4	N		1	1	2
02/19/19	15:40	G	GW	4	N		1	1	2
02/19/19	09:47	G	GW	4	N		1	1	2
02/19/19	11:35	G	GW	4	N		1	1	2
02/19/19	14:10	G	GW	4	N		1	1	2
02/19/19	12:41	G	GW	4	N		1	1	2
02/19/19	12:38	G	W	4	N		1	1	2
02/19/19	-	G	GW	4	N		4	1	4

**Sample Specific Notes:**  
 1 x 1/2 gallon radium  
 1 x 1/2 gallon radium

**Preservation Used:** 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other  
**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please list any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazardous  Flammable  Skin Irritant  Unknown  Poison  Other

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

**Custody Seal No.:** \_\_\_\_\_ **Therm ID No.:** \_\_\_\_\_

**Relinquished by:** Travis Martinez  
 Company: Goldco  
 Date/Time: 2-20-19  
 Date/Time: 2-20-19  
 Date/Time: 2-21-19  
 Date/Time: 9:00

**Received by:** [Signature]  
 Company: [Signature]  
 Date/Time: [Signature]

**Received in Laboratory by:** [Signature]

**Sample Disposal** (A fee may be assessed if samples are retained longer than 1 month)  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Cooler Temp. (°C):** Obs'd: \_\_\_\_\_  
 Company: 2-20-19  
 Date/Time: 0800  
 Company: APH  
 Date/Time: 2-21-19  
 Company: [Signature]  
 Date/Time: 9:00







180-86907 Waybill

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

59469-434 R112 Exp 10/19

This package conforms to 49 CFR

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

SHIP DATE: 20FEB19  
ACT WGT: 56.15 LB  
CAD: 859116/CAPE3211

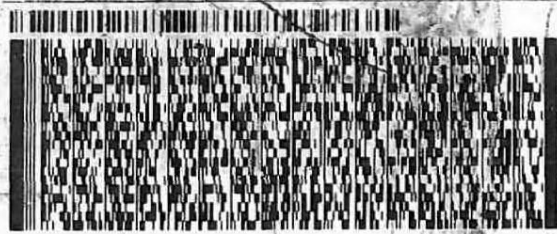
NORCROSS, GA 30093  
UNITED STATES US

RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068

REF: SOUTHERN CO



**FedEx**  
Express



**THU - 21 FEB 3:00P**  
**STANDARD OVERNIGHT**

TRK# 4651 0080 6300  
0201

## NA AGCA

15238  
PA-US PIT

Uncorrected temp  
Thermometer ID

25  
10

CF Q Initials B

PT-WI-SR-001 effective 11/8/18



- 1
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- 11
- 12
- 13

# TestAmerica

TELEPHONE  
ENVIRONMENTAL TESTING

PT-WI-SR-001-001 RITZ E.J. 2019

1215 N IDA MULA (678) 968-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
500 MCCONOUGH DRIVE  
MORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 20FEB19  
ACTWGT: 53.90 LB  
CAD: 859116/CAFE321

TO SAMPLE RECEIVING  
AT PITTSBURGH  
1520 PHA DRIVE  
PITTSBURGH, PA 15206  
17

LB 3:00P  
OVERNIGHT

15206  
PA-US PIT

Uncorrected temp 3.4 °C  
Thermometer ID 10  
CF 0 Initials JB

PT-WI-SR-001 effective 11/8/18



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**TestAmerica**  
AN ENVIRONMENTAL TESTING

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING  
722352

UNION LA (67)  
OJIA R  
ATLANTA 91  
UNION DRIVE  
GA 30093  
S US

SHIP DATE: 20FEB19  
ACTWT: 58.90 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

RECEIVED  
PITTSBURGH  
ALPHA DRIVE  
PARK  
PITTSBURGH PA  
THE N CO

3000/4240/01153

**FedEx**  
Express  
**E**  
AN L05090811317

U - 21 FEB 3:00P  
STANDARD OVERNIGHT

15238  
PA-US PIT

Unco  
Therm  
CF 16 °C  
10  
PT-WI-SR-001 effe  
TJ

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- 12
- 13

## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86907-2

SDG Number: Ash

**Login Number: 86907**

**List Number: 1**

**Creator: Watson, Debbie**

**List Source: TestAmerica Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86907-2

SDG Number: Ash

**Login Number: 86907**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: TestAmerica St. Louis**

**List Creation: 02/23/19 11:47 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86907-2

SDG Number: Ash

**Login Number: 86907**

**List Number: 3**

**Creator: Hellm, Michael**

**List Source: TestAmerica St. Louis**

**List Creation: 02/23/19 11:57 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-86954-1

TestAmerica Sample Delivery Group: Ash

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

3/18/2019 10:41:33 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



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[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416



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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

---

**Job ID: 180-86954-1**

---

**Laboratory: TestAmerica Pittsburgh**

---

## Narrative

**Job Narrative**  
**180-86954-1**

### Comments

No additional comments.

### Receipt

The samples were received on 2/22/2019 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.5° C, 1.9° C, 1.9° C, 2.1° C, 2.3° C and 3.1° C.

### Anions

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Metals

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

- 1
- 2
- 3
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- 12
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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19 *
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19 *
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19 *
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-86954-1	SGWC-6	Water	02/20/19 09:45	02/22/19 08:50
180-86954-2	SGWC-7	Water	02/20/19 11:00	02/22/19 08:50
180-86954-3	SGWC-8	Water	02/20/19 12:08	02/22/19 08:50
180-86954-4	SGWC-9	Water	02/20/19 09:13	02/22/19 08:50
180-86954-5	SGWC-10	Water	02/20/19 15:25	02/22/19 08:50
180-86954-6	SGWC-11	Water	02/20/19 11:09	02/22/19 08:50
180-86954-7	SGWC-12	Water	02/20/19 09:36	02/22/19 08:50
180-86954-8	SGWC-13	Water	02/20/19 10:05	02/22/19 08:50
180-86954-9	SGWC-14	Water	02/20/19 09:25	02/22/19 08:50
180-86954-10	FB-2	Water	02/20/19 13:25	02/22/19 08:50
180-86954-11	EB-2	Water	02/20/19 12:00	02/22/19 08:50
180-86954-12	DUP-2	Water	02/20/19 00:00	02/22/19 08:50
180-86954-13	SGWC-15	Water	02/20/19 11:36	02/22/19 08:50
180-86954-14	SGWC-16	Water	02/20/19 13:07	02/22/19 08:50
180-86954-15	SGWC-17	Water	02/20/19 13:15	02/22/19 08:50
180-86954-16	SGWC-18	Water	02/20/19 14:16	02/22/19 08:50
180-86954-17	SGWC-19	Water	02/20/19 15:56	02/22/19 08:50
180-86954-18	SGWC-20	Water	02/20/19 14:25	02/22/19 08:50
180-86954-19	SGWC-21	Water	02/20/19 09:54	02/22/19 08:50
180-86954-20	FB-3	Water	02/20/19 16:30	02/22/19 08:50
180-86954-21	EB-3	Water	02/20/19 16:15	02/22/19 08:50
180-86954-22	DUP-3	Water	02/20/19 00:00	02/22/19 08:50

# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	TAL PIT
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT
7470A	Preparation, Mercury	SW846	TAL PIT

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-6**  
**Date Collected: 02/20/19 09:45**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271929	03/05/19 07:08	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			271815	03/02/19 17:52	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			271557	02/27/19 17:45	KAK	TAL PIT

**Client Sample ID: SGWC-7**  
**Date Collected: 02/20/19 11:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271929	03/05/19 08:27	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			271815	03/02/19 17:56	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			271557	02/27/19 17:48	KAK	TAL PIT

**Client Sample ID: SGWC-8**  
**Date Collected: 02/20/19 12:08**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			271929	03/05/19 08:43	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			271815	03/02/19 17:59	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			271557	02/27/19 17:49	KAK	TAL PIT

**Client Sample ID: SGWC-9**  
**Date Collected: 02/20/19 09:13**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:59	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-86954-4**

Date Collected: 02/20/19 09:13

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:59	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:02	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:50	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-86954-5**

Date Collected: 02/20/19 15:25

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 10:33	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:06	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:55	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-86954-6**

Date Collected: 02/20/19 11:09

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 10:49	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:09	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:56	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

Date Collected: 02/20/19 09:36

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 11:05	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

Date Collected: 02/20/19 09:36

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 11:05	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:12	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:57	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-86954-8**

Date Collected: 02/20/19 10:05

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 11:21	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:16	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:58	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-86954-9**

Date Collected: 02/20/19 09:25

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 12:40	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:19	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 17:59	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

Date Collected: 02/20/19 13:25

Matrix: Water

Date Received: 02/22/19 08:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 09:30	MJH	TAL PIT

TestAmerica Pittsburgh



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

**Date Collected: 02/20/19 13:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 09:30	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:29	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:00	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: EB-2**

**Lab Sample ID: 180-86954-11**

**Date Collected: 02/20/19 12:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 06:52	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:32	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:01	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: DUP-2**

**Lab Sample ID: 180-86954-12**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 12:56	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:36	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:02	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-86954-13**

**Date Collected: 02/20/19 11:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:12	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-86954-13**

**Date Collected: 02/20/19 11:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:12	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:39	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:03	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-86954-14**

**Date Collected: 02/20/19 13:07**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:28	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:42	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:04	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-86954-15**

**Date Collected: 02/20/19 13:15**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 13:43	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:46	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:09	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-86954-16**

**Date Collected: 02/20/19 14:16**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 07:55	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-86954-16**

**Date Collected: 02/20/19 14:16**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271929	03/05/19 07:55	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:49	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:10	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-19**

**Lab Sample ID: 180-86954-17**

**Date Collected: 02/20/19 15:56**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 18:29	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:52	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:11	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-86954-18**

**Date Collected: 02/20/19 14:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 18:45	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 18:56	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:12	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

**Date Collected: 02/20/19 09:54**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 17:10	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

**Date Collected: 02/20/19 09:54**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 17:10	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 19:15	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:13	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: FB-3**

**Lab Sample ID: 180-86954-20**

**Date Collected: 02/20/19 16:30**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 16:39	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271510	02/27/19 12:08	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271815	03/02/19 19:19	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271461	02/27/19 09:04	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 18:14	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: EB-3**

**Lab Sample ID: 180-86954-21**

**Date Collected: 02/20/19 16:15**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 16:54	MJH	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	271353	02/26/19 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271799	03/01/19 13:57	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	271464	02/27/19 09:16	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 16:12	KAK	TAL PIT
Instrument ID: HGY										

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 19:01	MJH	TAL PIT

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			271818	03/04/19 19:01	MJH	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	271353	02/26/19 12:17	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			271799	03/01/19 14:00	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	271464	02/27/19 09:16	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			271557	02/27/19 16:13	KAK	TAL PIT
		Instrument ID: HGY								

**Laboratory References:**

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

**Analyst References:**

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

Batch Type: Analysis

KAK = Kayla Kalamasz

MJH = Matthew Hartman

RSK = Robert Kurtz

WTR = Bill Reinheimer

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-6**  
**Date Collected: 02/20/19 09:45**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-1**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.092	J	0.20	0.026	mg/L			03/05/19 07:08	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 17:52	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 17:52	1
Barium	0.052		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:52	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 17:52	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 17:52	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:52	1
Cobalt	0.00011	J	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 17:52	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 17:52	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 17:52	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 17:52	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 17:52	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 17:52	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:45	1

**Client Sample ID: SGWC-7**  
**Date Collected: 02/20/19 11:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-2**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.20		0.20	0.026	mg/L			03/05/19 08:27	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 17:56	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 17:56	1
Barium	0.28		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:56	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 17:56	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 17:56	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:56	1
Cobalt	0.0057		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 17:56	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 17:56	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 17:56	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 17:56	1
Molybdenum	0.0013	J	0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 17:56	1
Lithium	0.0060		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 17:56	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:48	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-86954-3**

Date Collected: 02/20/19 12:08

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.32		0.20	0.026	mg/L			03/05/19 08:43	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 17:59	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 17:59	1
Barium	0.20		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:59	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 17:59	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 17:59	1
Chromium	0.0021	J	0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:59	1
Cobalt	0.00014	J	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 17:59	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 17:59	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 17:59	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 17:59	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 17:59	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 17:59	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:49	1

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-86954-4**

Date Collected: 02/20/19 09:13

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.074	J	0.20	0.026	mg/L			03/05/19 13:59	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:02	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:02	1
Barium	0.077		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:02	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:02	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:02	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:02	1
Cobalt	0.010		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:02	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:02	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:02	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:02	1
Molybdenum	0.00075	J	0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:02	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:02	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:50	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-86954-5**

Date Collected: 02/20/19 15:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 10:33	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:06	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:06	1
<b>Barium</b>	<b>0.036</b>		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:06	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:06	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:06	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:06	1
<b>Cobalt</b>	<b>0.034</b>		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:06	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:06	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:06	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:06	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:06	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:06	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:55	1

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-86954-6**

Date Collected: 02/20/19 11:09

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 10:49	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:09	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:09	1
<b>Barium</b>	<b>0.044</b>		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:09	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:09	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:09	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:09	1
<b>Cobalt</b>	<b>0.024</b>		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:09	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:09	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:09	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:09	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:09	1
<b>Lithium</b>	<b>0.0031</b>	<b>J</b>	0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:09	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:56	1

TestAmerica Pittsburgh



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

Date Collected: 02/20/19 09:36

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.052	J	0.20	0.026	mg/L			03/05/19 11:05	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:12	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:12	1
Barium	0.054		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:12	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:12	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:12	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:12	1
Cobalt	0.0032		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:12	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:12	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:12	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:12	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:12	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:12	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:57	1

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-86954-8**

Date Collected: 02/20/19 10:05

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 11:21	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:16	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:16	1
Barium	0.041		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:16	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:16	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:16	1
Chromium	<0.00015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:16	1
Cobalt	0.0040		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:16	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:16	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:16	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:16	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:16	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:16	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:58	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-86954-9**

Date Collected: 02/20/19 09:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 12:40	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:19	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:19	1
Barium	0.053		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:19	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:19	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:19	1
Chromium	0.0016	J	0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:19	1
Cobalt	0.011		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:19	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:19	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:19	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:19	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:19	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:19	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:59	1

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

Date Collected: 02/20/19 13:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 09:30	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:29	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:29	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:29	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:29	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:29	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:29	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:29	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:29	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:29	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:29	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:29	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:29	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:00	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: EB-2**  
**Date Collected: 02/20/19 12:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-11**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 06:52	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:32	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:32	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:32	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:32	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:32	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:32	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:32	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:32	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:32	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:32	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:32	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:32	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:01	1

**Client Sample ID: DUP-2**  
**Date Collected: 02/20/19 00:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-12**  
**Matrix: Water**

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.14	J	0.20	0.026	mg/L			03/05/19 12:56	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:36	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:36	1
Barium	0.21		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:36	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:36	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:36	1
Chromium	0.0022	J	0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:36	1
Cobalt	0.00014	J	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:36	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:36	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:36	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:36	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:36	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:36	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:02	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-86954-13**

Date Collected: 02/20/19 11:36

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.33		0.20	0.026	mg/L			03/05/19 13:12	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:39	1
Arsenic	0.00075	J	0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:39	1
Barium	0.036		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:39	1
Beryllium	0.00042	J	0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:39	1
Cadmium	0.00033	J	0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:39	1
Chromium	0.038		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:39	1
Cobalt	0.26		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:39	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:39	1
Selenium	0.0034		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:39	1
Thallium	0.000098	J	0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:39	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:39	1
Lithium	0.0038	J	0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:39	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:03	1

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-86954-14**

Date Collected: 02/20/19 13:07

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 13:28	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:42	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:42	1
Barium	0.027		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:42	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:42	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:42	1
Chromium	0.013		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:42	1
Cobalt	0.0038		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:42	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:42	1
Selenium	0.0012	J	0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:42	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:42	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:42	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:42	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:04	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-86954-15**

Date Collected: 02/20/19 13:15

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.034	J	0.20	0.026	mg/L			03/05/19 13:43	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:46	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:46	1
Barium	0.023		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:46	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:46	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:46	1
Chromium	0.0061		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:46	1
Cobalt	0.00035	J	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:46	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:46	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:46	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:46	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:46	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:46	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:09	1

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-86954-16**

Date Collected: 02/20/19 14:16

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 07:55	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:49	1
Arsenic	0.0030		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:49	1
Barium	0.034		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:49	1
Beryllium	0.00033	J	0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:49	1
Cadmium	0.00023	J	0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:49	1
Chromium	0.011		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:49	1
Cobalt	0.19		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:49	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:49	1
Selenium	0.027		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:49	1
Thallium	0.00021	J	0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:49	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:49	1
Lithium	0.0054		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:49	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00026		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:10	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-19**

**Lab Sample ID: 180-86954-17**

Date Collected: 02/20/19 15:56

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/04/19 18:29	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:52	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:52	1
<b>Barium</b>	<b>0.036</b>		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:52	1
<b>Beryllium</b>	<b>0.00016</b>	<b>J</b>	0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:52	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:52	1
<b>Chromium</b>	<b>0.017</b>		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:52	1
<b>Cobalt</b>	<b>0.00012</b>	<b>J</b>	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:52	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:52	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:52	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:52	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:52	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:52	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:11	1

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-86954-18**

Date Collected: 02/20/19 14:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Fluoride</b>	<b>0.20</b>		0.20	0.026	mg/L			03/04/19 18:45	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 18:56	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Barium</b>	<b>0.030</b>		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Beryllium</b>	<b>0.00077</b>	<b>J</b>	0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 18:56	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 18:56	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Cobalt</b>	<b>0.18</b>		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Lead</b>	<b>0.00027</b>	<b>J</b>	0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Selenium</b>	<b>0.0011</b>	<b>J</b>	0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Thallium</b>	<b>0.00018</b>	<b>J</b>	0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 18:56	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 18:56	1
<b>Lithium</b>	<b>0.0048</b>	<b>J</b>	0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 18:56	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:12	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

Date Collected: 02/20/19 09:54

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.051	J	0.20	0.026	mg/L			03/04/19 17:10	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 19:15	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 19:15	1
Barium	0.10		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 19:15	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 19:15	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 19:15	1
Chromium	0.0015	J	0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 19:15	1
Cobalt	0.00011	J	0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 19:15	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 19:15	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 19:15	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 19:15	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 19:15	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 19:15	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:13	1

**Client Sample ID: FB-3**

**Lab Sample ID: 180-86954-20**

Date Collected: 02/20/19 16:30

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/04/19 16:39	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 19:19	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 19:19	1
Barium	0.0051		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 19:19	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 19:19	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 19:19	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 19:19	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 19:19	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 19:19	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 19:19	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 19:19	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 19:19	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 19:19	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 18:14	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

**Client Sample ID: EB-3**

**Lab Sample ID: 180-86954-21**

Date Collected: 02/20/19 16:15

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/04/19 16:54	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:17	03/01/19 13:57	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:17	03/01/19 13:57	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 13:57	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:17	03/01/19 13:57	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:17	03/01/19 13:57	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 13:57	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:17	03/01/19 13:57	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:17	03/01/19 13:57	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/26/19 12:17	03/01/19 13:57	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:17	03/01/19 13:57	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:17	03/01/19 13:57	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:17	03/01/19 13:57	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:16	02/27/19 16:12	1

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

Date Collected: 02/20/19 00:00

Matrix: Water

Date Received: 02/22/19 08:50

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<b>0.031</b>	J	0.20	0.026	mg/L			03/04/19 19:01	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:17	03/01/19 14:00	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:17	03/01/19 14:00	1
<b>Barium</b>	<b>0.032</b>		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 14:00	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:17	03/01/19 14:00	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:17	03/01/19 14:00	1
<b>Chromium</b>	<b>0.015</b>		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 14:00	1
<b>Cobalt</b>	<b>0.00010</b>	J	0.0025	0.000075	mg/L		02/26/19 12:17	03/01/19 14:00	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:17	03/01/19 14:00	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/26/19 12:17	03/01/19 14:00	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:17	03/01/19 14:00	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:17	03/01/19 14:00	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:17	03/01/19 14:00	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:16	02/27/19 16:13	1

TestAmerica Pittsburgh



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

**Lab Sample ID: MB 180-271818/46**  
**Matrix: Water**  
**Analysis Batch: 271818**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/04/19 16:07	1

**Lab Sample ID: LCS 180-271818/45**  
**Matrix: Water**  
**Analysis Batch: 271818**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.2		mg/L		101	90 - 110
Fluoride	1.25	1.24		mg/L		99	90 - 110
Sulfate	25.0	24.6		mg/L		99	90 - 110

**Lab Sample ID: 180-86954-19 MS**  
**Matrix: Water**  
**Analysis Batch: 271818**

**Client Sample ID: SGWC-21**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.0		25.0	33.2		mg/L		97	80 - 120
Fluoride	0.051	J	1.25	1.34		mg/L		103	80 - 120
Sulfate	86		25.0	108		mg/L		88	80 - 120

**Lab Sample ID: 180-86954-19 MSD**  
**Matrix: Water**  
**Analysis Batch: 271818**

**Client Sample ID: SGWC-21**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.0		25.0	33.4		mg/L		98	80 - 120	1	20
Fluoride	0.051	J	1.25	1.32		mg/L		102	80 - 120	1	20
Sulfate	86		25.0	109		mg/L		89	80 - 120	0	20

**Lab Sample ID: MB 180-271929/6**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	<0.026		0.20	0.026	mg/L			03/05/19 06:36	1

**Lab Sample ID: LCS 180-271929/5**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.5		mg/L		102	90 - 110
Fluoride	1.25	1.26		mg/L		101	90 - 110
Sulfate	25.0	24.9		mg/L		100	90 - 110

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 180-86954-1 MS**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Chloride	1.6		25.0	26.8		mg/L		101	80 - 120	
Fluoride	0.092	J	1.25	1.38		mg/L		103	80 - 120	
Sulfate	0.53	J	25.0	25.2		mg/L		99	80 - 120	

**Lab Sample ID: 180-86954-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD MSD		Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Chloride	1.6		25.0	26.4		mg/L		99	80 - 120	1	20	
Fluoride	0.092	J	1.25	1.35		mg/L		101	80 - 120	2	20	
Sulfate	0.53	J	25.0	24.9		mg/L		97	80 - 120	1	20	

**Lab Sample ID: 180-86954-8 MS**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: SGWC-13**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Chloride	8.1		25.0	34.6		mg/L		106	80 - 120	
Fluoride	<0.026		1.25	1.38		mg/L		110	80 - 120	
Sulfate	87		25.0	114		mg/L		109	80 - 120	

**Lab Sample ID: 180-86954-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 271929**

**Client Sample ID: SGWC-13**  
**Prep Type: Total/NA**

Analyte	Sample	Sample	Spike	MSD MSD		Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Chloride	8.1		25.0	35.3		mg/L		109	80 - 120	2	20	
Fluoride	<0.026		1.25	1.40		mg/L		112	80 - 120	1	20	
Sulfate	87		25.0	117		mg/L		119	80 - 120	2	20	

## Method: EPA 6020 - Metals (ICP/MS)

**Lab Sample ID: MB 180-271353/1-A**  
**Matrix: Water**  
**Analysis Batch: 271799**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271353**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	<0.00038		0.0025	0.00038	mg/L		02/26/19 12:17	03/01/19 12:20	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/26/19 12:17	03/01/19 12:20	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 12:20	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/26/19 12:17	03/01/19 12:20	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/26/19 12:17	03/01/19 12:20	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/26/19 12:17	03/01/19 12:20	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/26/19 12:17	03/01/19 12:20	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/26/19 12:17	03/01/19 12:20	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/26/19 12:17	03/01/19 12:20	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/26/19 12:17	03/01/19 12:20	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/26/19 12:17	03/01/19 12:20	1

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 180-271353/1-A**  
**Matrix: Water**  
**Analysis Batch: 271799**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271353**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<0.0031		0.0050	0.0031	mg/L		02/26/19 12:17	03/01/19 12:20	1

**Lab Sample ID: LCS 180-271353/2-A**  
**Matrix: Water**  
**Analysis Batch: 271799**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271353**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.500	0.557		mg/L		111	80 - 120
Arsenic	0.0400	0.0389		mg/L		97	80 - 120
Barium	2.00	2.15		mg/L		108	80 - 120
Beryllium	0.0500	0.0490		mg/L		98	80 - 120
Boron	1.00	0.992		mg/L		99	80 - 120
Cadmium	0.0500	0.0549		mg/L		110	80 - 120
Chromium	0.200	0.217		mg/L		108	80 - 120
Calcium	50.0	53.0		mg/L		106	80 - 120
Cobalt	0.500	0.486		mg/L		97	80 - 120
Lead	0.0200	0.0217		mg/L		108	80 - 120
Selenium	0.0100	0.00934		mg/L		93	80 - 120
Thallium	0.0500	0.0546		mg/L		109	80 - 120
Molybdenum	1.00	1.07		mg/L		107	80 - 120
Lithium	0.0500	0.0521		mg/L		104	80 - 120

**Lab Sample ID: MB 180-271510/1-A**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00038		0.0025	0.00038	mg/L		02/27/19 12:08	03/02/19 17:36	1
Arsenic	<0.00032		0.0013	0.00032	mg/L		02/27/19 12:08	03/02/19 17:36	1
Barium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:36	1
Beryllium	<0.00016		0.0025	0.00016	mg/L		02/27/19 12:08	03/02/19 17:36	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		02/27/19 12:08	03/02/19 17:36	1
Chromium	<0.0015		0.0025	0.0015	mg/L		02/27/19 12:08	03/02/19 17:36	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		02/27/19 12:08	03/02/19 17:36	1
Lead	<0.00013		0.0010	0.00013	mg/L		02/27/19 12:08	03/02/19 17:36	1
Selenium	<0.00081		0.0013	0.00081	mg/L		02/27/19 12:08	03/02/19 17:36	1
Thallium	<0.000063		0.00050	0.000063	mg/L		02/27/19 12:08	03/02/19 17:36	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		02/27/19 12:08	03/02/19 17:36	1
Lithium	<0.0031		0.0050	0.0031	mg/L		02/27/19 12:08	03/02/19 17:36	1

**Lab Sample ID: LCS 180-271510/2-A**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.500	0.453		mg/L		91	80 - 120
Arsenic	0.0400	0.0361		mg/L		90	80 - 120
Barium	2.00	2.11		mg/L		105	80 - 120
Beryllium	0.0500	0.0520		mg/L		104	80 - 120

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 180-271510/2-A**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.975		mg/L		97	80 - 120
Cadmium	0.0500	0.0538		mg/L		108	80 - 120
Chromium	0.200	0.213		mg/L		106	80 - 120
Calcium	50.0	51.0		mg/L		102	80 - 120
Cobalt	0.500	0.467		mg/L		93	80 - 120
Lead	0.0200	0.0201		mg/L		100	80 - 120
Selenium	0.0100	0.0101		mg/L		101	80 - 120
Thallium	0.0500	0.0482		mg/L		96	80 - 120
Molybdenum	1.00	1.02		mg/L		102	80 - 120
Lithium	0.0500	0.0501		mg/L		100	80 - 120

**Lab Sample ID: 180-86954-18 MS**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: SGWC-20**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.00038		0.500	0.474		mg/L		95	75 - 125
Arsenic	<0.00032		0.0400	0.0385		mg/L		96	75 - 125
Barium	0.030		2.00	2.29		mg/L		113	75 - 125
Beryllium	0.00077	J	0.0500	0.0543		mg/L		107	75 - 125
Boron	2.0	B	1.00	3.00		mg/L		105	75 - 125
Cadmium	<0.00013		0.0500	0.0565		mg/L		113	75 - 125
Chromium	<0.0015		0.200	0.222		mg/L		111	75 - 125
Calcium	14		50.0	66.9		mg/L		107	75 - 125
Cobalt	0.18		0.500	0.668		mg/L		97	75 - 125
Lead	0.00027	J	0.0200	0.0210		mg/L		103	75 - 125
Selenium	0.0011	J	0.0100	0.0113		mg/L		102	75 - 125
Thallium	0.00018	J	0.0500	0.0493		mg/L		98	75 - 125
Molybdenum	<0.00061		1.00	1.08		mg/L		108	75 - 125
Lithium	0.0048	J	0.0500	0.0566		mg/L		104	75 - 125

**Lab Sample ID: 180-86954-18 MSD**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: SGWC-20**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.00038		0.500	0.474		mg/L		95	75 - 125	0	20
Arsenic	<0.00032		0.0400	0.0390		mg/L		97	75 - 125	1	20
Barium	0.030		2.00	2.26		mg/L		112	75 - 125	1	20
Beryllium	0.00077	J	0.0500	0.0536		mg/L		106	75 - 125	1	20
Boron	2.0	B	1.00	2.96		mg/L		101	75 - 125	1	20
Cadmium	<0.00013		0.0500	0.0562		mg/L		112	75 - 125	1	20
Chromium	<0.0015		0.200	0.223		mg/L		111	75 - 125	0	20
Calcium	14		50.0	66.9		mg/L		107	75 - 125	0	20
Cobalt	0.18		0.500	0.665		mg/L		97	75 - 125	0	20
Lead	0.00027	J	0.0200	0.0214		mg/L		105	75 - 125	2	20
Selenium	0.0011	J	0.0100	0.0118		mg/L		106	75 - 125	4	20
Thallium	0.00018	J	0.0500	0.0498		mg/L		99	75 - 125	1	20
Molybdenum	<0.00061		1.00	1.07		mg/L		107	75 - 125	1	20

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 180-86954-18 MSD**  
**Matrix: Water**  
**Analysis Batch: 271815**

**Client Sample ID: SGWC-20**  
**Prep Type: Total Recoverable**  
**Prep Batch: 271510**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lithium	0.0048	J	0.0500	0.0566		mg/L		104	75 - 125	0	20

## Method: EPA 7470A - Mercury (CVAA)

**Lab Sample ID: MB 180-271461/1-A**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 271461**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:04	02/27/19 17:43	1

**Lab Sample ID: LCS 180-271461/2-A**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 271461**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00255		mg/L		102	80 - 120

**Lab Sample ID: 180-86954-1 MS**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**  
**Prep Batch: 271461**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	<0.00010		0.00100	0.000999		mg/L		100	75 - 125

**Lab Sample ID: 180-86954-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**  
**Prep Batch: 271461**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.00010		0.00100	0.000990		mg/L		99	75 - 125	1	20

**Lab Sample ID: MB 180-271464/1-A**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 271464**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		02/27/19 09:16	02/27/19 16:04	1

**Lab Sample ID: LCS 180-271464/2-A**  
**Matrix: Water**  
**Analysis Batch: 271557**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 271464**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00256		mg/L		102	80 - 120

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## HPLC/IC

### Analysis Batch: 271818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-17	SGWC-19	Total/NA	Water	EPA 300.0 R2.1	
180-86954-18	SGWC-20	Total/NA	Water	EPA 300.0 R2.1	
180-86954-19	SGWC-21	Total/NA	Water	EPA 300.0 R2.1	
180-86954-20	FB-3	Total/NA	Water	EPA 300.0 R2.1	
180-86954-21	EB-3	Total/NA	Water	EPA 300.0 R2.1	
180-86954-22	DUP-3	Total/NA	Water	EPA 300.0 R2.1	
MB 180-271818/46	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-271818/45	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-86954-19 MS	SGWC-21	Total/NA	Water	EPA 300.0 R2.1	
180-86954-19 MSD	SGWC-21	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 271929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-86954-2	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-86954-3	SGWC-8	Total/NA	Water	EPA 300.0 R2.1	
180-86954-4	SGWC-9	Total/NA	Water	EPA 300.0 R2.1	
180-86954-5	SGWC-10	Total/NA	Water	EPA 300.0 R2.1	
180-86954-6	SGWC-11	Total/NA	Water	EPA 300.0 R2.1	
180-86954-7	SGWC-12	Total/NA	Water	EPA 300.0 R2.1	
180-86954-8	SGWC-13	Total/NA	Water	EPA 300.0 R2.1	
180-86954-9	SGWC-14	Total/NA	Water	EPA 300.0 R2.1	
180-86954-10	FB-2	Total/NA	Water	EPA 300.0 R2.1	
180-86954-11	EB-2	Total/NA	Water	EPA 300.0 R2.1	
180-86954-12	DUP-2	Total/NA	Water	EPA 300.0 R2.1	
180-86954-13	SGWC-15	Total/NA	Water	EPA 300.0 R2.1	
180-86954-14	SGWC-16	Total/NA	Water	EPA 300.0 R2.1	
180-86954-15	SGWC-17	Total/NA	Water	EPA 300.0 R2.1	
180-86954-16	SGWC-18	Total/NA	Water	EPA 300.0 R2.1	
MB 180-271929/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-271929/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-86954-1 MS	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-86954-1 MSD	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-86954-8 MS	SGWC-13	Total/NA	Water	EPA 300.0 R2.1	
180-86954-8 MSD	SGWC-13	Total/NA	Water	EPA 300.0 R2.1	

## Metals

### Prep Batch: 271353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-21	EB-3	Total Recoverable	Water	3005A	
180-86954-22	DUP-3	Total Recoverable	Water	3005A	
MB 180-271353/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-271353/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Prep Batch: 271461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total/NA	Water	7470A	
180-86954-2	SGWC-7	Total/NA	Water	7470A	
180-86954-3	SGWC-8	Total/NA	Water	7470A	

TestAmerica Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Metals (Continued)

### Prep Batch: 271461 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-4	SGWC-9	Total/NA	Water	7470A	
180-86954-5	SGWC-10	Total/NA	Water	7470A	
180-86954-6	SGWC-11	Total/NA	Water	7470A	
180-86954-7	SGWC-12	Total/NA	Water	7470A	
180-86954-8	SGWC-13	Total/NA	Water	7470A	
180-86954-9	SGWC-14	Total/NA	Water	7470A	
180-86954-10	FB-2	Total/NA	Water	7470A	
180-86954-11	EB-2	Total/NA	Water	7470A	
180-86954-12	DUP-2	Total/NA	Water	7470A	
180-86954-13	SGWC-15	Total/NA	Water	7470A	
180-86954-14	SGWC-16	Total/NA	Water	7470A	
180-86954-15	SGWC-17	Total/NA	Water	7470A	
180-86954-16	SGWC-18	Total/NA	Water	7470A	
180-86954-17	SGWC-19	Total/NA	Water	7470A	
180-86954-18	SGWC-20	Total/NA	Water	7470A	
180-86954-19	SGWC-21	Total/NA	Water	7470A	
180-86954-20	FB-3	Total/NA	Water	7470A	
MB 180-271461/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-271461/2-A	Lab Control Sample	Total/NA	Water	7470A	
180-86954-1 MS	SGWC-6	Total/NA	Water	7470A	
180-86954-1 MSD	SGWC-6	Total/NA	Water	7470A	

### Prep Batch: 271464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-21	EB-3	Total/NA	Water	7470A	
180-86954-22	DUP-3	Total/NA	Water	7470A	
MB 180-271464/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-271464/2-A	Lab Control Sample	Total/NA	Water	7470A	

### Prep Batch: 271510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total Recoverable	Water	3005A	
180-86954-2	SGWC-7	Total Recoverable	Water	3005A	
180-86954-3	SGWC-8	Total Recoverable	Water	3005A	
180-86954-4	SGWC-9	Total Recoverable	Water	3005A	
180-86954-5	SGWC-10	Total Recoverable	Water	3005A	
180-86954-6	SGWC-11	Total Recoverable	Water	3005A	
180-86954-7	SGWC-12	Total Recoverable	Water	3005A	
180-86954-8	SGWC-13	Total Recoverable	Water	3005A	
180-86954-9	SGWC-14	Total Recoverable	Water	3005A	
180-86954-10	FB-2	Total Recoverable	Water	3005A	
180-86954-11	EB-2	Total Recoverable	Water	3005A	
180-86954-12	DUP-2	Total Recoverable	Water	3005A	
180-86954-13	SGWC-15	Total Recoverable	Water	3005A	
180-86954-14	SGWC-16	Total Recoverable	Water	3005A	
180-86954-15	SGWC-17	Total Recoverable	Water	3005A	
180-86954-16	SGWC-18	Total Recoverable	Water	3005A	
180-86954-17	SGWC-19	Total Recoverable	Water	3005A	
180-86954-18	SGWC-20	Total Recoverable	Water	3005A	
180-86954-19	SGWC-21	Total Recoverable	Water	3005A	
180-86954-20	FB-3	Total Recoverable	Water	3005A	

TestAmerica Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Metals (Continued)

### Prep Batch: 271510 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-271510/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-271510/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-86954-18 MS	SGWC-20	Total Recoverable	Water	3005A	
180-86954-18 MSD	SGWC-20	Total Recoverable	Water	3005A	

### Analysis Batch: 271557

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total/NA	Water	EPA 7470A	271461
180-86954-2	SGWC-7	Total/NA	Water	EPA 7470A	271461
180-86954-3	SGWC-8	Total/NA	Water	EPA 7470A	271461
180-86954-4	SGWC-9	Total/NA	Water	EPA 7470A	271461
180-86954-5	SGWC-10	Total/NA	Water	EPA 7470A	271461
180-86954-6	SGWC-11	Total/NA	Water	EPA 7470A	271461
180-86954-7	SGWC-12	Total/NA	Water	EPA 7470A	271461
180-86954-8	SGWC-13	Total/NA	Water	EPA 7470A	271461
180-86954-9	SGWC-14	Total/NA	Water	EPA 7470A	271461
180-86954-10	FB-2	Total/NA	Water	EPA 7470A	271461
180-86954-11	EB-2	Total/NA	Water	EPA 7470A	271461
180-86954-12	DUP-2	Total/NA	Water	EPA 7470A	271461
180-86954-13	SGWC-15	Total/NA	Water	EPA 7470A	271461
180-86954-14	SGWC-16	Total/NA	Water	EPA 7470A	271461
180-86954-15	SGWC-17	Total/NA	Water	EPA 7470A	271461
180-86954-16	SGWC-18	Total/NA	Water	EPA 7470A	271461
180-86954-17	SGWC-19	Total/NA	Water	EPA 7470A	271461
180-86954-18	SGWC-20	Total/NA	Water	EPA 7470A	271461
180-86954-19	SGWC-21	Total/NA	Water	EPA 7470A	271461
180-86954-20	FB-3	Total/NA	Water	EPA 7470A	271461
180-86954-21	EB-3	Total/NA	Water	EPA 7470A	271464
180-86954-22	DUP-3	Total/NA	Water	EPA 7470A	271464
MB 180-271461/1-A	Method Blank	Total/NA	Water	EPA 7470A	271461
MB 180-271464/1-A	Method Blank	Total/NA	Water	EPA 7470A	271464
LCS 180-271461/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	271461
LCS 180-271464/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	271464
180-86954-1 MS	SGWC-6	Total/NA	Water	EPA 7470A	271461
180-86954-1 MSD	SGWC-6	Total/NA	Water	EPA 7470A	271461

### Analysis Batch: 271799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-21	EB-3	Total Recoverable	Water	EPA 6020	271353
180-86954-22	DUP-3	Total Recoverable	Water	EPA 6020	271353
MB 180-271353/1-A	Method Blank	Total Recoverable	Water	EPA 6020	271353
LCS 180-271353/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	271353

### Analysis Batch: 271815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total Recoverable	Water	EPA 6020	271510
180-86954-2	SGWC-7	Total Recoverable	Water	EPA 6020	271510
180-86954-3	SGWC-8	Total Recoverable	Water	EPA 6020	271510
180-86954-4	SGWC-9	Total Recoverable	Water	EPA 6020	271510
180-86954-5	SGWC-10	Total Recoverable	Water	EPA 6020	271510
180-86954-6	SGWC-11	Total Recoverable	Water	EPA 6020	271510

TestAmerica Pittsburgh



# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-1  
SDG: Ash

## Metals (Continued)

### Analysis Batch: 271815 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-7	SGWC-12	Total Recoverable	Water	EPA 6020	271510
180-86954-8	SGWC-13	Total Recoverable	Water	EPA 6020	271510
180-86954-9	SGWC-14	Total Recoverable	Water	EPA 6020	271510
180-86954-10	FB-2	Total Recoverable	Water	EPA 6020	271510
180-86954-11	EB-2	Total Recoverable	Water	EPA 6020	271510
180-86954-12	DUP-2	Total Recoverable	Water	EPA 6020	271510
180-86954-13	SGWC-15	Total Recoverable	Water	EPA 6020	271510
180-86954-14	SGWC-16	Total Recoverable	Water	EPA 6020	271510
180-86954-15	SGWC-17	Total Recoverable	Water	EPA 6020	271510
180-86954-16	SGWC-18	Total Recoverable	Water	EPA 6020	271510
180-86954-17	SGWC-19	Total Recoverable	Water	EPA 6020	271510
180-86954-18	SGWC-20	Total Recoverable	Water	EPA 6020	271510
180-86954-19	SGWC-21	Total Recoverable	Water	EPA 6020	271510
180-86954-20	FB-3	Total Recoverable	Water	EPA 6020	271510
MB 180-271510/1-A	Method Blank	Total Recoverable	Water	EPA 6020	271510
LCS 180-271510/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	271510
180-86954-18 MS	SGWC-20	Total Recoverable	Water	EPA 6020	271510
180-86954-18 MSD	SGWC-20	Total Recoverable	Water	EPA 6020	271510



180-86954 Chain of Custody

TestAmerica Pittsburgh  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15236-2907  
phone 412.963.7058 fax 412.963.2468

# Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Dawn Prell  
Tel/Fax: 248-638-5445

Client Contact  
Southern Company  
241 Ralph McGill Blvd SE B10185  
Atlanta, GA, 30308  
(404) 506-7239 Phone  
FAX

Project Name: GPC Plant Scherer  
Site: Ash Pond  
P.O. # 166235018

Site Contact: Travis Martinez  
Lab Contact: Veronica Bortot

Date: \_\_\_\_\_  
Carrier: \_\_\_\_\_

COC No: 1 of 2 COCs  
Sampler: \_\_\_\_\_  
For Lab Use Only:  
Walk-In Client: \_\_\_\_\_  
Lab Sampling: \_\_\_\_\_  
Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:			
								300_ORGM_28D-Fluoride	9316_Ra226, 9320_Ra228, Ra226Ra228_GFPc		
SGWC-6	02/20/19	9:45	G	GW	4	N		1	1	2	
SGWC-7	02/20/19	11:00	G	GW	4	N		1	1	2	
SGWC-8	02/20/19	12:08	G	GW	4	N		1	1	2	
SGWC-9	02/21/19	09:13	G	GW	4	N		1	1	2	Extra Radium - (2 x 1/2 Gall)
SGWC-10	02/20/19	15:25	G	GW	4	N		1	1	2	
SGWC-11	02/20/19	11:09	G	GW	4	N		1	1	2	
SGWC-12	02/20/19	09:38	G	GW	4	N		1	1	2	
SGWC-13	02/20/19	10:05	G	GW	4	N		1	1	2	
SGWC-14	02/21/19	09:25	G	GW	4	N		1	1	2	Extra Radium - (2 x 1/2 Gall)
FB-2	02/20/19	13:25	G	W	4	N		1	1	2	
EB-2	02/20/19	12:00	G	W	4	N		1	1	2	
DUP-2	02/20/19	-	G	GW	4	N		1	1	2	
						4	1	4			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Biodegradable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Return to Client  Discard by Lab  Archive for \_\_\_\_\_ Months

Custody Seal No.: \_\_\_\_\_

Relinquished by: *Jean De* Date/Time: 2/21/19  
Company: *Gold*

Relinquished by: *TR* Date/Time: 16:10  
Company: *TR*

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_

Received by: *TR* Date/Time: 2/21/19  
Company: *TR*

Received in Laboratory by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_  
Cooler Temp. (C): Obs'd: \_\_\_\_\_  
Company: \_\_\_\_\_

Form No. CA-C-WJ-002, Rev. 4.18, dated 9/5/2018





### Chain of Custody Record

**TestAmerica Pittsburgh**  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15238-2907  
phone 412.963.7056 fax 412.963.2488

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Dawn Prell      Site Contact: Travis Martinez

Tel/Fax: 248-536-5445      Lab Contact: Veronica Bortot

COC No: 2 of 2 COCs

Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: Sample Specific Notes:

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below: \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Client Contact  
Southern Company  
241 Ralph McGill Blvd SE B10185  
Atlanta, GA, 30308  
(404) 506-7239 Phone  
FAX  
Project Name: GPC Plant Scherer  
Site: Ash Pond  
P O # 166235018

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Perform MS / MSD ( Y / N )		Filtered Sample ( Y / N )	Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl, 7470A - Hg	300 ORGM, 28D-Fluoride	9315 Ra226, 9320 Ra228, Ra226Ra228, GFPC	Date:	Carrier:
						Y	N						
SGWC-15	02/20/19	11:36	G	GW	4	N		N	1	1	2		
SGWC-16	02/20/19	13:07	G	GW	4	N		N	1	1	2		
SGWC-17	02/20/19	13:15	G	GW	4	N		N	1	1	2		
SGWC-18	02/20/19	14:16	G	GW	4	N		N	1	1	2		
SGWC-19	02/20/19	15:56	G	GW	4	N		N	1	1	2		
SGWC-20	02/20/19	14:25	G	GW	4	N		N	1	1	2		
SGWC-21	02/21/19	09:54	G	GW	6	N		N	1	1	4		
FB-3	02/20/19	16:30	G	W	4	N		N	1	1	2		
EB-3	02/20/19	16:15	G	W	4	N		N	1	1	2		
DUP-3	02/20/19	-	G	GW	4	N		N	1	1	2		

Preservation Used: 1= Ice, 2= HCI, 3= H2SO4, 4=HNO3; 5=NaOH; 6= Other  
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Unknown  Poison B

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Company: Goldier Associates	Date/Time: 2-21-19 14:16	Received by:	Company: JTA	Therm ID No.:	
Relinquished by: <i>[Signature]</i>		Company: <i>[Signature]</i>	Date/Time:	Received by:	Company:		
Relinquished by: <i>[Signature]</i>		Company: <i>[Signature]</i>	Date/Time:	Received by:	Company:		
Relinquished by: <i>[Signature]</i>		Company: <i>[Signature]</i>	Date/Time:	Received in Laboratory by:	Company:		

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RITZ EXP 10/19

RITZ EXP 10/19

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21 FEB 2019  
ACTWGT: 56.90 LBS  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7868  
REF: SOUTHERN CO.

(US)



ICC THE COMPLIANCE CENTER INC.

transport only:  
...BYWAY OF RAIL

Printed in C

4 of 6

MPS# 4651 0080 6549  
0263

Mstr# 4651 0080 6516

0201

FRI - 22 FEB 3:00P  
STANDARD OVERNIGHT

# NA AGCA

15238

PA-US PIT 994

31046



Uncorrected temp 21 °C  
Thermometer ID 10

CF 0 Initials JS

PT-WI-SR-001 effective 11/8/18

Test  
THE LEADER IN

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RITZ EXP 10/19

722359

Test America

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCCONOUGH DRIVE

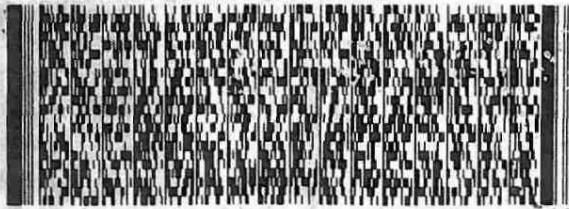
SHIP DATE: 21FEB19  
ACTWGT: 56.80 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 863-7068  
REF: SOUTHERN CO.



FedEx  
Express



6 of 6

FRI - 22 FEB 3:00P  
STANDARD OVERNIGHT

MPS# 0263 4651 0080 6560

Mstr# 4651 0080 6516

0201

**NA AGCA**

15238  
PA-U.S PIT

Uncorrected temp  
Thermometer ID

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18

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# AtAmerica

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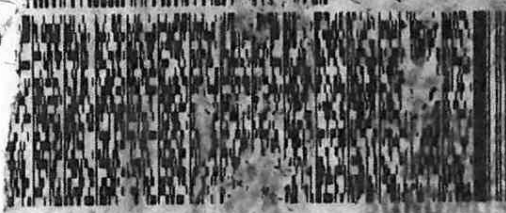
Part # 159469-424 (1) 12 EXP 10/19

MULA (678) 966-9991  
LOR  
CA ATLANTA  
OUGH DRIVE  
GA 30093  
TATES US

SHIP DATE: 21FEB19  
ACTWGT: 58.90 LB  
CAD: 859178/CAFE32L1

BILL RECIPIENT

PLE RECEIVING  
PITTSBURGH  
ALPHA DRIVE  
PARK  
PITTSBURGH PA 15238  
7058  
SOUTHERN CO



FedEx  
Express



1 of 6  
4651 0060 6516  
ASTER #

Feb - 22 FEB 3:00P  
STANDARD OVERNIGHT

**A AGCA**  
Uncorrected Temp  
Thermometer ID

15238  
PA-US PIT

CF 0 Initials 19 10 °C  
PT-VLSR-COT



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THE LEADER IN ENVIRONMENTAL TESTING

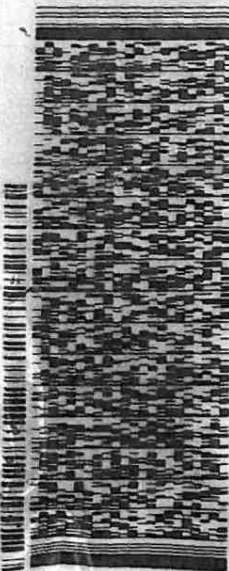
ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
8500 HCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21FEB19  
ACTWT: 56.80 LB  
CAD: 859116/CAFE3211

10 **SAMPLE RECEIVING**

**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO.



2 of 6  
MPS# 4651 0080 6527  
Mstr# 4651 0080 6516

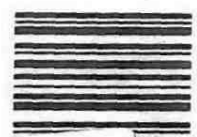
# NA AGCA

15238  
PA-US  
PIT

Uncorrected temp 23 °C  
Thermometer ID 10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



Part # 159469-434 RIT2 EXP 10/19

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
8500 HCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21FEB19  
ACTWT: 56.80 LB  
CAD: 859116/CAFE3211

10 **SAMPLE RECEIVING**

**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO.



5 of 6  
MPS# 4651 0080 6550  
Mstr# 4651 0080 6516

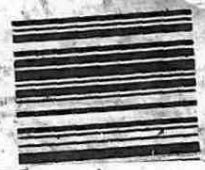
# NA AGCA

15238  
PA-US  
PIT

Uncorrected temp 11.9 °C  
Thermometer ID 10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



This package conforms to  
49 CFR 173.4  
for domestic highway or  
transport only.

IC: THE COMPLIANCE CENTER INC.

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CF<sub>2</sub>O  
# 10



## Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b>		Sampler: Lab PM: Bortol, Veronica		Carrier Tracking No(s):							
Client Contact: Shipping/Receiving		E-Mail: veronica.bortol@testamericainc.com		State of Origin: Florida							
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-86954-1							
Address: 13715 Rider Trail North,		Due Date Requested: 3/6/2019		COC No: 180-355699.1							
City: Earth City		TAT Requested (days):		Page: Page 1 of 3							
State, Zip: MO, 63045		PO #:		Page 1 of 3							
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		Job #: 180-86954-1							
Email:		Project #: 18019884		Preservation Codes:							
Project Name: CCR - Plant Scherer		SSOW#:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:							
Site: CCR Plant Scherer				M - Hexane N - None O - AsNaO2 P - Naz2OAS Q - Naz2SO3 R - Naz2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)							
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wast/woil, BT=tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Standard Target List	9320_Ra228/PreSep_0 Standard Target List	Ra226Ra228_GPC	Total Number of Containers	Special Instructions/Note:
SGWC-6 (180-86954-1)	2/20/19	09:45 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-7 (180-86954-2)	2/20/19	11:00 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-8 (180-86954-3)	2/20/19	12:08 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-9 (180-86954-4)	2/20/19	09:13 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-10 (180-86954-5)	2/20/19	15:25 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-11 (180-86954-6)	2/20/19	11:09 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-12 (180-86954-7)	2/20/19	09:36 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-13 (180-86954-8)	2/20/19	10:05 Eastern	Water	Water	X	X	X	X	X	2	
SGWC-14 (180-86954-9)	2/20/19	09:25 Eastern	Water	Water	X	X	X	X	X	2	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>											
<p><b>Possible Hazard Identification</b>  <input type="checkbox"/> Unconfirmed  <input type="checkbox"/> Return To Client  <input type="checkbox"/> Disposal By Lab  <input type="checkbox"/> Archive For _____ Months</p>											
<p>Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2</p>											
<p>Empty Kit Relinquished by: _____ Date: _____</p>											
<p>Relinquished by: _____ Date/Time: 2/20/19 17:00 Eastern                  Received by: Michael Sturm Date/Time: 2-20-19 09:00 Eastern                  Company: _____</p>											
<p>Relinquished by: _____ Date/Time: _____                  Received by: _____ Date/Time: _____                  Company: _____</p>											
<p>Custody Seals Intact: _____                  Custody Seal No.: _____                  Cooler Temperature(s) °C and Other Remarks: _____</p>											



Chain of Custody Record


<b>Client Information (Sub Contract Lab)</b>		Client Contact:	Lab PM:	Borlot, Veronica		Carrier Tracking No(s):	COC No:
Shipping/Receiving:		Phone:	E-Mail:	veronica.borlot@testamericainc.com		State of Origin:	180-355699.2
Company:		TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Page:	Page 2 of 3
Address:		Due Date Requested:	3/6/2019		Job #:		180-86954-1
City:		TAT Requested (days):	13715 Rider Trail North,		<b>Analysis Requested</b>		
Earth City:			MO, 63045		Field Filtered Sample (Yes or No)		
State, Zip:			PO #:		Perform MS/MSD (Yes or No)		
Phone:			WO #:		9315_Ra226/PrecSep_21 Standard Target List		
314-298-8566(Tel) 314-298-8757(Fax)			Project #:		9320_Ra228/PrecSep_0 Standard Target List		
Project Name:			18019884		Ra226Ra228_GFPC		
CCR - Plant Scherer			SSOW#:				
Site:							
CCR Plant Scherer							

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=waterfall, B=brine, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
FB-2 (180-86954-10)	2/20/19	13:25		Water		X	X	X	X	X	2	
EB-2 (180-86954-11)	2/20/19	12:00		Water		X	X	X	X	X	2	
DUP-2 (180-86954-12)	2/20/19			Water		X	X	X	X	X	2	
SGWC-15 (180-86954-13)	2/20/19	11:36		Water		X	X	X	X	X	2	
SGWC-16 (180-86954-14)	2/20/19	13:07		Water		X	X	X	X	X	2	
SGWC-17 (180-86954-15)	2/20/19	13:15		Water		X	X	X	X	X	2	
SGWC-18 (180-86954-16)	2/20/19	14:16		Water		X	X	X	X	X	2	
SGWC-19 (180-86954-17)	2/20/19	15:56		Water		X	X	X	X	X	2	
SGWC-20 (180-86954-18)	2/20/19	14:25		Water		X	X	X	X	X	2	

180-86954-01 Chain of Custody

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. 1

Possible Hazard Identification

Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2


Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by: Date/Time: Company: Received by: Date/Time: Company: THSR

Relinquished by: Date/Time: Company: Received by: Date/Time: Company:

Custody Seals Intact: Custody Seal No.: Cooler Temperature(s) °C and Other Remarks:

# Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PM:	Carrier Tracking No(s):
Client Contact: Shipping/Receiving		Phone:	Bortol, Veronica	180-355699_3
Company: TestAmerica Laboratories, Inc.		E-Mail:	veronica.bortol@testamericainc.com	Page: 3 of 3
Address: 13715 Rider Trail North,		Accreditations Required (See note):		
City: Earth City	Due Date Requested: 3/6/2019	180-86954-1		
State, Zip: MO, 63045	TAT Requested (days):	Preservation Codes:		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
Email:	WO #:	M - Hexane N - None O - AshNaO2 P - Naz2O4S Q - Naz2SO3 R - Naz2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		
Project Name: CCR - Plant Scherer	Project #: 18019884	Total Number of containers:		
Site: CCR Plant Scherer	SSOW#:	Special Instructions/Note:		
<b>Sample Identification - Client ID (Lab ID)</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=wasteliq, AT=tissue, A=AV)</b>
SGWC-21 (180-86954-19)	2/20/19	09:54 Eastern		Water
FB-3 (180-86954-20)	2/20/19	16:30 Eastern		Water
EB-3 (180-86954-21)	2/20/19	16:15 Eastern		Water
DUP-3 (180-86954-22)	2/20/19	Eastern		Water
 180-86954-02 Chain of Custody				
<b>Analysis Requested</b> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> 9315_Ra226/PreSep_21 Standard Target List <input checked="" type="checkbox"/> 9320_Ra226/PreSep_0 Standard Target List <input checked="" type="checkbox"/> Ra226Ra228_GFPc <input checked="" type="checkbox"/>				
<b>Possible Hazard Identification</b> Unconfirmed <input type="checkbox"/> Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: _____ Date/Time: 2/25/19 17:00 Relinquished by: _____ Date/Time: _____ Relinquished by: _____ Date/Time: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____				
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I				
<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
<b>Special Instructions/QC Requirements:</b>				
Time: _____ Method of Shipment: _____ Received by: _____ Date/Time: 2-26-19 0900 Received by: _____ Date/Time: _____ Received by: _____ Date/Time: _____ Cooler Temperature(s) °C and Other Remarks: _____				



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86954-1

SDG Number: Ash

**Login Number: 86954**

**List Number: 1**

**Creator: Watson, Debbie**

**List Source: TestAmerica Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-86954-2

TestAmerica Sample Delivery Group: Ash

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

3/31/2019 3:23:42 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416



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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Job ID: 180-86954-2**

**Laboratory: TestAmerica Pittsburgh**

## Narrative

### Job Narrative 180-86954-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 2/22/2019 8:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.5° C, 1.9° C, 1.9° C, 2.1° C, 2.3° C and 3.1° C.

#### RAD

Method(s) 903.0, 9315: Radium-226 Prep Batch 160-417027

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-9 (180-86954-4), SGWC-14 (180-86954-9), SGWC-17 (180-86954-15), SGWC-18 (180-86954-16), SGWC-19 (180-86954-17), SGWC-20 (180-86954-18), SGWC-21 (180-86954-19), FB-3 (180-86954-20), EB-3 (180-86954-21), DUP-3 (180-86954-22), (LCS 160-417027/1-A), (LCSD 160-417027/2-A) and (MB 160-417027/22-A)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-417390

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-6 (180-86954-1), SGWC-7 (180-86954-2), SGWC-8 (180-86954-3), SGWC-10 (180-86954-5), SGWC-11 (180-86954-6), SGWC-12 (180-86954-7), SGWC-13 (180-86954-8), FB-2 (180-86954-10), EB-2 (180-86954-11), DUP-2 (180-86954-12), SGWC-15 (180-86954-13), SGWC-16 (180-86954-14), (LCS 160-417390/1-A), (MB 160-417390/23-A), (490-169056-D-1-A) and (490-169056-F-1-A DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-417057

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-9 (180-86954-4), SGWC-14 (180-86954-9), SGWC-17 (180-86954-15), SGWC-18 (180-86954-16), SGWC-19 (180-86954-17), SGWC-20 (180-86954-18), SGWC-21 (180-86954-19), FB-3 (180-86954-20), EB-3 (180-86954-21), DUP-3 (180-86954-22), (LCS 160-417057/1-A), (LCSD 160-417057/2-A) and (MB 160-417057/22-A)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-417407

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-6 (180-86954-1), SGWC-7 (180-86954-2), SGWC-8 (180-86954-3), SGWC-10 (180-86954-5), SGWC-11 (180-86954-6), SGWC-12 (180-86954-7), SGWC-13 (180-86954-8), FB-2 (180-86954-10), EB-2 (180-86954-11), DUP-2 (180-86954-12), SGWC-15 (180-86954-13), SGWC-16 (180-86954-14), (LCS 160-417407/1-A), (MB 160-417407/23-A), (490-169056-D-1-B) and (490-169056-F-1-B DU)

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

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## Job ID: 180-86954-2 (Continued)

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### Laboratory: TestAmerica Pittsburgh (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19 *
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19 *
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19 *
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

## Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19 *
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Pittsburgh

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Laboratory: TestAmerica St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-86954-1	SGWC-6	Water	02/20/19 09:45	02/22/19 08:50
180-86954-2	SGWC-7	Water	02/20/19 11:00	02/22/19 08:50
180-86954-3	SGWC-8	Water	02/20/19 12:08	02/22/19 08:50
180-86954-4	SGWC-9	Water	02/20/19 09:13	02/22/19 08:50
180-86954-5	SGWC-10	Water	02/20/19 15:25	02/22/19 08:50
180-86954-6	SGWC-11	Water	02/20/19 11:09	02/22/19 08:50
180-86954-7	SGWC-12	Water	02/20/19 09:36	02/22/19 08:50
180-86954-8	SGWC-13	Water	02/20/19 10:05	02/22/19 08:50
180-86954-9	SGWC-14	Water	02/20/19 09:25	02/22/19 08:50
180-86954-10	FB-2	Water	02/20/19 13:25	02/22/19 08:50
180-86954-11	EB-2	Water	02/20/19 12:00	02/22/19 08:50
180-86954-12	DUP-2	Water	02/20/19 00:00	02/22/19 08:50
180-86954-13	SGWC-15	Water	02/20/19 11:36	02/22/19 08:50
180-86954-14	SGWC-16	Water	02/20/19 13:07	02/22/19 08:50
180-86954-15	SGWC-17	Water	02/20/19 13:15	02/22/19 08:50
180-86954-16	SGWC-18	Water	02/20/19 14:16	02/22/19 08:50
180-86954-17	SGWC-19	Water	02/20/19 15:56	02/22/19 08:50
180-86954-18	SGWC-20	Water	02/20/19 14:25	02/22/19 08:50
180-86954-19	SGWC-21	Water	02/20/19 09:54	02/22/19 08:50
180-86954-20	FB-3	Water	02/20/19 16:30	02/22/19 08:50
180-86954-21	EB-3	Water	02/20/19 16:15	02/22/19 08:50
180-86954-22	DUP-3	Water	02/20/19 00:00	02/22/19 08:50

# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

#### Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-6**

**Date Collected: 02/20/19 09:45**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.97 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.97 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-7**

**Date Collected: 02/20/19 11:00**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.17 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.17 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-8**

**Date Collected: 02/20/19 12:08**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.76 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.76 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-9**

**Date Collected: 02/20/19 09:13**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-86954-4**

**Date Collected: 02/20/19 09:13**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420408	03/21/19 05:55	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-86954-5**

**Date Collected: 02/20/19 15:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.94 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.94 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-86954-6**

**Date Collected: 02/20/19 11:09**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.60 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.60 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

**Date Collected: 02/20/19 09:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.83 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

**Date Collected: 02/20/19 09:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.83 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:40	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-86954-8**

**Date Collected: 02/20/19 10:05**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.35 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.35 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-86954-9**

**Date Collected: 02/20/19 09:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.67 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420408	03/21/19 05:55	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.67 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

**Date Collected: 02/20/19 13:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.49 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL

TestAmerica Pittsburgh



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

**Date Collected: 02/20/19 13:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			421036	03/25/19 07:54	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.49 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-2**

**Lab Sample ID: 180-86954-11**

**Date Collected: 02/20/19 12:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.44 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421039	03/25/19 07:56	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.44 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: DUP-2**

**Lab Sample ID: 180-86954-12**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.70 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421039	03/25/19 07:56	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.70 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-86954-13**

**Date Collected: 02/20/19 11:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.45 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-86954-13**

**Date Collected: 02/20/19 11:36**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			421039	03/25/19 07:56	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.45 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-86954-14**

**Date Collected: 02/20/19 13:07**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	417390	03/01/19 09:46	LTC	TAL SL
Total/NA	Analysis	9315		1			421039	03/25/19 07:56	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	417407	03/01/19 11:52	LTC	TAL SL
Total/NA	Analysis	9320		1			419763	03/18/19 09:41	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-86954-15**

**Date Collected: 02/20/19 13:15**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.56 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420407	03/21/19 05:56	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			999.56 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-86954-16**

**Date Collected: 02/20/19 14:16**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.36 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-86954-16**

**Date Collected: 02/20/19 14:16**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420407	03/21/19 05:56	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.36 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-19**

**Lab Sample ID: 180-86954-17**

**Date Collected: 02/20/19 15:56**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.80 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.80 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-86954-18**

**Date Collected: 02/20/19 14:25**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.18 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.18 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

**Date Collected: 02/20/19 09:54**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.59 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

**Date Collected: 02/20/19 09:54**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.59 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-3**

**Lab Sample ID: 180-86954-20**

**Date Collected: 02/20/19 16:30**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.47 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			999.47 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:11	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-3**

**Lab Sample ID: 180-86954-21**

**Date Collected: 02/20/19 16:15**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.35 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.35 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:12	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			999.77 mL	1.0 g	417027	02/27/19 09:24	LTC	TAL SL

TestAmerica Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

**Date Collected: 02/20/19 00:00**

**Matrix: Water**

**Date Received: 02/22/19 08:50**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9315		1			420407	03/21/19 05:57	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			999.77 mL	1.0 g	417057	02/27/19 13:04	LTC	TAL SL
Total/NA	Analysis	9320		1			419467	03/15/19 09:12	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			421660	03/28/19 15:47	CDR	TAL SL
Instrument ID: NOEQUIP										

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

**Analyst References:**

Lab: TAL SL

Batch Type: Prep

LTC = Logan Curtright

Batch Type: Analysis

CDR = Conrad Reuscher

KLS = Kody Saulters

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-6**  
**Date Collected: 02/20/19 09:45**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-1**  
**Matrix: Water**

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0465	U	0.0407	0.0409	1.00	0.111	pCi/L	03/01/19 09:46	03/25/19 07:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					03/01/19 09:46	03/25/19 07:54	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.250	U	0.211	0.213	1.00	0.336	pCi/L	03/01/19 11:52	03/18/19 09:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	84.5		40 - 110					03/01/19 11:52	03/18/19 09:40	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.250	U	0.215	0.217	5.00	0.336	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-7**  
**Date Collected: 02/20/19 11:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-2**  
**Matrix: Water**

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0665	U	0.0597	0.0600	1.00	0.0882	pCi/L	03/01/19 09:46	03/25/19 07:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					03/01/19 09:46	03/25/19 07:54	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.367		0.226	0.228	1.00	0.342	pCi/L	03/01/19 11:52	03/18/19 09:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	84.5		40 - 110					03/01/19 11:52	03/18/19 09:40	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-7**  
Date Collected: 02/20/19 11:00  
Date Received: 02/22/19 08:50

**Lab Sample ID: 180-86954-2**  
Matrix: Water

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.433		0.234	0.236	5.00	0.342	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-8**  
Date Collected: 02/20/19 12:08  
Date Received: 02/22/19 08:50

**Lab Sample ID: 180-86954-3**  
Matrix: Water

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.387		0.127	0.131	1.00	0.126	pCi/L	03/01/19 09:46	03/25/19 07:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.0		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.11		0.371	0.419	1.00	0.388	pCi/L	03/01/19 11:52	03/18/19 09:40	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.0		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	86.0		40 - 110					03/01/19 11:52	03/18/19 09:40	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.50		0.392	0.439	5.00	0.388	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-9**  
Date Collected: 02/20/19 09:13  
Date Received: 02/22/19 08:50

**Lab Sample ID: 180-86954-4**  
Matrix: Water

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0400	U	0.0594	0.0595	1.00	0.102	pCi/L	02/27/19 09:24	03/21/19 05:55	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.6		40 - 110					02/27/19 09:24	03/21/19 05:55	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-86954-4**

Date Collected: 02/20/19 09:13

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.385		0.243	0.246	1.00	0.372	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.6		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	84.1		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.425		0.250	0.253	5.00	0.372	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-86954-5**

Date Collected: 02/20/19 15:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0159	U	0.0468	0.0468	1.00	0.0913	pCi/L	03/01/19 09:46	03/25/19 07:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.6		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.277	U	0.185	0.186	1.00	0.394	pCi/L	03/01/19 11:52	03/18/19 09:40	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.6		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	81.9		40 - 110					03/01/19 11:52	03/18/19 09:40	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0159	U	0.191	0.192	5.00	0.394	pCi/L		03/28/19 15:47	1



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-86954-6**

Date Collected: 02/20/19 11:09

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0761	U	0.0697	0.0701	1.00	0.107	pCi/L	03/01/19 09:46	03/25/19 07:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.632		0.250	0.256	1.00	0.342	pCi/L	03/01/19 11:52	03/18/19 09:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	82.2		40 - 110					03/01/19 11:52	03/18/19 09:40	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.708		0.260	0.265	5.00	0.342	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

Date Collected: 02/20/19 09:36

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0520	U	0.0569	0.0571	1.00	0.0901	pCi/L	03/01/19 09:46	03/25/19 07:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.109	U	0.207	0.207	1.00	0.353	pCi/L	03/01/19 11:52	03/18/19 09:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					03/01/19 11:52	03/18/19 09:40	1
Y Carrier	84.1		40 - 110					03/01/19 11:52	03/18/19 09:40	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-86954-7**

Date Collected: 02/20/19 09:36

Matrix: Water

Date Received: 02/22/19 08:50

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.161	U	0.215	0.215	5.00	0.353	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-86954-8**

Date Collected: 02/20/19 10:05

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0120	U	0.0358	0.0358	1.00	0.0892	pCi/L	03/01/19 09:46	03/25/19 07:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.9		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.222	U	0.223	0.224	1.00	0.362	pCi/L	03/01/19 11:52	03/18/19 09:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.9		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	84.1		40 - 110					03/01/19 11:52	03/18/19 09:41	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.222	U	0.226	0.227	5.00	0.362	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-86954-9**

Date Collected: 02/20/19 09:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0754	U	0.0640	0.0643	1.00	0.0938	pCi/L	02/27/19 09:24	03/21/19 05:55	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/27/19 09:24	03/21/19 05:55	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-86954-9**

Date Collected: 02/20/19 09:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0719	U	0.189	0.189	1.00	0.328	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	85.6		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.147	U	0.200	0.200	5.00	0.328	pCi/L		03/28/19 15:47	1

**Client Sample ID: FB-2**

**Lab Sample ID: 180-86954-10**

Date Collected: 02/20/19 13:25

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0337	U	0.0566	0.0567	1.00	0.0994	pCi/L	03/01/19 09:46	03/25/19 07:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					03/01/19 09:46	03/25/19 07:54	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0123	U	0.194	0.194	1.00	0.349	pCi/L	03/01/19 11:52	03/18/19 09:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	84.5		40 - 110					03/01/19 11:52	03/18/19 09:41	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0460	U	0.202	0.202	5.00	0.349	pCi/L		03/28/19 15:47	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: EB-2**

**Lab Sample ID: 180-86954-11**

Date Collected: 02/20/19 12:00

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.0458	0.0458	1.00	0.0960	pCi/L	03/01/19 09:46	03/25/19 07:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					03/01/19 09:46	03/25/19 07:56	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0694	U	0.199	0.200	1.00	0.347	pCi/L	03/01/19 11:52	03/18/19 09:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	84.9		40 - 110					03/01/19 11:52	03/18/19 09:41	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0694	U	0.204	0.205	5.00	0.347	pCi/L		03/28/19 15:47	1

**Client Sample ID: DUP-2**

**Lab Sample ID: 180-86954-12**

Date Collected: 02/20/19 00:00

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>0.461</b>		0.129	0.135	1.00	0.0940	pCi/L	03/01/19 09:46	03/25/19 07:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					03/01/19 09:46	03/25/19 07:56	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>2.61</b>		0.422	0.485	1.00	0.387	pCi/L	03/01/19 11:52	03/18/19 09:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	79.3		40 - 110					03/01/19 11:52	03/18/19 09:41	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: DUP-2**  
**Date Collected: 02/20/19 00:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-12**  
**Matrix: Water**

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	3.07		0.441	0.503	5.00	0.387	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-15**  
**Date Collected: 02/20/19 11:36**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-13**  
**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0201	U	0.0527	0.0528	1.00	0.100	pCi/L	03/01/19 09:46	03/25/19 07:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		40 - 110					03/01/19 09:46	03/25/19 07:56	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.552		0.262	0.267	1.00	0.376	pCi/L	03/01/19 11:52	03/18/19 09:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	86.4		40 - 110					03/01/19 11:52	03/18/19 09:41	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.573		0.267	0.272	5.00	0.376	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-16**  
**Date Collected: 02/20/19 13:07**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-14**  
**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0130	U	0.0366	0.0366	1.00	0.0727	pCi/L	03/01/19 09:46	03/25/19 07:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					03/01/19 09:46	03/25/19 07:56	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-86954-14**

Date Collected: 02/20/19 13:07

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0554	U	0.168	0.168	1.00	0.295	pCi/L	03/01/19 11:52	03/18/19 09:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	103		40 - 110					03/01/19 11:52	03/18/19 09:41	1
Y Carrier	89.0		40 - 110					03/01/19 11:52	03/18/19 09:41	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0684	U	0.172	0.172	5.00	0.295	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-86954-15**

Date Collected: 02/20/19 13:15

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0255	U	0.0622	0.0623	1.00	0.114	pCi/L	02/27/19 09:24	03/21/19 05:56	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/27/19 09:24	03/21/19 05:56	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.252	U	0.229	0.230	1.00	0.369	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	81.9		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.278	U	0.237	0.238	5.00	0.369	pCi/L		03/28/19 15:47	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-18**

Date Collected: 02/20/19 14:16

Date Received: 02/22/19 08:50

**Lab Sample ID: 180-86954-16**

Matrix: Water

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0745	U	0.0647	0.0651	1.00	0.0941	pCi/L	02/27/19 09:24	03/21/19 05:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					02/27/19 09:24	03/21/19 05:56	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0647	U	0.206	0.206	1.00	0.360	pCi/L	02/27/19 13:04	03/15/19 09:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	83.0		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.139	U	0.216	0.216	5.00	0.360	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-19**

Date Collected: 02/20/19 15:56

Date Received: 02/22/19 08:50

**Lab Sample ID: 180-86954-17**

Matrix: Water

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0282	U	0.0562	0.0563	1.00	0.102	pCi/L	02/27/19 09:24	03/21/19 05:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					02/27/19 09:24	03/21/19 05:57	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0854	U	0.214	0.214	1.00	0.369	pCi/L	02/27/19 13:04	03/15/19 09:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	86.7		40 - 110					02/27/19 13:04	03/15/19 09:11	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-19**

**Date Collected: 02/20/19 15:56**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-17**

**Matrix: Water**

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.114	U	0.221	0.221	5.00	0.369	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-20**

**Date Collected: 02/20/19 14:25**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-18**

**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0116	U	0.0484	0.0484	1.00	0.0965	pCi/L	02/27/19 09:24	03/21/19 05:57	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.2		40 - 110					02/27/19 09:24	03/21/19 05:57	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.341		0.219	0.221	1.00	0.335	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.2		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	88.2		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.353		0.224	0.226	5.00	0.335	pCi/L		03/28/19 15:47	1

**Client Sample ID: SGWC-21**

**Date Collected: 02/20/19 09:54**

**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-19**

**Matrix: Water**

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0499	U	0.0543	0.0545	1.00	0.0851	pCi/L	02/27/19 09:24	03/21/19 05:57	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					02/27/19 09:24	03/21/19 05:57	1



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-86954-19**

Date Collected: 02/20/19 09:54

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.189	U	0.197	0.198	1.00	0.321	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	84.5		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.239	U	0.204	0.205	5.00	0.321	pCi/L		03/28/19 15:47	1

**Client Sample ID: FB-3**

**Lab Sample ID: 180-86954-20**

Date Collected: 02/20/19 16:30

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.0501	0.0501	1.00	0.106	pCi/L	02/27/19 09:24	03/21/19 05:57	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.1		40 - 110					02/27/19 09:24	03/21/19 05:57	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.631		0.257	0.264	1.00	0.355	pCi/L	02/27/19 13:04	03/15/19 09:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.1		40 - 110					02/27/19 13:04	03/15/19 09:11	1
Y Carrier	81.5		40 - 110					02/27/19 13:04	03/15/19 09:11	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.631		0.262	0.269	5.00	0.355	pCi/L		03/28/19 15:47	1

TestAmerica Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

**Client Sample ID: EB-3**

**Lab Sample ID: 180-86954-21**

Date Collected: 02/20/19 16:15

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0190	U	0.0462	0.0463	1.00	0.0882	pCi/L	02/27/19 09:24	03/21/19 05:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					02/27/19 09:24	03/21/19 05:57	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.113	U	0.197	0.197	1.00	0.335	pCi/L	02/27/19 13:04	03/15/19 09:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					02/27/19 13:04	03/15/19 09:12	1
Y Carrier	84.5		40 - 110					02/27/19 13:04	03/15/19 09:12	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.132	U	0.202	0.202	5.00	0.335	pCi/L		03/28/19 15:47	1

**Client Sample ID: DUP-3**

**Lab Sample ID: 180-86954-22**

Date Collected: 02/20/19 00:00

Matrix: Water

Date Received: 02/22/19 08:50

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00540	U	0.0426	0.0426	1.00	0.0900	pCi/L	02/27/19 09:24	03/21/19 05:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					02/27/19 09:24	03/21/19 05:57	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.00206	U	0.176	0.176	1.00	0.321	pCi/L	02/27/19 13:04	03/15/19 09:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					02/27/19 13:04	03/15/19 09:12	1
Y Carrier	85.6		40 - 110					02/27/19 13:04	03/15/19 09:12	1

# Client Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
 SDG: Ash

**Client Sample ID: DUP-3**  
**Date Collected: 02/20/19 00:00**  
**Date Received: 02/22/19 08:50**

**Lab Sample ID: 180-86954-22**  
**Matrix: Water**

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.00540	U	0.181	0.181	5.00	0.321	pCi/L		03/28/19 15:47	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Method: 9315 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-417027/22-A**  
**Matrix: Water**  
**Analysis Batch: 420396**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417027**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.02977	U	0.0576	0.0577	1.00	0.104	pCi/L	02/27/19 09:24	03/21/19 06:02	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110	02/27/19 09:24				03/21/19 06:02	1

**Lab Sample ID: LCS 160-417027/1-A**  
**Matrix: Water**  
**Analysis Batch: 420408**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417027**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	8.935		0.957	1.00	0.0854	pCi/L	79	68 - 137
Carrier	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
Ba Carrier	%Yield	Qualifier		40 - 110	02/27/19 09:24				03/21/19 06:02

**Lab Sample ID: LCSD 160-417027/2-A**  
**Matrix: Water**  
**Analysis Batch: 420408**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 417027**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
				Uncert. (2σ+/-)							
Radium-226	11.4	10.07		1.05	1.00	0.110	pCi/L	89	68 - 137	0.57	1
Carrier	LCSD LCSD		Limits			Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier		40 - 110	03/01/19 09:46				03/25/19 07:57	1	

**Lab Sample ID: MB 160-417390/23-A**  
**Matrix: Water**  
**Analysis Batch: 421039**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417390**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.006973	U	0.0390	0.0390	1.00	0.0890	pCi/L	03/01/19 09:46	03/25/19 07:57	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110	03/01/19 09:46				03/25/19 07:57	1

**Lab Sample ID: LCS 160-417390/1-A**  
**Matrix: Water**  
**Analysis Batch: 421036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417390**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.017		0.967	1.00	0.0734	pCi/L	79	68 - 137

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Method: 9315 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-417390/1-A**  
**Matrix: Water**  
**Analysis Batch: 421036**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417390**

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	104		40 - 110

## Method: 9320 - Radium-228 (GFPC)

**Lab Sample ID: MB 160-417057/22-A**  
**Matrix: Water**  
**Analysis Batch: 419466**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417057**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.08180	U	0.190	0.191	1.00	0.328	pCi/L	02/27/19 13:04	03/15/19 09:08	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	02/27/19 13:04	03/15/19 09:08	1
Y Carrier	85.2		40 - 110	02/27/19 13:04	03/15/19 09:08	1

**Lab Sample ID: LCS 160-417057/1-A**  
**Matrix: Water**  
**Analysis Batch: 419467**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417057**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.39	9.258		1.06	1.00	0.352	pCi/L	99	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	101		40 - 110
Y Carrier	87.1		40 - 110

**Lab Sample ID: LCSD 160-417057/2-A**  
**Matrix: Water**  
**Analysis Batch: 419467**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 417057**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	9.39	9.523		1.09	1.00	0.352	pCi/L	101	56 - 140	0.12	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	99.1		40 - 110
Y Carrier	84.5		40 - 110

**Lab Sample ID: MB 160-417407/23-A**  
**Matrix: Water**  
**Analysis Batch: 419763**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 417407**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09456	U	0.216	0.216	1.00	0.371	pCi/L	03/01/19 11:52	03/18/19 09:42	1

TestAmerica Pittsburgh

# QC Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
 SDG: Ash

Carrier	MB MB		Limits
	%Yield	Qualifier	
Ba Carrier	104		40 - 110
Y Carrier	88.6		40 - 110

Prepared	Analyzed	Dil Fac
03/01/19 11:52	03/18/19 09:42	1
03/01/19 11:52	03/18/19 09:42	1

**Lab Sample ID: LCS 160-417407/1-A**  
**Matrix: Water**  
**Analysis Batch: 419763**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 417407**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.
									Limits
Radium-228	9.39	8.980		1.03	1.00	0.319	pCi/L	96	56 - 140

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	104		40 - 110
Y Carrier	85.6		40 - 110

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# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Rad

### Prep Batch: 417027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-4	SGWC-9	Total/NA	Water	PrecSep-21	
180-86954-9	SGWC-14	Total/NA	Water	PrecSep-21	
180-86954-15	SGWC-17	Total/NA	Water	PrecSep-21	
180-86954-16	SGWC-18	Total/NA	Water	PrecSep-21	
180-86954-17	SGWC-19	Total/NA	Water	PrecSep-21	
180-86954-18	SGWC-20	Total/NA	Water	PrecSep-21	
180-86954-19	SGWC-21	Total/NA	Water	PrecSep-21	
180-86954-20	FB-3	Total/NA	Water	PrecSep-21	
180-86954-21	EB-3	Total/NA	Water	PrecSep-21	
180-86954-22	DUP-3	Total/NA	Water	PrecSep-21	
MB 160-417027/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417027/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-417027/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 417057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-4	SGWC-9	Total/NA	Water	PrecSep_0	
180-86954-9	SGWC-14	Total/NA	Water	PrecSep_0	
180-86954-15	SGWC-17	Total/NA	Water	PrecSep_0	
180-86954-16	SGWC-18	Total/NA	Water	PrecSep_0	
180-86954-17	SGWC-19	Total/NA	Water	PrecSep_0	
180-86954-18	SGWC-20	Total/NA	Water	PrecSep_0	
180-86954-19	SGWC-21	Total/NA	Water	PrecSep_0	
180-86954-20	FB-3	Total/NA	Water	PrecSep_0	
180-86954-21	EB-3	Total/NA	Water	PrecSep_0	
180-86954-22	DUP-3	Total/NA	Water	PrecSep_0	
MB 160-417057/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-417057/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-417057/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

### Prep Batch: 417390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total/NA	Water	PrecSep-21	
180-86954-2	SGWC-7	Total/NA	Water	PrecSep-21	
180-86954-3	SGWC-8	Total/NA	Water	PrecSep-21	
180-86954-5	SGWC-10	Total/NA	Water	PrecSep-21	
180-86954-6	SGWC-11	Total/NA	Water	PrecSep-21	
180-86954-7	SGWC-12	Total/NA	Water	PrecSep-21	
180-86954-8	SGWC-13	Total/NA	Water	PrecSep-21	
180-86954-10	FB-2	Total/NA	Water	PrecSep-21	
180-86954-11	EB-2	Total/NA	Water	PrecSep-21	
180-86954-12	DUP-2	Total/NA	Water	PrecSep-21	
180-86954-13	SGWC-15	Total/NA	Water	PrecSep-21	
180-86954-14	SGWC-16	Total/NA	Water	PrecSep-21	
MB 160-417390/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-417390/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

### Prep Batch: 417407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-1	SGWC-6	Total/NA	Water	PrecSep_0	
180-86954-2	SGWC-7	Total/NA	Water	PrecSep_0	

TestAmerica Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-86954-2  
SDG: Ash

## Rad (Continued)

### Prep Batch: 417407 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-86954-3	SGWC-8	Total/NA	Water	PrecSep_0	
180-86954-5	SGWC-10	Total/NA	Water	PrecSep_0	
180-86954-6	SGWC-11	Total/NA	Water	PrecSep_0	
180-86954-7	SGWC-12	Total/NA	Water	PrecSep_0	
180-86954-8	SGWC-13	Total/NA	Water	PrecSep_0	
180-86954-10	FB-2	Total/NA	Water	PrecSep_0	
180-86954-11	EB-2	Total/NA	Water	PrecSep_0	
180-86954-12	DUP-2	Total/NA	Water	PrecSep_0	
180-86954-13	SGWC-15	Total/NA	Water	PrecSep_0	
180-86954-14	SGWC-16	Total/NA	Water	PrecSep_0	
MB 160-417407/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-417407/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	





180-86954 Chain of Custody

TestAmerica Pittsburgh  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15236-2907  
phone 412.963.7058 fax 412.963.2468

# Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Dawn Prell  
Tel/Fax: 248-638-5445

Client Contact  
Southern Company  
241 Ralph McGill Blvd SE B10185  
Atlanta, GA, 30308  
(404) 506-7239 Phone  
FAX

Project Name: GPC Plant Scherer  
Site: Ash Pond  
P.O. # 166235018

Site Contact: Travis Martinez  
Lab Contact: Veronica Bortot

Date: \_\_\_\_\_  
Carrier: \_\_\_\_\_

COC No: 1 of 2 COCs  
Sampler: \_\_\_\_\_  
For Lab Use Only:  
Walk-In Client: \_\_\_\_\_  
Lab Sampling: \_\_\_\_\_  
Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:			
								300_ORGM_28D-Fluoride	9316_Ra226, 9320_Ra228		
SGWC-6	02/20/19	9:45	G	GW	4	N		1	1	2	
SGWC-7	02/20/19	11:00	G	GW	4	N		1	1	2	
SGWC-8	02/20/19	12:08	G	GW	4	N		1	1	2	
SGWC-9	02/21/19	09:13	G	GW	4	N		1	1	2	Extra Radium - (2 x 1/2 Gall)
SGWC-10	02/20/19	15:25	G	GW	4	N		1	1	2	
SGWC-11	02/20/19	11:09	G	GW	4	N		1	1	2	
SGWC-12	02/20/19	09:38	G	GW	4	N		1	1	2	
SGWC-13	02/20/19	10:05	G	GW	4	N		1	1	2	
SGWC-14	02/21/19	09:25	G	GW	4	N		1	1	2	Extra Radium - (2 x 1/2 Gall)
FB-2	02/20/19	13:25	G	W	4	N		1	1	2	
EB-2	02/20/19	12:00	G	W	4	N		1	1	2	
DUP-2	02/20/19	-	G	GW	4	N		1	1	2	
						4	1	4			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Biodegradable  Skin Irritant  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Custody Seal No.: \_\_\_\_\_

Relinquished by: *Jean De* Date/Time: 2/21/19  
Company: *Gold*

Relinquished by: *Ray* Date/Time: 16:10  
Company: *TA*

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_

Received by: *Ray* Date/Time: 2/21/19  
Company: *TA*

Received in Laboratory by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_  
Cooler Temp. (C): Obs'd: \_\_\_\_\_  
Company: \_\_\_\_\_  
Date/Time: 2/21/19

Form No. CA-C-WJ-002, Rev. 4.18, dated 9/5/2018



**Chain of Custody Record**

**TestAmerica Pittsburgh**  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15238-2907  
phone 412.963.7056 fax 412.963.2488

**TestAmerica Laboratories, Inc.**

**Regulatory Program:**  DW  NPDES  RCRA  Other: \_\_\_\_\_

**Project Manager:** Dawn Prell **Site Contact:** Travis Martinez

**Tel/Fax:** 248-536-5445 **Lab Contact:** Veronica Bortot

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
 TAT: If different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Perform MS / MSD (Y / N)		Sample Specific Notes:
						Filtered Sample (Y / N)	Other	
SGWC-15	02/20/19	11:36	G	GW	4	N		6020 - Sb,As,Ba,Be,Cd,Cr,Co,Pb,Li,Mo,Se, Ti, 7470A - Hg
SGWC-16	02/20/19	13:07	G	GW	4	N		300 ORGFM, 28D-Fluoride
SGWC-17	02/20/19	13:15	G	GW	4	N		9315 Ra226, 9320 Ra228, Ra226Ra228, GFPC
SGWC-18	02/20/19	14:16	G	GW	4	N		
SGWC-19	02/20/19	15:56	G	GW	4	N		
SGWC-20	02/20/19	14:25	G	GW	4	N		
SGWC-21	02/21/19	09:54	G	GW	6	N		Extra Radium
FB-3	02/20/19	16:30	G	W	4	N		
EB-3	02/20/19	16:15	G	W	4	N		
DUP-3	02/20/19	-	G	GW	4	N		

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Unknown

**Special Instructions/QC Requirements & Comments:** Attorney Client Privilege. Report J-Flags.

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**

Therm ID No.:	Company:	Date/Time:
	JA	2/21/19
		18:55

**Custody Seal No.:** \_\_\_\_\_

**Relinquished by:** *[Signature]* **Company:** Golden Associates

**Relinquished by:** *[Signature]* **Company:** 1610

**Relinquished by:** *[Signature]* **Company:** \_\_\_\_\_

**Received by:** *[Signature]* **Company:** \_\_\_\_\_

**Received by:** *[Signature]* **Company:** \_\_\_\_\_

**Received in Laboratory by:** \_\_\_\_\_

**Cooler Temp. (°C):** \_\_\_\_\_



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RITZ EXP 10/19

RITZ EXP 10/19

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21 FEB 2019  
ACTWGT: 56.90 LBS  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7868  
REF: SOUTHERN CO.

(US)



ICC THE COMPLIANCE CENTER INC.

transport only: ... HIGHWAY OR RAIL

Printed in C

4 of 6

MPS# 4651 0080 6549  
0263

Mstr# 4651 0080 6516

0201

FRI - 22 FEB 3:00P  
STANDARD OVERNIGHT

# NA AGCA

15238

PA-US PIT 994

31046



Uncorrected temp 21 °C  
Thermometer ID 10

CF 0 Initials JS

PT-WI-SR-001 effective 11/8/18

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RITZ EXP 10/19

722359

Test America

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

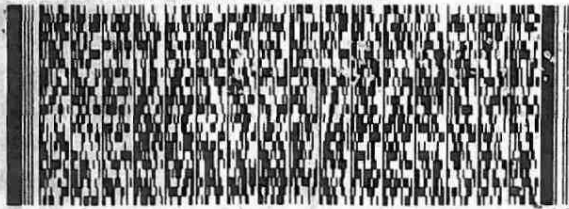
SHIP DATE: 21FEB19  
ACTWGT: 56.80 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 863-7068  
REF: SOUTHERN CO.



FedEx  
Express



6 of 6

MPS# 0263 4651 0080 6560

Mstr# 4651 0080 6516

0201

FRI - 22 FEB 3:00P  
STANDARD OVERNIGHT

**NA AGCA**

15238  
PA-U.S PIT

Uncorrected temp  
Thermometer ID

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18

15  
10 °C

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# AtAmerica

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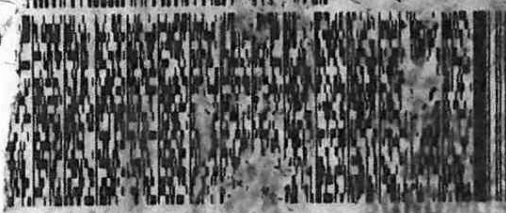
Part # 159469-424 (1) 12 EXP 10/19

MULA (678) 966-9991  
LOR  
CA ATLANTA  
OUGH DRIVE  
GA 30093  
TATES US

SHIP DATE: 21 FEB 19  
ACTWT: 58.90 LB  
CAD: 859176/CAFE32L1

BILL RECIPIENT

PLE RECEIVING  
PITTSBURGH  
ALPHA DRIVE  
PARK  
PITTSBURGH PA 15238  
7068  
SOUTHERN CO



FedEx  
Express



1 of 6  
4651 0060 6516  
ASTER ##

Feb - 22 FEB 3:00P  
STANDARD OVERNIGHT

**A AGCA**  
Uncorrected Temp  
Thermometer ID

15238  
PA-US PIT

CF 0 Initials 19 10 °C  
PT-VLSR-COT



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THE LEADER IN ENVIRONMENTAL TESTING

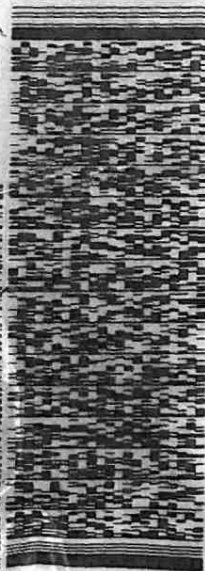
ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
8500 HCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21FEB19  
ACTWT: 56.80 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING  
TA PITTSBURGH  
301 ALPHA DRIVE  
RIDC PARK  
PITTSBURGH PA 15238

(412) 963-7068  
REF: SOUTHERN CO.



2 of 6  
MPS# 4651 0080 6527  
Mstr# 4651 0080 6516

# NA AGCA

15238  
PA-US  
PIT

Uncorrected temp 23 °C  
Thermometer ID 10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



Part # 159469-434 RIT2 EXP 10/19

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
8500 HCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 21FEB19  
ACTWT: 56.80 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING  
TA PITTSBURGH  
301 ALPHA DRIVE  
RIDC PARK  
PITTSBURGH PA 15238

(412) 963-7068  
REF: SOUTHERN CO.



5 of 6  
MPS# 4651 0080 6550  
Mstr# 4651 0080 6516

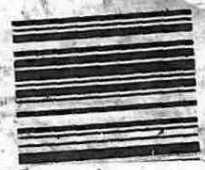
# NA AGCA

15238  
PA-US  
PIT

Uncorrected temp 19 °C  
Thermometer ID 10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



This package conforms to 49 CFR 173.4 for domestic highway or transport only.

IC: THE COMPLIANCE CENTER INC.

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## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86954-2

SDG Number: Ash

**Login Number: 86954**

**List Number: 1**

**Creator: Watson, Debbie**

**List Source: TestAmerica Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86954-2

SDG Number: Ash

**Login Number: 86954**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: TestAmerica St. Louis**

**List Creation: 02/26/19 03:31 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-86954-2

SDG Number: Ash

**Login Number: 86954**  
**List Number: 3**  
**Creator: Hellm, Michael**

**List Source: TestAmerica St. Louis**  
**List Creation: 02/26/19 04:08 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**APPENDIX A**

# **ANALYTICAL RESULTS**

**March/April 2019**

## ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15238  
Tel: (412)963-7058

Laboratory Job ID: 180-88347-1

Laboratory Sample Delivery Group: Ash Pond  
Client Project/Site: CCR - Plant Scherer

**For:**

Southern Company  
241 Ralph McGill Blvd SE  
B10185  
Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:  
5/10/2019 2:22:50 PM

Veronica Bortot, Senior Project Manager  
(412)963-2435  
[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416

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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Job ID: 180-88347-1**

**Laboratory: Eurofins TestAmerica, Pittsburgh**

## Narrative

### Job Narrative 180-88347-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 3/30/2019 10:00 AM, 4/3/2019 9:40 AM and 4/4/2019 8:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 9 coolers at receipt time were 1.2° C, 1.3° C, 1.3° C, 1.5° C, 2.1° C, 3.1° C, 3.1° C, 3.5° C and 4.8° C.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### RAD

Method(s) PrecSep-21: Radium 226 Prep Batch 160-423239:

Insufficient sample volume was available to perform a sample duplicate for the following samples: SGWC22 (180-88533-8), SGWC23 (180-88533-9), FB-3 (AP) (180-88533-10), EB-3 (AP) (180-88533-11) and FD-3 (AP) (180-88533-12). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-423240:

Insufficient sample volume was available to perform a sample duplicate for the following samples: SGWC22 (180-88533-8), SGWC23 (180-88533-9), FB-3 (AP) (180-88533-10), EB-3 (AP) (180-88533-11) and FD-3 (AP) (180-88533-12). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-423241:

Insufficient sample volume was available to perform a sample duplicate for the following samples: SGWC-7 (180-88428-1), SGWC-8 (180-88428-2), SGWC-9 (180-88428-3), SGWC-10 (180-88428-4), SGWC-11 (180-88428-5), SGWC-12 (180-88428-6), SGWC-13 (180-88428-7), SGWC-14 (180-88428-8), SGWC-15 (180-88428-9), EB-2 (AP) (180-88428-10), FB-2 (AP) (180-88428-11), FD-2 (AP) (180-88428-12), SGWC-6 (180-88533-1), SGWC-16 (180-88533-2), SGWC-17 (180-88533-3), SGWC-18 (180-88533-4), SGWC-19 (180-88533-5), SGWC-20 (180-88533-6) and SGWC-21 (180-88533-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-423242:

Insufficient sample volume was available to perform a sample duplicate for the following samples: SGWC-7 (180-88428-1), SGWC-8 (180-88428-2), SGWC-9 (180-88428-3), SGWC-10 (180-88428-4), SGWC-11 (180-88428-5), SGWC-12 (180-88428-6), SGWC-13 (180-88428-7), SGWC-14 (180-88428-8), SGWC-15 (180-88428-9), EB-2 (AP) (180-88428-10), FB-2 (AP) (180-88428-11), FD-2 (AP) (180-88428-12), SGWC-6 (180-88533-1), SGWC-16 (180-88533-2), SGWC-17 (180-88533-3), SGWC-18 (180-88533-4), SGWC-19 (180-88533-5), SGWC-20 (180-88533-6) and SGWC-21 (180-88533-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium-226 Prep Batch 160-423612:

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with preparation batch 160-423612. An LCS/LCSD was created to demonstrate precision.

Method(s) PrecSep\_0: Radium-228 Prep Batch 160-423844:

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Job ID: 180-88347-1 (Continued)

### Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with preparation batch 160-423844.

Method(s) 904.0, 9320: Radium-228 Prep Batch 160-423242

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-7 (180-88428-1), SGWC-8 (180-88428-2), SGWC-9 (180-88428-3), SGWC-10 (180-88428-4), SGWC-11 (180-88428-5), SGWC-12 (180-88428-6), SGWC-13 (180-88428-7), SGWC-14 (180-88428-8), SGWC-15 (180-88428-9), EB-2 (AP) (180-88428-10), FB-2 (AP) (180-88428-11), FD-2 (AP) (180-88428-12), SGWC-6 (180-88533-1), SGWC-16 (180-88533-2), SGWC-17 (180-88533-3), SGWC-18 (180-88533-4), SGWC-19 (180-88533-5), SGWC-20 (180-88533-6), SGWC-21 (180-88533-7), (LCS 160-423242/1-A), (LCSD 160-423242/2-A) and (MB 160-423242/23-A)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-423240

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC22 (180-88533-8), SGWC23 (180-88533-9), FB-3 (AP) (180-88533-10), EB-3 (AP) (180-88533-11), FD-3 (AP) (180-88533-12), (LCS 160-423240/1-A) and (LCSD 160-423240/2-A)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-423240

Ra-228 batch 423240 started counting on GFPC on 4/19/2019. The MB count associated with the batch failed to start. However, all the samples reported in this batch exhibited activity below the MDC. All other QC parameters are within limits. The laboratory does not believe this excursion adversely affects the sample data.

SGWC22 (180-88533-8), SGWC23 (180-88533-9), FB-3 (AP) (180-88533-10), EB-3 (AP) (180-88533-11), FD-3 (AP) (180-88533-12), (LCS 160-423240/1-A) and (LCSD 160-423240/2-A)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-423844

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-4 (180-88347-1), SGWA-5 (180-88347-2), SGWA-25 (180-88347-3), SGWA-3 (180-88347-4), FD-1 (AP) (180-88347-5), FB-1 (AP) (180-88347-6), EB-1 (AP) (180-88347-7), SGWA-1 (180-88347-8), SGWA-2 (180-88347-9), SGWA-24 (180-88347-10), (LCS 160-423844/1-A), (LCSD 160-423844/2-A) and (MB 160-423844/23-A)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-423241

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-7 (180-88428-1), SGWC-8 (180-88428-2), SGWC-9 (180-88428-3), SGWC-10 (180-88428-4), SGWC-11 (180-88428-5), SGWC-12 (180-88428-6), SGWC-13 (180-88428-7), SGWC-14 (180-88428-8), SGWC-15 (180-88428-9), EB-2 (AP) (180-88428-10), FB-2 (AP) (180-88428-11), SGWC-16 (180-88533-2), SGWC-17 (180-88533-3), SGWC-18 (180-88533-4), SGWC-19 (180-88533-5), SGWC-20 (180-88533-6), SGWC-21 (180-88533-7), (LCS 160-423241/1-A), (LCSD 160-423241/2-A) and (MB 160-423241/23-A)

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Job ID: 180-88347-1 (Continued)

### Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-423239

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC22 (180-88533-8), SGWC23 (180-88533-9), FB-3 (AP) (180-88533-10), EB-3 (AP) (180-88533-11), FD-3 (AP) (180-88533-12), (LCS 160-423239/1-A), (LCSD 160-423239/2-A) and (MB 160-423239/23-A)

Method(s) 9315: Ra-226 Prep Batch 160-423241

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

FD-2 (AP) (180-88428-12) and SGWC-6 (180-88533-1)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-423612

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-4 (180-88347-1), SGWA-5 (180-88347-2), SGWA-25 (180-88347-3), SGWA-3 (180-88347-4), FD-1 (AP) (180-88347-5), FB-1 (AP) (180-88347-6), EB-1 (AP) (180-88347-7), SGWA-1 (180-88347-8), SGWA-2 (180-88347-9), SGWA-24 (180-88347-10), (LCS 160-423612/1-A), (LCSD 160-423612/2-A) and (MB 160-423612/23-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

Method(s) 6020: The post digestion spike % recovery for Boron and Lead associated with batch 400-436341 was outside of control limits. The following sample is impacted: (180-88290-B-1-B PDS ^5).

Method(s) 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 400-435839 and analytical batch 400-436341 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 200.8, 6020: The post digestion spike % recovery associated with batch 400-436932 was outside of control limits.

Method(s) 200.8, 6020, SM 2340B: The following sample was diluted to bring the concentration of target analytes within the calibration range: SGWC-9 (180-88428-3). Elevated reporting limits (RLs) are provided.

Method(s) 200.8, 6020, SM 2340B: The following samples were diluted to bring the concentration of target analytes within the calibration range: SGWC-18 (180-88533-4), SGWC19 (180-88533-5), SGWC-20 (180-88533-6) and FD-3 (AP) (180-88533-12). Elevated reporting limits (RLs) are provided.

Method(s) 200.8, 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 400-437187 and analytical batch 400-437398 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

---

## Job ID: 180-88347-1 (Continued)

---

### Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

#### General Chemistry

Method(s) SM 2540C: Reanalysis of the following samples were performed outside of the analytical holding time due to error in initial analysis.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
 SDG: Ash Pond

## Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19 *
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-20
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-20
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-20
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	02-06-20
Pennsylvania	NELAP	3	02-00416	04-30-20
South Carolina	State Program	4	89014	04-30-19 *
Texas	NELAP	6	T104704528-15-2	03-31-20
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19 *
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-20
Wisconsin	State Program	5	998027800	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
 SDG: Ash Pond

## Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-20
West Virginia DEP	State Program	3	136	07-31-19

# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
 SDG: Ash Pond

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-88347-1	SGWA-4	Water	03/28/19 12:56	03/30/19 10:00
180-88347-2	SGWA-5	Water	03/28/19 13:45	03/30/19 10:00
180-88347-3	SGWA-25	Water	03/28/19 14:38	03/30/19 10:00
180-88347-4	SGWA-3	Water	03/28/19 14:40	03/30/19 10:00
180-88347-5	FD-1 (AP)	Water	03/28/19 00:00	03/30/19 10:00
180-88347-6	FB-1 (AP)	Water	03/28/19 13:40	03/30/19 10:00
180-88347-7	EB-1 (AP)	Water	03/28/19 15:00	03/30/19 10:00
180-88347-8	SGWA-1	Water	03/29/19 09:16	03/30/19 10:00
180-88347-9	SGWA-2	Water	03/29/19 10:07	03/30/19 10:00
180-88347-10	SGWA-24	Water	03/29/19 09:25	03/30/19 10:00
180-88428-1	SGWC-7	Water	04/01/19 11:56	04/03/19 09:40
180-88428-2	SGWC-8	Water	04/01/19 10:47	04/03/19 09:40
180-88428-3	SGWC-9	Water	04/01/19 11:20	04/03/19 09:40
180-88428-4	SGWC-10	Water	04/01/19 17:50	04/03/19 09:40
180-88428-5	SGWC-11	Water	04/01/19 11:25	04/03/19 09:40
180-88428-6	SGWC-12	Water	04/01/19 12:40	04/03/19 09:40
180-88428-7	SGWC-13	Water	04/01/19 13:40	04/03/19 09:40
180-88428-8	SGWC-14	Water	04/01/19 14:55	04/03/19 09:40
180-88428-9	SGWC-15	Water	04/01/19 16:25	04/03/19 09:40
180-88428-10	EB-2 (AP)	Water	04/01/19 17:30	04/03/19 09:40
180-88428-11	FB-2 (AP)	Water	04/01/19 10:50	04/03/19 09:40
180-88428-12	FD-2 (AP)	Water	04/01/19 00:00	04/03/19 09:40
180-88533-1	SGWC-6	Water	04/02/19 09:12	04/04/19 08:35
180-88533-2	SGWC-16	Water	04/02/19 10:34	04/04/19 08:35
180-88533-3	SGWC-17	Water	04/02/19 11:34	04/04/19 08:35
180-88533-4	SGWC-18	Water	04/02/19 09:00	04/04/19 08:35
180-88533-5	SGWC19	Water	04/02/19 10:20	04/04/19 08:35
180-88533-6	SGWC-20	Water	04/02/19 11:10	04/04/19 08:35
180-88533-7	SGWC-21	Water	04/02/19 09:05	04/04/19 08:35
180-88533-8	SGWC22	Water	04/02/19 09:50	04/04/19 08:35
180-88533-9	SGWC23	Water	04/02/19 11:05	04/04/19 08:35
180-88533-10	FB-3 (AP)	Water	04/02/19 09:00	04/04/19 08:35
180-88533-11	EB-3 (AP)	Water	04/02/19 12:00	04/04/19 08:35
180-88533-12	FD-3 (AP)	Water	04/02/19 00:00	04/04/19 08:35

# Method Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
 SDG: Ash Pond

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	TAL PIT
6020	Metals (ICP/MS)	SW846	TAL PEN
7470A	Mercury (CVAA)	SW846	TAL PEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PEN
7470A	Preparation, Mercury	SW846	TAL PEN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

**Protocol References:**

- EPA = US Environmental Protection Agency
- None = None
- SM = "Standard Methods For The Examination Of Water And Wastewater"
- SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

**Laboratory References:**

- TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001
- TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
- TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-88347-1**

**Date Collected: 03/28/19 12:56**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			274458	04/01/19 18:34	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:33	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:02	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274611	04/02/19 12:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			427794	05/09/19 12:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-88347-2**

**Date Collected: 03/28/19 13:45**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 11:26	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:38	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:04	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274611	04/02/19 12:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.24 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			427794	05/09/19 12:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.24 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-88347-3**

**Date Collected: 03/28/19 14:38**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 11:42	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:42	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:06	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274611	04/02/19 12:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.16 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			427794	05/09/19 12:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-88347-4**

**Date Collected: 03/28/19 14:40**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 10:22	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:45	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:08	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274611	04/02/19 12:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			427794	05/09/19 12:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-1 (AP)**

**Lab Sample ID: 180-88347-5**

**Date Collected: 03/28/19 00:00**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 10:38	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:50	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:10	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274611	04/02/19 12:58	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			427794	05/09/19 12:41	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

**Client Sample ID: FB-1 (AP)**

**Lab Sample ID: 180-88347-6**

**Date Collected: 03/28/19 13:40**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 12:29	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 22:53	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:12	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274717	04/03/19 11:13	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			427796	05/09/19 12:43	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-1 (AP)**

**Lab Sample ID: 180-88347-7**

**Date Collected: 03/28/19 15:00**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 12:45	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 23:17	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:52	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274717	04/03/19 11:13	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.22 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			427796	05/09/19 12:43	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.22 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

**Client Sample ID: SGWA-1**

**Lab Sample ID: 180-88347-8**

**Date Collected: 03/29/19 09:16**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 08:00	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 23:21	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:54	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274838	04/04/19 12:11	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			427796	05/09/19 12:43	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-2**

**Lab Sample ID: 180-88347-9**

**Date Collected: 03/29/19 10:07**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 08:16	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 23:26	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:56	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274838	04/04/19 12:11	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.04 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			427793	05/09/19 12:44	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.04 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-88347-10**

**Date Collected: 03/29/19 09:25**

**Matrix: Water**

**Date Received: 03/30/19 10:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			274532	04/02/19 08:31	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	435839	04/04/19 10:15	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436341	04/04/19 23:29	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	435663	04/03/19 09:19	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436068	04/05/19 13:58	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274865	04/04/19 13:40	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			999.88 mL	1.0 g	423612	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			427796	05/09/19 12:43	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.88 mL	1.0 g	423844	04/14/19 16:53	MMO	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			426333	05/01/19 15:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			427856	05/10/19 09:12	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-7**

**Lab Sample ID: 180-88428-1**

**Date Collected: 04/01/19 11:56**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 09:33	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 09:35	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 09:51	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	274958	04/05/19 12:09	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.74 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			426506	05/02/19 16:55	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.74 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			424352	04/18/19 15:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			426793	05/06/19 13:01	SMP	TAL SL

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-88428-2**

**Date Collected: 04/01/19 10:47**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 09:48	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 09:39	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 09:59	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.38 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			426506	05/02/19 16:55	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.38 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			424352	04/18/19 15:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			426793	05/06/19 13:01	SMP	TAL SL

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-88428-3**

**Date Collected: 04/01/19 11:20**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 10:04	CMR	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		5			275670	04/13/19 15:37	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 10:18	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700	DL	25			436932	04/12/19 12:01	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 10:01	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			999.54 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			426506	05/02/19 16:55	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.54 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			424352	04/18/19 15:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			426793	05/06/19 13:01	SMP	TAL SL

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-88428-4**

**Date Collected: 04/01/19 17:50**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 10:20	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 10:22	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 10:03	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.08 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			426518	05/02/19 18:31	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.08 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			424352	04/18/19 15:31	CDR	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-88428-4**

**Date Collected: 04/01/19 17:50**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-88428-5**

**Date Collected: 04/01/19 11:25**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 10:36	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 10:26	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 10:05	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			999.31 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			426518	05/02/19 18:32	CDR	TAL SL
Total/NA	Prep	PrecSep_0			999.31 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			424352	04/18/19 15:31	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			426793	05/06/19 13:01	SMP	TAL SL

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-88428-6**

**Date Collected: 04/01/19 12:40**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275670	04/13/19 10:52	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			436932	04/12/19 10:30	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 10:48	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.75 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			426518	05/02/19 18:32	CDR	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-88428-6**

**Date Collected: 04/01/19 12:40**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.75 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:31	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-88428-7**

**Date Collected: 04/01/19 13:40**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 11:08	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 10:34	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 10:50	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.04 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426518	05/02/19 18:32	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.04 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:31	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-88428-8**

**Date Collected: 04/01/19 14:55**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 11:23	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 10:38	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 10:52	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Instrument ID: NOEQUIP										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-88428-8**

**Date Collected: 04/01/19 14:55**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.76 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 13:21	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.76 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:31	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-88428-9**

**Date Collected: 04/01/19 16:25**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 12:11	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 10:42	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 10:55	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 11:22	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:31	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-2 (AP)**

**Lab Sample ID: 180-88428-10**

**Date Collected: 04/01/19 17:30**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 12:27	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 11:06	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 10:57	JAP	TAL PEN
Instrument ID: HYDRA AA2										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-2 (AP)**

**Lab Sample ID: 180-88428-10**

**Date Collected: 04/01/19 17:30**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.72 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 11:22	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.72 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:32	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-2 (AP)**

**Lab Sample ID: 180-88428-11**

**Date Collected: 04/01/19 10:50**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 12:42	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 11:09	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 10:59	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.10 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 11:22	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.10 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424352	04/18/19 15:32	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FD-2 (AP)**

**Lab Sample ID: 180-88428-12**

**Date Collected: 04/01/19 00:00**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275670	04/13/19 12:58	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	436825	04/11/19 17:30	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			436932	04/12/19 11:14	DRE	TAL PEN
Instrument ID: ICPMS7700										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-2 (AP)**

**Lab Sample ID: 180-88428-12**

**Date Collected: 04/01/19 00:00**

**Matrix: Water**

**Date Received: 04/03/19 09:40**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			40 mL	40 mL	436430	04/09/19 14:09	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 11:01	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	275110	04/08/19 11:54	JAS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426507	05/02/19 18:34	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-88533-1**

**Date Collected: 04/02/19 09:12**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 17:55	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 05:02	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total Recoverable	Prep	3005A	RA		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	RA	5			437398	04/17/19 08:53	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 12:44	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426507	05/02/19 18:34	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-88533-2**

**Date Collected: 04/02/19 10:34**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275697	04/14/19 18:43	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			437398	04/17/19 05:22	DRE	TAL PEN
Total Recoverable	Prep	3005A	RA		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700	RA	5			437398	04/17/19 08:57	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 12:46	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.42 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			426594	05/03/19 11:22	CDR	TAL SL
Total/NA	Prep	PrecSep_0			1000.42 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			424353	04/18/19 15:33	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			426793	05/06/19 13:01	SMP	TAL SL

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-88533-3**

**Date Collected: 04/02/19 11:34**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2100B		1			275697	04/14/19 19:30	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700		5			437398	04/17/19 05:26	DRE	TAL PEN
Total Recoverable	Prep	3005A	RA		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020 Instrument ID: ICPMS7700	RA	5			437398	04/17/19 09:01	DRE	TAL PEN
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A Instrument ID: HYDRA AA2		1			436767	04/11/19 12:48	JAP	TAL PEN
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			999.88 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCORANGE		1			426594	05/03/19 11:22	CDR	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-88533-3**

**Date Collected: 04/02/19 11:34**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			999.88 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-88533-4**

**Date Collected: 04/02/19 09:00**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 21:37	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total/NA	Analysis	EPA 300.0 R2.1		10			275697	04/14/19 21:52	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 05:30	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total Recoverable	Prep	3005A	RA		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	RA	5			437398	04/17/19 09:05	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total Recoverable	Prep	3005A	DL		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50			437398	04/17/19 09:08	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 12:50	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			999.34 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426595	05/03/19 11:20	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			999.34 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-88533-5**

**Date Collected: 04/02/19 10:20**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 19:46	CMR	TAL PIT
Instrument ID: CHICS2100B										

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-88533-5**

Date Collected: 04/02/19 10:20

Matrix: Water

Date Received: 04/04/19 08:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		5			275743	04/15/19 10:04	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 05:54	DRE	TAL PEN
		Instrument ID: ICPMS7700								
Total Recoverable	Prep	3005A	DL		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	25			437398	04/17/19 09:12	DRE	TAL PEN
		Instrument ID: ICPMS7700								
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 12:52	JAP	TAL PEN
		Instrument ID: HYDRA AA2								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426595	05/03/19 11:20	CDR	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-88533-6**

Date Collected: 04/02/19 11:10

Matrix: Water

Date Received: 04/04/19 08:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 20:02	CMR	TAL PIT
		Instrument ID: CHICS2100B								
Total/NA	Analysis	EPA 300.0 R2.1		5			275743	04/15/19 10:20	CMR	TAL PIT
		Instrument ID: CHICS2100B								
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 05:58	DRE	TAL PEN
		Instrument ID: ICPMS7700								
Total Recoverable	Prep	3005A	DL		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	25			437398	04/17/19 09:16	DRE	TAL PEN
		Instrument ID: ICPMS7700								
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 12:54	JAP	TAL PEN
		Instrument ID: HYDRA AA2								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.03 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1			426595	05/03/19 11:20	CDR	TAL SL
		Instrument ID: GFPCBLUE								

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-88533-6**

**Date Collected: 04/02/19 11:10**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.03 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424353	04/18/19 15:33	CDR	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-88533-7**

**Date Collected: 04/02/19 09:05**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 20:18	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 06:02	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:00	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.33 mL	1.0 g	423241	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9315		1	1.0 mL	1.0 mL	426595	05/03/19 11:20	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.33 mL	1.0 g	423242	04/10/19 14:13	CLP	TAL SL
Total/NA	Analysis	9320		1			424351	04/18/19 15:34	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC22**

**Lab Sample ID: 180-88533-8**

**Date Collected: 04/02/19 09:50**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 20:33	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 06:06	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:01	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC22**

**Lab Sample ID: 180-88533-8**

Date Collected: 04/02/19 09:50

Matrix: Water

Date Received: 04/04/19 08:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	423239	04/10/19 14:08	CLP	TAL SL
Total/NA	Analysis	9315		1			426506	05/02/19 19:08	CDR	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	423240	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9320		1			424434	04/19/19 15:17	BLH	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC23**

**Lab Sample ID: 180-88533-9**

Date Collected: 04/02/19 11:05

Matrix: Water

Date Received: 04/04/19 08:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 20:49	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 06:10	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:04	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			999.16 mL	1.0 g	423239	04/10/19 14:08	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 13:25	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.16 mL	1.0 g	423240	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9320		1			424434	04/19/19 15:17	BLH	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-3 (AP)**

**Lab Sample ID: 180-88533-10**

Date Collected: 04/02/19 09:00

Matrix: Water

Date Received: 04/04/19 08:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 21:05	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 06:14	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:06	JAP	TAL PEN
Instrument ID: HYDRA AA2										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FB-3 (AP)**

**Lab Sample ID: 180-88533-10**

**Date Collected: 04/02/19 09:00**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Total/NA	Prep	PrecSep-21			1000.86 mL	1.0 g	423239	04/10/19 14:08	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 13:25	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			1000.86 mL	1.0 g	423240	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9320		1			424434	04/19/19 15:17	BLH	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-3 (AP)**

**Lab Sample ID: 180-88533-11**

**Date Collected: 04/02/19 12:00**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275697	04/14/19 21:21	CMR	TAL PIT
Instrument ID: CHICS2100B										
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 06:18	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:08	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			999.82 mL	1.0 g	423239	04/10/19 14:08	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 13:25	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.82 mL	1.0 g	423240	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9320		1			424434	04/19/19 15:17	BLH	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FD-3 (AP)**

**Lab Sample ID: 180-88533-12**

**Date Collected: 04/02/19 00:00**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			275706	04/15/19 07:08	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total/NA	Analysis	EPA 300.0 R2.1		10			275706	04/15/19 07:24	MJH	TAL PIT
Instrument ID: CHIC2100A										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-3 (AP)**

**Lab Sample ID: 180-88533-12**

**Date Collected: 04/02/19 00:00**

**Matrix: Water**

**Date Received: 04/04/19 08:35**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020		5			437398	04/17/19 07:05	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total Recoverable	Prep	3005A	DL		50 mL	50 mL	437187	04/15/19 16:45	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50			437398	04/17/19 09:20	DRE	TAL PEN
Instrument ID: ICPMS7700										
Total/NA	Prep	7470A			40 mL	40 mL	436582	04/10/19 14:23	JAP	TAL PEN
Total/NA	Analysis	7470A		1			436767	04/11/19 13:10	JAP	TAL PEN
Instrument ID: HYDRA AA2										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	276061	04/17/19 15:52	TAM	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			999.95 mL	1.0 g	423239	04/10/19 14:08	CLP	TAL SL
Total/NA	Analysis	9315		1			426594	05/03/19 13:25	CDR	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Prep	PrecSep_0			999.95 mL	1.0 g	423240	04/10/19 14:10	CLP	TAL SL
Total/NA	Analysis	9320		1			424434	04/19/19 15:18	BLH	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			426793	05/06/19 13:01	SMP	TAL SL
Instrument ID: NOEQUIP										

**Laboratory References:**

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Analyst References:

Lab: TAL PEN

Batch Type: Prep

DRE = Daniel Etscheid

JAP = Jane Parker

Batch Type: Analysis

DRE = Daniel Etscheid

JAP = Jane Parker

Lab: TAL PIT

Batch Type: Analysis

AVS = Abbey Smith

CMR = Carl Reagle

JAS = Joshua Schmidt

MJH = Matthew Hartman

TAM = Tessa Mastalski

Lab: TAL SL

Batch Type: Prep

CLP = Cassandra Park

MMO = Molly Olson

Batch Type: Analysis

BLH = Brandi Hayes

CDR = Conrad Reuscher

KLS = Kody Saulters

SMP = Siobhan Perry

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-88347-1**

Date Collected: 03/28/19 12:56

Matrix: Water

Date Received: 03/30/19 10:00

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.2		1.0	0.71	mg/L			04/01/19 18:34	1
Fluoride	0.052	J	0.20	0.026	mg/L			04/01/19 18:34	1
Sulfate	1.2		1.0	0.38	mg/L			04/01/19 18:34	1

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:33	5
Barium	0.061		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:33	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:33	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:33	5
Calcium	17		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:33	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:33	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:33	5
Chromium	0.0046		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:33	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:33	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:33	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:33	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:33	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:33	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:33	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:02	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	10	mg/L			04/02/19 12:58	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0118	U	0.0458	0.0458	1.00	0.0901	pCi/L	04/14/19 16:53	05/09/19 12:41	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	104		40 - 110					04/14/19 16:53	05/09/19 12:41	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0856	U	0.263	0.263	1.00	0.453	pCi/L	04/14/19 16:53	05/01/19 15:53	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	104		40 - 110					04/14/19 16:53	05/01/19 15:53	1
<i>Y Carrier</i>	80.7		40 - 110					04/14/19 16:53	05/01/19 15:53	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-88347-1**

Date Collected: 03/28/19 12:56

Matrix: Water

Date Received: 03/30/19 10:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.0974	U	0.267	0.267	5.00	0.453	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-88347-2**

Date Collected: 03/28/19 13:45

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.7		1.0	0.71	mg/L			04/02/19 11:26	1
Fluoride	<0.026		0.20	0.026	mg/L			04/02/19 11:26	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 11:26	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:38	5
Barium	0.0097		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:38	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:38	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:38	5
Calcium	1.4		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:38	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:38	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:38	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:38	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:38	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:38	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:38	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:38	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:38	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:38	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:04	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	58		10	10	mg/L			04/02/19 12:58	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	-0.0105	U	0.0469	0.0469	1.00	0.103	pCi/L	04/14/19 16:53	05/09/19 12:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/09/19 12:41	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-88347-2**

Date Collected: 03/28/19 13:45

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.126	U	0.233	0.233	1.00	0.396	pCi/L	04/14/19 16:53	05/01/19 15:53	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/01/19 15:53	1
Y Carrier	82.6		40 - 110					04/14/19 16:53	05/01/19 15:53	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.115	U	0.238	0.238	5.00	0.396	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-88347-3**

Date Collected: 03/28/19 14:38

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.2		1.0	0.71	mg/L			04/02/19 11:42	1
Fluoride	0.037	J	0.20	0.026	mg/L			04/02/19 11:42	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 11:42	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00048	J	0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:42	5
Barium	0.022		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:42	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:42	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:42	5
Calcium	8.7		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:42	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:42	5
Cobalt	0.0042		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:42	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:42	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:42	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:42	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:42	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:42	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:42	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:42	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:06	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	79		10	10	mg/L			04/02/19 12:58	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-88347-3**

Date Collected: 03/28/19 14:38

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0254	U	0.0622	0.0622	1.00	0.114	pCi/L	04/14/19 16:53	05/09/19 12:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					04/14/19 16:53	05/09/19 12:41	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.000	U	0.204	0.204	1.00	0.369	pCi/L	04/14/19 16:53	05/01/19 15:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					04/14/19 16:53	05/01/19 15:53	1
Y Carrier	83.0		40 - 110					04/14/19 16:53	05/01/19 15:53	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0254	U	0.213	0.213	5.00	0.369	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-88347-4**

Date Collected: 03/28/19 14:40

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.0		1.0	0.71	mg/L			04/02/19 10:22	1
Fluoride	0.026	J	0.20	0.026	mg/L			04/02/19 10:22	1
Sulfate	1.9		1.0	0.38	mg/L			04/02/19 10:22	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:45	5
Barium	0.036		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:45	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:45	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:45	5
Calcium	4.8		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:45	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:45	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:45	5
Chromium	0.013		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:45	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:45	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:45	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:45	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:45	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:45	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:45	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-88347-4**

Date Collected: 03/28/19 14:40

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:08	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	43		10	10	mg/L			04/02/19 12:58	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0549	U	0.0601	0.0603	1.00	0.0955	pCi/L	04/14/19 16:53	05/09/19 12:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.1		40 - 110					04/14/19 16:53	05/09/19 12:41	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.255	U	0.259	0.260	1.00	0.421	pCi/L	04/14/19 16:53	05/01/19 15:53	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.1		40 - 110					04/14/19 16:53	05/01/19 15:53	1
Y Carrier	84.9		40 - 110					04/14/19 16:53	05/01/19 15:53	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.310	U	0.266	0.267	5.00	0.421	pCi/L		05/10/19 09:12	1

**Client Sample ID: FD-1 (AP)**

**Lab Sample ID: 180-88347-5**

Date Collected: 03/28/19 00:00

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.0		1.0	0.71	mg/L			04/02/19 10:38	1
Fluoride	0.056	J	0.20	0.026	mg/L			04/02/19 10:38	1
Sulfate	1.3		1.0	0.38	mg/L			04/02/19 10:38	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:50	5
Barium	0.060		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:50	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:50	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:50	5
Calcium	17		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:50	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:50	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:50	5
Chromium	0.0045		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:50	5

Eurofins TestAmerica, Pittsburgh



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-1 (AP)**

**Lab Sample ID: 180-88347-5**

Date Collected: 03/28/19 00:00

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:50	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:50	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:50	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:50	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:50	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:50	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	10	mg/L			04/02/19 12:58	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0413	U	0.0497	0.0499	1.00	0.0807	pCi/L	04/14/19 16:53	05/09/19 12:41	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/09/19 12:41	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0962	U	0.233	0.234	1.00	0.403	pCi/L	04/14/19 16:53	05/01/19 15:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	77.8		40 - 110					04/14/19 16:53	05/01/19 15:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.137	U	0.238	0.239	5.00	0.403	pCi/L		05/10/19 09:12	1

**Client Sample ID: FB-1 (AP)**

**Lab Sample ID: 180-88347-6**

Date Collected: 03/28/19 13:40

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/02/19 12:29	1
Fluoride	<0.026		0.20	0.026	mg/L			04/02/19 12:29	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 12:29	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FB-1 (AP)**

**Lab Sample ID: 180-88347-6**

Date Collected: 03/28/19 13:40

Matrix: Water

Date Received: 03/30/19 10:00

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 22:53	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 22:53	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 22:53	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:53	5
Calcium	<0.13		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 22:53	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 22:53	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 22:53	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 22:53	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 22:53	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 22:53	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 22:53	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 22:53	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 22:53	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 22:53	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:12	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/03/19 11:13	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0177	U	0.0446	0.0447	1.00	0.0844	pCi/L	04/14/19 16:53	05/09/19 12:43	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/09/19 12:43	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0830	U	0.211	0.212	1.00	0.365	pCi/L	04/14/19 16:53	05/01/19 15:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	86.4		40 - 110					04/14/19 16:53	05/01/19 15:54	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.101	U	0.216	0.217	5.00	0.365	pCi/L		05/10/19 09:12	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-1 (AP)**

**Lab Sample ID: 180-88347-7**

Date Collected: 03/28/19 15:00

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/02/19 12:45	1
Fluoride	<0.026		0.20	0.026	mg/L			04/02/19 12:45	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 12:45	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 23:17	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 23:17	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 23:17	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:17	5
Calcium	<0.13		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 23:17	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:17	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 23:17	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 23:17	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 23:17	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 23:17	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 23:17	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 23:17	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 23:17	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 23:17	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:52	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/03/19 11:13	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0562	U	0.0495	0.0498	1.00	0.0696	pCi/L	04/14/19 16:53	05/09/19 12:43	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/14/19 16:53	05/09/19 12:43	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.108	U	0.267	0.267	1.00	0.457	pCi/L	04/14/19 16:53	05/01/19 15:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	83.7		40 - 110					04/14/19 16:53	05/01/19 15:54	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-1 (AP)**

**Lab Sample ID: 180-88347-7**

Date Collected: 03/28/19 15:00

Matrix: Water

Date Received: 03/30/19 10:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.164	U	0.272	0.272	5.00	0.457	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-1**

**Lab Sample ID: 180-88347-8**

Date Collected: 03/29/19 09:16

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.5		1.0	0.71	mg/L			04/02/19 08:00	1
Fluoride	<0.026		0.20	0.026	mg/L			04/02/19 08:00	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 08:00	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 23:21	5
Barium	0.044		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 23:21	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 23:21	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:21	5
Calcium	2.0		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 23:21	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:21	5
Cobalt	0.00072	J	0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 23:21	5
Chromium	0.0017	J	0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 23:21	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 23:21	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 23:21	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 23:21	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 23:21	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 23:21	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 23:21	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	J	0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:54	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/04/19 12:11	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.0571	U	0.0525	0.0528	1.00	0.0773	pCi/L	04/14/19 16:53	05/09/19 12:43	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					04/14/19 16:53	05/09/19 12:43	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-1**  
Date Collected: 03/29/19 09:16  
Date Received: 03/30/19 10:00

**Lab Sample ID: 180-88347-8**  
Matrix: Water

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.254	U	0.246	0.247	1.00	0.398	pCi/L	04/14/19 16:53	05/01/19 15:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	84.5		40 - 110					04/14/19 16:53	05/01/19 15:54	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.311	U	0.252	0.253	5.00	0.398	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-2**  
Date Collected: 03/29/19 10:07  
Date Received: 03/30/19 10:00

**Lab Sample ID: 180-88347-9**  
Matrix: Water

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.2		1.0	0.71	mg/L			04/02/19 08:16	1
Fluoride	0.053	J	0.20	0.026	mg/L			04/02/19 08:16	1
Sulfate	0.65	J	1.0	0.38	mg/L			04/02/19 08:16	1

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 23:26	5
Barium	0.039		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 23:26	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 23:26	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:26	5
Calcium	11		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 23:26	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:26	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 23:26	5
Chromium	0.014		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 23:26	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 23:26	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 23:26	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 23:26	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 23:26	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 23:26	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 23:26	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:56	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	72		10	10	mg/L			04/04/19 12:11	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-2**

**Lab Sample ID: 180-88347-9**

Date Collected: 03/29/19 10:07

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0269	U	0.0475	0.0476	1.00	0.0853	pCi/L	04/14/19 16:53	05/09/19 12:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					04/14/19 16:53	05/09/19 12:44	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0501	U	0.238	0.238	1.00	0.432	pCi/L	04/14/19 16:53	05/01/19 15:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	80.4		40 - 110					04/14/19 16:53	05/01/19 15:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0232	U	0.243	0.243	5.00	0.432	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-88347-10**

Date Collected: 03/29/19 09:25

Matrix: Water

Date Received: 03/30/19 10:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.8		1.0	0.71	mg/L			04/02/19 08:31	1
Fluoride	0.056	J	0.20	0.026	mg/L			04/02/19 08:31	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 08:31	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 23:29	5
Barium	0.021		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 23:29	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 23:29	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:29	5
Calcium	12		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 23:29	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 23:29	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 23:29	5
Chromium	0.0043		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 23:29	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 23:29	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 23:29	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 23:29	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 23:29	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 23:29	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 23:29	5

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-88347-10**

Date Collected: 03/29/19 09:25

Matrix: Water

Date Received: 03/30/19 10:00

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:19	04/05/19 13:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	10	mg/L			04/04/19 13:40	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0537	U	0.0532	0.0534	1.00	0.0814	pCi/L	04/14/19 16:53	05/09/19 12:43	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					04/14/19 16:53	05/09/19 12:43	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0455	U	0.223	0.223	1.00	0.394	pCi/L	04/14/19 16:53	05/01/19 15:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					04/14/19 16:53	05/01/19 15:54	1
Y Carrier	80.7		40 - 110					04/14/19 16:53	05/01/19 15:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0992	U	0.229	0.229	5.00	0.394	pCi/L		05/10/19 09:12	1

**Client Sample ID: SGWC-7**

**Lab Sample ID: 180-88428-1**

Date Collected: 04/01/19 11:56

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.6		1.0	0.71	mg/L			04/13/19 09:33	1
Fluoride	0.12	J	0.20	0.026	mg/L			04/13/19 09:33	1
Sulfate	16		1.0	0.38	mg/L			04/13/19 09:33	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 09:35	5
Barium	0.24		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 09:35	5
Boron	0.025	J	0.050	0.021	mg/L		04/11/19 17:30	04/12/19 09:35	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:35	5
Calcium	18		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 09:35	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:35	5
Cobalt	0.0046		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 09:35	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 09:35	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-7**  
Date Collected: 04/01/19 11:56  
Date Received: 04/03/19 09:40

**Lab Sample ID: 180-88428-1**  
Matrix: Water

### Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 09:35	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 09:35	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 09:35	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 09:35	5
<b>Lithium</b>	<b>0.0058</b>		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 09:35	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 09:51	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>200</b>		10	10	mg/L			04/05/19 12:09	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00475	U	0.0375	0.0375	1.00	0.0791	pCi/L	04/10/19 14:10	05/02/19 16:55	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.9		40 - 110					04/10/19 14:10	05/02/19 16:55	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>0.670</b>		0.297	0.303	1.00	0.434	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.9		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	88.2		40 - 110					04/10/19 14:13	04/18/19 15:31	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Combined Radium 226 + 228</b>	<b>0.675</b>		0.299	0.305	5.00	0.434	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-8**  
Date Collected: 04/01/19 10:47  
Date Received: 04/03/19 09:40

**Lab Sample ID: 180-88428-2**  
Matrix: Water

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>10</b>		1.0	0.71	mg/L			04/13/19 09:48	1
<b>Fluoride</b>	<b>0.21</b>		0.20	0.026	mg/L			04/13/19 09:48	1
<b>Sulfate</b>	<b>67</b>		1.0	0.38	mg/L			04/13/19 09:48	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-88428-2**

Date Collected: 04/01/19 10:47

Matrix: Water

Date Received: 04/03/19 09:40

## Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0010	J	0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 09:39	5
Barium	0.19		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 09:39	5
Boron	0.076		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 09:39	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:39	5
Calcium	45		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 09:39	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:39	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 09:39	5
Chromium	0.0013	J	0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 09:39	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 09:39	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 09:39	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 09:39	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 09:39	5
Lithium	0.0021	J	0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 09:39	5

## Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 09:59	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	370		10	10	mg/L			04/08/19 11:54	1

## Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.526		0.121	0.130	1.00	0.0748	pCi/L	04/10/19 14:10	05/02/19 16:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					04/10/19 14:10	05/02/19 16:55	1

## Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.38		0.301	0.327	1.00	0.347	pCi/L	04/10/19 14:13	04/18/19 15:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	90.5		40 - 110					04/10/19 14:13	04/18/19 15:31	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.91		0.324	0.352	5.00	0.347	pCi/L		05/06/19 13:01	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-88428-3**

Date Collected: 04/01/19 11:20

Matrix: Water

Date Received: 04/03/19 09:40

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		1.0	0.71	mg/L			04/13/19 10:04	1
Fluoride	0.041	J	0.20	0.026	mg/L			04/13/19 10:04	1
Sulfate	310		5.0	1.9	mg/L			04/13/19 15:37	5

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:18	5
Barium	0.071		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:18	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:18	5
Calcium	50		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:18	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:18	5
Cobalt	0.010		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:18	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:18	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:18	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:18	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:18	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:18	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:18	5

### Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1.7		0.25	0.11	mg/L		04/11/19 17:30	04/12/19 12:01	25

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:01	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	580		10	10	mg/L			04/08/19 11:54	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00803	U	0.0523	0.0523	1.00	0.103	pCi/L	04/10/19 14:10	05/02/19 16:55	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.9		40 - 110					04/10/19 14:10	05/02/19 16:55	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0193	U	0.178	0.178	1.00	0.325	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.9		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	93.1		40 - 110					04/10/19 14:13	04/18/19 15:31	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-88428-3**

Date Collected: 04/01/19 11:20

Matrix: Water

Date Received: 04/03/19 09:40

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0113	U	0.186	0.186	5.00	0.325	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-88428-4**

Date Collected: 04/01/19 17:50

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.8		1.0	0.71	mg/L			04/13/19 10:20	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 10:20	1
Sulfate	21		1.0	0.38	mg/L			04/13/19 10:20	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00059	J	0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:22	5
Barium	0.039		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:22	5
Boron	0.16		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:22	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:22	5
Calcium	4.2		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:22	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:22	5
Cobalt	0.025		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:22	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:22	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:22	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:22	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:22	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:22	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:22	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:03	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	82		10	10	mg/L			04/08/19 11:54	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00379	U	0.0374	0.0374	1.00	0.0783	pCi/L	04/10/19 14:10	05/02/19 18:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					04/10/19 14:10	05/02/19 18:31	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-88428-4**

Date Collected: 04/01/19 17:50

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>0.448</b>		0.225	0.229	1.00	0.333	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	93.8		40 - 110					04/10/19 14:13	04/18/19 15:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Combined Radium 226 + 228</b>	<b>0.452</b>		0.228	0.232	5.00	0.333	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-88428-5**

Date Collected: 04/01/19 11:25

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>7.4</b>		1.0	0.71	mg/L			04/13/19 10:36	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 10:36	1
<b>Sulfate</b>	<b>0.81</b>	<b>J</b>	1.0	0.38	mg/L			04/13/19 10:36	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>0.0011</b>	<b>J</b>	0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:26	5
<b>Barium</b>	<b>0.041</b>		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:26	5
<b>Boron</b>	<b>0.46</b>		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:26	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:26	5
<b>Calcium</b>	<b>1.7</b>		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:26	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:26	5
<b>Cobalt</b>	<b>0.021</b>		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:26	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:26	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:26	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:26	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:26	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:26	5
<b>Lithium</b>	<b>0.0017</b>	<b>J</b>	0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:26	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:05	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>33</b>		10	10	mg/L			04/08/19 11:54	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-88428-5**

Date Collected: 04/01/19 11:25

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0561	U	0.0492	0.0495	1.00	0.0719	pCi/L	04/10/19 14:10	05/02/19 18:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					04/10/19 14:10	05/02/19 18:32	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.117	U	0.183	0.183	1.00	0.308	pCi/L	04/10/19 14:13	04/18/19 15:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	92.3		40 - 110					04/10/19 14:13	04/18/19 15:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.173	U	0.189	0.190	5.00	0.308	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-88428-6**

Date Collected: 04/01/19 12:40

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.0		1.0	0.71	mg/L			04/13/19 10:52	1
Fluoride	0.048	J	0.20	0.026	mg/L			04/13/19 10:52	1
Sulfate	48		1.0	0.38	mg/L			04/13/19 10:52	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0012	J	0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:30	5
Barium	0.051		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:30	5
Boron	<0.021		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:30	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:30	5
Calcium	20		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:30	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:30	5
Cobalt	0.0029		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:30	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:30	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:30	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:30	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:30	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:30	5
Lithium	0.0011	J	0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:30	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-88428-6**

Date Collected: 04/01/19 12:40

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:48	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	200		10	10	mg/L			04/08/19 11:54	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0627	U	0.0490	0.0494	1.00	0.0673	pCi/L	04/10/19 14:10	05/02/19 18:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	104		40 - 110					04/10/19 14:10	05/02/19 18:32	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.310	U	0.208	0.210	1.00	0.321	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	104		40 - 110					04/10/19 14:13	04/18/19 15:31	1
<i>Y Carrier</i>	91.2		40 - 110					04/10/19 14:13	04/18/19 15:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.372		0.214	0.216	5.00	0.321	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-88428-7**

Date Collected: 04/01/19 13:40

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.7		1.0	0.71	mg/L			04/13/19 11:08	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 11:08	1
Sulfate	82		1.0	0.38	mg/L			04/13/19 11:08	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0014		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:34	5
Barium	0.038		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:34	5
Boron	0.57		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:34	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:34	5
Calcium	17		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:34	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:34	5
Cobalt	0.0030		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:34	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:34	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-88428-7**

Date Collected: 04/01/19 13:40

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:34	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:34	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:34	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:34	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:34	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:50	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	190		10	10	mg/L			04/08/19 11:54	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00367	U	0.0424	0.0424	1.00	0.0864	pCi/L	04/10/19 14:10	05/02/19 18:32	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/10/19 14:10	05/02/19 18:32	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.356		0.222	0.224	1.00	0.339	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	89.3		40 - 110					04/10/19 14:13	04/18/19 15:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.360		0.226	0.228	5.00	0.339	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-88428-8**

Date Collected: 04/01/19 14:55

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.9		1.0	0.71	mg/L			04/13/19 11:23	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 11:23	1
Sulfate	180		1.0	0.38	mg/L			04/13/19 11:23	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-88428-8**

Date Collected: 04/01/19 14:55

Matrix: Water

Date Received: 04/03/19 09:40

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>0.0012</b>	<b>J</b>	0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:38	5
<b>Barium</b>	<b>0.054</b>		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:38	5
<b>Boron</b>	<b>1.7</b>		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:38	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:38	5
<b>Calcium</b>	<b>39</b>		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:38	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:38	5
<b>Cobalt</b>	<b>0.014</b>		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:38	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:38	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:38	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:38	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:38	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:38	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:38	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:52	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>330</b>		10	10	mg/L			04/08/19 11:54	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.0247	U	0.0554	0.0554	1.00	0.101	pCi/L	04/10/19 14:10	05/03/19 13:21	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.6		40 - 110					04/10/19 14:10	05/03/19 13:21	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	-0.162	U	0.203	0.204	1.00	0.388	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.6		40 - 110					04/10/19 14:13	04/18/19 15:31	1
Y Carrier	94.6		40 - 110					04/10/19 14:13	04/18/19 15:31	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	-0.138	U	0.210	0.211	5.00	0.388	pCi/L		05/06/19 13:01	1



# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-88428-9**

Date Collected: 04/01/19 16:25

Matrix: Water

Date Received: 04/03/19 09:40

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.2		1.0	0.71	mg/L			04/13/19 12:11	1
Fluoride	0.072	J	0.20	0.026	mg/L			04/13/19 12:11	1
Sulfate	190		1.0	0.38	mg/L			04/13/19 12:11	1

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0016		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 10:42	5
Barium	0.034		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 10:42	5
Boron	1.6		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 10:42	5
Beryllium	0.00034	J	0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:42	5
Calcium	16		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 10:42	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 10:42	5
Cobalt	0.26		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 10:42	5
Chromium	0.032		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 10:42	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 10:42	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 10:42	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 10:42	5
Thallium	0.000095	J	0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 10:42	5
Lithium	0.0025	J	0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 10:42	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:55	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	330		10	10	mg/L			04/08/19 11:54	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0114	U	0.0524	0.0524	1.00	0.101	pCi/L	04/10/19 14:10	05/03/19 11:22	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	92.0		40 - 110					04/10/19 14:10	05/03/19 11:22	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0385	U	0.194	0.194	1.00	0.343	pCi/L	04/10/19 14:13	04/18/19 15:31	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	92.0		40 - 110					04/10/19 14:13	04/18/19 15:31	1
<i>Y Carrier</i>	92.3		40 - 110					04/10/19 14:13	04/18/19 15:31	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-88428-9**

Date Collected: 04/01/19 16:25

Matrix: Water

Date Received: 04/03/19 09:40

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0499	U	0.201	0.201	5.00	0.343	pCi/L		05/06/19 13:01	1

**Client Sample ID: EB-2 (AP)**

**Lab Sample ID: 180-88428-10**

Date Collected: 04/01/19 17:30

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/13/19 12:27	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 12:27	1
Sulfate	<0.38		1.0	0.38	mg/L			04/13/19 12:27	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 11:06	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 11:06	5
Boron	<0.021		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 11:06	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:06	5
Calcium	<0.13		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 11:06	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:06	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 11:06	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 11:06	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 11:06	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 11:06	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 11:06	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 11:06	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 11:06	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:57	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/08/19 11:54	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.123		0.0685	0.0694	1.00	0.0820	pCi/L	04/10/19 14:10	05/03/19 11:22	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.1		40 - 110					04/10/19 14:10	05/03/19 11:22	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-2 (AP)**

**Lab Sample ID: 180-88428-10**

Date Collected: 04/01/19 17:30

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.192	U	0.191	0.191	1.00	0.309	pCi/L	04/10/19 14:13	04/18/19 15:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110					04/10/19 14:13	04/18/19 15:32	1
Y Carrier	94.2		40 - 110					04/10/19 14:13	04/18/19 15:32	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.315		0.203	0.203	5.00	0.309	pCi/L		05/06/19 13:01	1

**Client Sample ID: FB-2 (AP)**

**Lab Sample ID: 180-88428-11**

Date Collected: 04/01/19 10:50

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/13/19 12:42	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 12:42	1
Sulfate	<0.38		1.0	0.38	mg/L			04/13/19 12:42	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 11:09	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 11:09	5
Boron	<0.021		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 11:09	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:09	5
Calcium	<0.13		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 11:09	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:09	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 11:09	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 11:09	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 11:09	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 11:09	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 11:09	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 11:09	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 11:09	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 10:59	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/08/19 11:54	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FB-2 (AP)**

**Lab Sample ID: 180-88428-11**

Date Collected: 04/01/19 10:50

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0158	U	0.0332	0.0332	1.00	0.0828	pCi/L	04/10/19 14:10	05/03/19 11:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110					04/10/19 14:10	05/03/19 11:22	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0419	U	0.197	0.197	1.00	0.363	pCi/L	04/10/19 14:13	04/18/19 15:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110					04/10/19 14:13	04/18/19 15:32	1
Y Carrier	84.9		40 - 110					04/10/19 14:13	04/18/19 15:32	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0578	U	0.200	0.200	5.00	0.363	pCi/L		05/06/19 13:01	1

**Client Sample ID: FD-2 (AP)**

**Lab Sample ID: 180-88428-12**

Date Collected: 04/01/19 00:00

Matrix: Water

Date Received: 04/03/19 09:40

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.8		1.0	0.71	mg/L			04/13/19 12:58	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 12:58	1
Sulfate	0.92	J	1.0	0.38	mg/L			04/13/19 12:58	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 11:14	5
Barium	0.039		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 11:14	5
Boron	0.44		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 11:14	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:14	5
Calcium	1.6		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 11:14	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 11:14	5
Cobalt	0.021		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 11:14	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 11:14	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 11:14	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 11:14	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 11:14	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 11:14	5
Lithium	0.0026	J	0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 11:14	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-2 (AP)**

**Lab Sample ID: 180-88428-12**

Date Collected: 04/01/19 00:00

Matrix: Water

Date Received: 04/03/19 09:40

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 11:01	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/08/19 11:54	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0343	U	0.0472	0.0473	1.00	0.0797	pCi/L	04/10/19 14:10	05/02/19 18:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.8		40 - 110					04/10/19 14:10	05/02/19 18:34	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.330	U	0.231	0.233	1.00	0.361	pCi/L	04/10/19 14:13	04/18/19 15:33	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.8		40 - 110					04/10/19 14:13	04/18/19 15:33	1
Y Carrier	89.0		40 - 110					04/10/19 14:13	04/18/19 15:33	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.364		0.236	0.238	5.00	0.361	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-88533-1**

Date Collected: 04/02/19 09:12

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.0		1.0	0.71	mg/L			04/14/19 17:55	1
Fluoride	0.10	J	0.20	0.026	mg/L			04/14/19 17:55	1
Sulfate	1.3		1.0	0.38	mg/L			04/14/19 17:55	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:02	5
Barium	0.069		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:02	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:02	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:02	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:02	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:02	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:02	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:02	5

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-88533-1**

Date Collected: 04/02/19 09:12

Matrix: Water

Date Received: 04/04/19 08:35

**Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:02	5
<b>Calcium</b>	<b>6.7</b>		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:02	5
Boron	<0.021		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 05:02	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 08:53	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 08:53	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:44	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>91</b>	<b>H</b>	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.000	U	0.0331	0.0331	1.00	0.0724	pCi/L	04/10/19 14:10	05/02/19 18:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					04/10/19 14:10	05/02/19 18:34	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.300	U	0.242	0.244	1.00	0.385	pCi/L	04/10/19 14:13	04/18/19 15:33	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	100		40 - 110					04/10/19 14:13	04/18/19 15:33	1
Y Carrier	82.6		40 - 110					04/10/19 14:13	04/18/19 15:33	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.300	U	0.244	0.246	5.00	0.385	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-88533-2**

Date Collected: 04/02/19 10:34

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>8.2</b>		1.0	0.71	mg/L			04/14/19 18:43	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 18:43	1
<b>Sulfate</b>	<b>31</b>		1.0	0.38	mg/L			04/14/19 18:43	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-88533-2**

Date Collected: 04/02/19 10:34

Matrix: Water

Date Received: 04/04/19 08:35

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Barium</b>	<b>0.023</b>		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:22	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Cobalt</b>	<b>0.0041</b>		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Chromium</b>	<b>0.010</b>		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:22	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Selenium</b>	<b>0.0021</b>		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:22	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:22	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Calcium</b>	<b>0.92</b>		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:22	5
<b>Boron</b>	<b>0.53</b>		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 05:22	5

### Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 08:57	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 08:57	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:46	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>73</b>	<b>H</b>	10	10	mg/L			04/17/19 15:52	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0416	U	0.0300	0.0302	1.00	0.0898	pCi/L	04/10/19 14:10	05/03/19 11:22	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					04/10/19 14:10	05/03/19 11:22	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.209	U	0.189	0.190	1.00	0.304	pCi/L	04/10/19 14:13	04/18/19 15:33	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					04/10/19 14:13	04/18/19 15:33	1
Y Carrier	93.5		40 - 110					04/10/19 14:13	04/18/19 15:33	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.167	U	0.191	0.192	5.00	0.304	pCi/L		05/06/19 13:01	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-88533-3**

Date Collected: 04/02/19 11:34

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.2		1.0	0.71	mg/L			04/14/19 19:30	1
Fluoride	0.045	J	0.20	0.026	mg/L			04/14/19 19:30	1
Sulfate	180		1.0	0.38	mg/L			04/14/19 19:30	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:26	5
Barium	0.020		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:26	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:26	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:26	5
Chromium	0.0040		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:26	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:26	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:26	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:26	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:26	5
Calcium	46		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:26	5
Boron	0.32		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 05:26	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 09:01	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 09:01	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:48	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	400	H	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0121	U	0.0359	0.0359	1.00	0.0849	pCi/L	04/10/19 14:10	05/03/19 11:22	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.2		40 - 110					04/10/19 14:10	05/03/19 11:22	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0355	U	0.181	0.181	1.00	0.334	pCi/L	04/10/19 14:13	04/18/19 15:33	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.2		40 - 110					04/10/19 14:13	04/18/19 15:33	1
Y Carrier	90.5		40 - 110					04/10/19 14:13	04/18/19 15:33	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-88533-3**

Date Collected: 04/02/19 11:34

Matrix: Water

Date Received: 04/04/19 08:35

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	-0.0476	U	0.185	0.185	5.00	0.334	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-88533-4**

Date Collected: 04/02/19 09:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15		1.0	0.71	mg/L			04/14/19 21:37	1
Fluoride	0.050	J	0.20	0.026	mg/L			04/14/19 21:37	1
Sulfate	1100		10	3.8	mg/L			04/14/19 21:52	10

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0027		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:30	5
Barium	0.028		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:30	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:30	5
Cobalt	0.18		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:30	5
Chromium	0.0092		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:30	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:30	5
Selenium	0.0075		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:30	5
Thallium	0.00016	J	0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:30	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:30	5
Calcium	89		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:30	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	5.3		0.50	0.21	mg/L		04/15/19 16:45	04/17/19 09:08	50

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 09:05	5
Lithium	0.0041	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 09:05	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:50	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1700	H	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.0557	U	0.0506	0.0509	1.00	0.0747	pCi/L	04/10/19 14:10	05/03/19 11:20	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-88533-4**

Date Collected: 04/02/19 09:00

Matrix: Water

Date Received: 04/04/19 08:35

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	04/10/19 14:10	05/03/19 11:20	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.280	U	0.217	0.218	1.00	0.340	pCi/L	04/10/19 14:13	04/18/19 15:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	04/10/19 14:13	04/18/19 15:33	1
Y Carrier	85.6		40 - 110	04/10/19 14:13	04/18/19 15:33	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.336	U	0.223	0.224	5.00	0.340	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-88533-5**

Date Collected: 04/02/19 10:20

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.3		1.0	0.71	mg/L			04/14/19 19:46	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 19:46	1
Sulfate	240		5.0	1.9	mg/L			04/15/19 10:04	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:54	5
Barium	0.030		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:54	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:54	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:54	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:54	5
Chromium	0.014		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:54	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:54	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:54	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:54	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:54	5
Calcium	38		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:54	5
Lithium	0.0021	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 05:54	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.0		0.25	0.11	mg/L		04/15/19 16:45	04/17/19 09:12	25

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:52	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-88533-5**

Date Collected: 04/02/19 10:20

Matrix: Water

Date Received: 04/04/19 08:35

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	420	H	10	10	mg/L			04/17/19 15:52	1

## Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00811	U	0.0296	0.0296	1.00	0.0727	pCi/L	04/10/19 14:10	05/03/19 11:20	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110	04/10/19 14:10	05/03/19 11:20	1

## Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.118	U	0.209	0.209	1.00	0.354	pCi/L	04/10/19 14:13	04/18/19 15:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110	04/10/19 14:13	04/18/19 15:33	1
Y Carrier	86.7		40 - 110	04/10/19 14:13	04/18/19 15:33	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.110	U	0.211	0.211	5.00	0.354	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-88533-6**

Date Collected: 04/02/19 11:10

Matrix: Water

Date Received: 04/04/19 08:35

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11		1.0	0.71	mg/L			04/14/19 20:02	1
Fluoride	0.15	J	0.20	0.026	mg/L			04/14/19 20:02	1
Sulfate	220		5.0	1.9	mg/L			04/15/19 10:20	5

## Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 05:58	5
Barium	0.023		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 05:58	5
Beryllium	0.00043	J	0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:58	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 05:58	5
Cobalt	0.13		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 05:58	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 05:58	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 05:58	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 05:58	5
Thallium	0.00017	J	0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 05:58	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 05:58	5
Calcium	14		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 05:58	5
Lithium	0.0046	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 05:58	5

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-88533-6**

Date Collected: 04/02/19 11:10

Matrix: Water

Date Received: 04/04/19 08:35

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2.0		0.25	0.11	mg/L		04/15/19 16:45	04/17/19 09:16	25

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 12:54	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	370	H	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0607	U	0.0521	0.0524	1.00	0.0763	pCi/L	04/10/19 14:10	05/03/19 11:20	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	101		40 - 110					04/10/19 14:10	05/03/19 11:20	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.211	U	0.183	0.184	1.00	0.291	pCi/L	04/10/19 14:13	04/18/19 15:33	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	101		40 - 110					04/10/19 14:13	04/18/19 15:33	1
Y Carrier	94.2		40 - 110					04/10/19 14:13	04/18/19 15:33	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.271	U	0.190	0.191	5.00	0.291	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-88533-7**

Date Collected: 04/02/19 09:05

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.3		1.0	0.71	mg/L			04/14/19 20:18	1
Fluoride	0.066	J	0.20	0.026	mg/L			04/14/19 20:18	1
Sulfate	92		1.0	0.38	mg/L			04/14/19 20:18	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 06:02	5
Barium	0.087		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 06:02	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:02	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:02	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-88533-7**

Date Collected: 04/02/19 09:05

Matrix: Water

Date Received: 04/04/19 08:35

## Method: 6020 - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 06:02	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 06:02	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 06:02	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 06:02	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 06:02	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 06:02	5
Calcium	27		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 06:02	5
Boron	1.2		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 06:02	5
Lithium	0.0027	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 06:02	5

## Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:00	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	300	H	10	10	mg/L			04/17/19 15:52	1

## Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0386	U	0.0453	0.0454	1.00	0.0730	pCi/L	04/10/19 14:10	05/03/19 11:20	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	99.4		40 - 110					04/10/19 14:10	05/03/19 11:20	1

## Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.180	U	0.210	0.211	1.00	0.346	pCi/L	04/10/19 14:13	04/18/19 15:34	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	99.4		40 - 110					04/10/19 14:13	04/18/19 15:34	1
<i>Y Carrier</i>	91.6		40 - 110					04/10/19 14:13	04/18/19 15:34	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.218	U	0.215	0.216	5.00	0.346	pCi/L		05/06/19 13:01	1

**Client Sample ID: SGWC22**

**Lab Sample ID: 180-88533-8**

Date Collected: 04/02/19 09:50

Matrix: Water

Date Received: 04/04/19 08:35

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10		1.0	0.71	mg/L			04/14/19 20:33	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 20:33	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC22**

**Lab Sample ID: 180-88533-8**

Date Collected: 04/02/19 09:50

Matrix: Water

Date Received: 04/04/19 08:35

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	100		1.0	0.38	mg/L			04/14/19 20:33	1

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 06:06	5
Barium	0.076		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 06:06	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:06	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:06	5
Cobalt	0.0018	J	0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 06:06	5
Chromium	0.0012	J	0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 06:06	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 06:06	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 06:06	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 06:06	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 06:06	5
Calcium	26		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 06:06	5
Boron	0.44		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 06:06	5
Lithium	0.0026	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 06:06	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:01	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	240	H	10	10	mg/L			04/17/19 15:52	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0685	U	0.0538	0.0541	1.00	0.0747	pCi/L	04/10/19 14:08	05/02/19 19:08	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.8		40 - 110					04/10/19 14:08	05/02/19 19:08	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.244	U	0.263	0.264	1.00	0.430	pCi/L	04/10/19 14:10	04/19/19 15:17	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	96.8		40 - 110					04/10/19 14:10	04/19/19 15:17	1
Y Carrier	85.6		40 - 110					04/10/19 14:10	04/19/19 15:17	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.313	U	0.268	0.269	5.00	0.430	pCi/L		05/06/19 13:01	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC23**

**Lab Sample ID: 180-88533-9**

Date Collected: 04/02/19 11:05

Matrix: Water

Date Received: 04/04/19 08:35

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.9		1.0	0.71	mg/L			04/14/19 20:49	1
Fluoride	0.036	J	0.20	0.026	mg/L			04/14/19 20:49	1
Sulfate	95		1.0	0.38	mg/L			04/14/19 20:49	1

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 06:10	5
Barium	0.068		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 06:10	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:10	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:10	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 06:10	5
Chromium	0.0011	J	0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 06:10	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 06:10	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 06:10	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 06:10	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 06:10	5
Calcium	23		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 06:10	5
Boron	0.52		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 06:10	5
Lithium	0.0041	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 06:10	5

### Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:04	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	250	H	10	10	mg/L			04/17/19 15:52	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217		0.0815	0.0838	1.00	0.0753	pCi/L	04/10/19 14:08	05/03/19 13:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					04/10/19 14:08	05/03/19 13:25	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.299	U	0.244	0.245	1.00	0.387	pCi/L	04/10/19 14:10	04/19/19 15:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					04/10/19 14:10	04/19/19 15:17	1
Y Carrier	85.2		40 - 110					04/10/19 14:10	04/19/19 15:17	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: SGWC23**

**Lab Sample ID: 180-88533-9**

Date Collected: 04/02/19 11:05

Matrix: Water

Date Received: 04/04/19 08:35

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.516		0.257	0.259	5.00	0.387	pCi/L		05/06/19 13:01	1

**Client Sample ID: FB-3 (AP)**

**Lab Sample ID: 180-88533-10**

Date Collected: 04/02/19 09:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/14/19 21:05	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 21:05	1
Sulfate	0.72	J	1.0	0.38	mg/L			04/14/19 21:05	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 06:14	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 06:14	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:14	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:14	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 06:14	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 06:14	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 06:14	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 06:14	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 06:14	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 06:14	5
Calcium	<0.13		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 06:14	5
Boron	<0.021		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 06:14	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 06:14	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:06	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10	H	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00247	U	0.0316	0.0316	1.00	0.0689	pCi/L	04/10/19 14:08	05/03/19 13:25	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/10/19 14:08	05/03/19 13:25	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FB-3 (AP)**

**Lab Sample ID: 180-88533-10**

Date Collected: 04/02/19 09:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.108	U	0.218	0.218	1.00	0.374	pCi/L	04/10/19 14:10	04/19/19 15:17	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	101		40 - 110					04/10/19 14:10	04/19/19 15:17	1
Y Carrier	80.4		40 - 110					04/10/19 14:10	04/19/19 15:17	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.111	U	0.220	0.220	5.00	0.374	pCi/L		05/06/19 13:01	1

**Client Sample ID: EB-3 (AP)**

**Lab Sample ID: 180-88533-11**

Date Collected: 04/02/19 12:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/14/19 21:21	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 21:21	1
Sulfate	0.62	J	1.0	0.38	mg/L			04/14/19 21:21	1

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 06:18	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 06:18	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:18	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 06:18	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 06:18	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 06:18	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 06:18	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 06:18	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 06:18	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 06:18	5
Calcium	<0.13		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 06:18	5
Boron	<0.021		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 06:18	5
Lithium	0.0012	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 06:18	5

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:08	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10	H	10	10	mg/L			04/17/19 15:52	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: EB-3 (AP)**

**Lab Sample ID: 180-88533-11**

Date Collected: 04/02/19 12:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0201	U	0.0335	0.0335	1.00	0.0834	pCi/L	04/10/19 14:08	05/03/19 13:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					04/10/19 14:08	05/03/19 13:25	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.191	U	0.236	0.237	1.00	0.392	pCi/L	04/10/19 14:10	04/19/19 15:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					04/10/19 14:10	04/19/19 15:17	1
Y Carrier	82.2		40 - 110					04/10/19 14:10	04/19/19 15:17	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.171	U	0.238	0.239	5.00	0.392	pCi/L		05/06/19 13:01	1

**Client Sample ID: FD-3 (AP)**

**Lab Sample ID: 180-88533-12**

Date Collected: 04/02/19 00:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15		1.0	0.71	mg/L			04/15/19 07:08	1
Fluoride	0.053	J	0.20	0.026	mg/L			04/15/19 07:08	1
Sulfate	1100		10	3.8	mg/L			04/15/19 07:24	10

**Method: 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0027		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 07:05	5
Barium	0.029		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 07:05	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 07:05	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 07:05	5
Cobalt	0.18		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 07:05	5
Chromium	0.0094		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 07:05	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 07:05	5
Selenium	0.0080		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 07:05	5
Thallium	0.00017	J	0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 07:05	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 07:05	5
Calcium	87		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 07:05	5
Lithium	0.0046	J	0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 07:05	5

**Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	5.1		0.50	0.21	mg/L		04/15/19 16:45	04/17/19 09:20	50

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

**Client Sample ID: FD-3 (AP)**

**Lab Sample ID: 180-88533-12**

Date Collected: 04/02/19 00:00

Matrix: Water

Date Received: 04/04/19 08:35

**Method: 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00015	J	0.00020	0.000070	mg/L		04/10/19 14:23	04/11/19 13:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1700	H	10	10	mg/L			04/17/19 15:52	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0338	U	0.0473	0.0474	1.00	0.0802	pCi/L	04/10/19 14:08	05/03/19 13:25	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/10/19 14:08	05/03/19 13:25	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.229	U	0.228	0.229	1.00	0.370	pCi/L	04/10/19 14:10	04/19/19 15:18	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	102		40 - 110					04/10/19 14:10	04/19/19 15:18	1
Y Carrier	88.6		40 - 110					04/10/19 14:10	04/19/19 15:18	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.263	U	0.233	0.234	5.00	0.370	pCi/L		05/06/19 13:01	1

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

**Lab Sample ID: MB 180-274458/41**  
**Matrix: Water**  
**Analysis Batch: 274458**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/01/19 14:59	1
Fluoride	<0.026		0.20	0.026	mg/L			04/01/19 14:59	1
Sulfate	<0.38		1.0	0.38	mg/L			04/01/19 14:59	1

**Lab Sample ID: LCS 180-274458/38**  
**Matrix: Water**  
**Analysis Batch: 274458**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.3		mg/L		101	90 - 110
Fluoride	1.25	1.25		mg/L		100	90 - 110
Sulfate	25.0	25.3		mg/L		101	90 - 110

**Lab Sample ID: MB 180-274532/6**  
**Matrix: Water**  
**Analysis Batch: 274532**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/02/19 05:41	1
Fluoride	<0.026		0.20	0.026	mg/L			04/02/19 05:41	1
Sulfate	<0.38		1.0	0.38	mg/L			04/02/19 05:41	1

**Lab Sample ID: LCS 180-274532/5**  
**Matrix: Water**  
**Analysis Batch: 274532**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.6		mg/L		102	90 - 110
Fluoride	1.25	1.24		mg/L		99	90 - 110
Sulfate	25.0	25.2		mg/L		101	90 - 110

**Lab Sample ID: 180-88347-5 MS**  
**Matrix: Water**  
**Analysis Batch: 274532**

**Client Sample ID: FD-1 (AP)**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1.0		25.0	25.9		mg/L		99	80 - 120
Fluoride	0.056	J	1.25	1.28		mg/L		98	80 - 120
Sulfate	1.3		25.0	25.5		mg/L		97	80 - 120

**Lab Sample ID: 180-88347-5 MSD**  
**Matrix: Water**  
**Analysis Batch: 274532**

**Client Sample ID: FD-1 (AP)**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1.0		25.0	27.2		mg/L		105	80 - 120	5	20
Fluoride	0.056	J	1.25	1.34		mg/L		102	80 - 120	5	20
Sulfate	1.3		25.0	26.9		mg/L		102	80 - 120	5	20

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: MB 180-275670/5**  
**Matrix: Water**  
**Analysis Batch: 275670**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/13/19 07:25	1
Fluoride	<0.026		0.20	0.026	mg/L			04/13/19 07:25	1
Sulfate	<0.38		1.0	0.38	mg/L			04/13/19 07:25	1

**Lab Sample ID: LCS 180-275670/6**  
**Matrix: Water**  
**Analysis Batch: 275670**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.4		mg/L		102	90 - 110
Fluoride	1.25	1.14		mg/L		92	90 - 110
Sulfate	25.0	24.9		mg/L		100	90 - 110

**Lab Sample ID: 180-88428-1 MS**  
**Matrix: Water**  
**Analysis Batch: 275670**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.6		25.0	28.8		mg/L		97	80 - 120
Fluoride	0.12	J	1.25	1.31		mg/L		95	80 - 120
Sulfate	16		25.0	39.3		mg/L		95	80 - 120

**Lab Sample ID: 180-88428-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 275670**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.6		25.0	28.9		mg/L		97	80 - 120	0	20
Fluoride	0.12	J	1.25	1.37		mg/L		100	80 - 120	5	20
Sulfate	16		25.0	40.4		mg/L		99	80 - 120	3	20

**Lab Sample ID: MB 180-275697/17**  
**Matrix: Water**  
**Analysis Batch: 275697**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/14/19 13:11	1
Fluoride	<0.026		0.20	0.026	mg/L			04/14/19 13:11	1
Sulfate	<0.38		1.0	0.38	mg/L			04/14/19 13:11	1

**Lab Sample ID: LCS 180-275697/16**  
**Matrix: Water**  
**Analysis Batch: 275697**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.5		mg/L		102	90 - 110
Fluoride	1.25	1.27		mg/L		102	90 - 110
Sulfate	25.0	25.6		mg/L		102	90 - 110

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 180-88533-1 MS**  
**Matrix: Water**  
**Analysis Batch: 275697**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.0		25.0	27.8		mg/L		103	80 - 120
Fluoride	0.10	J	1.25	1.44		mg/L		107	80 - 120
Sulfate	1.3		25.0	26.8		mg/L		102	80 - 120

**Lab Sample ID: 180-88533-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 275697**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2.0		25.0	27.8		mg/L		103	80 - 120	0	20
Fluoride	0.10	J	1.25	1.44		mg/L		107	80 - 120	0	20
Sulfate	1.3		25.0	26.8		mg/L		102	80 - 120	0	20

**Lab Sample ID: MB 180-275706/6**  
**Matrix: Water**  
**Analysis Batch: 275706**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			04/15/19 05:00	1
Fluoride	<0.026		0.20	0.026	mg/L			04/15/19 05:00	1
Sulfate	<0.38		1.0	0.38	mg/L			04/15/19 05:00	1

**Lab Sample ID: LCS 180-275706/5**  
**Matrix: Water**  
**Analysis Batch: 275706**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	24.6		mg/L		98	90 - 110
Fluoride	1.25	1.21		mg/L		97	90 - 110
Sulfate	25.0	24.5		mg/L		98	90 - 110

**Lab Sample ID: MB 180-275743/5**  
**Matrix: Water**  
**Analysis Batch: 275743**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.38		1.0	0.38	mg/L			04/15/19 05:59	1

**Lab Sample ID: LCS 180-275743/6**  
**Matrix: Water**  
**Analysis Batch: 275743**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	25.0	23.5		mg/L		94	90 - 110

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 6020 - Metals (ICP/MS)

**Lab Sample ID: MB 400-435839/1-A ^5**  
**Matrix: Water**  
**Analysis Batch: 436341**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 435839**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/04/19 10:15	04/04/19 21:14	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/04/19 10:15	04/04/19 21:14	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 21:14	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/04/19 10:15	04/04/19 21:14	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/04/19 10:15	04/04/19 21:14	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/04/19 10:15	04/04/19 21:14	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/04/19 10:15	04/04/19 21:14	5
Antimony	<0.0010		0.0025	0.0010	mg/L		04/04/19 10:15	04/04/19 21:14	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/04/19 10:15	04/04/19 21:14	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/04/19 10:15	04/04/19 21:14	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/04/19 10:15	04/04/19 21:14	5
Calcium	<0.13		0.25	0.13	mg/L		04/04/19 10:15	04/04/19 21:14	5
Boron	<0.021		0.050	0.021	mg/L		04/04/19 10:15	04/04/19 21:14	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/04/19 10:15	04/04/19 21:14	5

**Lab Sample ID: LCS 400-435839/2-A**  
**Matrix: Water**  
**Analysis Batch: 436341**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 435839**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	0.0500	0.0508		mg/L		102	80 - 120
Barium	0.0500	0.0484		mg/L		97	80 - 120
Beryllium	0.0500	0.0494		mg/L		99	80 - 120
Cadmium	0.0500	0.0487		mg/L		97	80 - 120
Cobalt	0.0500	0.0492		mg/L		98	80 - 120
Chromium	0.0500	0.0488		mg/L		98	80 - 120
Lead	0.0500	0.0521		mg/L		104	80 - 120
Antimony	0.0500	0.0490		mg/L		98	80 - 120
Selenium	0.0500	0.0470		mg/L		94	80 - 120
Thallium	0.0100	0.0103		mg/L		103	80 - 120
Molybdenum	0.0500	0.0552		mg/L		110	80 - 120
Calcium	5.00	4.79		mg/L		96	80 - 120
Boron	0.100	0.101		mg/L		101	80 - 120
Lithium	0.0500	0.0515		mg/L		103	80 - 120

**Lab Sample ID: MB 400-436825/1-A ^5**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/11/19 17:30	04/12/19 09:23	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/11/19 17:30	04/12/19 09:23	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:23	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/11/19 17:30	04/12/19 09:23	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/11/19 17:30	04/12/19 09:23	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/11/19 17:30	04/12/19 09:23	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/11/19 17:30	04/12/19 09:23	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/11/19 17:30	04/12/19 09:23	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/11/19 17:30	04/12/19 09:23	5

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 400-436825/1-A ^5**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/11/19 17:30	04/12/19 09:23	5
Calcium	<0.13		0.25	0.13	mg/L		04/11/19 17:30	04/12/19 09:23	5
Boron	<0.021		0.050	0.021	mg/L		04/11/19 17:30	04/12/19 09:23	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/11/19 17:30	04/12/19 09:23	5

**Lab Sample ID: LCS 400-436825/2-A**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0500	0.0501		mg/L		100	80 - 120
Barium	0.0500	0.0506		mg/L		101	80 - 120
Beryllium	0.0500	0.0476		mg/L		95	80 - 120
Cadmium	0.0500	0.0499		mg/L		100	80 - 120
Cobalt	0.0500	0.0488		mg/L		98	80 - 120
Chromium	0.0500	0.0472		mg/L		94	80 - 120
Lead	0.0500	0.0507		mg/L		101	80 - 120
Selenium	0.0500	0.0479		mg/L		96	80 - 120
Thallium	0.0100	0.00993		mg/L		99	80 - 120
Molybdenum	0.0500	0.0522		mg/L		104	80 - 120
Calcium	5.00	4.74		mg/L		95	80 - 120
Boron	0.100	0.108		mg/L		108	80 - 120
Lithium	0.0500	0.0505		mg/L		101	80 - 120

**Lab Sample ID: 180-88428-2 MS**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: SGWC-8**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0010	J	0.0500	0.0526		mg/L		103	75 - 125
Barium	0.19		0.0500	0.239		mg/L		105	75 - 125
Beryllium	<0.00034		0.0500	0.0488		mg/L		98	75 - 125
Cadmium	<0.00034		0.0500	0.0522		mg/L		104	75 - 125
Cobalt	<0.00040		0.0500	0.0493		mg/L		99	75 - 125
Chromium	0.0013	J	0.0500	0.0487		mg/L		95	75 - 125
Lead	<0.00035		0.0500	0.0516		mg/L		103	75 - 125
Selenium	<0.00071		0.0500	0.0497		mg/L		99	75 - 125
Thallium	<0.000085		0.0100	0.0101		mg/L		101	75 - 125
Molybdenum	<0.0020		0.0500	0.0540		mg/L		108	75 - 125
Calcium	45		5.00	51.1	4	mg/L		113	75 - 125
Boron	0.076		0.100	0.195		mg/L		119	75 - 125
Lithium	0.0021	J	0.0500	0.0511		mg/L		98	75 - 125

**Lab Sample ID: 180-88428-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: SGWC-8**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.0010	J	0.0500	0.0513		mg/L		101	75 - 125	2	20

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 180-88428-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 436932**

**Client Sample ID: SGWC-8**  
**Prep Type: Total Recoverable**  
**Prep Batch: 436825**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.19		0.0500	0.238		mg/L		103	75 - 125	1	20
Beryllium	<0.00034		0.0500	0.0479		mg/L		96	75 - 125	2	20
Cadmium	<0.00034		0.0500	0.0511		mg/L		102	75 - 125	2	20
Cobalt	<0.00040		0.0500	0.0490		mg/L		98	75 - 125	1	20
Chromium	0.0013	J	0.0500	0.0485		mg/L		94	75 - 125	0	20
Lead	<0.00035		0.0500	0.0501		mg/L		100	75 - 125	3	20
Selenium	<0.00071		0.0500	0.0478		mg/L		96	75 - 125	4	20
Thallium	<0.000085		0.0100	0.0100		mg/L		100	75 - 125	0	20
Molybdenum	<0.0020		0.0500	0.0533		mg/L		107	75 - 125	1	20
Calcium	45		5.00	51.0	4	mg/L		112	75 - 125	0	20
Boron	0.076		0.100	0.192		mg/L		116	75 - 125	1	20
Lithium	0.0021	J	0.0500	0.0516		mg/L		99	75 - 125	1	20

**Lab Sample ID: MB 400-437187/1-A ^5**  
**Matrix: Water**  
**Analysis Batch: 437398**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 437187**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00046		0.0013	0.00046	mg/L		04/15/19 16:45	04/17/19 08:41	5
Barium	<0.00049		0.0025	0.00049	mg/L		04/15/19 16:45	04/17/19 08:41	5
Beryllium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 08:41	5
Cadmium	<0.00034		0.0025	0.00034	mg/L		04/15/19 16:45	04/17/19 08:41	5
Cobalt	<0.00040		0.0025	0.00040	mg/L		04/15/19 16:45	04/17/19 08:41	5
Chromium	<0.0011		0.0025	0.0011	mg/L		04/15/19 16:45	04/17/19 08:41	5
Lead	<0.00035		0.0013	0.00035	mg/L		04/15/19 16:45	04/17/19 08:41	5
Selenium	<0.00071		0.0013	0.00071	mg/L		04/15/19 16:45	04/17/19 08:41	5
Thallium	<0.000085		0.00050	0.000085	mg/L		04/15/19 16:45	04/17/19 08:41	5
Molybdenum	<0.0020		0.015	0.0020	mg/L		04/15/19 16:45	04/17/19 08:41	5
Calcium	<0.13		0.25	0.13	mg/L		04/15/19 16:45	04/17/19 08:41	5
Boron	<0.021		0.050	0.021	mg/L		04/15/19 16:45	04/17/19 08:41	5
Lithium	<0.0011		0.0050	0.0011	mg/L		04/15/19 16:45	04/17/19 08:41	5

**Lab Sample ID: LCS 400-437187/2-A**  
**Matrix: Water**  
**Analysis Batch: 437398**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 437187**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0500	0.0498		mg/L		100	80 - 120
Barium	0.0500	0.0482		mg/L		96	80 - 120
Beryllium	0.0500	0.0475		mg/L		95	80 - 120
Cadmium	0.0500	0.0495		mg/L		99	80 - 120
Cobalt	0.0500	0.0505		mg/L		101	80 - 120
Chromium	0.0500	0.0476		mg/L		95	80 - 120
Lead	0.0500	0.0485		mg/L		97	80 - 120
Selenium	0.0500	0.0510		mg/L		102	80 - 120
Thallium	0.0100	0.00948		mg/L		95	80 - 120
Molybdenum	0.0500	0.0526		mg/L		105	80 - 120
Calcium	5.00	4.62		mg/L		92	80 - 120
Boron	0.100	0.0975		mg/L		98	80 - 120

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 400-437187/2-A  
Matrix: Water  
Analysis Batch: 437398

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 437187

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Lithium	0.0500	0.0473		mg/L		95	80 - 120

Lab Sample ID: 180-88533-1 MS  
Matrix: Water  
Analysis Batch: 437398

Client Sample ID: SGWC-6  
Prep Type: Total Recoverable  
Prep Batch: 437187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	<0.00046		0.0500	0.0526		mg/L		105	75 - 125
Barium	0.069		0.0500	0.121		mg/L		103	75 - 125
Beryllium	<0.00034		0.0500	0.0491	^	mg/L		98	75 - 125
Cadmium	<0.00034		0.0500	0.0512		mg/L		102	75 - 125
Cobalt	<0.00040		0.0500	0.0527		mg/L		105	75 - 125
Chromium	<0.0011		0.0500	0.0493		mg/L		99	75 - 125
Lead	<0.00035		0.0500	0.0514		mg/L		103	75 - 125
Selenium	<0.00071		0.0500	0.0585		mg/L		117	75 - 125
Thallium	<0.000085		0.0100	0.0102		mg/L		102	75 - 125
Molybdenum	<0.0020		0.0500	0.0543		mg/L		109	75 - 125
Calcium	6.5		5.00	11.5		mg/L		101	75 - 125
Boron	<0.021	F1 F2	0.100	0.0835		mg/L		83	75 - 125
Lithium	<0.0011		0.0500	0.0497	^	mg/L		99	75 - 125

Lab Sample ID: 180-88533-1 MSD  
Matrix: Water  
Analysis Batch: 437398

Client Sample ID: SGWC-6  
Prep Type: Total Recoverable  
Prep Batch: 437187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	<0.00046		0.0500	0.0515		mg/L		103	75 - 125	2	20
Barium	0.069		0.0500	0.120		mg/L		101	75 - 125	1	20
Beryllium	<0.00034		0.0500	0.0470	^	mg/L		94	75 - 125	4	20
Cadmium	<0.00034		0.0500	0.0495		mg/L		99	75 - 125	3	20
Cobalt	<0.00040		0.0500	0.0530		mg/L		106	75 - 125	1	20
Chromium	<0.0011		0.0500	0.0498		mg/L		100	75 - 125	1	20
Lead	<0.00035		0.0500	0.0490		mg/L		98	75 - 125	5	20
Selenium	<0.00071		0.0500	0.0529		mg/L		106	75 - 125	10	20
Thallium	<0.000085		0.0100	0.00984		mg/L		98	75 - 125	3	20
Molybdenum	<0.0020		0.0500	0.0520		mg/L		104	75 - 125	4	20
Calcium	6.5		5.00	11.6		mg/L		101	75 - 125	0	20
Boron	<0.021	F1 F2	0.100	0.0679	F1 F2	mg/L		68	75 - 125	21	20
Lithium	<0.0011		0.0500	0.0462	^	mg/L		92	75 - 125	7	20

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 400-435663/14-A  
Matrix: Water  
Analysis Batch: 436068

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 435663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/03/19 09:18	04/05/19 12:58	1

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCS 400-435663/15-A**  
**Matrix: Water**  
**Analysis Batch: 436068**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 435663**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00101	0.00102		mg/L		101	80 - 120

**Lab Sample ID: MB 400-436430/14-A**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 436430**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/09/19 14:09	04/11/19 09:46	1

**Lab Sample ID: LCS 400-436430/15-A**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 436430**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00101	0.000960		mg/L		95	80 - 120

**Lab Sample ID: 180-88428-1 MS**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**  
**Prep Batch: 436430**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	<0.000070		0.00201	0.00221		mg/L		110	80 - 120

**Lab Sample ID: 180-88428-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**  
**Prep Batch: 436430**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	<0.000070		0.00201	0.00204		mg/L		101	80 - 120	8	20

**Lab Sample ID: MB 400-436582/14-A**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 436582**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000070		0.00020	0.000070	mg/L		04/10/19 14:16	04/11/19 12:23	1

**Lab Sample ID: LCS 400-436582/15-A**  
**Matrix: Water**  
**Analysis Batch: 436767**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 436582**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00101	0.00103		mg/L		103	80 - 120

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: SM 2540C - Solids, Total Dissolved (TDS)

**Lab Sample ID: MB 180-274611/2**  
**Matrix: Water**  
**Analysis Batch: 274611**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/02/19 12:58	1

**Lab Sample ID: LCS 180-274611/1**  
**Matrix: Water**  
**Analysis Batch: 274611**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	308		mg/L		101	80 - 120

**Lab Sample ID: MB 180-274717/2**  
**Matrix: Water**  
**Analysis Batch: 274717**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/03/19 11:13	1

**Lab Sample ID: LCS 180-274717/1**  
**Matrix: Water**  
**Analysis Batch: 274717**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	246		mg/L		81	80 - 120

**Lab Sample ID: MB 180-274838/2**  
**Matrix: Water**  
**Analysis Batch: 274838**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/04/19 12:11	1

**Lab Sample ID: LCS 180-274838/1**  
**Matrix: Water**  
**Analysis Batch: 274838**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	258		mg/L		85	80 - 120

**Lab Sample ID: MB 180-274865/2**  
**Matrix: Water**  
**Analysis Batch: 274865**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/04/19 13:40	1

**Lab Sample ID: LCS 180-274865/1**  
**Matrix: Water**  
**Analysis Batch: 274865**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	286		mg/L		94	80 - 120

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: SM 2540C - Solids, Total Dissolved (TDS)

**Lab Sample ID: MB 180-274958/2**  
**Matrix: Water**  
**Analysis Batch: 274958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/05/19 12:09	1

**Lab Sample ID: LCS 180-274958/1**  
**Matrix: Water**  
**Analysis Batch: 274958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	324		mg/L		107	80 - 120

**Lab Sample ID: MB 180-275110/2**  
**Matrix: Water**  
**Analysis Batch: 275110**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/08/19 11:54	1

**Lab Sample ID: LCS 180-275110/1**  
**Matrix: Water**  
**Analysis Batch: 275110**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	304	286		mg/L		94	80 - 120

**Lab Sample ID: 180-88428-5 DU**  
**Matrix: Water**  
**Analysis Batch: 275110**

**Client Sample ID: SGWC-11**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	33		34.0		mg/L		3	10

**Lab Sample ID: MB 180-276061/2**  
**Matrix: Water**  
**Analysis Batch: 276061**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			04/17/19 15:52	1

**Lab Sample ID: LCS 180-276061/1**  
**Matrix: Water**  
**Analysis Batch: 276061**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	201	220		mg/L		109	80 - 120

**Lab Sample ID: 180-88533-5 DU**  
**Matrix: Water**  
**Analysis Batch: 276061**

**Client Sample ID: SGWC19**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	420	H	407		mg/L		2	10

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 9315 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-423239/23-A**  
**Matrix: Water**  
**Analysis Batch: 426506**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 423239**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.001833	U	0.0315	0.0315	1.00	0.0713	pCi/L	04/10/19 14:08	05/02/19 21:51	1
Carrier	MB MB		Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	%Yield	Qualifier	40 - 110					04/10/19 14:08	05/02/19 21:51	1
	107									

**Lab Sample ID: LCS 160-423239/1-A**  
**Matrix: Water**  
**Analysis Batch: 426594**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423239**

Analyte	LCS LCS		Spike	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	%Yield	Qualifier	Added	Result	Qual	Uncert. (2σ+/-)					
Radium-226			11.4	9.150		0.951	1.00	0.0762	pCi/L	81	75 - 125
Carrier	LCS LCS		Limits								
Ba Carrier	%Yield	Qualifier	40 - 110								
	108										

**Lab Sample ID: LCSD 160-423239/2-A**  
**Matrix: Water**  
**Analysis Batch: 426506**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423239**

Analyte	LCSD LCSD		Spike	LCSD	LCSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	%Yield	Qualifier	Added	Result	Qual	Uncert. (2σ+/-)							
Radium-226			11.4	8.705		0.904	1.00	0.0678	pCi/L	77	75 - 125	0.24	1
Carrier	LCSD LCSD		Limits										
Ba Carrier	%Yield	Qualifier	40 - 110										
	107												

**Lab Sample ID: MB 160-423241/23-A**  
**Matrix: Water**  
**Analysis Batch: 426595**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 423241**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.01221	U	0.0250	0.0250	1.00	0.0670	pCi/L	04/10/19 14:10	05/03/19 11:21	1
Carrier	MB MB		Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	%Yield	Qualifier	40 - 110					04/10/19 14:10	05/03/19 11:21	1
	104									

**Lab Sample ID: LCS 160-423241/1-A**  
**Matrix: Water**  
**Analysis Batch: 426506**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423241**

Analyte	LCS LCS		Spike	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	%Yield	Qualifier	Added	Result	Qual	Uncert. (2σ+/-)					
Radium-226			11.4	9.945		1.02	1.00	0.0643	pCi/L	88	75 - 125

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 9315 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-423241/1-A**  
**Matrix: Water**  
**Analysis Batch: 426506**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423241**

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	103		40 - 110

**Lab Sample ID: LCSD 160-423241/2-A**  
**Matrix: Water**  
**Analysis Batch: 426506**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423241**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	10.61		1.11	1.00	0.0774	pCi/L	93	75 - 125	0.31	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	96.8		40 - 110

**Lab Sample ID: MB 160-423612/23-A**  
**Matrix: Water**  
**Analysis Batch: 427793**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 423612**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02477	U	0.0512	0.0512	1.00	0.0945	pCi/L	04/14/19 16:53	05/09/19 12:44	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110	04/14/19 16:53	05/09/19 12:44	1

**Lab Sample ID: LCS 160-423612/1-A**  
**Matrix: Water**  
**Analysis Batch: 427794**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423612**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	9.200		0.987	1.00	0.0782	pCi/L	81	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	95.6		40 - 110

**Lab Sample ID: LCSD 160-423612/2-A**  
**Matrix: Water**  
**Analysis Batch: 427796**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423612**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	9.064		0.954	1.00	0.0892	pCi/L	80	75 - 125	0.07	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	98.5		40 - 110

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 9320 - Radium-228 (GFPC)

**Lab Sample ID: LCS 160-423240/1-A**  
**Matrix: Water**  
**Analysis Batch: 424434**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423240**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
									75	125	
Radium-228	9.29	7.592		0.974	1.00	0.471	pCi/L	82	75	125	
<b>Carrier</b>	<b>%Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>								
Ba Carrier	108		40 - 110								
Y Carrier	67.7		40 - 110								

**Lab Sample ID: LCSD 160-423240/2-A**  
**Matrix: Water**  
**Analysis Batch: 424434**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423240**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
									75	125	0.23	1
Radium-228	9.29	8.047		0.972	1.00	0.390	pCi/L	87	75	125	0.23	1
<b>Carrier</b>	<b>%Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>									
Ba Carrier	107		40 - 110									
Y Carrier	82.2		40 - 110									

**Lab Sample ID: MB 160-423242/23-A**  
**Matrix: Water**  
**Analysis Batch: 424351**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 423242**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								04/10/19 14:13	04/18/19 15:34	04/10/19 14:13	04/18/19 15:34	1
Radium-228	0.3112	U	0.213	0.215	1.00	0.330	pCi/L	04/10/19 14:13	04/18/19 15:34	04/10/19 14:13	04/18/19 15:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>									
Ba Carrier	104		40 - 110									
Y Carrier	89.3		40 - 110									

**Lab Sample ID: LCS 160-423242/1-A**  
**Matrix: Water**  
**Analysis Batch: 424352**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423242**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									75	125
Radium-228	9.29	7.688		0.921	1.00	0.357	pCi/L	83	75	125
<b>Carrier</b>	<b>%Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	103		40 - 110							
Y Carrier	81.5		40 - 110							



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Method: 9320 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: LCSD 160-423242/2-A**  
**Matrix: Water**  
**Analysis Batch: 424352**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423242**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
									75 - 125	0.20	1	
Radium-228	9.29	7.329		0.883	1.00	0.330	pCi/L	79	75 - 125	0.20		1
<b>Carrier</b>		<b>LCSD %Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>								
Ba Carrier		96.8		40 - 110								
Y Carrier		89.7		40 - 110								

**Lab Sample ID: MB 160-423844/23-A**  
**Matrix: Water**  
**Analysis Batch: 426331**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 423844**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228										
<b>Carrier</b>		<b>MB %Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier		99.7		40 - 110				04/14/19 16:53	05/01/19 15:56	1
Y Carrier		84.5		40 - 110				04/14/19 16:53	05/01/19 15:56	1

**Lab Sample ID: LCS 160-423844/1-A**  
**Matrix: Water**  
**Analysis Batch: 426333**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 423844**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									75 - 125	
Radium-228	9.25	8.496		1.02	1.00	0.370	pCi/L	92	75 - 125	
<b>Carrier</b>		<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Ba Carrier		95.6		40 - 110						
Y Carrier		86.4		40 - 110						

**Lab Sample ID: LCSD 160-423844/2-A**  
**Matrix: Water**  
**Analysis Batch: 426333**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 423844**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
									75 - 125	0.06	1	
Radium-228	9.25	8.617		1.03	1.00	0.370	pCi/L	93	75 - 125	0.06		1
<b>Carrier</b>		<b>LCSD %Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>								
Ba Carrier		98.5		40 - 110								
Y Carrier		83.0		40 - 110								

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## HPLC/IC

### Analysis Batch: 274458

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	EPA 300.0 R2.1	
MB 180-274458/41	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-274458/38	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 274532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-2	SGWA-5	Total/NA	Water	EPA 300.0 R2.1	
180-88347-3	SGWA-25	Total/NA	Water	EPA 300.0 R2.1	
180-88347-4	SGWA-3	Total/NA	Water	EPA 300.0 R2.1	
180-88347-5	FD-1 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88347-6	FB-1 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88347-7	EB-1 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88347-8	SGWA-1	Total/NA	Water	EPA 300.0 R2.1	
180-88347-9	SGWA-2	Total/NA	Water	EPA 300.0 R2.1	
180-88347-10	SGWA-24	Total/NA	Water	EPA 300.0 R2.1	
MB 180-274532/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-274532/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-88347-5 MS	FD-1 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88347-5 MSD	FD-1 (AP)	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 275670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-88428-2	SGWC-8	Total/NA	Water	EPA 300.0 R2.1	
180-88428-3	SGWC-9	Total/NA	Water	EPA 300.0 R2.1	
180-88428-3	SGWC-9	Total/NA	Water	EPA 300.0 R2.1	
180-88428-4	SGWC-10	Total/NA	Water	EPA 300.0 R2.1	
180-88428-5	SGWC-11	Total/NA	Water	EPA 300.0 R2.1	
180-88428-6	SGWC-12	Total/NA	Water	EPA 300.0 R2.1	
180-88428-7	SGWC-13	Total/NA	Water	EPA 300.0 R2.1	
180-88428-8	SGWC-14	Total/NA	Water	EPA 300.0 R2.1	
180-88428-9	SGWC-15	Total/NA	Water	EPA 300.0 R2.1	
180-88428-10	EB-2 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88428-11	FB-2 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88428-12	FD-2 (AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-275670/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-275670/6	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-88428-1 MS	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-88428-1 MSD	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 275697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-1	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-88533-2	SGWC-16	Total/NA	Water	EPA 300.0 R2.1	
180-88533-3	SGWC-17	Total/NA	Water	EPA 300.0 R2.1	
180-88533-4	SGWC-18	Total/NA	Water	EPA 300.0 R2.1	
180-88533-4	SGWC-18	Total/NA	Water	EPA 300.0 R2.1	
180-88533-5	SGWC19	Total/NA	Water	EPA 300.0 R2.1	
180-88533-6	SGWC-20	Total/NA	Water	EPA 300.0 R2.1	
180-88533-7	SGWC-21	Total/NA	Water	EPA 300.0 R2.1	
180-88533-8	SGWC22	Total/NA	Water	EPA 300.0 R2.1	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## HPLC/IC (Continued)

### Analysis Batch: 275697 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-9	SGWC23	Total/NA	Water	EPA 300.0 R2.1	
180-88533-10	FB-3 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88533-11	EB-3 (AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-275697/17	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-275697/16	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-88533-1 MS	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-88533-1 MSD	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 275706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-12	FD-3 (AP)	Total/NA	Water	EPA 300.0 R2.1	
180-88533-12	FD-3 (AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-275706/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-275706/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 275743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-5	SGWC19	Total/NA	Water	EPA 300.0 R2.1	
180-88533-6	SGWC-20	Total/NA	Water	EPA 300.0 R2.1	
MB 180-275743/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-275743/6	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

## Metals

### Prep Batch: 435663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	7470A	
180-88347-2	SGWA-5	Total/NA	Water	7470A	
180-88347-3	SGWA-25	Total/NA	Water	7470A	
180-88347-4	SGWA-3	Total/NA	Water	7470A	
180-88347-5	FD-1 (AP)	Total/NA	Water	7470A	
180-88347-6	FB-1 (AP)	Total/NA	Water	7470A	
180-88347-7	EB-1 (AP)	Total/NA	Water	7470A	
180-88347-8	SGWA-1	Total/NA	Water	7470A	
180-88347-9	SGWA-2	Total/NA	Water	7470A	
180-88347-10	SGWA-24	Total/NA	Water	7470A	
MB 400-435663/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-435663/15-A	Lab Control Sample	Total/NA	Water	7470A	

### Prep Batch: 435839

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total Recoverable	Water	3005A	
180-88347-2	SGWA-5	Total Recoverable	Water	3005A	
180-88347-3	SGWA-25	Total Recoverable	Water	3005A	
180-88347-4	SGWA-3	Total Recoverable	Water	3005A	
180-88347-5	FD-1 (AP)	Total Recoverable	Water	3005A	
180-88347-6	FB-1 (AP)	Total Recoverable	Water	3005A	
180-88347-7	EB-1 (AP)	Total Recoverable	Water	3005A	
180-88347-8	SGWA-1	Total Recoverable	Water	3005A	
180-88347-9	SGWA-2	Total Recoverable	Water	3005A	
180-88347-10	SGWA-24	Total Recoverable	Water	3005A	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Metals (Continued)

### Prep Batch: 435839 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 400-435839/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-435839/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Analysis Batch: 436068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	7470A	435663
180-88347-2	SGWA-5	Total/NA	Water	7470A	435663
180-88347-3	SGWA-25	Total/NA	Water	7470A	435663
180-88347-4	SGWA-3	Total/NA	Water	7470A	435663
180-88347-5	FD-1 (AP)	Total/NA	Water	7470A	435663
180-88347-6	FB-1 (AP)	Total/NA	Water	7470A	435663
180-88347-7	EB-1 (AP)	Total/NA	Water	7470A	435663
180-88347-8	SGWA-1	Total/NA	Water	7470A	435663
180-88347-9	SGWA-2	Total/NA	Water	7470A	435663
180-88347-10	SGWA-24	Total/NA	Water	7470A	435663
MB 400-435663/14-A	Method Blank	Total/NA	Water	7470A	435663
LCS 400-435663/15-A	Lab Control Sample	Total/NA	Water	7470A	435663

### Analysis Batch: 436341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total Recoverable	Water	6020	435839
180-88347-2	SGWA-5	Total Recoverable	Water	6020	435839
180-88347-3	SGWA-25	Total Recoverable	Water	6020	435839
180-88347-4	SGWA-3	Total Recoverable	Water	6020	435839
180-88347-5	FD-1 (AP)	Total Recoverable	Water	6020	435839
180-88347-6	FB-1 (AP)	Total Recoverable	Water	6020	435839
180-88347-7	EB-1 (AP)	Total Recoverable	Water	6020	435839
180-88347-8	SGWA-1	Total Recoverable	Water	6020	435839
180-88347-9	SGWA-2	Total Recoverable	Water	6020	435839
180-88347-10	SGWA-24	Total Recoverable	Water	6020	435839
MB 400-435839/1-A ^5	Method Blank	Total Recoverable	Water	6020	435839
LCS 400-435839/2-A	Lab Control Sample	Total Recoverable	Water	6020	435839

### Prep Batch: 436430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	7470A	
180-88428-2	SGWC-8	Total/NA	Water	7470A	
180-88428-3	SGWC-9	Total/NA	Water	7470A	
180-88428-4	SGWC-10	Total/NA	Water	7470A	
180-88428-5	SGWC-11	Total/NA	Water	7470A	
180-88428-6	SGWC-12	Total/NA	Water	7470A	
180-88428-7	SGWC-13	Total/NA	Water	7470A	
180-88428-8	SGWC-14	Total/NA	Water	7470A	
180-88428-9	SGWC-15	Total/NA	Water	7470A	
180-88428-10	EB-2 (AP)	Total/NA	Water	7470A	
180-88428-11	FB-2 (AP)	Total/NA	Water	7470A	
180-88428-12	FD-2 (AP)	Total/NA	Water	7470A	
MB 400-436430/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-436430/15-A	Lab Control Sample	Total/NA	Water	7470A	
180-88428-1 MS	SGWC-7	Total/NA	Water	7470A	
180-88428-1 MSD	SGWC-7	Total/NA	Water	7470A	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Metals

### Prep Batch: 436582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-1	SGWC-6	Total/NA	Water	7470A	
180-88533-2	SGWC-16	Total/NA	Water	7470A	
180-88533-3	SGWC-17	Total/NA	Water	7470A	
180-88533-4	SGWC-18	Total/NA	Water	7470A	
180-88533-5	SGWC19	Total/NA	Water	7470A	
180-88533-6	SGWC-20	Total/NA	Water	7470A	
180-88533-7	SGWC-21	Total/NA	Water	7470A	
180-88533-8	SGWC22	Total/NA	Water	7470A	
180-88533-9	SGWC23	Total/NA	Water	7470A	
180-88533-10	FB-3 (AP)	Total/NA	Water	7470A	
180-88533-11	EB-3 (AP)	Total/NA	Water	7470A	
180-88533-12	FD-3 (AP)	Total/NA	Water	7470A	
MB 400-436582/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-436582/15-A	Lab Control Sample	Total/NA	Water	7470A	

### Analysis Batch: 436767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	7470A	436430
180-88428-2	SGWC-8	Total/NA	Water	7470A	436430
180-88428-3	SGWC-9	Total/NA	Water	7470A	436430
180-88428-4	SGWC-10	Total/NA	Water	7470A	436430
180-88428-5	SGWC-11	Total/NA	Water	7470A	436430
180-88428-6	SGWC-12	Total/NA	Water	7470A	436430
180-88428-7	SGWC-13	Total/NA	Water	7470A	436430
180-88428-8	SGWC-14	Total/NA	Water	7470A	436430
180-88428-9	SGWC-15	Total/NA	Water	7470A	436430
180-88428-10	EB-2 (AP)	Total/NA	Water	7470A	436430
180-88428-11	FB-2 (AP)	Total/NA	Water	7470A	436430
180-88428-12	FD-2 (AP)	Total/NA	Water	7470A	436430
180-88533-1	SGWC-6	Total/NA	Water	7470A	436582
180-88533-2	SGWC-16	Total/NA	Water	7470A	436582
180-88533-3	SGWC-17	Total/NA	Water	7470A	436582
180-88533-4	SGWC-18	Total/NA	Water	7470A	436582
180-88533-5	SGWC19	Total/NA	Water	7470A	436582
180-88533-6	SGWC-20	Total/NA	Water	7470A	436582
180-88533-7	SGWC-21	Total/NA	Water	7470A	436582
180-88533-8	SGWC22	Total/NA	Water	7470A	436582
180-88533-9	SGWC23	Total/NA	Water	7470A	436582
180-88533-10	FB-3 (AP)	Total/NA	Water	7470A	436582
180-88533-11	EB-3 (AP)	Total/NA	Water	7470A	436582
180-88533-12	FD-3 (AP)	Total/NA	Water	7470A	436582
MB 400-436430/14-A	Method Blank	Total/NA	Water	7470A	436430
MB 400-436582/14-A	Method Blank	Total/NA	Water	7470A	436582
LCS 400-436430/15-A	Lab Control Sample	Total/NA	Water	7470A	436430
LCS 400-436582/15-A	Lab Control Sample	Total/NA	Water	7470A	436582
180-88428-1 MS	SGWC-7	Total/NA	Water	7470A	436430
180-88428-1 MSD	SGWC-7	Total/NA	Water	7470A	436430

### Prep Batch: 436825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total Recoverable	Water	3005A	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
 SDG: Ash Pond

## Metals (Continued)

### Prep Batch: 436825 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-2	SGWC-8	Total Recoverable	Water	3005A	
180-88428-3 - DL	SGWC-9	Total Recoverable	Water	3005A	
180-88428-3	SGWC-9	Total Recoverable	Water	3005A	
180-88428-4	SGWC-10	Total Recoverable	Water	3005A	
180-88428-5	SGWC-11	Total Recoverable	Water	3005A	
180-88428-6	SGWC-12	Total Recoverable	Water	3005A	
180-88428-7	SGWC-13	Total Recoverable	Water	3005A	
180-88428-8	SGWC-14	Total Recoverable	Water	3005A	
180-88428-9	SGWC-15	Total Recoverable	Water	3005A	
180-88428-10	EB-2 (AP)	Total Recoverable	Water	3005A	
180-88428-11	FB-2 (AP)	Total Recoverable	Water	3005A	
180-88428-12	FD-2 (AP)	Total Recoverable	Water	3005A	
MB 400-436825/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-436825/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-88428-2 MS	SGWC-8	Total Recoverable	Water	3005A	
180-88428-2 MSD	SGWC-8	Total Recoverable	Water	3005A	

### Analysis Batch: 436932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total Recoverable	Water	6020	436825
180-88428-2	SGWC-8	Total Recoverable	Water	6020	436825
180-88428-3	SGWC-9	Total Recoverable	Water	6020	436825
180-88428-3 - DL	SGWC-9	Total Recoverable	Water	6020	436825
180-88428-4	SGWC-10	Total Recoverable	Water	6020	436825
180-88428-5	SGWC-11	Total Recoverable	Water	6020	436825
180-88428-6	SGWC-12	Total Recoverable	Water	6020	436825
180-88428-7	SGWC-13	Total Recoverable	Water	6020	436825
180-88428-8	SGWC-14	Total Recoverable	Water	6020	436825
180-88428-9	SGWC-15	Total Recoverable	Water	6020	436825
180-88428-10	EB-2 (AP)	Total Recoverable	Water	6020	436825
180-88428-11	FB-2 (AP)	Total Recoverable	Water	6020	436825
180-88428-12	FD-2 (AP)	Total Recoverable	Water	6020	436825
MB 400-436825/1-A ^5	Method Blank	Total Recoverable	Water	6020	436825
LCS 400-436825/2-A	Lab Control Sample	Total Recoverable	Water	6020	436825
180-88428-2 MS	SGWC-8	Total Recoverable	Water	6020	436825
180-88428-2 MSD	SGWC-8	Total Recoverable	Water	6020	436825

### Prep Batch: 437187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-1 - RA	SGWC-6	Total Recoverable	Water	3005A	
180-88533-1	SGWC-6	Total Recoverable	Water	3005A	
180-88533-2 - RA	SGWC-16	Total Recoverable	Water	3005A	
180-88533-2	SGWC-16	Total Recoverable	Water	3005A	
180-88533-3	SGWC-17	Total Recoverable	Water	3005A	
180-88533-3 - RA	SGWC-17	Total Recoverable	Water	3005A	
180-88533-4 - DL	SGWC-18	Total Recoverable	Water	3005A	
180-88533-4 - RA	SGWC-18	Total Recoverable	Water	3005A	
180-88533-4	SGWC-18	Total Recoverable	Water	3005A	
180-88533-5	SGWC19	Total Recoverable	Water	3005A	
180-88533-5 - DL	SGWC19	Total Recoverable	Water	3005A	
180-88533-6 - DL	SGWC-20	Total Recoverable	Water	3005A	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Metals (Continued)

### Prep Batch: 437187 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-6	SGWC-20	Total Recoverable	Water	3005A	
180-88533-7	SGWC-21	Total Recoverable	Water	3005A	
180-88533-8	SGWC22	Total Recoverable	Water	3005A	
180-88533-9	SGWC23	Total Recoverable	Water	3005A	
180-88533-10	FB-3 (AP)	Total Recoverable	Water	3005A	
180-88533-11	EB-3 (AP)	Total Recoverable	Water	3005A	
180-88533-12 - DL	FD-3 (AP)	Total Recoverable	Water	3005A	
180-88533-12	FD-3 (AP)	Total Recoverable	Water	3005A	
MB 400-437187/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-437187/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-88533-1 MS	SGWC-6	Total Recoverable	Water	3005A	
180-88533-1 MSD	SGWC-6	Total Recoverable	Water	3005A	

### Analysis Batch: 437398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-1	SGWC-6	Total Recoverable	Water	6020	437187
180-88533-1 - RA	SGWC-6	Total Recoverable	Water	6020	437187
180-88533-2	SGWC-16	Total Recoverable	Water	6020	437187
180-88533-2 - RA	SGWC-16	Total Recoverable	Water	6020	437187
180-88533-3	SGWC-17	Total Recoverable	Water	6020	437187
180-88533-3 - RA	SGWC-17	Total Recoverable	Water	6020	437187
180-88533-4	SGWC-18	Total Recoverable	Water	6020	437187
180-88533-4 - RA	SGWC-18	Total Recoverable	Water	6020	437187
180-88533-4 - DL	SGWC-18	Total Recoverable	Water	6020	437187
180-88533-5	SGWC19	Total Recoverable	Water	6020	437187
180-88533-5 - DL	SGWC19	Total Recoverable	Water	6020	437187
180-88533-6	SGWC-20	Total Recoverable	Water	6020	437187
180-88533-6 - DL	SGWC-20	Total Recoverable	Water	6020	437187
180-88533-7	SGWC-21	Total Recoverable	Water	6020	437187
180-88533-8	SGWC22	Total Recoverable	Water	6020	437187
180-88533-9	SGWC23	Total Recoverable	Water	6020	437187
180-88533-10	FB-3 (AP)	Total Recoverable	Water	6020	437187
180-88533-11	EB-3 (AP)	Total Recoverable	Water	6020	437187
180-88533-12	FD-3 (AP)	Total Recoverable	Water	6020	437187
180-88533-12 - DL	FD-3 (AP)	Total Recoverable	Water	6020	437187
MB 400-437187/1-A ^5	Method Blank	Total Recoverable	Water	6020	437187
LCS 400-437187/2-A	Lab Control Sample	Total Recoverable	Water	6020	437187
180-88533-1 MS	SGWC-6	Total Recoverable	Water	6020	437187
180-88533-1 MSD	SGWC-6	Total Recoverable	Water	6020	437187

## General Chemistry

### Analysis Batch: 274611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	SM 2540C	
180-88347-2	SGWA-5	Total/NA	Water	SM 2540C	
180-88347-3	SGWA-25	Total/NA	Water	SM 2540C	
180-88347-4	SGWA-3	Total/NA	Water	SM 2540C	
180-88347-5	FD-1 (AP)	Total/NA	Water	SM 2540C	
MB 180-274611/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-274611/1	Lab Control Sample	Total/NA	Water	SM 2540C	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## General Chemistry

### Analysis Batch: 274717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-6	FB-1 (AP)	Total/NA	Water	SM 2540C	
180-88347-7	EB-1 (AP)	Total/NA	Water	SM 2540C	
MB 180-274717/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-274717/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 274838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-8	SGWA-1	Total/NA	Water	SM 2540C	
180-88347-9	SGWA-2	Total/NA	Water	SM 2540C	
MB 180-274838/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-274838/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 274865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-10	SGWA-24	Total/NA	Water	SM 2540C	
MB 180-274865/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-274865/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 274958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	SM 2540C	
MB 180-274958/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-274958/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 275110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-2	SGWC-8	Total/NA	Water	SM 2540C	
180-88428-3	SGWC-9	Total/NA	Water	SM 2540C	
180-88428-4	SGWC-10	Total/NA	Water	SM 2540C	
180-88428-5	SGWC-11	Total/NA	Water	SM 2540C	
180-88428-6	SGWC-12	Total/NA	Water	SM 2540C	
180-88428-7	SGWC-13	Total/NA	Water	SM 2540C	
180-88428-8	SGWC-14	Total/NA	Water	SM 2540C	
180-88428-9	SGWC-15	Total/NA	Water	SM 2540C	
180-88428-10	EB-2 (AP)	Total/NA	Water	SM 2540C	
180-88428-11	FB-2 (AP)	Total/NA	Water	SM 2540C	
180-88428-12	FD-2 (AP)	Total/NA	Water	SM 2540C	
MB 180-275110/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-275110/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-88428-5 DU	SGWC-11	Total/NA	Water	SM 2540C	

### Analysis Batch: 276061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-1	SGWC-6	Total/NA	Water	SM 2540C	
180-88533-2	SGWC-16	Total/NA	Water	SM 2540C	
180-88533-3	SGWC-17	Total/NA	Water	SM 2540C	
180-88533-4	SGWC-18	Total/NA	Water	SM 2540C	
180-88533-5	SGWC-19	Total/NA	Water	SM 2540C	
180-88533-6	SGWC-20	Total/NA	Water	SM 2540C	
180-88533-7	SGWC-21	Total/NA	Water	SM 2540C	
180-88533-8	SGWC-22	Total/NA	Water	SM 2540C	

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# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## General Chemistry (Continued)

### Analysis Batch: 276061 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-9	SGWC23	Total/NA	Water	SM 2540C	
180-88533-10	FB-3 (AP)	Total/NA	Water	SM 2540C	
180-88533-11	EB-3 (AP)	Total/NA	Water	SM 2540C	
180-88533-12	FD-3 (AP)	Total/NA	Water	SM 2540C	
MB 180-276061/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-276061/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-88533-5 DU	SGWC19	Total/NA	Water	SM 2540C	

## Rad

### Prep Batch: 423239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-8	SGWC22	Total/NA	Water	PrecSep-21	
180-88533-9	SGWC23	Total/NA	Water	PrecSep-21	
180-88533-10	FB-3 (AP)	Total/NA	Water	PrecSep-21	
180-88533-11	EB-3 (AP)	Total/NA	Water	PrecSep-21	
180-88533-12	FD-3 (AP)	Total/NA	Water	PrecSep-21	
MB 160-423239/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-423239/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-423239/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 423240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-8	SGWC22	Total/NA	Water	PrecSep_0	
180-88533-9	SGWC23	Total/NA	Water	PrecSep_0	
180-88533-10	FB-3 (AP)	Total/NA	Water	PrecSep_0	
180-88533-11	EB-3 (AP)	Total/NA	Water	PrecSep_0	
180-88533-12	FD-3 (AP)	Total/NA	Water	PrecSep_0	
LCS 160-423240/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-423240/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

### Prep Batch: 423241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	PrecSep-21	
180-88428-2	SGWC-8	Total/NA	Water	PrecSep-21	
180-88428-3	SGWC-9	Total/NA	Water	PrecSep-21	
180-88428-4	SGWC-10	Total/NA	Water	PrecSep-21	
180-88428-5	SGWC-11	Total/NA	Water	PrecSep-21	
180-88428-6	SGWC-12	Total/NA	Water	PrecSep-21	
180-88428-7	SGWC-13	Total/NA	Water	PrecSep-21	
180-88428-8	SGWC-14	Total/NA	Water	PrecSep-21	
180-88428-9	SGWC-15	Total/NA	Water	PrecSep-21	
180-88428-10	EB-2 (AP)	Total/NA	Water	PrecSep-21	
180-88428-11	FB-2 (AP)	Total/NA	Water	PrecSep-21	
180-88428-12	FD-2 (AP)	Total/NA	Water	PrecSep-21	
180-88533-1	SGWC-6	Total/NA	Water	PrecSep-21	
180-88533-2	SGWC-16	Total/NA	Water	PrecSep-21	
180-88533-3	SGWC-17	Total/NA	Water	PrecSep-21	
180-88533-4	SGWC-18	Total/NA	Water	PrecSep-21	
180-88533-5	SGWC-19	Total/NA	Water	PrecSep-21	
180-88533-6	SGWC-20	Total/NA	Water	PrecSep-21	

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Rad (Continued)

### Prep Batch: 423241 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88533-7	SGWC-21	Total/NA	Water	PrecSep-21	
MB 160-423241/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-423241/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-423241/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 423242

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88428-1	SGWC-7	Total/NA	Water	PrecSep_0	
180-88428-2	SGWC-8	Total/NA	Water	PrecSep_0	
180-88428-3	SGWC-9	Total/NA	Water	PrecSep_0	
180-88428-4	SGWC-10	Total/NA	Water	PrecSep_0	
180-88428-5	SGWC-11	Total/NA	Water	PrecSep_0	
180-88428-6	SGWC-12	Total/NA	Water	PrecSep_0	
180-88428-7	SGWC-13	Total/NA	Water	PrecSep_0	
180-88428-8	SGWC-14	Total/NA	Water	PrecSep_0	
180-88428-9	SGWC-15	Total/NA	Water	PrecSep_0	
180-88428-10	EB-2 (AP)	Total/NA	Water	PrecSep_0	
180-88428-11	FB-2 (AP)	Total/NA	Water	PrecSep_0	
180-88428-12	FD-2 (AP)	Total/NA	Water	PrecSep_0	
180-88533-1	SGWC-6	Total/NA	Water	PrecSep_0	
180-88533-2	SGWC-16	Total/NA	Water	PrecSep_0	
180-88533-3	SGWC-17	Total/NA	Water	PrecSep_0	
180-88533-4	SGWC-18	Total/NA	Water	PrecSep_0	
180-88533-5	SGWC-19	Total/NA	Water	PrecSep_0	
180-88533-6	SGWC-20	Total/NA	Water	PrecSep_0	
180-88533-7	SGWC-21	Total/NA	Water	PrecSep_0	
MB 160-423242/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-423242/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-423242/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

### Prep Batch: 423612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	PrecSep-21	
180-88347-2	SGWA-5	Total/NA	Water	PrecSep-21	
180-88347-3	SGWA-25	Total/NA	Water	PrecSep-21	
180-88347-4	SGWA-3	Total/NA	Water	PrecSep-21	
180-88347-5	FD-1 (AP)	Total/NA	Water	PrecSep-21	
180-88347-6	FB-1 (AP)	Total/NA	Water	PrecSep-21	
180-88347-7	EB-1 (AP)	Total/NA	Water	PrecSep-21	
180-88347-8	SGWA-1	Total/NA	Water	PrecSep-21	
180-88347-9	SGWA-2	Total/NA	Water	PrecSep-21	
180-88347-10	SGWA-24	Total/NA	Water	PrecSep-21	
MB 160-423612/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-423612/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-423612/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 423844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-1	SGWA-4	Total/NA	Water	PrecSep_0	
180-88347-2	SGWA-5	Total/NA	Water	PrecSep_0	
180-88347-3	SGWA-25	Total/NA	Water	PrecSep_0	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

Job ID: 180-88347-1  
SDG: Ash Pond

## Rad (Continued)

### Prep Batch: 423844 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-88347-4	SGWA-3	Total/NA	Water	PrecSep_0	
180-88347-5	FD-1 (AP)	Total/NA	Water	PrecSep_0	
180-88347-6	FB-1 (AP)	Total/NA	Water	PrecSep_0	
180-88347-7	EB-1 (AP)	Total/NA	Water	PrecSep_0	
180-88347-8	SGWA-1	Total/NA	Water	PrecSep_0	
180-88347-9	SGWA-2	Total/NA	Water	PrecSep_0	
180-88347-10	SGWA-24	Total/NA	Water	PrecSep_0	
MB 160-423844/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-423844/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-423844/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

**TestAmerica Pittsburgh**  
 301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

**Chain of Custody Record**

681-Atlanta

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact: Joju Abraham, Southern Company, 241 Ralph McGill Blvd SE B10185, Atlanta, GA 30308, JAbraham@southernco.com, Project Name: CCR - Plant Scherer Ash Pond, Site: Georgia, P O # 18019884

Project Manager: Dawn Prell, Tel/Fax: 248-536-5445

Site Contact: Karim Minkara, Lab Contact: Veronica Bortot

Date: 3/29/19, Carrier:

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below 3-5 days  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Perfrom MS/MSD (Y/N)				Filtered Sample (Y/N)				Sample Specific Notes:
						6020, 7470A: As, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	Cl, F, SO4, TDS	Radium 226 + 228						
SGWA-4	3/28/2019	12:56	G	Water	3	X	X	X	X	X	X			
SGWA-5	3/28/2019	13:45	G	Water	3	X	X	X	X	X	X			
SGWA-25	3/28/2019	14:38	G	Water	3	X	X	X	X	X	X			
SGWA-3	3/28/2019	14:40	G	Water	4	X	X	X	X	X	X			Extra Radium
FD-1 (AP)	3/28/2019	--	G	Water	3	X	X	X	X	X	X			
FB-1 (AP)	3/28/2019	13:40	G	Water	3	X	X	X	X	X	X			
EB-1 (AP)	3/28/2019	15:00	G	Water	3	X	X	X	X	X	X			



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other  
 Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments:  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Relinquished by: Mrs. Tronell	Company: Solder	Date/Time: 3/29/19	Relinquished by: [Signature]	Company: [Signature]	Date/Time: 3/29/19	Relinquished by: [Signature]	Company: [Signature]	Date/Time: 3/29/19
-------------------------------	-----------------	--------------------	------------------------------	----------------------	--------------------	------------------------------	----------------------	--------------------



**Regulatory Program:**  DW  NPDES  RCRA  Other: \_\_\_\_\_

**Project Manager:** Dawn Prell  
**Tel/Fax:** 248-536-5445

**Site Contact:** Karim Minkara  
**Lab Contact:** Veronica Bortot

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below \_\_\_ 3-5 days \_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

**Client Contact**  
Joju Abraham  
Southern Company  
241 Ralph McGill Blvd SE B10185  
Atlanta, GA 30308  
JAbraham@southernco.com  
Project Name: CCR - Plant Scherer Ash Pond  
Site: Georgia  
P O # 18019884

**Date:** 3/29/19  
**Carrier:**

**COC No.:** 1 of 1 COCs

**Sampler:**  
**For Lab Use Only:**  
Walk-in Client: \_\_\_\_\_  
Lab Sampling: \_\_\_\_\_  
Job / SDG No.: \_\_\_\_\_

**Sample Identification**

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	6020, 7470A: As, B, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ti	Cd, Cr, Cu, Ni, Pb, Zn, TDS	Radium 226 + 228
3/29/2019	9:16	G	Water	3			X	X	X
3/29/2019	10:07	G	Water	3			X	X	X
3/29/2019	09:25	G	Water	3			X	X	X

**Sample Specific Notes:**

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

**Possible Hazard Identification:**  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Special Instructions/QC Requirements & Comments:**

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Custody Seal No.:** \_\_\_\_\_  
**Company:** Southern  
**Received by:** Chris Trull  
**Date/Time:** 3/29/19 14:10  
**Received by:** [Signature]  
**Date/Time:** 3/20/19 10:00  
**Received in Laboratory by:** [Signature]  
**Date/Time:**

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact		Project Manager: Dawn Prell Tel/Fax: 248-536-5445		Site Contact: Karim Minkara Lab Contact: Veronica Bortot		Date: 4/1/2019		COC No: 3 of 4 COCs	
Southern Company		Analysis Turnaround Time		Perform MS/MSD (Y/N)		Carrier:		Sampler:	
241 Ralph McGill Blvd SE B10185 Atlanta, GA 30308 JAbraham@southernco.com		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 3-5 days		Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ti				For Lab Use Only:	
Project Name: CCR - Plant Scherer Ash Pond		2 weeks		6020, 7470A: As, B, Ba, Be, Ca				Walk-in Client:	
Site: Georgia		1 week		Cl, F, SO4, TDS				Lab Sampling:	
P O # 18019894		2 days		Radium 226 + 228				Job / SDG No.:	
		1 day						Sample Specific Notes:	
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)			
SGWC-7	4/1/2019	11:56	G	Water	3	X	X	X	
SGWC-8	4/1/2019	10:47	G	Water	3	X	X	X	
SGWC-9	4/1/2019	11:20	G	Water	4	X	X	X	Extra Radium
SGWC-10	4/1/2019	17:50	G	Water	3	X	X	X	
SGWC-11	4/1/2019	11:25	G	Water	3	X	X	X	
SGWC-12	4/1/2019	12:40	G	Water	3	X	X	X	
SGWC-13	4/1/2019	13:40	G	Water	3	X	X	X	
SGWC-14	4/1/2019	14:55	G	Water	3	X	X	X	
SGWC-15	4/1/2019	16:25	G	Water	3	X	X	X	
EB-2 (AP)	4/1/2019	17:30	G	Water	3	X	X	X	
FB-2 (AP)	4/1/2019	10:50	G	Water	3	X	X	X	
FD-2 (AP)	4/1/2019	-	G	Water	3	X	X	X	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments:

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Custody Seal No.:	Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>
Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>		Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>
Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>		Relinquished by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>	Received by: <i>Blaine Crook</i>	Company: <i>Blaine Crook</i>



4/3/19 11

**TestAmerica Pittsburgh**  
301 Alpha Drive  
RDC Park  
Pittsburgh, PA 15238-2907  
phone 412.963.7058 fax 412.963.2468

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

**TestAmerica Laboratories, Inc.**

**Regulatory Program:**  DW  NPDES  RCRA  Other:

<b>Client Contact</b>	<b>Project Manager:</b> Dawn Prell <b>Tel/Fax:</b> 248-536-5445	<b>Site Contact:</b> Karim Minkara <b>Lab Contact:</b> Veronica Bortot	<b>Date:</b> 4/2/2019	<b>COC No.:</b> 4 of 4 COCs
<b>Joju Abraham</b>	<b>Analysis Turnaround Time</b>			
<b>Southern Company</b>	<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS			
<b>241 Ralph McGill Blvd SE B10185</b>	TAT if different from Below 3-5 days _____			
<b>Atlanta, GA 30308</b>	<input type="checkbox"/> 2 weeks			
<b>JAbraham@southernco.com</b>	<input type="checkbox"/> 1 week			
<b>Project Name: CCR - Plant Scherer Ash Pond</b>	<input type="checkbox"/> 2 days			
<b>Site: Georgia</b>	<input type="checkbox"/> 1 day			
<b>P O # 18019884</b>				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS/MSD (Y/N)		Carrier:	Sample Specific Notes:
						6020, 7470A: As, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ti	Cl, F, SO4, TDS	Radium 226 + 228	Extra Radium		
SGWC-6	4/2/2019	9:12	G	Water	4	X	X	X	X		
SGWC-16	4/2/2019	10:34	G	Water	3	X	X	X	X		
SGWC-17	4/2/2019	11:34	G	Water	3	X	X	X	X		
SGWC-18	4/2/2019	9:00	G	Water	3	X	X	X	X		
SGWC-19	4/2/2019	10:20	G	Water	3	X	X	X	X		
SGWC-20	4/2/2019	11:10	G	Water	3	X	X	X	X		
SGWC-21	4/2/2019	9:05	G	Water	3	X	X	X	X		
SGWC-22	4/2/2019	9:50	G	Water	3	X	X	X	X		
SGWC-23	4/2/2019	11:05	G	Water	3	X	X	X	X		
FB-3 (AP)	4/2/2019	9:00	G	Water	3	X	X	X	X		
EB-3 (AP)	4/2/2019	12:00	G	Water	3	X	X	X	X		
FD-3 (AP)	4/2/2019	-	G	Water	3	X	X	X	X		
<b>Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other</b>						<b>4</b>	<b>1</b>	<b>4</b>	<b>4</b>		



180-88533 Chain of Custody

**Possible Hazard Identification:** Are any samples from a listed EPA Hazardous Waste? Please list any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazardous  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:**

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

<b>Relinquished by:</b> [Signature]	<b>Company:</b> Southern	<b>Date/Time:</b> 4-3-19 10:30	<b>Received by:</b> [Signature]	<b>Company:</b> [Signature]	<b>Date/Time:</b> 4/3/19 9:30
<b>Relinquished by:</b> [Signature]	<b>Company:</b> [Signature]	<b>Date/Time:</b> 4/3/19 16:00	<b>Received by:</b> [Signature]	<b>Company:</b> [Signature]	<b>Date/Time:</b> 4-19
<b>Relinquished by:</b> [Signature]	<b>Company:</b> [Signature]	<b>Date/Time:</b> [Signature]	<b>Received in Laboratory by:</b> [Signature]	<b>Company:</b> [Signature]	<b>Date/Time:</b> 8:35



merica

FR IN ENVIRONMENTAL TESTING

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 McDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 29MAR19  
ACTWT: 53.20 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**

**PITTSBURGH PA 15238**  
(412) 963-7058  
**REF: GOLDER**



1 of 3  
TRK# 0201 **4651 0081 0450**  
## MASTER ##

**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

**VO AGCA**

Uncorrected temp  
Thermometer ID

**15238**  
PA-US **PIT**

CF 0 Initials TS

215  
10 °C



180-88347 Waybill



TestAmA  
THE LEADER IN ENVIRONMENTAL TESTING

03:30

12:00

5

RT 639

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR ATLANTA  
TEST AMERICA DRIVE  
6500 MCDONOUGH DRIVE  
NORCROSS, GA 30054  
UNITED STATES US

SHIP DATE: 23MAY19  
ACTWGT: 53.20 LB  
CAD: 859116/CAFE3211

BILL RECEIPT

TO SAMPLE RECEIVING  
TA PITTSBURGH  
301 ALPHA DRIVE  
PITTSBURGH PA 15238

(412) 963-7058  
REF: GOLDR



SATURDAY 12:00P  
PRIORITY OVERNIGHT

2 of 3  
MPS# 4651 0081 0460  
Mstr# 4651 0081 0450

XO AGCA

15238  
PA-US  
PIT

Uncorrected temp 3.1 °C  
Thermometer ID 10

CF 0 Initials B



PT-WI-SR-001 effective 11/8/18

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
8500 MCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 23MAR19  
ACTWGT: 53.20 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**

**PITTSBURGH PA 15238**  
(412) 963-7068  
REF: **GOLDER**



**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

3 of 3  
MPS# **4651 0081 0471**  
0263  
Mstr# **4651 0081 0450**

**XO AGCA**

**15238**  
PA-US PIT

Uncorrected temp 4.8 °C  
Thermometer ID 10  
CF 0 Initials JS

PT-WI-SR-001 effective 11/8/18

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159-434 RIT2 EXP 10/19

STANDARD OVERNIGHT Master 4651 0081 0894  
TRACK: 4651 0081 0894

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



180-88428 Waybill

SHIP DATE: 02APR19  
ACTWGT: 69.30 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 McDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**  
(412) 963-7068  
REF: SOUTHERN CO.



WED - 03 APR 3:00P  
STANDARD OVERNIGHT

15238  
PA-US  
PIT

3 of 3  
4651 0081 0909  
0201

# NA AGCA



1.2 °C  
10  
B

Uncorrected temp  
Thermometer ID

CF 0 Initials

PT-WI-SR-001 effective 11/8/18

Part # 159-434 RIT2 EXP 10/19

TRACK: 4651 0081 0910

# TestAmerica

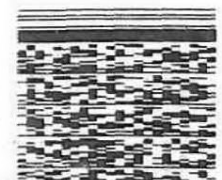
THE LEADER IN ENVIRONMENTAL TESTING

SHIP DATE: 02APR19  
ACTWGT: 69.30 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 McDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**  
(412) 963-7068  
REF: SOUTHERN CO.



WED - 03 APR 3:00P  
STANDARD OVERNIGHT

15238  
PA-US  
PIT

3 of 3  
1651 0081 0910  
0201

# NA AGCA



2.1 °C  
10  
B

Uncorrected temp  
Thermometer ID

CF 0 Initials

PT-WI-SR-001 effective 11/8/18

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

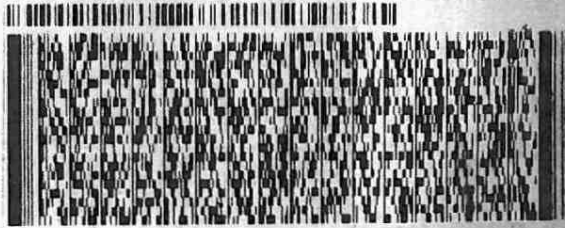
ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

SHIP DATE: 02APR19  
ACTWT: 69.30 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECEIPT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**  
(412) 963-7068  
REF: SOUTHERN CO.



1 of 3  
TRK# 0201 4651 0081 0894  
## MASTER ##

WED - 03 APR 3:00P  
STANDARD OVERNIGHT

**NA AGCA**

15238  
PA-US PIT

Uncorrected temp  
Thermometer ID

1.3 °C  
10

CF 0 Initials B

PT-WI-SR-001 effective 11/8/18



STAND



180-88533 Waybill

Part # 159468-434 RT2 EXP 10/19

# estAmerica

LEADER IN ENVIRONMENTAL TESTING

FORMULA (678) 966-9991  
FLOR  
ICA ATLANTA  
BOUGH DRIVE

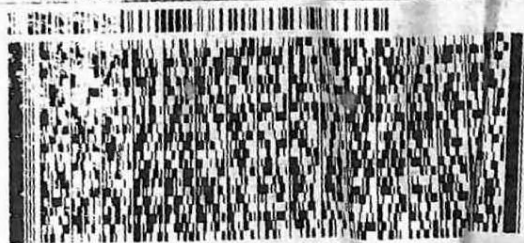
SHIP DATE: 03APR19  
ACTWGT: 61.35 LB  
CAD: 859116/CAFE3211

ATLANTA, GA 30093  
UNITED STATES US

BILL RECIPIENT

10 **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 562-7058  
REF. SOUTHERN CO



**FedEx**  
Express



2 of 3

**TH- 04 APR 3:00P**  
**STANRD OVERNIGHT**

MPS# 0263 **4651 0081 0953**

Mstr# 4651 0081.0942 10201

**NA AGCA**

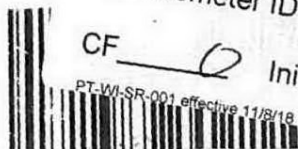
PA-US PR

Uncorrected temp  
Thermometer ID

15 °C

10

CF Q Initials TS



PT-WL-SR-001 effective 11/8/18

TRCK: 4651 0081 0964

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

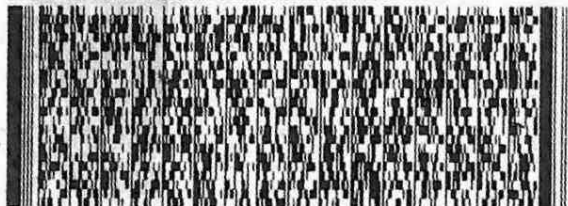
SHIP DATE: 03APR18  
ACTWGT: 61.35 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECEIPT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO



3 of 3

THU - 04 APR 3 00P  
STANDARD OVERNIGHT

MPS# 4651 0081 0964  
0263

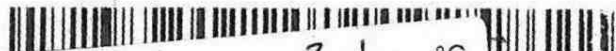
Mstr# 4651 0081 0942

0201

## NA AGCA

15238

PA-US PIT



Uncorrected temp  
Thermometer ID

3.1 °C  
10

CF 0

Initials B

PT-WI-SR-001 effective 11/8/18

Svcs: STANDARD OVERNIGHT Master 4651 0081 0942  
TRCK: 4651 0081 0942

cus  
DATE  
SIGN

Part # 159489-434 RIT2 EXP 10/19

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica  
THE LEADER IN ENVIRONMENTAL TESTING  
692572

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
TEST AMERICA ATLANTA  
6500 MCDONOUGH DRIVE

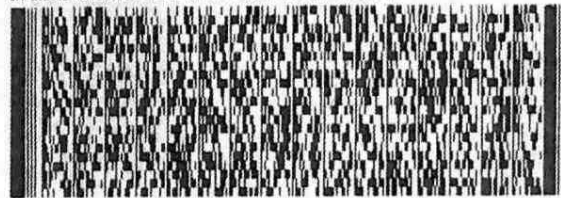
SHIP DATE: 03APR19  
ACTWT: 47.80 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

10 **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO



FedEx  
Express



1 of 3  
TRK# 4651 0081 0942  
0201  
## MASTER ##

THU - 04 APR 3:00P  
STANDARD OVERNIGHT

## NA AGCA

15238  
PA-US PIT



Uncorrected temp 1.3 °C  
Thermometer ID 10

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18

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**Chain of Custody Record**



Client Information (Sub Contract Lab)		Sampler:		Lab PM:		Carrier Tracking No(s):																																																																																																															
Client Contact: Shipping/Receiving		Phone:		Bortot, Veronica		180-358762.1																																																																																																															
Company: TestAmerica Laboratories, Inc.		E-Mail: veronica.bortot@testamericainc.com		State of Origin: Florida		Page: Page 1 of 2																																																																																																															
Address: 3355 McLemore Drive, Pensacola FL, 32514		Due Date Requested: 4/5/2019		Accreditations Required (See note):		Job #: 180-88347-1																																																																																																															
Phone: 850-474-1001(Tel) 850-478-2671(Fax)		TAT Requested (days):		<b>Analysis Requested</b>																																																																																																																	
Email:																																																																																																																					
Project Name: CCR - Plant Scherer		Project #: 18019884		<table border="1"> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=water/soil, BT=TISSUE, A=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform M/MSD (Yes or No)</th> <th>7470A/7470A_Prep</th> <th>6020/3005A Appendix III &amp; IV</th> <th>Total Number of Containers</th> <th>Special Instructions/Note:</th> </tr> <tr> <td>SGWA-4 (180-88347-1)</td> <td>3/28/19</td> <td>12:56 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>SGWA-5 (180-88347-2)</td> <td>3/28/19</td> <td>13:45 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>SGWA-25 (180-88347-3)</td> <td>3/28/19</td> <td>14:38 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>SGWA-3 (180-88347-4)</td> <td>3/28/19</td> <td>14:40 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FD-1 (AP) (180-88347-5)</td> <td>3/28/19</td> <td>Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FB-1 (AP) (180-88347-6)</td> <td>3/28/19</td> <td>13:40 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>EB-1 (AP) (180-88347-7)</td> <td>3/28/19</td> <td>15:00 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>SGWA-1 (180-88347-8)</td> <td>3/29/19</td> <td>09:16 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>SGWA-2 (180-88347-9)</td> <td>3/29/19</td> <td>10:07 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> </table>				Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=water/soil, BT=TISSUE, A=Air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	7470A/7470A_Prep	6020/3005A Appendix III & IV	Total Number of Containers	Special Instructions/Note:	SGWA-4 (180-88347-1)	3/28/19	12:56 Eastern	Water	Water	X	X	X	X	1		SGWA-5 (180-88347-2)	3/28/19	13:45 Eastern	Water	Water	X	X	X	X	1		SGWA-25 (180-88347-3)	3/28/19	14:38 Eastern	Water	Water	X	X	X	X	1		SGWA-3 (180-88347-4)	3/28/19	14:40 Eastern	Water	Water	X	X	X	X	1		FD-1 (AP) (180-88347-5)	3/28/19	Eastern	Water	Water	X	X	X	X	1		FB-1 (AP) (180-88347-6)	3/28/19	13:40 Eastern	Water	Water	X	X	X	X	1		EB-1 (AP) (180-88347-7)	3/28/19	15:00 Eastern	Water	Water	X	X	X	X	1		SGWA-1 (180-88347-8)	3/29/19	09:16 Eastern	Water	Water	X	X	X	X	1		SGWA-2 (180-88347-9)	3/29/19	10:07 Eastern	Water	Water	X	X	X	X	1	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)					Matrix (W=water, S=solid, O=water/soil, BT=TISSUE, A=Air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	7470A/7470A_Prep	6020/3005A Appendix III & IV	Total Number of Containers	Special Instructions/Note:																																																																																																							
SGWA-4 (180-88347-1)	3/28/19	12:56 Eastern	Water	Water	X	X	X	X	1																																																																																																												
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FD-1 (AP) (180-88347-5)	3/28/19	Eastern	Water	Water	X	X	X	X	1																																																																																																												
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Project Name: CCR Plant Scherer		SSOW#:		Preservation Codes:				Special Instructions/Note:																																																																																																													

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:

**Possible Hazard Identification**  
 Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_ Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: *[Signature]* Date/Time: 3/11/19 17:00 Company: *[Signature]* Company: *[Signature]*  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Custody Seal No.: \_\_\_\_\_  
 Custody Seals Intact:  Yes  No  
 Cooler Temperature(s) °C and Other Remarks: 12.5°C, 13.5°C, 13.2°C 1R7  
 Ver: 01/16/2019





Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b> Client Contact: 3355 McLemore Drive, Pensacola, FL, 32514 Shipping/Receiving TestAmerica Laboratories, Inc. Address: 3355 McLemore Drive, Pensacola, FL, 32514 City: Pensacola State, Zip: FL, 32514 Phone: 850-474-1001(Tel) 850-478-2671(Fax) Email:		Sampler: Bortot, Veronica Lab PM: Bortot, Veronica E-Mail: veronica.bortot@testamericainc.com Accreditations Required (See note):	Carrier Tracking No(s): 180-358762.2 State of Origin: Florida Page 2 of 2 Job #: 180-88347-1	COC No: 180-358762.2 Page: 2 of 2 Job #: 180-88347-1
Due Date Requested: 4/5/2019 TAT Requested (days): PO #: WO #: Project #: 18019884 SSOV#:		<b>Analysis Requested</b> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> 7470A/7470A_Prep Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> 6020/3005A Appendix III & IV Total Number of containers: 1		
<b>Sample Identification - Client ID (Lab ID)</b> SGWA-24 (180-88347-10)		Sample Date: 3/29/19 Sample Time: 09:25 Eastern Matrix (W=Water, S=Soil, O=Water/Soil, BT=Tissue, A=Air) Preservation Code: Water	Special Instructions/Note:	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.				
<b>Possible Hazard Identification</b> Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)				
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:				
Empty Kit Relinquished by:		Method of Shipment:		
Relinquished by: [Signature] Date/Time: 4/19/19 17:00 Company: [Signature] Company		Received by: [Signature] Date/Time: 4.2.19 Company: [Signature] Company		
Relinquished by: [Signature] Date/Time:		Received by: [Signature] Date/Time:		
Relinquished by: [Signature] Date/Time:		Received by: [Signature] Date/Time:		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: 12.5°, 13.5°, 13.2° IR7		



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88347**

**List Number: 1**

**Creator: Say, Thomas C**

**List Source: Eurofins TestAmerica, Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88347**

**List Number: 2**

**Creator: Brown, Nathan**

**List Source: Eurofins TestAmerica, Pensacola**

**List Creation: 04/02/19 01:03 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	12.5°C, 13.5°C, 13.2°C IR7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88347**

**List Number: 3**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 04/02/19 02:33 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88428**

**List Source: Eurofins TestAmerica, Pittsburgh**

**List Number: 1**

**Creator: Watson, Debbie**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88428**

**List Number: 3**

**Creator: Shannon, Jonathon W**

**List Source: Eurofins TestAmerica, Pensacola**

**List Creation: 04/06/19 12:56 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0°C, 2.6°C, 3.2°C IR7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88428**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 04/06/19 09:18 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88533**

**List Source: Eurofins TestAmerica, Pittsburgh**

**List Number: 1**

**Creator: Watson, Debbie**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88533**

**List Number: 3**

**Creator: Shannon, Jonathon W**

**List Source: Eurofins TestAmerica, Pensacola**

**List Creation: 04/06/19 12:56 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0°C, 2.6°C, 3.2°C IR7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-88347-1

SDG Number: Ash Pond

**Login Number: 88533**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 04/06/19 09:18 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**APPENDIX A**

# ANALYTICAL RESULTS

September 2019

## ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh  
301 Alpha Drive  
RIDC Park  
Pittsburgh, PA 15238  
Tel: (412)963-7058

Laboratory Job ID: 180-95735-1

Laboratory Sample Delivery Group: Ash Pond  
Client Project/Site: CCR - Plant Scherer Ash Pond

**For:**

Southern Company  
241 Ralph McGill Blvd SE  
B10185  
Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:  
10/31/2019 9:11:30 PM

Veronica Bortot, Senior Project Manager  
(412)963-2435  
[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416



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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Job ID: 180-95735-1**

**Laboratory: Eurofins TestAmerica, Pittsburgh**

## Narrative

### Job Narrative 180-95735-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 9/14/2019 9:45 AM, 9/18/2019 9:00 AM, 9/19/2019 8:30 AM and 9/19/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 1.1° C, 1.1° C, 1.2° C, 1.3° C, 1.3° C, 1.3° C, 1.4° C, 1.6° C, 3.3° C and 3.4° C.

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### RAD

Methods 903.0, 9315: Ra-226 Prep Batch 160-443369

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-5 (180-95735-1), EB-1(AP) (180-95735-2), FB-1(AP) (180-95735-3), SGWA-24 (180-95735-4), (LCS 160-443369/1-A), (MB 160-443369/22-A), (180-95663-E-7-B) and (180-95663-D-7-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-443701

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-1 (180-95845-1), SGWA-2 (180-95845-2), SGWA-3 (180-95845-3), SGWA-4 (180-95845-4), SGWC-6 (180-95845-5), SGWA-25 (180-95845-6), SGWC-9 (180-95845-7), SGWC-11 (180-95845-8), SGWC-12 (180-95845-9), FD-1(AP) (180-95845-10), EB-2(AP) (180-95845-11), FB-2(AP) (180-95845-12), (LCS 160-443701/1-A), (MB 160-443701/21-A) and (180-95845-D-5-B DU)

Method 9315: Radium-226 prep batch 160-444191-

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-22 (180-95933-1), SGWC-23 (180-95933-2), EB-3(AP) (180-95933-3), SGWC-7 (180-95957-1), SGWC-8 (180-95957-2), SGWC-10 (180-95957-3), SGWC-13 (180-95957-4), SGWC-14 (180-95957-5), SGWC-15 (180-95957-6), SGWC-16 (180-95957-7), SGWC-17 (180-95957-8), SGWC-18 (180-95957-9), SGWC19 (180-95957-10), SGWC-20 (180-95957-11), SGWC-21 (180-95957-12), FD-2(AP) (180-95957-13), FB-3(AP) (180-95957-14), FD-3(AP) (180-95957-15), (LCS 160-444191/1-A), (MB 160-444191/21-A) and (180-95957-A-12-B DU)

Methods 904.0, 9320: Ra-226 Prep Batch 160-443392

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Job ID: 180-95735-1 (Continued)

### Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

SGWA-5 (180-95735-1), EB-1(AP) (180-95735-2), FB-1(AP) (180-95735-3), SGWA-24 (180-95735-4), (LCS 160-443392/1-A), (MB 160-443392/22-A), (180-95663-E-7-C) and (180-95663-D-7-C DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-443704

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-1 (180-95845-1), SGWA-2 (180-95845-2), SGWA-3 (180-95845-3), SGWA-4 (180-95845-4), SGWC-6 (180-95845-5), SGWC-9 (180-95845-7), SGWC-11 (180-95845-8), SGWC-12 (180-95845-9), FD-1(AP) (180-95845-10), EB-2(AP) (180-95845-11), FB-2(AP) (180-95845-12), (LCS 160-443704/1-A), (MB 160-443704/21-A) and (180-95845-D-5-D DU)

Method 9320: Radium-228 prep batch 160-444193-

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWC-22 (180-95933-1), SGWC-23 (180-95933-2), EB-3(AP) (180-95933-3), SGWC-7 (180-95957-1), SGWC-8 (180-95957-2), SGWC-10 (180-95957-3), SGWC-13 (180-95957-4), SGWC-14 (180-95957-5), SGWC-15 (180-95957-6), SGWC-16 (180-95957-7), SGWC-17 (180-95957-8), SGWC-18 (180-95957-9), SGWC19 (180-95957-10), SGWC-20 (180-95957-11), SGWC-21 (180-95957-12), FD-2(AP) (180-95957-13), FB-3(AP) (180-95957-14), FD-3(AP) (180-95957-15), (LCS 160-444193/1-A), (MB 160-444193/21-A), (180-95957-D-12-B) and (180-95957-A-12-C DU)

Method 9320: Radium-228 prep batch 160-444193-

The sample duplicate precision was outside control limits: SGWC-22 (180-95933-1), SGWC-23 (180-95933-2), EB-3(AP) (180-95933-3), SGWC19 (180-95957-10), SGWC-20 (180-95957-11), SGWC-21 (180-95957-12), (180-95957-D-12-B) and (180-95957-A-12-C DU). Non-homogeneity of the sample matrix is suspected (see Prep NCM 160-181103). The results are reported with this narrative.

Method 9320: Radium-228 prep batch 160-446605-

The Ra-228 spike recovery in the LCSD failed low (2%) outside QC limits (75%-125%) indicating a potential low bias to the sample results. The LCSD was inadvertently not spiked. The MB and LCS are within limits. There is insufficient volume to re-analyze the samples. The data is reported with this narrative per client request.

Method 9320: Radium-228 prep batch 160-446605-

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recovered outside control limits (The LCS was inadvertently not spiked). Due to insufficient volume to re-analyze, the data is reported with this narrative per client request.

Method 9320: Radium-228 prep batch 160-446605-

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

SGWA-25 (180-95845-6), (LCS 160-446605/1-A), (LCSD 160-446605/2-A) and (MB 160-446605/4-A)

# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Job ID: 180-95735-1 (Continued)

### Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

Method PrecSep\_0: Radium-228 Prep Batch 160-443704

The following sample needs re-extract/re-analyze due to sample not being counted/detector error.

SGWA-25 (180-95845-6)

Method PrecSep\_0: Radium 228 Prep Batch 160-446605:

Insufficient sample volume was available to perform a sample duplicate for the following samples: SGWA-25 (180-95845-6). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep\_0: Radium 228 Prep Batch 160-446605:

The following samples were prepared at a reduced aliquot due to limited volume: SGWA-25 (180-95845-6).

Method PrecSep\_0: Radium-228 Prep Batch 160-444193:

Samples SGWC-21 (180-95957-12) and (180-95957-A-12 DU) had small floating particles.

Method PrecSep-21: Radium-226 Prep Batch 160-444191:

Samples SGWC-21 (180-95957-12) and (180-95957-A-12 DU) had small floating particles.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### Metals

Methods 200.8, 6020, 6020A: The ICSAB for batch 180-294446 was outside the acceptance limits for element: for silicon. All other QC including the MB and LCS pass for silicon so the analyte has been reported.

Methods 200.8, 6020, 6020A: The ICSAB for batch 180-294446 was outside the acceptance limits for element silicon. All other QC,(CCV/CCB), including the MB and LCS passed for silicon so the analyte has been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Rad

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
F	Duplicate RPD exceeds the control limit
U	Result is less than the sample detection limit.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
California	State	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Georgia	State	PA 02-00416	04-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State	434	12-31-19
North Dakota	State	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
South Carolina	State	89014	04-30-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
Wisconsin	State	998027800	08-31-20



# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Iowa	State Program	373	12-01-20
Kansas	NELAP	E-10236	10-31-19 *
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
Washington	State Program	C592	08-30-20
West Virginia DEP	State	381	10-31-19
West Virginia DEP	State Program	381	10-31-19 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-95735-1	SGWA-5	Water	09/12/19 14:25	09/14/19 09:45	
180-95735-2	EB-1(AP)	Water	09/12/19 16:40	09/14/19 09:45	
180-95735-3	FB-1(AP)	Water	09/13/19 10:09	09/14/19 09:45	
180-95735-4	SGWA-24	Water	09/13/19 10:21	09/14/19 09:45	
180-95845-1	SGWA-1	Water	09/16/19 15:02	09/18/19 09:00	
180-95845-2	SGWA-2	Water	09/16/19 15:58	09/18/19 09:00	
180-95845-3	SGWA-3	Water	09/16/19 13:26	09/18/19 09:00	
180-95845-4	SGWA-4	Water	09/16/19 12:05	09/18/19 09:00	
180-95845-5	SGWC-6	Water	09/16/19 15:15	09/18/19 09:00	
180-95845-6	SGWA-25	Water	09/16/19 13:35	09/18/19 09:00	
180-95845-7	SGWC-9	Water	09/16/19 12:00	09/18/19 09:00	
180-95845-8	SGWC-11	Water	09/16/19 14:25	09/18/19 09:00	
180-95845-9	SGWC-12	Water	09/16/19 16:10	09/18/19 09:00	
180-95845-10	FD-1(AP)	Water	09/16/19 00:00	09/18/19 09:00	
180-95845-11	EB-2(AP)	Water	09/16/19 16:00	09/18/19 09:00	
180-95845-12	FB-2(AP)	Water	09/16/19 16:10	09/18/19 09:00	
180-95933-1	SGWC-22	Water	09/18/19 09:35	09/19/19 08:30	
180-95933-2	SGWC-23	Water	09/18/19 09:20	09/19/19 08:30	
180-95933-3	EB-3(AP)	Water	09/18/19 10:15	09/19/19 08:30	
180-95957-1	SGWC-7	Water	09/17/19 10:25	09/19/19 09:00	
180-95957-2	SGWC-8	Water	09/17/19 11:15	09/19/19 09:00	
180-95957-3	SGWC-10	Water	09/17/19 12:20	09/19/19 09:00	
180-95957-4	SGWC-13	Water	09/17/19 10:05	09/19/19 09:00	
180-95957-5	SGWC-14	Water	09/17/19 11:20	09/19/19 09:00	
180-95957-6	SGWC-15	Water	09/17/19 12:40	09/19/19 09:00	
180-95957-7	SGWC-16	Water	09/17/19 14:12	09/19/19 09:00	
180-95957-8	SGWC-17	Water	09/17/19 15:45	09/19/19 09:00	
180-95957-9	SGWC-18	Water	09/17/19 17:08	09/19/19 09:00	
180-95957-10	SGWC19	Water	09/17/19 14:00	09/19/19 09:00	
180-95957-11	SGWC-20	Water	09/17/19 16:30	09/19/19 09:00	
180-95957-12	SGWC-21	Water	09/17/19 15:40	09/19/19 09:00	
180-95957-13	FD-2(AP)	Water	09/17/19 00:00	09/19/19 09:00	
180-95957-14	FB-3(AP)	Water	09/17/19 10:05	09/19/19 09:00	
180-95957-15	FD-3(AP)	Water	09/17/19 00:00	09/19/19 09:00	

# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	TAL PIT
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
EPA 7470A	Mercury (CVAA)	SW846	TAL PIT
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PIT
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT
7470A	Preparation, Mercury	SW846	TAL PIT
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

#### Protocol References:

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-95735-1**

**Date Collected: 09/12/19 14:25**

**Matrix: Water**

**Date Received: 09/14/19 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2000		1			292203	09/22/19 16:52	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292487	09/24/19 14:33	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			293025	09/27/19 17:05	WTR	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293530	10/02/19 15:35	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293683	10/03/19 13:34	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	291934	09/19/19 12:24	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.48 mL	1.0 g	443369	09/19/19 09:08	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			445982	10/13/19 13:39	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.48 mL	1.0 g	443392	09/19/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			444961	10/03/19 17:31	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446110	10/15/19 08:06	SMP	TAL SL

**Client Sample ID: EB-1(AP)**

**Lab Sample ID: 180-95735-2**

**Date Collected: 09/12/19 16:40**

**Matrix: Water**

**Date Received: 09/14/19 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2000		1			293618	10/03/19 17:14	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292487	09/24/19 14:33	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			293025	09/27/19 17:22	WTR	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293530	10/02/19 15:35	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293683	10/03/19 13:37	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	291934	09/19/19 12:24	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.59 mL	1.0 g	443369	09/19/19 09:08	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			445982	10/13/19 13:40	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.59 mL	1.0 g	443392	09/19/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			444961	10/03/19 17:31	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446110	10/15/19 08:06	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FB-1(AP)**

**Lab Sample ID: 180-95735-3**

**Date Collected: 09/13/19 10:09**

**Matrix: Water**

**Date Received: 09/14/19 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2000		1			292203	09/22/19 17:07	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292487	09/24/19 14:33	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			293025	09/27/19 17:32	WTR	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293530	10/02/19 15:35	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293683	10/03/19 13:49	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292096	09/20/19 13:01	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.53 mL	1.0 g	443369	09/19/19 09:08	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			445982	10/13/19 13:40	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			1000.53 mL	1.0 g	443392	09/19/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			444961	10/03/19 17:31	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446110	10/15/19 08:06	SMP	TAL SL

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-95735-4**

**Date Collected: 09/13/19 10:21**

**Matrix: Water**

**Date Received: 09/14/19 09:45**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2000		1			292203	09/22/19 17:22	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292487	09/24/19 14:33	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			293025	09/27/19 17:35	WTR	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293530	10/02/19 15:35	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293683	10/03/19 13:50	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292096	09/20/19 13:01	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			999.97 mL	1.0 g	443369	09/19/19 09:08	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			445982	10/13/19 13:40	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			999.97 mL	1.0 g	443392	09/19/19 09:32	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			444961	10/03/19 17:31	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446110	10/15/19 08:06	SMP	TAL SL

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-1**

**Lab Sample ID: 180-95845-1**

**Date Collected: 09/16/19 15:02**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 01:32	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 15:43	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:02	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.63 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446357	10/15/19 22:27	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.63 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:00	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

**Client Sample ID: SGWA-2**

**Lab Sample ID: 180-95845-2**

**Date Collected: 09/16/19 15:58**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 01:47	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 15:47	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:03	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.75 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446357	10/15/19 22:27	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.75 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:00	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-95845-3**

**Date Collected: 09/16/19 13:26**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 02:03	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 15:50	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:04	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446357	10/15/19 22:27	JCB	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:00	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-95845-4**

**Date Collected: 09/16/19 12:05**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 02:19	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 15:53	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:05	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:24	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:00	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-95845-5**

**Date Collected: 09/16/19 15:15**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 02:35	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 15:57	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:06	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.71 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:24	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.71 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:01	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-95845-6**

**Date Collected: 09/16/19 13:35**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 02:51	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 16:00	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:10	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.90 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:26	AJD	TAL SL
Total/NA	Prep	PrecSep_0			750.60 mL	1.0 g	446605	10/17/19 10:57	RBR	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPROTEAN		1			447458	10/23/19 13:20	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-95845-7**

**Date Collected: 09/16/19 12:00**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 03:38	CMR	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHICS2000		10			293618	10/03/19 17:00	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 16:10	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294446	10/09/19 09:49	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:11	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			1000.31 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:26	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.31 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCORANGE		1			445308	10/07/19 20:01	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-95845-8**

**Date Collected: 09/16/19 14:25**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 03:54	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 16:14	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294446	10/09/19 09:53	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:12	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Total/NA	Prep	PrecSep-21			999.88 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:26	AJD	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-95845-8**

**Date Collected: 09/16/19 14:25**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			999.88 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320		1			445308	10/07/19 20:01	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			446514	10/17/19 08:20	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-95845-9**

**Date Collected: 09/16/19 16:10**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292035	09/21/19 04:10	CMR	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294230	10/08/19 16:17	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294446	10/09/19 09:56	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A		1			293834	10/04/19 16:13	NAM	TAL PIT
Instrument ID: HGZ										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.42 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315		1			446416	10/16/19 06:26	AJD	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.42 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320		1			445308	10/07/19 20:02	KLS	TAL SL
Instrument ID: GFPCORANGE										
Total/NA	Analysis	Ra226_Ra228		1			446514	10/17/19 08:20	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FD-1(AP)**

**Lab Sample ID: 180-95845-10**

**Date Collected: 09/16/19 00:00**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292035	09/21/19 04:26	CMR	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294230	10/08/19 16:20	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294446	10/09/19 09:59	RSK	TAL PIT
Instrument ID: A										

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FD-1(AP)**

**Lab Sample ID: 180-95845-10**

**Date Collected: 09/16/19 00:00**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A		1			293834	10/04/19 16:14	NAM	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292105	09/20/19 14:07	AGP	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.68 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315		1			446416	10/16/19 06:27	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.68 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320		1			445306	10/07/19 20:05	KLS	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			446514	10/17/19 08:20	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Client Sample ID: EB-2(AP)**

**Lab Sample ID: 180-95845-11**

**Date Collected: 09/16/19 16:00**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292035	09/21/19 05:13	CMR	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294230	10/08/19 16:24	RSK	TAL PIT
		Instrument ID: A								
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294446	10/09/19 10:03	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A		1			293834	10/04/19 16:15	NAM	TAL PIT
		Instrument ID: HGZ								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292191	09/21/19 11:57	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.22 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315		1			446416	10/16/19 06:27	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.22 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320		1			445306	10/07/19 20:06	KLS	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			446514	10/17/19 08:20	SMP	TAL SL
		Instrument ID: NOEQUIP								

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FB-2(AP)**

**Lab Sample ID: 180-95845-12**

**Date Collected: 09/16/19 16:10**

**Matrix: Water**

**Date Received: 09/18/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292035	09/21/19 05:29	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294230	10/08/19 16:27	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292490	09/24/19 14:37	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294446	10/09/19 10:06	RSK	TAL PIT
Total/NA	Prep	7470A			25 mL	25 mL	293673	10/03/19 15:16	NAM	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGZ		1			293834	10/04/19 16:16	NAM	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292191	09/21/19 11:57	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.57 mL	1.0 g	443701	09/23/19 08:39	EJQ	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446416	10/16/19 06:27	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.57 mL	1.0 g	443704	09/23/19 09:29	EJQ	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPROTEAN		1			445306	10/07/19 20:06	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			446514	10/17/19 08:20	SMP	TAL SL

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-95933-1**

**Date Collected: 09/18/19 09:35**

**Matrix: Water**

**Date Received: 09/19/19 08:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 20:31	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			295459	10/18/19 16:48	RSK	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			295479	10/19/19 16:12	WTR	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 11:11	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292600	09/25/19 10:56	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446517	10/17/19 21:18	AJD	TAL SL

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-95933-1**

**Date Collected: 09/18/19 09:35**

**Matrix: Water**

**Date Received: 09/19/19 08:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:00	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-95933-2**

**Date Collected: 09/18/19 09:20**

**Matrix: Water**

**Date Received: 09/19/19 08:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 20:47	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295459	10/18/19 16:52	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295479	10/19/19 16:16	WTR	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:12	RJR	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292600	09/25/19 10:56	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.55 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446517	10/17/19 21:18	AJD	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.55 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:00	KLS	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: EB-3(AP)**

**Lab Sample ID: 180-95933-3**

**Date Collected: 09/18/19 10:15**

**Matrix: Water**

**Date Received: 09/19/19 08:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 21:02	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295459	10/18/19 16:55	RSK	TAL PIT
Instrument ID: A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292562	09/25/19 09:13	KEM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			295479	10/19/19 16:19	WTR	TAL PIT
Instrument ID: A										

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: EB-3(AP)**

**Lab Sample ID: 180-95933-3**

**Date Collected: 09/18/19 10:15**

**Matrix: Water**

**Date Received: 09/19/19 08:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:13	RJR	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292600	09/25/19 10:56	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.45 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446517	10/17/19 21:18	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.45 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:01	KLS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Client Sample ID: SGWC-7**

**Lab Sample ID: 180-95957-1**

**Date Collected: 09/17/19 10:25**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 14:14	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/15/19 23:06	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 10:50	RJR	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292387	09/24/19 10:37	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.39 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446517	10/17/19 21:18	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.39 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:01	KLS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-95957-2**

**Date Collected: 09/17/19 11:15**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 15:00	MJH	TAL PIT
		Instrument ID: CHIC2100A								

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-95957-2**

**Date Collected: 09/17/19 11:15**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/15/19 23:22	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 10:51	RJR	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.11 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446517	10/17/19 21:18	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.11 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:01	KLS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-95957-3**

**Date Collected: 09/17/19 12:20**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 15:16	MJH	TAL PIT
		Instrument ID: CHIC2100A								
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/15/19 23:25	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 10:52	RJR	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446517	10/17/19 21:19	AJD	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445720	10/10/19 17:01	KLS	TAL SL
		Instrument ID: GFPCPURPLE								
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
		Instrument ID: NOEQUIP								

# Lab Chronicle

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-95957-4**

**Date Collected: 09/17/19 10:05**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 15:31	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:29	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 10:53	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.06 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446517	10/17/19 21:19	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.06 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:01	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-95957-5**

**Date Collected: 09/17/19 11:20**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 15:46	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		5			292375	09/24/19 09:47	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:32	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 10:57	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.13 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446517	10/17/19 21:19	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.13 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:01	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-95957-6**

**Date Collected: 09/17/19 12:40**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 16:34	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		5			292375	09/24/19 10:03	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:42	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 10:58	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.01 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446517	10/17/19 21:19	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.01 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-95957-7**

**Date Collected: 09/17/19 14:12**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 16:49	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:46	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 10:59	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.26 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			446620	10/17/19 21:16	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.26 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

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# Lab Chronicle

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-95957-8**

**Date Collected: 09/17/19 15:45**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 17:05	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		5			292375	09/24/19 10:18	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:49	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 11:00	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.14 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			446867	10/18/19 06:32	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.14 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-95957-9**

**Date Collected: 09/17/19 17:08**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 17:21	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		10			292226	09/23/19 17:37	MJH	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:52	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 11:01	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.59 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCPURPLE		1			446867	10/18/19 06:32	AJD	TAL SL
Total/NA	Prep	PrecSep_0			1000.59 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:02	KLS	TAL SL

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-95957-9**

**Date Collected: 09/17/19 17:08**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-95957-10**

**Date Collected: 09/17/19 14:00**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 17:53	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		5			292375	09/24/19 10:34	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:56	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 11:02	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315 Instrument ID: GFPCBLUE		1			446870	10/18/19 06:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320 Instrument ID: GFPCPURPLE		1			445720	10/10/19 17:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228 Instrument ID: NOEQUIP		1			447525	10/24/19 08:27	SMP	TAL SL

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-95957-11**

**Date Collected: 09/17/19 16:30**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		1			292226	09/23/19 18:09	MJH	TAL PIT
Total/NA	Analysis	EPA 300.0 R2.1 Instrument ID: CHIC2100A		5			292375	09/24/19 10:49	CMR	TAL PIT
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020 Instrument ID: A		1			294986	10/15/19 23:59	RSK	TAL PIT
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A Instrument ID: HGY		1			294165	10/08/19 11:03	RJR	TAL PIT
Total/NA	Analysis	SM 2540C Instrument ID: NOEQUIP		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT

Eurofins TestAmerica, Pittsburgh

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-95957-11**

**Date Collected: 09/17/19 16:30**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446870	10/18/19 06:34	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445775	10/10/19 16:54	KLS	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-95957-12**

**Date Collected: 09/17/19 15:40**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 18:24	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/16/19 00:03	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:04	RJR	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.67 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446870	10/18/19 06:34	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.67 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445775	10/10/19 16:54	KLS	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FD-2(AP)**

**Lab Sample ID: 180-95957-13**

**Date Collected: 09/17/19 00:00**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 18:40	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/16/19 00:06	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:05	RJR	TAL PIT
Instrument ID: HGY										

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# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FD-2(AP)**

**Lab Sample ID: 180-95957-13**

**Date Collected: 09/17/19 00:00**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Total/NA	Prep	PrecSep-21			1000.20 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446870	10/18/19 06:35	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.20 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445775	10/10/19 16:54	KLS	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FB-3(AP)**

**Lab Sample ID: 180-95957-14**

**Date Collected: 09/17/19 10:05**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 19:59	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/16/19 00:09	RSK	TAL PIT
Instrument ID: A										
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:06	RJR	TAL PIT
Instrument ID: HGY										
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Prep	PrecSep-21			1000.48 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446870	10/18/19 06:35	KLS	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Prep	PrecSep_0			1000.48 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445775	10/10/19 16:54	KLS	TAL SL
Instrument ID: GFPCPROTEAN										
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
Instrument ID: NOEQUIP										

**Client Sample ID: FD-3(AP)**

**Lab Sample ID: 180-95957-15**

**Date Collected: 09/17/19 00:00**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 300.0 R2.1		1			292226	09/23/19 20:15	MJH	TAL PIT
Instrument ID: CHIC2100A										
Total/NA	Analysis	EPA 300.0 R2.1		5			292375	09/24/19 11:04	CMR	TAL PIT
Instrument ID: CHIC2100A										

# Lab Chronicle

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

**Client Sample ID: FD-3(AP)**

**Lab Sample ID: 180-95957-15**

**Date Collected: 09/17/19 00:00**

**Matrix: Water**

**Date Received: 09/19/19 09:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	292626	09/25/19 12:32	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			294986	10/16/19 00:13	RSK	TAL PIT
		Instrument ID: A								
Total/NA	Prep	7470A			50 mL	50 mL	293940	10/07/19 07:13	RJR	TAL PIT
Total/NA	Analysis	EPA 7470A		1			294165	10/08/19 11:10	RJR	TAL PIT
		Instrument ID: HGY								
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	292391	09/24/19 10:45	AVS	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	PrecSep-21			1000.63 mL	1.0 g	444191	09/25/19 17:44	ORM	TAL SL
Total/NA	Analysis	9315		1			446870	10/18/19 06:35	KLS	TAL SL
		Instrument ID: GFPCBLUE								
Total/NA	Prep	PrecSep_0			1000.63 mL	1.0 g	444193	09/25/19 18:26	ORM	TAL SL
Total/NA	Analysis	9320		1			445775	10/10/19 16:54	KLS	TAL SL
		Instrument ID: GFPCPROTEAN								
Total/NA	Analysis	Ra226_Ra228		1			447525	10/24/19 08:27	SMP	TAL SL
		Instrument ID: NOEQUIP								

**Laboratory References:**

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

**Analyst References:**

Lab: TAL PIT

Batch Type: Prep

KEM = Kimberly Mahoney

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

Batch Type: Analysis

AGP = Angela Partridge

AVS = Abbey Smith

CMR = Carl Reagle

MJH = Matthew Hartman

NAM = Nicole Marfisi

RJR = Ron Rosenbaum

RSK = Robert Kurtz

WTR = Bill Reinheimer

Lab: TAL SL

Batch Type: Prep

EJQ = Erin Quinn

ORM = Octavia Moore

RBR = Rachael Ratcliff

Batch Type: Analysis

AJD = Audra DeMariano

CJQ = Caleb Quinn

JCB = Justin Banner

KLS = Kody Saulters

SCB = Sarah Bernsen

SMP = Siobhan Perry

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-95735-1**

Date Collected: 09/12/19 14:25

Matrix: Water

Date Received: 09/14/19 09:45

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>1.5</b>		1.0	0.71	mg/L			09/22/19 16:52	1
Fluoride	<0.026		0.10	0.026	mg/L			09/22/19 16:52	1
Sulfate	<0.38		1.0	0.38	mg/L			09/22/19 16:52	1

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:33	09/27/19 17:05	1
<b>Barium</b>	<b>0.012</b>		0.010	0.0016	mg/L		09/24/19 14:33	09/27/19 17:05	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:33	09/27/19 17:05	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:33	09/27/19 17:05	1
<b>Chromium</b>	<b>0.0023 J</b>		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:05	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:33	09/27/19 17:05	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:33	09/27/19 17:05	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:05	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:33	09/27/19 17:05	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:33	09/27/19 17:05	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:33	09/27/19 17:05	1
<b>Calcium</b>	<b>1.6</b>		0.25	0.13	mg/L		09/24/19 14:33	09/27/19 17:05	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:33	09/27/19 17:05	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/02/19 15:35	10/03/19 13:34	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>22</b>		10	10	mg/L			09/19/19 12:24	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0529	U	0.0833	0.0834	1.00	0.143	pCi/L	09/19/19 09:08	10/13/19 13:39	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	87.9		40 - 110					09/19/19 09:08	10/13/19 13:39	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0488	U	0.239	0.239	1.00	0.421	pCi/L	09/19/19 09:32	10/03/19 17:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	87.9		40 - 110					09/19/19 09:32	10/03/19 17:31	1
Y Carrier	88.6		40 - 110					09/19/19 09:32	10/03/19 17:31	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-5**

**Lab Sample ID: 180-95735-1**

Date Collected: 09/12/19 14:25

Matrix: Water

Date Received: 09/14/19 09:45

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.102	U	0.253	0.253	5.00	0.421	pCi/L		10/15/19 08:06	1

**Client Sample ID: EB-1(AP)**

**Lab Sample ID: 180-95735-2**

Date Collected: 09/12/19 16:40

Matrix: Water

Date Received: 09/14/19 09:45

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			10/03/19 17:14	1
Fluoride	<0.026		0.10	0.026	mg/L			10/03/19 17:14	1
<b>Sulfate</b>	<b>0.44</b>	<b>J</b>	1.0	0.38	mg/L			10/03/19 17:14	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:33	09/27/19 17:22	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:33	09/27/19 17:22	1
<b>Beryllium</b>	<b>0.00049</b>	<b>J</b>	0.0025	0.00018	mg/L		09/24/19 14:33	09/27/19 17:22	1
<b>Cadmium</b>	<b>0.00013</b>	<b>J</b>	0.0025	0.00013	mg/L		09/24/19 14:33	09/27/19 17:22	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:22	1
<b>Cobalt</b>	<b>0.000079</b>	<b>J</b>	0.0025	0.000075	mg/L		09/24/19 14:33	09/27/19 17:22	1
<b>Lead</b>	<b>0.00014</b>	<b>J</b>	0.0010	0.00013	mg/L		09/24/19 14:33	09/27/19 17:22	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:22	1
<b>Thallium</b>	<b>0.00026</b>	<b>J</b>	0.00050	0.00015	mg/L		09/24/19 14:33	09/27/19 17:22	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:33	09/27/19 17:22	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:33	09/27/19 17:22	1
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:33	09/27/19 17:22	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:33	09/27/19 17:22	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/02/19 15:35	10/03/19 13:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/19/19 12:24	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00364	U	0.0612	0.0612	1.00	0.124	pCi/L	09/19/19 09:08	10/13/19 13:40	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/19/19 09:08	10/13/19 13:40	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: EB-1(AP)**

**Lab Sample ID: 180-95735-2**

Date Collected: 09/12/19 16:40

Matrix: Water

Date Received: 09/14/19 09:45

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.409	U	0.291	0.293	1.00	0.455	pCi/L	09/19/19 09:32	10/03/19 17:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/19/19 09:32	10/03/19 17:31	1
Y Carrier	81.9		40 - 110					09/19/19 09:32	10/03/19 17:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.406	U	0.297	0.299	5.00	0.455	pCi/L		10/15/19 08:06	1

**Client Sample ID: FB-1(AP)**

**Lab Sample ID: 180-95735-3**

Date Collected: 09/13/19 10:09

Matrix: Water

Date Received: 09/14/19 09:45

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/22/19 17:07	1
Fluoride	<0.026		0.10	0.026	mg/L			09/22/19 17:07	1
Sulfate	<0.38		1.0	0.38	mg/L			09/22/19 17:07	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:33	09/27/19 17:32	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:33	09/27/19 17:32	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:33	09/27/19 17:32	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:33	09/27/19 17:32	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:32	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:33	09/27/19 17:32	1
<b>Lead</b>	<b>0.00014</b>	<b>J</b>	0.0010	0.00013	mg/L		09/24/19 14:33	09/27/19 17:32	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:32	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:33	09/27/19 17:32	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:33	09/27/19 17:32	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:33	09/27/19 17:32	1
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:33	09/27/19 17:32	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:33	09/27/19 17:32	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/02/19 15:35	10/03/19 13:49	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/20/19 13:01	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FB-1(AP)**

**Lab Sample ID: 180-95735-3**

Date Collected: 09/13/19 10:09

Matrix: Water

Date Received: 09/14/19 09:45

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0332	U	0.0589	0.0590	1.00	0.130	pCi/L	09/19/19 09:08	10/13/19 13:40	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.2		40 - 110					09/19/19 09:08	10/13/19 13:40	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.166	U	0.240	0.240	1.00	0.402	pCi/L	09/19/19 09:32	10/03/19 17:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	95.2		40 - 110					09/19/19 09:32	10/03/19 17:31	1
Y Carrier	83.7		40 - 110					09/19/19 09:32	10/03/19 17:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.132	U	0.247	0.247	5.00	0.402	pCi/L		10/15/19 08:06	1

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-95735-4**

Date Collected: 09/13/19 10:21

Matrix: Water

Date Received: 09/14/19 09:45

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.7		1.0	0.71	mg/L			09/22/19 17:22	1
Fluoride	0.049	J	0.10	0.026	mg/L			09/22/19 17:22	1
Sulfate	<0.38		1.0	0.38	mg/L			09/22/19 17:22	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:33	09/27/19 17:35	1
Barium	0.025		0.010	0.0016	mg/L		09/24/19 14:33	09/27/19 17:35	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:33	09/27/19 17:35	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:33	09/27/19 17:35	1
Chromium	0.0056		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:35	1
Cobalt	0.00018	J	0.0025	0.000075	mg/L		09/24/19 14:33	09/27/19 17:35	1
Lead	0.00014	J	0.0010	0.00013	mg/L		09/24/19 14:33	09/27/19 17:35	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 17:35	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:33	09/27/19 17:35	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:33	09/27/19 17:35	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:33	09/27/19 17:35	1
Calcium	14		0.25	0.13	mg/L		09/24/19 14:33	09/27/19 17:35	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:33	09/27/19 17:35	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-24**

**Lab Sample ID: 180-95735-4**

Date Collected: 09/13/19 10:21

Matrix: Water

Date Received: 09/14/19 09:45

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/02/19 15:35	10/03/19 13:50	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	200		10	10	mg/L			09/20/19 13:01	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0312	U	0.0738	0.0739	1.00	0.133	pCi/L	09/19/19 09:08	10/13/19 13:40	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.1		40 - 110					09/19/19 09:08	10/13/19 13:40	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.308	U	0.245	0.246	1.00	0.388	pCi/L	09/19/19 09:32	10/03/19 17:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	92.1		40 - 110					09/19/19 09:32	10/03/19 17:31	1
Y Carrier	91.2		40 - 110					09/19/19 09:32	10/03/19 17:31	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.339	U	0.256	0.257	5.00	0.388	pCi/L		10/15/19 08:06	1

**Client Sample ID: SGWA-1**

**Lab Sample ID: 180-95845-1**

Date Collected: 09/16/19 15:02

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.8		1.0	0.71	mg/L			09/21/19 01:32	1
Fluoride	<0.026		0.10	0.026	mg/L			09/21/19 01:32	1
Sulfate	0.98	J	1.0	0.38	mg/L			09/21/19 01:32	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 15:43	1
Barium	0.048		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 15:43	1
Beryllium	0.00028	J	0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 15:43	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 15:43	1
Chromium	0.0017	J	0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:43	1
Cobalt	0.0014	J	0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 15:43	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 15:43	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:43	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-1**

**Lab Sample ID: 180-95845-1**

Date Collected: 09/16/19 15:02

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 15:43	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 15:43	1
<b>Lithium</b>	<b>0.0034</b>		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 15:43	1
<b>Boron</b>	<b>0.13</b>		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 15:43	1
<b>Calcium</b>	<b>1.7</b>		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 15:43	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:02	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>17</b>		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0208	U	0.0802	0.0803	1.00	0.148	pCi/L	09/23/19 08:39	10/15/19 22:27	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	91.5		40 - 110					09/23/19 08:39	10/15/19 22:27	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.136	U	0.297	0.297	1.00	0.512	pCi/L	09/23/19 09:29	10/07/19 20:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	91.5		40 - 110					09/23/19 09:29	10/07/19 20:00	1
Y Carrier	82.2		40 - 110					09/23/19 09:29	10/07/19 20:00	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.157	U	0.308	0.308	5.00	0.512	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWA-2**

**Lab Sample ID: 180-95845-2**

Date Collected: 09/16/19 15:58

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>1.3</b>		1.0	0.71	mg/L			09/21/19 01:47	1
<b>Fluoride</b>	<b>0.054</b>	<b>J</b>	0.10	0.026	mg/L			09/21/19 01:47	1
<b>Sulfate</b>	<b>0.68</b>	<b>J</b>	1.0	0.38	mg/L			09/21/19 01:47	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-2**

**Lab Sample ID: 180-95845-2**

Date Collected: 09/16/19 15:58

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 15:47	1
<b>Barium</b>	<b>0.045</b>		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 15:47	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 15:47	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 15:47	1
<b>Chromium</b>	<b>0.014</b>		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:47	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 15:47	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 15:47	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:47	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 15:47	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 15:47	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 15:47	1
<b>Boron</b>	<b>0.089</b>		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 15:47	1
<b>Calcium</b>	<b>12</b>		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 15:47	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:03	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>91</b>		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0188	U	0.0776	0.0776	1.00	0.146	pCi/L	09/23/19 08:39	10/15/19 22:27	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	86.2		40 - 110					09/23/19 08:39	10/15/19 22:27	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.264	U	0.263	0.264	1.00	0.540	pCi/L	09/23/19 09:29	10/07/19 20:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	86.2		40 - 110					09/23/19 09:29	10/07/19 20:00	1
Y Carrier	80.0		40 - 110					09/23/19 09:29	10/07/19 20:00	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.245	U	0.274	0.275	5.00	0.540	pCi/L		10/17/19 08:20	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-95845-3**

Date Collected: 09/16/19 13:26

Matrix: Water

Date Received: 09/18/19 09:00

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.2		1.0	0.71	mg/L			09/21/19 02:03	1
Fluoride	0.026	J	0.10	0.026	mg/L			09/21/19 02:03	1
Sulfate	0.92	J	1.0	0.38	mg/L			09/21/19 02:03	1

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 15:50	1
Barium	0.041		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 15:50	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 15:50	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 15:50	1
Chromium	0.019		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:50	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 15:50	1
Lead	0.00017	J	0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 15:50	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:50	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 15:50	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 15:50	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 15:50	1
Boron	0.050		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 15:50	1
Calcium	5.9		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 15:50	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00050		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:04	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	19		10	10	mg/L			09/20/19 14:07	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0333	U	0.0794	0.0795	1.00	0.144	pCi/L	09/23/19 08:39	10/15/19 22:27	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.0		40 - 110					09/23/19 08:39	10/15/19 22:27	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.299	U	0.365	0.366	1.00	0.604	pCi/L	09/23/19 09:29	10/07/19 20:00	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.0		40 - 110					09/23/19 09:29	10/07/19 20:00	1
<i>Y Carrier</i>	86.0		40 - 110					09/23/19 09:29	10/07/19 20:00	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-3**

**Lab Sample ID: 180-95845-3**

Date Collected: 09/16/19 13:26

Matrix: Water

Date Received: 09/18/19 09:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.333	U	0.374	0.375	5.00	0.604	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-95845-4**

Date Collected: 09/16/19 12:05

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.2		1.0	0.71	mg/L			09/21/19 02:19	1
Fluoride	0.055	J	0.10	0.026	mg/L			09/21/19 02:19	1
Sulfate	1.1		1.0	0.38	mg/L			09/21/19 02:19	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 15:53	1
Barium	0.068		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 15:53	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 15:53	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 15:53	1
Chromium	0.0064		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:53	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 15:53	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 15:53	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:53	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 15:53	1
Molybdenum	0.00069	J	0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 15:53	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 15:53	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 15:53	1
Calcium	18		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 15:53	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00027		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:05	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	57		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.000849	U	0.0734	0.0734	1.00	0.146	pCi/L	09/23/19 08:39	10/16/19 06:24	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	77.1		40 - 110					09/23/19 08:39	10/16/19 06:24	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-4**

**Lab Sample ID: 180-95845-4**

Date Collected: 09/16/19 12:05

Matrix: Water

Date Received: 09/18/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0835	U	0.336	0.336	1.00	0.594	pCi/L	09/23/19 09:29	10/07/19 20:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	77.1		40 - 110					09/23/19 09:29	10/07/19 20:00	1
Y Carrier	83.0		40 - 110					09/23/19 09:29	10/07/19 20:00	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0843	U	0.344	0.344	5.00	0.594	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-95845-5**

Date Collected: 09/16/19 15:15

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.9		1.0	0.71	mg/L			09/21/19 02:35	1
Fluoride	0.099	J	0.10	0.026	mg/L			09/21/19 02:35	1
Sulfate	0.53	J	1.0	0.38	mg/L			09/21/19 02:35	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 15:57	1
Barium	0.13		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 15:57	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 15:57	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 15:57	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:57	1
Cobalt	0.00013	J	0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 15:57	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 15:57	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 15:57	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 15:57	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 15:57	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 15:57	1
Boron	0.040	J	0.050	0.039	mg/L		09/24/19 14:37	10/08/19 15:57	1
Calcium	8.9		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 15:57	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:06	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	76		10	10	mg/L			09/20/19 14:07	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-6**

**Lab Sample ID: 180-95845-5**

Date Collected: 09/16/19 15:15

Matrix: Water

Date Received: 09/18/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0414	U	0.0741	0.0742	1.00	0.162	pCi/L	09/23/19 08:39	10/16/19 06:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		40 - 110					09/23/19 08:39	10/16/19 06:24	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.122	U	0.341	0.341	1.00	0.594	pCi/L	09/23/19 09:29	10/07/19 20:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		40 - 110					09/23/19 09:29	10/07/19 20:01	1
Y Carrier	84.5		40 - 110					09/23/19 09:29	10/07/19 20:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0805	U	0.349	0.349	5.00	0.594	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-95845-6**

Date Collected: 09/16/19 13:35

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.9		1.0	0.71	mg/L			09/21/19 02:51	1
Fluoride	0.040	J	0.10	0.026	mg/L			09/21/19 02:51	1
Sulfate	<0.38		1.0	0.38	mg/L			09/21/19 02:51	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:00	1
Barium	0.028		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:00	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:00	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:00	1
Chromium	0.0015	J	0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:00	1
Cobalt	0.0045		0.0025	0.000075	mg/L		09/24/19 14:37	10/08/19 16:00	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:00	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:00	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:00	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:00	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:00	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:00	1
Calcium	9.5		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:00	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWA-25**

**Lab Sample ID: 180-95845-6**

Date Collected: 09/16/19 13:35

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	42		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0217	U	0.0696	0.0696	1.00	0.145	pCi/L	09/23/19 08:39	10/16/19 06:26	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	86.7		40 - 110					09/23/19 08:39	10/16/19 06:26	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	11.6	*	0.919	1.41	1.00	0.594	pCi/L	10/17/19 10:57	10/23/19 13:20	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.9		40 - 110					10/17/19 10:57	10/23/19 13:20	1
Y Carrier	82.2		40 - 110					10/17/19 10:57	10/23/19 13:20	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	11.5		0.922	1.41	5.00	0.594	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-95845-7**

Date Collected: 09/16/19 12:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		1.0	0.71	mg/L			09/21/19 03:38	1
Fluoride	0.057	J	0.10	0.026	mg/L			09/21/19 03:38	1
Sulfate	310		10	3.8	mg/L			10/03/19 17:00	10

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:10	1
Barium	0.077		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:10	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:10	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:10	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:10	1
Cobalt	0.0010	J	0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 09:49	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:10	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:10	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-9**

**Lab Sample ID: 180-95845-7**

Date Collected: 09/16/19 12:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:10	1
<b>Molybdenum</b>	<b>0.00067</b>	<b>J</b>	0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:10	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:10	1
<b>Boron</b>	<b>1.6</b>		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:10	1
<b>Calcium</b>	<b>56</b>		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:10	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:11	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>550</b>		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0284	U	0.0651	0.0652	1.00	0.141	pCi/L	09/23/19 08:39	10/16/19 06:26	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/23/19 08:39	10/16/19 06:26	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0876	U	0.342	0.343	1.00	0.626	pCi/L	09/23/19 09:29	10/07/19 20:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/23/19 09:29	10/07/19 20:01	1
Y Carrier	83.4		40 - 110					09/23/19 09:29	10/07/19 20:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.116	U	0.348	0.349	5.00	0.626	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-95845-8**

Date Collected: 09/16/19 14:25

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>7.9</b>		1.0	0.71	mg/L			09/21/19 03:54	1
Fluoride	<0.026		0.10	0.026	mg/L			09/21/19 03:54	1
<b>Sulfate</b>	<b>0.72</b>	<b>J</b>	1.0	0.38	mg/L			09/21/19 03:54	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-11**

**Lab Sample ID: 180-95845-8**

Date Collected: 09/16/19 14:25

Matrix: Water

Date Received: 09/18/19 09:00

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:14	1
<b>Barium</b>	<b>0.045</b>		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:14	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:14	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:14	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:14	1
<b>Cobalt</b>	<b>0.022</b>		0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 09:53	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:14	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:14	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:14	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:14	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:14	1
<b>Boron</b>	<b>0.39</b>		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:14	1
<b>Calcium</b>	<b>1.9</b>		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:14	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:12	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/20/19 14:07	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0581	U	0.0473	0.0476	1.00	0.127	pCi/L	09/23/19 08:39	10/16/19 06:26	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	88.7		40 - 110					09/23/19 08:39	10/16/19 06:26	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.309	U	0.427	0.428	1.00	0.711	pCi/L	09/23/19 09:29	10/07/19 20:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	88.7		40 - 110					09/23/19 09:29	10/07/19 20:01	1
Y Carrier	84.5		40 - 110					09/23/19 09:29	10/07/19 20:01	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.251	U	0.430	0.431	5.00	0.711	pCi/L		10/17/19 08:20	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-95845-9**

Date Collected: 09/16/19 16:10

Matrix: Water

Date Received: 09/18/19 09:00

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.3		1.0	0.71	mg/L			09/21/19 04:10	1
Fluoride	0.065	J	0.10	0.026	mg/L			09/21/19 04:10	1
Sulfate	44		1.0	0.38	mg/L			09/21/19 04:10	1

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:17	1
Barium	0.052		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:17	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:17	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:17	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:17	1
Cobalt	0.0030		0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 09:56	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:17	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:17	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:17	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:17	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:17	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:17	1
Calcium	23		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:17	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:13	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	200		10	10	mg/L			09/20/19 14:07	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00332	U	0.0627	0.0627	1.00	0.127	pCi/L	09/23/19 08:39	10/16/19 06:26	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	81.4		40 - 110					09/23/19 08:39	10/16/19 06:26	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.566	U	0.406	0.409	1.00	0.633	pCi/L	09/23/19 09:29	10/07/19 20:02	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	81.4		40 - 110					09/23/19 09:29	10/07/19 20:02	1
<i>Y Carrier</i>	82.2		40 - 110					09/23/19 09:29	10/07/19 20:02	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-12**

**Lab Sample ID: 180-95845-9**

Date Collected: 09/16/19 16:10

Matrix: Water

Date Received: 09/18/19 09:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.569	U	0.411	0.414	5.00	0.633	pCi/L		10/17/19 08:20	1

**Client Sample ID: FD-1(AP)**

**Lab Sample ID: 180-95845-10**

Date Collected: 09/16/19 00:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.9		1.0	0.71	mg/L			09/21/19 04:26	1
Fluoride	<0.026		0.10	0.026	mg/L			09/21/19 04:26	1
Sulfate	1.1		1.0	0.38	mg/L			09/21/19 04:26	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:20	1
Barium	0.050		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:20	1
Beryllium	0.00026	J	0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:20	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:20	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:20	1
Cobalt	0.0012	J	0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 09:59	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:20	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:20	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:20	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:20	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:20	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:20	1
Calcium	1.8		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:20	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00019	J	0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:14	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	12		10	10	mg/L			09/20/19 14:07	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	-0.0361	U	0.0620	0.0621	1.00	0.142	pCi/L	09/23/19 08:39	10/16/19 06:27	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	78.2		40 - 110					09/23/19 08:39	10/16/19 06:27	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FD-1(AP)**

**Lab Sample ID: 180-95845-10**

Date Collected: 09/16/19 00:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.323	U	0.535	0.536	1.00	0.901	pCi/L	09/23/19 09:29	10/07/19 20:05	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	78.2		40 - 110					09/23/19 09:29	10/07/19 20:05	1
Y Carrier	72.9		40 - 110					09/23/19 09:29	10/07/19 20:05	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.287	U	0.539	0.540	5.00	0.901	pCi/L		10/17/19 08:20	1

**Client Sample ID: EB-2(AP)**

**Lab Sample ID: 180-95845-11**

Date Collected: 09/16/19 16:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/21/19 05:13	1
Fluoride	<0.026		0.10	0.026	mg/L			09/21/19 05:13	1
Sulfate	<0.38		1.0	0.38	mg/L			09/21/19 05:13	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:24	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:24	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:24	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:24	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:24	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 10:03	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:24	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:24	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:24	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:24	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:24	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:24	1
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:24	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00024		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:15	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/21/19 11:57	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: EB-2(AP)**

**Lab Sample ID: 180-95845-11**

Date Collected: 09/16/19 16:00

Matrix: Water

Date Received: 09/18/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0333	U	0.0369	0.0370	1.00	0.103	pCi/L	09/23/19 08:39	10/16/19 06:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					09/23/19 08:39	10/16/19 06:27	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.162	U	0.367	0.367	1.00	0.675	pCi/L	09/23/19 09:29	10/07/19 20:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.1		40 - 110					09/23/19 09:29	10/07/19 20:06	1
Y Carrier	85.6		40 - 110					09/23/19 09:29	10/07/19 20:06	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.195	U	0.369	0.369	5.00	0.675	pCi/L		10/17/19 08:20	1

**Client Sample ID: FB-2(AP)**

**Lab Sample ID: 180-95845-12**

Date Collected: 09/16/19 16:10

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/21/19 05:29	1
Fluoride	<0.026		0.10	0.026	mg/L			09/21/19 05:29	1
Sulfate	<0.38		1.0	0.38	mg/L			09/21/19 05:29	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 16:27	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 16:27	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 16:27	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 16:27	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:27	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 10:06	1
<b>Lead</b>	<b>0.00021</b>	<b>J</b>	0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 16:27	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 16:27	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 16:27	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 16:27	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 16:27	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 16:27	1
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 16:27	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FB-2(AP)**

**Lab Sample ID: 180-95845-12**

Date Collected: 09/16/19 16:10

Matrix: Water

Date Received: 09/18/19 09:00

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 16:16	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/21/19 11:57	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0122	U	0.0664	0.0664	1.00	0.137	pCi/L	09/23/19 08:39	10/16/19 06:27	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	85.0		40 - 110					09/23/19 08:39	10/16/19 06:27	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.129	U	0.401	0.401	1.00	0.697	pCi/L	09/23/19 09:29	10/07/19 20:06	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	85.0		40 - 110					09/23/19 09:29	10/07/19 20:06	1
Y Carrier	78.5		40 - 110					09/23/19 09:29	10/07/19 20:06	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.117	U	0.406	0.406	5.00	0.697	pCi/L		10/17/19 08:20	1

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-95933-1**

Date Collected: 09/18/19 09:35

Matrix: Water

Date Received: 09/19/19 08:30

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10		1.0	0.71	mg/L			09/23/19 20:31	1
Fluoride	0.028	J	0.10	0.026	mg/L			09/23/19 20:31	1
Sulfate	100		1.0	0.38	mg/L			09/23/19 20:31	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00035	J	0.0013	0.00032	mg/L		09/25/19 09:13	10/18/19 16:48	1
Barium	0.078		0.010	0.0016	mg/L		09/25/19 09:13	10/18/19 16:48	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 09:13	10/18/19 16:48	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 09:13	10/18/19 16:48	1
Chromium	0.0024	J B	0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:48	1
Cobalt	0.0020	J	0.0025	0.000075	mg/L		09/25/19 09:13	10/18/19 16:48	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 09:13	10/18/19 16:48	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:48	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-22**

**Lab Sample ID: 180-95933-1**

Date Collected: 09/18/19 09:35

Matrix: Water

Date Received: 09/19/19 08:30

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 09:13	10/18/19 16:48	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 09:13	10/18/19 16:48	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 09:13	10/18/19 16:48	1
<b>Calcium</b>	<b>27</b>		0.25	0.13	mg/L		09/25/19 09:13	10/18/19 16:48	1
<b>Boron</b>	<b>0.52</b>		0.050	0.039	mg/L		09/25/19 09:13	10/19/19 16:12	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:11	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>470</b>		10	10	mg/L			09/25/19 10:56	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0462	U	0.0500	0.0502	1.00	0.124	pCi/L	09/25/19 17:44	10/17/19 21:18	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.6		40 - 110					09/25/19 17:44	10/17/19 21:18	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.148	U	0.248	0.248	1.00	0.419	pCi/L	09/25/19 18:26	10/10/19 17:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.6		40 - 110					09/25/19 18:26	10/10/19 17:00	1
Y Carrier	78.9		40 - 110					09/25/19 18:26	10/10/19 17:00	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.101	U	0.253	0.253	5.00	0.419	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-95933-2**

Date Collected: 09/18/19 09:20

Matrix: Water

Date Received: 09/19/19 08:30

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>9.7</b>		1.0	0.71	mg/L			09/23/19 20:47	1
<b>Fluoride</b>	<b>0.044</b>	<b>J</b>	0.10	0.026	mg/L			09/23/19 20:47	1
<b>Sulfate</b>	<b>95</b>		1.0	0.38	mg/L			09/23/19 20:47	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-23**

**Lab Sample ID: 180-95933-2**

Date Collected: 09/18/19 09:20

Matrix: Water

Date Received: 09/19/19 08:30

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Barium</b>	<b>0.068</b>		0.010	0.0016	mg/L		09/25/19 09:13	10/18/19 16:52	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 09:13	10/18/19 16:52	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Chromium</b>	<b>0.0024</b>	<b>J B</b>	0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Cobalt</b>	<b>0.00013</b>	<b>J</b>	0.0025	0.000075	mg/L		09/25/19 09:13	10/18/19 16:52	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 09:13	10/18/19 16:52	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:52	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 09:13	10/18/19 16:52	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Lithium</b>	<b>0.0043</b>		0.0020	0.0034	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Calcium</b>	<b>26</b>		0.25	0.13	mg/L		09/25/19 09:13	10/18/19 16:52	1
<b>Boron</b>	<b>0.54</b>		0.050	0.039	mg/L		09/25/19 09:13	10/19/19 16:16	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:12	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>490</b>		10	10	mg/L			09/25/19 10:56	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00323	U	0.0509	0.0509	1.00	0.110	pCi/L	09/25/19 17:44	10/17/19 21:18	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.0		40 - 110					09/25/19 17:44	10/17/19 21:18	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.289	U	0.282	0.284	1.00	0.459	pCi/L	09/25/19 18:26	10/10/19 17:00	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.0		40 - 110					09/25/19 18:26	10/10/19 17:00	1
Y Carrier	81.1		40 - 110					09/25/19 18:26	10/10/19 17:00	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.285	U	0.287	0.289	5.00	0.459	pCi/L		10/24/19 08:27	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: EB-3(AP)**

**Lab Sample ID: 180-95933-3**

Date Collected: 09/18/19 10:15

Matrix: Water

Date Received: 09/19/19 08:30

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/23/19 21:02	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 21:02	1
Sulfate	<0.38		1.0	0.38	mg/L			09/23/19 21:02	1

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 09:13	10/18/19 16:55	1
Barium	<0.0016		0.010	0.0016	mg/L		09/25/19 09:13	10/18/19 16:55	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 09:13	10/18/19 16:55	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 09:13	10/18/19 16:55	1
<b>Chromium</b>	<b>0.0015</b>	<b>J B</b>	0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:55	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/25/19 09:13	10/18/19 16:55	1
<b>Lead</b>	<b>0.00016</b>	<b>J</b>	0.0010	0.00013	mg/L		09/25/19 09:13	10/18/19 16:55	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 16:55	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 09:13	10/18/19 16:55	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 09:13	10/18/19 16:55	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 09:13	10/18/19 16:55	1
Calcium	<0.13		0.25	0.13	mg/L		09/25/19 09:13	10/18/19 16:55	1
Boron	<0.039		0.050	0.039	mg/L		09/25/19 09:13	10/19/19 16:19	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:13	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/25/19 10:56	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0413	U	0.0568	0.0570	1.00	0.132	pCi/L	09/25/19 17:44	10/17/19 21:18	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.9		40 - 110					09/25/19 17:44	10/17/19 21:18	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.207	U	0.235	0.235	1.00	0.386	pCi/L	09/25/19 18:26	10/10/19 17:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.9		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	84.9		40 - 110					09/25/19 18:26	10/10/19 17:01	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: EB-3(AP)**

**Lab Sample ID: 180-95933-3**

Date Collected: 09/18/19 10:15

Matrix: Water

Date Received: 09/19/19 08:30

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.166	U	0.242	0.242	5.00	0.386	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-7**

**Lab Sample ID: 180-95957-1**

Date Collected: 09/17/19 10:25

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.8		1.0	0.71	mg/L			09/23/19 14:14	1
Fluoride	0.20		0.10	0.026	mg/L			09/23/19 14:14	1
Sulfate	8.7		1.0	0.38	mg/L			09/23/19 14:14	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:06	1
Barium	0.23		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:06	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:06	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:06	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:06	1
Cobalt	0.0039		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:06	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:06	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:06	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:06	1
Molybdenum	0.0014	J	0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:06	1
Lithium	0.0049		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:06	1
Calcium	16		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:06	1
Boron	<0.039		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:06	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:50	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	140		10	10	mg/L			09/24/19 10:37	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0900	U	0.0881	0.0885	1.00	0.138	pCi/L	09/25/19 17:44	10/17/19 21:18	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	90.1		40 - 110					09/25/19 17:44	10/17/19 21:18	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-7**

**Lab Sample ID: 180-95957-1**

Date Collected: 09/17/19 10:25

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.251	U	0.253	0.254	1.00	0.412	pCi/L	09/25/19 18:26	10/10/19 17:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	90.1		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	80.4		40 - 110					09/25/19 18:26	10/10/19 17:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.341	U	0.268	0.269	5.00	0.412	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-95957-2**

Date Collected: 09/17/19 11:15

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		1.0	0.71	mg/L			09/23/19 15:00	1
Fluoride	0.47		0.10	0.026	mg/L			09/23/19 15:00	1
Sulfate	77		1.0	0.38	mg/L			09/23/19 15:00	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00035	J	0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:22	1
Barium	0.19		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:22	1
Beryllium	0.00019	J	0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:22	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:22	1
Chromium	0.0031		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:22	1
Cobalt	0.00013	J	0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:22	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:22	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:22	1
Thallium	0.00023	J	0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:22	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:22	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:22	1
Calcium	52		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:22	1
Boron	0.11		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:22	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	380		10	10	mg/L			09/24/19 10:45	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-8**

**Lab Sample ID: 180-95957-2**

Date Collected: 09/17/19 11:15

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>0.340</b>		0.127	0.131	1.00	0.137	pCi/L	09/25/19 17:44	10/17/19 21:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					09/25/19 17:44	10/17/19 21:18	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>1.70</b>		0.386	0.416	1.00	0.462	pCi/L	09/25/19 18:26	10/10/19 17:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	80.0		40 - 110					09/25/19 18:26	10/10/19 17:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Combined Radium 226 + 228</b>	<b>2.04</b>		0.406	0.436	5.00	0.462	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-95957-3**

Date Collected: 09/17/19 12:20

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>9.7</b>		1.0	0.71	mg/L			09/23/19 15:16	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 15:16	1
<b>Sulfate</b>	<b>2.3</b>		1.0	0.38	mg/L			09/23/19 15:16	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:25	1
<b>Barium</b>	<b>0.029</b>		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:25	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:25	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:25	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:25	1
<b>Cobalt</b>	<b>0.022</b>		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:25	1
<b>Lead</b>	<b>0.00013</b>	<b>J</b>	0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:25	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:25	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:25	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:25	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:25	1
<b>Calcium</b>	<b>0.79</b>		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:25	1
<b>Boron</b>	<b>0.077</b>		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:25	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-10**

**Lab Sample ID: 180-95957-3**

Date Collected: 09/17/19 12:20

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:52	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	17		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0140	U	0.0601	0.0601	1.00	0.126	pCi/L	09/25/19 17:44	10/17/19 21:19	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.6		40 - 110					09/25/19 17:44	10/17/19 21:19	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.240	U	0.226	0.227	1.00	0.365	pCi/L	09/25/19 18:26	10/10/19 17:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	98.6		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	89.3		40 - 110					09/25/19 18:26	10/10/19 17:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.226	U	0.234	0.235	5.00	0.365	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-95957-4**

Date Collected: 09/17/19 10:05

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.4		1.0	0.71	mg/L			09/23/19 15:31	1
Fluoride	0.040	J	0.10	0.026	mg/L			09/23/19 15:31	1
Sulfate	79		1.0	0.38	mg/L			09/23/19 15:31	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:29	1
Barium	0.036		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:29	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:29	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:29	1
Chromium	0.0017	J	0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:29	1
Cobalt	0.0024	J	0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:29	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:29	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:29	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-13**

**Lab Sample ID: 180-95957-4**

Date Collected: 09/17/19 10:05

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:29	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:29	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:29	1
<b>Calcium</b>	<b>17</b>		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:29	1
<b>Boron</b>	<b>0.43</b>		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:29	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>170</b>		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0335	U	0.0702	0.0702	1.00	0.151	pCi/L	09/25/19 17:44	10/17/19 21:19	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.6		40 - 110					09/25/19 17:44	10/17/19 21:19	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.177	U	0.238	0.238	1.00	0.396	pCi/L	09/25/19 18:26	10/10/19 17:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.6		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	84.9		40 - 110					09/25/19 18:26	10/10/19 17:01	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.143	U	0.248	0.248	5.00	0.396	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-95957-5**

Date Collected: 09/17/19 11:20

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>11</b>		1.0	0.71	mg/L			09/23/19 15:46	1
<b>Fluoride</b>	<b>0.028</b>	J	0.10	0.026	mg/L			09/23/19 15:46	1
<b>Sulfate</b>	<b>200</b>		5.0	1.9	mg/L			09/24/19 09:47	5

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-14**

**Lab Sample ID: 180-95957-5**

Date Collected: 09/17/19 11:20

Matrix: Water

Date Received: 09/19/19 09:00

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Barium</b>	<b>0.048</b>		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:32	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:32	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Chromium</b>	<b>0.0026</b>		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Cobalt</b>	<b>0.0096</b>		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Lead</b>	<b>0.00016</b>	<b>J</b>	0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:32	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:32	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:32	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:32	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Calcium</b>	<b>38</b>		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:32	1
<b>Boron</b>	<b>1.4</b>		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:32	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:57	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>310</b>		10	10	mg/L			09/24/19 10:45	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	-0.0407	U	0.0627	0.0628	1.00	0.145	pCi/L	09/25/19 17:44	10/17/19 21:19	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	91.2		40 - 110					09/25/19 17:44	10/17/19 21:19	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.304	U	0.237	0.239	1.00	0.374	pCi/L	09/25/19 18:26	10/10/19 17:01	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	91.2		40 - 110					09/25/19 18:26	10/10/19 17:01	1
Y Carrier	84.9		40 - 110					09/25/19 18:26	10/10/19 17:01	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.264	U	0.245	0.247	5.00	0.374	pCi/L		10/24/19 08:27	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-95957-6**

Date Collected: 09/17/19 12:40

Matrix: Water

Date Received: 09/19/19 09:00

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10		1.0	0.71	mg/L			09/23/19 16:34	1
Fluoride	0.10		0.10	0.026	mg/L			09/23/19 16:34	1
Sulfate	220		5.0	1.9	mg/L			09/24/19 10:03	5

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00080	J	0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:42	1
Barium	0.034		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:42	1
Beryllium	0.00046	J	0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:42	1
Cadmium	0.00034	J	0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:42	1
Chromium	0.037		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:42	1
Cobalt	0.27		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:42	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:42	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:42	1
Thallium	0.00016	J	0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:42	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:42	1
Lithium	0.0037		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:42	1
Calcium	17		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:42	1
Boron	1.4		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:42	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:58	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	320		10	10	mg/L			09/24/19 10:45	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.104	U	0.0964	0.0969	1.00	0.150	pCi/L	09/25/19 17:44	10/17/19 21:19	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.0		40 - 110					09/25/19 17:44	10/17/19 21:19	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.337	U	0.279	0.281	1.00	0.444	pCi/L	09/25/19 18:26	10/10/19 17:02	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.0		40 - 110					09/25/19 18:26	10/10/19 17:02	1
<i>Y Carrier</i>	80.0		40 - 110					09/25/19 18:26	10/10/19 17:02	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-15**

**Lab Sample ID: 180-95957-6**

Date Collected: 09/17/19 12:40

Matrix: Water

Date Received: 09/19/19 09:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.441	U	0.295	0.297	5.00	0.444	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-95957-7**

Date Collected: 09/17/19 14:12

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.4		1.0	0.71	mg/L			09/23/19 16:49	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 16:49	1
Sulfate	33		1.0	0.38	mg/L			09/23/19 16:49	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:46	1
Barium	0.029		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:46	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:46	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:46	1
Chromium	0.013		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:46	1
Cobalt	0.0042		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:46	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:46	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:46	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:46	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:46	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:46	1
Calcium	1.0		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:46	1
Boron	0.55		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:46	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:59	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	59		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.00753	U	0.0630	0.0630	1.00	0.123	pCi/L	09/25/19 17:44	10/17/19 21:16	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.2		40 - 110					09/25/19 17:44	10/17/19 21:16	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-16**

**Lab Sample ID: 180-95957-7**

Date Collected: 09/17/19 14:12

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-228</b>	<b>0.551</b>		0.263	0.268	1.00	0.384	pCi/L	09/25/19 18:26	10/10/19 17:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	97.2		40 - 110					09/25/19 18:26	10/10/19 17:02	1
Y Carrier	83.7		40 - 110					09/25/19 18:26	10/10/19 17:02	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Combined Radium 226 + 228</b>	<b>0.558</b>		0.270	0.275	5.00	0.384	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-95957-8**

Date Collected: 09/17/19 15:45

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>8.3</b>		1.0	0.71	mg/L			09/23/19 17:05	1
<b>Fluoride</b>	<b>0.047</b>	<b>J</b>	0.10	0.026	mg/L			09/23/19 17:05	1
<b>Sulfate</b>	<b>200</b>		5.0	1.9	mg/L			09/24/19 10:18	5

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:49	1
<b>Barium</b>	<b>0.025</b>		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:49	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:49	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:49	1
<b>Chromium</b>	<b>0.0078</b>		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:49	1
<b>Cobalt</b>	<b>0.00048</b>	<b>J</b>	0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:49	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:49	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:49	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:49	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:49	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:49	1
<b>Calcium</b>	<b>51</b>		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:49	1
<b>Boron</b>	<b>0.43</b>		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:49	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:00	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>380</b>		10	10	mg/L			09/24/19 10:45	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-17**

**Lab Sample ID: 180-95957-8**

Date Collected: 09/17/19 15:45

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0607	U	0.0561	0.0564	1.00	0.138	pCi/L	09/25/19 17:44	10/18/19 06:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					09/25/19 17:44	10/18/19 06:32	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.295	U	0.227	0.228	1.00	0.355	pCi/L	09/25/19 18:26	10/10/19 17:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					09/25/19 18:26	10/10/19 17:02	1
Y Carrier	85.6		40 - 110					09/25/19 18:26	10/10/19 17:02	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.235	U	0.234	0.235	5.00	0.355	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-95957-9**

Date Collected: 09/17/19 17:08

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		1.0	0.71	mg/L			09/23/19 17:21	1
Fluoride	0.034	J	0.10	0.026	mg/L			09/23/19 17:21	1
Sulfate	1100		10	3.8	mg/L			09/23/19 17:37	10

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0029		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:52	1
Barium	0.026		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:52	1
Beryllium	0.00035	J	0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:52	1
Cadmium	0.00018	J	0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:52	1
Chromium	0.011		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:52	1
Cobalt	0.16		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:52	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:52	1
Selenium	0.0036		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:52	1
Thallium	0.00025	J	0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:52	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:52	1
Lithium	0.0050		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:52	1
Calcium	87		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:52	1
Boron	5.0		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:52	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-18**

**Lab Sample ID: 180-95957-9**

Date Collected: 09/17/19 17:08

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00014	J	0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:01	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1600		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0308	U	0.0697	0.0698	1.00	0.126	pCi/L	09/25/19 17:44	10/18/19 06:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	92.4		40 - 110					09/25/19 17:44	10/18/19 06:32	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.418		0.259	0.262	1.00	0.395	pCi/L	09/25/19 18:26	10/10/19 17:02	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	92.4		40 - 110					09/25/19 18:26	10/10/19 17:02	1
<i>Y Carrier</i>	80.0		40 - 110					09/25/19 18:26	10/10/19 17:02	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.449		0.268	0.271	5.00	0.395	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-95957-10**

Date Collected: 09/17/19 14:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.4		1.0	0.71	mg/L			09/23/19 17:53	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 17:53	1
Sulfate	260		5.0	1.9	mg/L			09/24/19 10:34	5

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:56	1
Barium	0.035		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:56	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:56	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:56	1
Chromium	0.017		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:56	1
Cobalt	0.00013	J	0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:56	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:56	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:56	1

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# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC19**

**Lab Sample ID: 180-95957-10**

Date Collected: 09/17/19 14:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:56	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:56	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:56	1
<b>Calcium</b>	<b>44</b>		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:56	1
<b>Boron</b>	<b>1.8</b>		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:56	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:02	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total Dissolved Solids</b>	<b>400</b>		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0304	U	0.0597	0.0597	1.00	0.134	pCi/L	09/25/19 17:44	10/18/19 06:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.5		40 - 110					09/25/19 17:44	10/18/19 06:34	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.332	U	0.284	0.285	1.00	0.455	pCi/L	09/25/19 18:26	10/10/19 17:02	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.5		40 - 110					09/25/19 18:26	10/10/19 17:02	1
Y Carrier	85.2		40 - 110					09/25/19 18:26	10/10/19 17:02	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.302	U	0.290	0.291	5.00	0.455	pCi/L		10/24/19 08:27	1

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-95957-11**

Date Collected: 09/17/19 16:30

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>11</b>		1.0	0.71	mg/L			09/23/19 18:09	1
<b>Fluoride</b>	<b>0.14</b>		0.10	0.026	mg/L			09/23/19 18:09	1
<b>Sulfate</b>	<b>220</b>		5.0	1.9	mg/L			09/24/19 10:49	5

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-20**

**Lab Sample ID: 180-95957-11**

Date Collected: 09/17/19 16:30

Matrix: Water

Date Received: 09/19/19 09:00

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00037	J	0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 23:59	1
Barium	0.025		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 23:59	1
Beryllium	0.00057	J	0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 23:59	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 23:59	1
Chromium	0.0022	J	0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:59	1
Cobalt	0.13		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 23:59	1
Lead	0.00025	J	0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 23:59	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 23:59	1
Thallium	0.00021	J	0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 23:59	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 23:59	1
Lithium	0.0042		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 23:59	1
Calcium	14		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 23:59	1
Boron	1.8		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 23:59	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:03	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	320		10	10	mg/L			09/24/19 10:45	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0150	U	0.0744	0.0744	1.00	0.151	pCi/L	09/25/19 17:44	10/18/19 06:34	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/25/19 17:44	10/18/19 06:34	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.606		0.310	0.315	1.00	0.468	pCi/L	09/25/19 18:26	10/10/19 16:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	89.8		40 - 110					09/25/19 18:26	10/10/19 16:54	1
Y Carrier	88.6		40 - 110					09/25/19 18:26	10/10/19 16:54	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.591		0.319	0.324	5.00	0.468	pCi/L		10/24/19 08:27	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-95957-12**

Date Collected: 09/17/19 15:40

Matrix: Water

Date Received: 09/19/19 09:00

### Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10		1.0	0.71	mg/L			09/23/19 18:24	1
Fluoride	0.077	J	0.10	0.026	mg/L			09/23/19 18:24	1
Sulfate	99		1.0	0.38	mg/L			09/23/19 18:24	1

### Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/16/19 00:03	1
Barium	0.097		0.010	0.0016	mg/L		09/25/19 12:32	10/16/19 00:03	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/16/19 00:03	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/16/19 00:03	1
Chromium	0.0016	J	0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:03	1
Cobalt	0.000087	J	0.0025	0.000075	mg/L		09/25/19 12:32	10/16/19 00:03	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/16/19 00:03	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:03	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/16/19 00:03	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/16/19 00:03	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/16/19 00:03	1
Calcium	30		0.25	0.13	mg/L		09/25/19 12:32	10/16/19 00:03	1
Boron	1.1		0.050	0.039	mg/L		09/25/19 12:32	10/16/19 00:03	1

### Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:04	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	290		10	10	mg/L			09/24/19 10:45	1

### Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0322	U	0.0681	0.0681	1.00	0.122	pCi/L	09/25/19 17:44	10/18/19 06:34	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	101		40 - 110					09/25/19 17:44	10/18/19 06:34	1

### Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0722	U	0.237	0.237	1.00	0.431	pCi/L	09/25/19 18:26	10/10/19 16:54	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	101		40 - 110					09/25/19 18:26	10/10/19 16:54	1
<i>Y Carrier</i>	81.5		40 - 110					09/25/19 18:26	10/10/19 16:54	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: SGWC-21**

**Lab Sample ID: 180-95957-12**

Date Collected: 09/17/19 15:40

Matrix: Water

Date Received: 09/19/19 09:00

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0400	U	0.247	0.247	5.00	0.431	pCi/L		10/24/19 08:27	1

**Client Sample ID: FD-2(AP)**

**Lab Sample ID: 180-95957-13**

Date Collected: 09/17/19 00:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.6		1.0	0.71	mg/L			09/23/19 18:40	1
Fluoride	0.18		0.10	0.026	mg/L			09/23/19 18:40	1
Sulfate	8.2		1.0	0.38	mg/L			09/23/19 18:40	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/16/19 00:06	1
Barium	0.24		0.010	0.0016	mg/L		09/25/19 12:32	10/16/19 00:06	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/16/19 00:06	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/16/19 00:06	1
Chromium	0.0016	J	0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:06	1
Cobalt	0.0040		0.0025	0.000075	mg/L		09/25/19 12:32	10/16/19 00:06	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/16/19 00:06	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:06	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/16/19 00:06	1
Molybdenum	0.0014	J	0.015	0.00061	mg/L		09/25/19 12:32	10/16/19 00:06	1
Lithium	0.0050		0.0020	0.0034	mg/L		09/25/19 12:32	10/16/19 00:06	1
Calcium	16		0.25	0.13	mg/L		09/25/19 12:32	10/16/19 00:06	1
Boron	0.098		0.050	0.039	mg/L		09/25/19 12:32	10/16/19 00:06	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:05	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	150		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0139	U	0.0747	0.0747	1.00	0.151	pCi/L	09/25/19 17:44	10/18/19 06:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					09/25/19 17:44	10/18/19 06:35	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FD-2(AP)**

**Lab Sample ID: 180-95957-13**

Date Collected: 09/17/19 00:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.178	U	0.290	0.291	1.00	0.487	pCi/L	09/25/19 18:26	10/10/19 16:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	94.4		40 - 110					09/25/19 18:26	10/10/19 16:54	1
Y Carrier	83.4		40 - 110					09/25/19 18:26	10/10/19 16:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.164	U	0.299	0.300	5.00	0.487	pCi/L		10/24/19 08:27	1

**Client Sample ID: FB-3(AP)**

**Lab Sample ID: 180-95957-14**

Date Collected: 09/17/19 10:05

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/23/19 19:59	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 19:59	1
Sulfate	<0.38		1.0	0.38	mg/L			09/23/19 19:59	1

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/16/19 00:09	1
Barium	<0.0016		0.010	0.0016	mg/L		09/25/19 12:32	10/16/19 00:09	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/16/19 00:09	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/16/19 00:09	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:09	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/25/19 12:32	10/16/19 00:09	1
<b>Lead</b>	<b>0.00019</b>	<b>J</b>	0.0010	0.00013	mg/L		09/25/19 12:32	10/16/19 00:09	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:09	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/16/19 00:09	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/16/19 00:09	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/16/19 00:09	1
Calcium	<0.13		0.25	0.13	mg/L		09/25/19 12:32	10/16/19 00:09	1
<b>Boron</b>	<b>0.055</b>		0.050	0.039	mg/L		09/25/19 12:32	10/16/19 00:09	1

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:06	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/24/19 10:45	1

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FB-3(AP)**

**Lab Sample ID: 180-95957-14**

Date Collected: 09/17/19 10:05

Matrix: Water

Date Received: 09/19/19 09:00

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0683	U	0.0565	0.0569	1.00	0.144	pCi/L	09/25/19 17:44	10/18/19 06:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5		40 - 110					09/25/19 17:44	10/18/19 06:35	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.430		0.278	0.281	1.00	0.430	pCi/L	09/25/19 18:26	10/10/19 16:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5		40 - 110					09/25/19 18:26	10/10/19 16:54	1
Y Carrier	84.5		40 - 110					09/25/19 18:26	10/10/19 16:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.362	U	0.284	0.287	5.00	0.430	pCi/L		10/24/19 08:27	1

**Client Sample ID: FD-3(AP)**

**Lab Sample ID: 180-95957-15**

Date Collected: 09/17/19 00:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 300.0 R2.1 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.3		1.0	0.71	mg/L			09/23/19 20:15	1
Fluoride	0.052	J	0.10	0.026	mg/L			09/23/19 20:15	1
Sulfate	190		5.0	1.9	mg/L			09/24/19 11:04	5

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/16/19 00:13	1
Barium	0.024		0.010	0.0016	mg/L		09/25/19 12:32	10/16/19 00:13	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/16/19 00:13	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/16/19 00:13	1
Chromium	0.0076		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:13	1
Cobalt	0.00046	J	0.0025	0.000075	mg/L		09/25/19 12:32	10/16/19 00:13	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/16/19 00:13	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/16/19 00:13	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/16/19 00:13	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/16/19 00:13	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/16/19 00:13	1
Calcium	50		0.25	0.13	mg/L		09/25/19 12:32	10/16/19 00:13	1
Boron	0.42		0.050	0.039	mg/L		09/25/19 12:32	10/16/19 00:13	1

Eurofins TestAmerica, Pittsburgh

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

**Client Sample ID: FD-3(AP)**

**Lab Sample ID: 180-95957-15**

Date Collected: 09/17/19 00:00

Matrix: Water

Date Received: 09/19/19 09:00

**Method: EPA 7470A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 11:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	390		10	10	mg/L			09/24/19 10:45	1

**Method: 9315 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0116	U	0.0570	0.0570	1.00	0.120	pCi/L	09/25/19 17:44	10/18/19 06:35	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	99.4		40 - 110					09/25/19 17:44	10/18/19 06:35	1

**Method: 9320 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.120	U	0.238	0.238	1.00	0.404	pCi/L	09/25/19 18:26	10/10/19 16:54	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	99.4		40 - 110					09/25/19 18:26	10/10/19 16:54	1
Y Carrier	85.2		40 - 110					09/25/19 18:26	10/10/19 16:54	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.108	U	0.245	0.245	5.00	0.404	pCi/L		10/24/19 08:27	1



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

**Lab Sample ID: MB 180-292035/49**  
**Matrix: Water**  
**Analysis Batch: 292035**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/20/19 23:09	1
Fluoride	<0.026		0.10	0.026	mg/L			09/20/19 23:09	1
Sulfate	<0.38		1.0	0.38	mg/L			09/20/19 23:09	1

**Lab Sample ID: LCS 180-292035/48**  
**Matrix: Water**  
**Analysis Batch: 292035**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	23.6		mg/L		94	90 - 110
Fluoride	1.25	1.25		mg/L		100	90 - 110
Sulfate	25.0	23.4		mg/L		93	90 - 110

**Lab Sample ID: MB 180-292203/15**  
**Matrix: Water**  
**Analysis Batch: 292203**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/22/19 15:23	1
Fluoride	<0.026		0.10	0.026	mg/L			09/22/19 15:23	1
Sulfate	<0.38		1.0	0.38	mg/L			09/22/19 15:23	1

**Lab Sample ID: LCS 180-292203/5**  
**Matrix: Water**  
**Analysis Batch: 292203**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	25.6		mg/L		102	90 - 110
Fluoride	1.25	1.19		mg/L		95	90 - 110
Sulfate	25.0	24.4		mg/L		98	90 - 110

**Lab Sample ID: MB 180-292226/6**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.71		1.0	0.71	mg/L			09/23/19 07:45	1
Fluoride	<0.026		0.10	0.026	mg/L			09/23/19 07:45	1
Sulfate	<0.38		1.0	0.38	mg/L			09/23/19 07:45	1

**Lab Sample ID: LCS 180-292226/5**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	25.0	24.8		mg/L		99	90 - 110
Fluoride	1.25	1.27		mg/L		102	90 - 110
Sulfate	25.0	24.9		mg/L		99	90 - 110

# QC Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 180-95957-1 MS**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.8		25.0	29.4		mg/L		102	80 - 120
Fluoride	0.20		1.25	1.51		mg/L		104	80 - 120
Sulfate	8.7		25.0	34.3		mg/L		102	80 - 120

**Lab Sample ID: 180-95957-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: SGWC-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.8		25.0	29.5		mg/L		103	80 - 120	0	20
Fluoride	0.20		1.25	1.51		mg/L		105	80 - 120	0	20
Sulfate	8.7		25.0	34.2		mg/L		102	80 - 120	0	20

**Lab Sample ID: 180-95957-13 MS**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: FD-2(AP)**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.6		25.0	28.5		mg/L		99	80 - 120
Fluoride	0.18		1.25	1.45		mg/L		102	80 - 120
Sulfate	8.2		25.0	32.9		mg/L		99	80 - 120

**Lab Sample ID: 180-95957-13 MSD**  
**Matrix: Water**  
**Analysis Batch: 292226**

**Client Sample ID: FD-2(AP)**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.6		25.0	28.2		mg/L		98	80 - 120	1	20
Fluoride	0.18		1.25	1.43		mg/L		100	80 - 120	1	20
Sulfate	8.2		25.0	32.3		mg/L		96	80 - 120	2	20

**Lab Sample ID: MB 180-292375/6**  
**Matrix: Water**  
**Analysis Batch: 292375**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.38		1.0	0.38	mg/L			09/24/19 07:58	1

**Lab Sample ID: LCS 180-292375/5**  
**Matrix: Water**  
**Analysis Batch: 292375**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	25.0	24.9		mg/L		100	90 - 110

# QC Sample Results

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Method: EPA 300.0 R2.1 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 180-293618/6  
 Matrix: Water  
 Analysis Batch: 293618

Client Sample ID: Method Blank  
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.38		1.0	0.38	mg/L			10/03/19 14:59	1

Lab Sample ID: LCS 180-293618/5  
 Matrix: Water  
 Analysis Batch: 293618

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	25.0	27.4		mg/L		110	90 - 110

## Method: EPA 6020 - Metals (ICP/MS)

Lab Sample ID: MB 180-292487/1-A  
 Matrix: Water  
 Analysis Batch: 293025

Client Sample ID: Method Blank  
 Prep Type: Total Recoverable  
 Prep Batch: 292487

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:33	09/27/19 16:38	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:33	09/27/19 16:38	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:33	09/27/19 16:38	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:33	09/27/19 16:38	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 16:38	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:33	09/27/19 16:38	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:33	09/27/19 16:38	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:33	09/27/19 16:38	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:33	09/27/19 16:38	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:33	09/27/19 16:38	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:33	09/27/19 16:38	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:33	09/27/19 16:38	1
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:33	09/27/19 16:38	1

Lab Sample ID: LCS 180-292487/2-A  
 Matrix: Water  
 Analysis Batch: 293025

Client Sample ID: Lab Control Sample  
 Prep Type: Total Recoverable  
 Prep Batch: 292487

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.984		mg/L		98	80 - 120
Barium	1.00	1.10		mg/L		110	80 - 120
Beryllium	0.500	0.511		mg/L		102	80 - 120
Cadmium	0.500	0.515		mg/L		103	80 - 120
Chromium	0.500	0.520		mg/L		104	80 - 120
Cobalt	0.500	0.488		mg/L		98	80 - 120
Lead	0.500	0.526		mg/L		105	80 - 120
Selenium	1.00	1.08		mg/L		108	80 - 120
Thallium	1.00	1.11		mg/L		111	80 - 120
Molybdenum	0.500	0.526		mg/L		105	80 - 120
Lithium	0.500	0.499		mg/L		100	80 - 120
Boron	1.25	1.18		mg/L		95	80 - 120
Calcium	25.0	27.3		mg/L		109	80 - 120

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 180-95735-1 MS**  
**Matrix: Water**  
**Analysis Batch: 293025**

**Client Sample ID: SGWA-5**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292487**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	<0.00032		1.00	0.951		mg/L		95	75 - 125
Barium	0.012		1.00	1.13		mg/L		112	75 - 125
Beryllium	<0.00018		0.500	0.487		mg/L		97	75 - 125
Cadmium	<0.00013		0.500	0.513		mg/L		103	75 - 125
Chromium	0.0023	J	0.500	0.515		mg/L		103	75 - 125
Cobalt	<0.000075		0.500	0.477		mg/L		95	75 - 125
Lead	<0.00013		0.500	0.517		mg/L		103	75 - 125
Selenium	<0.0015		1.00	1.05		mg/L		105	75 - 125
Thallium	<0.00015		1.00	1.10		mg/L		110	75 - 125
Molybdenum	<0.00061		0.500	0.513		mg/L		103	75 - 125
Lithium	<0.0034		0.500	0.471		mg/L		94	75 - 125
Boron	<0.039		1.25	1.19		mg/L		95	75 - 125
Calcium	1.6		25.0	28.3		mg/L		107	75 - 125

**Lab Sample ID: 180-95735-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 293025**

**Client Sample ID: SGWA-5**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292487**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	<0.00032		1.00	0.973		mg/L		97	75 - 125	2	20
Barium	0.012		1.00	1.16		mg/L		115	75 - 125	3	20
Beryllium	<0.00018		0.500	0.499		mg/L		100	75 - 125	2	20
Cadmium	<0.00013		0.500	0.507		mg/L		101	75 - 125	1	20
Chromium	0.0023	J	0.500	0.515		mg/L		103	75 - 125	0	20
Cobalt	<0.000075		0.500	0.487		mg/L		97	75 - 125	2	20
Lead	<0.00013		0.500	0.514		mg/L		103	75 - 125	0	20
Selenium	<0.0015		1.00	1.06		mg/L		106	75 - 125	1	20
Thallium	<0.00015		1.00	1.08		mg/L		108	75 - 125	2	20
Molybdenum	<0.00061		0.500	0.522		mg/L		104	75 - 125	2	20
Lithium	<0.0034		0.500	0.477		mg/L		95	75 - 125	1	20
Boron	<0.039		1.25	1.22		mg/L		98	75 - 125	3	20
Calcium	1.6		25.0	28.1		mg/L		106	75 - 125	1	20

**Lab Sample ID: MB 180-292490/1-A**  
**Matrix: Water**  
**Analysis Batch: 294230**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292490**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/24/19 14:37	10/08/19 14:50	1
Barium	<0.0016		0.010	0.0016	mg/L		09/24/19 14:37	10/08/19 14:50	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/24/19 14:37	10/08/19 14:50	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/24/19 14:37	10/08/19 14:50	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 14:50	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/24/19 14:37	10/08/19 14:50	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/24/19 14:37	10/08/19 14:50	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/24/19 14:37	10/08/19 14:50	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/24/19 14:37	10/08/19 14:50	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/24/19 14:37	10/08/19 14:50	1
Boron	<0.039		0.050	0.039	mg/L		09/24/19 14:37	10/08/19 14:50	1

Eurofins TestAmerica, Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 180-292490/1-A**  
**Matrix: Water**  
**Analysis Batch: 294230**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292490**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.13		0.25	0.13	mg/L		09/24/19 14:37	10/08/19 14:50	1

**Lab Sample ID: MB 180-292490/1-A**  
**Matrix: Water**  
**Analysis Batch: 294446**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292490**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/24/19 14:37	10/09/19 09:43	1

**Lab Sample ID: LCS 180-292490/2-A**  
**Matrix: Water**  
**Analysis Batch: 294230**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292490**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1.00	0.912		mg/L		91	80 - 120
Barium	1.00	1.06		mg/L		106	80 - 120
Beryllium	0.500	0.479		mg/L		96	80 - 120
Cadmium	0.500	0.530		mg/L		106	80 - 120
Chromium	0.500	0.514		mg/L		103	80 - 120
Lead	0.500	0.508		mg/L		102	80 - 120
Selenium	1.00	1.03		mg/L		103	80 - 120
Thallium	1.00	1.08		mg/L		108	80 - 120
Molybdenum	0.500	0.505		mg/L		101	80 - 120
Lithium	0.500	0.474		mg/L		95	80 - 120
Boron	1.25	1.13		mg/L		90	80 - 120
Calcium	25.0	25.9		mg/L		104	80 - 120

**Lab Sample ID: LCS 180-292490/2-A**  
**Matrix: Water**  
**Analysis Batch: 294446**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292490**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cobalt	0.500	0.483		mg/L		97	80 - 120

**Lab Sample ID: MB 180-292562/1-A**  
**Matrix: Water**  
**Analysis Batch: 295459**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292562**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 09:13	10/18/19 15:52	1
Barium	<0.0016		0.010	0.0016	mg/L		09/25/19 09:13	10/18/19 15:52	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 09:13	10/18/19 15:52	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 09:13	10/18/19 15:52	1
Chromium	0.00150	J	0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 15:52	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/25/19 09:13	10/18/19 15:52	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 09:13	10/18/19 15:52	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 09:13	10/18/19 15:52	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 09:13	10/18/19 15:52	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 09:13	10/18/19 15:52	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 09:13	10/18/19 15:52	1

Eurofins TestAmerica, Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 180-292562/1-A**  
**Matrix: Water**  
**Analysis Batch: 295459**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292562**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.13		0.25	0.13	mg/L		09/25/19 09:13	10/18/19 15:52	1

**Lab Sample ID: MB 180-292562/1-A**  
**Matrix: Water**  
**Analysis Batch: 295479**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292562**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.039		0.050	0.039	mg/L		09/25/19 09:13	10/19/19 15:12	1

**Lab Sample ID: LCS 180-292562/2-A**  
**Matrix: Water**  
**Analysis Batch: 295459**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292562**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1.00	1.08		mg/L		108	80 - 120
Barium	1.00	0.932		mg/L		93	80 - 120
Beryllium	0.500	0.473		mg/L		95	80 - 120
Cadmium	0.500	0.507		mg/L		101	80 - 120
Chromium	0.500	0.441		mg/L		88	80 - 120
Cobalt	0.500	0.596		mg/L		119	80 - 120
Lead	0.500	0.506		mg/L		101	80 - 120
Selenium	1.00	0.895		mg/L		90	80 - 120
Thallium	1.00	1.04		mg/L		104	80 - 120
Molybdenum	0.500	0.504		mg/L		101	80 - 120
Lithium	0.500	0.489		mg/L		98	80 - 120
Calcium	25.0	25.4		mg/L		102	80 - 120

**Lab Sample ID: LCS 180-292562/2-A**  
**Matrix: Water**  
**Analysis Batch: 295479**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292562**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.25	1.27		mg/L		102	80 - 120

**Lab Sample ID: MB 180-292626/1-A**  
**Matrix: Water**  
**Analysis Batch: 294986**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 292626**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00032		0.0013	0.00032	mg/L		09/25/19 12:32	10/15/19 22:35	1
Barium	<0.0016		0.010	0.0016	mg/L		09/25/19 12:32	10/15/19 22:35	1
Beryllium	<0.00018		0.0025	0.00018	mg/L		09/25/19 12:32	10/15/19 22:35	1
Cadmium	<0.00013		0.0025	0.00013	mg/L		09/25/19 12:32	10/15/19 22:35	1
Chromium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 22:35	1
Cobalt	<0.000075		0.0025	0.000075	mg/L		09/25/19 12:32	10/15/19 22:35	1
Lead	<0.00013		0.0010	0.00013	mg/L		09/25/19 12:32	10/15/19 22:35	1
Selenium	<0.0015		0.0025	0.0015	mg/L		09/25/19 12:32	10/15/19 22:35	1
Thallium	<0.00015		0.00050	0.00015	mg/L		09/25/19 12:32	10/15/19 22:35	1
Molybdenum	<0.00061		0.015	0.00061	mg/L		09/25/19 12:32	10/15/19 22:35	1
Lithium	<0.0034		0.0020	0.0034	mg/L		09/25/19 12:32	10/15/19 22:35	1

Eurofins TestAmerica, Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 180-292626/1-A  
Matrix: Water  
Analysis Batch: 294986

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 292626

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.039		0.050	0.039	mg/L		09/25/19 12:32	10/15/19 22:35	1
Calcium	<0.13		0.25	0.13	mg/L		09/25/19 12:32	10/15/19 22:35	1

Lab Sample ID: LCS 180-292626/2-A  
Matrix: Water  
Analysis Batch: 294986

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 292626

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.970		mg/L		97	80 - 120
Barium	1.00	1.08		mg/L		108	80 - 120
Beryllium	0.500	0.523		mg/L		105	80 - 120
Cadmium	0.500	0.536		mg/L		107	80 - 120
Chromium	0.500	0.539		mg/L		108	80 - 120
Cobalt	0.500	0.490		mg/L		98	80 - 120
Lead	0.500	0.537		mg/L		107	80 - 120
Selenium	1.00	1.08		mg/L		108	80 - 120
Thallium	1.00	1.07		mg/L		107	80 - 120
Molybdenum	0.500	0.533		mg/L		107	80 - 120
Lithium	0.500	0.532		mg/L		106	80 - 120
Boron	1.25	1.28		mg/L		103	80 - 120
Calcium	25.0	26.0		mg/L		104	80 - 120

Lab Sample ID: 180-95957-1 MS  
Matrix: Water  
Analysis Batch: 294986

Client Sample ID: SGWC-7  
Prep Type: Total Recoverable  
Prep Batch: 292626

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.00032		1.00	0.968		mg/L		97	75 - 125
Barium	0.23		1.00	1.36		mg/L		113	75 - 125
Beryllium	<0.00018		0.500	0.510		mg/L		102	75 - 125
Cadmium	<0.00013		0.500	0.546		mg/L		109	75 - 125
Chromium	<0.0015		0.500	0.539		mg/L		108	75 - 125
Cobalt	0.0039		0.500	0.496		mg/L		98	75 - 125
Lead	<0.00013		0.500	0.535		mg/L		107	75 - 125
Selenium	<0.0015		1.00	1.06		mg/L		106	75 - 125
Thallium	<0.00015		1.00	1.10		mg/L		110	75 - 125
Molybdenum	0.0014	J	0.500	0.541		mg/L		108	75 - 125
Lithium	0.0049		0.500	0.486		mg/L		96	75 - 125
Boron	<0.039		1.25	1.24		mg/L		99	75 - 125
Calcium	16		25.0	41.8		mg/L		103	75 - 125

Lab Sample ID: 180-95957-1 MSD  
Matrix: Water  
Analysis Batch: 294986

Client Sample ID: SGWC-7  
Prep Type: Total Recoverable  
Prep Batch: 292626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.00032		1.00	0.967		mg/L		97	75 - 125	0	20
Barium	0.23		1.00	1.32		mg/L		109	75 - 125	3	20
Beryllium	<0.00018		0.500	0.513		mg/L		103	75 - 125	1	20

Eurofins TestAmerica, Pittsburgh

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 180-95957-1 MSD  
Matrix: Water  
Analysis Batch: 294986

Client Sample ID: SGWC-7  
Prep Type: Total Recoverable  
Prep Batch: 292626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	<0.00013		0.500	0.542		mg/L		108	75 - 125	1	20
Chromium	<0.0015		0.500	0.546		mg/L		109	75 - 125	1	20
Cobalt	0.0039		0.500	0.491		mg/L		97	75 - 125	1	20
Lead	<0.00013		0.500	0.538		mg/L		108	75 - 125	1	20
Selenium	<0.0015		1.00	1.08		mg/L		108	75 - 125	2	20
Thallium	<0.00015		1.00	1.10		mg/L		110	75 - 125	0	20
Molybdenum	0.0014	J	0.500	0.543		mg/L		108	75 - 125	0	20
Lithium	0.0049		0.500	0.502		mg/L		99	75 - 125	3	20
Boron	<0.039		1.25	1.30		mg/L		104	75 - 125	5	20
Calcium		16	25.0	42.5		mg/L		106	75 - 125	2	20

## Method: EPA 7470A - Mercury (CVAA)

Lab Sample ID: MB 180-293530/1-A  
Matrix: Water  
Analysis Batch: 293683

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 293530

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/02/19 15:35	10/03/19 13:26	1

Lab Sample ID: LCS 180-293530/2-A  
Matrix: Water  
Analysis Batch: 293683

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 293530

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00252		mg/L		101	80 - 120

Lab Sample ID: MB 180-293673/1-A  
Matrix: Water  
Analysis Batch: 293834

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 293673

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/03/19 15:16	10/04/19 15:49	1

Lab Sample ID: LCS 180-293673/2-A  
Matrix: Water  
Analysis Batch: 293834

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 293673

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00250	0.00251		mg/L		101	80 - 120

Lab Sample ID: MB 180-293940/1-A  
Matrix: Water  
Analysis Batch: 294165

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 293940

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00010		0.00020	0.00010	mg/L		10/07/19 07:13	10/08/19 10:44	1

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: EPA 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 180-293940/2-A  
Matrix: Water  
Analysis Batch: 294165

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 293940  
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00250	0.00251		mg/L		101	80 - 120

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 180-291934/2  
Matrix: Water  
Analysis Batch: 291934

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/19/19 12:24	1

Lab Sample ID: LCS 180-291934/1  
Matrix: Water  
Analysis Batch: 291934

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	633	542		mg/L		86	80 - 120

Lab Sample ID: MB 180-292096/2  
Matrix: Water  
Analysis Batch: 292096

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/20/19 13:01	1

Lab Sample ID: LCS 180-292096/1  
Matrix: Water  
Analysis Batch: 292096

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	633	614		mg/L		97	80 - 120

Lab Sample ID: MB 180-292105/2  
Matrix: Water  
Analysis Batch: 292105

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/20/19 14:07	1

Lab Sample ID: LCS 180-292105/1  
Matrix: Water  
Analysis Batch: 292105

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	633	638		mg/L		101	80 - 120

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

**Lab Sample ID: MB 180-292191/2**  
**Matrix: Water**  
**Analysis Batch: 292191**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L	-		09/21/19 11:57	1

**Lab Sample ID: LCS 180-292191/1**  
**Matrix: Water**  
**Analysis Batch: 292191**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	633	598		mg/L	-	94	80 - 120

**Lab Sample ID: MB 180-292387/2**  
**Matrix: Water**  
**Analysis Batch: 292387**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L	-		09/24/19 10:37	1

**Lab Sample ID: LCS 180-292387/1**  
**Matrix: Water**  
**Analysis Batch: 292387**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	633	556		mg/L	-	88	80 - 120

**Lab Sample ID: MB 180-292391/2**  
**Matrix: Water**  
**Analysis Batch: 292391**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L	-		09/24/19 10:45	1

**Lab Sample ID: LCS 180-292391/1**  
**Matrix: Water**  
**Analysis Batch: 292391**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	633	598		mg/L	-	94	80 - 120

**Lab Sample ID: 180-95957-2 DU**  
**Matrix: Water**  
**Analysis Batch: 292391**

**Client Sample ID: SGWC-8**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	380		398		mg/L	-	6	10

**Lab Sample ID: 180-95957-12 DU**  
**Matrix: Water**  
**Analysis Batch: 292391**

**Client Sample ID: SGWC-21**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	290		286		mg/L	-	2	10

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 180-292600/2  
Matrix: Water  
Analysis Batch: 292600

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<10		10	10	mg/L			09/25/19 10:56	1

Lab Sample ID: LCS 180-292600/1  
Matrix: Water  
Analysis Batch: 292600

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	633	626		mg/L		99	80 - 120

## Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-443369/22-A  
Matrix: Water  
Analysis Batch: 445982

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 443369

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.08983	U	0.0830	0.0833	1.00	0.129	pCi/L	09/19/19 09:08	10/13/19 15:43	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					09/19/19 09:08	10/13/19 15:43	1

Lab Sample ID: LCS 160-443369/1-A  
Matrix: Water  
Analysis Batch: 445982

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 443369

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	8.663		0.924	1.00	0.120	pCi/L	76	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.5		40 - 110						

Lab Sample ID: MB 160-443701/21-A  
Matrix: Water  
Analysis Batch: 446428

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 443701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.03178	U	0.0562	0.0562	1.00	0.130	pCi/L	09/23/19 09:20	10/16/19 06:21	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					09/23/19 09:20	10/16/19 06:21	1

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: 9315 - Radium-226 (GFPC) (Continued)

**Lab Sample ID: LCS 160-443701/1-A**  
**Matrix: Water**  
**Analysis Batch: 446357**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 443701**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	9.274		0.991	1.00	0.130	pCi/L	82	75 - 125	
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	90.4		40 - 110							

**Lab Sample ID: 180-95845-5 DU**  
**Matrix: Water**  
**Analysis Batch: 446416**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**  
**Prep Batch: 443701**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	-0.0414	U	0.06433	U	0.0784	1.00	0.129	pCi/L	0.69	1
<b>Carrier</b>	<b>DU %Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	89.8		40 - 110							

**Lab Sample ID: MB 160-444191/21-A**  
**Matrix: Water**  
**Analysis Batch: 446870**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 444191**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.004841	U	0.0588	0.0588	1.00	0.123	pCi/L	09/25/19 17:44	10/18/19 06:35	1
<b>Carrier</b>	<b>MB %Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>							
Ba Carrier	88.1		40 - 110							
								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
								09/25/19 17:44	10/18/19 06:35	1

**Lab Sample ID: LCS 160-444191/1-A**  
**Matrix: Water**  
**Analysis Batch: 446517**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 444191**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.4	9.687		1.03	1.00	0.119	pCi/L	85	75 - 125
<b>Carrier</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Ba Carrier	94.1		40 - 110						

**Lab Sample ID: 180-95957-12 DU**  
**Matrix: Water**  
**Analysis Batch: 446870**

**Client Sample ID: SGWC-21**  
**Prep Type: Total/NA**  
**Prep Batch: 444191**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.0322	U	-0.02810	U	0.0647	1.00	0.139	pCi/L	0.45	1

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 180-95957-12 DU  
Matrix: Water  
Analysis Batch: 446870

Client Sample ID: SGWC-21  
Prep Type: Total/NA  
Prep Batch: 444191

Carrier	DU	DU	Qualifier	Limits
Ba Carrier	96.3			40 - 110

## Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-443392/22-A  
Matrix: Water  
Analysis Batch: 444983

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 443392

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1785	U	0.268	0.268	1.00	0.449	pCi/L	09/19/19 09:32	10/03/19 17:35	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110	09/19/19 09:32	10/03/19 17:35	1
Y Carrier	83.4		40 - 110	09/19/19 09:32	10/03/19 17:35	1

Lab Sample ID: LCS 160-443392/1-A  
Matrix: Water  
Analysis Batch: 444961

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 443392

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.53	9.410		1.10	1.00	0.391	pCi/L	99	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	93.5		40 - 110
Y Carrier	88.6		40 - 110

Lab Sample ID: MB 160-443704/21-A  
Matrix: Water  
Analysis Batch: 445349

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 443704

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1473	U	0.376	0.376	1.00	0.701	pCi/L	09/23/19 09:29	10/07/19 20:57	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110	09/23/19 09:29	10/07/19 20:57	1
Y Carrier	82.6		40 - 110	09/23/19 09:29	10/07/19 20:57	1

Lab Sample ID: LCS 160-443704/1-A  
Matrix: Water  
Analysis Batch: 445308

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 443704

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.51	9.941		1.25	1.00	0.539	pCi/L	104	75 - 125

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# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: 9320 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: LCS 160-443704/1-A**  
**Matrix: Water**  
**Analysis Batch: 445308**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 443704**

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	90.4		40 - 110
Y Carrier	83.0		40 - 110

**Lab Sample ID: 180-95845-5 DU**  
**Matrix: Water**  
**Analysis Batch: 445308**

**Client Sample ID: SGWC-6**  
**Prep Type: Total/NA**  
**Prep Batch: 443704**

Analyte	Sample Sample		DU DU	Total	RL	MDC	Unit	RER	RER	Limit
	Result	Qual								
Radium-228	0.122	U	0.08837	U	0.437	1.00	0.769	pCi/L	0.04	1

Carrier	DU DU		Limits
	%Yield	Qualifier	
Ba Carrier	89.8		40 - 110
Y Carrier	60.6		40 - 110

**Lab Sample ID: MB 160-444193/21-A**  
**Matrix: Water**  
**Analysis Batch: 445775**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 444193**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Radium-228	0.4058	U	0.322	0.324	1.00	0.512	pCi/L	09/25/19 18:26	10/10/19 16:54	1
Radium-228	0.4058	U	0.322	0.324	1.00	0.512	pCi/L	09/25/19 18:26	10/10/19 16:54	1

Carrier	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	88.1		40 - 110	09/25/19 18:26	10/10/19 16:54	1
Ba Carrier	88.1		40 - 110	09/25/19 18:26	10/10/19 16:54	1
Y Carrier	78.9		40 - 110	09/25/19 18:26	10/10/19 16:54	1
Y Carrier	78.9		40 - 110	09/25/19 18:26	10/10/19 16:54	1

**Lab Sample ID: LCS 160-444193/1-A**  
**Matrix: Water**  
**Analysis Batch: 445720**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 444193**

Analyte	Spike Added	LCS LCS		Total	RL	MDC	Unit	%Rec	%Rec.	Limits
		Result	Qual							
Radium-228	9.51	9.075		1.07	1.00	0.427	pCi/L	95	75 - 125	
Radium-228	9.51	9.075		1.07	1.00	0.427	pCi/L	95	75 - 125	

Carrier	LCS LCS		Limits
	%Yield	Qualifier	
Ba Carrier	94.1		40 - 110
Ba Carrier	94.1		40 - 110
Y Carrier	83.0		40 - 110
Y Carrier	83.0		40 - 110

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Method: 9320 - Radium-228 (GFPC) (Continued)

**Lab Sample ID: 180-95957-12 DU**  
**Matrix: Water**  
**Analysis Batch: 445775**

**Client Sample ID: SGWC-21**  
**Prep Type: Total/NA**  
**Prep Batch: 444193**

Analyte	Sample	Sample	DU		Total	RL	MDC	Unit	RER	Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-228	-0.0722	U	0.8949	F	0.326	1.00	0.440	pCi/L	1.72	1
Radium-228	-0.0722	U	0.8949	F	0.326	1.00	0.440	pCi/L	1.72	1

Carrier	DU	DU	Limits
	%Yield	Qualifier	
Ba Carrier	96.3		40 - 110
Ba Carrier	96.3		40 - 110
Y Carrier	83.4		40 - 110
Y Carrier	83.4		40 - 110

**Lab Sample ID: MB 160-446605/4-A**  
**Matrix: Water**  
**Analysis Batch: 447458**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 446605**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1935	U	0.275	0.276	1.00	0.460	pCi/L	10/17/19 10:57	10/23/19 13:20	1

Carrier	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Ba Carrier	82.2		40 - 110	10/17/19 10:57	10/23/19 13:20	1
Y Carrier	92.3		40 - 110	10/17/19 10:57	10/23/19 13:20	1

**Lab Sample ID: LCS 160-446605/1-A**  
**Matrix: Water**  
**Analysis Batch: 447458**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 446605**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	9.47	7.835		0.971	1.00	0.427	pCi/L	83	75 - 125

Carrier	LCS	LCS	Limits
	%Yield	Qualifier	
Ba Carrier	92.1		40 - 110
Y Carrier	87.5		40 - 110

**Lab Sample ID: LCSD 160-446605/2-A**  
**Matrix: Water**  
**Analysis Batch: 447458**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 446605**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
				Uncert. (2σ+/-)						RER	Limit
Radium-228	9.47	0.1772	U *	0.252	1.00	0.421	pCi/L	2	75 - 125	6.26	1

Carrier	LCSD	LCSD	Limits
	%Yield	Qualifier	
Ba Carrier	88.7		40 - 110
Y Carrier	89.3		40 - 110

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## HPLC/IC

### Analysis Batch: 292035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	EPA 300.0 R2.1	
180-95845-2	SGWA-2	Total/NA	Water	EPA 300.0 R2.1	
180-95845-3	SGWA-3	Total/NA	Water	EPA 300.0 R2.1	
180-95845-4	SGWA-4	Total/NA	Water	EPA 300.0 R2.1	
180-95845-5	SGWC-6	Total/NA	Water	EPA 300.0 R2.1	
180-95845-6	SGWA-25	Total/NA	Water	EPA 300.0 R2.1	
180-95845-7	SGWC-9	Total/NA	Water	EPA 300.0 R2.1	
180-95845-8	SGWC-11	Total/NA	Water	EPA 300.0 R2.1	
180-95845-9	SGWC-12	Total/NA	Water	EPA 300.0 R2.1	
180-95845-10	FD-1(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95845-11	EB-2(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95845-12	FB-2(AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-292035/49	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-292035/48	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-95845-10 MS	FD-1(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95845-10 MSD	FD-1(AP)	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 292203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	EPA 300.0 R2.1	
180-95735-3	FB-1(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95735-4	SGWA-24	Total/NA	Water	EPA 300.0 R2.1	
MB 180-292203/15	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-292203/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 292226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	EPA 300.0 R2.1	
180-95933-2	SGWC-23	Total/NA	Water	EPA 300.0 R2.1	
180-95933-3	EB-3(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95957-1	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-95957-2	SGWC-8	Total/NA	Water	EPA 300.0 R2.1	
180-95957-3	SGWC-10	Total/NA	Water	EPA 300.0 R2.1	
180-95957-4	SGWC-13	Total/NA	Water	EPA 300.0 R2.1	
180-95957-5	SGWC-14	Total/NA	Water	EPA 300.0 R2.1	
180-95957-6	SGWC-15	Total/NA	Water	EPA 300.0 R2.1	
180-95957-7	SGWC-16	Total/NA	Water	EPA 300.0 R2.1	
180-95957-8	SGWC-17	Total/NA	Water	EPA 300.0 R2.1	
180-95957-9	SGWC-18	Total/NA	Water	EPA 300.0 R2.1	
180-95957-9	SGWC-18	Total/NA	Water	EPA 300.0 R2.1	
180-95957-10	SGWC-19	Total/NA	Water	EPA 300.0 R2.1	
180-95957-11	SGWC-20	Total/NA	Water	EPA 300.0 R2.1	
180-95957-12	SGWC-21	Total/NA	Water	EPA 300.0 R2.1	
180-95957-13	FD-2(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95957-14	FB-3(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95957-15	FD-3(AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-292226/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-292226/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
180-95957-1 MS	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-95957-1 MSD	SGWC-7	Total/NA	Water	EPA 300.0 R2.1	
180-95957-13 MS	FD-2(AP)	Total/NA	Water	EPA 300.0 R2.1	

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# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## HPLC/IC (Continued)

### Analysis Batch: 292226 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-13 MSD	FD-2(AP)	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 292375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-5	SGWC-14	Total/NA	Water	EPA 300.0 R2.1	
180-95957-6	SGWC-15	Total/NA	Water	EPA 300.0 R2.1	
180-95957-8	SGWC-17	Total/NA	Water	EPA 300.0 R2.1	
180-95957-10	SGWC-19	Total/NA	Water	EPA 300.0 R2.1	
180-95957-11	SGWC-20	Total/NA	Water	EPA 300.0 R2.1	
180-95957-15	FD-3(AP)	Total/NA	Water	EPA 300.0 R2.1	
MB 180-292375/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-292375/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

### Analysis Batch: 293618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-2	EB-1(AP)	Total/NA	Water	EPA 300.0 R2.1	
180-95845-7	SGWC-9	Total/NA	Water	EPA 300.0 R2.1	
MB 180-293618/6	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 180-293618/5	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	

## Metals

### Prep Batch: 292487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total Recoverable	Water	3005A	
180-95735-2	EB-1(AP)	Total Recoverable	Water	3005A	
180-95735-3	FB-1(AP)	Total Recoverable	Water	3005A	
180-95735-4	SGWA-24	Total Recoverable	Water	3005A	
MB 180-292487/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-292487/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-95735-1 MS	SGWA-5	Total Recoverable	Water	3005A	
180-95735-1 MSD	SGWA-5	Total Recoverable	Water	3005A	

### Prep Batch: 292490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total Recoverable	Water	3005A	
180-95845-2	SGWA-2	Total Recoverable	Water	3005A	
180-95845-3	SGWA-3	Total Recoverable	Water	3005A	
180-95845-4	SGWA-4	Total Recoverable	Water	3005A	
180-95845-5	SGWC-6	Total Recoverable	Water	3005A	
180-95845-6	SGWA-25	Total Recoverable	Water	3005A	
180-95845-7	SGWC-9	Total Recoverable	Water	3005A	
180-95845-8	SGWC-11	Total Recoverable	Water	3005A	
180-95845-9	SGWC-12	Total Recoverable	Water	3005A	
180-95845-10	FD-1(AP)	Total Recoverable	Water	3005A	
180-95845-11	EB-2(AP)	Total Recoverable	Water	3005A	
180-95845-12	FB-2(AP)	Total Recoverable	Water	3005A	
MB 180-292490/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-292490/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Metals

### Prep Batch: 292562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total Recoverable	Water	3005A	
180-95933-2	SGWC-23	Total Recoverable	Water	3005A	
180-95933-3	EB-3(AP)	Total Recoverable	Water	3005A	
MB 180-292562/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-292562/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

### Prep Batch: 292626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-1	SGWC-7	Total Recoverable	Water	3005A	
180-95957-2	SGWC-8	Total Recoverable	Water	3005A	
180-95957-3	SGWC-10	Total Recoverable	Water	3005A	
180-95957-4	SGWC-13	Total Recoverable	Water	3005A	
180-95957-5	SGWC-14	Total Recoverable	Water	3005A	
180-95957-6	SGWC-15	Total Recoverable	Water	3005A	
180-95957-7	SGWC-16	Total Recoverable	Water	3005A	
180-95957-8	SGWC-17	Total Recoverable	Water	3005A	
180-95957-9	SGWC-18	Total Recoverable	Water	3005A	
180-95957-10	SGWC-19	Total Recoverable	Water	3005A	
180-95957-11	SGWC-20	Total Recoverable	Water	3005A	
180-95957-12	SGWC-21	Total Recoverable	Water	3005A	
180-95957-13	FD-2(AP)	Total Recoverable	Water	3005A	
180-95957-14	FB-3(AP)	Total Recoverable	Water	3005A	
180-95957-15	FD-3(AP)	Total Recoverable	Water	3005A	
MB 180-292626/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-292626/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-95957-1 MS	SGWC-7	Total Recoverable	Water	3005A	
180-95957-1 MSD	SGWC-7	Total Recoverable	Water	3005A	

### Analysis Batch: 293025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total Recoverable	Water	EPA 6020	292487
180-95735-2	EB-1(AP)	Total Recoverable	Water	EPA 6020	292487
180-95735-3	FB-1(AP)	Total Recoverable	Water	EPA 6020	292487
180-95735-4	SGWA-24	Total Recoverable	Water	EPA 6020	292487
MB 180-292487/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292487
LCS 180-292487/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292487
180-95735-1 MS	SGWA-5	Total Recoverable	Water	EPA 6020	292487
180-95735-1 MSD	SGWA-5	Total Recoverable	Water	EPA 6020	292487

### Prep Batch: 293530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	7470A	
180-95735-2	EB-1(AP)	Total/NA	Water	7470A	
180-95735-3	FB-1(AP)	Total/NA	Water	7470A	
180-95735-4	SGWA-24	Total/NA	Water	7470A	
MB 180-293530/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-293530/2-A	Lab Control Sample	Total/NA	Water	7470A	

### Prep Batch: 293673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	7470A	

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# QC Association Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Metals (Continued)

### Prep Batch: 293673 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-2	SGWA-2	Total/NA	Water	7470A	
180-95845-3	SGWA-3	Total/NA	Water	7470A	
180-95845-4	SGWA-4	Total/NA	Water	7470A	
180-95845-5	SGWC-6	Total/NA	Water	7470A	
180-95845-6	SGWA-25	Total/NA	Water	7470A	
180-95845-7	SGWC-9	Total/NA	Water	7470A	
180-95845-8	SGWC-11	Total/NA	Water	7470A	
180-95845-9	SGWC-12	Total/NA	Water	7470A	
180-95845-10	FD-1(AP)	Total/NA	Water	7470A	
180-95845-11	EB-2(AP)	Total/NA	Water	7470A	
180-95845-12	FB-2(AP)	Total/NA	Water	7470A	
MB 180-293673/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-293673/2-A	Lab Control Sample	Total/NA	Water	7470A	

### Analysis Batch: 293683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	EPA 7470A	293530
180-95735-2	EB-1(AP)	Total/NA	Water	EPA 7470A	293530
180-95735-3	FB-1(AP)	Total/NA	Water	EPA 7470A	293530
180-95735-4	SGWA-24	Total/NA	Water	EPA 7470A	293530
MB 180-293530/1-A	Method Blank	Total/NA	Water	EPA 7470A	293530
LCS 180-293530/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	293530

### Analysis Batch: 293834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	EPA 7470A	293673
180-95845-2	SGWA-2	Total/NA	Water	EPA 7470A	293673
180-95845-3	SGWA-3	Total/NA	Water	EPA 7470A	293673
180-95845-4	SGWA-4	Total/NA	Water	EPA 7470A	293673
180-95845-5	SGWC-6	Total/NA	Water	EPA 7470A	293673
180-95845-6	SGWA-25	Total/NA	Water	EPA 7470A	293673
180-95845-7	SGWC-9	Total/NA	Water	EPA 7470A	293673
180-95845-8	SGWC-11	Total/NA	Water	EPA 7470A	293673
180-95845-9	SGWC-12	Total/NA	Water	EPA 7470A	293673
180-95845-10	FD-1(AP)	Total/NA	Water	EPA 7470A	293673
180-95845-11	EB-2(AP)	Total/NA	Water	EPA 7470A	293673
180-95845-12	FB-2(AP)	Total/NA	Water	EPA 7470A	293673
MB 180-293673/1-A	Method Blank	Total/NA	Water	EPA 7470A	293673
LCS 180-293673/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	293673

### Prep Batch: 293940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	7470A	
180-95933-2	SGWC-23	Total/NA	Water	7470A	
180-95933-3	EB-3(AP)	Total/NA	Water	7470A	
180-95957-1	SGWC-7	Total/NA	Water	7470A	
180-95957-2	SGWC-8	Total/NA	Water	7470A	
180-95957-3	SGWC-10	Total/NA	Water	7470A	
180-95957-4	SGWC-13	Total/NA	Water	7470A	
180-95957-5	SGWC-14	Total/NA	Water	7470A	
180-95957-6	SGWC-15	Total/NA	Water	7470A	

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# QC Association Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Metals (Continued)

### Prep Batch: 293940 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-7	SGWC-16	Total/NA	Water	7470A	
180-95957-8	SGWC-17	Total/NA	Water	7470A	
180-95957-9	SGWC-18	Total/NA	Water	7470A	
180-95957-10	SGWC-19	Total/NA	Water	7470A	
180-95957-11	SGWC-20	Total/NA	Water	7470A	
180-95957-12	SGWC-21	Total/NA	Water	7470A	
180-95957-13	FD-2(AP)	Total/NA	Water	7470A	
180-95957-14	FB-3(AP)	Total/NA	Water	7470A	
180-95957-15	FD-3(AP)	Total/NA	Water	7470A	
MB 180-293940/1-A	Method Blank	Total/NA	Water	7470A	
LCS 180-293940/2-A	Lab Control Sample	Total/NA	Water	7470A	

### Analysis Batch: 294165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	EPA 7470A	293940
180-95933-2	SGWC-23	Total/NA	Water	EPA 7470A	293940
180-95933-3	EB-3(AP)	Total/NA	Water	EPA 7470A	293940
180-95957-1	SGWC-7	Total/NA	Water	EPA 7470A	293940
180-95957-2	SGWC-8	Total/NA	Water	EPA 7470A	293940
180-95957-3	SGWC-10	Total/NA	Water	EPA 7470A	293940
180-95957-4	SGWC-13	Total/NA	Water	EPA 7470A	293940
180-95957-5	SGWC-14	Total/NA	Water	EPA 7470A	293940
180-95957-6	SGWC-15	Total/NA	Water	EPA 7470A	293940
180-95957-7	SGWC-16	Total/NA	Water	EPA 7470A	293940
180-95957-8	SGWC-17	Total/NA	Water	EPA 7470A	293940
180-95957-9	SGWC-18	Total/NA	Water	EPA 7470A	293940
180-95957-10	SGWC-19	Total/NA	Water	EPA 7470A	293940
180-95957-11	SGWC-20	Total/NA	Water	EPA 7470A	293940
180-95957-12	SGWC-21	Total/NA	Water	EPA 7470A	293940
180-95957-13	FD-2(AP)	Total/NA	Water	EPA 7470A	293940
180-95957-14	FB-3(AP)	Total/NA	Water	EPA 7470A	293940
180-95957-15	FD-3(AP)	Total/NA	Water	EPA 7470A	293940
MB 180-293940/1-A	Method Blank	Total/NA	Water	EPA 7470A	293940
LCS 180-293940/2-A	Lab Control Sample	Total/NA	Water	EPA 7470A	293940

### Analysis Batch: 294230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total Recoverable	Water	EPA 6020	292490
180-95845-2	SGWA-2	Total Recoverable	Water	EPA 6020	292490
180-95845-3	SGWA-3	Total Recoverable	Water	EPA 6020	292490
180-95845-4	SGWA-4	Total Recoverable	Water	EPA 6020	292490
180-95845-5	SGWC-6	Total Recoverable	Water	EPA 6020	292490
180-95845-6	SGWA-25	Total Recoverable	Water	EPA 6020	292490
180-95845-7	SGWC-9	Total Recoverable	Water	EPA 6020	292490
180-95845-8	SGWC-11	Total Recoverable	Water	EPA 6020	292490
180-95845-9	SGWC-12	Total Recoverable	Water	EPA 6020	292490
180-95845-10	FD-1(AP)	Total Recoverable	Water	EPA 6020	292490
180-95845-11	EB-2(AP)	Total Recoverable	Water	EPA 6020	292490
180-95845-12	FB-2(AP)	Total Recoverable	Water	EPA 6020	292490
MB 180-292490/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292490
LCS 180-292490/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292490

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Metals

### Analysis Batch: 294446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-7	SGWC-9	Total Recoverable	Water	EPA 6020	292490
180-95845-8	SGWC-11	Total Recoverable	Water	EPA 6020	292490
180-95845-9	SGWC-12	Total Recoverable	Water	EPA 6020	292490
180-95845-10	FD-1(AP)	Total Recoverable	Water	EPA 6020	292490
180-95845-11	EB-2(AP)	Total Recoverable	Water	EPA 6020	292490
180-95845-12	FB-2(AP)	Total Recoverable	Water	EPA 6020	292490
MB 180-292490/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292490
LCS 180-292490/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292490

### Analysis Batch: 294986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-1	SGWC-7	Total Recoverable	Water	EPA 6020	292626
180-95957-2	SGWC-8	Total Recoverable	Water	EPA 6020	292626
180-95957-3	SGWC-10	Total Recoverable	Water	EPA 6020	292626
180-95957-4	SGWC-13	Total Recoverable	Water	EPA 6020	292626
180-95957-5	SGWC-14	Total Recoverable	Water	EPA 6020	292626
180-95957-6	SGWC-15	Total Recoverable	Water	EPA 6020	292626
180-95957-7	SGWC-16	Total Recoverable	Water	EPA 6020	292626
180-95957-8	SGWC-17	Total Recoverable	Water	EPA 6020	292626
180-95957-9	SGWC-18	Total Recoverable	Water	EPA 6020	292626
180-95957-10	SGWC-19	Total Recoverable	Water	EPA 6020	292626
180-95957-11	SGWC-20	Total Recoverable	Water	EPA 6020	292626
180-95957-12	SGWC-21	Total Recoverable	Water	EPA 6020	292626
180-95957-13	FD-2(AP)	Total Recoverable	Water	EPA 6020	292626
180-95957-14	FB-3(AP)	Total Recoverable	Water	EPA 6020	292626
180-95957-15	FD-3(AP)	Total Recoverable	Water	EPA 6020	292626
MB 180-292626/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292626
LCS 180-292626/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292626
180-95957-1 MS	SGWC-7	Total Recoverable	Water	EPA 6020	292626
180-95957-1 MSD	SGWC-7	Total Recoverable	Water	EPA 6020	292626

### Analysis Batch: 295459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total Recoverable	Water	EPA 6020	292562
180-95933-2	SGWC-23	Total Recoverable	Water	EPA 6020	292562
180-95933-3	EB-3(AP)	Total Recoverable	Water	EPA 6020	292562
MB 180-292562/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292562
LCS 180-292562/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292562

### Analysis Batch: 295479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total Recoverable	Water	EPA 6020	292562
180-95933-2	SGWC-23	Total Recoverable	Water	EPA 6020	292562
180-95933-3	EB-3(AP)	Total Recoverable	Water	EPA 6020	292562
MB 180-292562/1-A	Method Blank	Total Recoverable	Water	EPA 6020	292562
LCS 180-292562/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	292562

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## General Chemistry

### Analysis Batch: 291934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	SM 2540C	
180-95735-2	EB-1(AP)	Total/NA	Water	SM 2540C	
MB 180-291934/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-291934/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 292096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-3	FB-1(AP)	Total/NA	Water	SM 2540C	
180-95735-4	SGWA-24	Total/NA	Water	SM 2540C	
MB 180-292096/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292096/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 292105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	SM 2540C	
180-95845-2	SGWA-2	Total/NA	Water	SM 2540C	
180-95845-3	SGWA-3	Total/NA	Water	SM 2540C	
180-95845-4	SGWA-4	Total/NA	Water	SM 2540C	
180-95845-5	SGWC-6	Total/NA	Water	SM 2540C	
180-95845-6	SGWA-25	Total/NA	Water	SM 2540C	
180-95845-7	SGWC-9	Total/NA	Water	SM 2540C	
180-95845-8	SGWC-11	Total/NA	Water	SM 2540C	
180-95845-9	SGWC-12	Total/NA	Water	SM 2540C	
180-95845-10	FD-1(AP)	Total/NA	Water	SM 2540C	
MB 180-292105/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292105/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 292191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-11	EB-2(AP)	Total/NA	Water	SM 2540C	
180-95845-12	FB-2(AP)	Total/NA	Water	SM 2540C	
MB 180-292191/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292191/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 292387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-1	SGWC-7	Total/NA	Water	SM 2540C	
MB 180-292387/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292387/1	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 292391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-2	SGWC-8	Total/NA	Water	SM 2540C	
180-95957-3	SGWC-10	Total/NA	Water	SM 2540C	
180-95957-4	SGWC-13	Total/NA	Water	SM 2540C	
180-95957-5	SGWC-14	Total/NA	Water	SM 2540C	
180-95957-6	SGWC-15	Total/NA	Water	SM 2540C	
180-95957-7	SGWC-16	Total/NA	Water	SM 2540C	
180-95957-8	SGWC-17	Total/NA	Water	SM 2540C	
180-95957-9	SGWC-18	Total/NA	Water	SM 2540C	
180-95957-10	SGWC19	Total/NA	Water	SM 2540C	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## General Chemistry (Continued)

### Analysis Batch: 292391 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-11	SGWC-20	Total/NA	Water	SM 2540C	
180-95957-12	SGWC-21	Total/NA	Water	SM 2540C	
180-95957-13	FD-2(AP)	Total/NA	Water	SM 2540C	
180-95957-14	FB-3(AP)	Total/NA	Water	SM 2540C	
180-95957-15	FD-3(AP)	Total/NA	Water	SM 2540C	
MB 180-292391/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292391/1	Lab Control Sample	Total/NA	Water	SM 2540C	
180-95957-2 DU	SGWC-8	Total/NA	Water	SM 2540C	
180-95957-12 DU	SGWC-21	Total/NA	Water	SM 2540C	

### Analysis Batch: 292600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	SM 2540C	
180-95933-2	SGWC-23	Total/NA	Water	SM 2540C	
180-95933-3	EB-3(AP)	Total/NA	Water	SM 2540C	
MB 180-292600/2	Method Blank	Total/NA	Water	SM 2540C	
LCS 180-292600/1	Lab Control Sample	Total/NA	Water	SM 2540C	

## Rad

### Prep Batch: 443369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	PrecSep-21	
180-95735-2	EB-1(AP)	Total/NA	Water	PrecSep-21	
180-95735-3	FB-1(AP)	Total/NA	Water	PrecSep-21	
180-95735-4	SGWA-24	Total/NA	Water	PrecSep-21	
MB 160-443369/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-443369/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

### Prep Batch: 443392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95735-1	SGWA-5	Total/NA	Water	PrecSep_0	
180-95735-2	EB-1(AP)	Total/NA	Water	PrecSep_0	
180-95735-3	FB-1(AP)	Total/NA	Water	PrecSep_0	
180-95735-4	SGWA-24	Total/NA	Water	PrecSep_0	
MB 160-443392/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-443392/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

### Prep Batch: 443701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	PrecSep-21	
180-95845-2	SGWA-2	Total/NA	Water	PrecSep-21	
180-95845-3	SGWA-3	Total/NA	Water	PrecSep-21	
180-95845-4	SGWA-4	Total/NA	Water	PrecSep-21	
180-95845-5	SGWC-6	Total/NA	Water	PrecSep-21	
180-95845-6	SGWA-25	Total/NA	Water	PrecSep-21	
180-95845-7	SGWC-9	Total/NA	Water	PrecSep-21	
180-95845-8	SGWC-11	Total/NA	Water	PrecSep-21	
180-95845-9	SGWC-12	Total/NA	Water	PrecSep-21	
180-95845-10	FD-1(AP)	Total/NA	Water	PrecSep-21	
180-95845-11	EB-2(AP)	Total/NA	Water	PrecSep-21	

Eurofins TestAmerica, Pittsburgh

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
SDG: Ash Pond

## Rad (Continued)

### Prep Batch: 443701 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-12	FB-2(AP)	Total/NA	Water	PrecSep-21	
MB 160-443701/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-443701/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-95845-5 DU	SGWC-6	Total/NA	Water	PrecSep-21	

### Prep Batch: 443704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-1	SGWA-1	Total/NA	Water	PrecSep_0	
180-95845-2	SGWA-2	Total/NA	Water	PrecSep_0	
180-95845-3	SGWA-3	Total/NA	Water	PrecSep_0	
180-95845-4	SGWA-4	Total/NA	Water	PrecSep_0	
180-95845-5	SGWC-6	Total/NA	Water	PrecSep_0	
180-95845-7	SGWC-9	Total/NA	Water	PrecSep_0	
180-95845-8	SGWC-11	Total/NA	Water	PrecSep_0	
180-95845-9	SGWC-12	Total/NA	Water	PrecSep_0	
180-95845-10	FD-1(AP)	Total/NA	Water	PrecSep_0	
180-95845-11	EB-2(AP)	Total/NA	Water	PrecSep_0	
180-95845-12	FB-2(AP)	Total/NA	Water	PrecSep_0	
MB 160-443704/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-443704/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-95845-5 DU	SGWC-6	Total/NA	Water	PrecSep_0	

### Prep Batch: 444191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	PrecSep-21	
180-95933-2	SGWC-23	Total/NA	Water	PrecSep-21	
180-95933-3	EB-3(AP)	Total/NA	Water	PrecSep-21	
180-95957-1	SGWC-7	Total/NA	Water	PrecSep-21	
180-95957-2	SGWC-8	Total/NA	Water	PrecSep-21	
180-95957-3	SGWC-10	Total/NA	Water	PrecSep-21	
180-95957-4	SGWC-13	Total/NA	Water	PrecSep-21	
180-95957-5	SGWC-14	Total/NA	Water	PrecSep-21	
180-95957-6	SGWC-15	Total/NA	Water	PrecSep-21	
180-95957-7	SGWC-16	Total/NA	Water	PrecSep-21	
180-95957-8	SGWC-17	Total/NA	Water	PrecSep-21	
180-95957-9	SGWC-18	Total/NA	Water	PrecSep-21	
180-95957-10	SGWC19	Total/NA	Water	PrecSep-21	
180-95957-11	SGWC-20	Total/NA	Water	PrecSep-21	
180-95957-12	SGWC-21	Total/NA	Water	PrecSep-21	
180-95957-13	FD-2(AP)	Total/NA	Water	PrecSep-21	
180-95957-14	FB-3(AP)	Total/NA	Water	PrecSep-21	
180-95957-15	FD-3(AP)	Total/NA	Water	PrecSep-21	
MB 160-444191/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-444191/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
180-95957-12 DU	SGWC-21	Total/NA	Water	PrecSep-21	

### Prep Batch: 444193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95933-1	SGWC-22	Total/NA	Water	PrecSep_0	
180-95933-2	SGWC-23	Total/NA	Water	PrecSep_0	
180-95933-3	EB-3(AP)	Total/NA	Water	PrecSep_0	

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# QC Association Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer Ash Pond

Job ID: 180-95735-1  
 SDG: Ash Pond

## Rad (Continued)

### Prep Batch: 444193 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95957-1	SGWC-7	Total/NA	Water	PrecSep_0	
180-95957-2	SGWC-8	Total/NA	Water	PrecSep_0	
180-95957-3	SGWC-10	Total/NA	Water	PrecSep_0	
180-95957-4	SGWC-13	Total/NA	Water	PrecSep_0	
180-95957-5	SGWC-14	Total/NA	Water	PrecSep_0	
180-95957-6	SGWC-15	Total/NA	Water	PrecSep_0	
180-95957-7	SGWC-16	Total/NA	Water	PrecSep_0	
180-95957-8	SGWC-17	Total/NA	Water	PrecSep_0	
180-95957-9	SGWC-18	Total/NA	Water	PrecSep_0	
180-95957-10	SGWC-19	Total/NA	Water	PrecSep_0	
180-95957-11	SGWC-20	Total/NA	Water	PrecSep_0	
180-95957-12	SGWC-21	Total/NA	Water	PrecSep_0	
180-95957-13	FD-2(AP)	Total/NA	Water	PrecSep_0	
180-95957-14	FB-3(AP)	Total/NA	Water	PrecSep_0	
180-95957-15	FD-3(AP)	Total/NA	Water	PrecSep_0	
MB 160-444193/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-444193/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-95957-12 DU	SGWC-21	Total/NA	Water	PrecSep_0	

### Prep Batch: 446605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-95845-6	SGWA-25	Total/NA	Water	PrecSep_0	
MB 160-446605/4-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-446605/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-446605/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Regulatory Program:  DW  NPDES  RCRA  Other:

**Client Contact**  
Joju Abraham  
Southern Company  
241 Ralph McGill Blvd SE B10185  
Atlanta, GA 30308  
jAbraham@southernco.com

**Project Name:** CCR - Plant Scherer Ash Pond  
**Site:** Georgia  
**P O #** 18019884

**Project Manager:** Dawn Prell  
**Tel/Fax:** 248-536-5445

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below \_\_\_ 3-5 days \_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS/MSD (Y/N)		6020, 7470A: As, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl	C1, F, SO4, TDS	Radium 226 + 228
						Y	N	Y	N			
SGWA-5	9/12/2019	1425	G	Water	3					X	X	X
EB-1 (AP)	9/12/2019	1640	G	Water	3					X	X	X
FB-1 (AP)	9/13/2019	1009	G	Water	3					X	X	X
SGWA-24	9/13/2019	1021	G	Water	3					X	X	X

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

**Possible Hazard Identification:** Please List any EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Special Instructions/QC Requirements & Comments:**

**Custody Seal No.:** \_\_\_\_\_

Relinquished by: *Aug 20* Company: *Southern* Date/Time: *9-13-19 1325*

Relinquished by: *[Signature]* Company: *[Signature]* Date/Time: *1341*

Relinquished by: *[Signature]* Company: *[Signature]* Date/Time: *1779 9:25*

Therm ID No.: \_\_\_\_\_  
Cooler Temp. (°C): \_\_\_\_\_ Obs'd: \_\_\_\_\_  
Company: *[Signature]* Date/Time: *9-13-19 1325*  
Company: *[Signature]* Date/Time: *1779 9:25*  
Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_



TestAmerica Pittsburgh  
 301 Alpha Drive  
 RIDC Park  
 Pittsburgh, PA 15238-2907  
 phone 412.963.7058 fax 412.963.2468

Chain of Custody Record

TestAmerica  
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Dawn Prell  
 Tel/Fax: 248-536-5445

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below: 3-5 days \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Client Contact  
 Joju Abraham  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA 30308  
 JAbraham@southernco.com  
 Project Name: CCR - Plant Scherer Ash Pond  
 Site: Georgia  
 P O # 18019884

Site Contact: Chris Tidwell  
 Lab Contact: Veronica Bortot

Date: 9/17/2019  
 Carrier: \_\_\_\_\_

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs  
 Sampler: \_\_\_\_\_  
 For Lab Use Only:  
 Walk-in Client: \_\_\_\_\_  
 Lab Sampling: \_\_\_\_\_  
 Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		Perform MS / MSD (Y / N)		Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ti	6020, 7470A, As, B, Ba, Be, Ca	C, T, SO4, TDS	Radium 226 + 228
						Y	N	Y	N				
SGWA-1	9/16/2019	15:02	G	Water	3								
SGWA-2	9/16/2019	15:58	G	Water	3								
SGWA-3	9/16/2019	13:26	G	Water	3								
SGWA-4	9/16/2019	12:05	G	Water	3								
SGWC-6	9/16/2019	15:15	G	Water	4								
SGWA-25	9/16/2019	13:35	G	Water	3								
SGWC-9	9/16/2019	12:00	G	Water	4								
SGWC-11	9/16/2019	14:25	G	Water	3								
SGWC-12	9/16/2019	16:10	G	Water	3								
FD-1(AP)	--	--	G	Water	3								
EB-2(AP)	9/16/2019	16:00	G	Water	3								
FB-2(AP)	9/16/2019	16:10	G	Water	3								



Preservation Used: 1 = Ice, 2 = HCl; 3 = H2SO4; 4 = HNO3; 5 = NaOH; 6 = Other

Possible Hazard Identification:  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  
 Poison B  Unknown

Special Instructions/QC Requirements & Comments:  
 3 Codes

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Custody Seal No.: \_\_\_\_\_  
 Relinquished by: *M. Bortot* (M. Bortot)  
 Relinquished by: *M. Bortot* (M. Bortot)  
 Relinquished by: *ETW* (ETW)

Company: Southern Company  
 Date/Time: 9-17-19 10:00  
 Received by: *ETW*  
 Date/Time: 9-17-19 10:00  
 Received by: *ETW*

Company: COURIER NEW  
 Date/Time: 9-17-19 8:15  
 Received by: *ETW*  
 Date/Time: 9-17-19 8:15  
 Received by: *ETW*

Company: *ETW*  
 Date/Time: 9-17-19 16:00  
 Received by: *ETW*  
 Date/Time: 9-17-19 16:00  
 Received by: *ETW*

Therm ID No.: \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Corr'd: \_\_\_\_\_

Form No. CA-C-WI-002, Rev. 4.20, dated 2/28/2019





# Chain of Custody Record

TestAmerica Laboratories, Inc.

Regulatory Program:  DW  NPDES  RCRA  Other:

**Client Contact**  
 Joju Abraham  
 Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA 30308  
 JAbraham@southernco.com  
 Project Name: CCR - Plant Scherer Ash Pond  
 Site: Georgia  
 P O # 18019884

**Project Manager: Dawn Prell**  
 Tel/Fax: 248-536-5445

**Site Contact: Chris Tidwell**  
**Lab Contact: Veronica Bortot**  
 Date: 9/18/2019  
 Carrier: \_\_\_\_\_

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs

Sampler: \_\_\_\_\_  
 For Lab Use Only:  
 Walk-in Client: \_\_\_\_\_  
 Lab Sampling: \_\_\_\_\_  
 Job / SDG No.: \_\_\_\_\_

Sample Specific Notes:  
 Radium 226 + 228

6020, 7470A: As, B, Ba, Be, Ca, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl  
 Perform MS / MSD ( Y / N )  
 Filtered Sample ( Y / N )

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time			
						CALENDAR DAYS	WORKING DAYS	TAT if different from Below	3-5 days
SGWC-7	9/17/2019	10:25	G	Water	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-8	9/17/2019	11:15	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-10	9/17/2019	12:20	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-13	9/17/2019	10:05	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-14	9/17/2019	11:20	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-15	9/17/2019	12:40	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-16	9/17/2019	14:12	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-17	9/17/2019	15:45	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-18	9/17/2019	17:08	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-19	9/17/2019	14:00	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-20	9/17/2019	16:30	G	Water	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SGWC-21	9/17/2019	15:40	G	Water	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EX LTM INDIUM



**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other  
 Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:**  
 3 coolers

Company	Date/Time	Received by	Company	Date/Time	Received by	Company	Date/Time	Received by
Coora	9-18-19 11:11	REINIE COOK	COORIER	9/18/19 8:11				
Coora	09:50 9/18/19		EPA	9/18/19				
Coora	9/18/19		EPA	9/19-19				

Therm ID No.: \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months



Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

<b>Client Contact</b>		<b>Project Manager: Dawn Prell</b> Tel/Fax: 248-536-5445		<b>Date: 9/18/2019</b>		<b>COC No:</b> 2 of 2 COCs	
<b>Client Contact</b>		<b>Site Contact: Chris Tidwell</b>		<b>Carrier:</b>			
<b>Southern Company</b>		<b>Lab Contact: Veronica Bortot</b>					
241 Ralph McGill Blvd SE B10185							
Atlanta, GA 30308							
JAbraham@southernco.com							
Project Name: CCR - Plant Scherer Ash Pond							
Site: Georgia							
P O # 18019884							

Sample Identification	Sample Date	Sample Type (C=Comp, G=Grab)	Sample Time	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:									
								Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ca	C1, F, SO4, TDS	Radium 226 + 228							
FD-2(AP)	--	G	--	Water	3			X	X	X							
FB-3(AP)	9/17/2019	G	10:05	Water	3			X	X	X							
FD-3(AP)	--	G	--	Water	3			X	X	X							

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Special Instructions/QC Requirements & Comments:

3 colors

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cooler Temp. (°C): Obs'd: _____	Therm ID No.: _____
Relinquished by: <i>Chris Tidwell</i>	Company: <i>GOLDEN</i>	Date/Time: <i>9/18/19 09:50</i>
Relinquished by: <i>Christine Cook</i>	Company: <i>ETA</i>	Date/Time: <i>9/18/19 09:50</i>
Relinquished by: <i>[Signature]</i>	Company: <i>ETA</i>	Date/Time: <i>9-19-19 9:00</i>

Received by: *Christine Cook* Company: *OUTER NOW* Date/Time: *9/18/19 8:11*

Received by: *ETA* Company: *ETA* Date/Time: *9/18/19 09:50*

Received at Laboratory by: *[Signature]* Company: *ETA* Date/Time: *9-19-19 9:00*

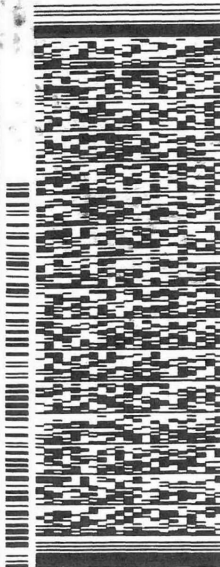


Environment Testing  
TestAmerica

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINS TEST AMERICA, ATLANTA  
6500 MCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: GOLDER



**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

1 of 4  
TRK# 4651 0083 6563  
0201  
## MASTER ##

**XO AGCA**

15238  
PA-US  
PU

Uncorrected temp  
Thermometer ID

1.3  
10  
C

CF 0 Initials B

PT-WI-SR-001 effective 11/8/18

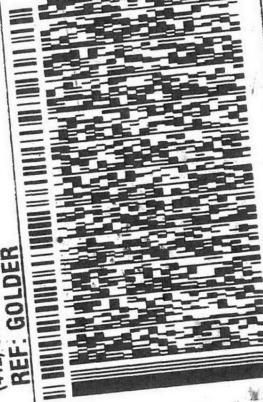


Environment Testing  
TestAmerica

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINS TEST AMERICA, ATLANTA  
6500 MCDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: GOLDER



**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

3 of 4  
MPS# 4651 0083 6563  
0263  
Met# 4651 0083 6563  
0201

**XO AGCA**

15238  
PA-US  
PIT

Uncorrected temp  
thermometer ID

1.3  
10  
C

CF 0 Initials B

PT-WI-SR-001 effective 11/8/18



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A 6574 09.14

5 12:00



Environmer  
TestAmerica

RT 639  
ST 11

Part # 159469-434 RTR 10/5/20

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINSTESTAMERICA, ATLANTA  
6500 MCDONOUGH DRIVE

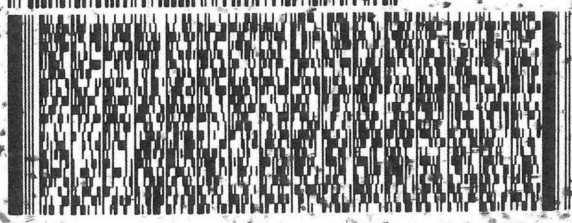
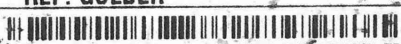
SHIP DATE: 13SEP19  
ACTWGT: 55.50 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**TA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: GOLDER



FedEx  
Express



2 of 4

**SATURDAY 12:00P**  
**PRIORITY OVERNIGHT**

MPS# 4651 0083 6574  
0263  
Mstr# 4651 0083 6563

0201

**XO AGCA**  
Uncorrected temp  
Thermometer ID

3.4 °C  
10

15238  
PA-US PIT

CF Initials

PT-WI-SR-001 effective 11/8/18







Environment Testing  
TestAmerica

159469-434 RIT2 EXP 0920

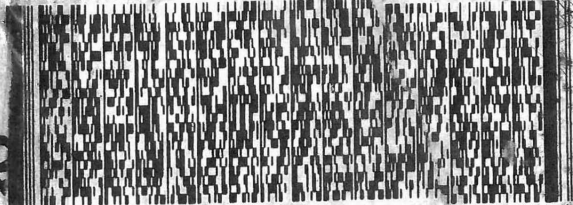
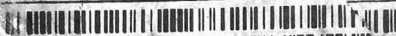
ORIGIN ID: 7014 (678) 966-9991  
GEORGE TAYLOR  
EUROFINSTESTAMERICA, ATLANTA  
6500 MCDONOUGH DISTRICT  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 17SEP19  
ACTWGT: 60.00 LB  
CAD: 859116/CAFE3211

BILL RECIPIENT

TO **SAMPLE RECEIVING  
EUROFINS TESTAMERICA PITTSBURGH  
301 ALPHA DRIVE  
RIDC PARK  
PITTSBURGH PA 15238**

(412) 963-7058  
REF: SOTHERN CO.



FedEx  
Express



DEPOT®  
office depot.com  
Office D.  
JT®  
at.com

2 of 3  
MPS# 4651 0083 6964  
0263  
Mstr# 4651 0083 6953  
0201

WED - 18 SEP 3:00P  
STANDARD OVERNIGHT

**NA AGCA**

15238  
PA-US PIT

Uncorrected temp  
Thermometer ID

11 °C

CF 0 Initials D

PT-WI-SR-001 effective 11/8/18



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eurofins

Enviro  
TestAmerica

RT 97

Part # 159469-4  
00250 JP-VP 0520 \*\*\*

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINS TESTAMERICA - ATLANTA  
5500 McDONOUGH DRIVE  
NORCROSS, GA 30093  
UNITED STATES US

SHIP DATE: 17SEP19  
ACTWGT: 80.00 LB  
CAD: 859118/CAF9211

BILL RECIPIENT

SAMPLE RECEIVING  
EUROFINS TESTAMERICA PITTSBURGH  
301 ALPHA DRIVE  
RIDC PARK  
PITTSBURGH PA 15238

(412) 883-7068  
REF: SOTHERN CO.



FedEx  
Express  
E

WED - 18 SEP 3:00P  
STANDARD OVERNIGHT

3 of 3  
MPS# 4651 0083 6975  
0263  
Metr# 4651 0083 6953  
0201

NA AGCA

15238  
PA-US PIT

Uncorrected temp  
Thermometer ID

CF 0 Initials J

PT-WL-SR-001 effective 11/8/18

LOT# 0110901D

ANALYSIS

DATE TIME PRESS

Environment Testing  
TestAmerica

1129240

eurofins

NORC 1305

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Seal  
17-0-19  
Signature



Environment Testing  
TestAmerica



Environment Testing  
TestAmerica

1129241

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINSTESTAMERICA ATLANTA  
6500 MCDONOUGH DRIVE

SHIP DATE: 17SEP19  
ACTWT: 60.00 LB  
CAD: 859116/CAFE3211

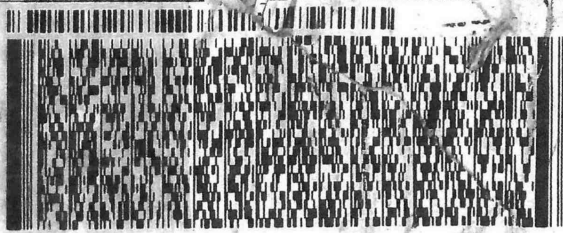
NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**EUROFINS TESTAMERICA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7058

REF: SOTHERN C



FedEx  
Express



AN1050909211181J

1 of 3

TRK# 4651 0083 6953

0201

## MASTER ##

WED - 18 SEP 3:00P  
STANDARD OVERNIGHT

Uncorrected temp  
Thermometer ID

1.6 °C  
10

CF

Initials

JD

15238

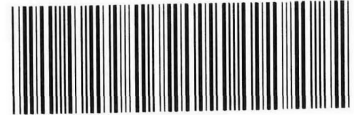
PA-US

PIT

PT-WI-SR-001 effective 11/8/18



SHIPPING: 0.00  
SPECIAL: 0.00  
HANDLING: 0.00  
TOTAL: 0.00



180-95933 Waybill



Environment Testing  
TestAmerica

ORIGIN ID:MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINSTESTAMERICA, ATLANTA  
6500 MCDONOUGH DRIVE

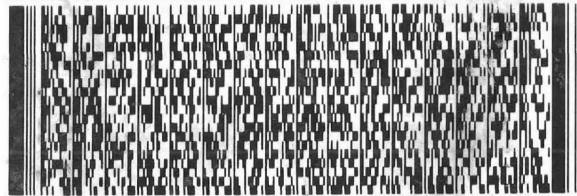
SHIP DATE: 18SEP19  
ACTWGT: 55.20 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**EUROFINS TESTAMERICA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO.



FedEx  
Express



THU - 19 SEP 3:00P  
STANDARD OVERNIGHT

TRK# 4651 0083 7261  
0201

**NA AGCA**

15238  
PA-US PIT



Uncorrected temp  
Thermometer ID

3.3 °C  
10

CF 0

Initials JB

PT-WI-SR-001 effective 11/8/18



9



Environment Testing  
TestAmerica

ORIGIN ID: MULA (678) 966-9991  
GEORGE TAYLOR  
EUROFINSTESTAMERICA, ATLANTA  
6500 MCDONOUGH DRIVE

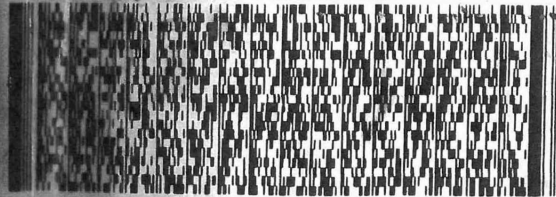
SHIP DATE: 18SEP19  
ACTWGT: 67.55 LB  
CAD: 859116/CAFE3211

NORCROSS, GA 30093  
UNITED STATES US

BILL RECIPIENT

TO **SAMPLE RECEIVING**  
**EUROFINS TESTAMERICA PITTSBURGH**  
**301 ALPHA DRIVE**  
**RIDC PARK**  
**PITTSBURGH PA 15238**

(412) 963-7068  
REF: SOUTHERN CO.



FedEx  
Express



1 of 3

TRK# 4651 0083 7147  
0201

## MASTER ##

THU - 19 SEP 3:00P  
STANDARD OVERNIGHT

**NA AGCA**

Uncorrected temp  
Thermometer ID

101 °C  
10

15238  
PA-US PIT

CF 0 Initials TS

PT-WI-SR-001 effective 11/8/18



Part # 159469-434 RITZ EXP 05/20

TestAmerica

18.19



Environment Testing  
TestAmerica

1129247



180-95957 Waybill

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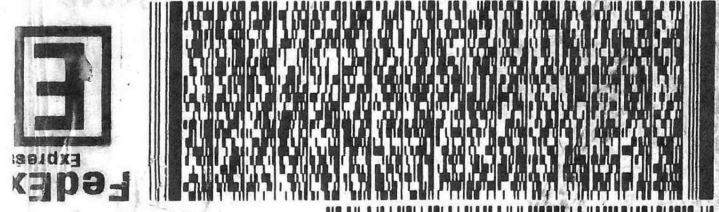
NOHC 1508 1500  
 Door  
 465100837158  
 7/06/19



Uncorrected temp 1.3 °C  
 Thermometer ID 10  
 Initials JS  
 CF O  
 PT-WI-SR-001 effective 11/8/18

15238 PA-US P11

MPS# 0263  
 4651 0083 7158  
 Mstr# 4651 0083 7147  
 0201  
 THU - 19 SEP 3:00  
 STANDARD OVERNIGHT

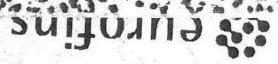


10 SAMPLE RECEIVING  
 EUROFINS TESTAMERICA PITTSBURGH  
 301 ALPHA DRIVE  
 RIDC PARK  
 PITTSBURGH PA 15238  
 REF: SOUTHERN CO.  
 (412) 963-7058

ORIGIN ID: MULA (628) 966-9991  
 GEORGE TAYLOR  
 EUROFINSTESTAMERICA, ATLANTA  
 6500 MCDONOUGH DRIVE  
 NORCROSS, GA 30093  
 UNITED STATES US  
 SHIP DATE: 18SEP19  
 ACTWGT: 67.55 LB  
 CAD: 859116/CAFE3213  
 BILL RECIPIENT

Part # 159469-434 RIT2 EXP 05/20  
 Part # 159469-434

Environment Testing  
 TestAmerica



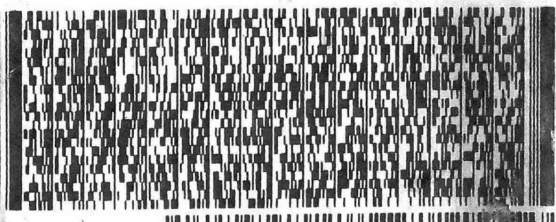
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**NA AGCA**

Uncorrected temp  
Thermometer ID  
CF 0  
Initials 13  
PT-WI-SR-001 effective 11/8/18

15238  
PIT us

MPS# 4651 0083 7169  
3 of 3  
Mstr# 4651 0083 7147  
0201  
STANDARD OVERNIGHT  
THU - 19 EP 3:00P

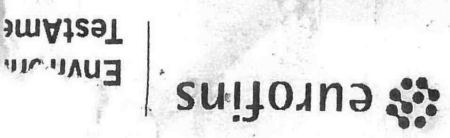


REF: SOUTHERN CO.  
(412) 968-7068

**PITTSBURGH PA 15238**  
RIDC PARK  
301 ALPHA DRIVE  
EUROFINS TESTAMERICA PIT

**SAMPLE RECEIVING**

TO  
NORCROSS, GA 30093  
UNITED STATES US  
EUROFINS TESTAMERICA, ATLANTA  
6500 MCDONOUGH DRIVE  
GEORGE TAYLOR  
ORIGIN ID: MULA (678) 966-9991  
SHIP 16/01/19 18:55  
ACT 16/01/19 18:55  
CAD 16/01/19 18:55  
E  
AGENT



Testame  
Environ

153469-434 RIT? EXP 05/20

environment testing

**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:								
Client Contact:		Bortol, Veronica	Bortol, Veronica		180-373678-1								
Shipping/Receiving		Phone:	E-Mail:	State of Origin:	Page:								
Company:		TestAmerica Laboratories, Inc.	veronica.bortol@testamericainc.com	Florida	1 of 1								
Address:		Due Date Requested:	Accreditations Required (See note):										
13715 Rider Trail North,		9/26/2019	180-95735-1										
City:		TAT Requested (days):	Preservation Codes:										
Earth City			A - HCL M - Hexane N - None O - AsNbO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Z - other (specify)										
State, Zip:		PO #:	Other:										
MO, 63045		WO #:											
Phone:		Project #:											
314-298-8566(Tel) 314-298-8757(Fax)		18019884											
Email:		SSOW#:											
Project Name:													
CCR - Plant Scherer Ash Pond													
Site:													
CCR Plant Scherer													
<b>Sample Identification - Client ID (Lab ID)</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=comp, G=grab)</b>	<b>Matrix (Water, Solid, Open/soil, BT-Tissue, A&amp;M)</b>	<b>Preservation Code:</b>	<b>Field Filtered Sample (Yes or No)</b>	<b>Perform MS/MSD (Yes or No)</b>	<b>9315_Ra226/PreSep_21 Standard Target List</b>	<b>9320_Ra228/PreSep_0 Standard Target List</b>	<b>Ra226Ra228_GFPc</b>	<b>Total Number of Containers</b>	<b>Special Instructions/Note:</b>
SGWA-5 (180-95735-1)	9/12/19	14:25 Eastern	Water			X	X	X				1	
EB-1(AP) (180-95735-2)	9/12/19	16:40 Eastern	Water			X	X	X				1	
FB-1(AP) (180-95735-3)	9/13/19	10:09 Eastern	Water			X	X	X				1	
SGWA-24 (180-95735-4)	9/13/19	10:21 Eastern	Water			X	X	X				1	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>													
<b>Possible Hazard Identification</b>													
Unconfirmed													
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2													
Empty Kit Relinquished by: _____ Date: _____ Time: _____													
Relinquished by: _____ Date/Time: 9/11/19 17:00 EST Company: _____													
Relinquished by: _____ Date/Time: _____ Company: _____													
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____													
Cooler Temperature(s) °C and Other Remarks: _____													
<p><b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b></p> <p><input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements: _____</p>													
<p>Method of Shipment: _____</p> <p>Received by: _____ Date/Time: 9/18/19 09:12 Company: TASC</p> <p>Received by: _____ Date/Time: _____ Company: _____</p> <p>Received by: _____ Date/Time: _____ Company: _____</p>													



# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95735**

**List Number: 1**

**Creator: Watson, Debbie**

**List Source: Eurofins TestAmerica, Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95735**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 09/18/19 07:23 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	False	
COC is filled out in ink and legible.	N/A	
COC is filled out with all pertinent information.	N/A	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95845**

**List Source: Eurofins TestAmerica, Pittsburgh**

**List Number: 1**

**Creator: Watson, Debbie**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95845**

**List Number: 2**

**Creator: Hellm, Michael**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 09/20/19 12:33 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95933**

**List Number: 1**

**Creator: Say, Thomas C**

**List Source: Eurofins TestAmerica, Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95933**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 09/24/19 04:36 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95957**

**List Source: Eurofins TestAmerica, Pittsburgh**

**List Number: 1**

**Creator: Watson, Debbie**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-95735-1

SDG Number: Ash Pond

**Login Number: 95957**

**List Number: 2**

**Creator: Harris, Lorin C**

**List Source: Eurofins TestAmerica, St. Louis**

**List Creation: 09/24/19 04:36 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





**APPENDIX A**

# FIELD DATA FORMS

February 2019

Product Name: Low-Flow System

Date: 2019-02-18 15:21:43

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length ft

Pump placement from TOC ft

Well Information:

Well ID SGWA-1  
Well diameter 2 in  
Well Total Depth 53.4 ft  
Screen Length 10 ft  
Depth to Water 37.13 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 4.44 in  
Total Volume Pumped 9.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:58:17	900.02	18.46	5.47	39.86	1.89	37.50	2.99	66.12
Last 5	15:03:17	1200.01	18.32	5.46	39.44	1.70	37.50	2.83	65.71
Last 5	15:08:18	1501.01	18.28	5.46	38.99	1.26	37.50	2.68	65.33
Last 5	15:13:18	1801.01	18.25	5.45	38.67	1.09	37.50	2.58	65.25
Last 5	15:18:18	2101.00	18.23	5.43	38.26	0.76	37.50	2.48	65.60
Variance 0			-0.05	-0.01	-0.46			-0.14	-0.39
Variance 1			-0.02	-0.01	-0.32			-0.10	-0.07
Variance 2			-0.02	-0.02	-0.41			-0.10	0.34

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-18 15:06:25

Project Information:

Operator Name J Quenneville  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type  
Tubing Type  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWA-2  
Well diameter 2 in  
Well Total Depth 98.5 ft  
Screen Length 10 ft  
Depth to Water 36.05 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.09 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.35 in  
Total Volume Pumped 5.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 0.3	+/- 10
Last 5	14:43:36	900.03	18.21	6.68	122.89	0.33	37.52	4.72	110.90
Last 5	14:48:36	1200.03	18.22	6.69	122.90	0.29	37.40	4.75	112.56
Last 5	14:53:36	1500.02	18.15	6.70	122.85	0.30	37.40	4.78	114.37
Last 5	14:58:36	1800.03	18.19	6.70	122.90	0.36	37.40	4.81	116.66
Last 5	15:03:36	2100.03	18.64	6.74	122.71	--	--	4.95	118.04
Variance 0			-0.07	0.01	-0.05			0.03	1.80
Variance 1			0.04	0.00	0.05			0.03	2.29
Variance 2			0.44	0.04	-0.19			0.14	1.38

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-19 09:37:52

Project Information:

Operator Name JFQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020

Pump Information:

Pump Model/Type QED Well  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWA-3  
Well diameter 2 in  
Well Total Depth 52.8 ft  
Screen Length 10 ft  
Depth to Water 31.8 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 51.6 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:12:07	1200.03	16.40	5.70	82.94	0.24	35.50	4.28	112.76
Last 5	09:17:07	1500.02	16.42	5.71	82.49	0.33	35.90	4.05	114.90
Last 5	09:22:07	1800.03	16.52	5.75	82.50	0.48	36.00	4.08	115.30
Last 5	09:27:07	2100.03	15.99	5.68	82.54	0.21	36.02	4.16	121.52
Last 5	09:32:07	2400.03	16.16	5.69	82.73	0.17	36.10	4.22	123.30
Variance 0			0.10	0.04	0.00			0.03	0.40
Variance 1			-0.53	-0.07	0.05			0.07	6.22
Variance 2			0.17	0.02	0.19			0.06	1.78

Notes

Sampled at 0935

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-18 15:51:43

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 63.2 ft

Pump placement from TOC 58.2 ft

Well Information:

Well ID SGWA-4  
Well diameter 2 in  
Well Total Depth 63.2 ft  
Screen Length 10 ft  
Depth to Water 51.73 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.7670884 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.14 in  
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	15:28:01	300.10	17.43	6.45	182.05	1.94	52.42	8.03	75.07
Last 5	15:33:01	600.03	17.92	6.32	184.06	0.90	52.75	7.13	70.15
Last 5	15:38:01	900.03	17.90	6.26	184.63	0.49	52.83	6.63	68.88
Last 5	15:43:01	1200.04	17.92	6.25	184.11	0.73	52.81	6.31	68.68
Last 5	15:48:01	1500.04	17.79	6.28	183.72	0.31	52.87	6.09	68.83
Variance 0			-0.03	-0.06	0.57			-0.50	-1.28
Variance 1			0.02	-0.01	-0.52			-0.32	-0.20
Variance 2			-0.13	0.04	-0.39			-0.21	0.16

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-19 15:43:19

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 32 ft

Pump placement from TOC 24.36 ft

Well Information:

Well ID SGWA-5  
Well diameter 2 in  
Well Total Depth 33.1 ft  
Screen Length 10 ft  
Depth to Water 15.61 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.72 in  
Total Volume Pumped 9 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	15:20:27	1200.01	16.44	5.57	51.77	0.48	16.33	3.65	75.02
Last 5	15:25:27	1500.01	16.53	5.55	51.45	0.35	16.33	4.10	72.43
Last 5	15:30:27	1800.01	16.53	5.67	51.56	0.44	16.33	3.69	68.31
Last 5	15:35:27	2100.00	16.58	5.67	51.49	0.33	16.33	3.59	67.14
Last 5	15:40:27	2400.00	16.53	5.67	51.53	0.27	16.33	3.56	67.31
Variance 0			-0.01	0.12	0.11			-0.40	-4.12
Variance 1			0.05	0.00	-0.07			-0.10	-1.17
Variance 2			-0.04	-0.01	0.04			-0.03	0.16

Notes

Sampled @ 1540

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 09:45:28

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 24 ft

Pump placement from TOC 19.21 ft

Well Information:

Well ID SGWC-6  
Well diameter 2 in  
Well Total Depth 27.6 ft  
Screen Length 10 ft  
Depth to Water 14.81 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.96 in  
Total Volume Pumped 5.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	09:22:26	900.00	15.41	6.40	96.63	0.43	16.43	2.91	79.50
Last 5	09:27:26	1199.99	15.47	6.36	96.33	0.37	16.56	2.78	78.68
Last 5	09:32:26	1499.99	15.46	6.34	96.26	0.52	16.66	2.69	77.68
Last 5	09:37:26	1799.97	15.37	6.34	96.32	0.53	16.75	2.58	76.67
Last 5	09:42:26	2099.97	15.42	6.34	96.56	0.57	16.77	2.46	76.15
Variance 0			-0.02	-0.01	-0.06			-0.09	-1.00
Variance 1			-0.09	-0.00	0.06			-0.11	-1.02
Variance 2			0.05	-0.00	0.23			-0.13	-0.52

Notes

Sampled @ 0945

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 10:59:25

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 35 ft

Pump placement from TOC 29.75 ft

Well Information:

Well ID SGWC-7  
Well diameter 2 in  
Well Total Depth 37.7 ft  
Screen Length 10 ft  
Depth to Water 14.18 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.17 in  
Total Volume Pumped 5.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	10:37:32	900.00	16.56	6.43	303.17	3.21	14.35	0.78	82.05
Last 5	10:42:32	1199.99	16.70	6.43	302.02	2.21	14.35	0.68	79.45
Last 5	10:47:32	1499.98	16.67	6.42	300.38	1.34	14.35	0.61	78.03
Last 5	10:52:32	1799.97	16.64	6.40	299.90	0.98	14.35	0.54	75.69
Last 5	10:57:32	2099.97	16.70	6.40	298.36	0.77	14.35	0.49	73.42
Variance 0			-0.03	-0.01	-1.63			-0.07	-1.43
Variance 1			-0.03	-0.02	-0.49			-0.07	-2.34
Variance 2			0.06	-0.00	-1.54			-0.05	-2.27

Notes

Sampled @ 1100

Grab Samples



Product Name: Low-Flow System

Date: 2019-02-20 12:08:20

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 40 ft

Pump placement from TOC 34.2 ft

Well Information:

Well ID SGWC-8  
Well diameter 2 in  
Well Total Depth 42.6 ft  
Screen Length 10 ft  
Depth to Water 21.8 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 150 in  
Total Volume Pumped 5.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	11:46:33	900.00	17.05	6.41	574.08	0.40	21.94	1.86	64.54
Last 5	11:51:33	1200.00	17.07	6.43	577.24	0.36	21.96	1.58	62.82
Last 5	11:56:33	1499.98	17.11	6.41	577.92	0.25	21.96	1.36	63.93
Last 5	12:01:33	1799.97	17.11	6.42	577.41	0.22	21.96	1.29	63.92
Last 5	12:06:33	2099.97	17.13	6.40	576.28	0.32	21.96	1.28	64.10
Variance 0			0.04	-0.02	0.68			-0.21	1.11
Variance 1			-0.00	0.00	-0.51			-0.07	-0.01
Variance 2			0.02	-0.02	-1.14			-0.01	0.19

Notes

Sampled @ 1208, Dup-2 collected

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-21 09:13:04

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 26 ft

Pump placement from TOC 21.4 ft

Well Information:

Well ID SGWC-9  
Well diameter 2 in  
Well Total Depth 37.8 ft  
Screen Length 10 ft  
Depth to Water 19.85 ft

Pumping Information:

Final Pumping Rate 150 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.58 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	08:50:56	300.15	16.44	6.18	787.65	0.79	20.43	1.27	101.96
Last 5	08:55:56	600.03	16.61	6.12	784.24	0.99	20.43	0.49	95.45
Last 5	09:00:56	900.02	16.62	6.11	782.35	0.68	20.43	0.30	91.62
Last 5	09:05:56	1200.02	16.74	6.10	779.34	0.84	20.43	0.25	89.11
Last 5	09:10:56	1500.02	16.80	6.10	778.77	0.55	20.43	0.22	87.79
Variance 0			0.01	-0.01	-1.89			-0.19	-3.83
Variance 1			0.12	-0.01	-3.01			-0.05	-2.50
Variance 2			0.06	-0.00	-0.57			-0.03	-1.33

Notes

Sampled @ 0913

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 15:26:27

Project Information:

Operator Name K. Coolman  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
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 0.170  
Tubing Diameter in  
Tubing Length 29 ft

Pump placement from TOC 24.2 ft

Well Information:

Well ID SGWC-10  
Well diameter 2 in  
Well Total Depth 32.6 ft  
Screen Length 10 ft  
Depth to Water 16.68 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.06 in  
Total Volume Pumped 15.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	15:03:25	4799.89	16.28	5.39	87.93	0.35	17.74	1.38	70.90
Last 5	15:08:25	5099.88	16.38	5.42	90.37	0.37	17.74	0.85	69.65
Last 5	15:13:25	5399.88	16.36	5.43	93.01	0.27	17.74	0.65	70.04
Last 5	15:18:25	5699.87	16.40	5.42	95.80	0.21	17.74	0.60	71.31
Last 5	15:23:25	5999.89	16.31	5.43	97.30	0.21	17.74	0.62	70.90
Variance 0			-0.02	0.01	2.64			-0.20	0.38
Variance 1			0.05	-0.00	2.80			-0.05	1.28
Variance 2			-0.09	0.01	1.50			0.02	-0.41

Notes

Sampled @ 1525

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 11:10:28

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 42.7 ft

Pump placement from TOC 37.7 ft

Well Information:

Well ID SGWC-11  
Well diameter 2 in  
Well Total Depth 42.7 ft  
Screen Length 10 ft  
Depth to Water 18.23 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.6755881 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.65 in  
Total Volume Pumped 4.44 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	10:49:32	900.04	14.02	5.26	62.73	0.59	19.64	0.99	50.37
Last 5	10:54:32	1200.04	13.78	5.23	62.52	0.76	19.73	0.56	50.43
Last 5	10:59:32	1500.04	14.15	5.23	62.88	0.76	19.81	0.38	49.57
Last 5	11:04:32	1800.09	14.11	5.22	63.02	0.29	19.84	0.32	49.64
Last 5	11:09:32	2100.08	14.15	5.22	63.29	0.51	19.88	0.30	49.50
Variance 0			0.38	-0.00	0.36			-0.18	-0.85
Variance 1			-0.04	-0.01	0.14			-0.06	0.06
Variance 2			0.05	0.00	0.27			-0.02	-0.13

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 09:40:03

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 50.2 ft

Pump placement from TOC 45.2 ft

Well Information:

Well ID SGWC-12  
Well diameter 2 in  
Well Total Depth 50.2 ft  
Screen Length 10 ft  
Depth to Water 14.34 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.7090638 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.95 in  
Total Volume Pumped 3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	09:16:39	300.08	16.47	6.06	308.66	5.69	15.70	1.65	44.44
Last 5	09:21:39	600.03	16.58	6.06	308.93	4.25	15.95	1.08	41.37
Last 5	09:26:39	900.04	16.63	6.07	307.30	4.18	16.20	0.58	40.94
Last 5	09:31:39	1200.04	16.52	6.06	307.19	2.66	16.26	0.42	40.70
Last 5	09:36:39	1500.04	16.48	6.07	307.49	1.93	16.29	0.33	39.57
Variance 0			0.04	0.00	-1.63			-0.50	-0.43
Variance 1			-0.11	-0.00	-0.12			-0.17	-0.23
Variance 2			-0.04	0.01	0.30			-0.08	-1.13

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 10:10:50

Project Information:

Operator Name JQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWC-13  
Well diameter 2 in  
Well Total Depth 37.5 ft  
Screen Length 10 ft  
Depth to Water 4.29 ft

Pumping Information:

Final Pumping Rate 120 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.62 in  
Total Volume Pumped 7.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	09:45:15	2400.03	16.26	5.97	287.81	0.94	5.95	0.78	138.87
Last 5	09:50:15	2700.03	16.29	5.97	289.96	0.71	5.96	0.70	140.10
Last 5	09:55:15	3000.03	16.32	5.97	292.28	0.63	5.91	0.64	141.60
Last 5	10:00:15	3300.03	16.25	5.96	293.87	0.41	5.95	0.54	143.26
Last 5	10:05:16	3601.04	16.34	5.97	294.39	--	5.91	0.47	144.34
Variance 0			0.03	-0.00	2.33			-0.06	1.50
Variance 1			-0.07	-0.01	1.59			-0.10	1.66
Variance 2			0.09	0.01	0.52			-0.07	1.09

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-21 09:25:43

Project Information:

Operator Name Travis Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 553835  
Turbidity Make/Model Lamotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 38.5 ft

Pump placement from TOC 33.5 ft

Well Information:

Well ID SGWC-14  
Well diameter 2 in  
Well Total Depth 38.5 ft  
Screen Length 10 ft  
Depth to Water 10.23 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.6568418 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.07 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	09:05:03	300.08	14.90	5.66	493.25	0.69	10.30	1.08	43.96
Last 5	09:10:03	600.02	15.08	5.66	493.05	0.83	10.30	0.70	40.41
Last 5	09:15:03	900.02	15.07	5.67	491.66	0.98	10.30	0.62	34.80
Last 5	09:20:03	1200.02	15.15	5.64	492.02	1.22	10.30	0.58	30.90
Last 5	09:25:03	1500.02	14.90	5.65	493.11	1.06	10.30	0.47	27.89
Variance 0			-0.02	0.01	-1.39			-0.08	-5.62
Variance 1			0.08	-0.03	0.36			-0.04	-3.89
Variance 2			-0.25	0.00	1.08			-0.11	-3.01

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 11:40:48

Project Information:

Operator Name JQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type QED well wizar  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWC-15  
Well diameter 2 in  
Well Total Depth 48.4 ft  
Screen Length 10 ft  
Depth to Water 27.1 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 7.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	11:16:43	1200.02	16.74	4.60	513.50	4.07	27.10	1.94	205.37
Last 5	11:21:43	1500.03	16.82	4.61	507.75	3.74	27.11	2.08	205.85
Last 5	11:26:43	1800.03	16.83	4.61	513.56	3.53	27.10	1.76	207.93
Last 5	11:31:47	2104.03	16.83	4.62	514.14	2.57	27.10	1.79	207.19
Last 5	11:36:47	2404.03	16.65	4.62	514.69	3.63	27.11	1.84	207.76
Variance 0			0.01	-0.01	5.81			-0.32	2.07
Variance 1			-0.00	0.01	0.58			0.03	-0.74
Variance 2			-0.18	0.00	0.55			0.05	0.57

Notes

Actual time at 1136 samples taken

Grab Samples



Product Name: Low-Flow System

Date: 2019-02-20 13:10:25

Project Information:

Operator Name JQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWC-16  
Well diameter 2 in  
Well Total Depth 43.3 ft  
Screen Length 10 ft  
Depth to Water 22.59 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 11.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	12:47:15	1500.03	16.65	5.23	127.41	8.28	22.68	3.24	164.83
Last 5	12:52:15	1800.03	16.78	5.25	127.28	6.49	22.70	3.10	164.26
Last 5	12:57:15	2100.02	16.74	5.26	127.59	4.74	22.69	3.07	162.61
Last 5	13:02:15	2400.03	16.75	5.24	127.76	4.25	22.70	3.17	163.28
Last 5	13:07:15	2700.03	16.68	5.23	127.63	3.06	22.70	3.17	163.21
Variance 0			-0.03	0.01	0.31			-0.03	-1.65
Variance 1			0.00	-0.02	0.17			0.10	0.67
Variance 2			-0.07	-0.00	-0.13			-0.01	-0.07

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 13:17:05

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 27.00 ft

Pump placement from TOC 22.00 ft

Well Information:

Well ID SGWC-17  
Well diameter 2 in  
Well Total Depth 27.00 ft  
Screen Length 10 ft  
Depth to Water 0.70 ft

Pumping Information:

Final Pumping Rate 160 mL/min  
Total System Volume 0.6055124 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.4 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	12:55:46	600.04	13.74	6.28	556.16	2.33	1.04	1.09	42.74
Last 5	13:00:46	900.04	14.07	6.26	557.77	2.64	1.10	0.56	45.25
Last 5	13:05:46	1200.04	13.98	6.26	559.59	1.99	1.10	0.35	47.47
Last 5	13:10:46	1500.04	14.18	6.26	557.89	1.99	1.10	0.28	49.40
Last 5	13:15:46	1800.05	14.19	6.26	562.83	1.40	1.10	0.25	51.09
Variance 0			-0.09	-0.00	1.82			-0.21	2.22
Variance 1			0.20	0.00	-1.71			-0.08	1.92
Variance 2			0.01	-0.00	4.94			-0.03	1.69

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 14:19:50

Project Information:

Operator Name JQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWA-18  
Well diameter 2 in  
Well Total Depth 47.6 ft  
Screen Length 10 ft  
Depth to Water 32.3 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 6.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	13:56:41	300.03	17.72	4.77	2229.42	0.48	32.60	3.03	212.29
Last 5	14:01:41	600.02	17.91	4.77	2222.23	1.25	32.59	2.65	211.98
Last 5	14:06:41	900.03	17.95	4.77	2219.78	1.40	32.60	2.27	212.11
Last 5	14:11:41	1200.03	17.90	4.76	2215.97	0.29	32.60	2.14	212.03
Last 5	14:16:41	1500.03	17.87	4.76	2201.94	0.47	32.56	2.28	211.76
Variance 0			0.04	-0.00	-2.46			-0.38	0.13
Variance 1			-0.05	-0.00	-3.81			-0.13	-0.08
Variance 2			-0.03	-0.00	-14.03			0.14	-0.28

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 15:57:44

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 37.4 ft

Pump placement from TOC 32.4 ft

Well Information:

Well ID SGWC-19  
Well diameter 2 in  
Well Total Depth 37.4 ft  
Screen Length 10 ft  
Depth to Water 14.99 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.651932 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.71 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	15:36:57	300.04	16.63	5.61	575.98	1.74	15.75	3.70	94.06
Last 5	15:41:57	600.04	16.63	5.59	575.04	0.81	15.62	3.61	92.71
Last 5	15:46:57	900.04	16.60	5.59	577.87	0.91	15.70	3.30	92.27
Last 5	15:51:57	1200.04	16.54	5.58	578.92	0.97	15.70	3.38	92.64
Last 5	15:56:58	1501.05	16.44	5.58	576.10	0.96	15.70	3.31	93.53
Variance 0			-0.03	-0.01	2.82			-0.30	-0.44
Variance 1			-0.06	-0.01	1.06			0.07	0.37
Variance 2			-0.09	0.00	-2.82			-0.07	0.89

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-20 14:28:33

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 27.90 ft

Pump placement from TOC 22.90 ft

Well Information:

Well ID SGWC-20  
Well diameter 2 in  
Well Total Depth 27.90 ft  
Screen Length 10 ft  
Depth to Water 12.74 ft

Pumping Information:

Final Pumping Rate 160 mL/min  
Total System Volume 0.6095295 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.56 in  
Total Volume Pumped 4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	14:05:41	600.03	18.72	4.21	595.76	0.39	13.28	2.34	117.67
Last 5	14:10:41	900.04	18.68	4.22	595.33	0.50	13.25	2.78	116.20
Last 5	14:15:41	1200.04	18.93	4.23	594.45	0.60	13.26	1.61	119.88
Last 5	14:20:41	1500.04	18.99	4.25	591.67	0.20	13.29	1.48	119.36
Last 5	14:25:41	1800.05	18.59	4.26	592.63	0.58	13.30	1.47	122.13
Variance 0			0.26	0.01	-0.88			-1.17	3.68
Variance 1			0.06	0.01	-2.78			-0.13	-0.53
Variance 2			-0.40	0.01	0.96			-0.01	2.77

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-21 09:56:55

Project Information:

Operator Name JQ  
Company Name  
Project Name  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type .17  
Tubing Diameter in  
Tubing Length ft  
Pump placement from TOC ft

Well Information:

Well ID SGWC-21  
Well diameter 2 in  
Well Total Depth 27.79 ft  
Screen Length 10 ft  
Depth to Water .3 ft

Pumping Information:

Final Pumping Rate 240 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.1 in  
Total Volume Pumped 8.16 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 10
Last 5	09:34:02	300.05	17.63	6.06	446.22	2.14	0.40	1.27	113.88
Last 5	09:39:02	600.02	17.67	6.07	443.11	1.90	0.40	1.36	114.92
Last 5	09:44:02	900.05	17.72	6.07	444.75	1.66	0.40	1.31	117.42
Last 5	09:49:02	1200.03	17.76	6.08	426.14	1.95	0.40	1.22	120.38
Last 5	09:54:02	1500.03	17.86	6.08	436.63	1.97	0.40	1.13	125.23
Variance 0			0.06	0.00	1.64			-0.05	2.50
Variance 1			0.04	0.01	-18.61			-0.08	2.95
Variance 2			0.09	-0.00	10.49			-0.09	4.85

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-19 14:12:53

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 52.6 ft

Pump placement from TOC 47.6 ft

Well Information:

Well ID SGWC-22  
Well diameter 2 in  
Well Total Depth 52.6 ft  
Screen Length 10 ft  
Depth to Water 23.84 ft

Pumping Information:

Final Pumping Rate 130 mL/min  
Total System Volume 0.719776 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.86 in  
Total Volume Pumped 5.2 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	13:50:20	1200.04	17.11	5.65	364.02	0.21	24.69	1.53	60.31
Last 5	13:55:21	1501.04	17.07	5.67	363.28	0.19	24.71	0.84	62.49
Last 5	14:00:23	1803.04	16.94	5.68	361.83	1.82	24.64	0.49	63.79
Last 5	14:05:23	2103.04	16.98	5.68	361.25	0.30	24.66	0.45	64.86
Last 5	14:10:23	2403.05	16.86	5.69	360.84	0.39	24.70	0.37	65.80
Variance 0			-0.13	0.01	-1.45			-0.35	1.30
Variance 1			0.04	0.01	-0.58			-0.04	1.07
Variance 2			-0.13	0.00	-0.41			-0.08	0.94

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-19 12:44:08

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 52.6 ft

Pump placement from TOC 47.6 ft

Well Information:

Well ID SGWC-23  
Well diameter 2 in  
Well Total Depth 52.60 ft  
Screen Length 10 ft  
Depth to Water 27.45 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.719776 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.11 in  
Total Volume Pumped 3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	12:21:33	300.03	16.49	5.98	350.56	0.07	27.66	2.95	32.46
Last 5	12:26:33	600.03	16.85	5.94	353.24	0.38	27.70	2.60	41.35
Last 5	12:31:33	900.03	16.95	5.91	350.82	0.08	27.70	2.37	47.00
Last 5	12:36:33	1200.04	17.03	5.90	349.00	0.10	27.64	2.28	50.81
Last 5	12:41:33	1500.04	17.05	5.90	346.19	0.15	27.56	2.39	53.88
Variance 0			0.10	-0.02	-2.41			-0.23	5.64
Variance 1			0.08	-0.01	-1.82			-0.09	3.81
Variance 2			0.02	-0.01	-2.81			0.11	3.07

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-02-19 09:48:46

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 42.9 ft

Pump placement from TOC 37.9 ft

Well Information:

Well ID SGWA-24  
Well diameter 2 in  
Well Total Depth 42.90 ft  
Screen Length 10 ft  
Depth to Water 13.70 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.6764808 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.4 in  
Total Volume Pumped 3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	09:27:43	300.11	14.83	6.40	146.45	1.87	14.08	4.26	69.42
Last 5	09:32:43	600.03	16.42	6.28	139.45	0.84	14.13	3.36	62.22
Last 5	09:37:43	900.03	16.52	6.28	144.18	1.02	14.18	3.07	58.37
Last 5	09:42:43	1200.03	16.54	6.27	144.09	1.10	14.14	3.29	58.21
Last 5	09:47:43	1500.04	16.64	6.29	144.09	0.91	14.10	3.11	57.09
Variance 0			0.10	0.00	4.73			-0.29	-3.85
Variance 1			0.02	-0.01	-0.09			0.22	-0.16
Variance 2			0.10	0.02	-0.01			-0.18	-1.12

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-02-19 11:37:24

Project Information:

Operator Name T. Martinez  
Company Name Golder Associates  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 48.0 ft

Pump placement from TOC 43.0 ft

Well Information:

Well ID SGWA-25  
Well diameter 2 in  
Well Total Depth 48.0 ft  
Screen Length 10 ft  
Depth to Water 26.90 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.6992443 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0.17 in  
Total Volume Pumped 7.7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 0
Last 5	11:15:58	2101.04	16.27	6.02	118.54	0.71	27.08	2.05	44.92
Last 5	11:20:58	2401.05	16.34	6.01	118.42	0.21	27.09	1.43	45.19
Last 5	11:25:58	2701.05	16.31	6.03	118.50	0.40	27.08	0.71	44.58
Last 5	11:30:58	3001.05	16.36	6.03	118.14	0.49	27.06	0.84	45.27
Last 5	11:35:58	3301.05	16.36	6.03	118.17	0.27	27.07	0.77	45.00
Variance 0			-0.03	0.02	0.08			-0.72	-0.61
Variance 1			0.04	-0.00	-0.35			0.13	0.69
Variance 2			0.00	0.00	0.02			-0.07	-0.27

Notes

Grab Samples

**APPENDIX A**

# FIELD DATA FORMS

March/April 2019

Product Name: Low-Flow System

Date: 2019-03-29 09:19:13

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 44.6 ft

Well Information:

Well ID SGWA-1  
Well diameter 2 in  
Well Total Depth 43.4 ft  
Screen Length 10 ft  
Depth to Water 36.4 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 2.52 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:56:14	300.04	16.36	5.42	37.95	2.92	36.61	2.63	310.50
Last 5	09:01:14	600.02	16.85	5.21	36.28	2.20	36.62	1.56	298.20
Last 5	09:06:14	900.00	16.98	5.20	35.82	1.97	36.61	1.03	289.50
Last 5	09:11:15	1201.00	16.99	5.21	35.55	1.75	36.61	0.94	287.16
Last 5	09:16:15	1500.99	17.09	5.22	35.89	1.23	36.61	0.97	288.89
Variance 0			0.13	-0.01	-0.46			-0.53	-8.69
Variance 1			0.00	0.01	-0.27			-0.09	-2.34
Variance 2			0.10	0.01	0.33			0.03	1.72

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-29 10:10:55

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 91.05 ft

Well Information:

Well ID SGWA-2  
Well diameter 2 in  
Well Total Depth 98.5 ft  
Screen Length 10 ft  
Depth to Water 25.65 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 140.04 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:52:08	300.03	16.98	6.52	140.15	0.65	36.65	3.55	259.07
Last 5	09:57:08	600.01	17.16	6.73	140.06	1.67	37.09	4.90	268.69
Last 5	10:02:08	900.01	17.21	6.80	140.07	1.39	37.24	4.79	269.39
Last 5	10:07:08	1200.00	17.32	6.81	140.13	1.07	37.32	4.75	270.44
Last 5									
Variance 0			0.18	0.21	-0.09			1.35	9.62
Variance 1			0.05	0.07	0.01			-0.10	0.69
Variance 2			0.11	0.02	0.06			-0.05	1.05

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-28 14:46:06

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 44.7 ft

Pump placement from TOC 44.7 ft

Well Information:

Well ID SGWA-3  
Well diameter 2 in  
Well Total Depth 52.8 ft  
Screen Length 10 ft  
Depth to Water 31.70 ft

Pumping Information:

Final Pumping Rate 180 mL/min  
Total System Volume 0.684515 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 109 in  
Total Volume Pumped 63 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:23:17	900.02	18.28	5.87	79.50	0.17	39.91	3.01	180.31
Last 5	14:28:17	1200.02	18.23	5.87	81.12	0.19	40.20	3.30	184.16
Last 5	14:33:17	1500.02	18.21	5.87	81.69	0.16	40.55	3.66	185.94
Last 5	14:38:17	1800.02	18.26	5.88	81.83	0.14	40.70	3.57	187.03
Last 5	14:43:17	2100.02	18.22	5.88	83.03	0.22	40.72	3.69	187.72
Variance 0			-0.02	0.00	0.57			0.36	1.78
Variance 1			0.04	0.01	0.14			-0.09	1.09
Variance 2			-0.04	-0.00	1.20			0.12	0.69

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-28 13:00:57

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 54.8 ft

Pump placement from TOC 54.8 ft

Well Information:

Well ID SGWA-4  
Well diameter 2 in  
Well Total Depth 63.2 ft  
Screen Length 10 ft  
Depth to Water 51.08 ft

Pumping Information:

Final Pumping Rate 100 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 24.96 in  
Total Volume Pumped 3.1 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:36:36	300.03	18.28	6.59	199.50	1.34	53.00	5.93	279.95
Last 5	12:41:36	600.01	18.41	6.54	197.83	1.90	53.15	5.63	278.20
Last 5	12:46:35	900.00	18.23	6.54	200.97	1.02	53.15	5.73	277.51
Last 5	12:51:35	1200.00	18.03	6.53	202.44	0.93	53.15	5.81	277.41
Last 5	12:56:35	1499.99	17.98	6.53	203.73	1.20	53.16	5.88	277.59
Variance 0			-0.17	-0.00	3.14			0.10	-0.68
Variance 1			-0.21	-0.00	1.47			0.08	-0.11
Variance 2			-0.05	0.00	1.29			0.07	0.18

Notes

FD-1 AP

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-28 13:49:20

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 24.36 ft

Pump placement from TOC 24.36 ft

Well Information:

Well ID SGWA-5  
Well diameter 2 in  
Well Total Depth 33.10 ft  
Screen Length 10 ft  
Depth to Water 15.04 ft

Pumping Information:

Final Pumping Rate 209 mL/min  
Total System Volume 0.593729 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 46.68 in  
Total Volume Pumped 5.23 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:24:54	300.08	17.84	5.75	52.46	0.40	19.92	3.47	133.01
Last 5	13:29:54	600.03	17.88	5.69	52.67	0.25	18.99	3.33	140.87
Last 5	13:34:54	900.02	17.86	5.68	52.51	0.29	18.97	3.41	149.42
Last 5	13:39:54	1200.02	17.83	5.68	52.37	0.14	18.89	3.43	157.49
Last 5	13:44:54	1500.02	17.85	5.67	52.32	0.11	18.90	3.39	165.24
Variance 0			-0.02	-0.01	-0.16			0.09	8.55
Variance 1			-0.03	-0.00	-0.14			0.02	8.07
Variance 2			0.02	-0.01	-0.04			-0.04	7.75

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-04-01 13:00:13

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 19.21 ft

Well Information:

Well ID SGWC-6  
Well diameter 2 in  
Well Total Depth 27.6 ft  
Screen Length 10 ft  
Depth to Water 14.61 ft

Pumping Information:

Final Pumping Rate 140 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 14.6 in  
Total Volume Pumped 5.46 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:35:05	600.00	17.46	6.50	107.27	0.74	16.71	3.50	166.80
Last 5	12:40:05	899.98	17.66	6.47	107.44	0.52	17.11	3.29	167.85
Last 5	12:45:05	1199.96	17.70	6.45	107.19	0.70	17.51	3.15	169.08
Last 5	12:50:05	1499.95	17.68	6.44	107.11	0.67	17.50	3.02	168.62
Last 5	12:55:05	1799.93	17.69	6.43	107.69	0.63	17.51	2.81	169.15
Variance 0			0.04	-0.02	-0.25			-0.14	1.23
Variance 1			-0.02	-0.01	-0.09			-0.13	-0.45
Variance 2			0.01	-0.01	0.59			-0.20	0.53

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 11:58:38

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 29.75 ft

Well Information:

Well ID SGWC-7  
Well diameter 2 in  
Well Total Depth 37.7 ft  
Screen Length 10 ft  
Depth to Water 13.98 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 2.76 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:36:37	599.99	17.55	6.64	338.30	1.27	14.18	2.47	87.93
Last 5	11:41:37	899.98	17.54	6.60	341.93	1.35	14.20	1.64	83.25
Last 5	11:46:37	1199.96	17.34	6.58	340.00	1.06	14.20	1.21	81.20
Last 5	11:51:37	1499.95	17.52	6.57	337.92	0.82	14.22	1.21	84.93
Last 5	11:56:37	1799.93	17.56	6.57	334.58	0.75	14.21	1.22	90.43
Variance 0			-0.19	-0.02	-1.93			-0.44	-2.05
Variance 1			0.18	-0.01	-2.08			0.00	3.73
Variance 2			0.04	-0.00	-3.34			0.01	5.49

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 10:48:58

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 34.2 ft

Well Information:

Well ID SGWC-8  
Well diameter 2 in  
Well Total Depth 42.6 ft  
Screen Length 10 ft  
Depth to Water 21.69 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 2.16 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:32:13	300.06	16.90	6.38	638.16	0.58	21.88	1.63	218.25
Last 5	10:37:13	599.99	17.12	6.40	644.55	0.69	21.89	1.43	215.01
Last 5	10:42:13	899.98	17.18	6.41	646.69	0.74	21.85	1.41	215.01
Last 5	10:47:13	1199.96	17.24	6.41	646.63	0.75	21.87	1.40	215.56
Last 5									
Variance 0			0.22	0.02	6.38			-0.20	-3.24
Variance 1			0.07	0.01	2.14			-0.03	0.00
Variance 2			0.06	0.00	-0.06			-0.01	0.54

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 11:23:42

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 29.4 ft

Pump placement from TOC 29.4 ft

Well Information:

Well ID SGWC-9  
Well diameter 2 in  
Well Total Depth 37.8 ft  
Screen Length 10 ft  
Depth to Water 19.74 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6162246 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 10.32 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:01:34	300.03	16.39	6.41	733.19	5.44	20.50	1.41	92.22
Last 5	11:06:34	600.02	16.79	6.22	727.54	3.69	20.54	1.12	87.17
Last 5	11:11:34	900.02	16.83	6.15	726.66	2.88	20.60	0.57	84.72
Last 5	11:16:34	1200.02	16.84	6.12	726.08	1.94	20.60	0.40	83.59
Last 5	11:21:34	1500.02	16.69	6.11	725.31	1.07	20.60	0.53	83.17
Variance 0			0.04	-0.08	-0.88			-0.55	-2.45
Variance 1			0.01	-0.03	-0.58			-0.17	-1.13
Variance 2			-0.14	-0.01	-0.77			0.13	-0.42

Notes

Sampled SGWC-9 at 1120. Extra radium

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 17:16:22

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 24.2 ft

Well Information:

Well ID SGWC-10  
Well diameter 2 in  
Well Total Depth 32.6 ft  
Screen Length 10 ft  
Depth to Water 16.38 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 28.44 in  
Total Volume Pumped 11 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:49:28	2099.92	18.19	5.43	100.71	0.70	18.70	1.04	246.16
Last 5	16:54:28	2399.90	18.15	5.43	106.57	0.68	18.70	0.85	242.71
Last 5	16:59:33	2704.89	18.10	5.44	113.17	0.70	18.75	0.72	237.63
Last 5	17:04:33	3004.87	18.17	5.44	116.43	0.63	18.73	0.64	235.44
Last 5	17:09:33	3304.89	18.15	5.45	120.44	0.69	18.75	0.56	234.35
Variance 0			-0.05	0.01	6.60			-0.14	-5.08
Variance 1			0.07	0.00	3.26			-0.08	-2.18
Variance 2			-0.02	0.01	4.02			-0.08	-1.09

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 17:53:19

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 24.2 ft

Well Information:

Well ID SGWC-10  
Well diameter 2 in  
Well Total Depth 32.6 ft  
Screen Length 10 ft  
Depth to Water 16.38 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 29.64 in  
Total Volume Pumped 17.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	17:22:32	300.04	18.32	5.45	126.70	0.72	18.81	0.44	230.55
Last 5	17:27:32	600.00	18.31	5.46	130.01	0.52	18.82	0.43	228.19
Last 5	17:40:19	1366.97	18.05	5.47	134.18	0.44	18.82	0.38	211.32
Last 5	17:45:19	1666.94	18.01	5.47	137.61	0.70	18.82	0.36	204.24
Last 5	17:50:19	1966.92	17.97	5.46	135.13	0.71	18.85	0.33	202.28
Variance 0			-0.26	0.01	4.17			-0.05	-16.88
Variance 1			-0.04	0.00	3.44			-0.02	-7.08
Variance 2			-0.04	-0.01	-2.48			-0.02	-1.96

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 11:31:43

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 34.3 ft

Pump placement from TOC 34.3 ft

Well Information:

Well ID SGWC-11  
Well diameter 2 in  
Well Total Depth 42.7 ft  
Screen Length 10 ft  
Depth to Water 18.92 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6380954 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 93.12 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:05:15	300.12	18.34	5.39	65.34	1.01	26.90	2.87	43.65
Last 5	11:10:15	600.02	18.21	5.29	62.11	0.61	26.70	1.35	34.61
Last 5	11:15:15	900.01	18.11	5.24	61.28	0.40	26.71	0.50	31.20
Last 5	11:20:15	1200.01	18.25	5.23	59.46	0.53	26.69	0.43	29.26
Last 5	11:25:15	1500.00	18.25	5.24	60.44	0.40	26.68	0.33	28.32
Variance 0			-0.10	-0.05	-0.83			-0.85	-3.41
Variance 1			0.14	-0.01	-1.82			-0.07	-1.94
Variance 2			-0.00	0.01	0.98			-0.10	-0.94

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 12:44:37

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 41.87 ft

Pump placement from TOC 41.87 ft

Well Information:

Well ID SGWC-12  
Well diameter 2 in  
Well Total Depth 50.20 ft  
Screen Length 10 ft  
Depth to Water 14.25 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6718835 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 66.84 in  
Total Volume Pumped 9 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:22:02	1500.00	19.26	6.13	297.37	0.47	19.81	1.32	28.61
Last 5	12:27:02	1800.00	19.44	6.13	300.77	0.55	19.81	1.07	26.66
Last 5	12:32:02	2099.99	19.33	6.12	301.47	0.49	19.82	0.87	26.19
Last 5	12:37:02	2399.99	19.55	6.13	300.35	0.51	19.82	0.82	24.06
Last 5	12:42:02	2699.99	19.58	6.14	299.18	0.54	19.82	0.82	24.69
Variance 0			-0.12	-0.01	0.70			-0.20	-0.48
Variance 1			0.22	0.01	-1.12			-0.04	-2.12
Variance 2			0.04	0.01	-1.17			-0.01	0.63

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-04-01 13:41:38

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 29.0 ft

Pump placement from TOC 29.0 ft

Well Information:

Well ID SGWC-13  
Well diameter 2 in  
Well Total Depth 37.5 ft  
Screen Length 10 ft  
Depth to Water 4.12 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 31.44 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:19:12	300.03	18.12	6.24	273.04	5.49	6.30	0.92	50.48
Last 5	13:24:12	600.02	18.26	6.16	272.11	1.68	6.65	0.62	51.12
Last 5	13:29:12	900.02	18.27	6.11	270.24	1.75	6.72	0.52	51.50
Last 5	13:34:12	1200.01	18.27	6.09	276.85	1.73	6.73	0.58	52.72
Last 5	13:39:12	1500.01	18.26	6.06	279.08	--	--	0.41	53.92
Variance 0			0.02	-0.05	-1.88			-0.10	0.38
Variance 1			-0.00	-0.03	6.61			0.06	1.22
Variance 2			-0.02	-0.03	2.23			-0.17	1.20

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 15:01:10

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 30.24 ft

Pump placement from TOC 30.24 ft

Well Information:

Well ID SGWC-14  
Well diameter 2 in  
Well Total Depth 38.5 ft  
Screen Length 10 ft  
Depth to Water 10.35 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6199739 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.8 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:38:05	300.04	16.67	6.29	469.13	22.95	10.50	0.56	48.97
Last 5	14:43:05	600.02	16.64	6.08	481.05	8.64	10.49	0.54	49.78
Last 5	14:48:05	900.02	16.57	5.96	484.60	10.11	10.50	0.44	50.30
Last 5	14:53:05	1200.00	16.56	5.92	487.03	4.79	10.49	0.45	50.39
Last 5	14:58:05	1500.01	16.51	5.89	486.53	4.66	10.50	0.45	50.45
Variance 0			-0.06	-0.12	3.55			-0.10	0.52
Variance 1			-0.02	-0.04	2.42			0.01	0.09
Variance 2			-0.04	-0.03	-0.50			-0.00	0.06

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-01 16:28:53

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.65 ft

Pump placement from TOC 39.65 ft

Well Information:

Well ID SGWC-15  
Well diameter 2 in  
Well Total Depth 48.2 ft  
Screen Length 10 ft  
Depth to Water 27.61 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6619747 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1 in  
Total Volume Pumped 13 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:05:49	2699.99	19.10	4.83	477.58	4.77	27.69	0.99	110.72
Last 5	16:10:49	2999.99	19.06	4.79	476.34	4.52	27.69	1.07	114.09
Last 5	16:15:49	3299.98	19.06	4.77	473.20	4.39	27.69	0.83	117.40
Last 5	16:20:49	3599.98	19.12	4.74	476.33	4.22	27.69	0.83	121.49
Last 5	16:25:49	3899.97	19.10	4.72	476.98	4.14	27.70	0.78	124.55
Variance 0			0.00	-0.03	-3.14			-0.24	3.31
Variance 1			0.06	-0.03	3.13			0.00	4.09
Variance 2			-0.02	-0.02	0.66			-0.05	3.06

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 10:38:33

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 34.62 ft

Well Information:

Well ID SGWC-16  
Well diameter 2 in  
Well Total Depth 43.3 ft  
Screen Length 10 ft  
Depth to Water 23.68 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.44 in  
Total Volume Pumped 7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:20:01	1247.42	16.81	5.26	142.87	7.85	23.82	2.57	237.79
Last 5	10:25:01	1547.38	16.78	5.26	142.56	4.34	23.81	2.56	237.03
Last 5	10:30:01	1847.36	16.76	5.26	142.69	3.80	23.82	2.56	236.53
Last 5	10:35:01	2147.35	16.76	5.27	142.80	2.62	23.80	2.56	236.46
Last 5									
Variance 0			-0.02	0.00	-0.31			-0.01	-0.76
Variance 1			-0.02	-0.00	0.14			0.01	-0.49
Variance 2			-0.00	0.00	0.11			-0.01	-0.07

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 11:37:57

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 19.24 ft

Well Information:

Well ID SGWC-17  
Well diameter 2 in  
Well Total Depth 27.6 ft  
Screen Length 10 ft  
Depth to Water .93 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 8.04 in  
Total Volume Pumped 6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:24:44	1245.97	16.58	6.26	614.11	3.14	1.62	0.16	121.63
Last 5	11:29:44	1545.95	16.72	6.26	614.25	2.00	1.60	0.13	118.66
Last 5	11:34:44	1845.93	16.74	6.26	613.81	2.50	1.60	0.12	117.49
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.14	0.00	0.14			-0.03	-2.97
Variance 2			0.02	0.00	-0.44			-0.02	-1.17

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 09:02:29

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.20 ft

Pump placement from TOC 39.20 ft

Well Information:

Well ID SGWC-18  
Well diameter 2 in  
Well Total Depth 47.60 ft  
Screen Length 10 ft  
Depth to Water 32.83 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6599662 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 6.8 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:39:56	300.08	18.67	4.75	2174.57	1.35	33.40	1.52	130.83
Last 5	08:44:56	600.02	18.70	4.73	2173.17	1.45	33.40	1.48	123.19
Last 5	08:49:56	900.01	18.70	4.72	2168.86	1.31	33.38	1.47	119.33
Last 5	08:54:56	1200.01	18.70	4.72	2171.34	1.20	33.40	1.47	116.72
Last 5	08:59:56	1500.01	18.66	4.72	2169.56	0.97	33.40	1.46	115.19
Variance 0			0.00	-0.00	-4.31			-0.01	-3.86
Variance 1			-0.00	-0.00	2.48			0.00	-2.61
Variance 2			-0.04	0.00	-1.78			-0.01	-1.53

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 10:20:50

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 29.0 ft

Pump placement from TOC 29.0 ft

Well Information:

Well ID SGWC-19  
Well diameter 2 in  
Well Total Depth 37.40 ft  
Screen Length 10 ft  
Depth to Water 15.55 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 17.4 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:58:32	300.03	18.06	5.56	550.31	0.70	17.10	3.55	68.33
Last 5	10:03:32	600.02	18.09	5.52	543.76	0.61	17.10	3.16	70.95
Last 5	10:08:32	900.02	18.08	5.50	556.03	0.59	17.01	3.07	71.88
Last 5	10:13:32	1200.01	18.28	5.50	555.91	0.80	17.02	2.97	72.44
Last 5	10:18:32	1500.01	18.43	5.50	553.59	1.23	17.00	2.97	72.68
Variance 0			-0.01	-0.02	12.27			-0.09	0.93
Variance 1			0.20	-0.00	-0.12			-0.10	0.55
Variance 2			0.16	0.00	-2.32			-0.00	0.25

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 11:14:31

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613229  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 19.5 ft

Pump placement from TOC 19.5 ft

Well Information:

Well ID SGWC-20  
Well diameter 2 in  
Well Total Depth 27.9 ft  
Screen Length 10 ft  
Depth to Water 13.46 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5720367 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 38.9 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:50:45	300.03	20.49	4.23	576.75	0.24	16.29	1.54	87.09
Last 5	10:55:45	600.02	20.26	4.26	567.95	0.35	16.80	1.00	91.77
Last 5	11:00:45	900.01	20.12	4.28	571.85	0.56	16.68	0.78	95.10
Last 5	11:05:45	1200.01	20.07	4.30	564.92	0.25	16.73	0.60	96.98
Last 5	11:10:45	1500.01	20.26	4.33	560.76	0.39	16.70	0.46	98.85
Variance 0			-0.14	0.02	3.89			-0.22	3.34
Variance 1			-0.05	0.02	-6.93			-0.19	1.88
Variance 2			0.19	0.03	-4.16			-0.14	1.87

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-04-02 09:06:17

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 19.39 ft

Pump placement from TOC 19.39 ft

Well Information:

Well ID SGWC-21  
Well diameter 2 in  
Well Total Depth 27.79 ft  
Screen Length 10 ft  
Depth to Water 0.70 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.5715458 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 $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:49:23	300.05	16.10	6.36	447.68	0.92	0.70	0.91	106.58
Last 5	08:54:23	600.02	16.38	6.12	444.44	0.86	0.70	0.53	100.65
Last 5	08:59:23	900.02	16.60	6.09	444.88	0.67	0.70	0.36	98.10
Last 5	09:04:23	1200.02	16.74	6.09	443.79	0.61	0.70	0.29	96.79
Last 5									
Variance 0			0.28	-0.24	-3.24			-0.38	-5.93
Variance 1			0.22	-0.03	0.44			-0.17	-2.55
Variance 2			0.13	-0.00	-1.09			-0.07	-1.31

Notes

Sampled SGWC-21 at 0905. FB-3 (AP) here

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 09:54:04

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 44.2 ft

Pump placement from TOC 44.2 ft

Well Information:

Well ID SGWC-22  
Well diameter 2 in  
Well Total Depth 52.6 ft  
Screen Length 10 ft  
Depth to Water 24.12 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.6822833 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 16.8 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:36:56	300.03	16.65	5.84	354.14	1.87	25.20	1.05	93.26
Last 5	09:41:56	600.02	16.83	5.66	358.73	1.95	25.40	0.51	95.01
Last 5	09:46:56	900.02	16.88	5.65	356.48	1.78	25.52	0.27	95.18
Last 5	09:51:56	1200.02	16.98	5.65	354.75	2.34	25.52	0.20	95.21
Last 5									
Variance 0			0.18	-0.18	4.59			-0.54	1.75
Variance 1			0.05	-0.01	-2.25			-0.23	0.17
Variance 2			0.11	0.01	-1.73			-0.07	0.03

Notes

Sampled SGWC-22 at 0950

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 11:07:44

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 44.25 ft

Pump placement from TOC 44.25 ft

Well Information:

Well ID SGWC-23  
Well diameter 2 in  
Well Total Depth 52.6 ft  
Screen Length 10 ft  
Depth to Water 27.47 ft

Pumping Information:

Final Pumping Rate 250 mL/min  
Total System Volume 0.6825064 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 2.16 in  
Total Volume Pumped 10 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:45:54	1200.02	17.99	5.92	361.37	0.47	27.65	1.58	90.82
Last 5	10:50:54	1500.02	18.08	5.90	356.18	0.40	27.65	1.98	91.58
Last 5	10:55:54	1800.03	18.13	5.88	351.15	0.32	27.65	2.23	92.98
Last 5	11:00:54	2100.03	18.15	5.87	345.63	0.30	27.65	2.35	94.49
Last 5	11:05:54	2400.02	18.22	5.87	342.60	0.30	27.65	2.39	96.11
Variance 0			0.05	-0.02	-5.02			0.26	1.41
Variance 1			0.03	-0.01	-5.53			0.12	1.51
Variance 2			0.07	-0.00	-3.03			0.04	1.62

Notes

Sampled SGWC-23 at 1105

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-29 09:29:36

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type Polyethylene  
Tubing Diameter .170 in  
Tubing Length 34.80 ft

Pump placement from TOC 34.8 ft

Well Information:

Well ID SGWA-24  
Well diameter 2 in  
Well Total Depth 42.90 ft  
Screen Length 10 ft  
Depth to Water 13.93 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6403272 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 11.76 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:06:19	300.06	17.19	6.42	136.54	8.84	15.05	2.16	81.72
Last 5	09:11:19	600.02	17.10	6.34	135.65	8.67	14.92	2.14	80.93
Last 5	09:16:19	900.02	17.19	6.29	135.49	9.70	14.90	2.07	82.02
Last 5	09:21:19	1200.02	17.09	6.30	135.08	5.34	14.90	2.04	81.09
Last 5	09:26:19	1500.02	17.05	6.31	135.14	4.60	14.91	1.96	80.39
Variance 0			0.09	-0.05	-0.16			-0.06	1.10
Variance 1			-0.09	0.01	-0.41			-0.04	-0.93
Variance 2			-0.04	0.01	0.06			-0.07	-0.70

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-28 14:40:38

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 364455  
Turbidity Make/Model LaMotte

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length ft

Pump placement from TOC 39.76 ft

Well Information:

Well ID SGWA-25  
Well diameter 2 in  
Well Total Depth 49 ft  
Screen Length 10 ft  
Depth to Water 26.75 ft

Pumping Information:

Final Pumping Rate 180 mL/min  
Total System Volume 0.485 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 2.88 in  
Total Volume Pumped 5.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:18:13	600.02	18.36	6.16	127.44	8.65	26.99	0.73	488.74
Last 5	14:23:13	900.01	18.29	6.15	128.64	6.51	26.98	0.32	360.60
Last 5	14:28:13	1200.00	18.32	6.15	129.47	4.76	26.98	0.21	236.21
Last 5	14:33:12	1499.99	18.28	6.14	130.27	4.56	26.98	0.18	209.56
Last 5	14:38:12	1799.98	18.23	6.15	130.49	3.77	26.99	0.16	197.27
Variance 0			0.03	-0.00	0.83			-0.12	-124.38
Variance 1			-0.04	-0.00	0.80			-0.03	-26.66
Variance 2			-0.05	0.00	0.22			-0.02	-12.29

Notes

Grab Samples

**APPENDIX A**

# FIELD DATA FORMS

September 2019

Product Name: Low-Flow System

Date: 2019-09-16 15:04:41

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Sample Pro  
Tubing Type polyethylene  
Tubing Diameter .17 in  
Tubing Length 44.6 ft

Pump placement from TOC 44.6 ft

Well Information:

Well ID SGWA-1  
Well diameter 2 in  
Well Total Depth 53.4 ft  
Screen Length 10 ft  
Depth to Water 41.5 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6840687 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 3.84 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:42:12	300.03	22.02	5.42	36.32	1.84	41.77	2.93	95.56
Last 5	14:47:12	600.01	20.76	5.24	37.29	1.74	41.80	1.05	102.02
Last 5	14:52:12	900.00	20.62	5.23	37.18	1.19	41.79	0.46	104.15
Last 5	14:57:12	1199.99	20.62	5.24	36.99	0.84	41.80	0.37	105.23
Last 5	15:02:12	1499.99	20.53	5.22	36.67	0.45	41.82	0.34	106.59
Variance 0			-0.14	-0.01	-0.11			-0.59	2.13
Variance 1			0.00	0.01	-0.19			-0.10	1.08
Variance 2			-0.09	-0.02	-0.31			-0.03	1.36

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 16:00:53

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Sample Pro  
Tubing Type polyethylene  
Tubing Diameter .17 in  
Tubing Length 91.05 ft

Pump placement from TOC 91.05 ft

Well Information:

Well ID SGWA-2  
Well diameter 2 in  
Well Total Depth 98.5 ft  
Screen Length 10 ft  
Depth to Water 41.61 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.8913947 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 23.88 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:37:58	300.02	22.47	6.63	126.74	0.64	42.64	1.87	114.41
Last 5	15:42:58	600.01	20.93	6.75	131.49	0.39	43.20	2.54	119.17
Last 5	15:47:58	900.00	20.80	6.79	131.85	0.73	43.74	2.71	121.34
Last 5	15:52:58	1199.99	20.70	6.81	132.24	0.66	43.62	2.96	122.42
Last 5	15:57:58	1499.98	20.58	6.82	131.99	0.41	43.60	3.01	123.26
Variance 0			-0.13	0.04	0.36			0.18	2.17
Variance 1			-0.09	0.02	0.39			0.25	1.08
Variance 2			-0.12	0.01	-0.25			0.05	0.83

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-09-16 13:29:46

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Sample Pro  
Tubing Type polyethylene  
Tubing Diameter .17 in  
Tubing Length 44.7 ft

Pump placement from TOC 44.7 ft

Well Information:

Well ID SGWA-3  
Well diameter 2 in  
Well Total Depth 52.8 ft  
Screen Length 10 ft  
Depth to Water 35.70 ft

Pumping Information:

Final Pumping Rate 100 mL/min  
Total System Volume 0.684515 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 51.96 in  
Total Volume Pumped 4.68 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:06:03	600.01	20.88	5.78	82.54	0.57	38.22	3.73	110.02
Last 5	13:11:03	900.00	20.80	5.77	85.17	0.33	39.25	3.72	112.96
Last 5	13:16:03	1199.99	20.77	5.79	85.75	0.18	39.85	3.43	114.39
Last 5	13:21:03	1499.98	22.05	5.77	86.63	0.10	40.05	3.24	115.93
Last 5	13:26:03	1799.98	22.36	5.80	87.29	0.17	40.03	3.41	116.20
Variance 0			-0.02	0.02	0.58			-0.28	1.43
Variance 1			1.27	-0.02	0.88			-0.19	1.54
Variance 2			0.31	0.03	0.66			0.17	0.27

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 12:06:30

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Sample Pro  
Tubing Type polyethylene  
Tubing Diameter .17 in  
Tubing Length 54.8 ft

Pump placement from TOC 54.8 ft

Well Information:

Well ID SGWA-4  
Well diameter 2 in  
Well Total Depth 63.2 ft  
Screen Length 10 ft  
Depth to Water 50.0 ft

Pumping Information:

Final Pumping Rate 100 mL/min  
Total System Volume 0.7295956 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 27.0 in  
Total Volume Pumped 3.70 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:43:41	300.09	20.73	6.76	190.25	0.82	51.24	6.54	106.76
Last 5	11:48:41	600.01	19.97	6.50	188.18	0.59	51.81	5.79	103.99
Last 5	11:53:41	900.00	19.95	6.44	186.96	0.44	52.32	5.20	105.13
Last 5	11:58:41	1199.99	20.75	6.43	188.11	0.38	52.41	5.12	106.47
Last 5	12:03:41	1499.99	21.61	6.44	188.19	0.34	52.25	5.16	108.37
Variance 0			-0.02	-0.05	-1.22			-0.59	1.14
Variance 1			0.80	-0.01	1.16			-0.08	1.34
Variance 2			0.86	0.01	0.08			0.04	1.89

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-12 14:00:49

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463068  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 24.36 ft

Pump placement from TOC 24.36 ft

Well Information:

Well ID SGWA-5  
Well diameter 2 in  
Well Total Depth 33.1 ft  
Screen Length 10 ft  
Depth to Water 16.98 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.593729 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 0 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:46:00	300.03	25.09	6.20	51.23	0.32	17.64	3.73	73.28
Last 5	13:51:00	600.02	22.89	5.69	52.98	0.07	17.70	3.65	78.08
Last 5	13:56:00	900.02	22.94	5.62	53.19	--	--	3.38	81.52
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-2.20	-0.52	1.75			-0.08	4.80
Variance 2			0.04	-0.06	0.21			-0.27	3.43

Notes

Battery died, ended low flow at 1400 (4L purged).

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-12 14:25:10

Project Information:

Operator Name K. Minkara  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463068  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 24.36 ft

Pump placement from TOC 24.36 ft

Well Information:

Well ID SGWA-5  
Well diameter 2 in  
Well Total Depth 33.1 ft  
Screen Length 10 ft  
Depth to Water 16.98 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.593729 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 9.84 in  
Total Volume Pumped 7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:12:31	300.03	22.08	5.60	52.85	0.31	17.80	3.35	89.16
Last 5	14:17:31	600.03	22.62	5.59	52.88	0.17	17.80	3.36	90.93
Last 5	14:22:31	900.03	22.89	5.59	52.95	0.22	17.80	3.38	91.80
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.54	-0.01	0.03			0.01	1.77
Variance 2			0.27	0.00	0.07			0.02	0.87

Notes

Purged 4L initially before battery died, purged 3L after battery replaced. Sampled SGWA-5 at 1425

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-13 10:23:29

Project Information:

Operator Name J. Quenneville  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 613179  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Sample Pro  
Tubing Type polyethylene  
Tubing Diameter .17 in  
Tubing Length 34.8 ft

Pump placement from TOC 34.8 ft

Well Information:

Well ID SGWA-24  
Well diameter 2 in  
Well Total Depth 42.9 ft  
Screen Length 10 ft  
Depth to Water 16.22 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6403272 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 6.48 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:06:06	300.03	19.80	6.36	145.49	2.87	16.80	2.73	105.46
Last 5	10:11:06	600.01	19.73	6.36	146.33	3.20	16.80	2.40	112.06
Last 5	10:16:06	900.00	19.76	6.37	145.72	3.00	16.79	2.26	117.23
Last 5	10:21:06	1200.00	19.69	6.36	145.80	3.07	16.76	2.21	120.55
Last 5									
Variance 0			-0.07	0.00	0.84			-0.34	6.60
Variance 1			0.03	0.01	-0.61			-0.14	5.17
Variance 2			-0.07	-0.01	0.08			-0.05	3.32

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 13:14:56

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.75 ft

Pump placement from TOC 39.75 ft

Well Information:

Well ID SGWA-25  
Well diameter 2 in  
Well Total Depth 48 ft  
Screen Length 10 ft  
Depth to Water 31.02 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6624211 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 3.36 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:42:52	300.06	19.59	6.16	110.63	5.59	31.35	1.20	62.46
Last 5	12:47:52	600.02	20.30	6.09	110.51	3.78	31.30	1.15	60.37
Last 5	12:52:52	900.02	20.38	6.07	110.33	4.03	31.30	0.65	58.79
Last 5	12:57:52	1200.02	20.41	6.05	110.74	2.16	31.30	0.72	58.26
Last 5	13:02:52	1500.02	20.29	6.05	109.85	1.85	31.30	0.63	58.26
Variance 0			0.08	-0.02	-0.18			-0.51	-1.57
Variance 1			0.03	-0.02	0.41			0.07	-0.53
Variance 2			-0.13	-0.01	-0.89			-0.09	0.00

Notes

Not recording. Restarted

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 13:37:11

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.75 ft

Pump placement from TOC 39.75 ft

Well Information:

Well ID SGWA-25  
Well diameter 2 in  
Well Total Depth 48 ft  
Screen Length 10 ft  
Depth to Water 31.02 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6624211 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 3.36 in  
Total Volume Pumped 8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:23:54	300.06	20.35	6.03	109.48	1.85	31.30	0.81	57.74
Last 5	13:28:54	600.02	20.32	6.03	109.62	2.01	31.30	0.76	57.91
Last 5	13:33:54	900.02	20.17	6.01	109.52	1.93	31.30	0.75	58.81
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.03	-0.00	0.15			-0.05	0.17
Variance 2			-0.15	-0.02	-0.11			-0.01	0.90

Notes: see part 1-purged 5 L

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 15:19:43

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 19.21 ft

Pump placement from TOC 19.21 ft

Well Information:

Well ID SGWC-6  
Well diameter 2 in  
Well Total Depth 27.60 ft  
Screen Length 10 ft  
Depth to Water 16.26 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5707424 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 21.96 in  
Total Volume Pumped 12 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:57:09	2400.01	22.02	6.28	116.73	0.40	18.05	1.21	77.40
Last 5	15:02:09	2700.01	21.85	6.26	117.42	0.42	18.06	1.38	77.24
Last 5	15:07:09	3000.01	21.86	6.26	117.06	0.37	18.07	1.06	77.69
Last 5	15:12:09	3300.01	21.64	6.26	117.05	0.44	18.08	1.08	77.75
Last 5	15:17:09	3600.01	21.78	6.26	117.25	0.36	18.09	1.11	77.42
Variance 0			0.01	-0.00	-0.36			-0.32	0.45
Variance 1			-0.22	-0.00	-0.01			0.02	0.06
Variance 2			0.14	-0.00	0.20			0.03	-0.34

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-09-17 10:29:40

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 29.75 ft

Pump placement from TOC 29.75 ft

Well Information:

Well ID SGWC-7  
Well diameter 2 in  
Well Total Depth 37.70 ft  
Screen Length 10 ft  
Depth to Water 15.04 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6177869 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 3.36 in  
Total Volume Pumped 7.0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:01:33	600.02	19.90	6.43	305.21	0.49	15.31	1.19	78.10
Last 5	10:06:33	900.02	19.95	6.44	295.03	0.53	15.33	0.81	75.35
Last 5	10:16:34	1501.03	20.67	6.43	273.73	0.30	15.32	0.91	74.07
Last 5	10:21:34	1801.02	20.86	6.42	267.87	0.34	15.32	0.72	73.73
Last 5	10:26:34	2101.03	21.14	6.41	263.87	0.38	15.32	0.92	73.73
Variance 0			0.72	-0.01	-21.30			0.10	-1.28
Variance 1			0.20	-0.01	-5.85			-0.19	-0.34
Variance 2			0.28	-0.01	-4.01			0.20	0.00

Notes

20 min reading missing due to smart troll disconnect

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 11:19:04

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 34.2 ft

Pump placement from TOC 34.2 ft

Well Information:

Well ID SGWC-8  
Well diameter 2 in  
Well Total Depth 42.60 ft  
Screen Length 10 ft  
Depth to Water 23.13 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6376491 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.68 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:00:53	300.03	22.00	6.74	606.41	0.58	23.21	3.33	68.32
Last 5	11:05:53	600.02	21.19	6.56	618.88	0.52	23.25	2.77	65.02
Last 5	11:10:53	900.02	20.93	6.52	618.31	0.66	23.26	2.57	64.21
Last 5	11:15:53	1200.02	20.86	6.50	618.25	0.72	23.27	2.56	64.19
Last 5									
Variance 0			-0.80	-0.18	12.47			-0.56	-3.31
Variance 1			-0.26	-0.04	-0.57			-0.20	-0.80
Variance 2			-0.07	-0.02	-0.06			-0.00	-0.03

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 12:03:57

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 29.4 ft

Pump placement from TOC 29.4 ft

Well Information:

Well ID SGWC-9  
Well diameter 2 in  
Well Total Depth 37.80 ft  
Screen Length 10 ft  
Depth to Water 21.60 ft

Pumping Information:

Final Pumping Rate 164 mL/min  
Total System Volume 0.6162246 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 7.8 in  
Total Volume Pumped 6.56 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:39:31	1200.01	19.90	6.13	767.17	0.78	22.45	1.11	83.50
Last 5	11:44:31	1500.01	19.90	6.12	768.03	0.22	22.45	1.03	76.07
Last 5	11:49:31	1800.01	20.84	6.11	762.63	0.28	22.30	0.82	64.82
Last 5	11:54:31	2100.00	21.32	6.11	759.00	0.42	22.28	0.81	58.09
Last 5	11:59:31	2400.00	21.28	6.11	764.43	0.32	22.25	0.83	53.04
Variance 0			0.94	-0.00	-5.40			-0.21	-11.24
Variance 1			0.49	-0.00	-3.63			-0.01	-6.74
Variance 2			-0.04	-0.00	5.43			0.02	-5.05

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 12:24:18

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 24.20 ft

Pump placement from TOC 24.20 ft

Well Information:

Well ID SGWC-10  
Well diameter 2 in  
Well Total Depth 32.60 ft  
Screen Length 10 ft  
Depth to Water 19.22 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5930148 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 11.04 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:01:31	300.03	21.46	5.88	68.34	1.02	20.15	1.61	51.18
Last 5	12:06:31	600.02	22.55	5.50	67.90	0.95	20.13	1.71	58.44
Last 5	12:11:31	900.01	22.71	5.41	70.68	1.99	20.14	1.72	62.84
Last 5	12:16:31	1200.02	22.46	5.36	69.90	2.08	20.14	1.63	67.45
Last 5	12:21:31	1500.01	22.30	5.31	69.05	2.76	20.14	1.58	69.03
Variance 0			0.16	-0.09	2.78			0.01	4.40
Variance 1			-0.25	-0.04	-0.78			-0.09	4.61
Variance 2			-0.17	-0.05	-0.85			-0.05	1.59

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 14:10:41

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 34.3 ft

Pump placement from TOC 34.3 ft

Well Information:

Well ID SGWC-11  
Well diameter 2 in  
Well Total Depth 42.7 ft  
Screen Length 10 ft  
Depth to Water 21.01 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6380954 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 33.36 in  
Total Volume Pumped 11 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:45:17	2100.01	21.95	5.35	63.41	0.53	23.68	0.83	0.97
Last 5	13:50:17	2400.00	21.73	5.34	63.16	0.34	23.71	1.15	0.93
Last 5	13:55:18	2701.00	22.12	5.33	63.42	0.19	23.75	0.68	1.00
Last 5	14:00:18	3001.00	21.93	5.32	62.97	0.25	23.79	0.87	0.89
Last 5	14:05:18	3301.00	21.78	5.32	62.72	0.29	23.79	0.75	1.09
Variance 0			0.39	-0.02	0.26			-0.47	0.08
Variance 1			-0.18	-0.00	-0.45			0.18	-0.12
Variance 2			-0.15	-0.01	-0.25			-0.12	0.20

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 14:32:20

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 34.3 ft

Pump placement from TOC 34.3 ft

Well Information:

Well ID SGWC-11  
Well diameter 2 in  
Well Total Depth 42.70 ft  
Screen Length 10 ft  
Depth to Water 21.01 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6380954 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 34.68 in  
Total Volume Pumped 14 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:17:46	300.03	21.68	5.31	62.47	0.08	23.88	0.70	-0.29
Last 5	14:22:46	600.02	21.64	5.30	62.38	0.22	23.89	0.70	0.72
Last 5	14:27:46	900.02	21.63	5.30	62.60	0.37	23.90	0.73	0.73
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.04	-0.02	-0.09			0.00	1.01
Variance 2			-0.01	-0.00	0.21			0.03	0.00

Notes: see part 1 where 11L was pumped

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-16 16:16:20

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 41.87 ft

Pump placement from TOC 41.87 ft

Well Information:

Well ID SGWC-12  
Well diameter 2 in  
Well Total Depth 50.20 ft  
Screen Length 10 ft  
Depth to Water 16.77 ft

Pumping Information:

Final Pumping Rate 172 mL/min  
Total System Volume 0.6718835 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 35.04 in  
Total Volume Pumped 8.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:50:59	1800.01	23.09	6.21	298.20	1.54	19.40	0.85	-9.83
Last 5	15:55:59	2100.01	23.07	6.20	296.44	1.26	19.49	0.78	-10.02
Last 5	16:00:59	2400.01	23.00	6.19	296.58	1.33	19.51	0.74	-10.32
Last 5	16:05:59	2700.00	22.80	6.18	296.06	1.32	19.55	0.69	-10.25
Last 5	16:10:59	2999.98	22.31	6.18	297.39	0.76	19.69	0.75	-9.76
Variance 0			-0.07	-0.01	0.14			-0.04	-0.31
Variance 1			-0.20	-0.01	-0.51			-0.05	0.08
Variance 2			-0.49	-0.00	1.32			0.06	0.48

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 10:12:33

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 29 ft

Pump placement from TOC 29 ft

Well Information:

Well ID SGWC-13  
Well diameter 2 in  
Well Total Depth 37.5 ft  
Screen Length 10 ft  
Depth to Water 5.46 ft

Pumping Information:

Final Pumping Rate 160 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 12.48 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:47:15	300.06	21.68	5.99	265.04	9.72	6.30	0.80	60.23
Last 5	09:52:15	600.02	21.09	5.96	264.85	4.98	6.49	0.69	54.79
Last 5	09:57:15	900.02	20.97	5.96	265.41	2.92	6.55	0.63	53.07
Last 5	10:02:15	1200.01	20.93	5.96	264.97	2.16	6.54	0.54	50.83
Last 5	10:07:15	1500.01	20.94	5.98	262.27	2.19	6.50	0.52	49.46
Variance 0			-0.13	0.00	0.56			-0.06	-1.71
Variance 1			-0.04	0.00	-0.44			-0.10	-2.24
Variance 2			0.01	0.01	-2.69			-0.01	-1.37

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-09-17 11:26:15

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 30.24 ft

Pump placement from TOC 30.24 ft

Well Information:

Well ID SGWC-14  
Well diameter 2 in  
Well Total Depth 38.5 ft  
Screen Length 10 ft  
Depth to Water 11.48 ft

Pumping Information:

Final Pumping Rate 180 mL/min  
Total System Volume 0.6199739 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.2 in  
Total Volume Pumped 4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:02:23	300.04	19.46	5.91	510.01	3.48	11.56	1.69	44.81
Last 5	11:07:23	600.02	18.52	5.86	487.06	4.51	11.55	1.57	51.01
Last 5	11:12:23	900.02	18.52	5.83	487.15	3.15	11.56	1.03	54.73
Last 5	11:17:23	1200.01	18.52	5.81	487.25	2.95	11.57	1.01	56.03
Last 5	11:22:23	1500.01	18.62	5.78	488.62	2.31	11.58	0.98	56.42
Variance 0			0.00	-0.03	0.09			-0.54	3.71
Variance 1			-0.00	-0.02	0.10			-0.02	1.31
Variance 2			0.10	-0.02	1.37			-0.03	0.38

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 12:45:11

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.65 ft

Pump placement from TOC 39.65 ft

Well Information:

Well ID SGWC-15  
Well diameter 2 in  
Well Total Depth 48.2 ft  
Screen Length 10 ft  
Depth to Water 30.89 ft

Pumping Information:

Final Pumping Rate 172 mL/min  
Total System Volume 0.6619747 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.08 in  
Total Volume Pumped 5.16 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:19:57	600.03	21.87	4.66	520.04	6.34	30.95	1.91	144.04
Last 5	12:24:57	900.02	22.13	4.65	521.23	5.53	30.95	1.62	158.52
Last 5	12:29:57	1200.02	22.26	4.64	520.62	4.29	30.94	1.48	169.40
Last 5	12:34:57	1500.02	22.17	4.64	519.92	3.16	30.95	1.40	183.88
Last 5	12:39:57	1800.01	22.62	4.65	519.60	3.54	30.98	1.38	205.57
Variance 0			0.14	-0.01	-0.61			-0.14	10.89
Variance 1			-0.09	0.00	-0.69			-0.07	14.47
Variance 2			0.45	0.00	-0.32			-0.02	21.70

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 14:18:03

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 34.62 ft

Pump placement from TOC 34.62 ft

Well Information:

Well ID SGWC-16  
Well diameter 2 in  
Well Total Depth 43.3 ft  
Screen Length 10 ft  
Depth to Water 26.66 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6395237 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.68 in  
Total Volume Pumped 8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:53:41	1200.02	21.87	5.27	135.41	7.37	26.80	2.39	75.14
Last 5	13:58:41	1500.01	22.29	5.26	133.54	6.74	26.81	2.31	77.13
Last 5	14:03:41	1800.01	22.02	5.25	133.82	5.59	26.82	2.31	76.18
Last 5	14:08:41	2100.01	22.23	5.27	134.61	6.19	26.80	2.31	75.95
Last 5	14:13:41	2400.01	23.43	5.26	134.60	2.91	26.80	2.30	76.08
Variance 0			-0.27	-0.01	0.28			0.00	-0.95
Variance 1			0.22	0.03	0.79			-0.00	-0.23
Variance 2			1.19	-0.01	-0.01			-0.01	0.13

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 15:48:38

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 19.24 ft

Pump placement from TOC 19.24 ft

Well Information:

Well ID SGWC-17  
Well diameter 2 in  
Well Total Depth 27.6 ft  
Screen Length 10 ft  
Depth to Water 1.05 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5708762 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 10.44 in  
Total Volume Pumped 4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:29:06	300.03	23.07	6.23	548.36	22.20	1.78	0.71	32.92
Last 5	15:34:06	600.03	22.30	6.23	557.76	7.55	1.84	0.36	37.30
Last 5	15:39:06	900.02	22.32	6.23	557.41	7.67	1.91	0.30	39.43
Last 5	15:44:06	1200.05	22.44	6.23	556.77	4.55	1.92	0.29	40.69
Last 5									
Variance 0			-0.77	-0.00	9.40			-0.34	4.37
Variance 1			0.02	0.00	-0.35			-0.06	2.13
Variance 2			0.12	0.00	-0.64			-0.01	1.27

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 17:14:27

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 39.20 ft

Pump placement from TOC 39.20 ft

Well Information:

Well ID SGWC-18  
Well diameter 2 in  
Well Total Depth 47.60 ft  
Screen Length 10 ft  
Depth to Water 36.14 ft

Pumping Information:

Final Pumping Rate 188 mL/min  
Total System Volume 0.6599662 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 4.68 in  
Total Volume Pumped 4.7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:48:52	300.11	25.11	4.84	2170.62	1.75	36.49	3.28	128.11
Last 5	16:53:52	600.02	22.89	4.78	2233.37	1.07	36.50	2.15	129.65
Last 5	16:58:52	900.02	22.57	4.77	2237.55	1.18	36.51	1.87	130.61
Last 5	17:03:52	1200.02	22.35	4.77	2235.52	1.00	36.50	1.79	131.37
Last 5	17:08:52	1500.01	22.27	4.77	2232.77	1.11	36.53	1.81	132.03
Variance 0			-0.32	-0.01	4.18			-0.27	0.95
Variance 1			-0.22	-0.01	-2.03			-0.08	0.77
Variance 2			-0.09	-0.00	-2.75			0.01	0.66

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 14:03:03

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 29.0 ft

Pump placement from TOC 29.0 ft

Well Information:

Well ID SGWC-19  
Well diameter 2 in  
Well Total Depth 37.4 ft  
Screen Length 10 ft  
Depth to Water 17.14 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6144392 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 4.8 in  
Total Volume Pumped 13 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:39:19	2700.02	22.76	5.54	547.87	1.07	17.54	3.06	121.26
Last 5	13:44:19	3000.02	22.90	5.54	576.77	1.11	17.54	3.07	121.75
Last 5	13:49:19	3300.02	25.28	5.54	583.28	1.29	17.54	3.71	121.90
Last 5	13:54:19	3600.02	25.85	5.55	580.03	1.21	17.54	3.77	122.63
Last 5	13:59:19	3900.02	26.60	5.55	580.79	1.17	17.54	3.81	123.39
Variance 0			2.39	0.00	6.51			0.64	0.15
Variance 1			0.56	0.01	-3.25			0.06	0.74
Variance 2			0.76	-0.00	0.76			0.04	0.76

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 16:35:39

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 19.5 ft

Pump placement from TOC 19.5 ft

Well Information:

Well ID SGWC-20  
Well diameter 2 in  
Well Total Depth 27.90 ft  
Screen Length 10 ft  
Depth to Water 15.00 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5720367 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 9.72 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:12:03	300.02	24.61	4.33	584.81	0.69	15.79	0.90	158.02
Last 5	16:17:03	600.02	25.01	4.33	583.47	0.35	15.79	1.92	161.77
Last 5	16:22:03	900.02	24.88	4.33	579.28	0.77	15.79	1.72	165.25
Last 5	16:27:03	1200.02	25.10	4.36	562.68	1.02	15.81	1.62	169.01
Last 5	16:32:03	1500.02	25.10	4.37	559.53	1.16	15.81	1.65	172.03
Variance 0			-0.13	0.01	-4.20			-0.20	3.48
Variance 1			0.22	0.02	-16.60			-0.11	3.77
Variance 2			0.00	0.01	-3.15			0.04	3.02

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-17 15:44:15

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 19.39 ft

Pump placement from TOC 19.39 ft

Well Information:

Well ID SGWC-21  
Well diameter 2 in  
Well Total Depth 27.9 ft  
Screen Length 10 ft  
Depth to Water 2.25 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.5720367 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.32 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:21:16	300.03	23.48	6.28	451.79	2.43	2.33	1.88	141.09
Last 5	15:26:16	600.02	25.24	6.29	460.63	1.29	2.34	2.14	141.28
Last 5	15:31:16	900.02	25.15	6.28	457.97	1.67	2.36	2.08	142.03
Last 5	15:36:16	1200.05	24.87	6.29	458.00	1.89	2.35	2.21	142.56
Last 5	15:41:16	1500.03	24.89	6.27	458.59	1.44	2.36	2.14	142.47
Variance 0			-0.09	-0.00	-2.66			-0.06	0.75
Variance 1			-0.27	0.00	0.03			0.13	0.53
Variance 2			0.01	-0.01	0.59			-0.07	-0.10

Notes

Grab Samples



Product Name: Low-Flow System

Date: 2019-09-18 09:40:22

Project Information:

Operator Name C. Tidwell  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 463453  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED well wizard  
Tubing Type polyethylene  
Tubing Diameter 0.170 in  
Tubing Length 44.20 ft

Pump placement from TOC 44.20 ft

Well Information:

Well ID SGWC-22  
Well diameter 2 in  
Well Total Depth 52.60 ft  
Screen Length 10 ft  
Depth to Water 26.73 ft

Pumping Information:

Final Pumping Rate 200 mL/min  
Total System Volume 0.6822833 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 15.84 in  
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:11:57	300.06	20.44	5.64	353.42	2.46	28.03	1.18	86.84
Last 5	09:16:59	602.02	20.46	5.65	342.54	2.48	28.03	0.81	86.53
Last 5	09:21:59	902.02	20.48	5.66	340.27	2.17	28.04	0.77	86.37
Last 5	09:26:59	1202.02	20.53	5.66	339.80	2.11	28.05	0.96	86.77
Last 5	09:31:59	1502.02	20.71	5.66	339.85	1.98	28.05	0.75	87.26
Variance 0			0.02	0.01	-2.27			-0.03	-0.15
Variance 1			0.05	0.01	-0.47			0.19	0.39
Variance 2			0.18	-0.00	0.05			-0.21	0.49

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2019-09-18 09:27:17

Project Information:

Operator Name A. McClure  
Company Name Golder  
Project Name 166235018  
Site Name Plant Scherer  
Latitude 0° 0' 0"  
Longitude 0° 0' 0"  
Sonde SN 642531  
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED Well Wizard  
Tubing Type polyethylene  
Tubing Diameter .170 in  
Tubing Length 44.25 ft

Pump placement from TOC 44.25 ft

Well Information:

Well ID SGWC-23  
Well diameter 2 in  
Well Total Depth 52.60 ft  
Screen Length 10 ft  
Depth to Water 30.08 ft

Pumping Information:

Final Pumping Rate 168 mL/min  
Total System Volume 0.6825064 L  
Calculated Sample Rate 300 sec  
Stabilization Drawdown 1.44 in  
Total Volume Pumped 3.36 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond $\mu$ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:08:23	300.07	21.86	6.06	327.12	0.86	30.19	1.47	39.83
Last 5	09:13:23	600.02	21.28	5.99	327.82	0.81	30.20	1.37	52.17
Last 5	09:18:23	900.02	21.41	5.97	328.53	0.62	30.20	1.32	53.78
Last 5	09:23:23	1200.01	21.58	5.97	333.50	0.49	30.20	1.33	53.90
Last 5									
Variance 0			-0.58	-0.07	0.69			-0.10	12.35
Variance 1			0.13	-0.01	0.71			-0.05	1.61
Variance 2			0.16	-0.01	4.97			0.01	0.12

Notes

Grab Samples

**APPENDIX A**

# DATA VALIDATION SUMMARIES

February - April 2019

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## Quality Control Review of Analytical Data- Ash Pond AP-1 Submitted by Eurofins TestAmerica January-April 2019

This narrative presents results of the Quality Control (QC) data review performed on analytical data submitted by Eurofins TestAmerica, Inc. for groundwater samples collected at Plant Scherer CCR Ash Pond AP-1 between February 18, 2019 and April 2, 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 (USEPA Method 300.0), Solids in Water (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 Inorganic Data by Inductively Coupled Plasma – Atomic Emission Spectroscopy and Inductively Coupled Plasma – Mass Spectroscopy (September 2011, Rev. 2.0) and the National Functional Guidelines for Inorganic Superfund Methods Data Review (January 2017). In addition, Southern Company Services, Inc. provided data validation guidance. 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 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

<b>Laboratory Precision:</b>	Laboratory goals for precision were met with the exception of boron in SDG 180-88347-1 as described in the qualifications sections below.
<b>Field Precision:</b>	Field goals for precision were met with the exception of FD-2 (AP) in SDG 180-88347-1 as described in the qualifications sections below.
<b>Accuracy:</b>	Laboratory goals for accuracy were met, with the exception of boron as described in the qualifications sections below.
<b>Detection Limits:</b>	Project goals for detection limits were met. Certain samples were diluted due to the concentration of the 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.
<b>Completeness:</b>	There were no rejected analytical results for this event, resulting in a completion of 100%.

**Holding Times:** All holding time requirements were met with the exception of total dissolved solids (TDS) in SDG 180-88347-1.

## 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.
- U** The analyte was not detected above the method detection limit.
- UJ** The analyte was not detected above the method detection limit; the associated method detection limit is approximate and may be inaccurate.

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 the samples collected at the site, the qualifications may not have been required or applied to all samples collected. A summary of sample qualifications can be found in Table 2.

- Certain TDS results in SDG 180-88347-1 were qualified as estimated (J) since they were analyzed outside of hold time.
- Certain boron results in SDG 180-88347-1 were qualified as estimated biased low (J-) as the associated MS and/or MSD recoveries were below the QC criteria and above 10%. The RPD for boron in the associated MS/MSD also exceeded laboratory goals for precision.
- The non-detect boron result for SGWC-6 in SDG 180-88347-1 was qualified as estimated (UJ) as the associated MS and/or MSD recovered below the QC criteria and above 10%. The RPD for boron in the associated MS/MSD also exceeded laboratory goals for precision.
- Certain TDS results in SDG 180-88347-1 were qualified as non-detect (UJ) as the parent sample and field duplicate exceeded field goal precision criteria.
- Certain barium, lithium, selenium, and sulfate results in SDGs 180-86907-1, 180-86954-1, and 180-88347-1 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, when the original sample result was below the RL, the method detection limit was raised to the sample result as part of the qualification process. When the original sample result was above the RL, both the MDL and the RL were raised to the sample result as part of the qualification process.
- Certain radium-228 and total radium results in SDGs 180-86954-2 were qualified as non-detect (U) when radium-228 was detected at a similar concentration in an associated blank sample. As shown in Table 2, the minimum detectable concentration (MDC) was raised to the sample result as part of the qualification process.

Golder reviewed the data from samples collected at Plant Scherer CCR Ash Pond AP-1 between February 18, 2019 and April 2, 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

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, January 2017, National, Office of Superfund Remediation and Technology Innovation, *National Functional Guidelines for Inorganic Superfund Methods Data Review*, Revision 0.0.

**TABLE 1**  
**Sample Summary Table**  
**Plant Scherer Ash Pond AP-1**

SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses			
						TAL Metals +Hg (6020, 7470A)	Anions (300.0)	TDS (SM 2540C)	Radium 226, Radium 228 (9315, 9320)
180-86907-1/2	SGWA-1	2/18/2019	180-86907-1	GW	-	X	X	X	X
180-86907-1/2	SGWA-2	2/18/2019	180-86907-2	GW	-	X	X	X	X
180-86907-1/2	SGWA-4	2/18/2019	180-86907-3	GW	-	X	X	X	X
180-86907-1/2	FB-1	2/18/2019	180-86907-4	GW	FB	X	X	X	X
180-86907-1/2	SGWA-3	2/19/2019	180-86907-5	GW	-	X	X	X	X
180-86907-1/2	SGWA-5	2/19/2019	180-86907-6	GW	-	X	X	X	X
180-86907-1/2	SGWA-24	2/19/2019	180-86907-7	GW	-	X	X	X	X
180-86907-1/2	SGWA-25	2/19/2019	180-86907-8	GW	-	X	X	X	X
180-86907-1/2	SGWC-22	2/19/2019	180-86907-9	GW	-	X	X	X	X
180-86907-1/2	SGWC-23	2/19/2019	180-86907-10	GW	-	X	X	X	X
180-86907-1/2	EB-1	2/19/2019	180-86907-11	GW	EB	X	X	X	X
180-86907-1/2	DUP-1	2/19/2019	180-86907-12	GW	FD (SGWC-22)	X	X	X	X
180-86954-1/2	SGWC-6	2/20/2019	180-86954-1	GW	-	X	X	X	X
180-86954-1/2	SGWC-7	2/20/2019	180-86954-2	GW	-	X	X	X	X
180-86954-1/2	SGWC-8	2/20/2019	180-86954-3	GW	-	X	X	X	X
180-86954-1/2	SGWC-9	2/20/2019	180-86954-4	GW	-	X	X	X	X
180-86954-1/2	SGWC-10	2/20/2019	180-86954-5	GW	-	X	X	X	X
180-86954-1/2	SGWC-11	2/20/2019	180-86954-6	GW	-	X	X	X	X
180-86954-1/2	SGWC-12	2/20/2019	180-86954-7	GW	-	X	X	X	X
180-86954-1/2	SGWC-13	2/20/2019	180-86954-8	GW	-	X	X	X	X
180-86954-1/2	SGWC-14	2/20/2019	180-86954-9	GW	-	X	X	X	X
180-86954-1/2	FB-2	2/20/2019	180-86954-10	WQ	FB	X	X	X	X
180-86954-1/2	EB-2	2/20/2019	180-86954-11	WQ	EB	X	X	X	X
180-86954-1/2	DUP-2	2/20/2019	180-86954-12	GW	FD (SGWC-8)	X	X	X	X
180-86954-1/2	SGWC-15	2/20/2019	180-86954-13	GW	-	X	X	X	X
180-86954-1/2	SGWC-16	2/20/2019	180-86954-14	GW	-	X	X	X	X
180-86954-1/2	SGWC-17	2/20/2019	180-86954-15	GW	-	X	X	X	X
180-86954-1/2	SGWC-18	2/20/2019	180-86954-16	GW	-	X	X	X	X
180-86954-1/2	SGWC-19	2/20/2019	180-86954-17	GW	-	X	X	X	X
180-86954-1/2	SGWC-20	2/20/2019	180-86954-18	GW	-	X	X	X	X
180-86954-1/2	SGWC-21	2/20/2019	180-86954-19	GW	-	X	X	X	X
180-86954-1/2	FB-3	2/20/2019	180-86954-20	WQ	FB	X	X	X	X
180-86954-1/2	EB-3	2/20/2019	180-86954-21	WQ	EB	X	X	X	X
180-86954-1/2	DUP-3	2/20/2019	180-86954-22	GW	FD (SGWC-19)	X	X	X	X
180-88347-1/2	SGWA-4	3/28/2019	180-88347-1	GW	-	X	X	X	X
180-88347-1/2	SGWA-5	3/28/2019	180-88347-2	GW	-	X	X	X	X
180-88347-1/2	SGWA-25	3/28/2019	180-88347-3	GW	-	X	X	X	X
180-88347-1/2	SGWA-3	3/28/2019	180-88347-4	GW	-	X	X	X	X
180-88347-1/2	FD-1 (AP)	3/28/2019	180-88347-5	GW	FD (SGWA-4)	X	X	X	X
180-88347-1/2	FB-1 (AP)	3/28/2019	180-88347-6	WQ	FB	X	X	X	X
180-88347-1/2	EB-1 (AP)	3/28/2019	180-88347-7	WQ	EB	X	X	X	X
180-88347-1/2	SGWA-1	3/29/2019	180-88347-8	GW	-	X	X	X	X
180-88347-1/2	SGWA-2	3/29/2019	180-88347-9	GW	-	X	X	X	X
180-88347-1/2	SGWA-24	3/29/2019	180-88347-10	GW	-	X	X	X	X
180-88347-1/2	SGWC-7	4/1/2019	180-88428-1	GW	-	X	X	X	X
180-88347-1/2	SGWC-8	4/1/2019	180-88428-2	GW	-	X	X	X	X
180-88347-1/2	SGWC-9	4/1/2019	180-88428-3	GW	-	X	X	X	X
180-88347-1/2	SGWC-10	4/1/2019	180-88428-4	GW	-	X	X	X	X
180-88347-1/2	SGWC-11	4/1/2019	180-88428-5	GW	-	X	X	X	X
180-88347-1/2	SGWC-12	4/1/2019	180-88428-6	GW	-	X	X	X	X
180-88347-1/2	SGWC-13	4/1/2019	180-88428-7	GW	-	X	X	X	X
180-88347-1/2	SGWC-14	4/1/2019	180-88428-8	GW	-	X	X	X	X

**Abbreviations:**

- EB - Equipment blank
- FB - Field blank
- FD - Field duplicate
- GW - Groundwater
- TAL - Target analyte list
- TDS - Total dissolved solids
- WQ - Water quality control
- QC - Quality control
- SDG- Sample delivery group
- Hg - Mercury



**TABLE 1**  
**Sample Summary Table**  
**Plant Scherer Ash Pond AP-1**

SDG	Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses			
						TAL Metals +Hg (6020, 7470A)	Anions (300.0)	TDS (SM 2540C)	Radium 226, Radium 228 (9315, 9320)
180-88347-1/2	SGWC-15	4/1/2019	180-88428-9	GW	-	X	X	X	X
180-88347-1/2	EB-2 (AP)	4/1/2019	180-88428-10	WQ	EB	X	X	X	X
180-88347-1/2	FB-2 (AP)	4/1/2019	180-88428-11	WQ	FB	X	X	X	X
180-88347-1/2	FD-2 (AP)	4/1/2019	180-88428-12	GW	FD (SGWC-11)	X	X	X	X
180-88347-1/2	SGWC-6	4/2/2019	180-88533-1	GW	-	X	X	X	X
180-88347-1/2	SGWC-16	4/2/2019	180-88533-2	GW	-	X	X	X	X
180-88347-1/2	SGWC-17	4/2/2019	180-88533-3	GW	-	X	X	X	X
180-88347-1/2	SGWC-18	4/2/2019	180-88533-4	GW	-	X	X	X	X
180-88347-1/2	SGWC-19	4/2/2019	180-88533-5	GW	-	X	X	X	X
180-88347-1/2	SGWC-20	4/2/2019	180-88533-6	GW	-	X	X	X	X
180-88347-1/2	SGWC-21	4/2/2019	180-88533-7	GW	-	X	X	X	X
180-88347-1/2	SGWC-22	4/2/2019	180-88533-8	GW	-	X	X	X	X
180-88347-1/2	SGWC-23	4/2/2019	180-88533-9	GW	-	X	X	X	X
180-88347-1/2	FB-3 (AP)	4/2/2019	180-88533-10	WQ	FB	X	X	X	X
180-88347-1/2	EB-3 (AP)	4/2/2019	180-88533-11	WQ	EB	X	X	X	X
180-88347-1/2	FD-3 (AP)	4/2/2019	180-88533-12	GW	FD (SGWC-18)	X	X	X	X

**Abbreviations:**

EB - Equipment blank	QC - Quality control
FB - Field blank	SDG- Sample delivery group
FD - Field duplicate	Hg - Mercury
GW - Groundwater	
TAL - Target analyte list	
TDS - Total dissolved solids	
WQ - Water quality control	

**TABLE 2**  
**Qualifier Summary Table**  
**Plant Scherer Ash Pond AP-1**

SDG	Sample Name	Constituent	New RL	New MDL or MDC	Qualifier	Reason
180-86907-1	SGWA-2	Selenium	-	0.00017	U	Blank detection
180-86907-1	SGWA-3	Selenium	-	0.00012	U	Blank detection
180-86907-1	SGWC-23	Selenium	-	0.00021	U	Blank detection
180-86954-1	SGWC-17	Barium	0.023	0.023	U	Blank detection
180-86954-2	SGWC-7	Radium-228	-	0.367	U	Blank detection
180-86954-2	SGWC-7	Total Radium	-	0.433	U	Blank detection
180-86954-2	SGWC-9	Radium-228	-	0.385	U	Blank detection
180-86954-2	SGWC-9	Total Radium	-	0.425	U	Blank detection
180-86954-2	SGWC-11	Radium-228	-	0.632	U	Blank detection
180-86954-2	SGWC-11	Total Radium	-	0.708	U	Blank detection
180-86954-2	SGWC-15	Radium-228	-	0.552	U	Blank detection
180-86954-2	SGWC-15	Total Radium	-	0.573	U	Blank detection
180-86954-2	SGWC-20	Radium-228	-	0.341	U	Blank detection
180-86954-2	SGWC-20	Total Radium	-	0.353	U	Blank detection
180-88347-1	SGWC-6	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-16	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-17	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-18	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-19	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-20	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-21	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-22	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-23	TDS	-	-	J	Analyzed outside hold time
180-88347-1	FD-3 (AP)	TDS	-	-	J	Analyzed outside hold time
180-88347-1	SGWC-6	Sulfate	1.3	1.3	U	Blank detection
180-88347-1	SGWC-18	Lithium	-	0.0041	U	Blank detection
180-88347-1	SGWC-19	Lithium	-	0.0021	U	Blank detection
180-88347-1	SGWC-20	Lithium	-	0.0046	U	Blank detection
180-88347-1	SGWC-21	Lithium	-	0.0027	U	Blank detection
180-88347-1	SGWC-22	Lithium	-	0.0026	U	Blank detection
180-88347-1	SGWC-23	Lithium	-	0.0041	U	Blank detection
180-88347-1	FD-3 (AP)	Lithium	-	0.0046	U	Blank detection
180-88347-1	SGWC-6	Boron	-	-	UJ	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-16	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-17	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-18	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-19	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-20	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-21	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-22	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-23	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	FD-3 (AP)	Boron	-	-	J-	MS and/or MSD recovery below QC criteria and RPD outside acceptable range
180-88347-1	SGWC-11	TDS	-	-	J	Sample exceeds RPD field goals for precision
180-88347-1	FD-2 (AP)	TDS	-	-	UJ	Sample exceeds RPD field goals for precision

**Abbreviations:**

MDC: Minimum detectable concentration  
 MS/MSD: Matrix spike / matrix spike duplicate  
 MDL: Method detection limit  
 RL : Reporting limit  
 SDG : Sample delivery group  
 RPD: Relative percent difference

**Qualifiers:**

J+ : Estimated result, biased high  
 J-: Estimated result, biased low  
 J: Estimated result  
 U : Non-detect result  
 UJ : Non-detect result, estimated

**APPENDIX A**

# DATA VALIDATION SUMMARIES

September 2019

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## Quality Control Review of Analytical Data- Ash Pond AP-1 Submitted by Eurofins TestAmerica September 2019

This narrative presents results of the Quality Control (QC) data review performed on analytical data submitted by Eurofins TestAmerica, Inc. for groundwater samples collected at Plant Scherer CCR Ash Pond AP-1 between September 12, 2019 and September 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 6020), 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 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 with the exception of Radium-228 as described in the qualification's sections below.
- Field Precision:** Field goals for precision were met with the exception of Boron in FD-1(AP) and SGWA-1 as described in the qualification's sections below.
- Accuracy:** Laboratory goals for accuracy were met, with the exception of Radium-228 as described in the qualification's sections 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 sample delivery group (SDG) 18095735-1, qualifications may not have been required or applied to all samples collected. A summary of sample qualifications can be found in Table 2.

- The radium-228 result in sample SGWA-25 was qualified as estimated biased low (J-) as the associated Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LCSD) recovery was below the QC criteria and below 10%. The Replicate Error Ratio (RER) for Radium-228 in the associated LCS/LCSD also exceeded laboratory goals for precision.
- Boron results in parent/duplicate samples, SWGA-1/FD-1(AP), were qualified as estimated values (J) as the parent sample and field duplicate exceeded field goal precision criteria.
- Certain chromium, boron, lead, and mercury 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, when the original sample result was below the reporting limit (RL), the result was raised to the RL as part of the qualification process. When the original sample result was above the RL, both the MDL and the RL were raised to the sample result as part of the qualification process.
- Certain radium-228 and total radium results were qualified as non-detect (U) when radium-228 was detected at a similar concentration in an associated blank sample. As shown in Table 2, the minimum detectable concentration (MDC) was raised to the sample result as part of the qualification process.

Golder reviewed the data from samples collected at Plant Scherer CCR Ash Pond AP-1 between September 12, 2019 and September 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**  
**Plant Scherer Ash Pond AP-1**

Field Identification	Collection Date	Lab Identification	Matrix	QC Samples	Analyses			
					Total Metals +Hg (6020, 7470A)	Anions (300.0)	TDS (SM 2540C)	Radium 226, Radium 228 (9315, 9320)
EB-1(AP)	9/12/2019	EB-1(AP)091219	WQ	EB	X	X	X	X
EB-2(AP)	9/16/2019	EB-2(AP)091619	WQ	EB	X	X	X	X
EB-3(AP)	9/18/2019	EB-3(AP)091819	WQ	EB	X	X	X	X
FB-1(AP)	9/13/2019	FB-1(AP)091319	WQ	FB	X	X	X	X
FB-2(AP)	9/16/2019	FB-2(AP)091619	WQ	FB	X	X	X	X
FB-3(AP)	9/17/2019	FB-3(AP)091719	WQ	FB	X	X	X	X
FD-1(AP)	9/16/2019	FD-1(AP)091619	GW	SGWA-1	X	X	X	X
FD-2(AP)	9/17/2019	FD-2(AP)091719	GW	SGWC-7	X	X	X	X
FD-3(AP)	9/17/2019	FD-3(AP)091719	GW	SGWC-17	X	X	X	X
SGWA-1	9/16/2019	SGWA-1091619	GW	-	X	X	X	X
SGWA-2	9/16/2019	SGWA-2091619	GW	-	X	X	X	X
SGWA-24	9/13/2019	SGWA-24091319	GW	-	X	X	X	X
SGWA-25	9/16/2019	SGWA-25091619	GW	-	X	X	X	X
SGWA-3	9/16/2019	SGWA-3091619	GW	-	X	X	X	X
SGWA-4	9/16/2019	SGWA-4091619	GW	-	X	X	X	X
SGWA-5	9/12/2019	SGWA-5091219	GW	-	X	X	X	X
SGWC-10	9/17/2019	SGWC-10091719	GW	-	X	X	X	X
SGWC-11	9/16/2019	SGWC-11091619	GW	-	X	X	X	X
SGWC-12	9/16/2019	SGWC-12091619	GW	-	X	X	X	X
SGWC-13	9/17/2019	SGWC-13091719	GW	-	X	X	X	X
SGWC-14	9/17/2019	SGWC-14091719	GW	-	X	X	X	X
SGWC-15	9/17/2019	SGWC-15091719	GW	-	X	X	X	X
SGWC-16	9/17/2019	SGWC-16091719	GW	-	X	X	X	X
SGWC-17	9/17/2019	SGWC-17091719	GW	-	X	X	X	X
SGWC-18	9/17/2019	SGWC-18091719	GW	-	X	X	X	X
SGWC19	9/17/2019	SGWC19091719	GW	-	X	X	X	X
SGWC-20	9/17/2019	SGWC-20091719	GW	-	X	X	X	X
SGWC-21	9/17/2019	SGWC-21091719	GW	-	X	X	X	X
SGWC-22	9/18/2019	SGWC-22091819	GW	-	X	X	X	X
SGWC-23	9/18/2019	SGWC-23091819	GW	-	X	X	X	X
SGWC-6	9/16/2019	SGWC-6091619	GW	-	X	X	X	X
SGWC-7	9/17/2019	SGWC-7091719	GW	-	X	X	X	X
SGWC-8	9/17/2019	SGWC-8091719	GW	-	X	X	X	X
SGWC-9	9/16/2019	SGWC-9091619	GW	-	X	X	X	X

**Abbreviations:**

EB - Equipment blank  
 FB - Field blank  
 FD - Field duplicate  
 GW - Groundwater  
 TDS - Total dissolved solids  
 WQ - Water quality control  
 Hg - Mercury

**TABLE 2**  
**Qualifier Summary Table**  
**Plant Scherer Ash Pond AP-1**

<b>SDG</b>	<b>Sample Name</b>	<b>Constituent</b>	<b>New Result</b>	<b>New RL or MDC</b>	<b>Qualifier</b>	<b>Reason</b>
18095735-1	SGWC-22	Chromium	0.0025	-	U	Blank contamination
18095735-1	SGWC-23	Chromium	0.0025	-	U	Blank contamination
18095735-1	SGWA-24	Lead	0.001	-	U	Field blank contamination
18095735-1	SGWA-3	Lead	0.001	-	U	Field blank contamination
18095735-1	FD-1(AP)	Mercury	0.001	-	U	Field blank contamination
18095735-1	SGWA-3	Mercury	-	0.0005	U	Field blank contamination
18095735-1	SGWA-4	Mercury	-	0.00027	U	Field blank contamination
18095735-1	SGWC-10	Boron	-	0.077	U	Field blank contamination
18095735-1	SGWC-13	Boron	-	0.43	U	Field blank contamination
18095735-1	SGWC-16	Boron	-	0.55	U	Field blank contamination
18095735-1	SGWC-17	Boron	-	0.43	U	Field blank contamination
18095735-1	SGWC-8	Boron	-	0.11	U	Field blank contamination
18095735-1	FD-2(AP)	Boron	-	0.098	U	Field blank contamination
18095735-1	FD-3(AP)	Boron	-	0.42	U	Field blank contamination
18095735-1	SGWC-10	Lead	0.001	-	U	Field blank contamination
18095735-1	SGWC-14	Lead	0.001	-	U	Field blank contamination
18095735-1	SGWC-20	Lead	0.001	-	U	Field blank contamination
18095735-1	SGWC-16	Radium-228	-	0.551	U	Field blank contamination
18095735-1	SGWC-18	Radium-228	-	0.418	U	Field blank contamination
18095735-1	SGWC-20	Radium-228	-	0.606	U	Field blank contamination
18095735-1	SGWC-8	Radium-228	-	1.7	U	Field blank contamination
18095735-1	SGWC-16	Total Radium	-	0.558	U	Field blank contamination
18095735-1	SGWC-18	Total Radium	-	0.449	U	Field blank contamination
18095735-1	SGWC-20	Total Radium	-	0.591	U	Field blank contamination
18095735-1	SGWC-8	Total Radium	-	-	J+	Field blank contamination
18095735-1	SGWA-25	Radium-228	-	-	J-	LCSD recovered below 10%. LCS/LCSD also exceeded RER criteria for Radium-228
18095735-1	SGWA-1	Boron	-	-	J	Parent sample and field duplicated exceeded RPD criteria
18095735-1	FD-1(AP)	Boron	-	-	J	Parent sample and field duplicated exceeded RPD criteria

**Abbreviations:**

MDC : Minimum detectable concentration  
 RL : Reporting limit  
 SDG : Sample delivery group  
 TDS : Total dissolved solids  
 FD : Field duplicate  
 RPD: Relative percent difference  
 LCSD: Laboratory control sample duplicate  
 RER: Replicate Error Ratio

**Qualifiers:**

U : Non-detect result  
 J : Estimated value  
 J- : Estimated value, bias low  
 J+ : Estimated value, bias high



**APPENDIX B**

# STATISTICAL ANALYSES

**APPENDIX B**

# STATISTICAL ANALYSES

March/April 2019

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:41 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	SGWC-10	0.0109	n/a	4/1/2019	0.16	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-11	0.0109	n/a	4/1/2019	0.46	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-13	0.0109	n/a	4/1/2019	0.57	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-14	0.0109	n/a	4/1/2019	1.7	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-15	0.0109	n/a	4/1/2019	1.6	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-16	0.0109	n/a	4/2/2019	0.53	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-17	0.0109	n/a	4/2/2019	0.32	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-18	0.0109	n/a	4/2/2019	5.3	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-19	0.0109	n/a	4/2/2019	2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-20	0.0109	n/a	4/2/2019	2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-21	0.0109	n/a	4/2/2019	1.2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-22	0.0109	n/a	4/2/2019	0.44	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-23	0.0109	n/a	4/2/2019	0.52	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-8	0.0109	n/a	4/1/2019	0.076	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-9	0.0109	n/a	4/1/2019	1.7	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SGWC-12	19	n/a	4/1/2019	20	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-14	19	n/a	4/1/2019	39	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-17	19	n/a	4/2/2019	46	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-18	19	n/a	4/2/2019	89	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-19	19	n/a	4/2/2019	38	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-21	19	n/a	4/2/2019	27	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-22	19	n/a	4/2/2019	26	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-23	19	n/a	4/2/2019	23	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-8	19	n/a	4/1/2019	45	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-9	19	n/a	4/1/2019	50	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	SGWC-10	3.152	n/a	4/1/2019	7.8	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-11	3.152	n/a	4/1/2019	7.4	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-12	3.152	n/a	4/1/2019	9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-13	3.152	n/a	4/1/2019	7.7	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-14	3.152	n/a	4/1/2019	9.9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-15	3.152	n/a	4/1/2019	9.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-16	3.152	n/a	4/2/2019	8.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-17	3.152	n/a	4/2/2019	8.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-18	3.152	n/a	4/2/2019	15	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-19	3.152	n/a	4/2/2019	7.3	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-20	3.152	n/a	4/2/2019	11	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-21	3.152	n/a	4/2/2019	9.3	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-22	3.152	n/a	4/2/2019	10	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-23	3.152	n/a	4/2/2019	8.9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-7	3.152	n/a	4/1/2019	4.6	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-8	3.152	n/a	4/1/2019	10	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-9	3.152	n/a	4/1/2019	13	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Fluoride (mg/L)	SGWC-8	0.108	n/a	4/1/2019	0.21	Yes	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
pH (S.U.)	SGWC-15	6.87	5.21	4/1/2019	4.72	Yes	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-18	6.87	5.21	4/2/2019	4.72	Yes	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-20	6.87	5.21	4/2/2019	4.33	Yes	82	0	n/a	0.000...	NP Inter (normality) ...
Sulfate (mg/L)	SGWC-10	3.75	n/a	4/1/2019	21	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-12	3.75	n/a	4/1/2019	48	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-13	3.75	n/a	4/1/2019	82	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-14	3.75	n/a	4/1/2019	180	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:41 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Sulfate (mg/L)	SGWC-15	3.75	n/a	4/1/2019	190	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-16	3.75	n/a	4/2/2019	31	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-17	3.75	n/a	4/2/2019	180	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-18	3.75	n/a	4/2/2019	1100	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-19	3.75	n/a	4/2/2019	240	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-20	3.75	n/a	4/2/2019	220	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-21	3.75	n/a	4/2/2019	92	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-22	3.75	n/a	4/2/2019	100	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-23	3.75	n/a	4/2/2019	95	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-7	3.75	n/a	4/1/2019	16	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-8	3.75	n/a	4/1/2019	67	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-9	3.75	n/a	4/1/2019	310	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Total Dissolved Solids (mg/L)	SGWC-12	130	n/a	4/1/2019	200	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-13	130	n/a	4/1/2019	190	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-14	130	n/a	4/1/2019	330	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-15	130	n/a	4/1/2019	330	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-17	130	n/a	4/2/2019	400	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-18	130	n/a	4/2/2019	1700	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-19	130	n/a	4/2/2019	420	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-20	130	n/a	4/2/2019	370	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-21	130	n/a	4/2/2019	300	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-22	130	n/a	4/2/2019	240	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-23	130	n/a	4/2/2019	250	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-7	130	n/a	4/1/2019	200	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-8	130	n/a	4/1/2019	370	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-9	130	n/a	4/1/2019	580	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:41 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	SGWC-10	0.0109	n/a	4/1/2019	0.16	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-11	0.0109	n/a	4/1/2019	0.46	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-12	0.0109	n/a	4/1/2019	0.0105ND	No	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-13	0.0109	n/a	4/1/2019	0.57	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-14	0.0109	n/a	4/1/2019	1.7	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-15	0.0109	n/a	4/1/2019	1.6	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-16	0.0109	n/a	4/2/2019	0.53	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-17	0.0109	n/a	4/2/2019	0.32	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-18	0.0109	n/a	4/2/2019	5.3	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-19	0.0109	n/a	4/2/2019	2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-20	0.0109	n/a	4/2/2019	2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-21	0.0109	n/a	4/2/2019	1.2	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-22	0.0109	n/a	4/2/2019	0.44	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-23	0.0109	n/a	4/2/2019	0.52	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-6	0.0109	n/a	4/2/2019	0.0105ND	No	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-7	0.0109	n/a	4/1/2019	0.025	No	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-8	0.0109	n/a	4/1/2019	0.076	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-9	0.0109	n/a	4/1/2019	1.7	Yes	84	96.43	n/a	0.00027	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SGWC-10	19	n/a	4/1/2019	4.2	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-11	19	n/a	4/1/2019	1.7	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-12	19	n/a	4/1/2019	20	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-13	19	n/a	4/1/2019	17	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-14	19	n/a	4/1/2019	39	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-15	19	n/a	4/1/2019	16	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-16	19	n/a	4/2/2019	0.92	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-17	19	n/a	4/2/2019	46	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-18	19	n/a	4/2/2019	89	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-19	19	n/a	4/2/2019	38	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-20	19	n/a	4/2/2019	14	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-21	19	n/a	4/2/2019	27	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-22	19	n/a	4/2/2019	26	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-23	19	n/a	4/2/2019	23	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-6	19	n/a	4/2/2019	6.7	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-7	19	n/a	4/1/2019	18	No	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-8	19	n/a	4/1/2019	45	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-9	19	n/a	4/1/2019	50	Yes	81	0	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	SGWC-10	3.152	n/a	4/1/2019	7.8	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-11	3.152	n/a	4/1/2019	7.4	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-12	3.152	n/a	4/1/2019	9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-13	3.152	n/a	4/1/2019	7.7	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-14	3.152	n/a	4/1/2019	9.9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-15	3.152	n/a	4/1/2019	9.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-16	3.152	n/a	4/2/2019	8.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-17	3.152	n/a	4/2/2019	8.2	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-18	3.152	n/a	4/2/2019	15	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-19	3.152	n/a	4/2/2019	7.3	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-20	3.152	n/a	4/2/2019	11	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-21	3.152	n/a	4/2/2019	9.3	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-22	3.152	n/a	4/2/2019	10	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-23	3.152	n/a	4/2/2019	8.9	Yes	82	0	ln(x)	0.000418	Param Inter 1 of 2

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:41 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Chloride (mg/L)	SGWC-6	3.152	n/a	4/2/2019	2	No	82	0	ln(x)	0.000418	Param Inter 1 of 2
<b>Chloride (mg/L)</b>	<b>SGWC-7</b>	<b>3.152</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>4.6</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-8</b>	<b>3.152</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>10</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-9</b>	<b>3.152</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>13</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
Fluoride (mg/L)	SGWC-10	0.108	n/a	4/1/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-11	0.108	n/a	4/1/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-12	0.108	n/a	4/1/2019	0.048	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-13	0.108	n/a	4/1/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-14	0.108	n/a	4/1/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-15	0.108	n/a	4/1/2019	0.072	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-16	0.108	n/a	4/2/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-17	0.108	n/a	4/2/2019	0.045	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-18	0.108	n/a	4/2/2019	0.05	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-19	0.108	n/a	4/2/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-20	0.108	n/a	4/2/2019	0.15	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-21	0.108	n/a	4/2/2019	0.066	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-22	0.108	n/a	4/2/2019	0.013ND	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-23	0.108	n/a	4/2/2019	0.036	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-6	0.108	n/a	4/2/2019	0.1	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-7	0.108	n/a	4/1/2019	0.12	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Fluoride (mg/L)</b>	<b>SGWC-8</b>	<b>0.108</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>0.21</b>	<b>Yes</b>	<b>98</b>	<b>77.55</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
Fluoride (mg/L)	SGWC-9	0.108	n/a	4/1/2019	0.041	No	98	77.55	n/a	0.000...	NP Inter (NDs) 1 of 2
pH (S.U.)	SGWC-10	6.87	5.21	4/1/2019	5.46	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-11	6.87	5.21	4/1/2019	5.24	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-12	6.87	5.21	4/1/2019	6.14	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-13	6.87	5.21	4/1/2019	6.06	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-14	6.87	5.21	4/1/2019	5.89	No	82	0	n/a	0.000...	NP Inter (normality) ...
<b>pH (S.U.)</b>	<b>SGWC-15</b>	<b>6.87</b>	<b>5.21</b>	<b>4/1/2019</b>	<b>4.72</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
pH (S.U.)	SGWC-16	6.87	5.21	4/2/2019	5.27	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-17	6.87	5.21	4/2/2019	6.26	No	82	0	n/a	0.000...	NP Inter (normality) ...
<b>pH (S.U.)</b>	<b>SGWC-18</b>	<b>6.87</b>	<b>5.21</b>	<b>4/2/2019</b>	<b>4.72</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
pH (S.U.)	SGWC-19	6.87	5.21	4/2/2019	5.5	No	82	0	n/a	0.000...	NP Inter (normality) ...
<b>pH (S.U.)</b>	<b>SGWC-20</b>	<b>6.87</b>	<b>5.21</b>	<b>4/2/2019</b>	<b>4.33</b>	<b>Yes</b>	<b>82</b>	<b>0</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
pH (S.U.)	SGWC-21	6.87	5.21	4/2/2019	6.09	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-22	6.87	5.21	4/2/2019	5.65	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-23	6.87	5.21	4/2/2019	5.87	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-6	6.87	5.21	4/2/2019	6.25	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-7	6.87	5.21	4/1/2019	6.57	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-8	6.87	5.21	4/1/2019	6.41	No	82	0	n/a	0.000...	NP Inter (normality) ...
pH (S.U.)	SGWC-9	6.87	5.21	4/1/2019	6.11	No	82	0	n/a	0.000...	NP Inter (normality) ...
<b>Sulfate (mg/L)</b>	<b>SGWC-10</b>	<b>3.75</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>21</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
Sulfate (mg/L)	SGWC-11	3.75	n/a	4/1/2019	0.81	No	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
<b>Sulfate (mg/L)</b>	<b>SGWC-12</b>	<b>3.75</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>48</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-13</b>	<b>3.75</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>82</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-14</b>	<b>3.75</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>180</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-15</b>	<b>3.75</b>	<b>n/a</b>	<b>4/1/2019</b>	<b>190</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-16</b>	<b>3.75</b>	<b>n/a</b>	<b>4/2/2019</b>	<b>31</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-17</b>	<b>3.75</b>	<b>n/a</b>	<b>4/2/2019</b>	<b>180</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-18</b>	<b>3.75</b>	<b>n/a</b>	<b>4/2/2019</b>	<b>1100</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-19</b>	<b>3.75</b>	<b>n/a</b>	<b>4/2/2019</b>	<b>240</b>	<b>Yes</b>	<b>84</b>	<b>52.38</b>	<b>n/a</b>	<b>0.00027</b>	<b>NP Inter (NDs) 1 of 2</b>

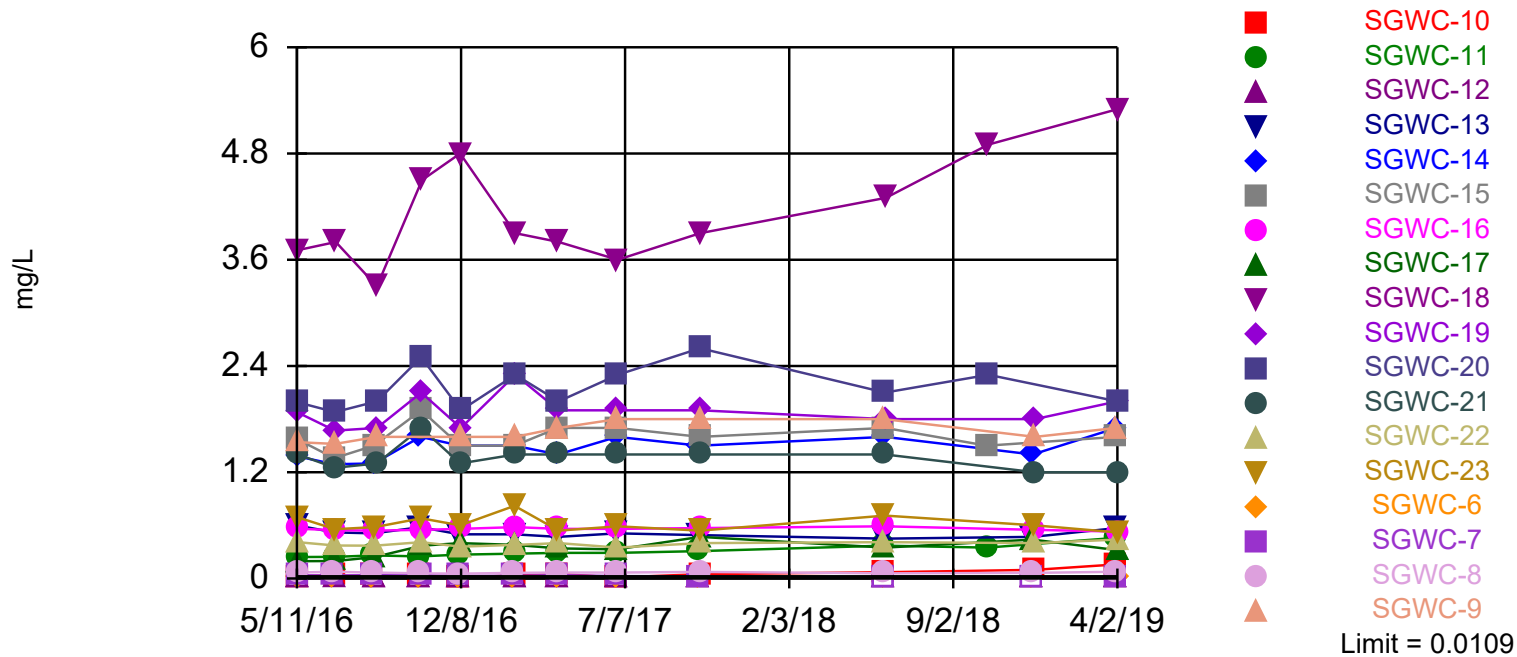
# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:41 AM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Sulfate (mg/L)	SGWC-20	3.75	n/a	4/2/2019	220	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-21	3.75	n/a	4/2/2019	92	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-22	3.75	n/a	4/2/2019	100	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-23	3.75	n/a	4/2/2019	95	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-6	3.75	n/a	4/2/2019	1.3	No	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-7	3.75	n/a	4/1/2019	16	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-8	3.75	n/a	4/1/2019	67	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-9	3.75	n/a	4/1/2019	310	Yes	84	52.38	n/a	0.00027	NP Inter (NDs) 1 of 2
Total Dissolved Solids (mg/L)	SGWC-10	130	n/a	4/1/2019	82	No	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-11	130	n/a	4/1/2019	33	No	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-12	130	n/a	4/1/2019	200	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-13	130	n/a	4/1/2019	190	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-14	130	n/a	4/1/2019	330	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-15	130	n/a	4/1/2019	330	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-16	130	n/a	4/2/2019	73	No	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-17	130	n/a	4/2/2019	400	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-18	130	n/a	4/2/2019	1700	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-19	130	n/a	4/2/2019	420	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-20	130	n/a	4/2/2019	370	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-21	130	n/a	4/2/2019	300	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-22	130	n/a	4/2/2019	240	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-23	130	n/a	4/2/2019	250	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-6	130	n/a	4/2/2019	91	No	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-7	130	n/a	4/1/2019	200	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-8	130	n/a	4/1/2019	370	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-9	130	n/a	4/1/2019	580	Yes	84	3.571	n/a	0.00027	NP Inter (normality) ...

Exceeds Limit: SGWC-10, SGWC-11,  
SGWC-13, SGWC-14, SGWC-15, SGWC-16

### Prediction Limit Interwell Non-parametric

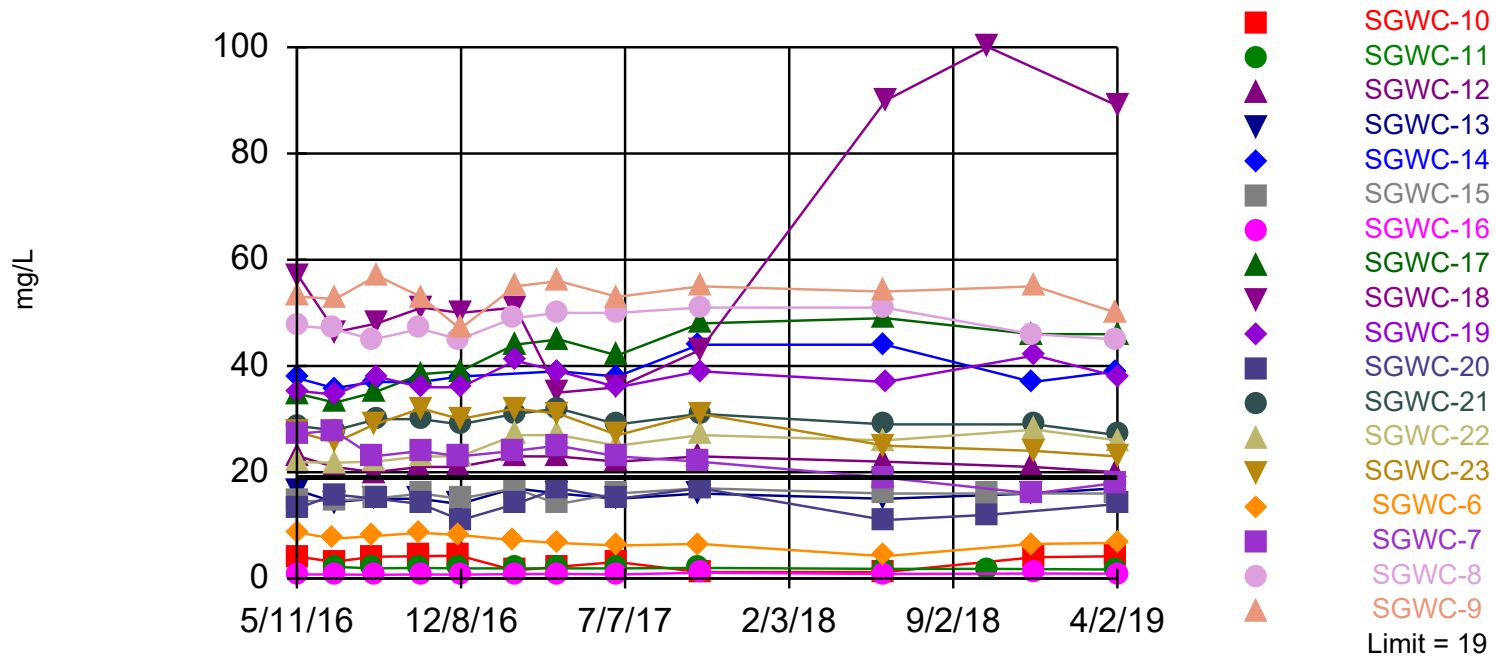


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 84 background values. 96.43% NDs. Annual per-constituent alpha = 0.009675. Individual comparison alpha = 0.00027 (1 of 2). Comparing 18 points to limit.



Exceeds Limit: SGWC-12, SGWC-14,  
SGWC-17, SGWC-18, SGWC-19, SGWC-21

### Prediction Limit Interwell Non-parametric

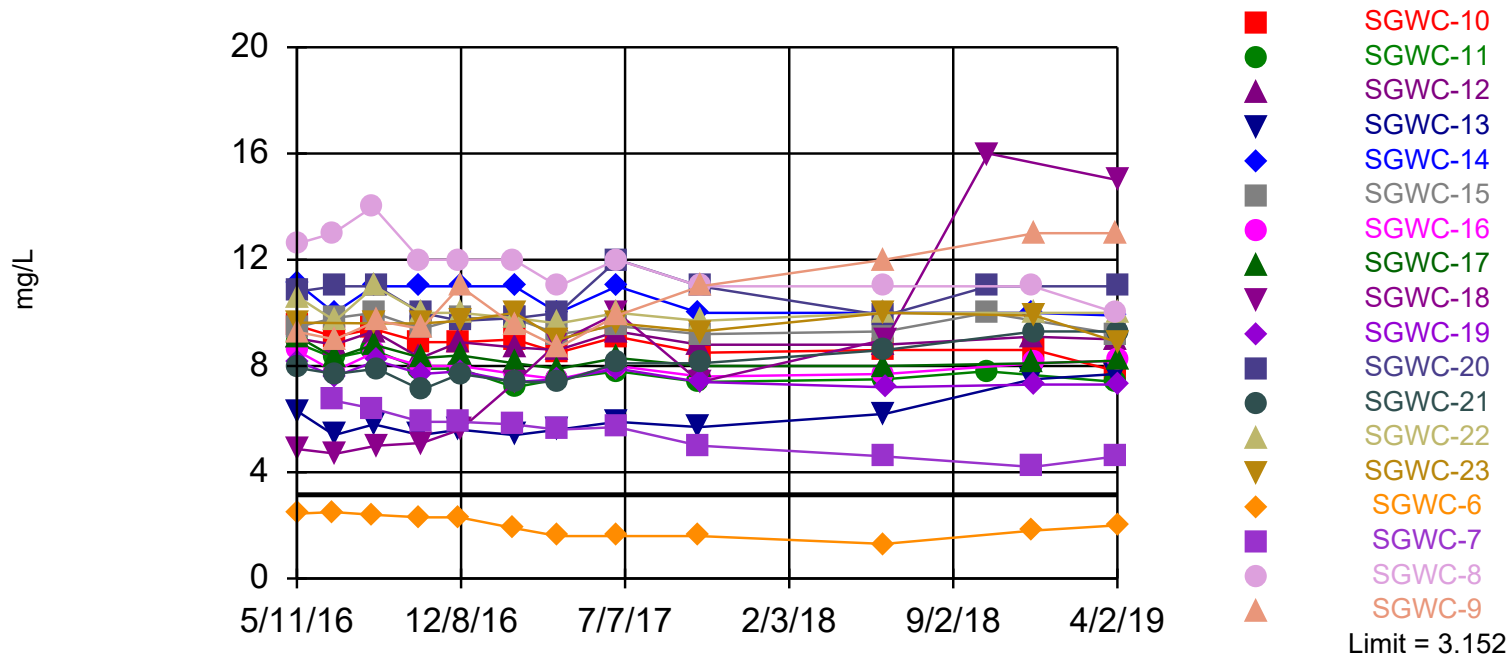


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 81 background values. Annual per-constituent alpha = 0.01031. Individual comparison alpha = 0.0002879 (1 of 2). Comparing 18 points to limit.

Constituent: Calcium Analysis Run 5/20/2019 9:39 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Exceeds Limit: SGWC-10, SGWC-11,  
SGWC-12, SGWC-13, SGWC-14, SGWC-15

### Prediction Limit Interwell Parametric

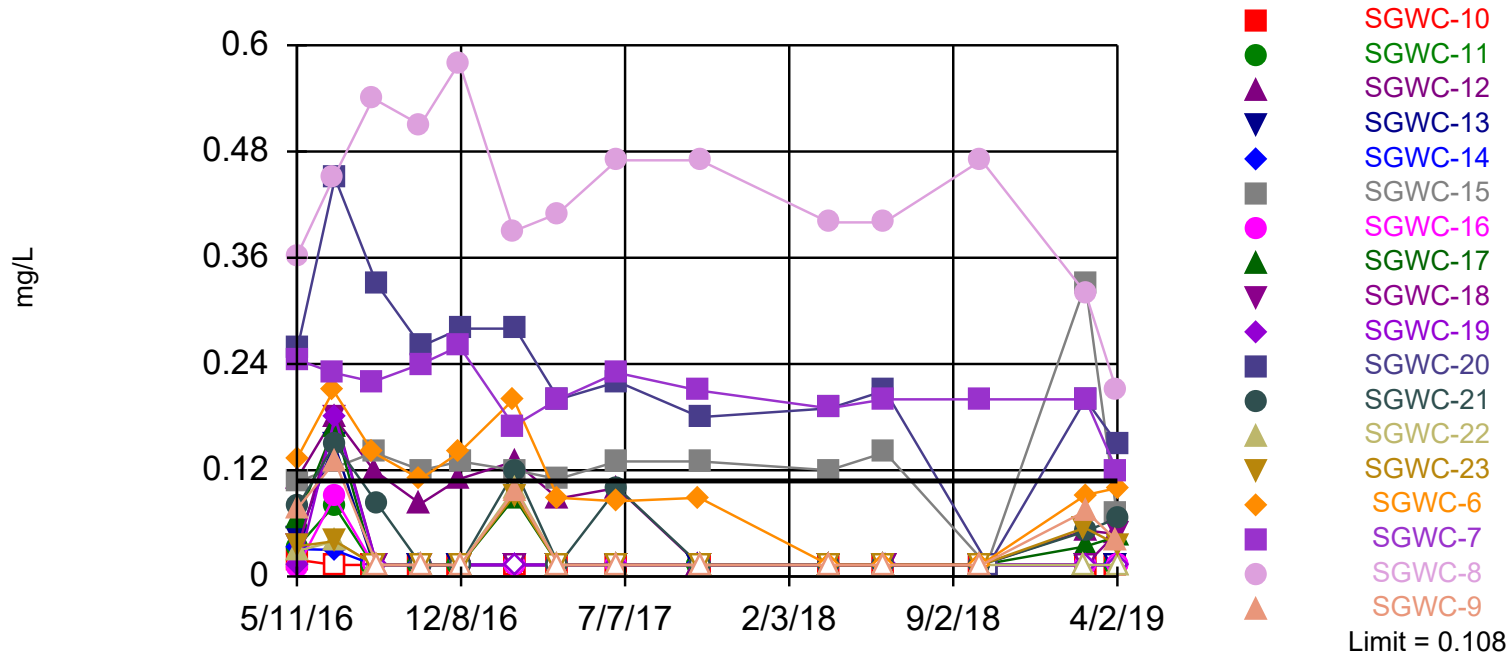


Background Data Summary (based on natural log transformation): Mean=0.5895, Std. Dev.=0.2634, n=82. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9649, critical = 0.959. Kappa = 2.12 (c=7, w=18, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000418. Comparing 18 points to limit.

Constituent: Chloride Analysis Run 5/20/2019 9:39 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Exceeds Limit: SGWC-8

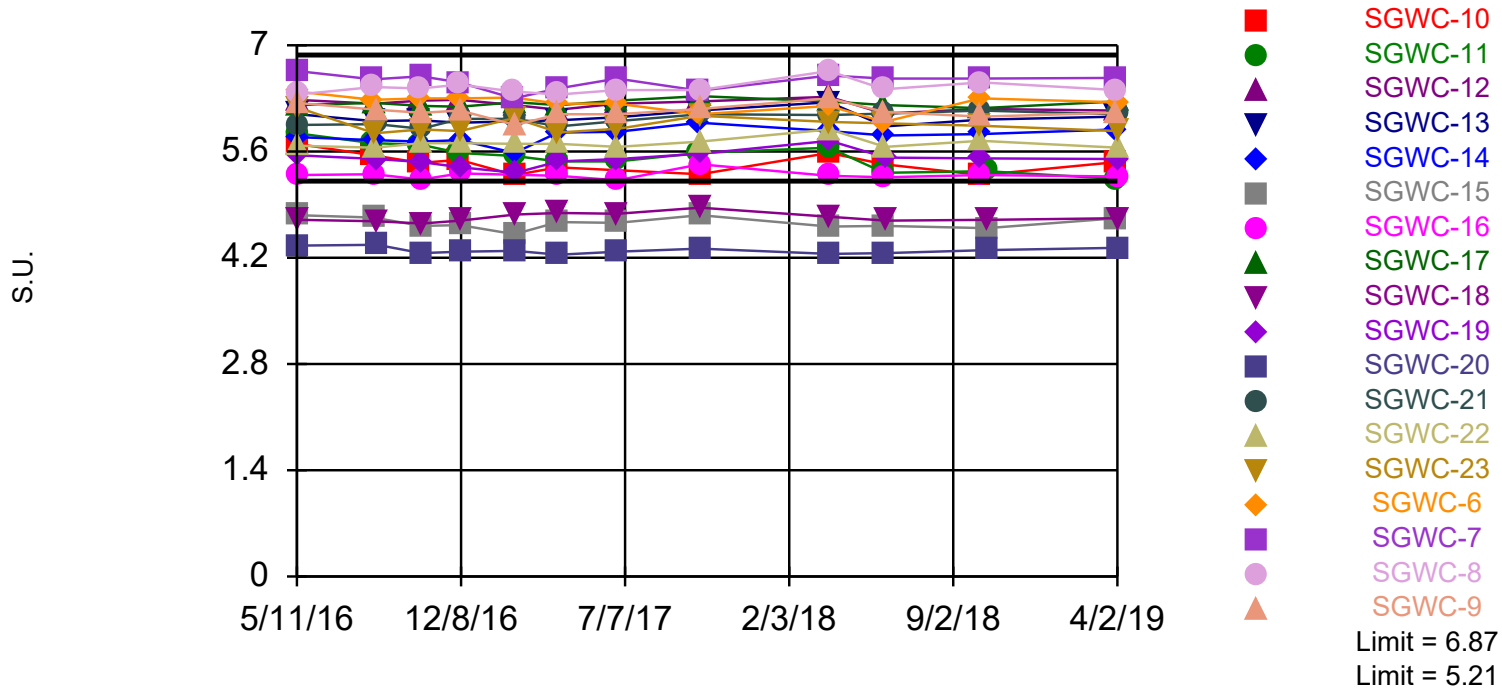
### Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 98 background values. 77.55% NDs. Annual per-constituent alpha = 0.007164. Individual comparison alpha = 0.0001997 (1 of 2). Comparing 18 points to limit.

Exceeds Limits: SGWC-15, SGWC-18,  
SGWC-20

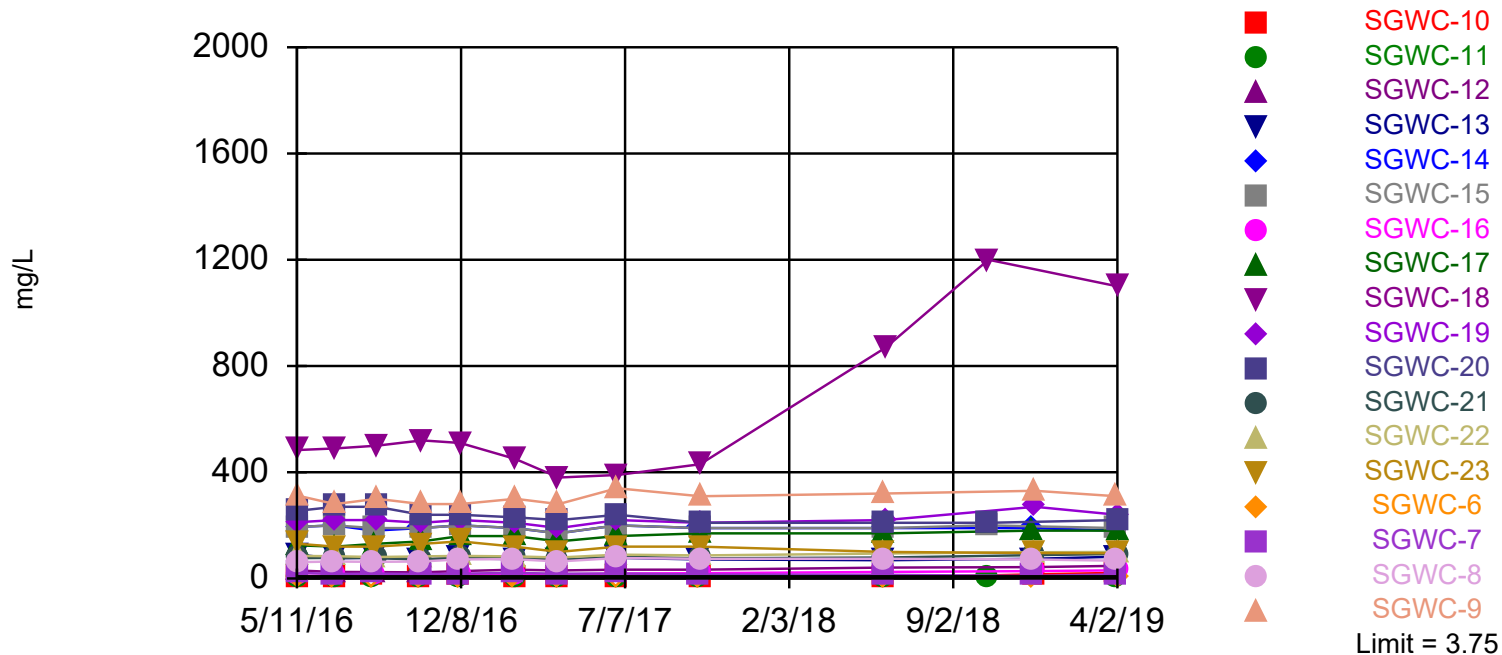
### Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 82 background values. Annual per-constituent alpha = 0.0202. Individual comparison alpha = 0.0005638 (1 of 2). Comparing 18 points to limit.

Exceeds Limit: SGWC-10, SGWC-12,  
SGWC-13, SGWC-14, SGWC-15, SGWC-16

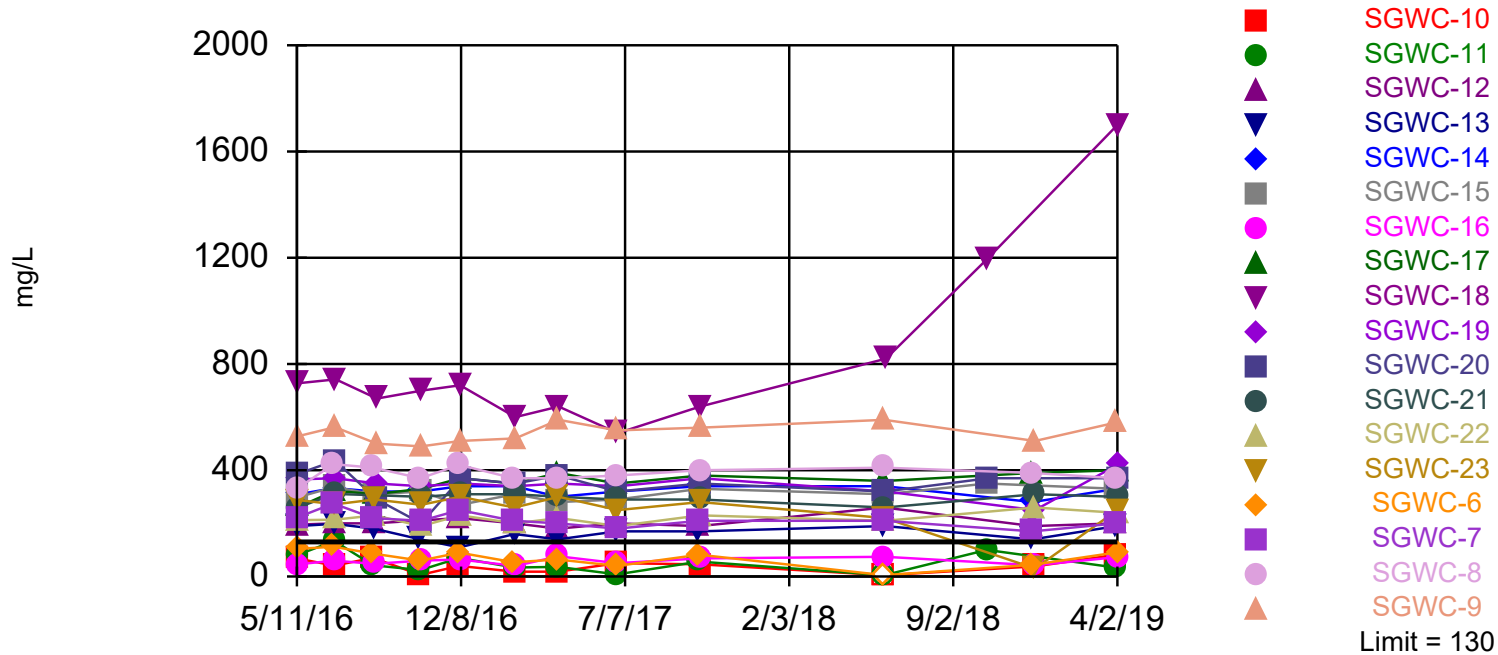
### Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 84 background values. 52.38% NDs. Annual per-constituent alpha = 0.009675. Individual comparison alpha = 0.00027 (1 of 2). Comparing 18 points to limit.

Exceeds Limit: SGWC-12, SGWC-13,  
SGWC-14, SGWC-15, SGWC-17, SGWC-18

### Prediction Limit Interwell Non-parametric

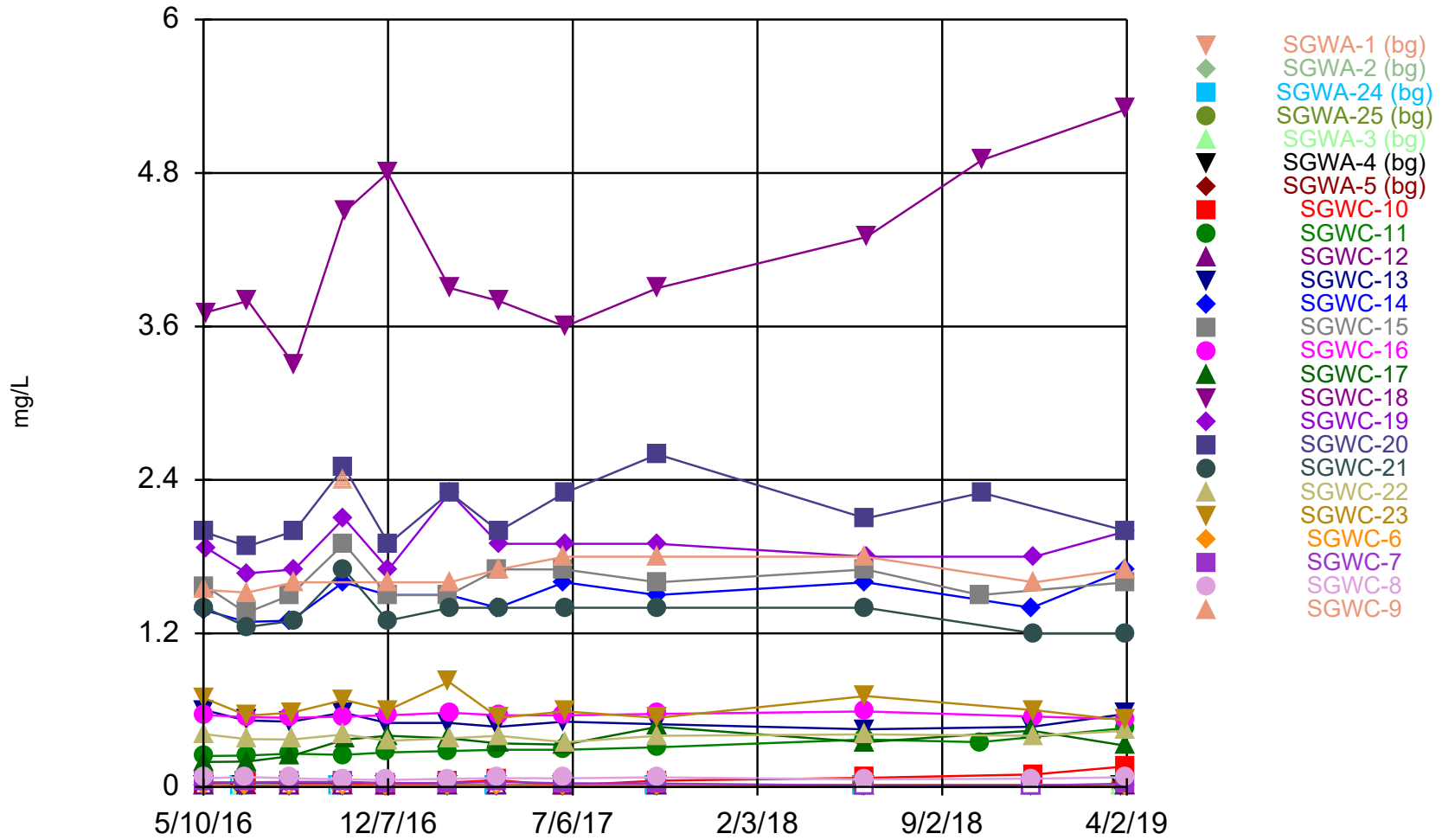


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 84 background values. 3.571% NDs. Annual per-constituent alpha = 0.009675. Individual comparison alpha = 0.00027 (1 of 2). Comparing 18 points to limit.

Constituent: Total Dissolved Solids Analysis Run 5/20/2019 9:39 AM View: App III

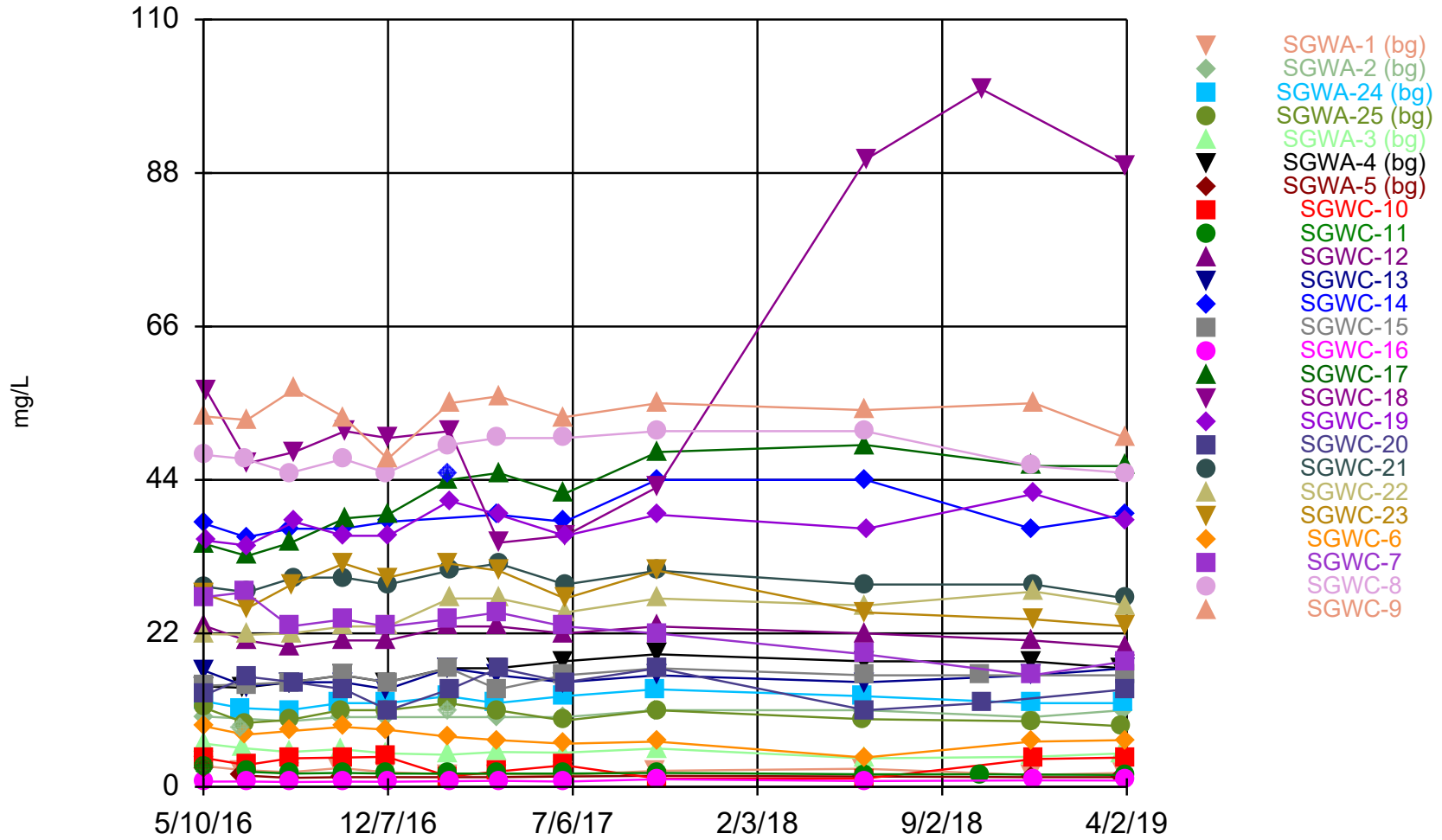
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Boron Analysis Run 5/20/2019 10:02 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series

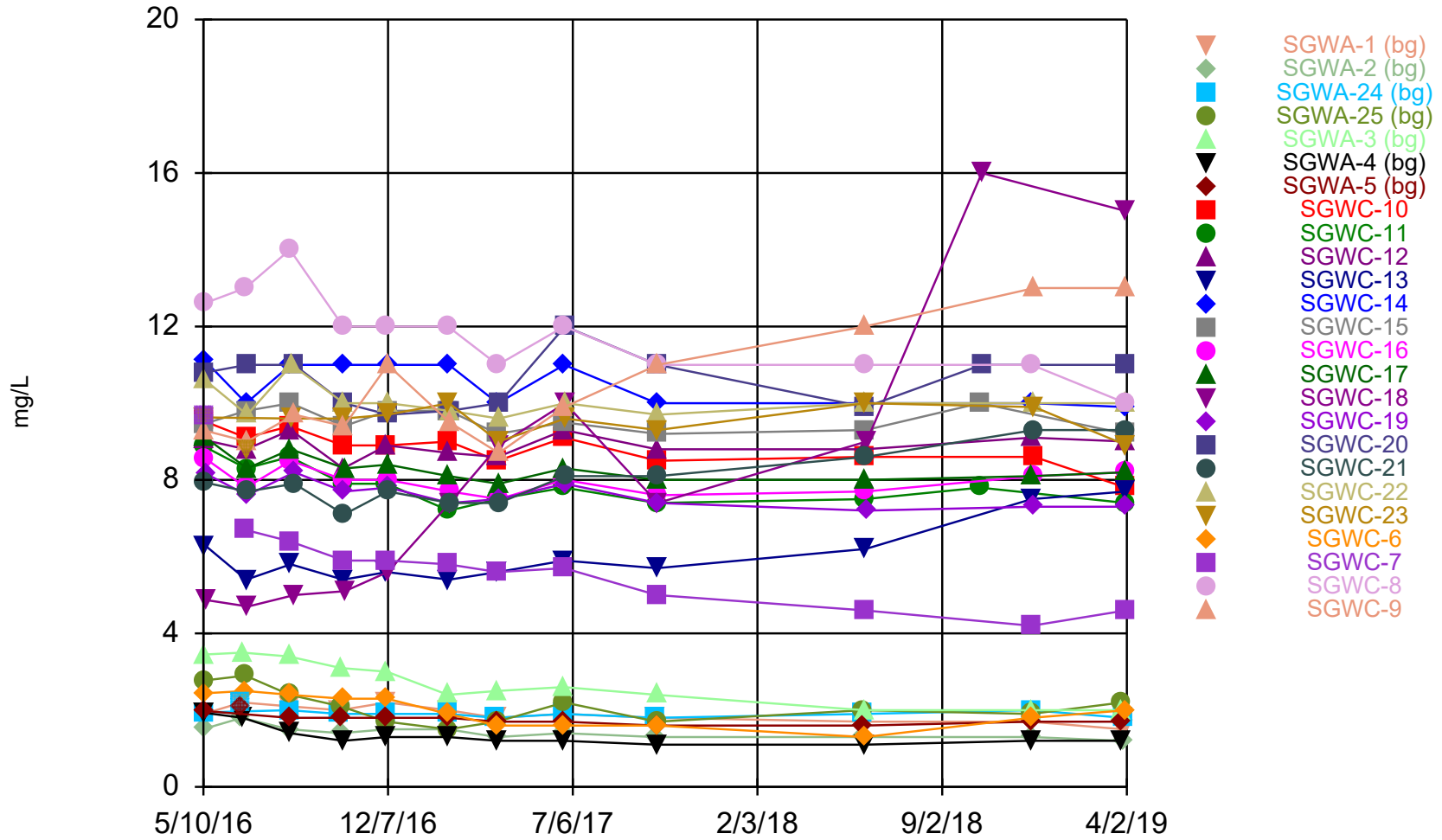


Constituent: Calcium Analysis Run 5/20/2019 10:02 AM View: App III

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



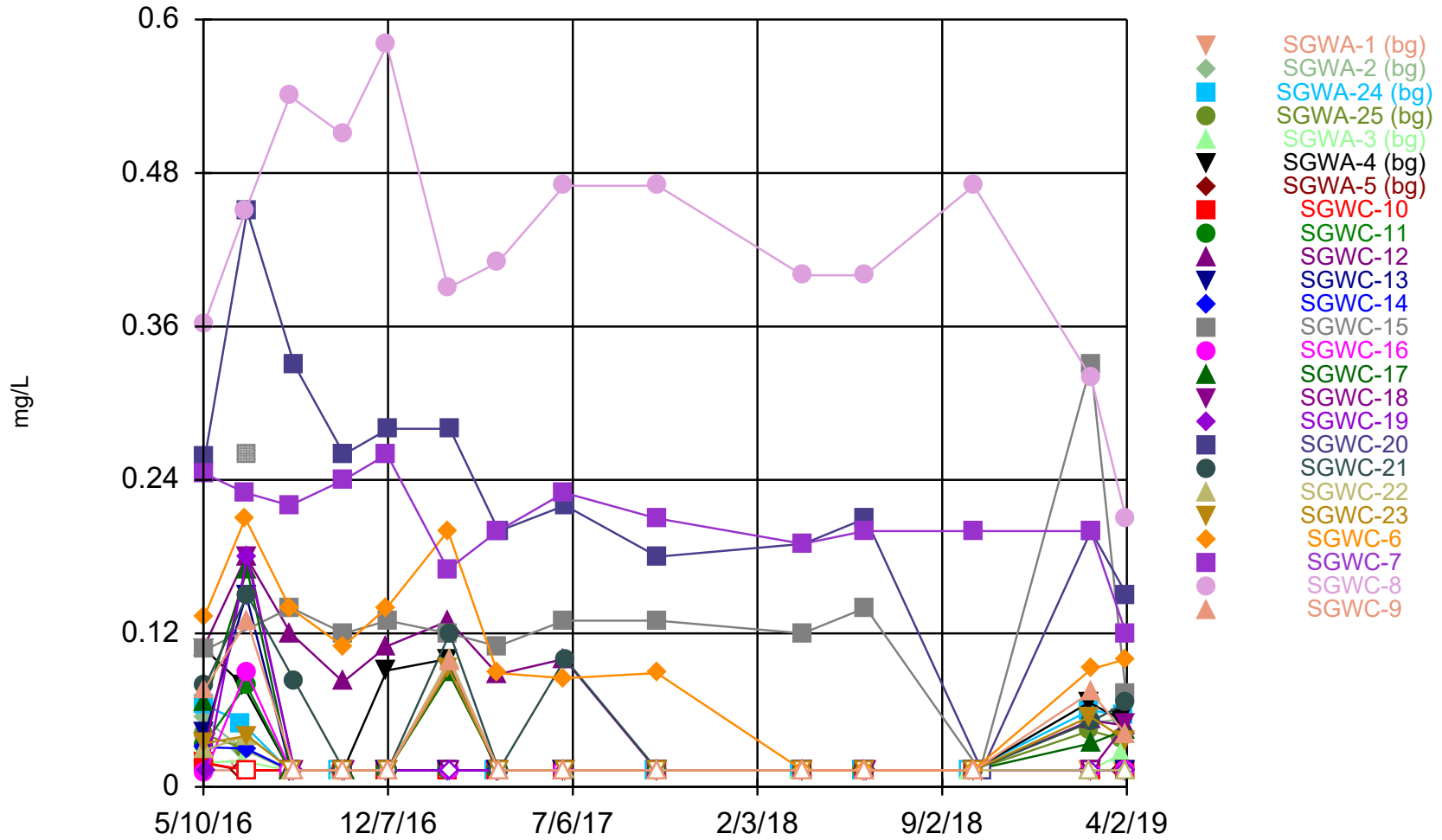
### Time Series



Constituent: Chloride Analysis Run 5/20/2019 10:03 AM View: App III

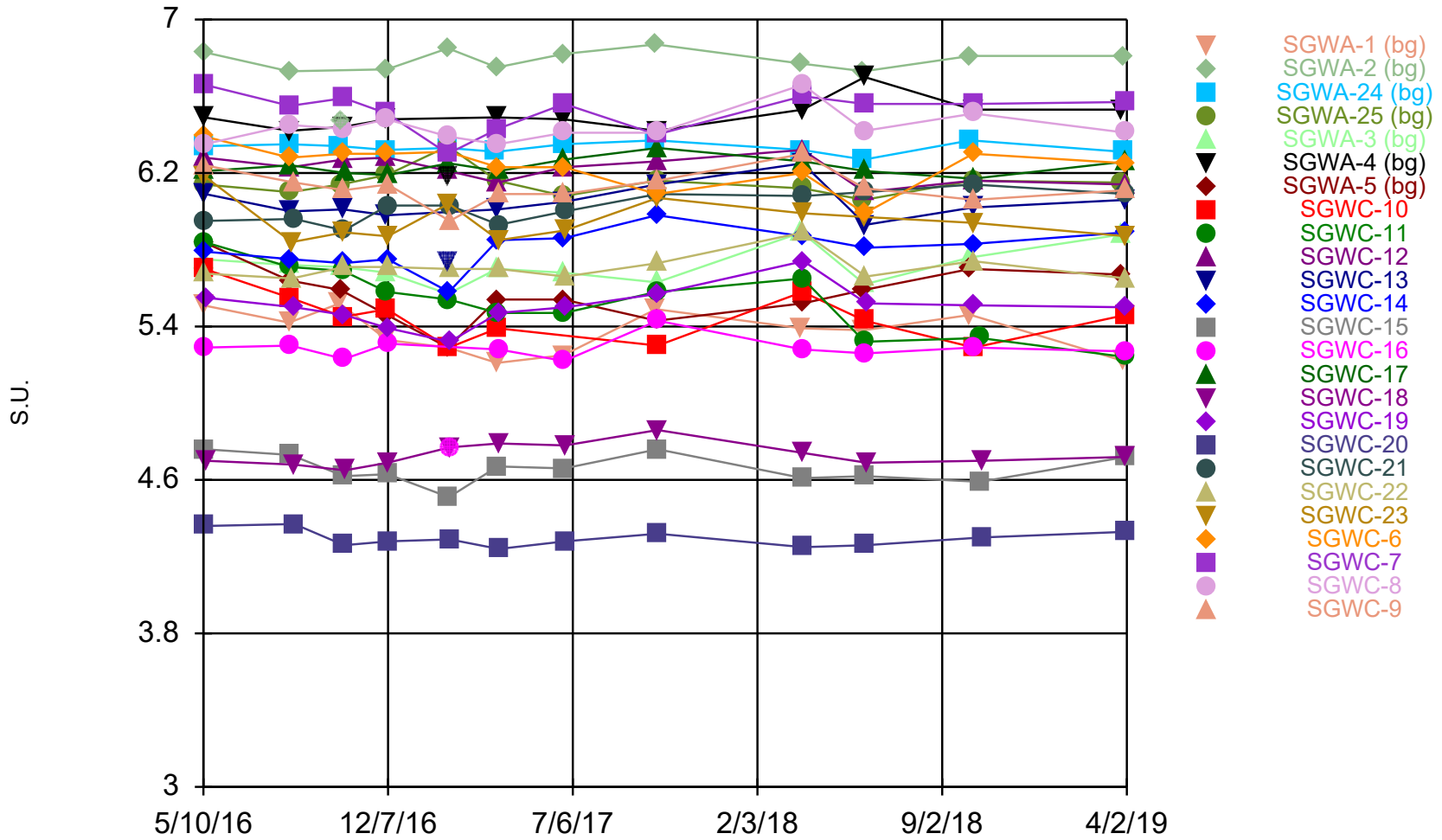
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



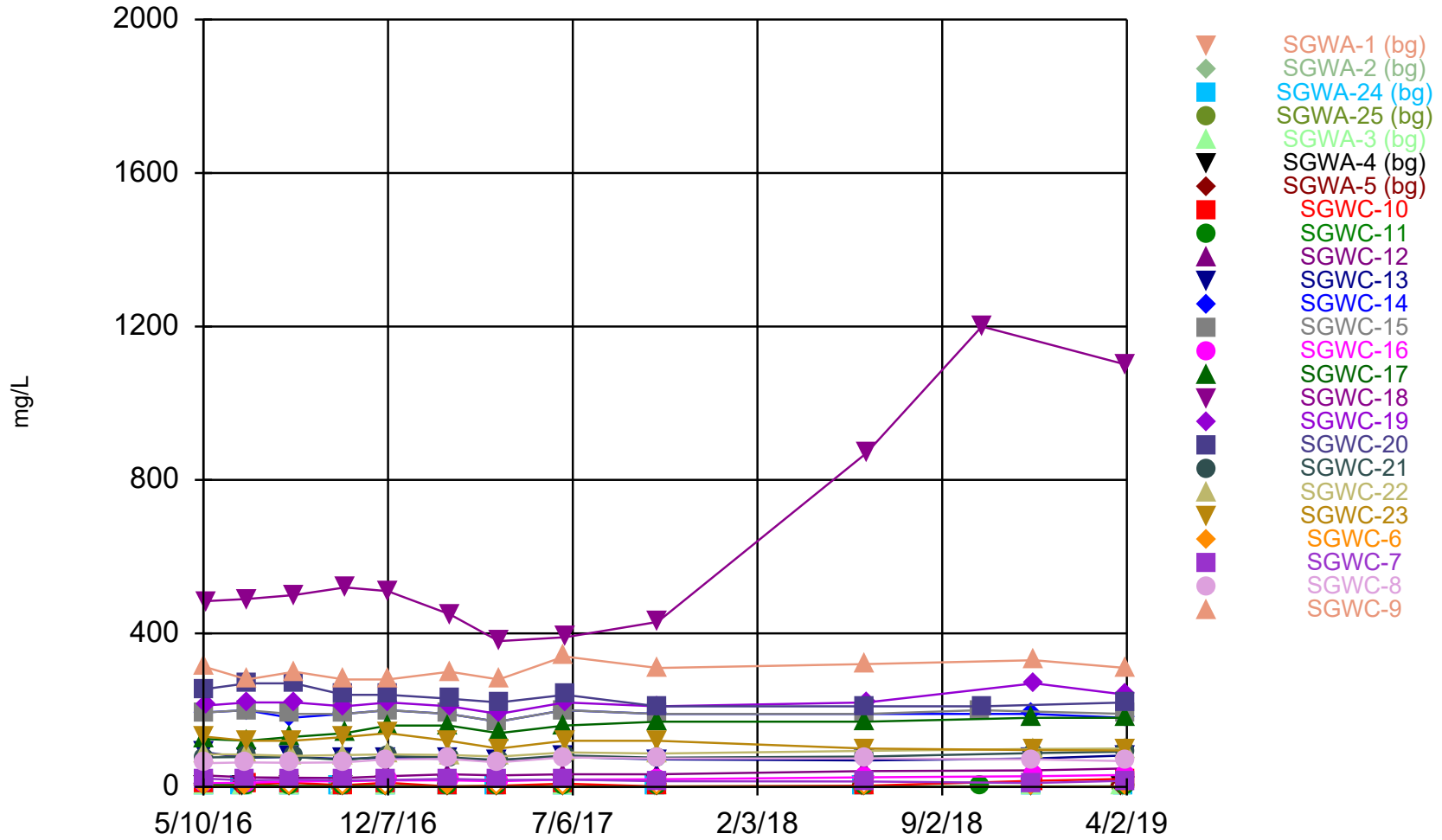
Constituent: Fluoride Analysis Run 5/20/2019 10:03 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



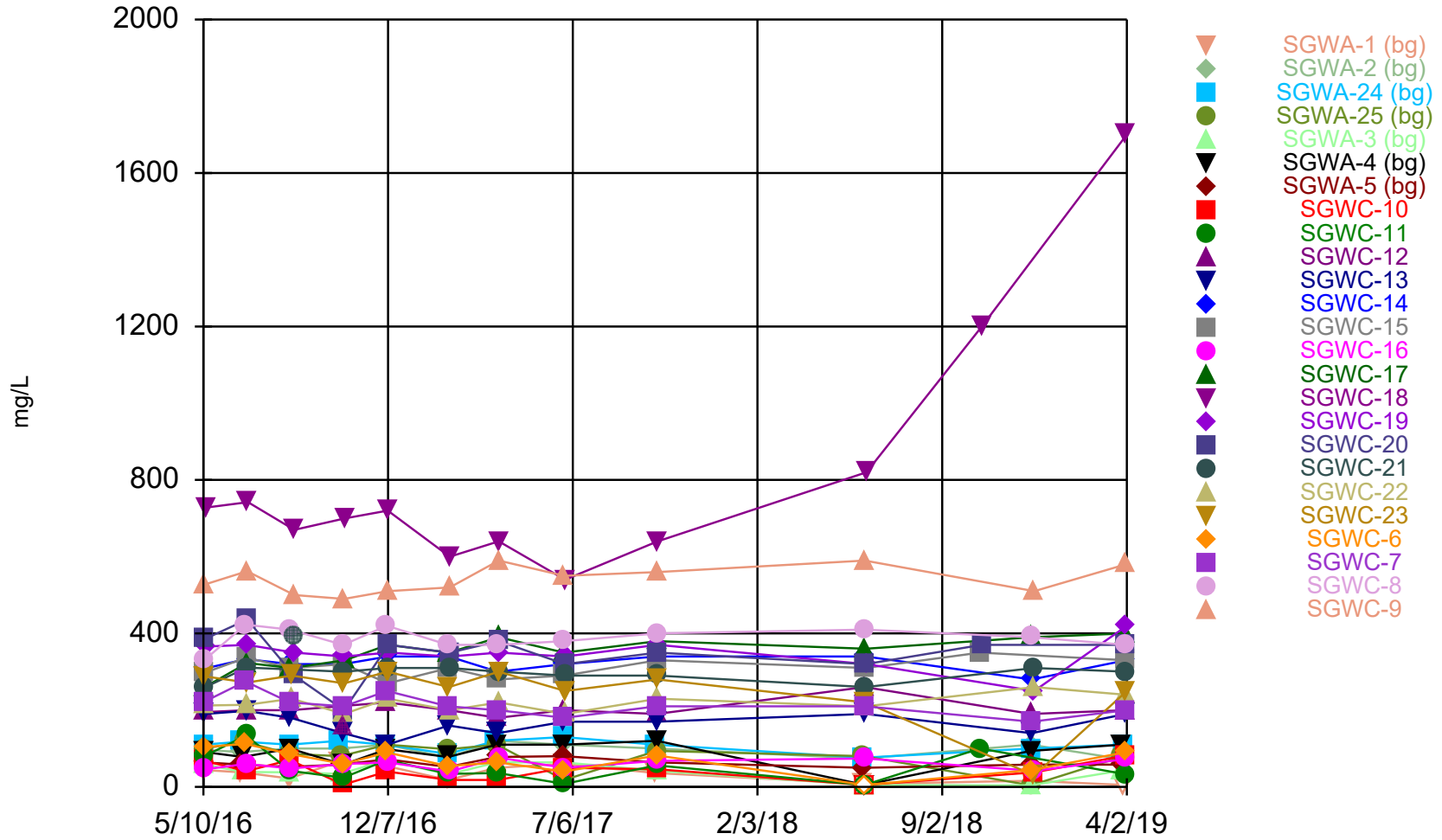
Constituent: pH Analysis Run 5/20/2019 10:03 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Sulfate Analysis Run 5/20/2019 10:03 AM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Total Dissolved Solids Analysis Run 5/20/2019 10:03 AM View: App III

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

# Tolerance Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:42 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	n/a	0.0021	n/a	n/a	n/a	83	92.77	n/a	0.01416	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0015	n/a	n/a	n/a	91	78.02	n/a	0.009394	NP Inter(NDs)
Barium (mg/L)	n/a	0.06349	n/a	n/a	n/a	91	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0002	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0011	n/a	n/a	n/a	84	97.62	n/a	0.01345	NP Inter(NDs)
Chromium (mg/L)	n/a	0.016	n/a	n/a	n/a	91	35.16	n/a	0.009394	NP Inter(normal...
Cobalt (mg/L)	n/a	0.02	n/a	n/a	n/a	90	64.44	n/a	0.009888	NP Inter(normal...
Combined Radium 226 + 228 (pCi/L)	n/a	1.2	n/a	n/a	n/a	90	14.44	n/a	0.009888	NP Inter(normal...
Fluoride (mg/L)	n/a	0.108	n/a	n/a	n/a	98	77.55	n/a	0.00656	NP Inter(NDs)
Lead (mg/L)	n/a	0.000175	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Lithium (mg/L)	n/a	0.00235	n/a	n/a	n/a	91	90.11	n/a	0.009394	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00012	n/a	n/a	n/a	91	89.01	n/a	0.009394	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.00278	n/a	n/a	n/a	84	89.29	n/a	0.01345	NP Inter(NDs)
Selenium (mg/L)	n/a	0.00041	n/a	n/a	n/a	91	95.6	n/a	0.009394	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0001	n/a	n/a	n/a	91	96.7	n/a	0.009394	NP Inter(NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Cobalt (mg/L)	SGWC-10	0.03244	0.02191	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-11	0.03044	0.02587	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-15	0.2764	0.2608	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-18	0.1609	0.1202	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-20	0.231	0.1892	0.02	Yes	13	0	No	0.05	Param.

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	SGWA-1 (bg)	0.0012	0.0004	0.006	No	12	83.33	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-2 (bg)	0.0005	0.0005	0.006	No	12	100	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-24 (bg)	0.0005	0.0003	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-25 (bg)	0.0005	0.0003	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-3 (bg)	0.0021	0.0005	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-4 (bg)	0.0007	0.0005	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-5 (bg)	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-10	0.0005	0.0005	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-11	0.0005	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-12	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-13	0.0005	0.0004	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-14	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-15	0.0005	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-16	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-17	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-18	0.0005	0.0005	0.006	No	10	90	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-19	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-20	0.0005	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-21	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-22	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-23	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-6	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-7	0.0005	0.0004	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-8	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-9	0.0005	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Arsenic (mg/L)	SGWA-1 (bg)	0.00055	0.00023	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-2 (bg)	0.00046	0.00023	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-24 (bg)	0.00057	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-25 (bg)	0.0008085	0.0003303	0.01	No	13	38.46	No	0.05	Param.
Arsenic (mg/L)	SGWA-3 (bg)	0.00063	0.00023	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-4 (bg)	0.00055	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-5 (bg)	0.00079	0.00023	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-10	0.0005	0.00023	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-11	0.0011	0.00023	0.01	No	13	30.77	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-12	0.00091	0.00023	0.01	No	13	46.15	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-13	0.00047	0.00023	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-14	0.00057	0.00023	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-15	0.001316	0.0004382	0.01	No	13	30.77	No	0.05	Param.
Arsenic (mg/L)	SGWC-16	0.00054	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-17	0.00066	0.00023	0.01	No	13	61.54	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-18	0.002359	0.001387	0.01	No	13	0	No	0.05	Param.
Arsenic (mg/L)	SGWC-19	0.00058	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-20	0.00085	0.00023	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-21	0.00076	0.00023	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-22	0.0006	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-23	0.00061	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-6	0.00046	0.00023	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-7	0.00058	0.00023	0.01	No	13	61.54	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-8	0.0005	0.00023	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-9	0.00079	0.00023	0.01	No	13	46.15	No	0.05	NP (normality)



## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	SGWA-1 (bg)	0.05593	0.04912	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-2 (bg)	0.03864	0.03599	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-24 (bg)	0.02207	0.02052	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-25 (bg)	0.02366	0.02151	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-3 (bg)	0.03503	0.03301	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-4 (bg)	0.05691	0.05071	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-5 (bg)	0.01061	0.009881	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-10	0.03245	0.02858	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-11	0.03967	0.03653	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-12	0.04404	0.03573	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-13	0.0317	0.02531	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-14	0.06174	0.05707	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-15	0.04028	0.03641	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-16	0.02141	0.01779	2	No	12	0	ln(x)	0.05	Param.
Barium (mg/L)	SGWC-17	0.02022	0.01806	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-18	0.029	0.0138	2	No	13	0	No	0.05	NP (normality)
Barium (mg/L)	SGWC-19	0.04289	0.03699	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-20	0.03686	0.02979	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-21	0.09368	0.08997	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-22	0.09397	0.08551	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-23	0.08903	0.07876	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-6	0.08447	0.05327	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-7	0.3104	0.2755	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-8	0.19	0.17	2	No	13	0	No	0.05	NP (normality)
Barium (mg/L)	SGWC-9	0.06681	0.05594	2	No	13	0	No	0.05	Param.
Beryllium (mg/L)	SGWA-1 (bg)	0.0002	0.00017	0.004	No	13	92.31	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-2 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-24 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-25 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-3 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-4 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-5 (bg)	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-10	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-11	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-12	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-13	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-14	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-15	0.0004	0.0003	0.004	No	13	23.08	No	0.05	NP (Cohens/xfrm)
Beryllium (mg/L)	SGWC-16	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-17	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-18	0.0003	0.00017	0.004	No	13	69.23	No	0.05	NP (normality)
Beryllium (mg/L)	SGWC-19	0.0002	0.00016	0.004	No	13	84.62	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-20	0.0008153	0.0006912	0.004	No	13	0	No	0.05	Param.
Beryllium (mg/L)	SGWC-21	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-22	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-23	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-6	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-7	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-8	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-9	0.00017	0.00017	0.004	No	13	100	No	0.05	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cadmium (mg/L)	SGWA-1 (bg)	0.00017	0.000156	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-2 (bg)	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-24 (bg)	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-25 (bg)	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-3 (bg)	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-4 (bg)	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-5 (bg)	0.0011	0.00017	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-10	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-11	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-12	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-13	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-14	0.00017	0.000136	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-15	0.0003	0.00017	0.005	No	12	66.67	No	0.05	NP (normality)
Cadmium (mg/L)	SGWC-16	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-17	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-18	0.0002	0.00016	0.005	No	12	75	No	0.05	NP (normality)
Cadmium (mg/L)	SGWC-19	0.00036	0.00017	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-20	0.00017	0.000108	0.005	No	12	83.33	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-21	0.00039	0.00017	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-22	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-23	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-6	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-7	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-8	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-9	0.00017	0.00017	0.005	No	12	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWA-1 (bg)	0.0014	0.00055	0.1	No	13	69.23	No	0.05	NP (normality)
Chromium (mg/L)	SGWA-2 (bg)	0.0139	0.01152	0.1	No	13	0	x^3	0.05	Param.
Chromium (mg/L)	SGWA-24 (bg)	0.004344	0.003507	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-25 (bg)	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWA-3 (bg)	0.0118	0.008221	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-4 (bg)	0.005565	0.003261	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-5 (bg)	0.0011	0.00055	0.1	No	13	76.92	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-10	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-11	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-12	0.0023	0.00055	0.1	No	13	92.31	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-13	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-14	0.0008	0.00055	0.1	No	13	69.23	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-15	0.03421	0.03216	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-16	0.01	0.0093	0.1	No	13	0	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-17	0.005546	0.003754	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-18	0.008385	0.006909	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-19	0.01559	0.01429	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-20	0.0009	0.00055	0.1	No	13	92.31	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-21	0.0012	0.00055	0.1	No	13	84.62	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-22	0.0007	0.00055	0.1	No	13	76.92	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-23	0.0014	0.00055	0.1	No	12	50	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-6	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-7	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-8	0.0013	0.00055	0.1	No	13	53.85	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-9	0.00055	0.00055	0.1	No	13	100	No	0.05	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	SGWA-1 (bg)	0.01348	0.006417	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-2 (bg)	0.0004	0.0002	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-24 (bg)	0.0004	0.0002	0.02	No	13	76.92	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-25 (bg)	0.01307	0.008664	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-3 (bg)	0.00051	0.0002	0.02	No	12	91.67	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-4 (bg)	0.00041	0.0002	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-5 (bg)	0.0002	0.0002	0.02	No	13	100	No	0.05	NP (NDs)
<b>Cobalt (mg/L)</b>	<b>SGWC-10</b>	<b>0.03244</b>	<b>0.02191</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
<b>Cobalt (mg/L)</b>	<b>SGWC-11</b>	<b>0.03044</b>	<b>0.02587</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-12	0.004296	0.00344	0.02	No	13	0	x^(1/3)	0.05	Param.
Cobalt (mg/L)	SGWC-13	0.008913	0.005426	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-14	0.0122	0.007597	0.02	No	13	0	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-15</b>	<b>0.2764</b>	<b>0.2608</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-16	0.003718	0.003256	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-17	0.0006166	0.000396	0.02	No	12	25	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-18</b>	<b>0.1609</b>	<b>0.1202</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-19	0.0006	0.0002	0.02	No	13	53.85	No	0.05	NP (normality)
<b>Cobalt (mg/L)</b>	<b>SGWC-20</b>	<b>0.231</b>	<b>0.1892</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-21	0.0002	0.00011	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWC-22	0.003961	0.002599	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-23	0.0002	0.0002	0.02	No	12	100	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWC-6	0.002361	0.0007227	0.02	No	13	23.08	No	0.05	Param.
Cobalt (mg/L)	SGWC-7	0.0122	0.0074	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-8	0.00049	0.0002	0.02	No	13	69.23	No	0.05	NP (normality)
Cobalt (mg/L)	SGWC-9	0.01418	0.01032	0.02	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-1 (bg)	0.3626	0.22	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-2 (bg)	0.441	0.124	5	No	13	15.38	No	0.05	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SGWA-24 (bg)	0.3648	0.1393	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-25 (bg)	0.3436	0.1091	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-3 (bg)	0.332	0.152	5	No	13	15.38	No	0.05	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWA-4 (bg)	0.2693	0.07354	5	No	12	16.67	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-5 (bg)	0.358	0.207	5	No	13	15.38	No	0.05	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SGWC-10	0.47	0.136	5	No	13	7.692	No	0.05	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWC-11	0.5633	0.2475	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-12	0.3922	0.1505	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-13	0.4327	0.1478	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-14	0.4149	0.1565	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-15	0.4425	0.2244	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-16	0.3603	0.1494	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-17	0.3847	0.1785	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-18	0.3762	0.1933	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-19	0.3575	0.1285	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-20	0.587	0.3108	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-21	0.38	0.143	5	No	13	15.38	No	0.05	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SGWC-22	0.3485	0.1964	5	No	12	8.333	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-23	0.6575	0.4445	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-6	0.355	0.122	5	No	13	15.38	No	0.05	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SGWC-7	0.5181	0.346	5	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-8	2.5	2.072	5	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-9	0.4197	0.2193	5	No	13	7.692	No	0.05	Param.

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	SGWA-1 (bg)	0.013	0.013	4	No	14	100	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWA-2 (bg)	0.03	0.013	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-24 (bg)	0.05	0.013	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-25 (bg)	0.03	0.013	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-3 (bg)	0.0192	0.013	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWA-4 (bg)	0.08	0.013	4	No	14	57.14	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-5 (bg)	0.0188	0.013	4	No	14	92.86	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-10	0.019	0.013	4	No	14	92.86	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-11	0.033	0.013	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-12	0.09934	0.0399	4	No	14	28.57	No	0.05	Param.
Fluoride (mg/L)	SGWC-13	0.042	0.013	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-14	0.03	0.013	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-15	0.14	0.11	4	No	13	7.692	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-16	0.09	0.011	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-17	0.045	0.013	4	No	14	64.29	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-18	0.0343	0.013	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-19	0.18	0.0126	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-20	0.2766	0.1837	4	No	14	7.143	No	0.05	Param.
Fluoride (mg/L)	SGWC-21	0.083	0.013	4	No	14	50	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-22	0.029	0.013	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-23	0.036	0.013	4	No	14	64.29	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-6	0.1299	0.06374	4	No	14	21.43	No	0.05	Param.
Fluoride (mg/L)	SGWC-7	0.2248	0.1916	4	No	14	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-8	0.4718	0.3828	4	No	14	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-9	0.074	0.013	4	No	14	64.29	No	0.05	NP (normality)
Lead (mg/L)	SGWA-1 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-2 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-24 (bg)	0.000175	0.0001	0.015	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-25 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-3 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-4 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-5 (bg)	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-10	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-11	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-12	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-13	0.00039	0.000175	0.015	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-14	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-15	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-16	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-17	0.000175	0.000175	0.015	No	12	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-18	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-19	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-20	0.00027	0.000175	0.015	No	13	69.23	No	0.05	NP (normality)
Lead (mg/L)	SGWC-21	0.000175	0.00009	0.015	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-22	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-23	0.000175	0.00009	0.015	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-6	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-7	0.00085	0.000175	0.015	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-8	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-9	0.000175	0.000175	0.015	No	13	100	No	0.05	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (mg/L)	SGWA-1 (bg)	0.0013	0.00055	0.04	No	13	69.23	No	0.05	NP (normality)
Lithium (mg/L)	SGWA-2 (bg)	0.00055	0.00055	0.04	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-24 (bg)	0.0011	0.00055	0.04	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-25 (bg)	0.0015	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-3 (bg)	0.0013	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-4 (bg)	0.00055	0.00055	0.04	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-5 (bg)	0.0017	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-10	0.00055	0.00055	0.04	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-11	0.0029	0.00055	0.04	No	13	53.85	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-12	0.0011	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-13	0.0014	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-14	0.000925	0.00055	0.04	No	12	83.33	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-15	0.003	0.00055	0.04	No	13	53.85	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-16	0.0015	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-17	0.0014	0.00055	0.04	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-18	0.0042	0.00055	0.04	No	13	46.15	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-19	0.0021	0.00055	0.04	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-20	0.004834	0.003718	0.04	No	12	8.333	x^2	0.05	Param.
Lithium (mg/L)	SGWC-21	0.0013	0.00055	0.04	No	13	76.92	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-22	0.0011	0.00055	0.04	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-23	0.003599	0.001908	0.04	No	12	25	No	0.05	Param.
Lithium (mg/L)	SGWC-6	0.00055	0.00055	0.04	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-7	0.005163	0.004087	0.04	No	12	0	No	0.05	Param.
Lithium (mg/L)	SGWC-8	0.0018	0.00055	0.04	No	13	61.54	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-9	0.00055	0.00055	0.04	No	13	100	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-1 (bg)	0.00007	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-2 (bg)	0.00011	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-24 (bg)	0.00012	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-25 (bg)	0.000075	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-3 (bg)	0.000087	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-4 (bg)	0.00011	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-5 (bg)	0.000072	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-10	0.00013	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-11	0.0000535	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-12	0.000093	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-13	0.00011	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-14	0.000089	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-15	0.0001046	0.00005923	0.002	No	13	38.46	No	0.05	Param.
Mercury (mg/L)	SGWC-16	0.000076	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-17	0.00011	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-18	0.0002	0.000035	0.002	No	13	38.46	No	0.05	NP (normality)
Mercury (mg/L)	SGWC-19	0.000035	0.000035	0.002	No	13	100	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-20	0.000073	0.000035	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-21	0.0001	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-22	0.000099	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-23	0.000071	0.000035	0.002	No	13	76.92	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-6	0.00011	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-7	0.00011	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-8	0.000076	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-9	0.0001	0.000035	0.002	No	13	92.31	No	0.05	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Molybdenum (mg/L)	SGWA-1 (bg)	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-2 (bg)	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-24 (bg)	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-25 (bg)	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-3 (bg)	0.0011	0.001	0.1	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-4 (bg)	0.0018	0.00095	0.1	No	12	33.33	No	0.05	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWA-5 (bg)	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-10	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-11	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-12	0.0011	0.001	0.1	No	12	83.33	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-13	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-14	0.003	0.001	0.1	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-15	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-16	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-17	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-18	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-19	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-20	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-21	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-22	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-23	0.001	0.001	0.1	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-6	0.001	0.00099	0.1	No	12	83.33	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-7	0.0033	0.001	0.1	No	12	33.33	No	0.05	NP (normality)
Molybdenum (mg/L)	SGWC-8	0.001	0.0008	0.1	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-9	0.0014	0.001	0.1	No	12	50	No	0.05	NP (normality)
Selenium (mg/L)	SGWA-1 (bg)	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-2 (bg)	0.000355	0.00017	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-24 (bg)	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-25 (bg)	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-3 (bg)	0.000355	0.00029	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-4 (bg)	0.00041	0.000355	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-5 (bg)	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-10	0.000355	0.000355	0.05	No	12	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-11	0.00046	0.000355	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-12	0.000355	0.00031	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-13	0.000355	0.0003	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-14	0.00066	0.000355	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-15	0.0021	0.0007	0.05	No	13	23.08	No	0.05	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-16	0.001	0.000355	0.05	No	13	61.54	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-17	0.000355	0.00024	0.05	No	12	91.67	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-18	0.017	0.0057	0.05	No	13	0	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-19	0.00096	0.000355	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-20	0.0011	0.000355	0.05	No	13	53.85	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-21	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-22	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-23	0.000355	0.00033	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-6	0.00057	0.00034	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-7	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-8	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-9	0.000355	0.000355	0.05	No	13	100	No	0.05	NP (NDs)

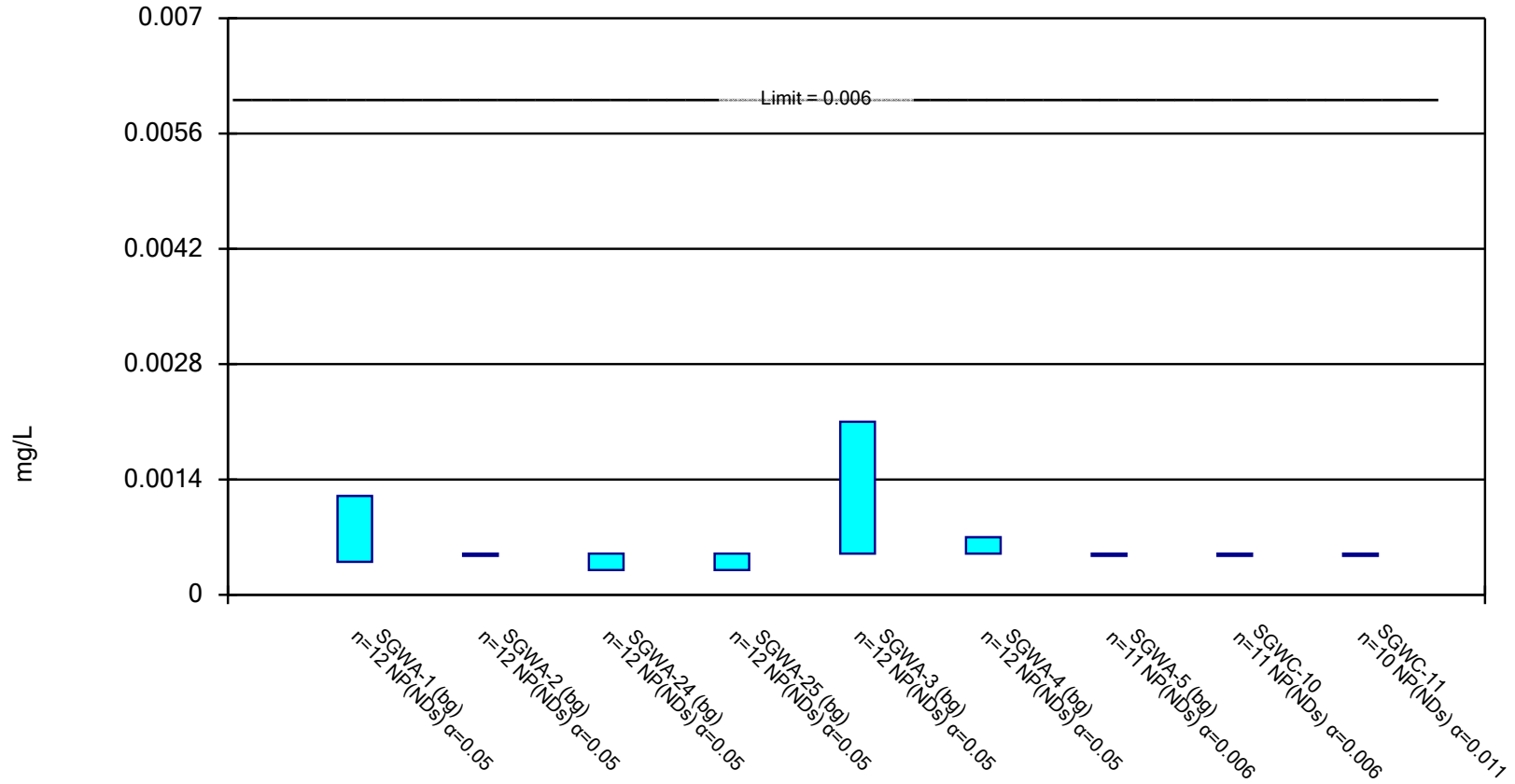
# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 5/20/2019, 9:50 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	SGWA-1 (bg)	0.00008	0.0000425	0.002	No	13	84.62	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-2 (bg)	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-24 (bg)	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-25 (bg)	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-3 (bg)	0.0001	0.0000425	0.002	No	13	92.31	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-4 (bg)	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-5 (bg)	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-10	0.0001	0.0000425	0.002	No	13	92.31	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-11	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-12	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-13	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-14	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-15	0.000098	0.0000425	0.002	No	13	46.15	No	0.05	NP (normality)
Thallium (mg/L)	SGWC-16	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-17	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-18	0.0001706	0.0001303	0.002	No	12	0	No	0.05	Param.
Thallium (mg/L)	SGWC-19	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-20	0.00018	0.0001416	0.002	No	12	0	No	0.05	Param.
Thallium (mg/L)	SGWC-21	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-22	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-23	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-6	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-7	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-8	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-9	0.0000425	0.0000425	0.002	No	13	100	No	0.05	NP (NDs)

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

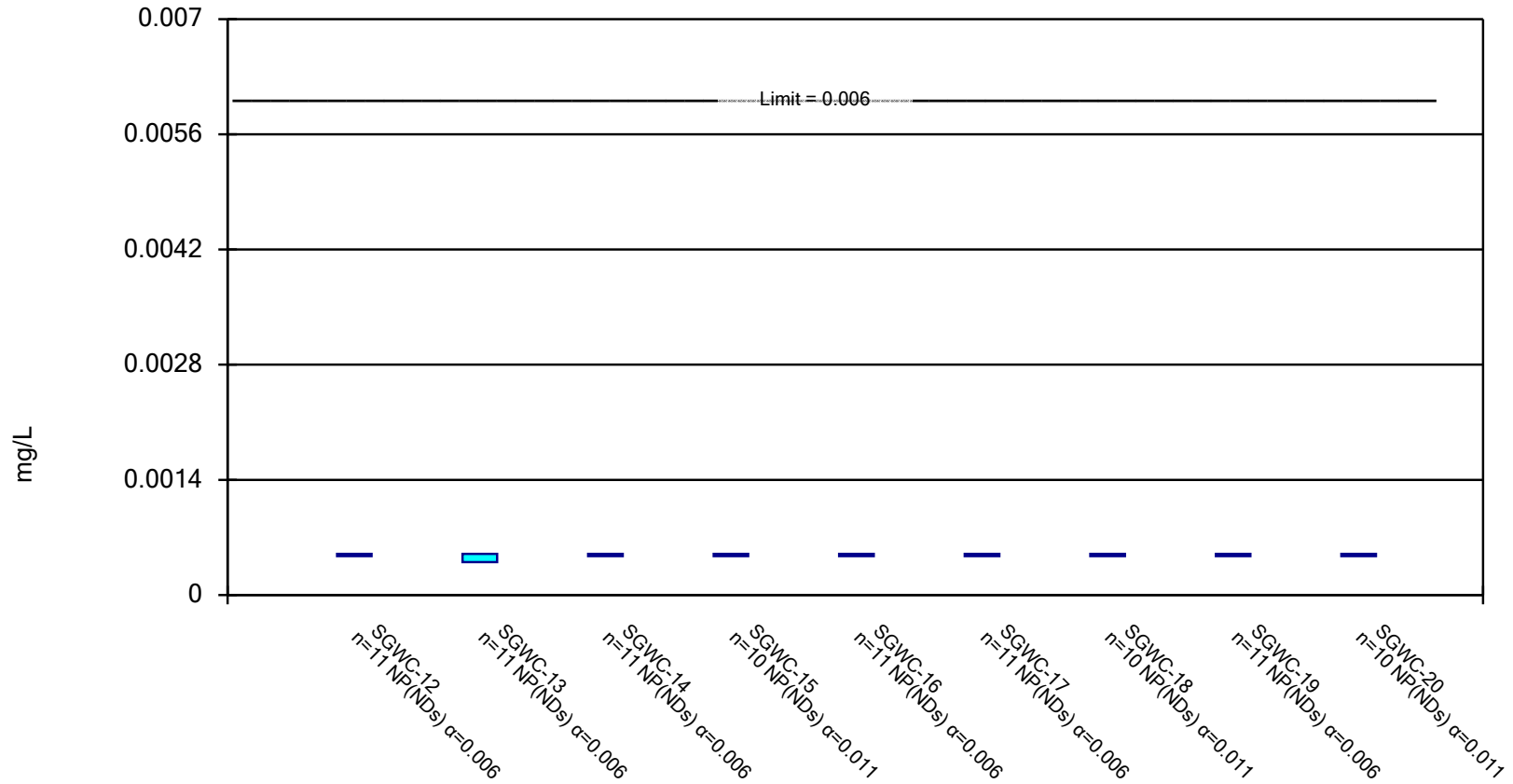


Constituent: Antimony Analysis Run 5/20/2019 9:48 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Non-Parametric Confidence Interval

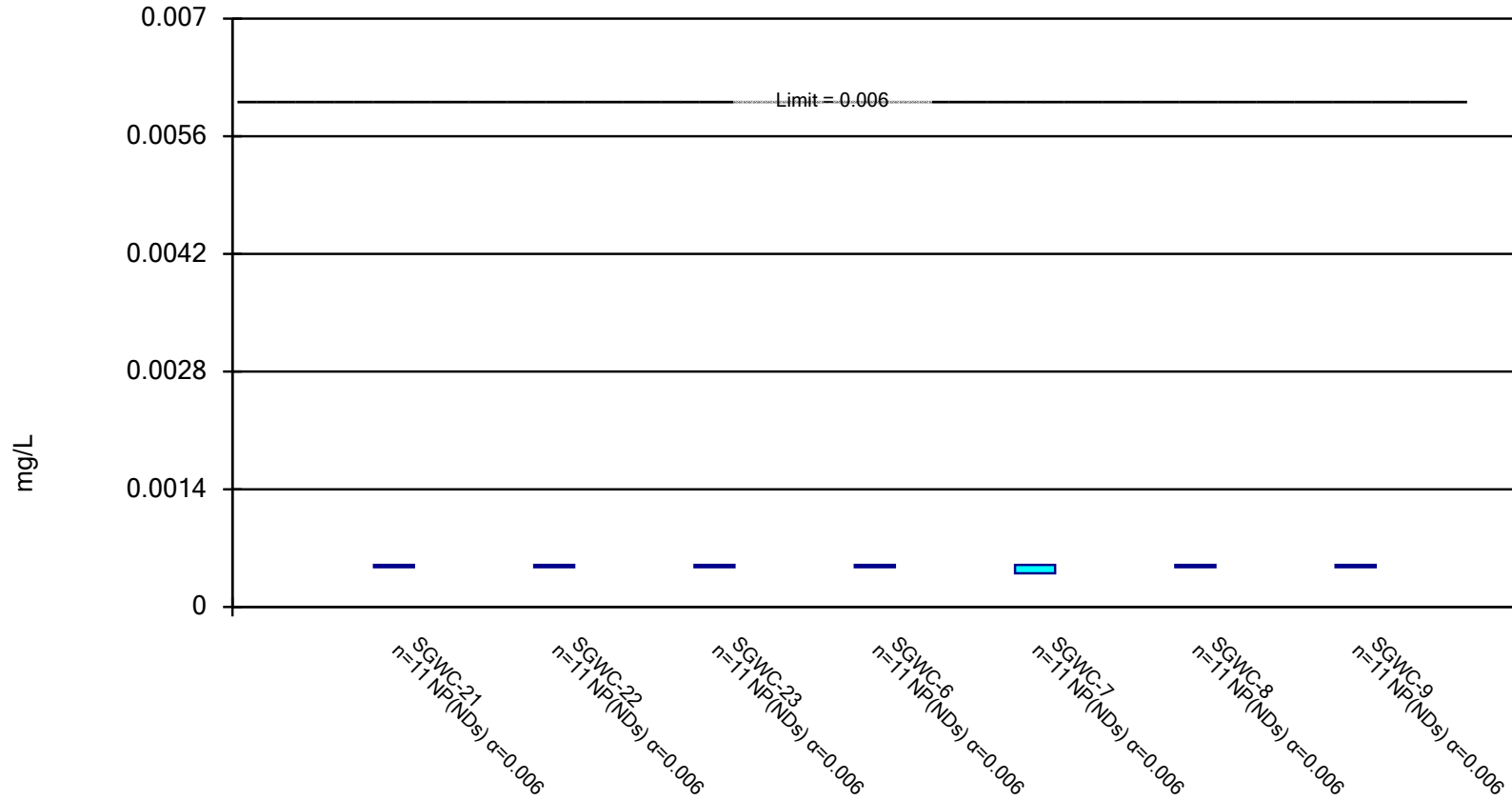
Compliance Limit is not exceeded.



Constituent: Antimony    Analysis Run 5/20/2019 9:48 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

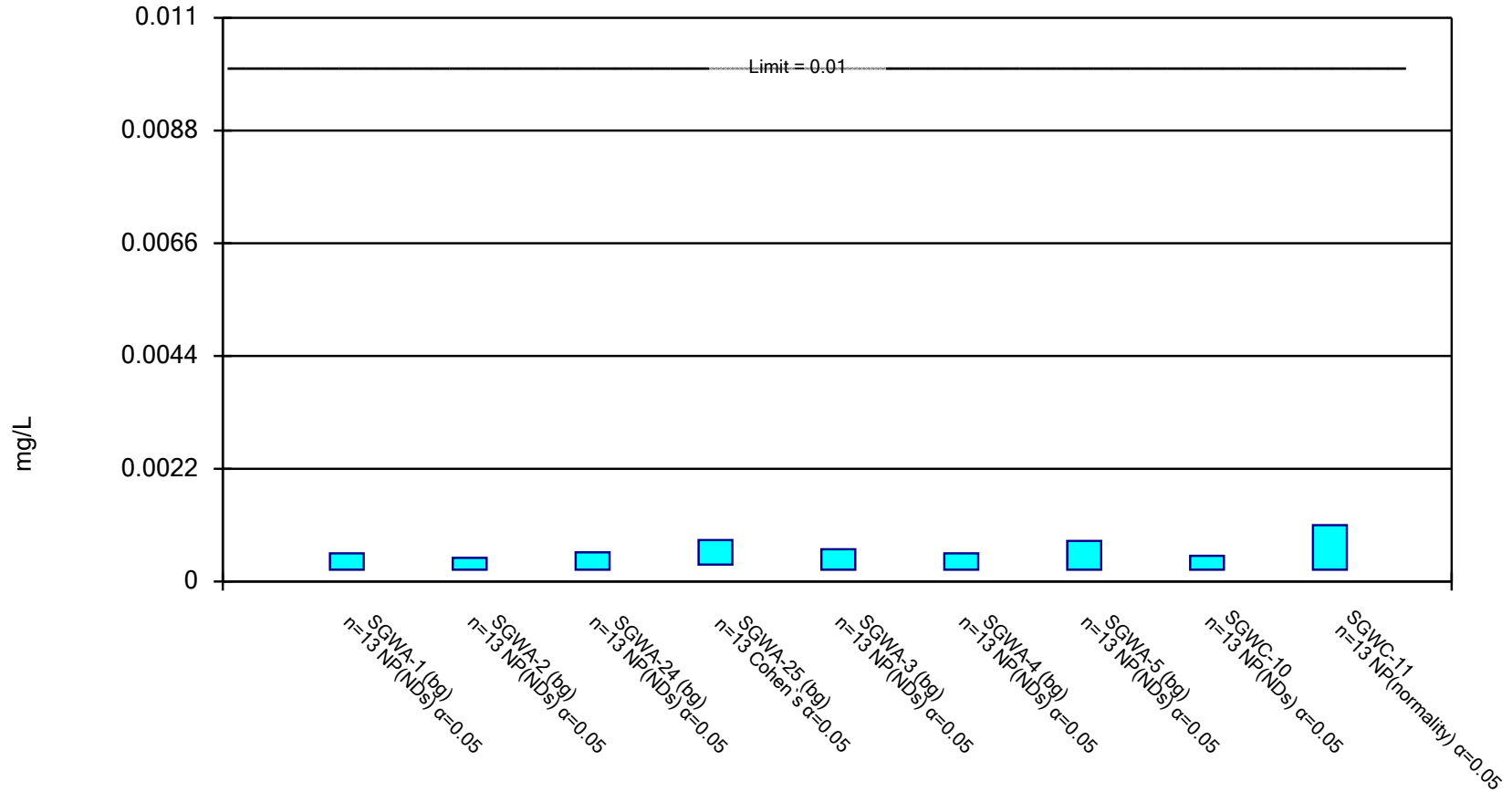
Compliance Limit is not exceeded.



Constituent: Antimony Analysis Run 5/20/2019 9:48 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

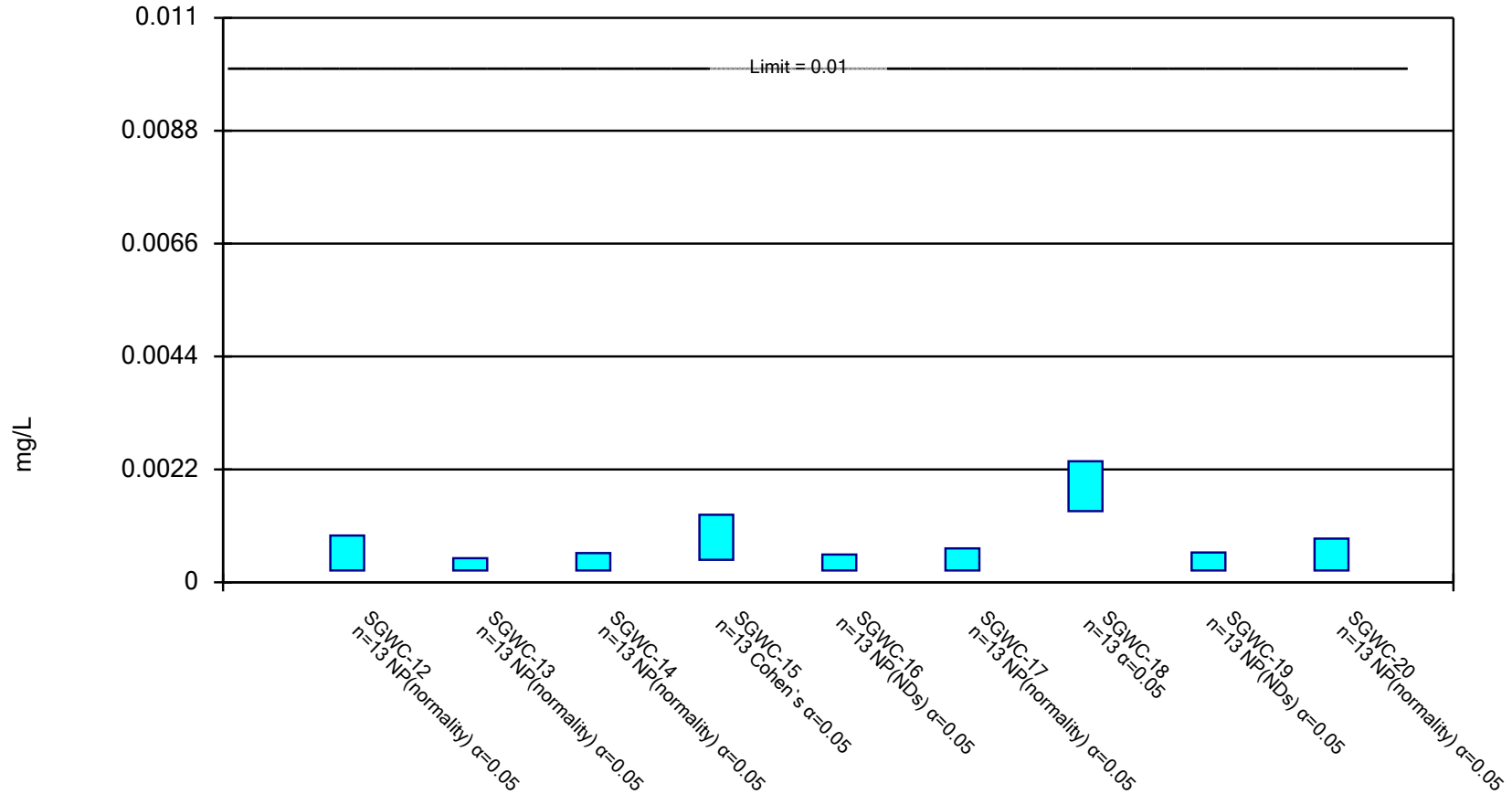
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic    Analysis Run 5/20/2019 9:48 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

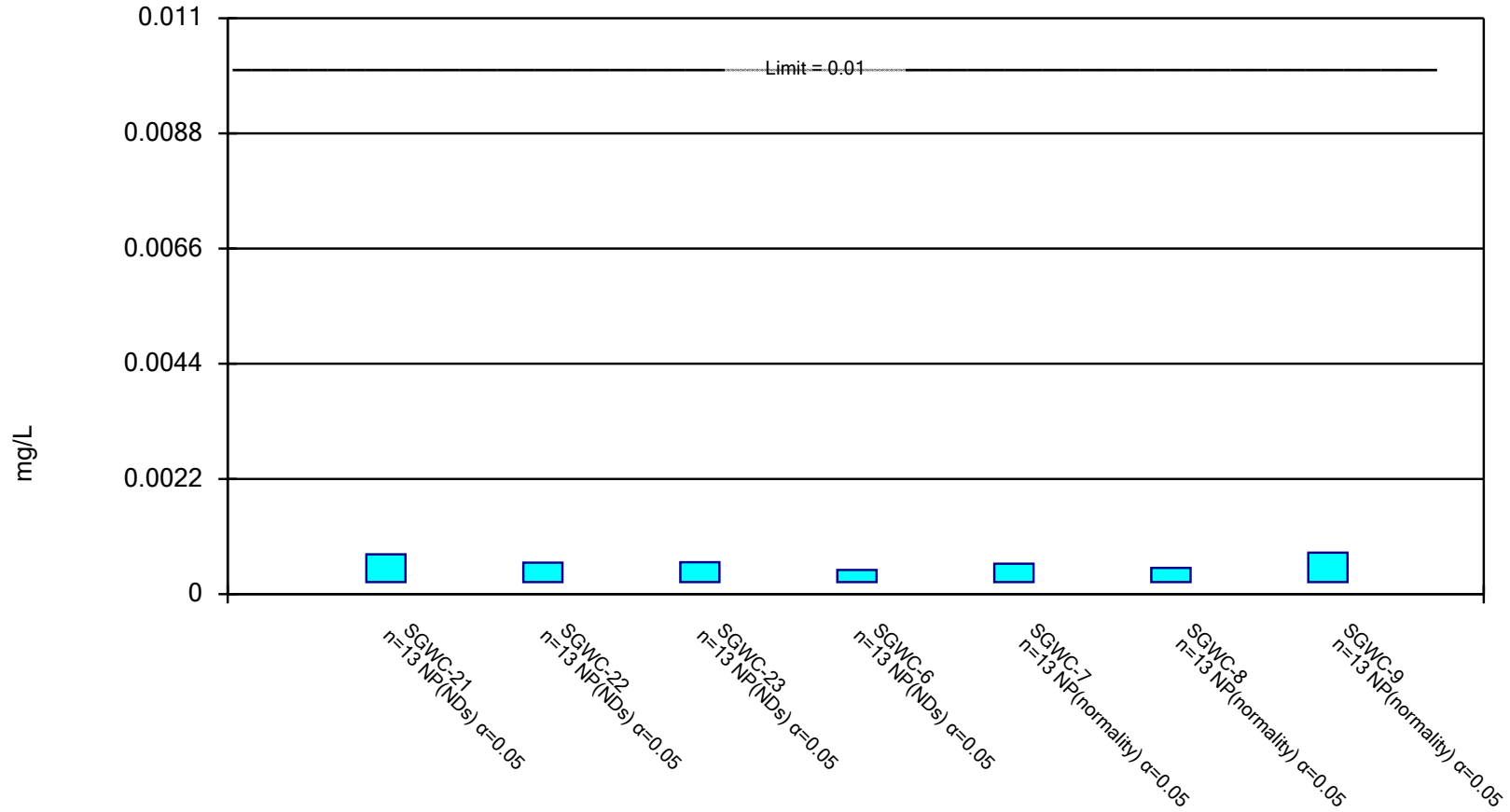


Constituent: Arsenic Analysis Run 5/20/2019 9:48 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

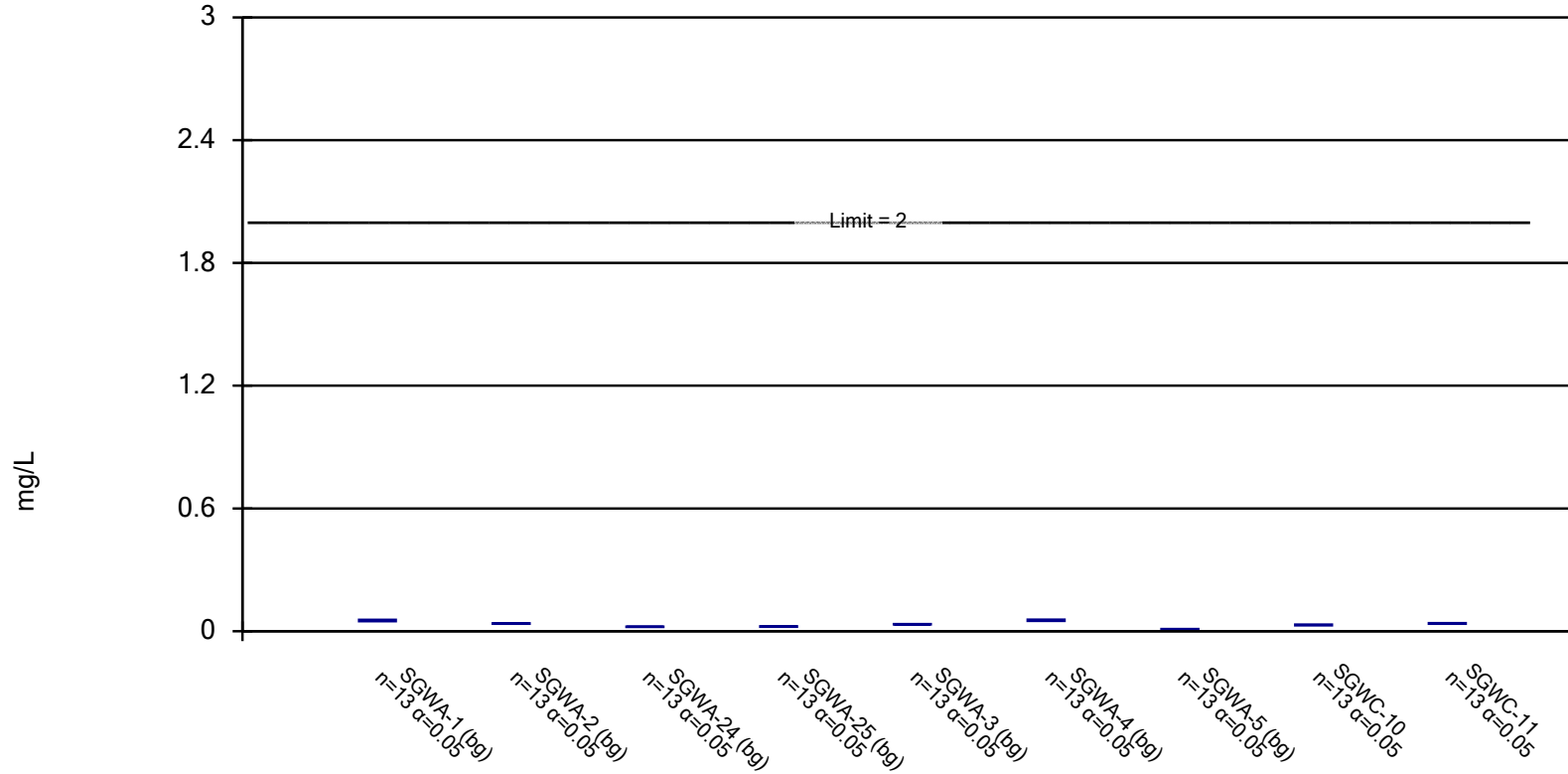
Compliance Limit is not exceeded.



Constituent: Arsenic Analysis Run 5/20/2019 9:48 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric Confidence Interval

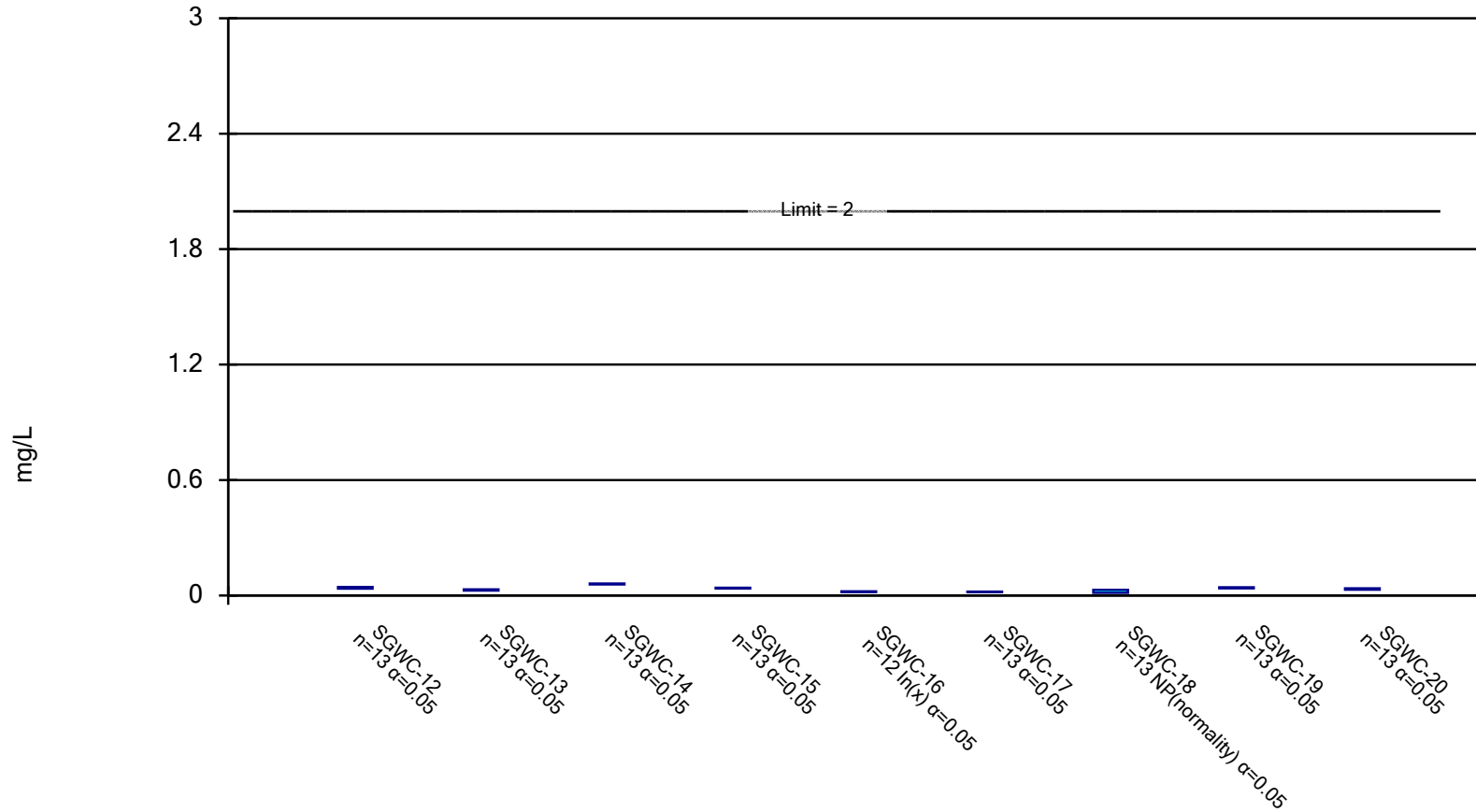
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium    Analysis Run 5/20/2019 9:48 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

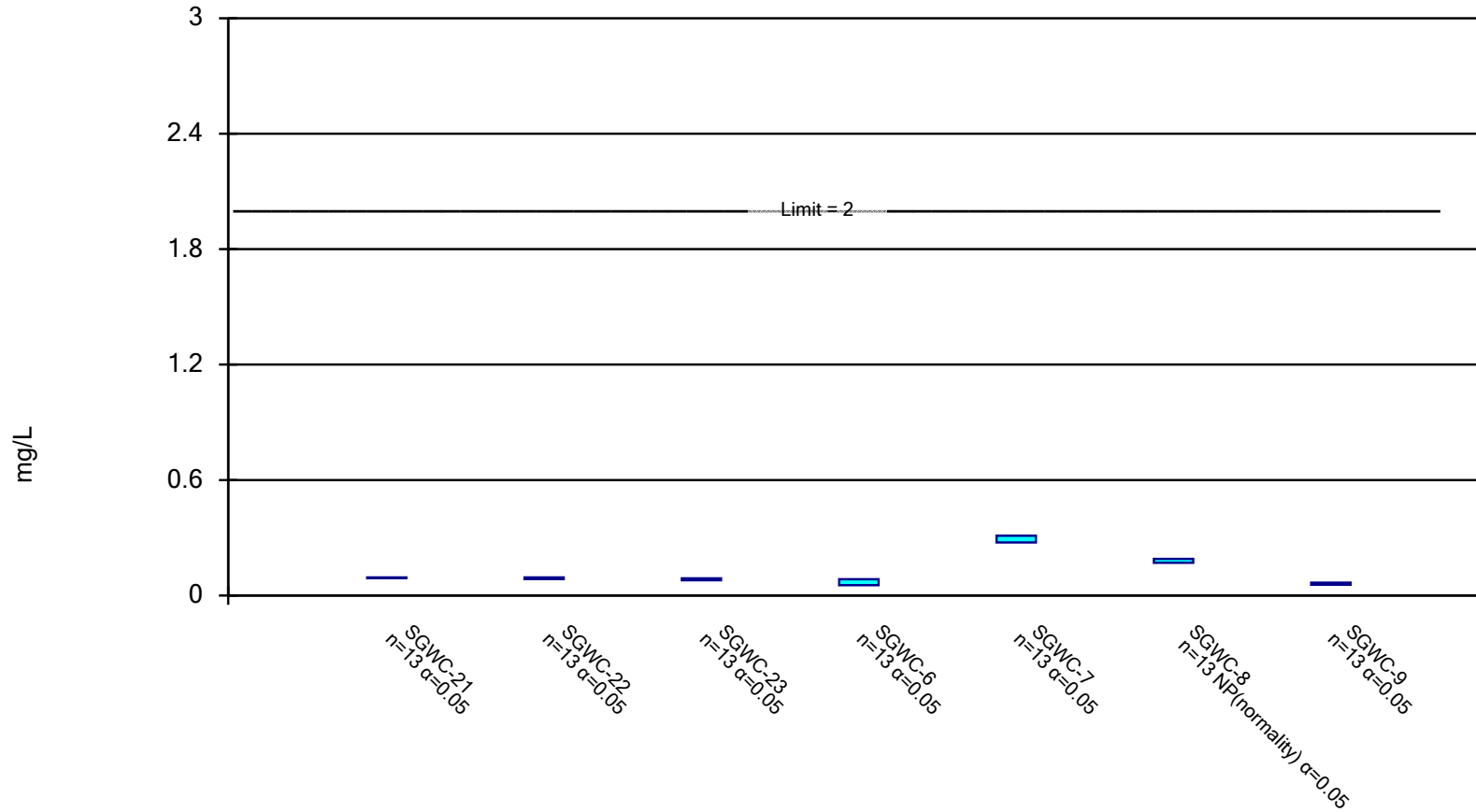
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium    Analysis Run 5/20/2019 9:48 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

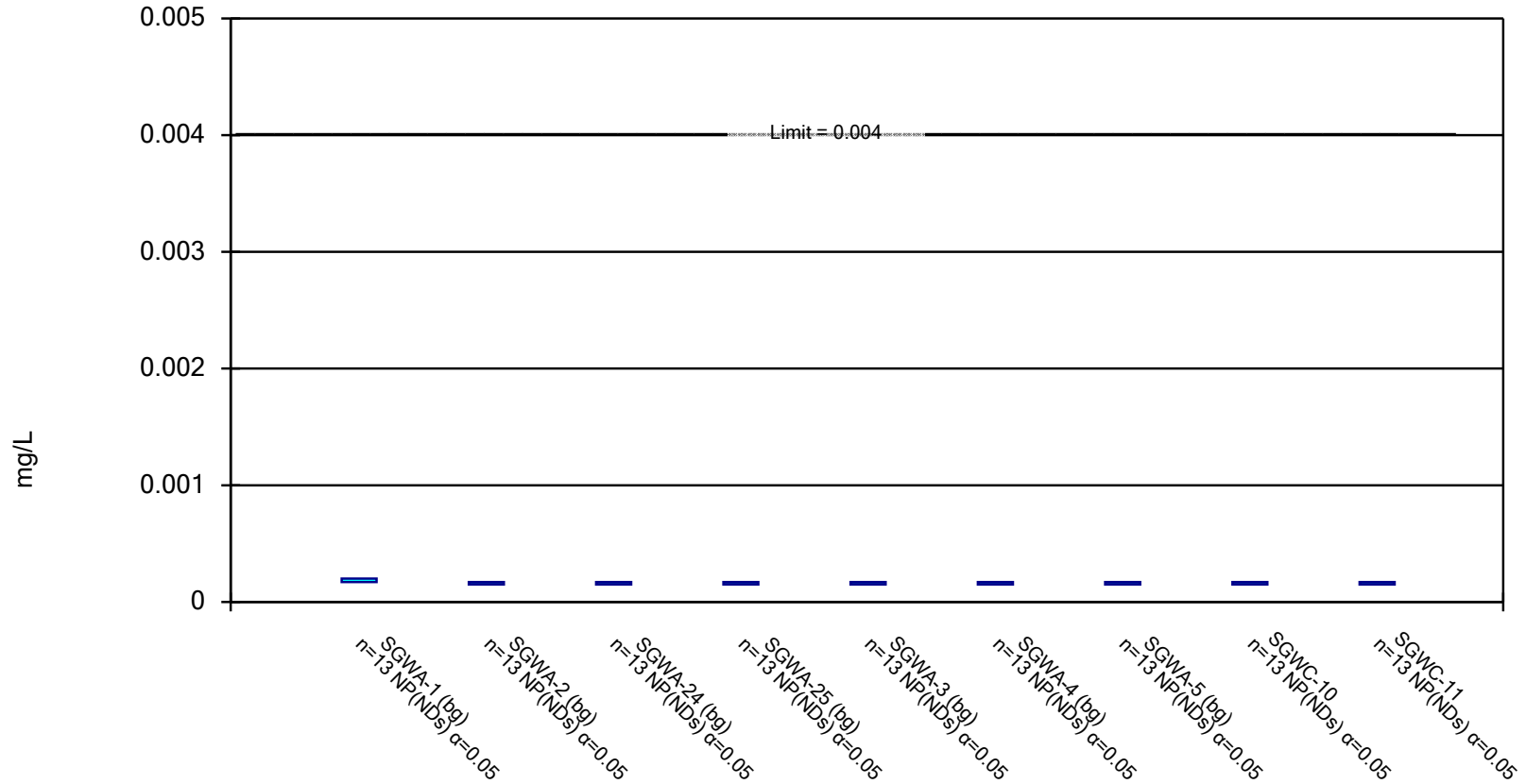


Constituent: Barium    Analysis Run 5/20/2019 9:48 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

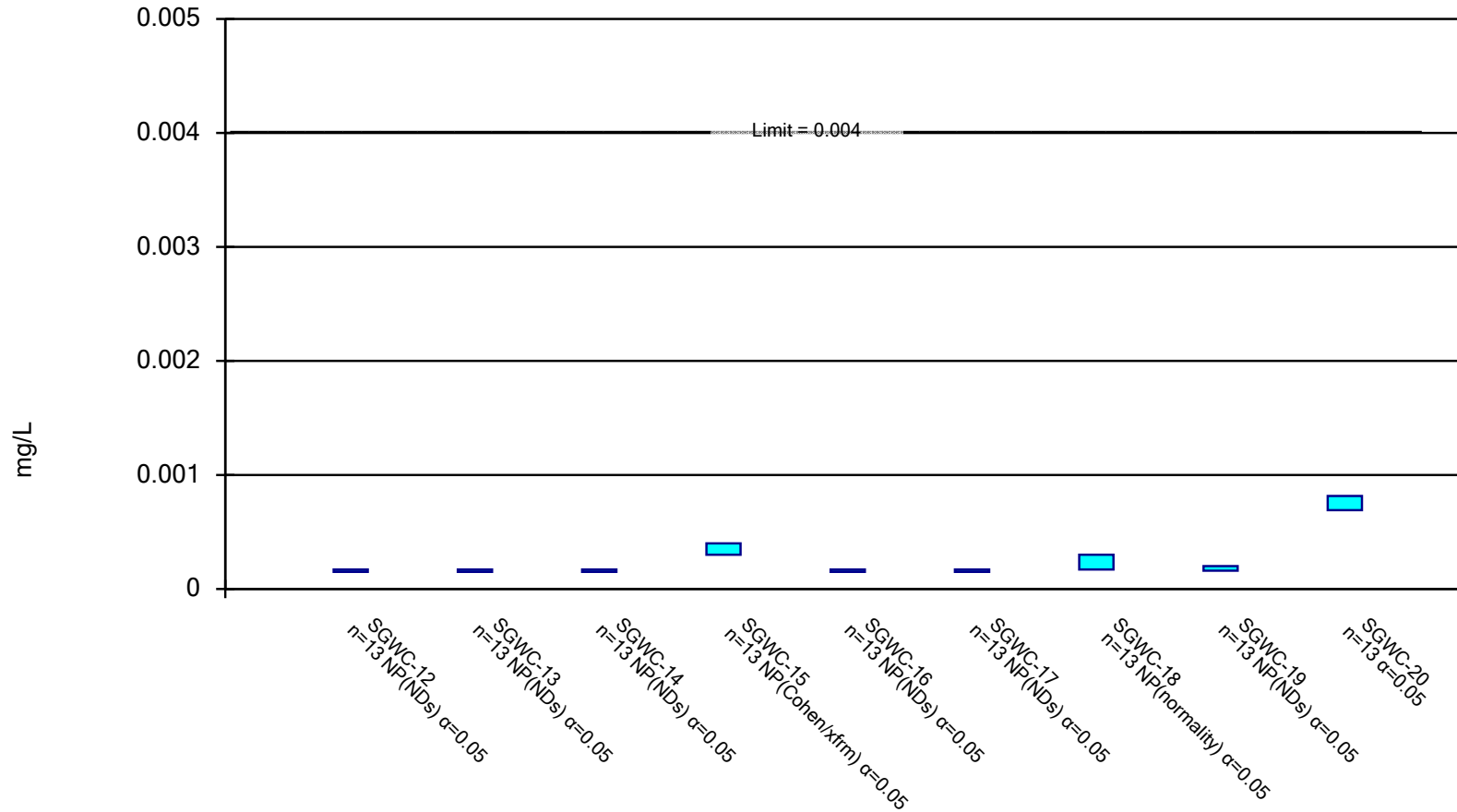


Constituent: Beryllium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

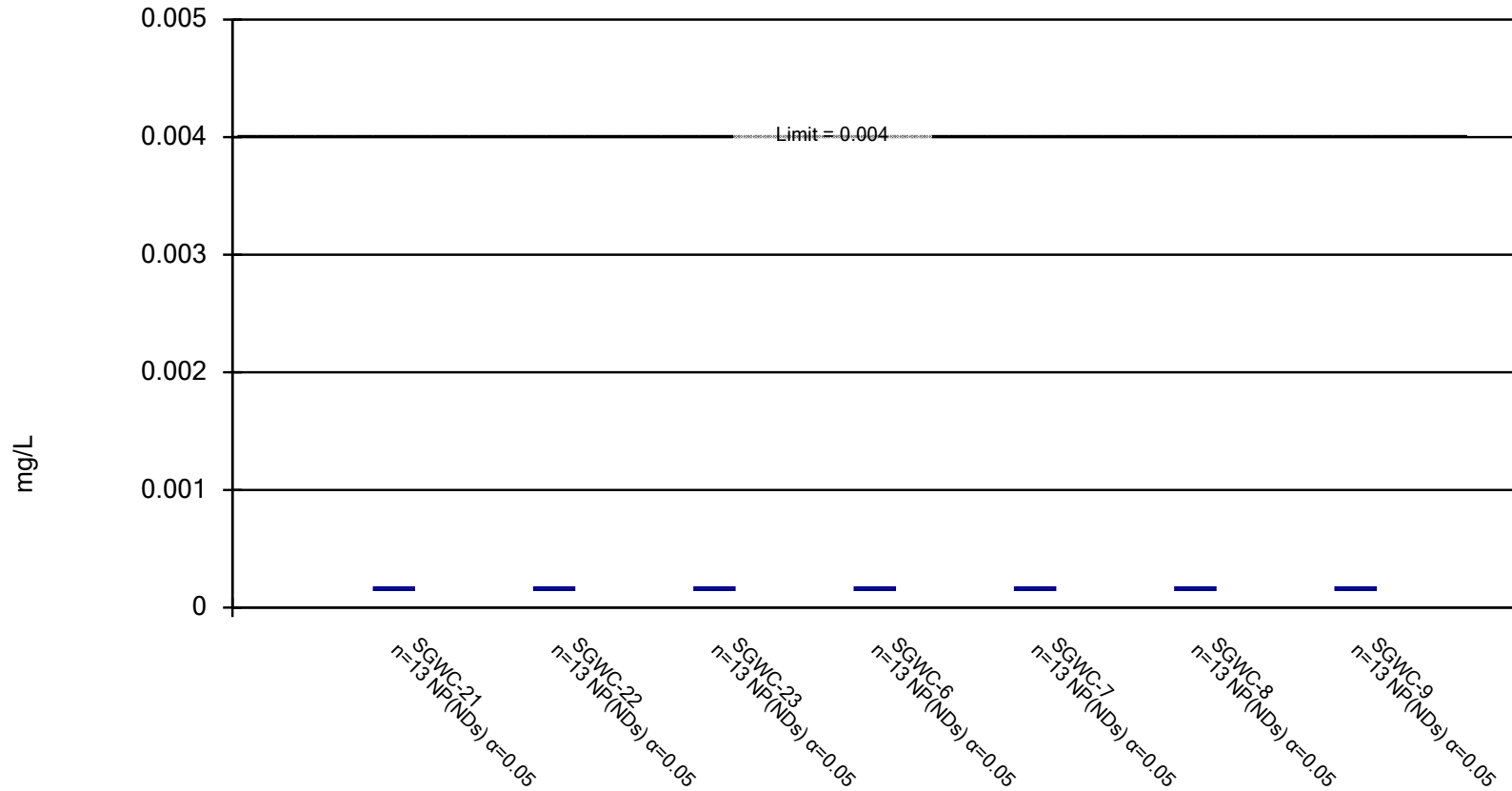


Constituent: Beryllium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

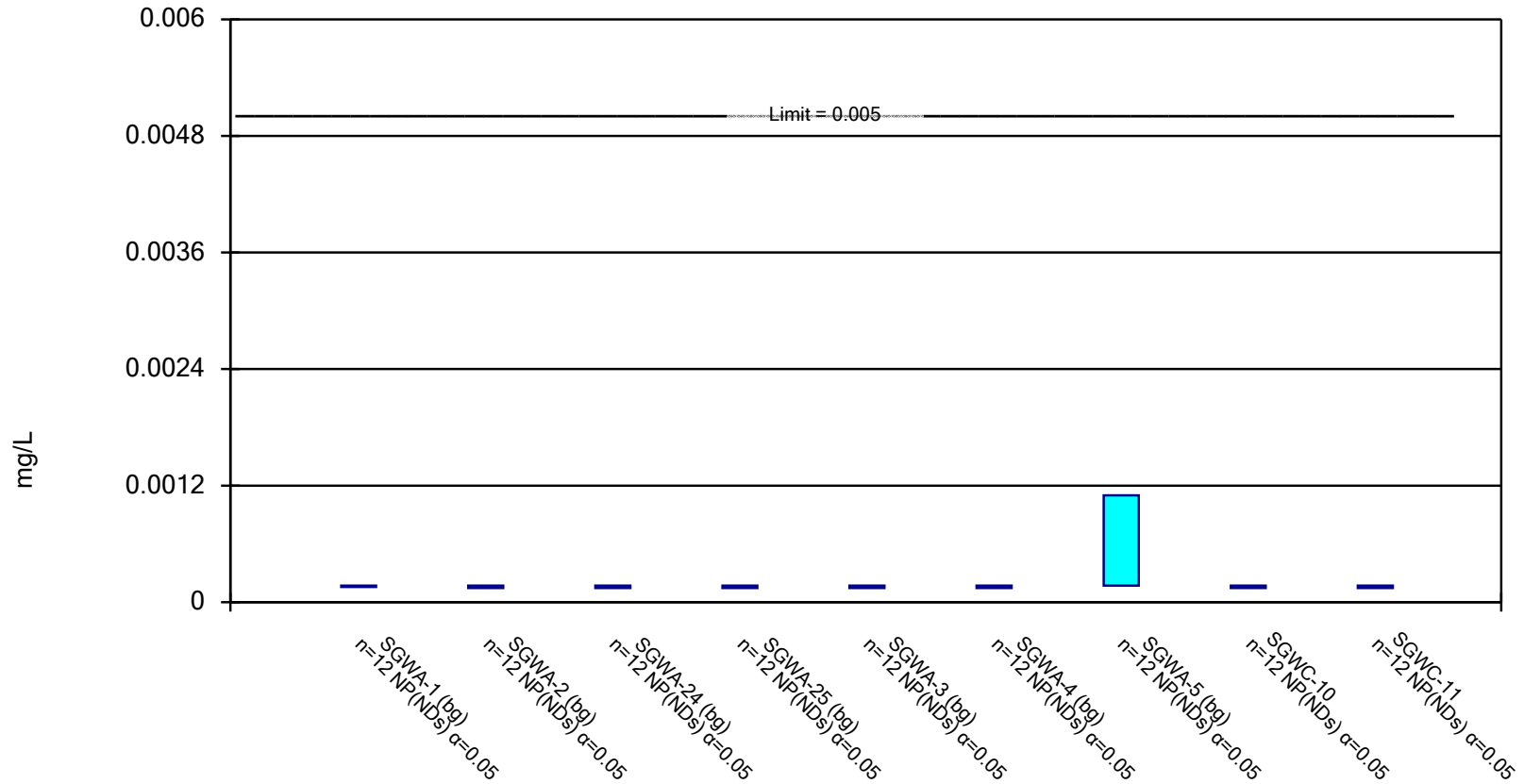
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

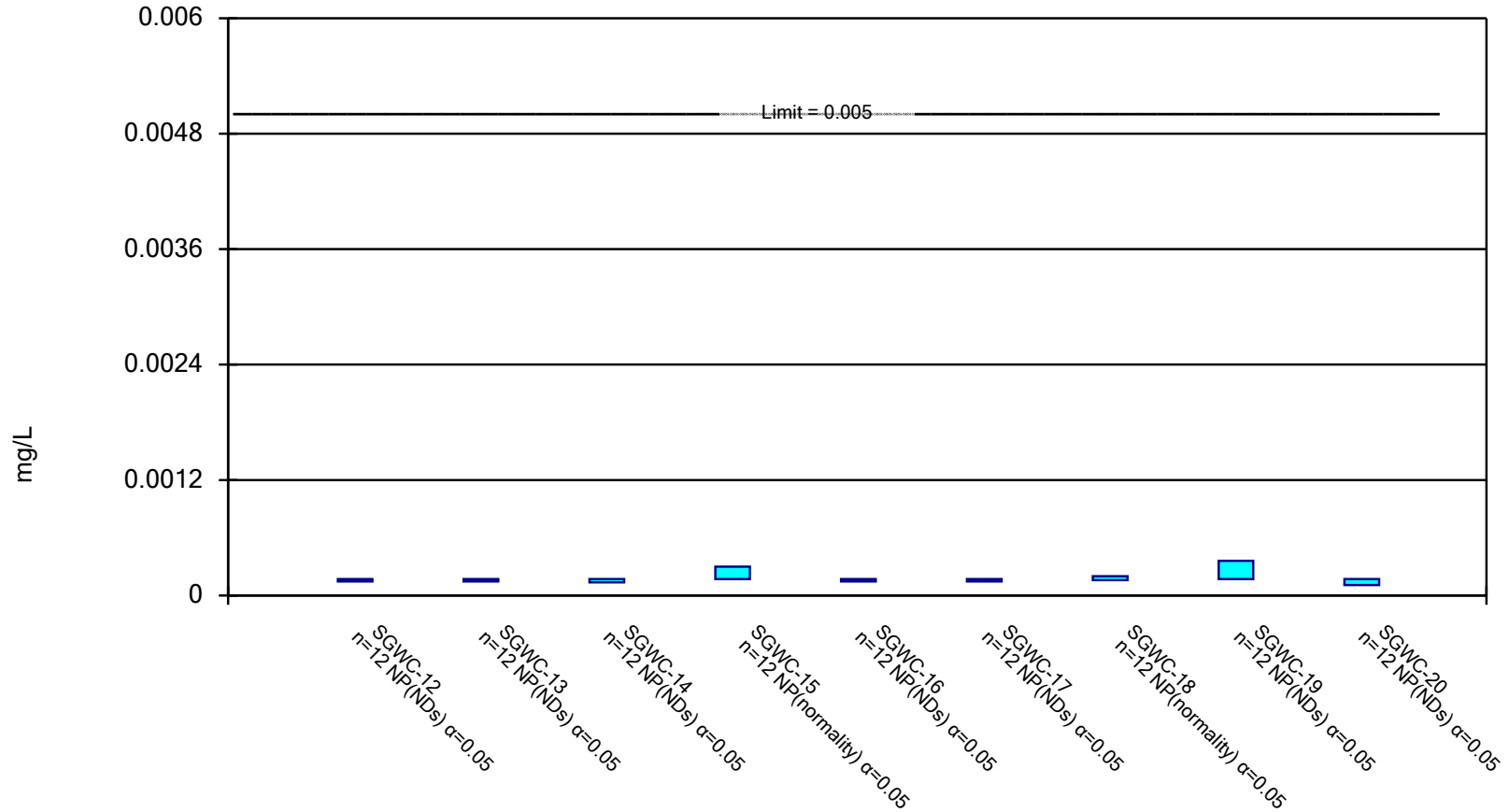


Constituent: Cadmium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

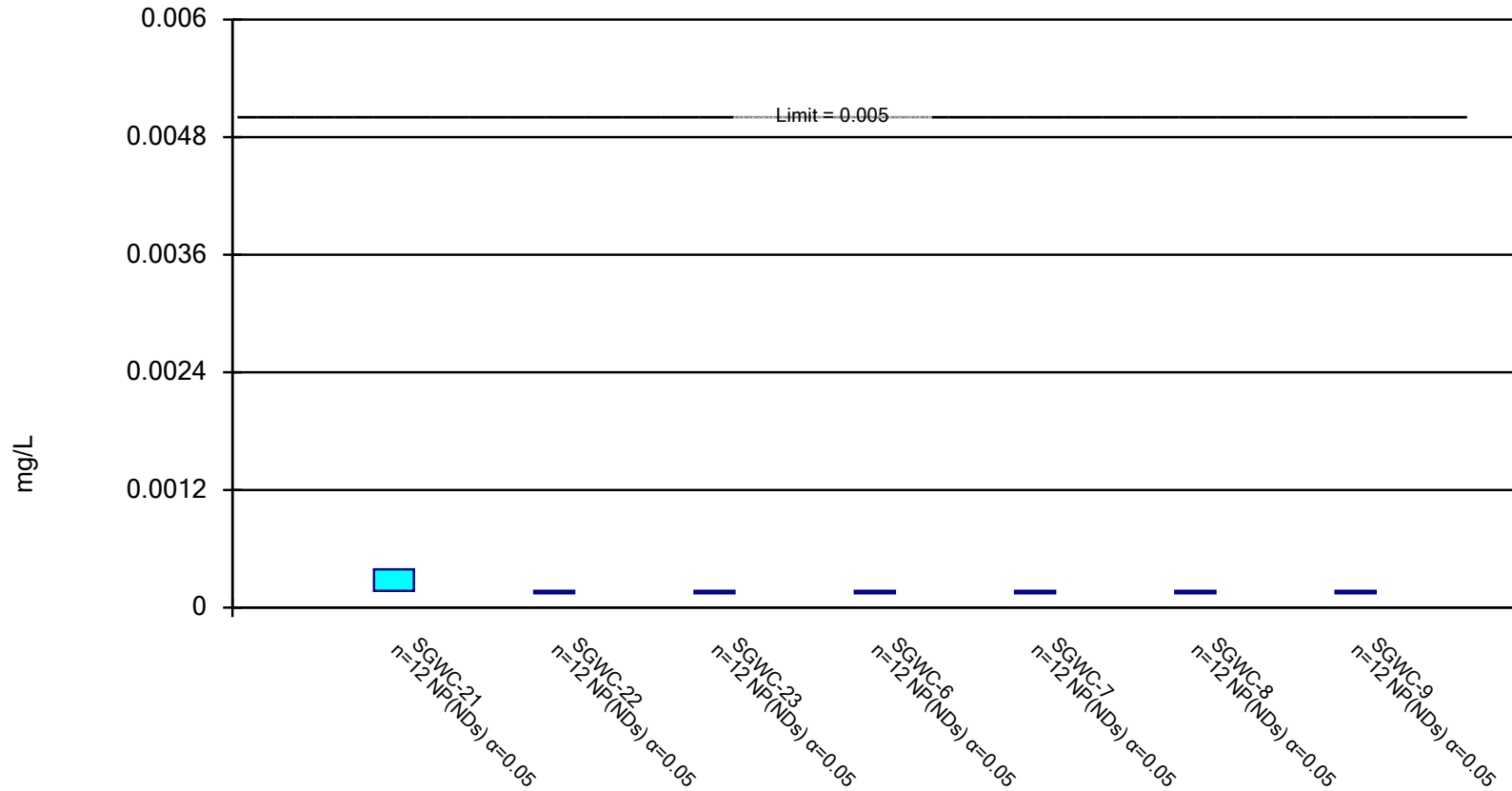
Compliance Limit is not exceeded.



Constituent: Cadmium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

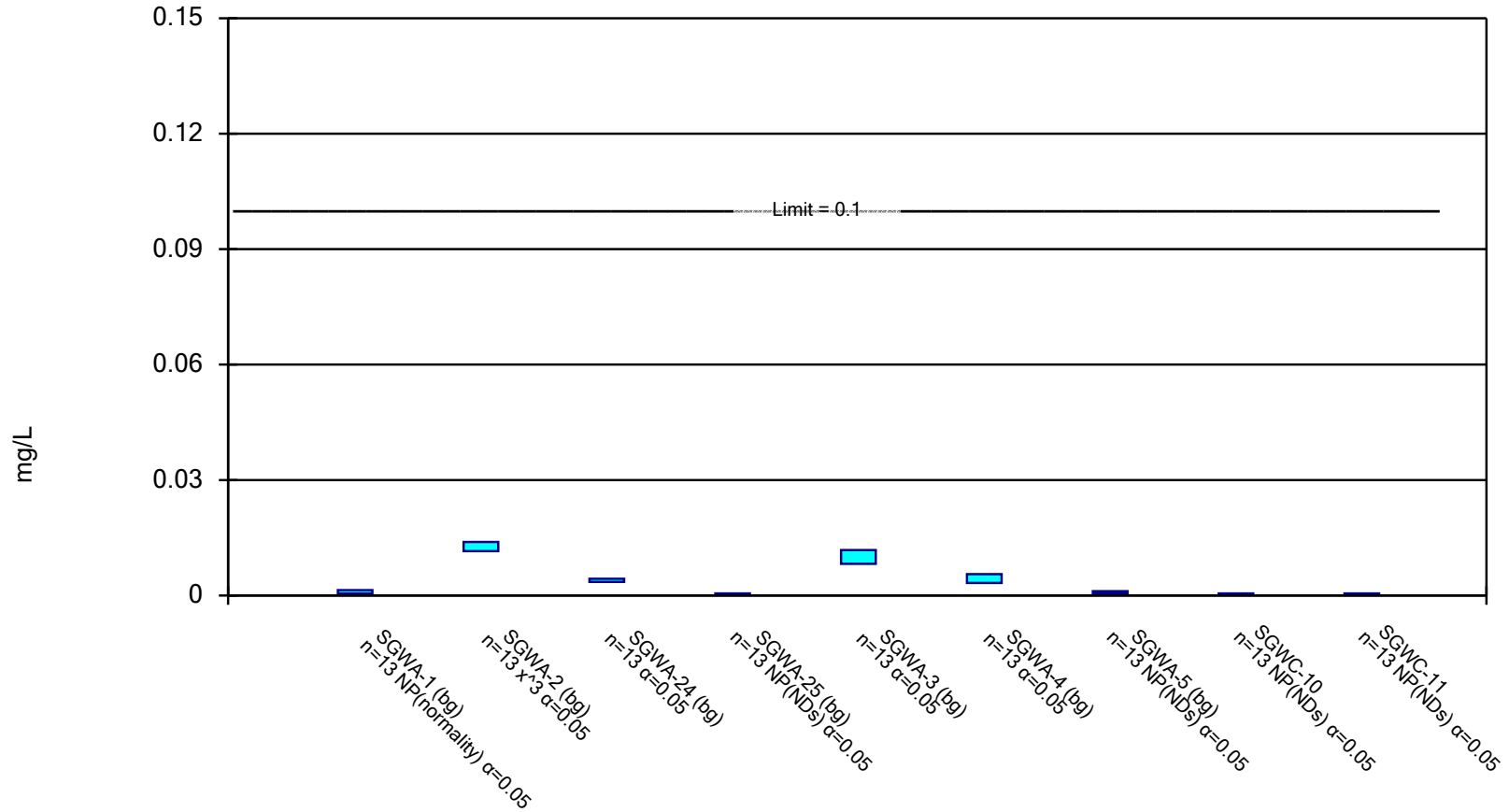
Compliance Limit is not exceeded.



Constituent: Cadmium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

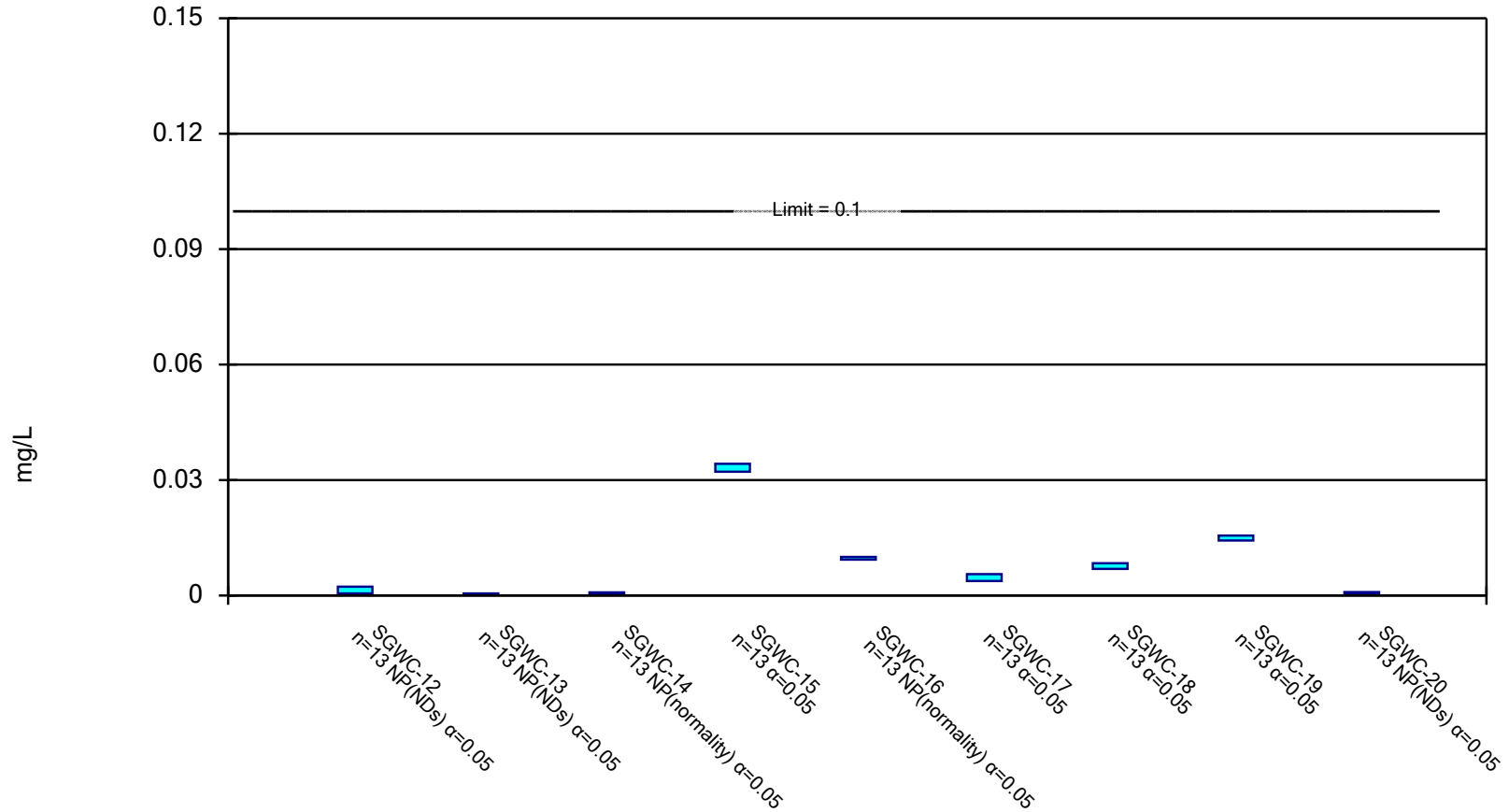
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



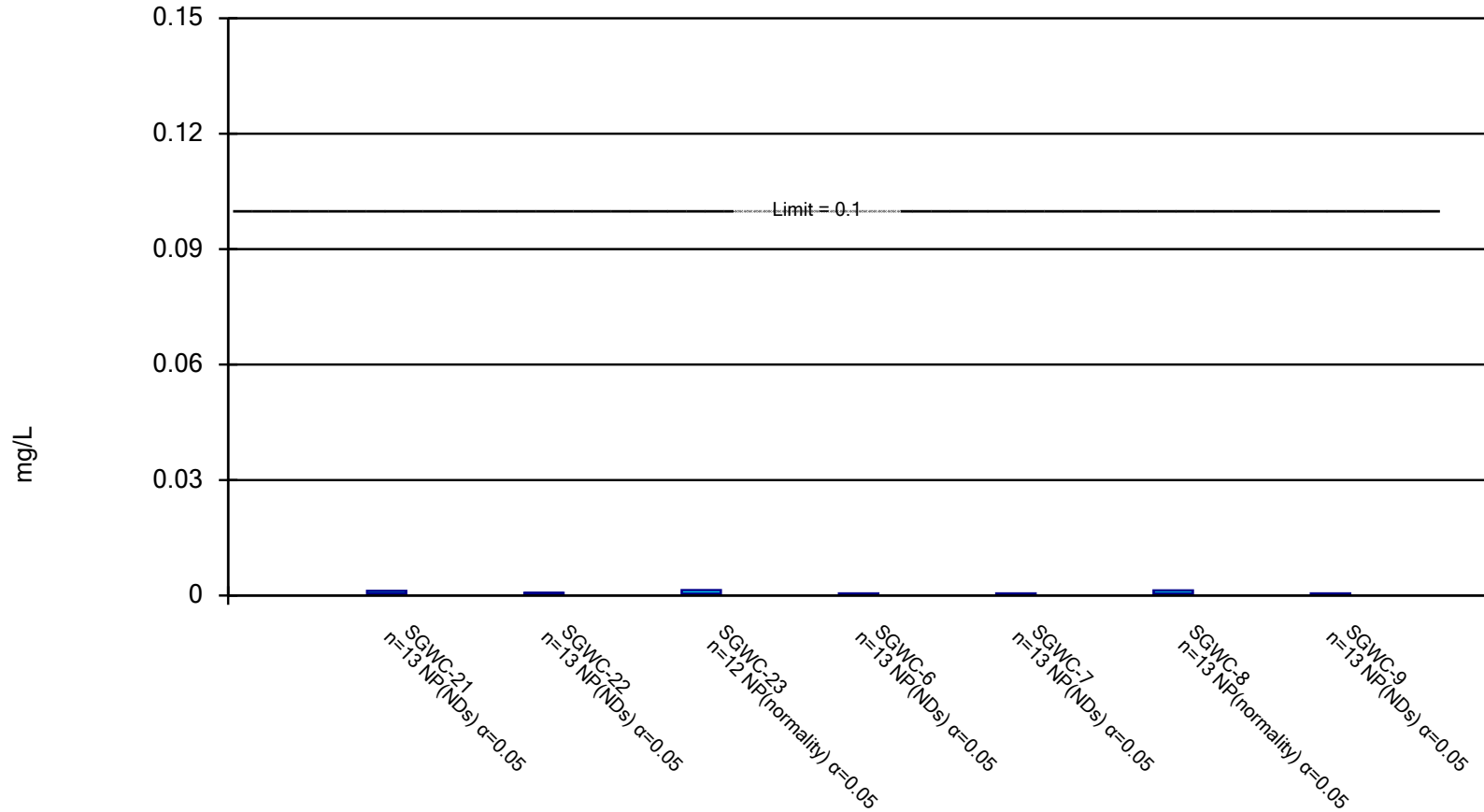
Constituent: Chromium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Non-Parametric Confidence Interval

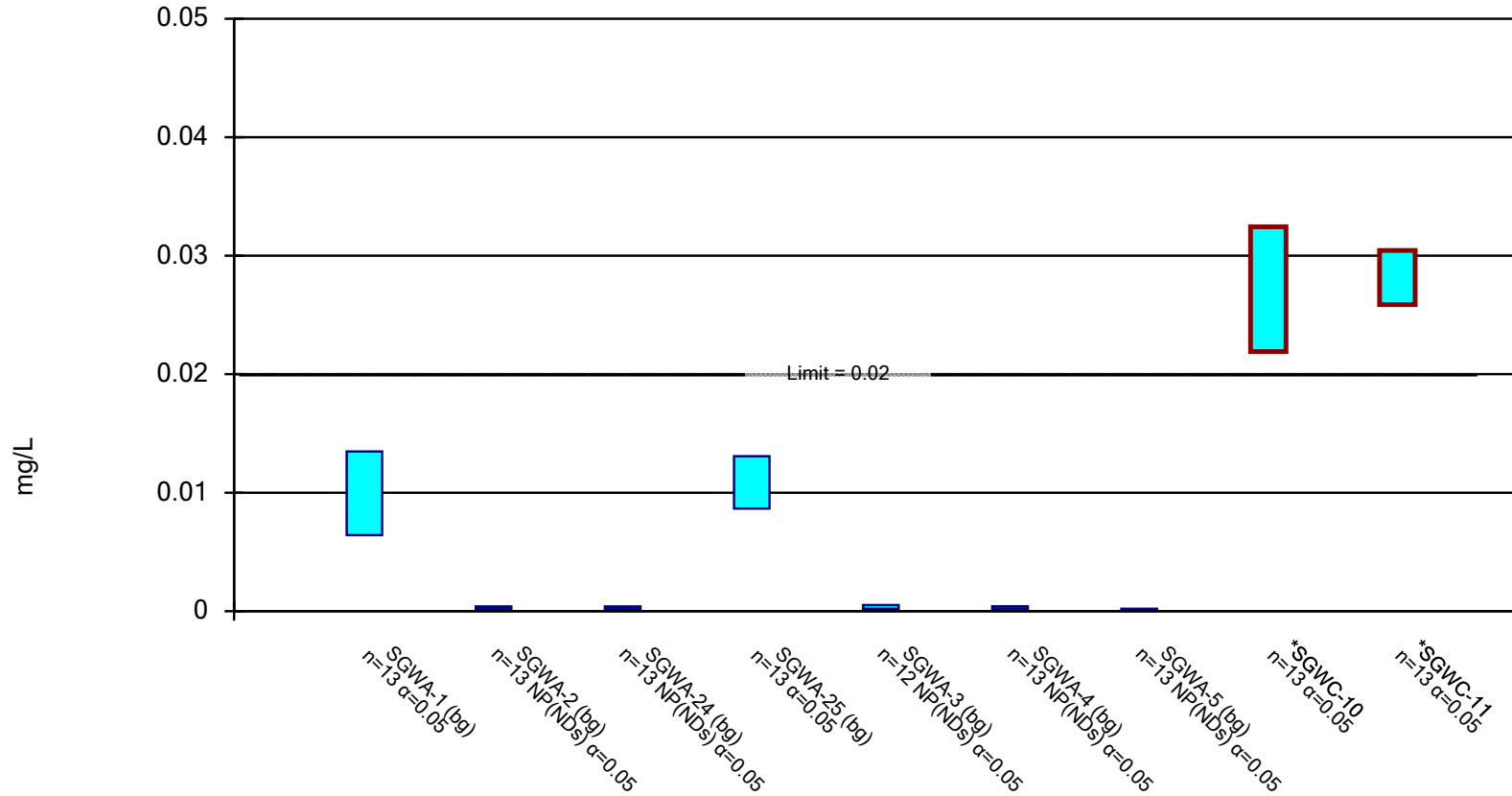
Compliance Limit is not exceeded.



Constituent: Chromium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.

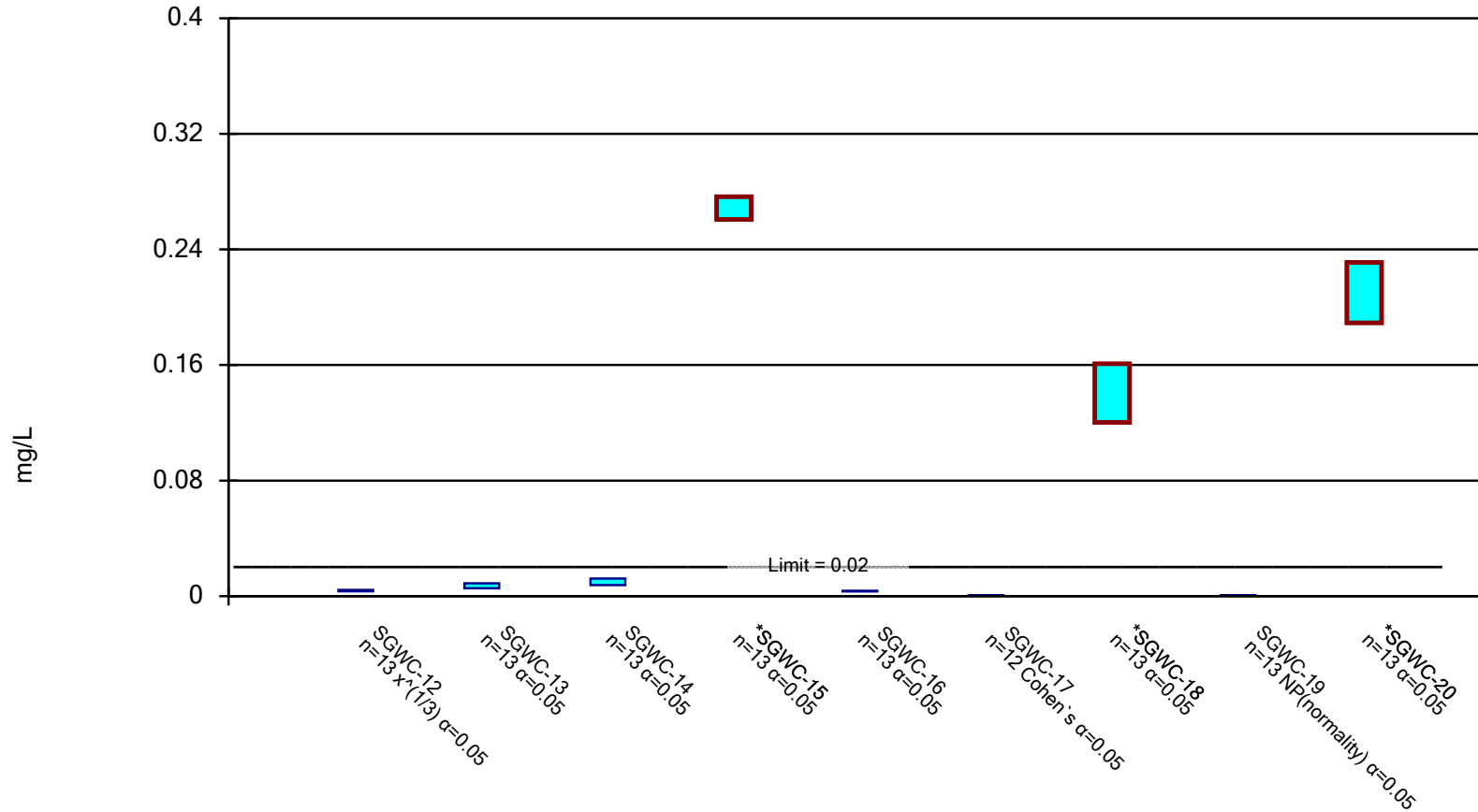


Constituent: Cobalt Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

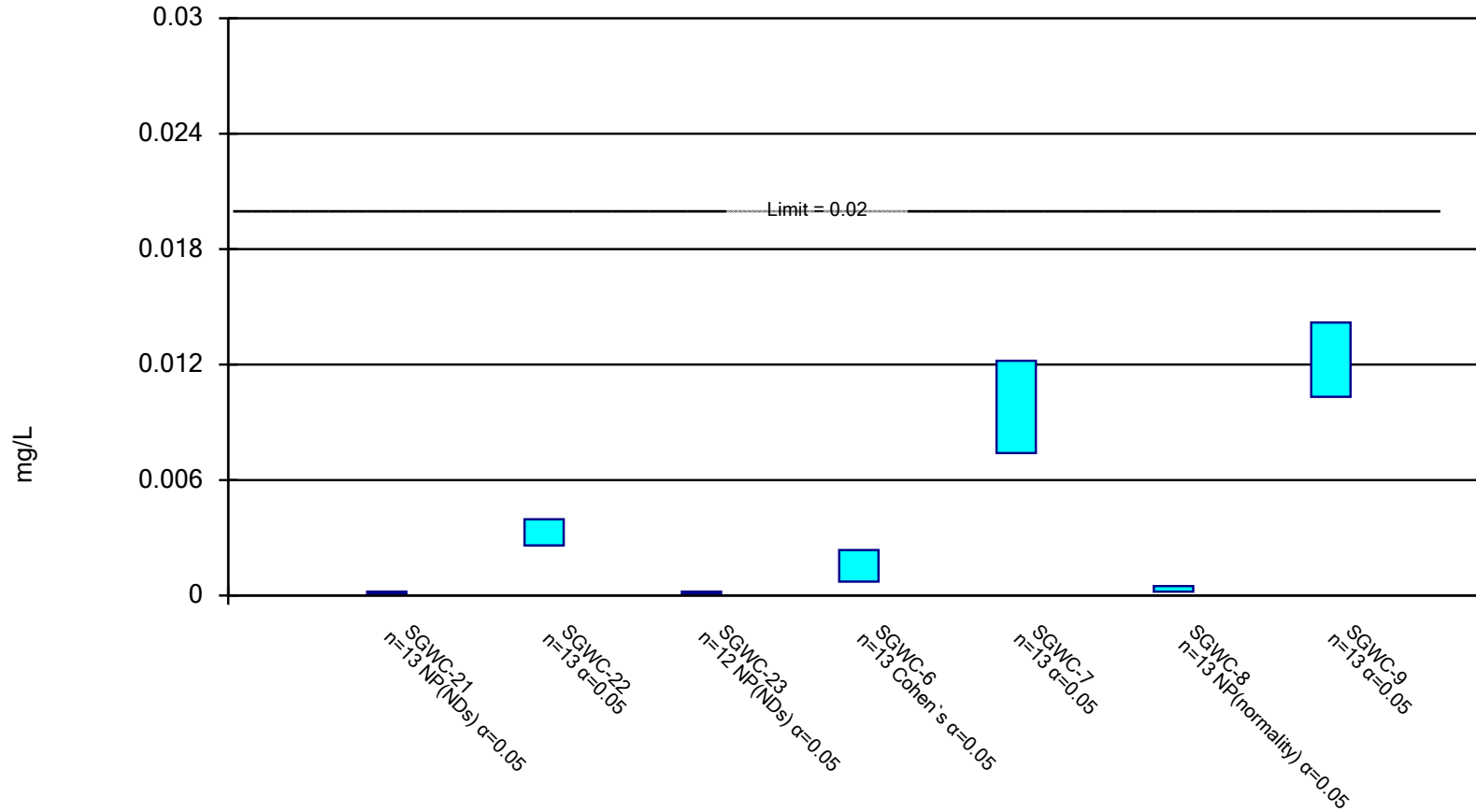
Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

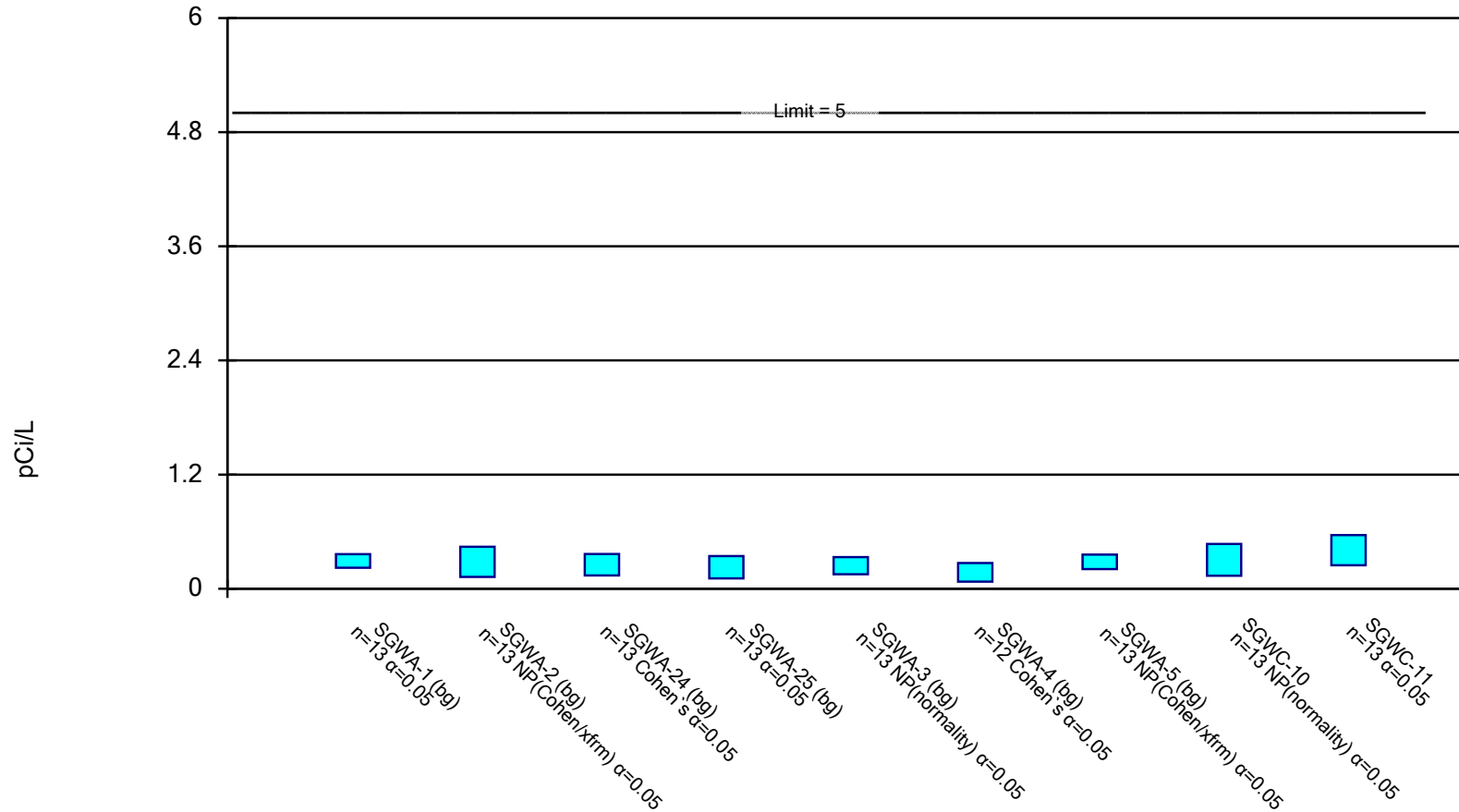
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

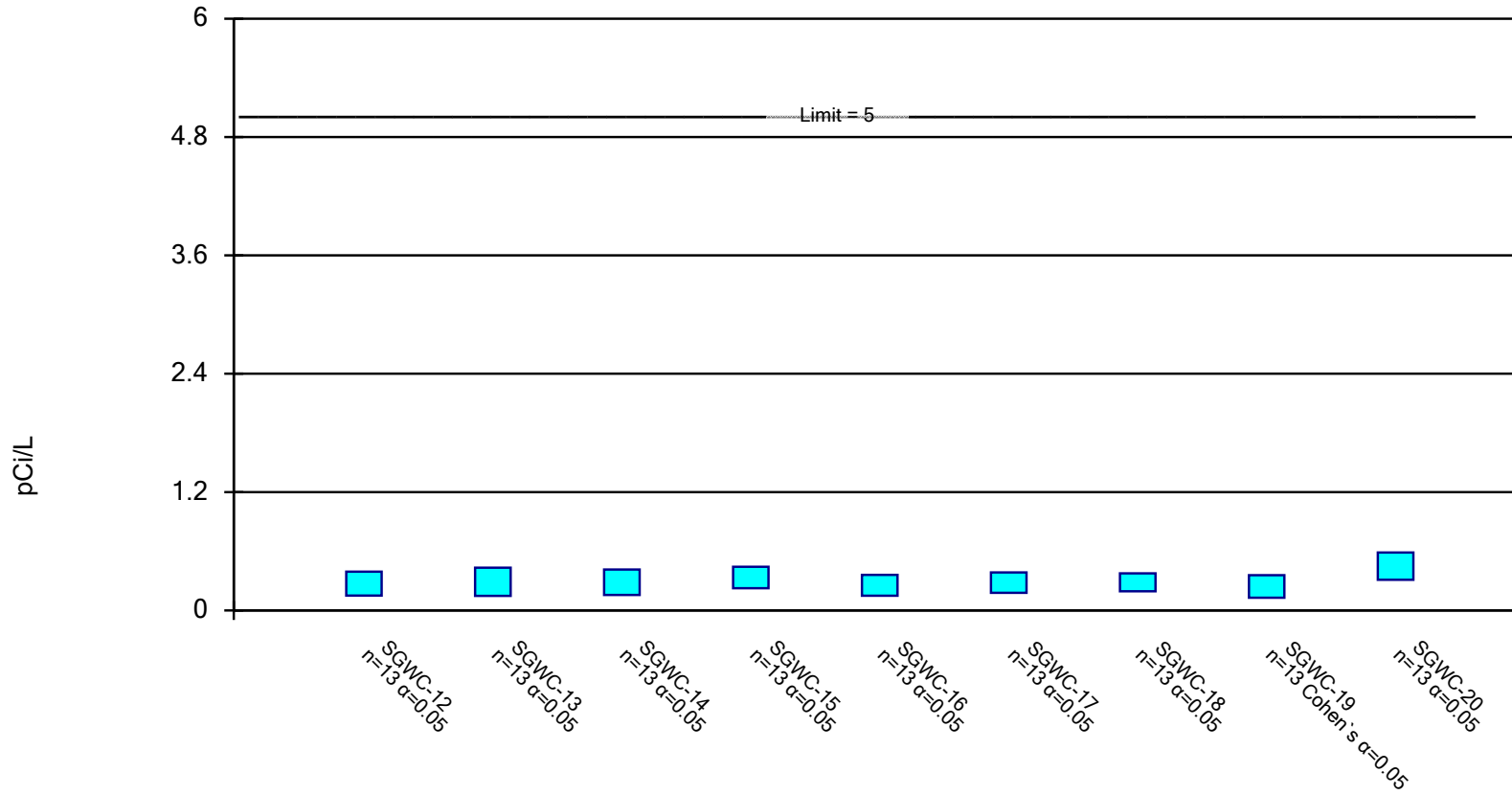


Constituent: Combined Radium 226 + 228 Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Int

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

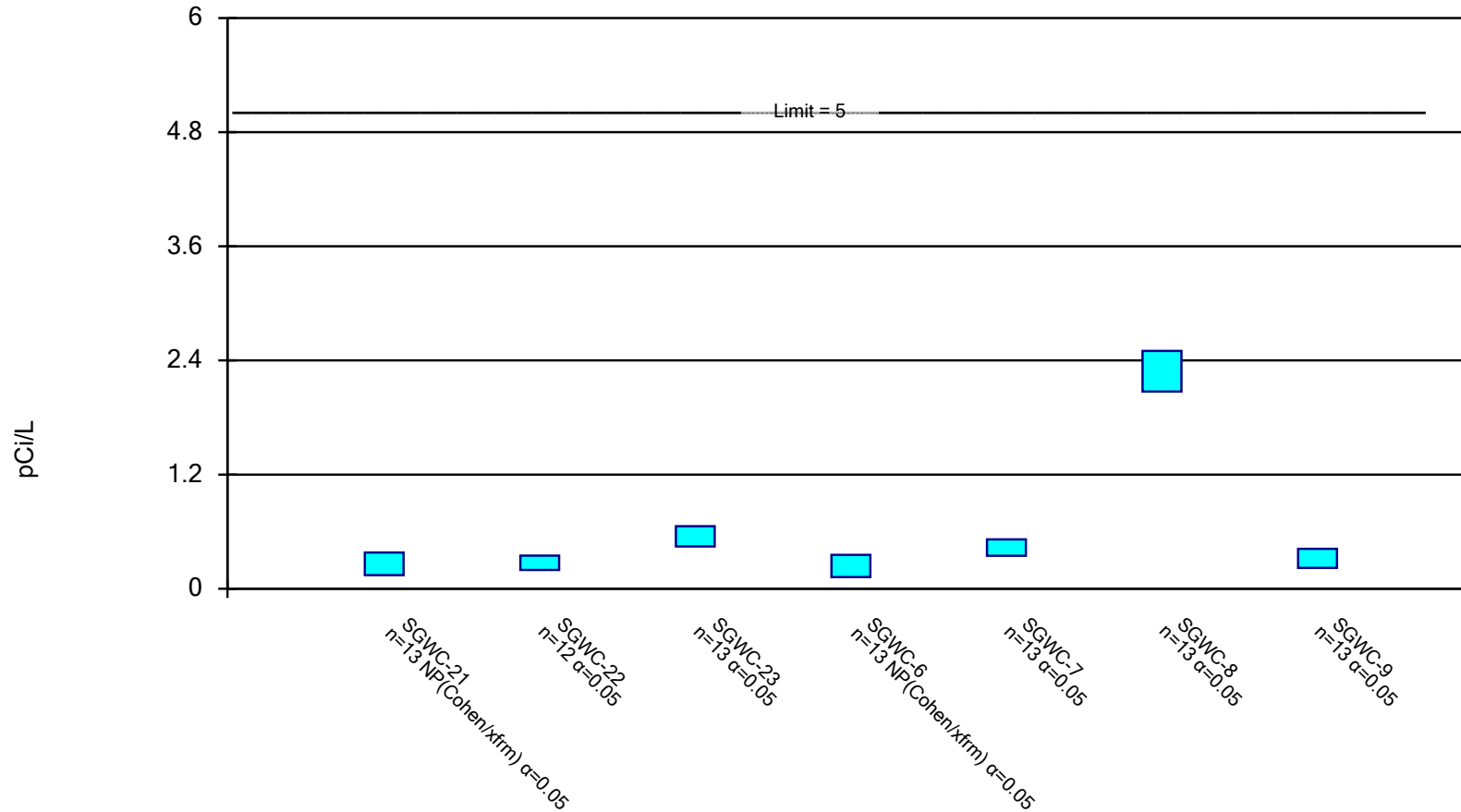
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Int  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

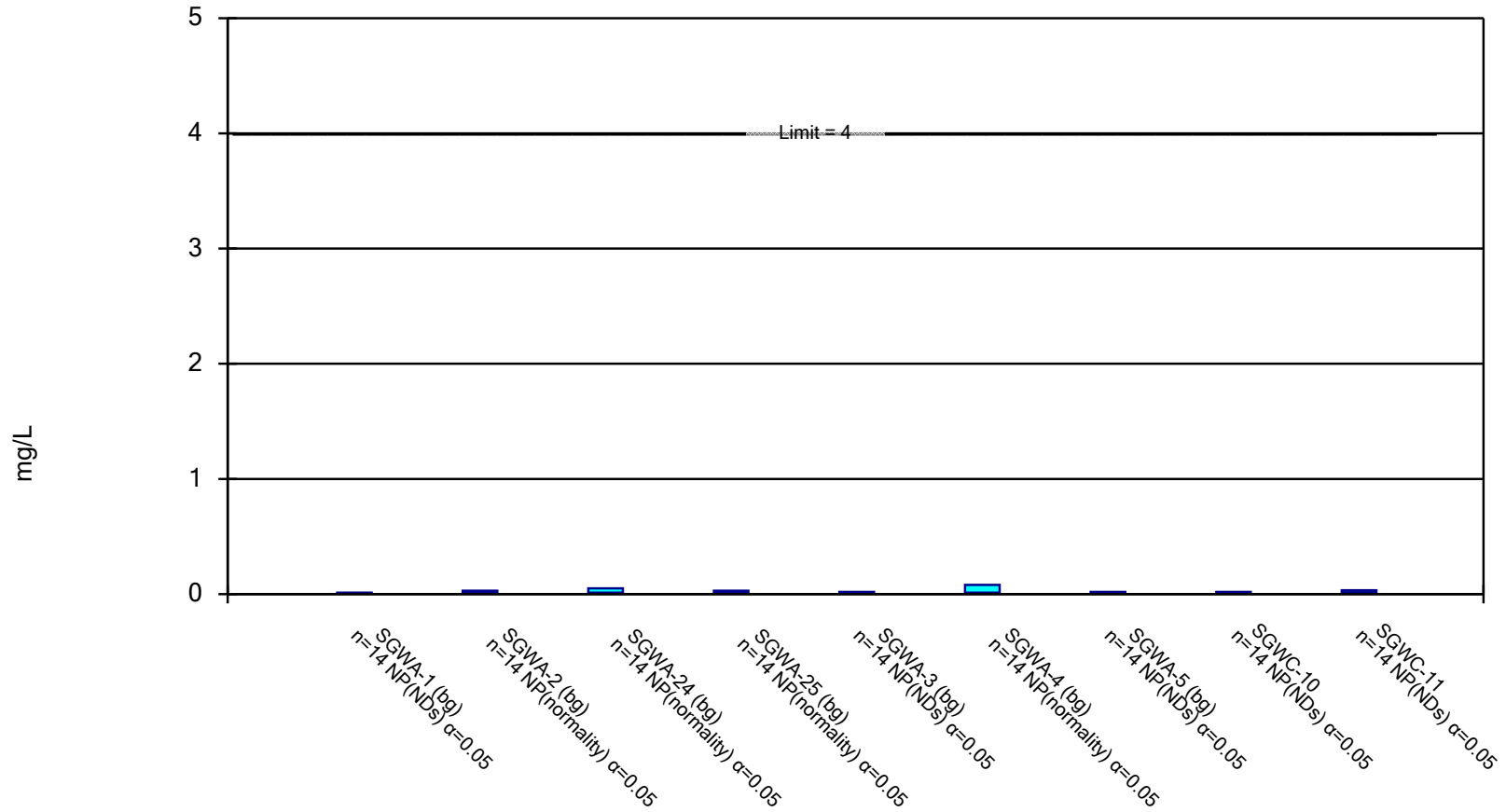
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Int  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



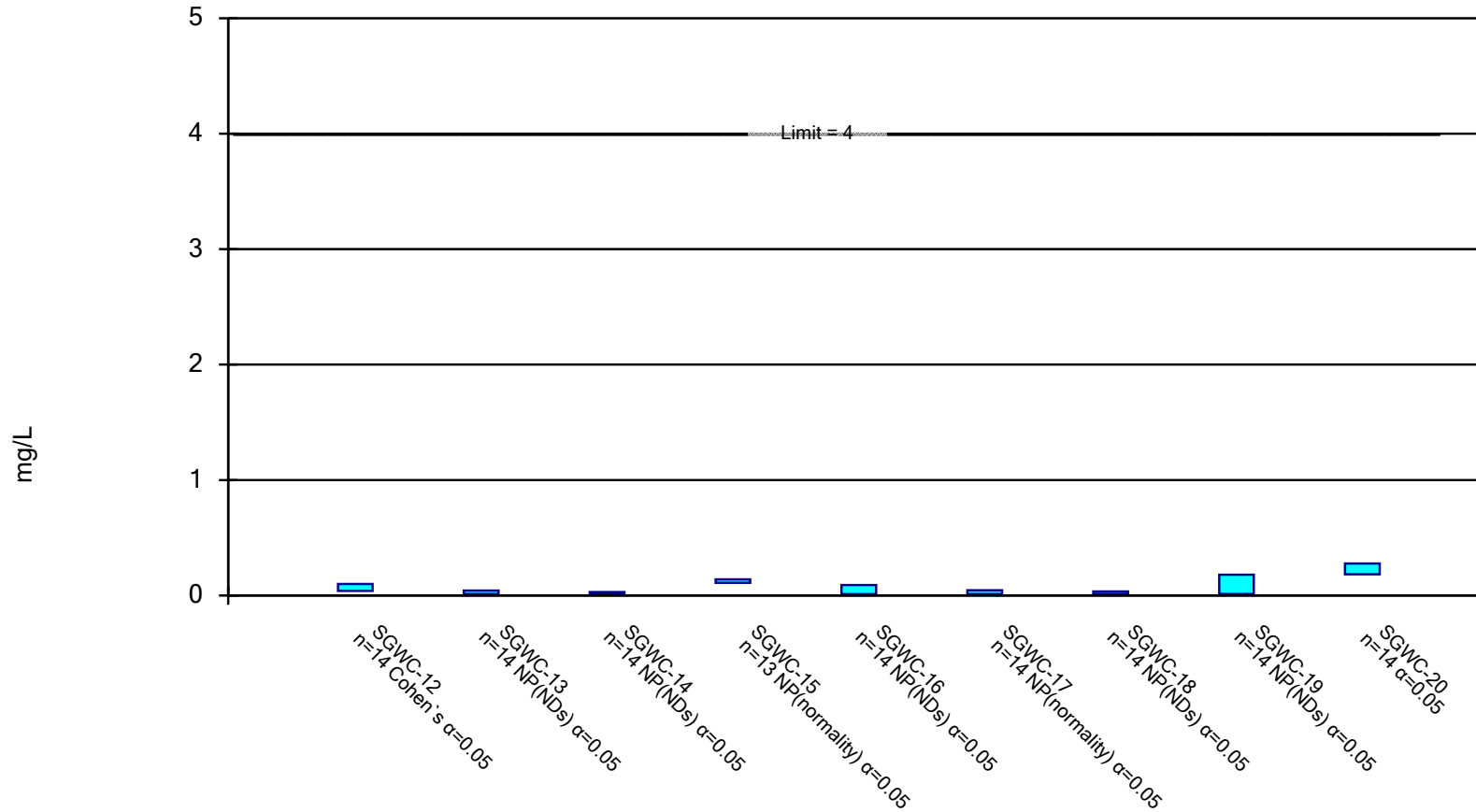
Constituent: Fluoride Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

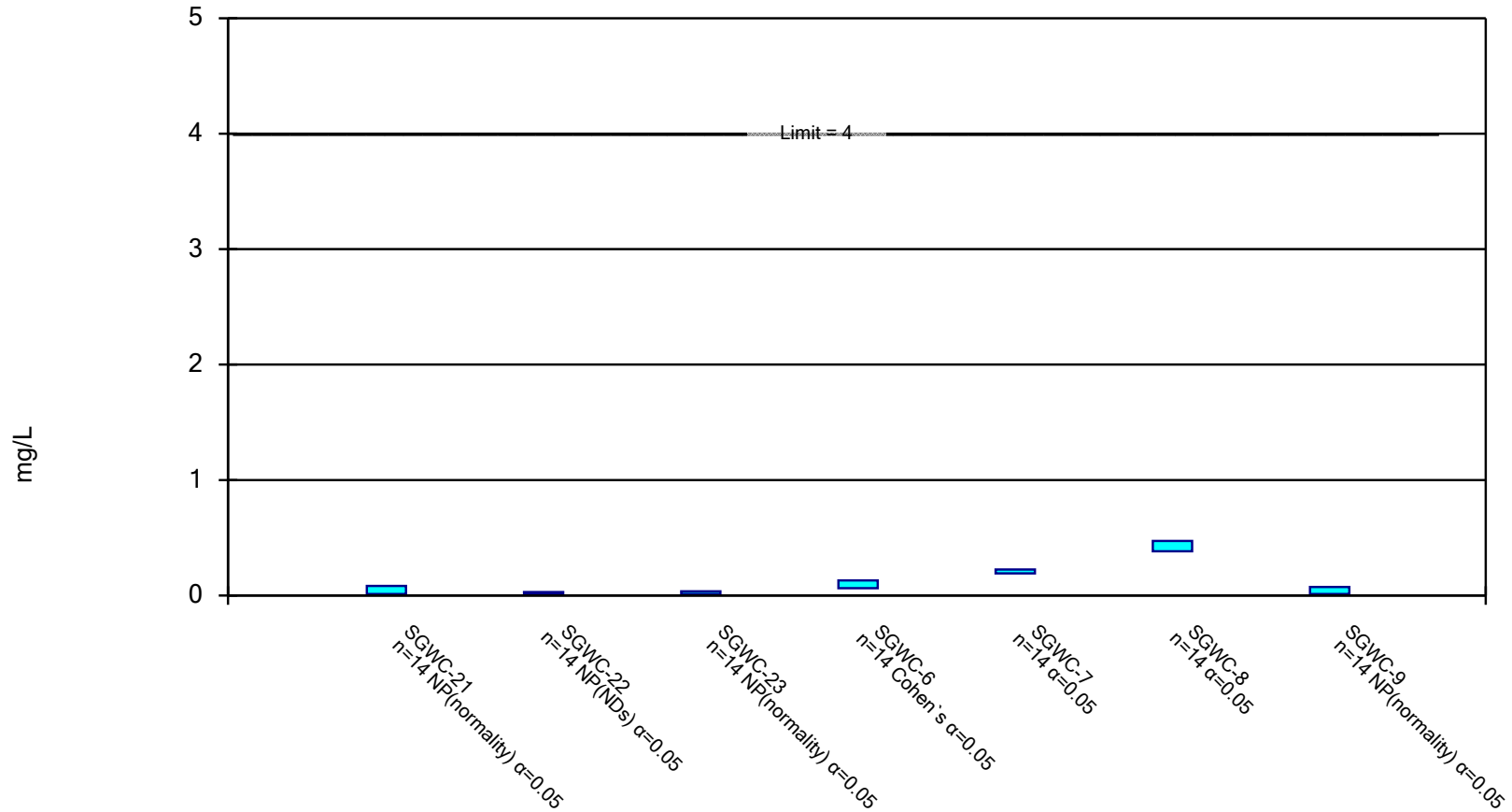
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

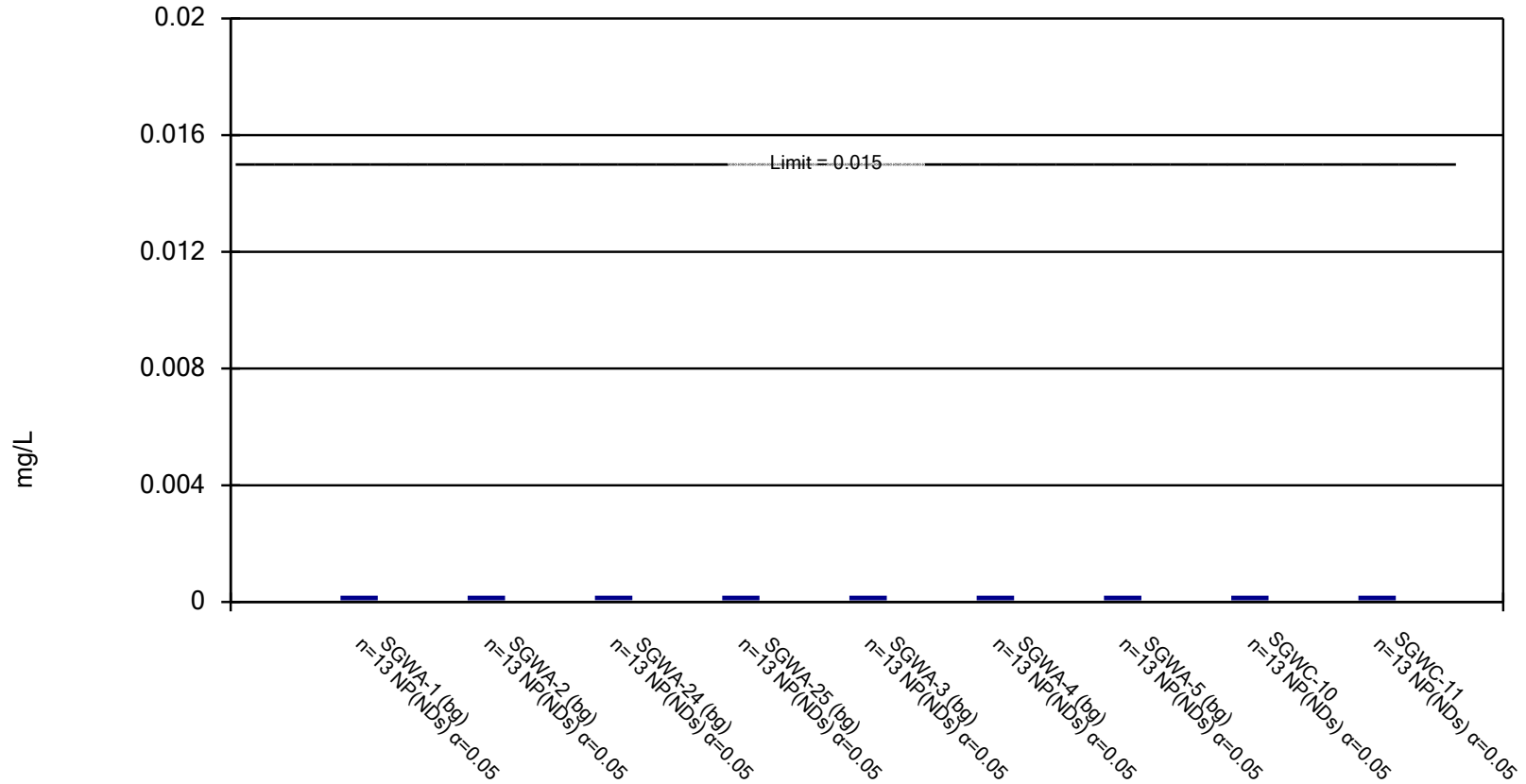
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

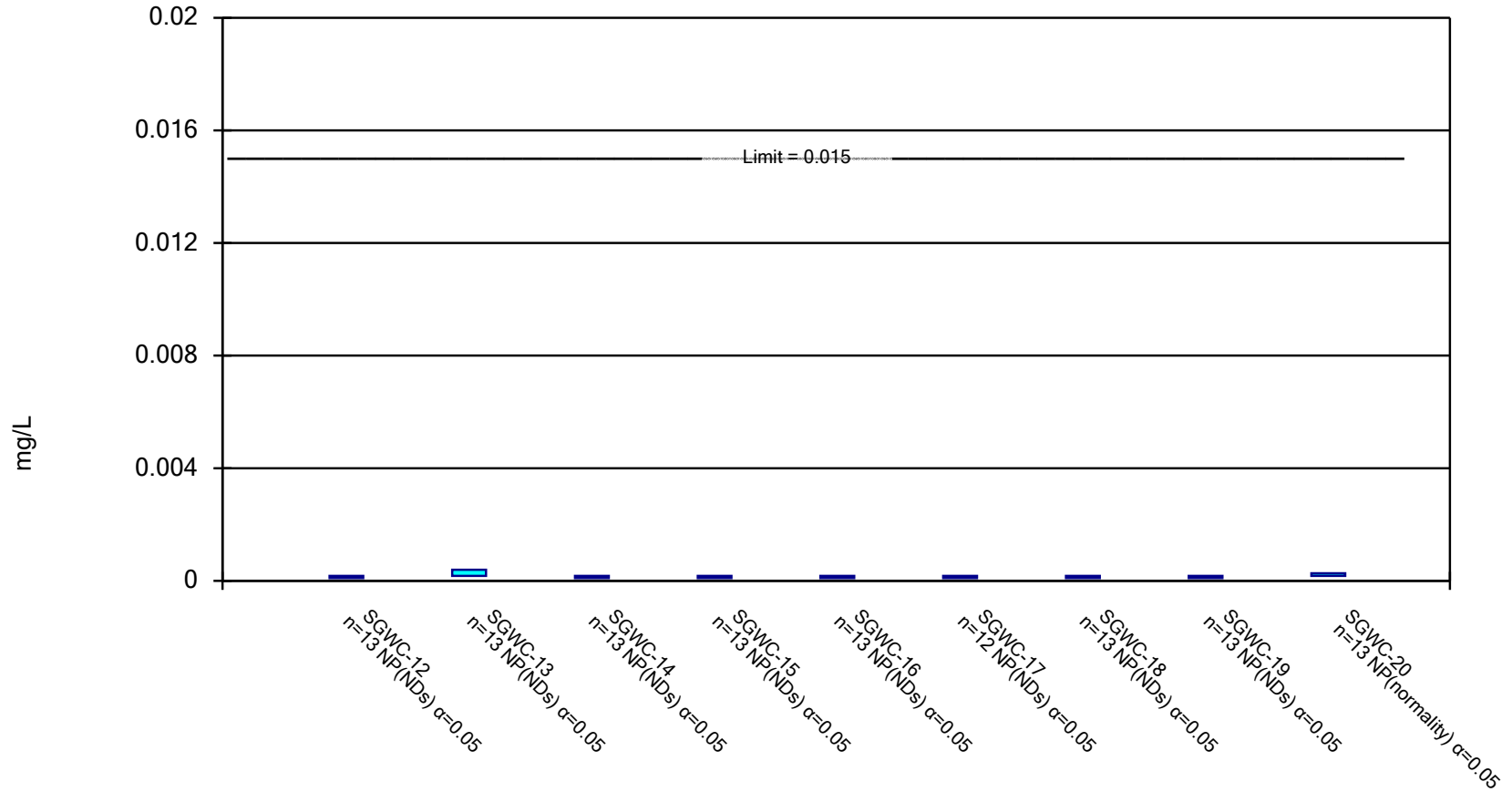


Constituent: Lead Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

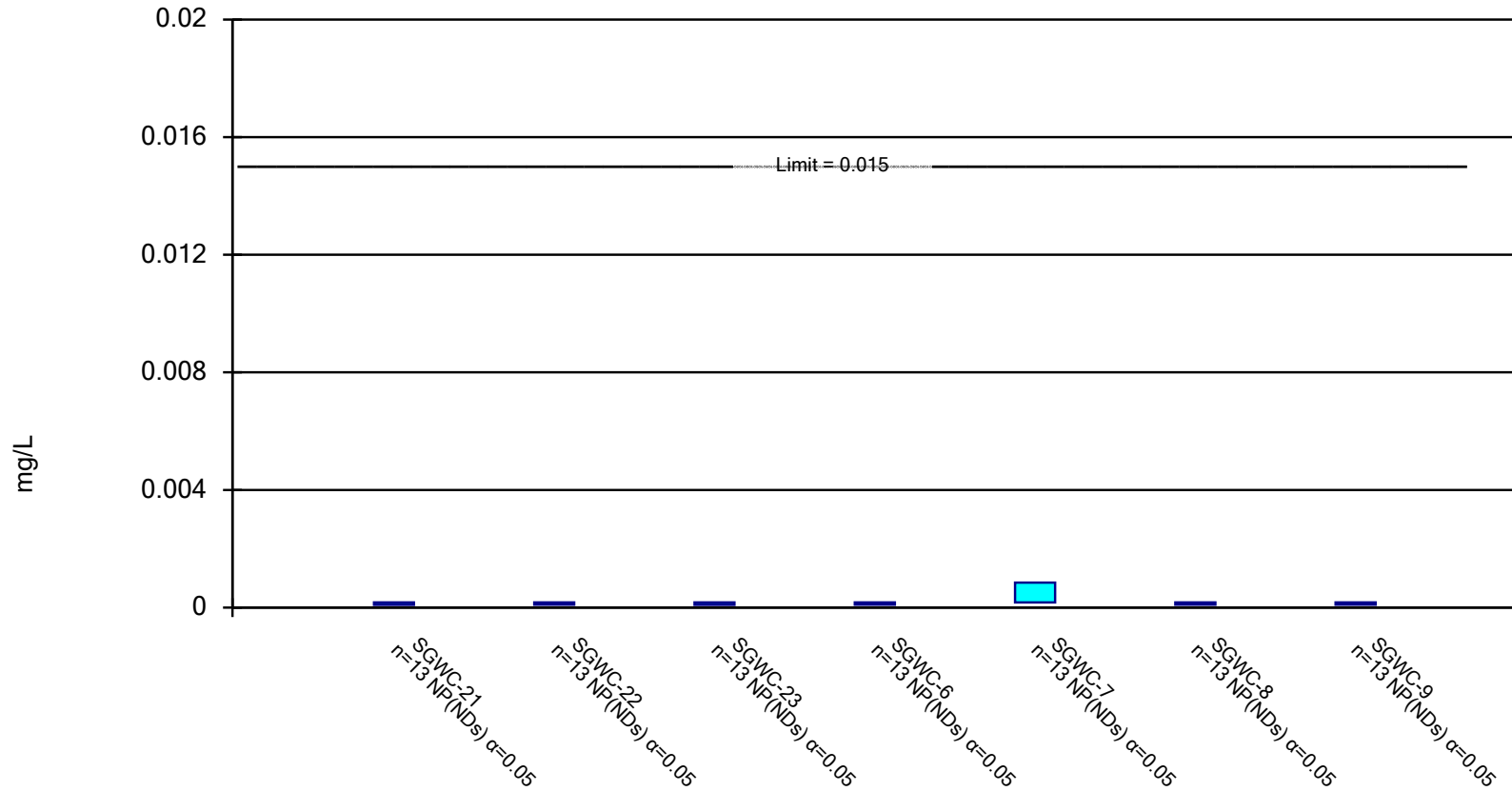


Constituent: Lead Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

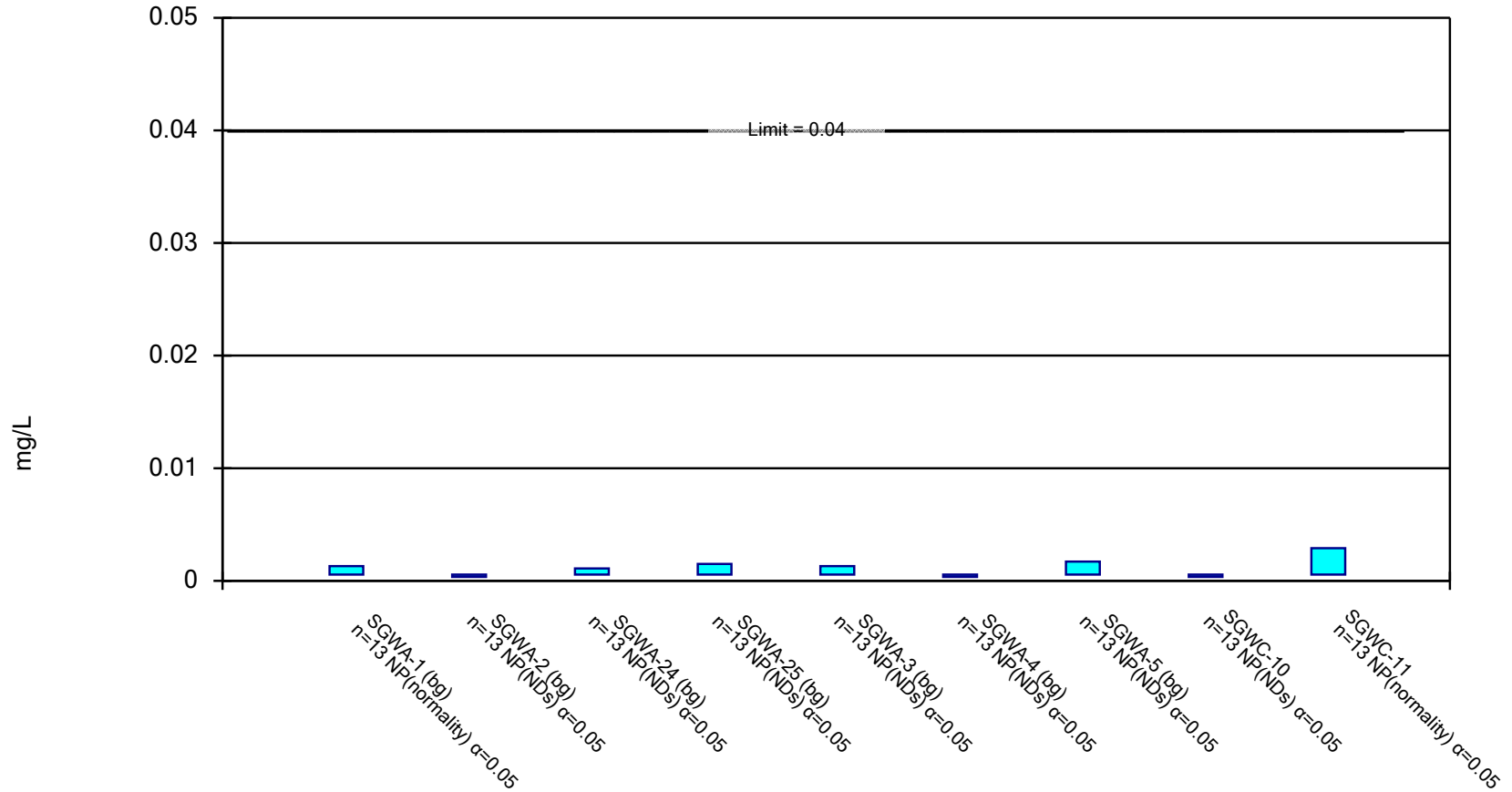


Constituent: Lead Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

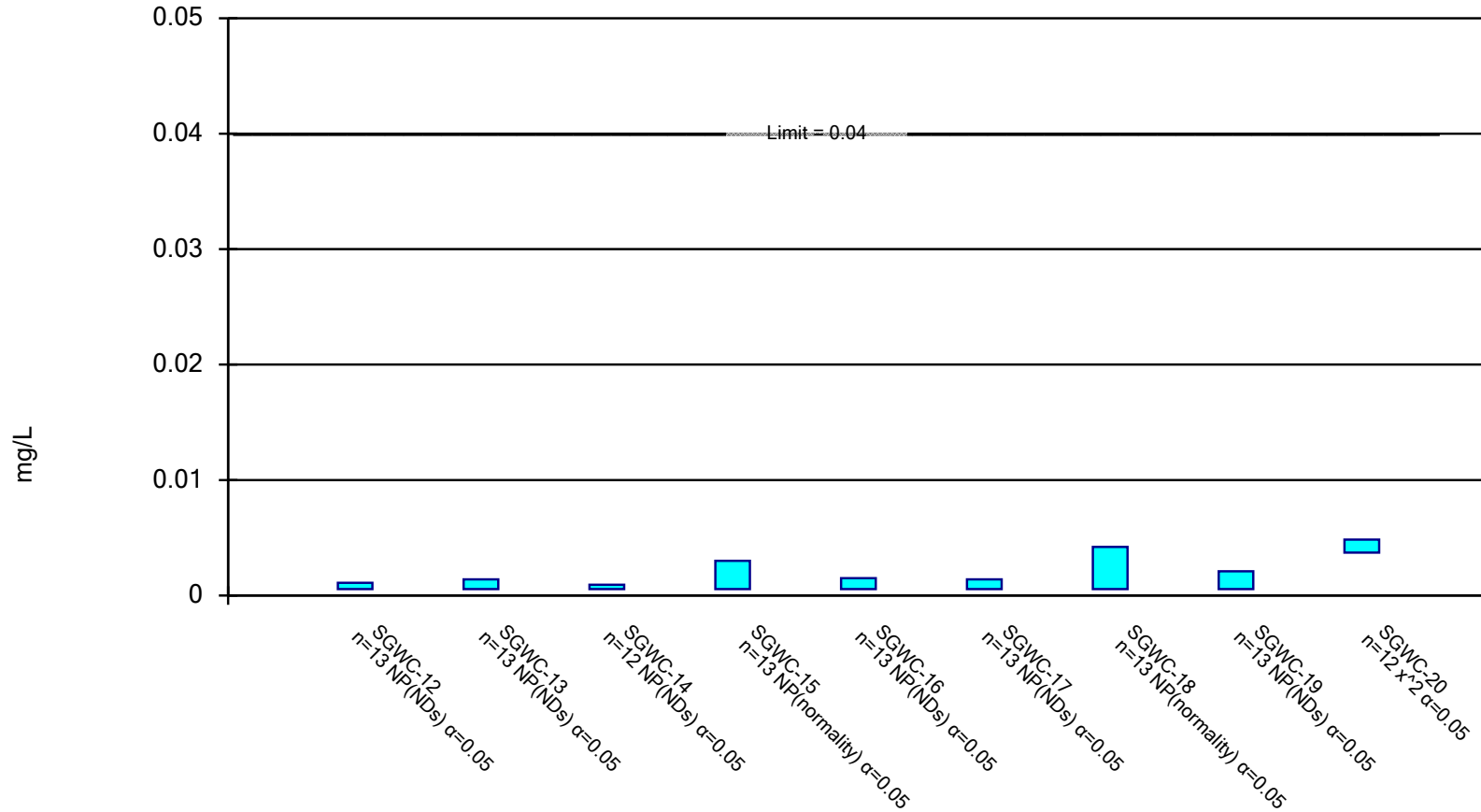
Compliance Limit is not exceeded.



Constituent: Lithium    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

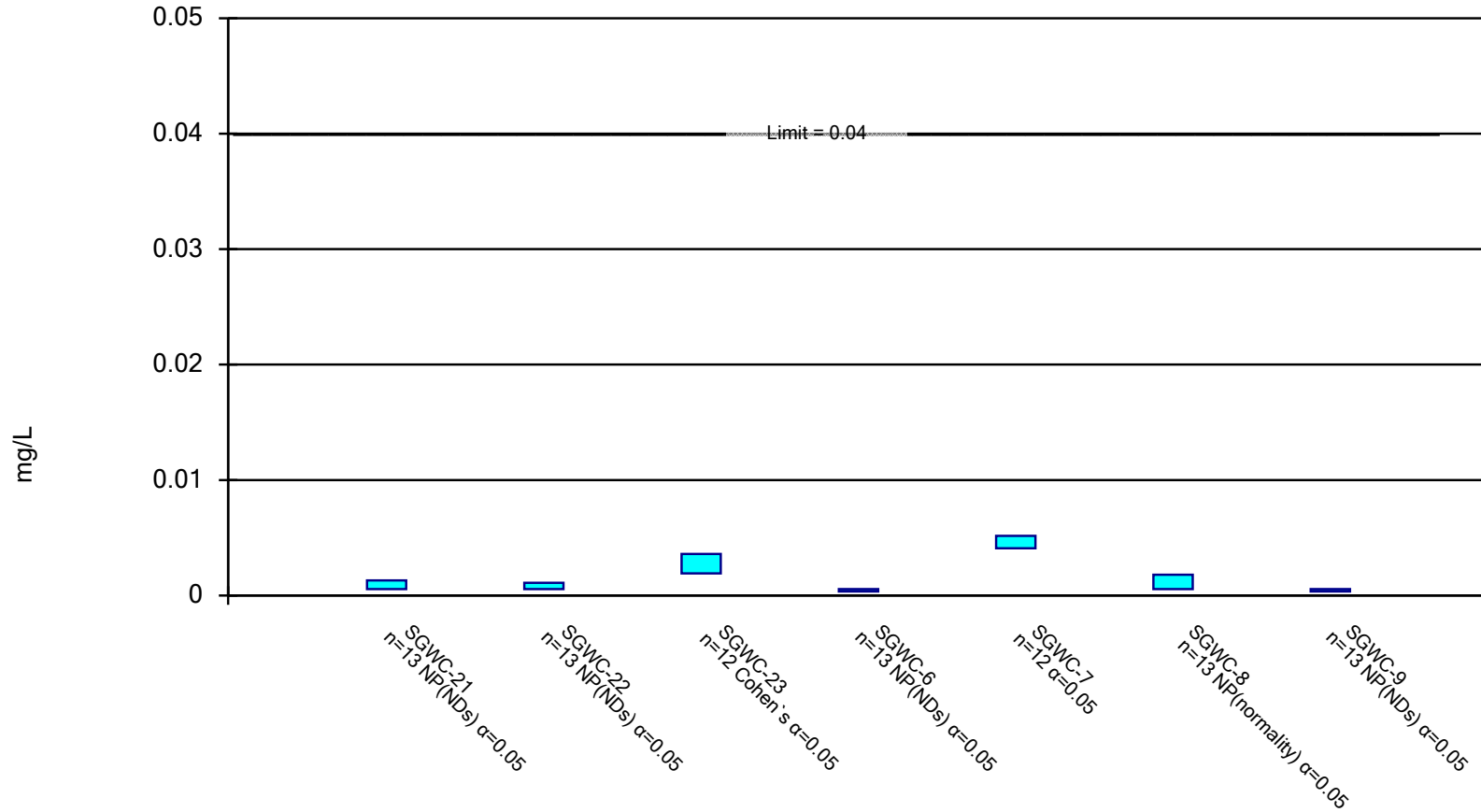
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

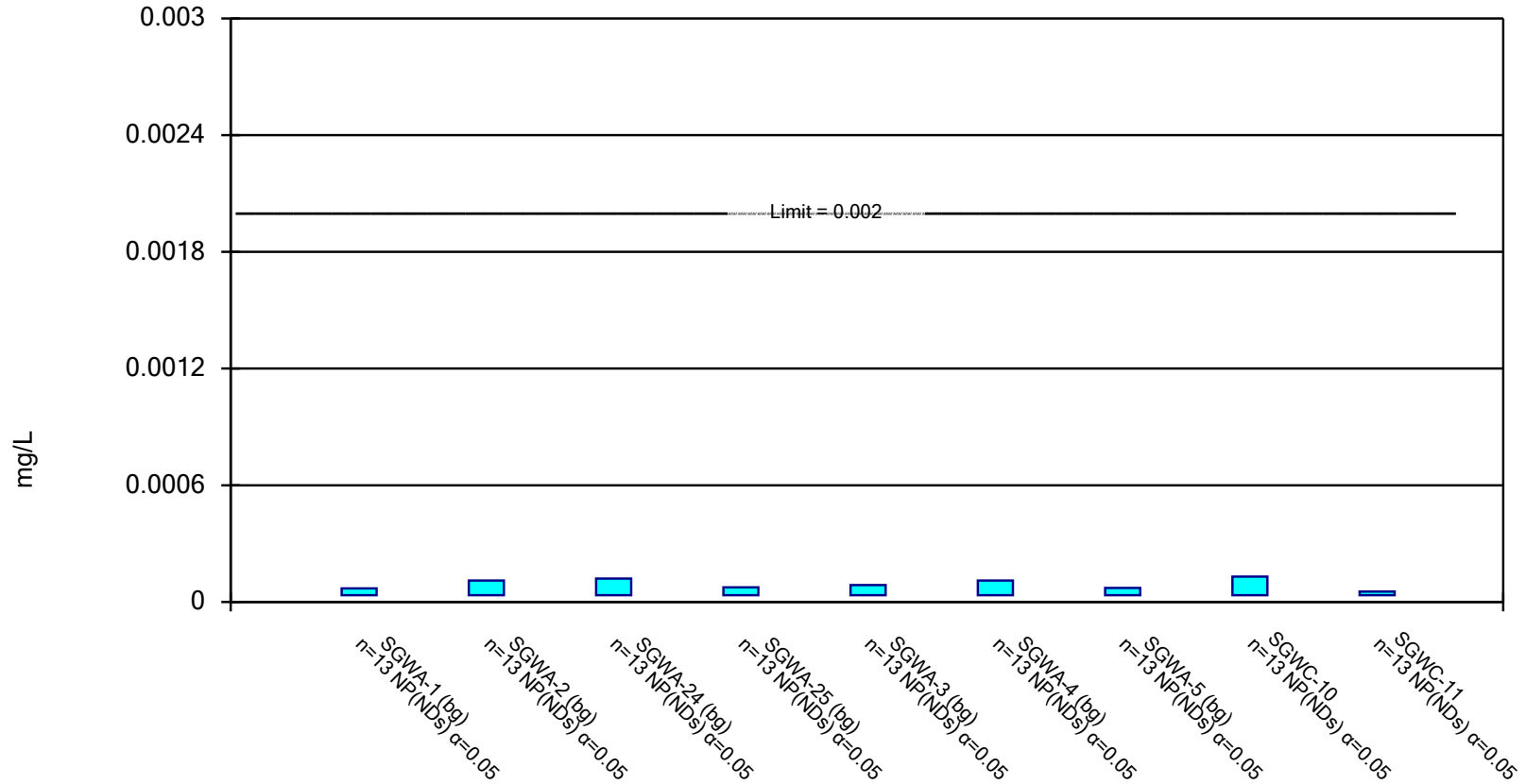


Constituent: Lithium    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Non-Parametric Confidence Interval

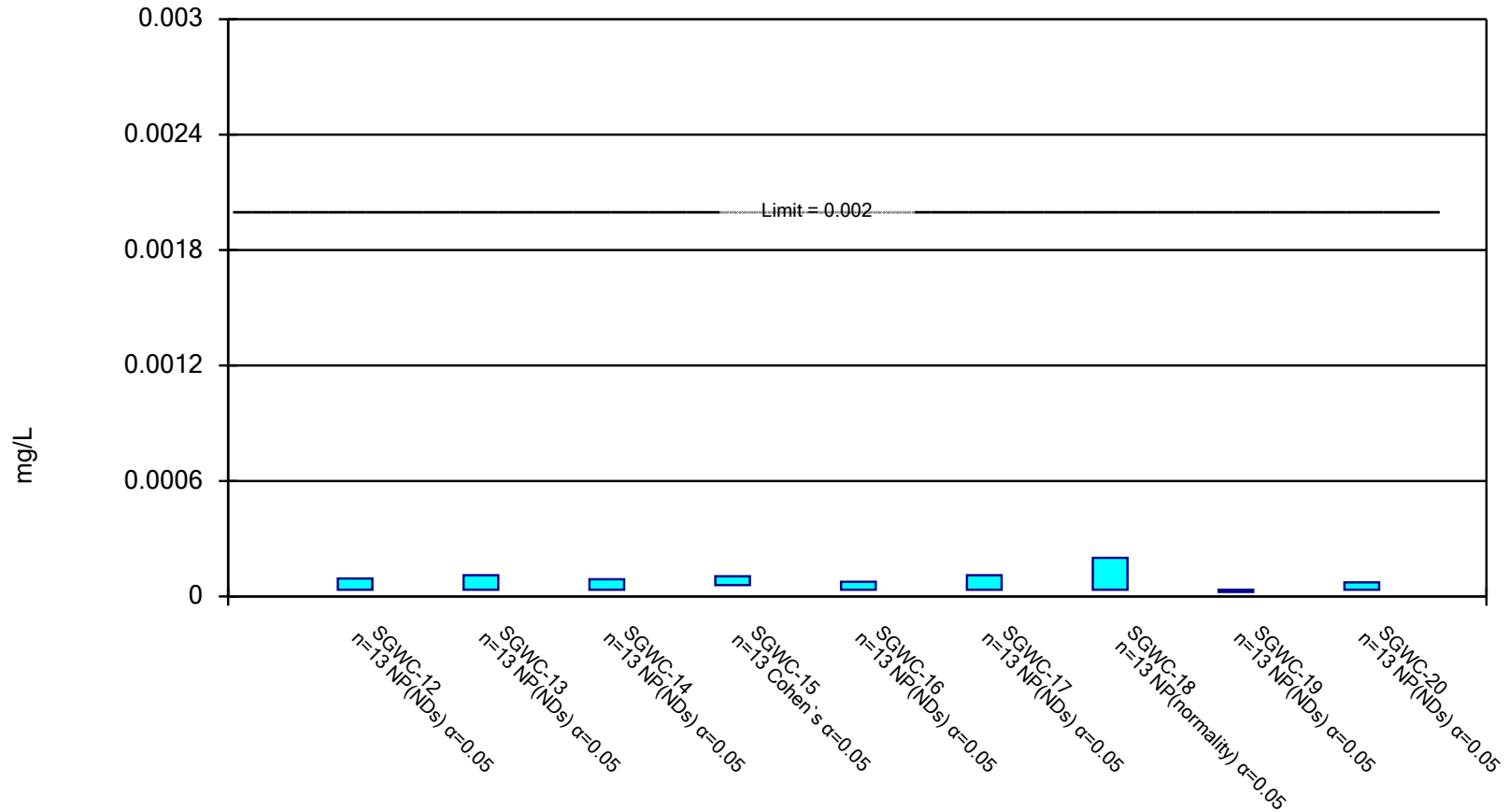
Compliance Limit is not exceeded.



Constituent: Mercury    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

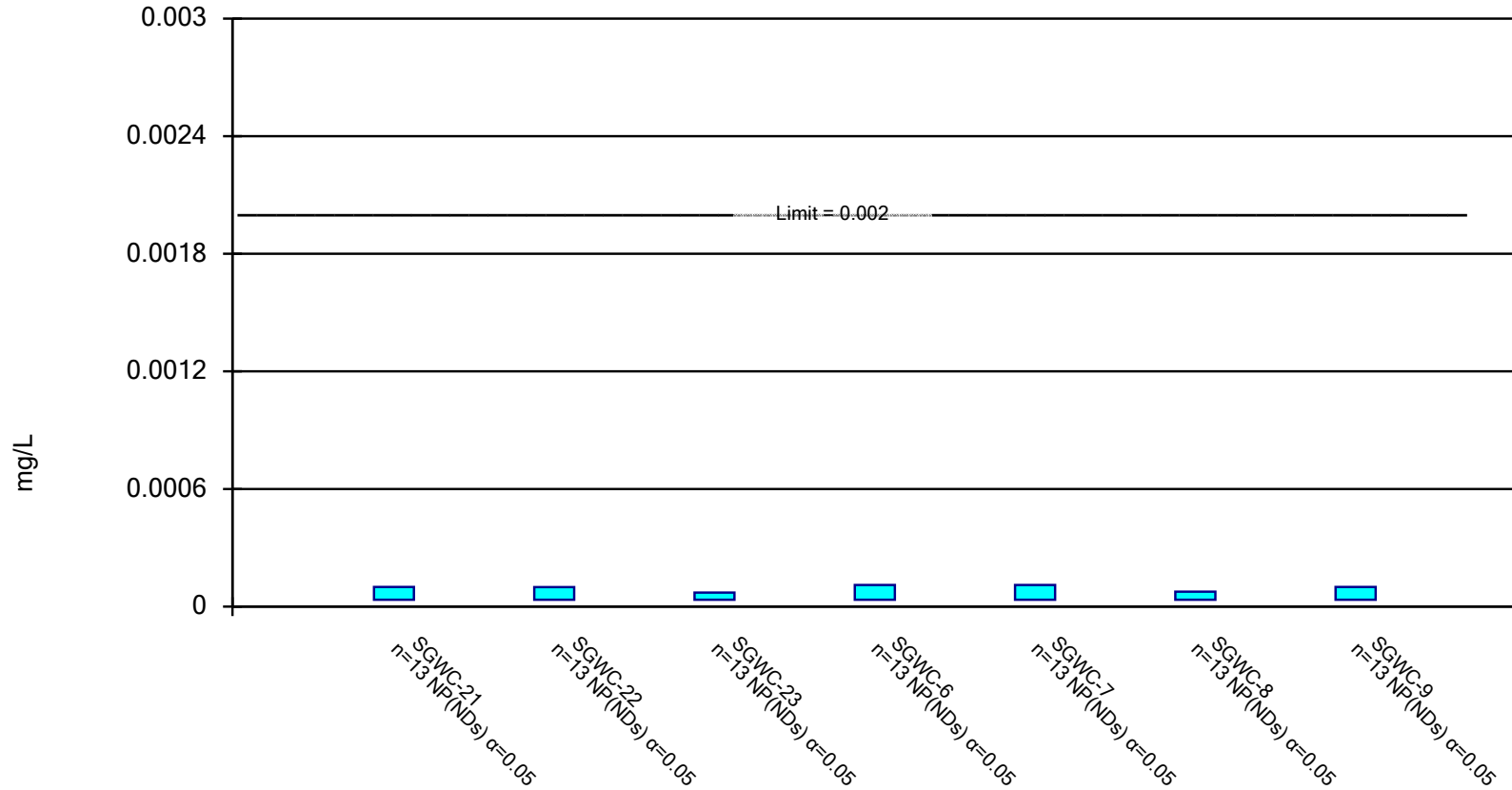
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

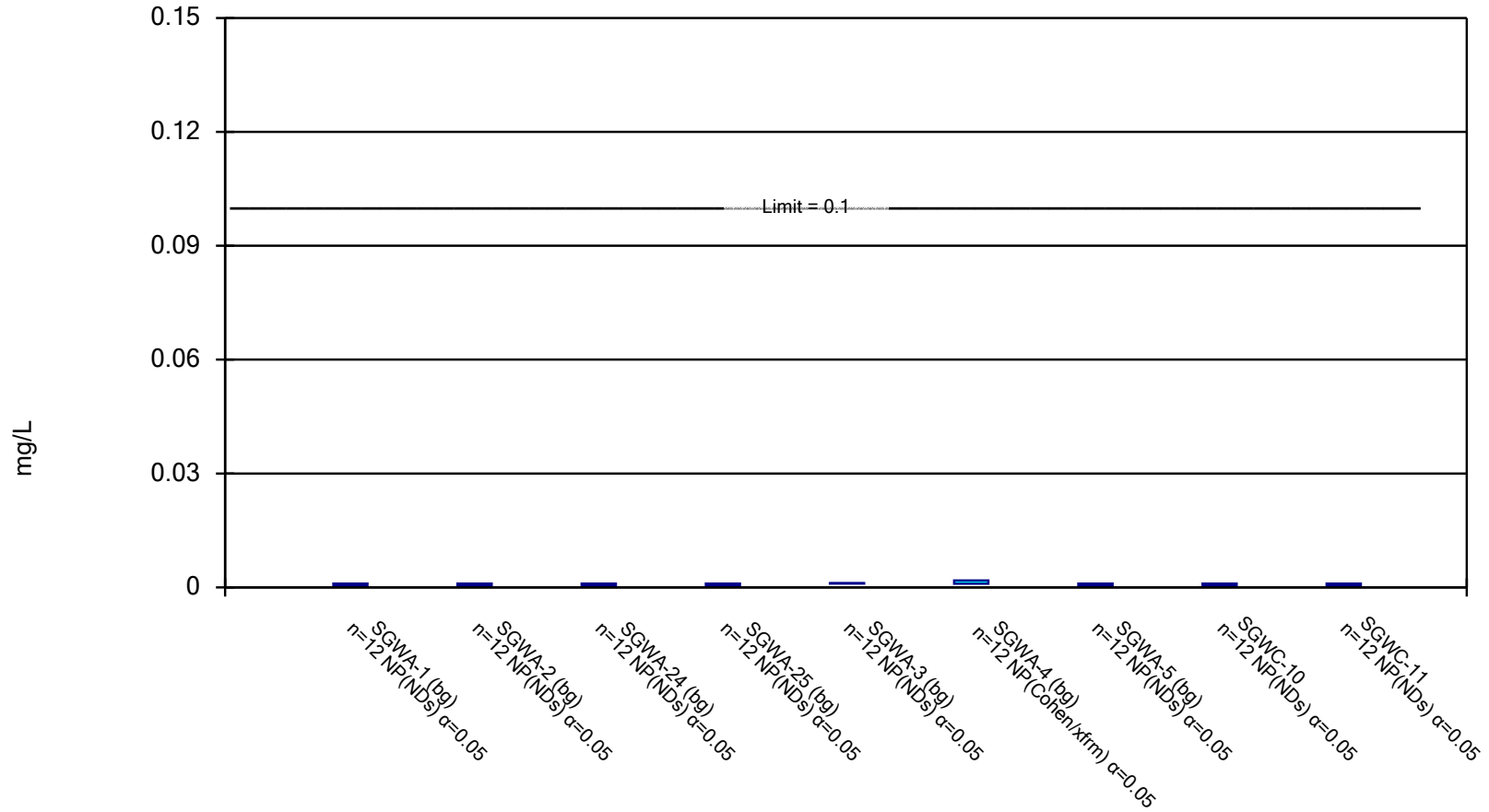
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

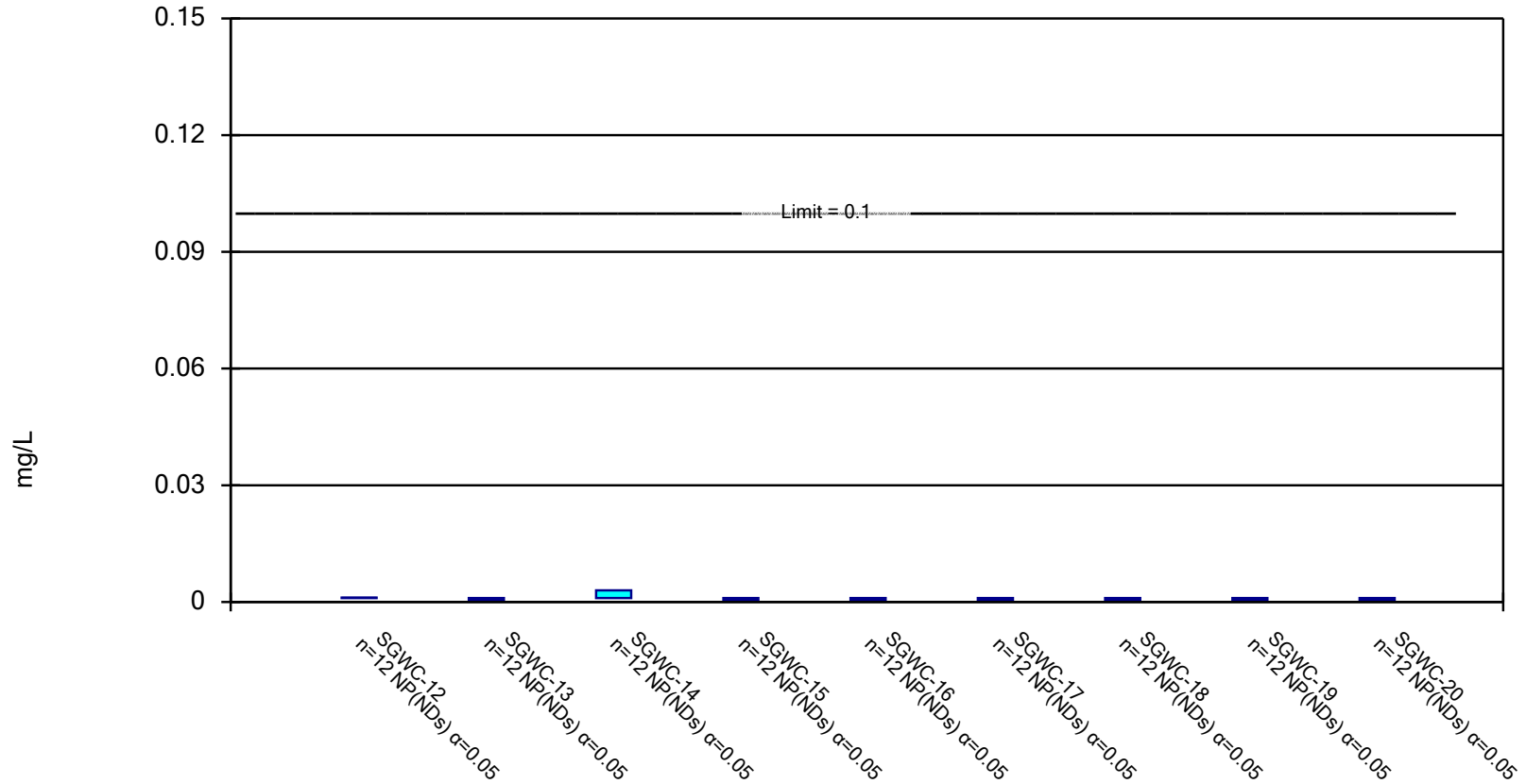


Constituent: Molybdenum Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

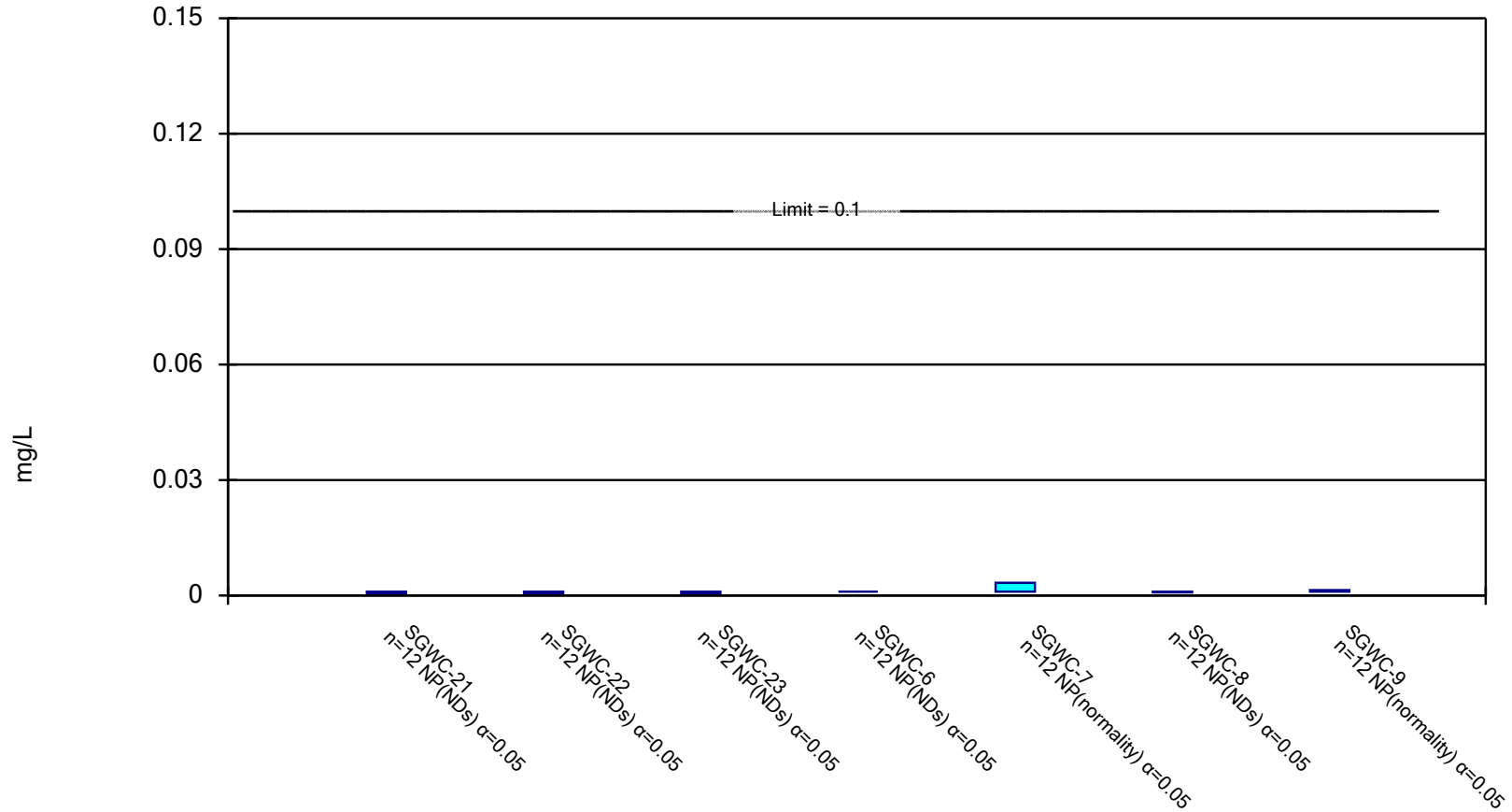


Constituent: Molybdenum Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

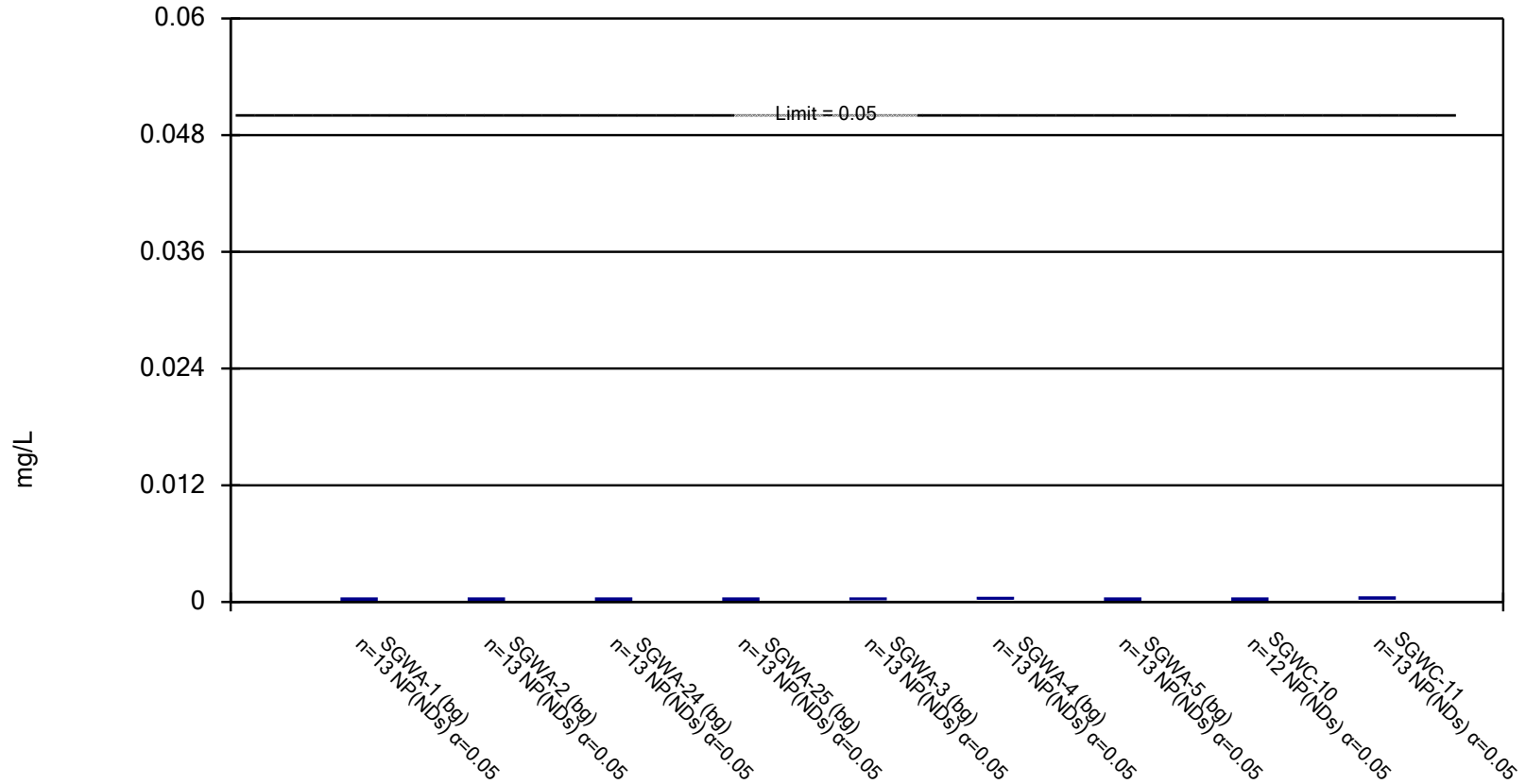


Constituent: Molybdenum Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

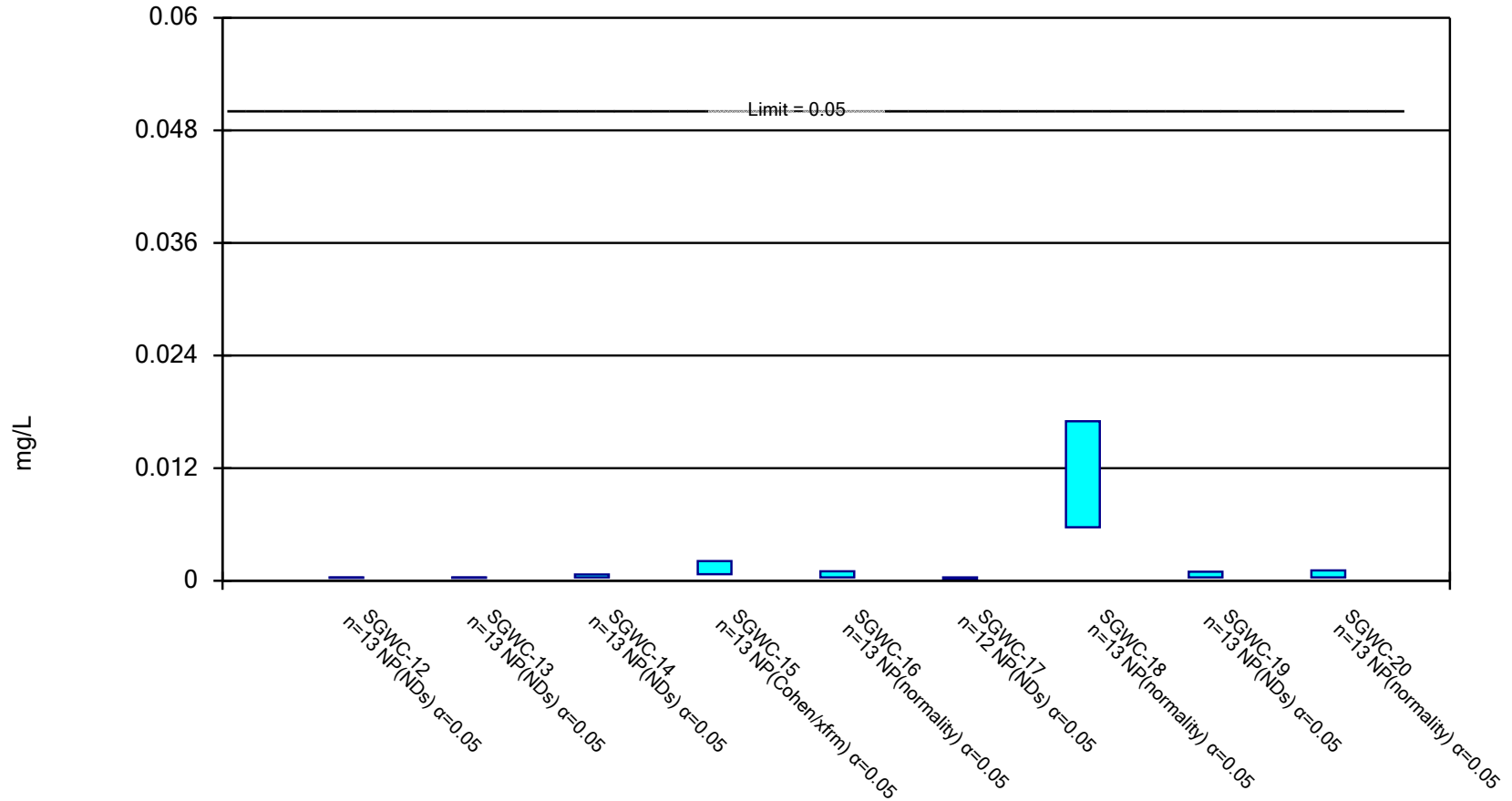


Constituent: Selenium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



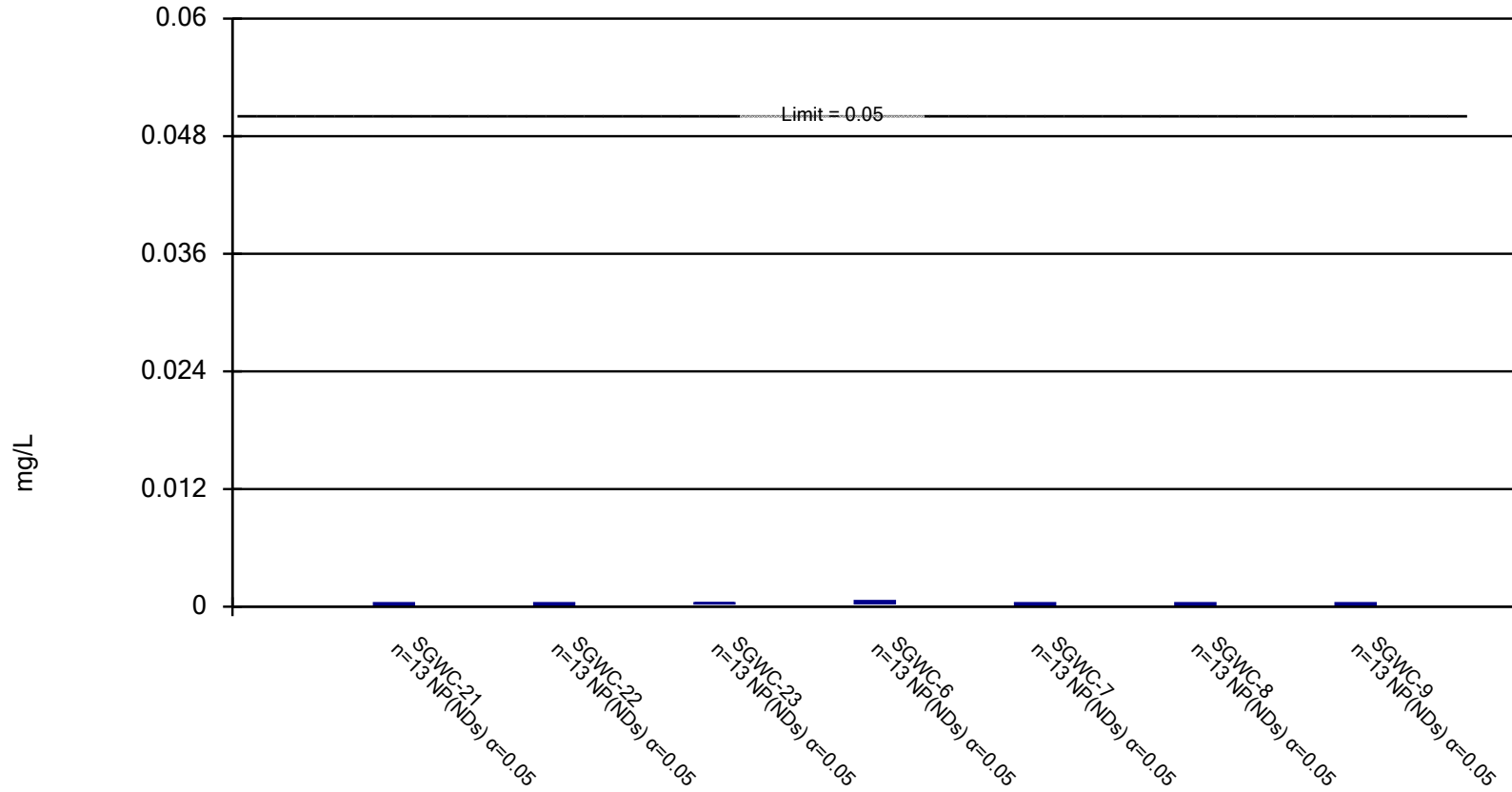
Constituent: Selenium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Non-Parametric Confidence Interval

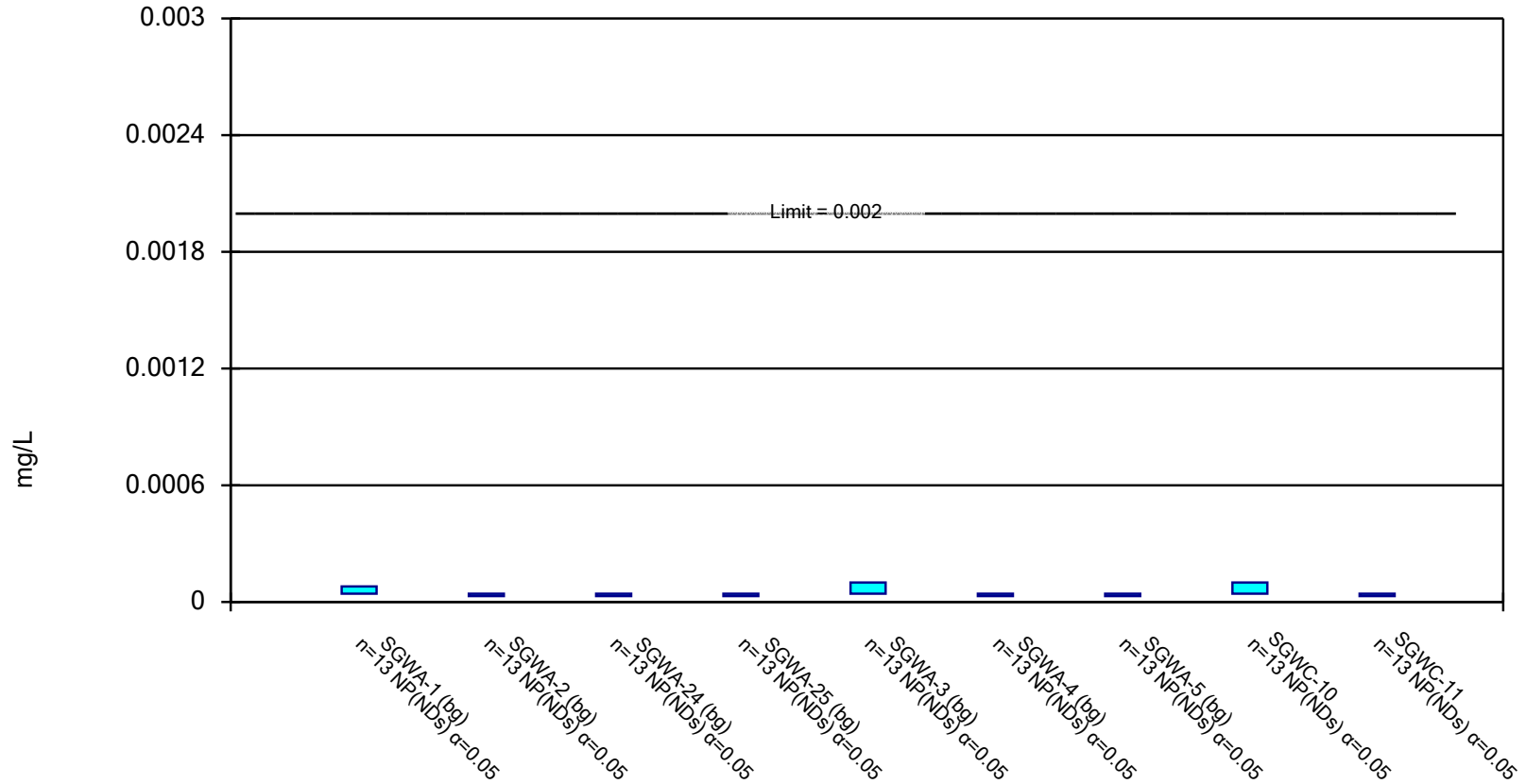
Compliance Limit is not exceeded.



Constituent: Selenium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

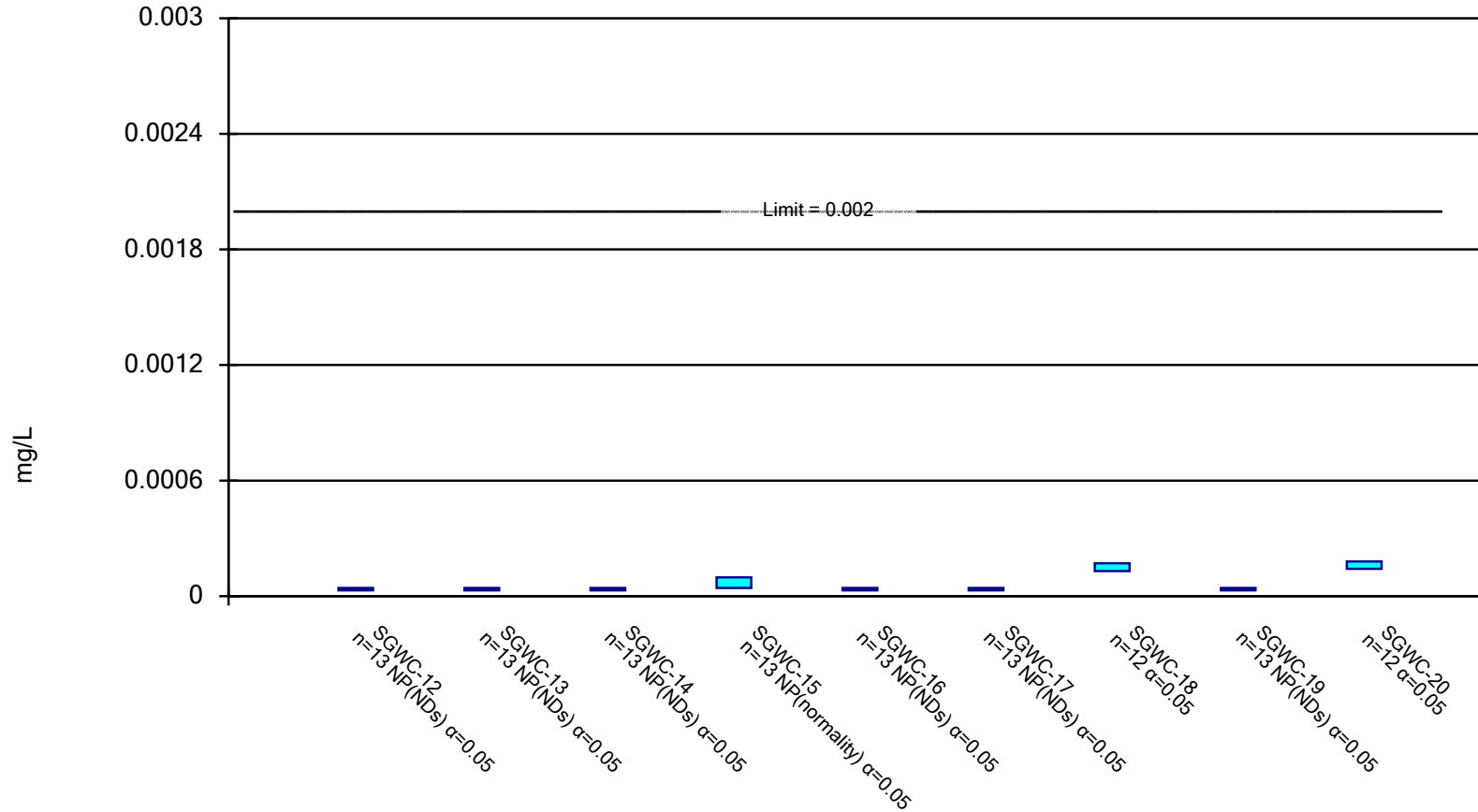


Constituent: Thallium Analysis Run 5/20/2019 9:49 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

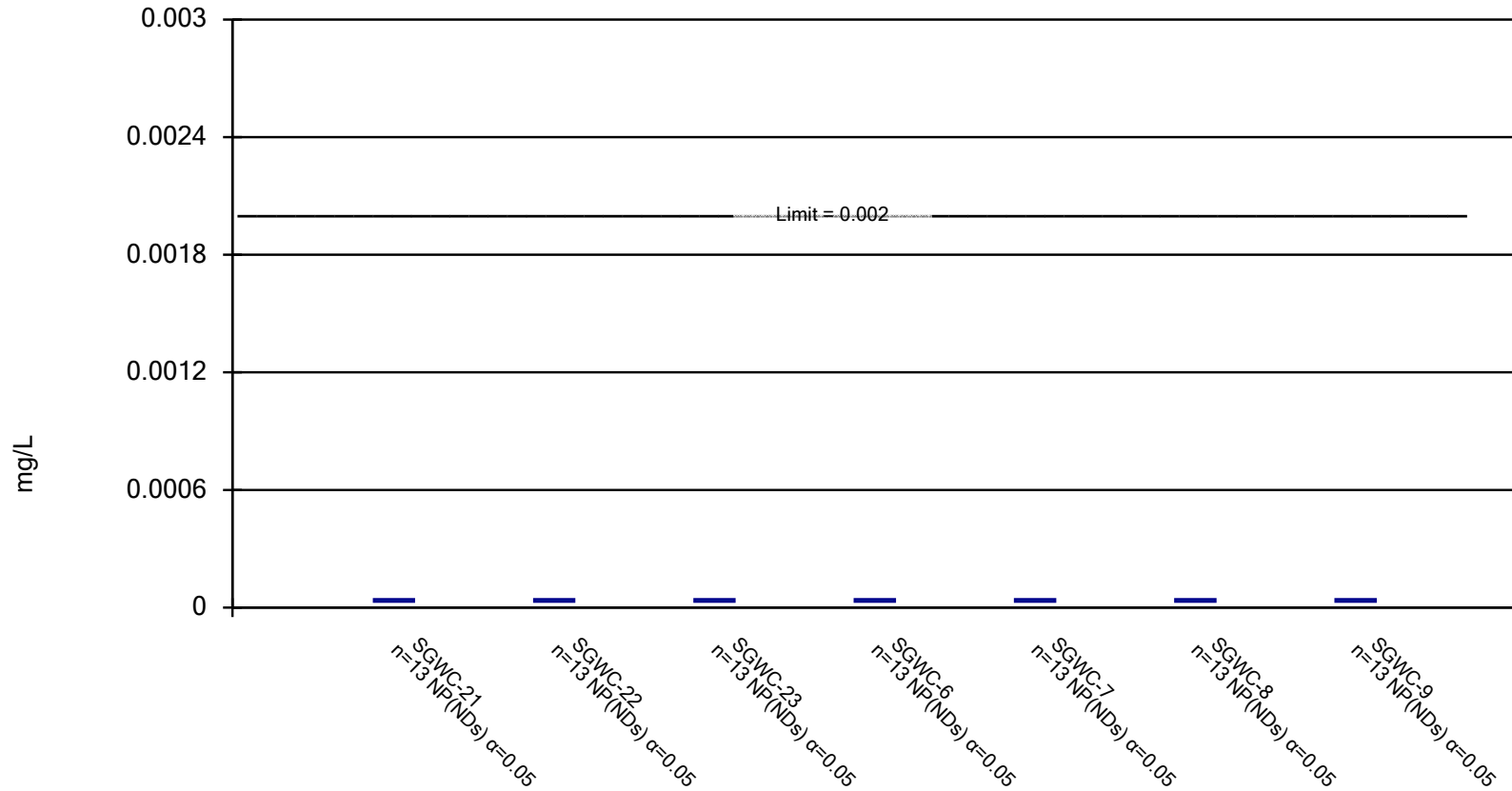
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



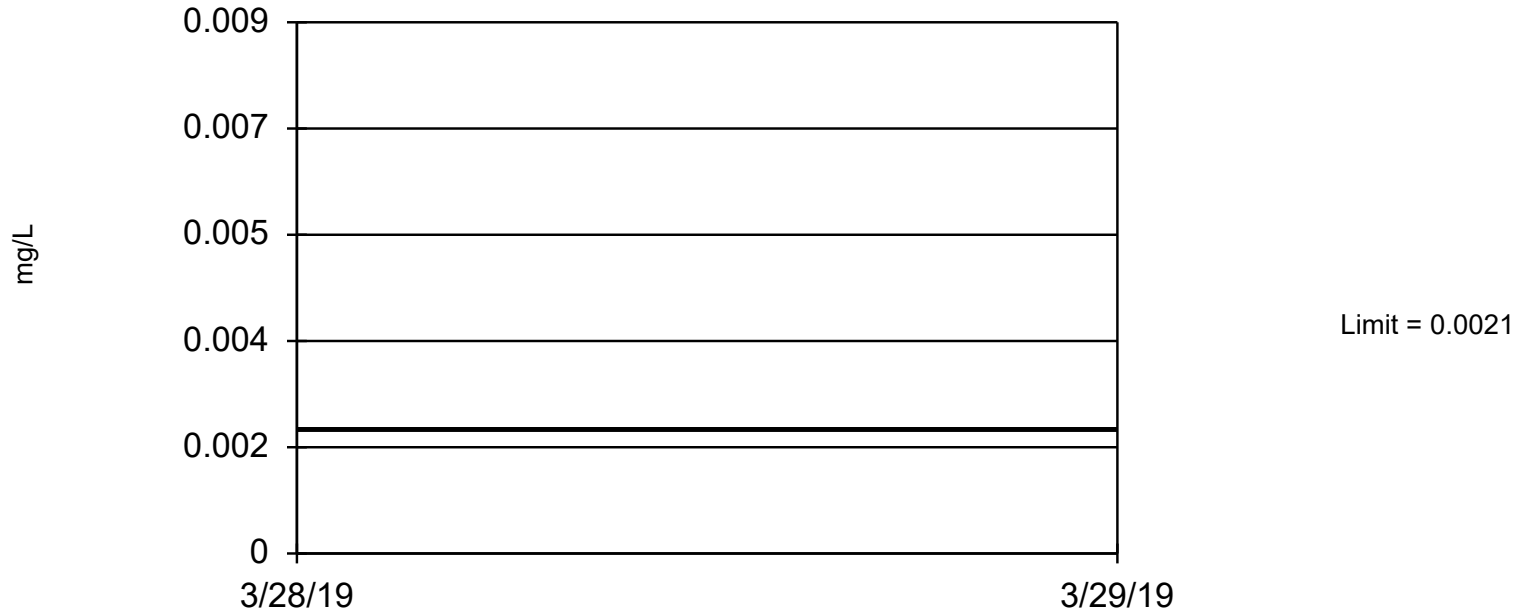
Constituent: Thallium    Analysis Run 5/20/2019 9:49 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

# Tolerance Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 11:58 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bq N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	n/a	0.0021	n/a	n/a	n/a	83	92.77	n/a	0.01416	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0015	n/a	n/a	n/a	91	78.02	n/a	0.009394	NP Inter(NDs)
Barium (mg/L)	n/a	0.06349	n/a	n/a	n/a	91	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.00034	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0011	n/a	n/a	n/a	84	97.62	n/a	0.01345	NP Inter(NDs)
Chromium (mg/L)	n/a	0.016	n/a	n/a	n/a	91	35.16	n/a	0.009394	NP Inter(normal...
Cobalt (mg/L)	n/a	0.02	n/a	n/a	n/a	90	64.44	n/a	0.009888	NP Inter(normal...
Combined Radium 226 + 228 (pCi/L)	n/a	1.2	n/a	n/a	n/a	90	14.44	n/a	0.009888	NP Inter(normal...
Fluoride (mg/L)	n/a	0.108	n/a	n/a	n/a	98	77.55	n/a	0.00656	NP Inter(NDs)
Lead (mg/L)	n/a	0.0013	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Lithium (mg/L)	n/a	0.0005	n/a	n/a	n/a	91	90.11	n/a	0.009394	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00012	n/a	n/a	n/a	91	89.01	n/a	0.009394	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.00278	n/a	n/a	n/a	84	89.29	n/a	0.01345	NP Inter(NDs)
Selenium (mg/L)	n/a	0.00071	n/a	n/a	n/a	91	95.6	n/a	0.009394	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0001	n/a	n/a	n/a	91	96.7	n/a	0.009394	NP Inter(NDs)

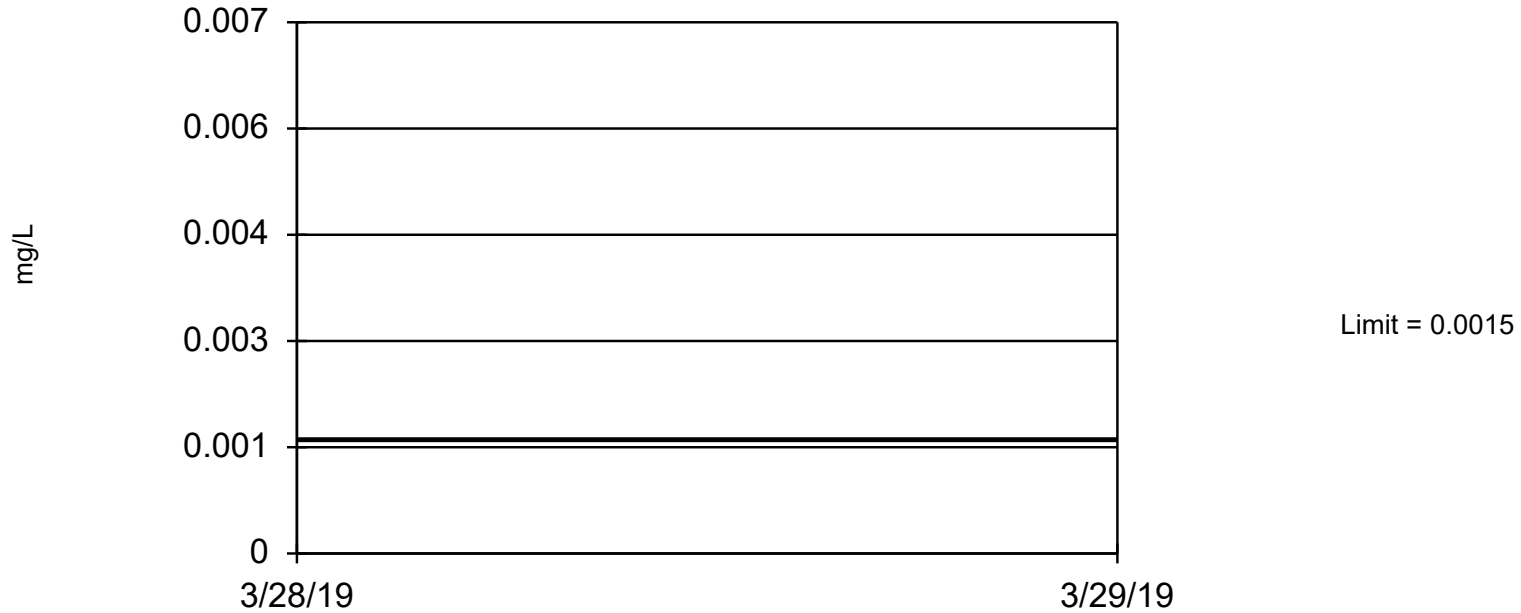
## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 83 background values. 92.77% NDs. 94.73% coverage at alpha=0.01; 96.29% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.01416.

Constituent: Antimony    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

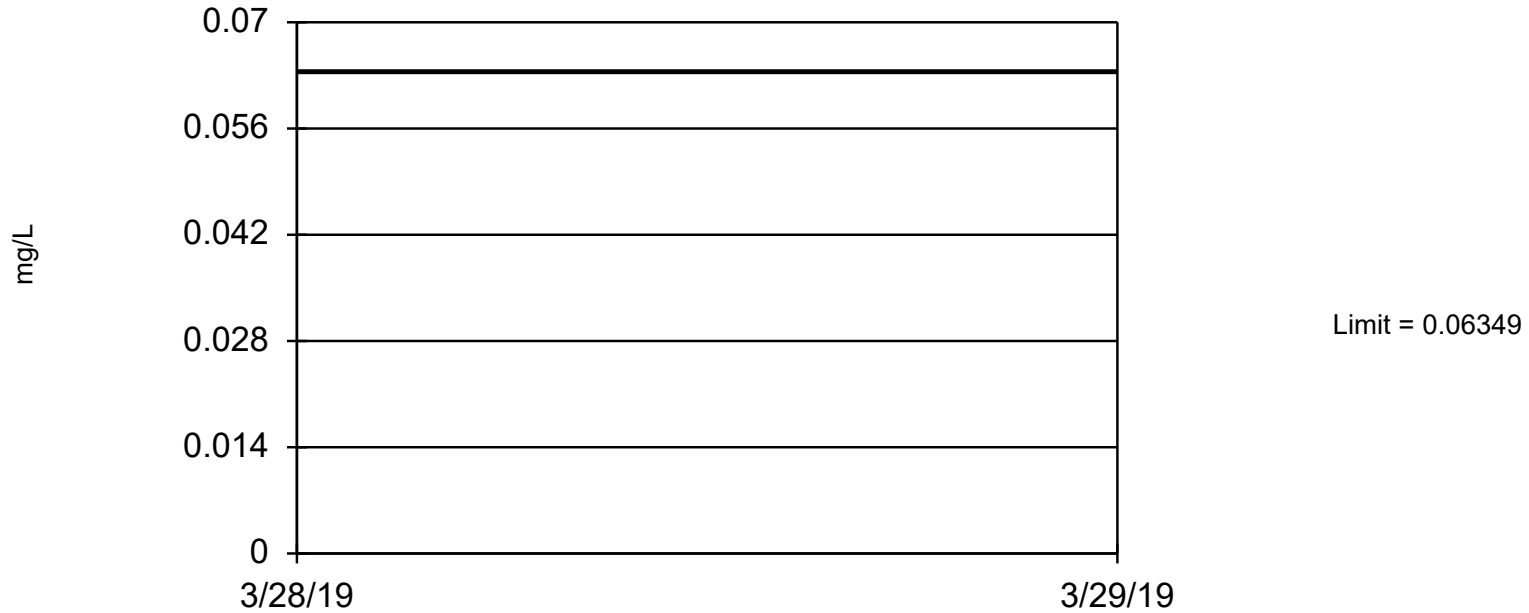
## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 78.02% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Arsenic    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary: Mean=0.03311, Std. Dev.=0.01565, n=91. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9655, critical = 0.962. Report alpha = 0.05.

Constituent: Barium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 98.9% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Beryllium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 84 background values. 97.62% NDs. 94.73% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.01345.

Constituent: Cadmium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 91 background values. 35.16% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Chromium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 90 background values. 64.44% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009888.

Constituent: Cobalt    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

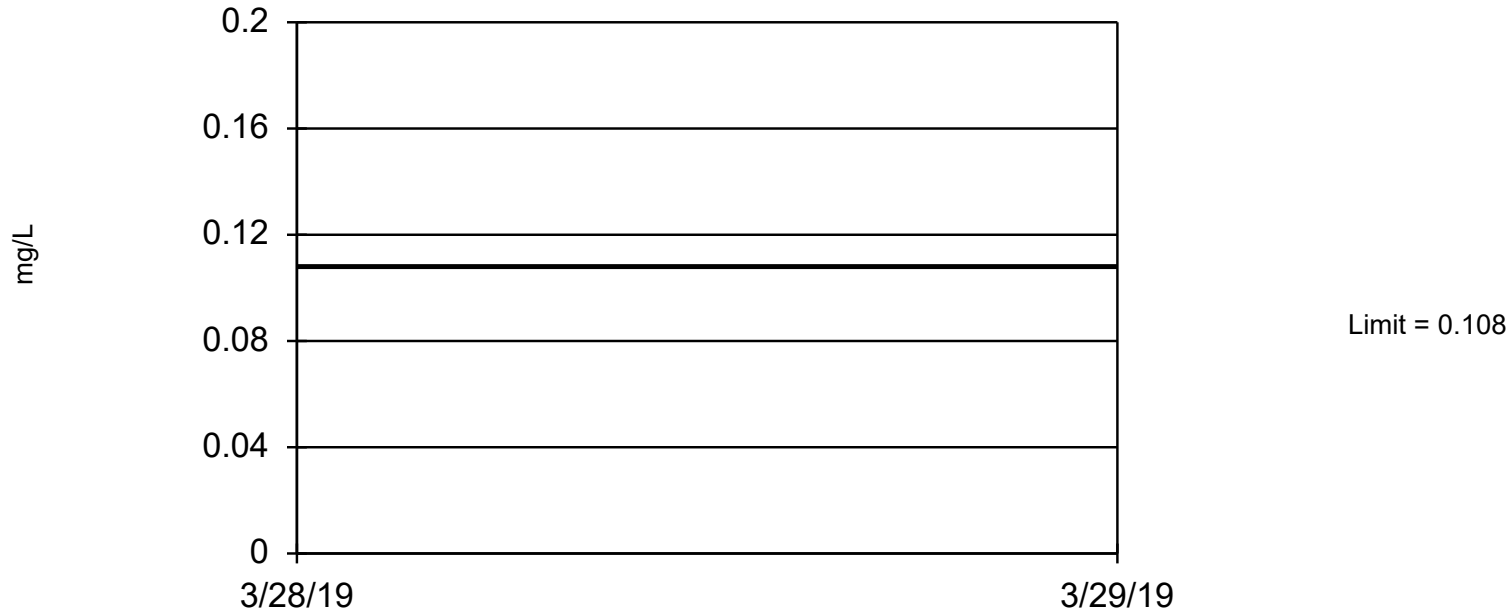
## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 90 background values. 14.44% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009888.

Constituent: Combined Radium 226 + 228    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Li  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 77.55% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Fluoride    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 98.9% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Lead    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 90.11% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Lithium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



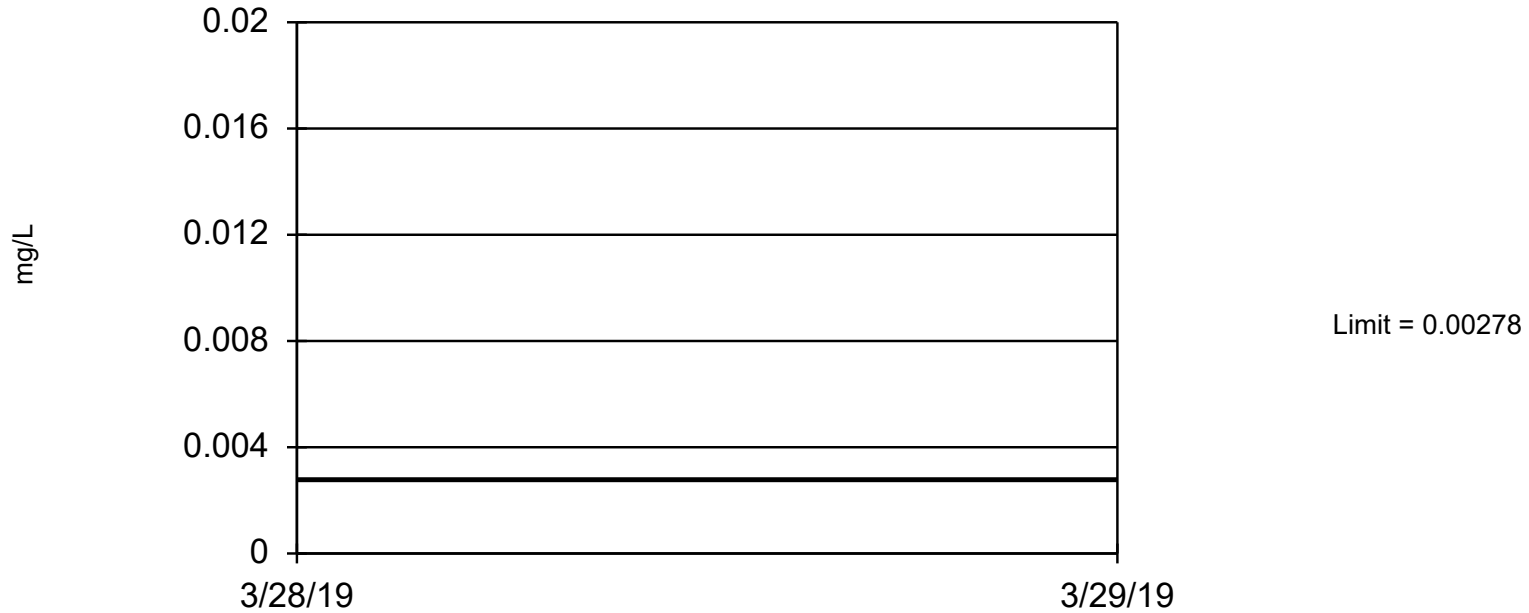
## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 89.01% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Mercury Analysis Run 6/28/2019 11:57 AM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

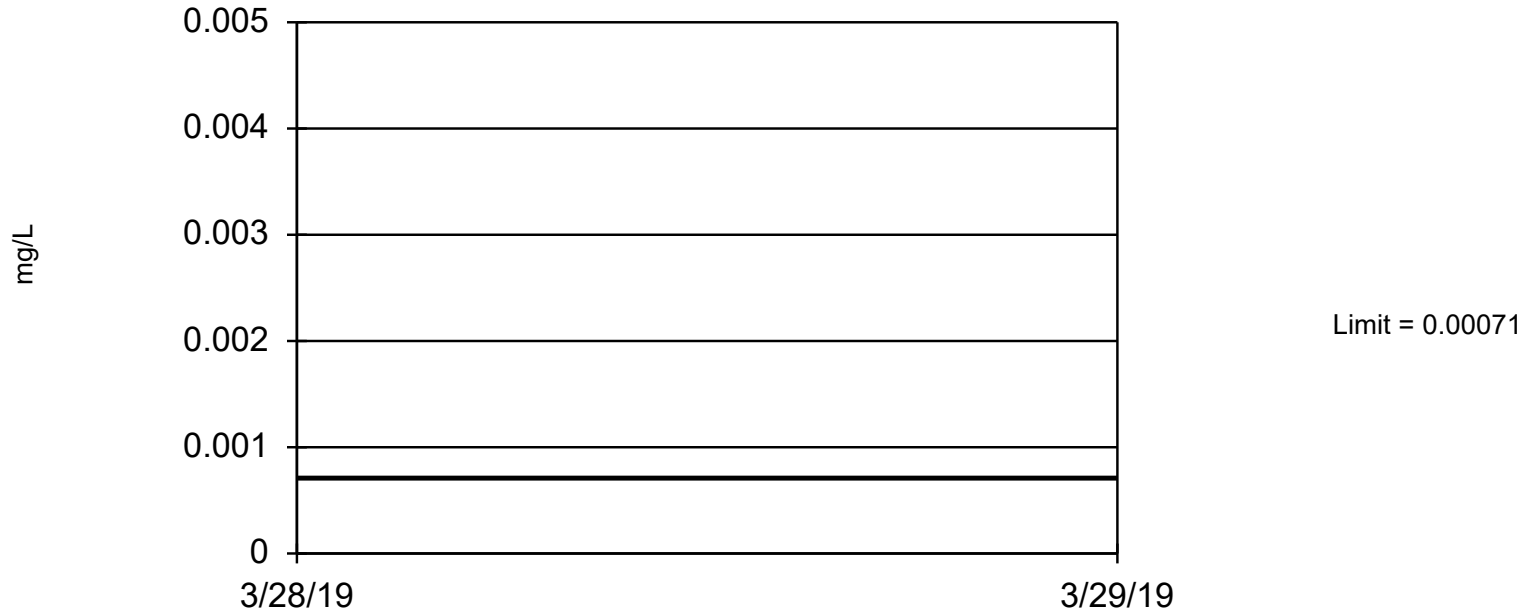
## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 84 background values. 89.29% NDs. 94.73% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.01345.

Constituent: Molybdenum    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 95.6% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Selenium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 96.7% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Thallium    Analysis Run 6/28/2019 11:57 AM    View: Interwell Tolerance Limits  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

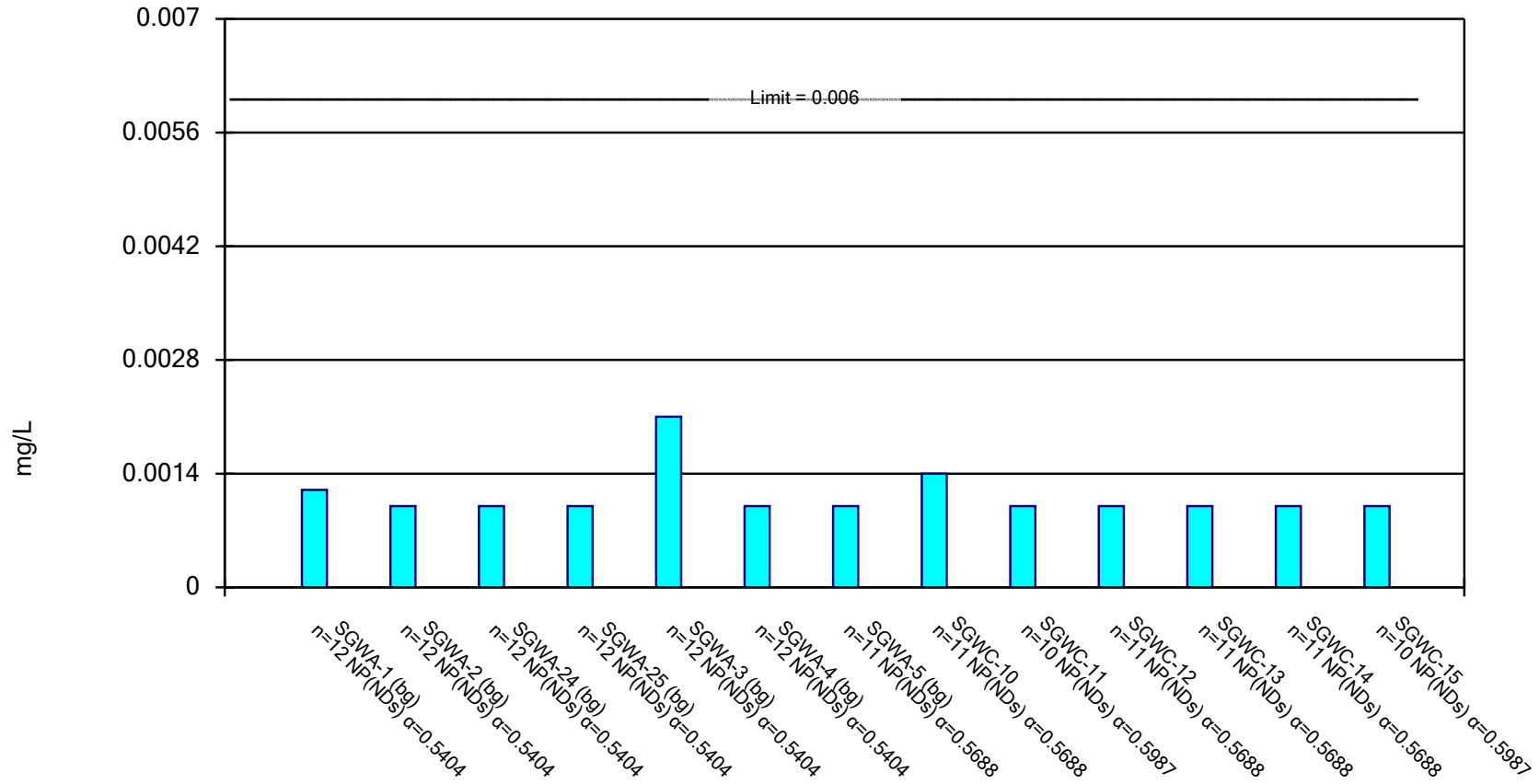
# Tolerance Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:36 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	n/a	0.0021	n/a	n/a	n/a	83	92.77	n/a	0.01416	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0015	n/a	n/a	n/a	91	78.02	n/a	0.009394	NP Inter(NDs)
Barium (mg/L)	n/a	0.06349	n/a	n/a	n/a	91	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.00034	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0011	n/a	n/a	n/a	84	97.62	n/a	0.01345	NP Inter(NDs)
Chromium (mg/L)	n/a	0.016	n/a	n/a	n/a	91	35.16	n/a	0.009394	NP Inter(normal...
Cobalt (mg/L)	n/a	0.02	n/a	n/a	n/a	90	64.44	n/a	0.009888	NP Inter(normal...
Combined Radium 226 + 228 (pCi/L)	n/a	1.2	n/a	n/a	n/a	90	14.44	n/a	0.009888	NP Inter(normal...
Fluoride (mg/L)	n/a	0.108	n/a	n/a	n/a	98	77.55	n/a	0.00656	NP Inter(NDs)
Lead (mg/L)	n/a	0.0013	n/a	n/a	n/a	91	98.9	n/a	0.009394	NP Inter(NDs)
Lithium (mg/L)	n/a	0.005	n/a	n/a	n/a	91	90.11	n/a	0.009394	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00012	n/a	n/a	n/a	91	89.01	n/a	0.009394	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.00278	n/a	n/a	n/a	84	89.29	n/a	0.01345	NP Inter(NDs)
Selenium (mg/L)	n/a	0.00071	n/a	n/a	n/a	91	95.6	n/a	0.009394	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0001	n/a	n/a	n/a	91	96.7	n/a	0.009394	NP Inter(NDs)

### Non-Parametric Tolerance Interval

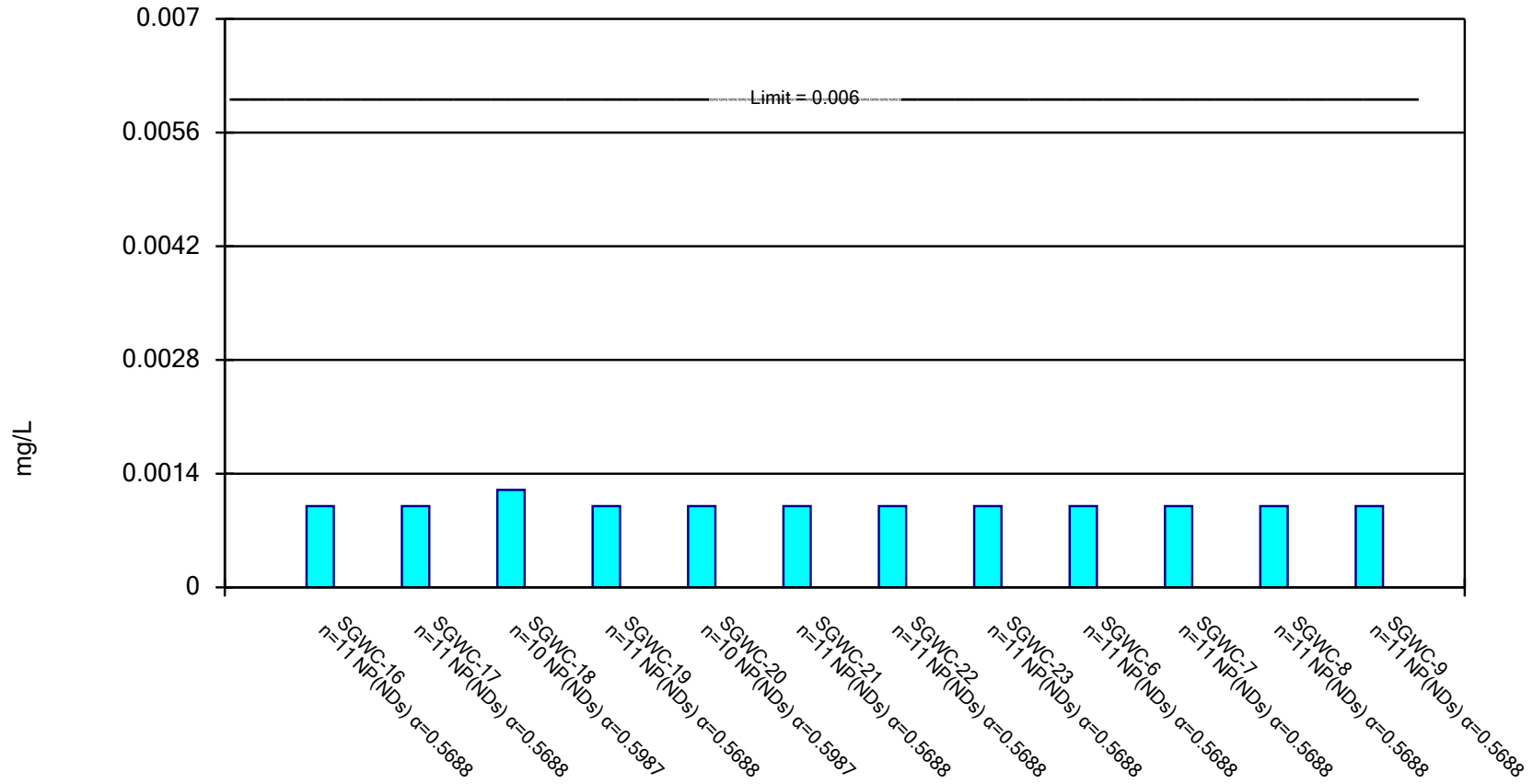
Compliance Limit is not exceeded. Normality Test: , alpha based on n.



Constituent: Antimony    Analysis Run 6/28/2019 12:16 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: , alpha based on n.

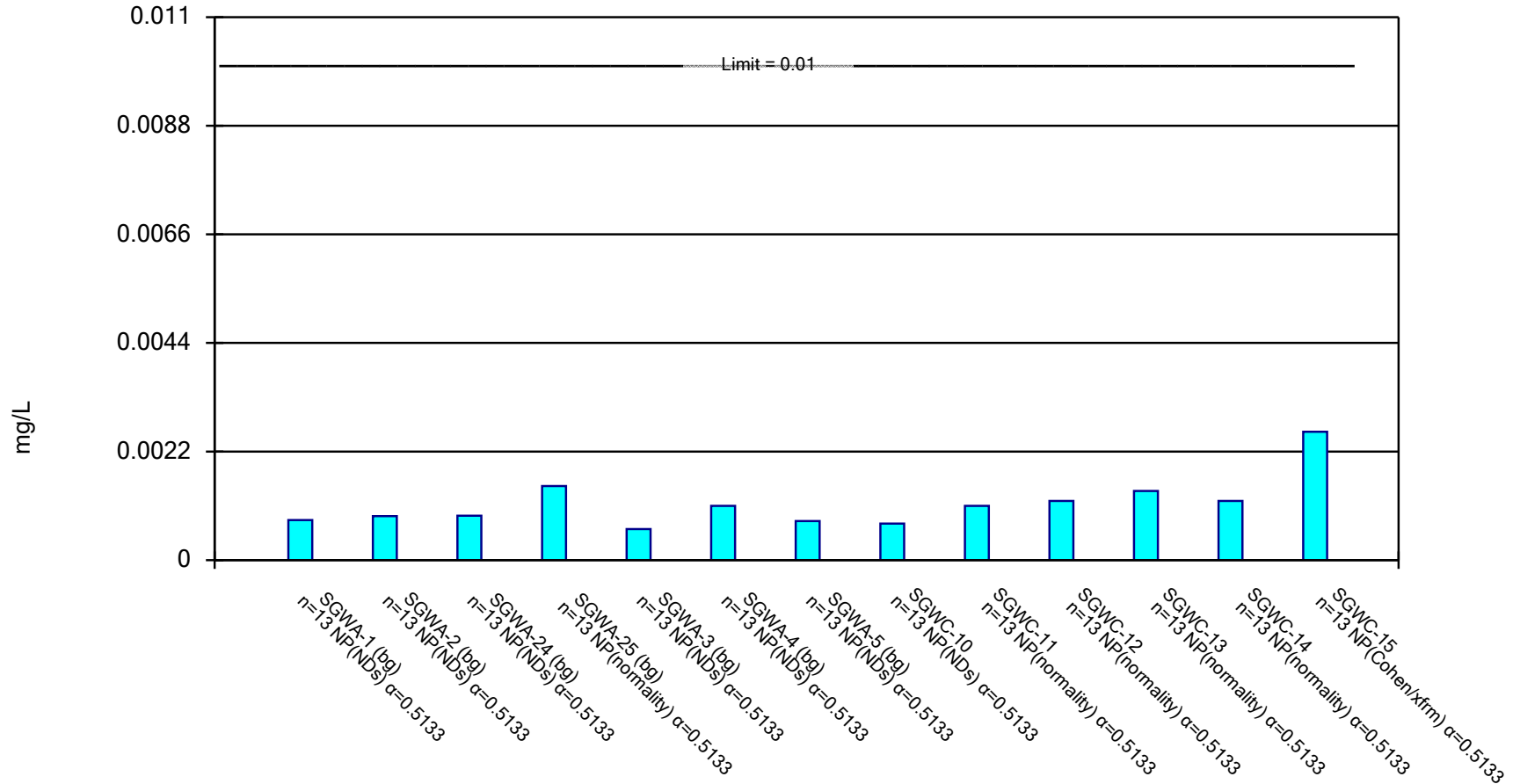


Constituent: Antimony Analysis Run 6/28/2019 12:16 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



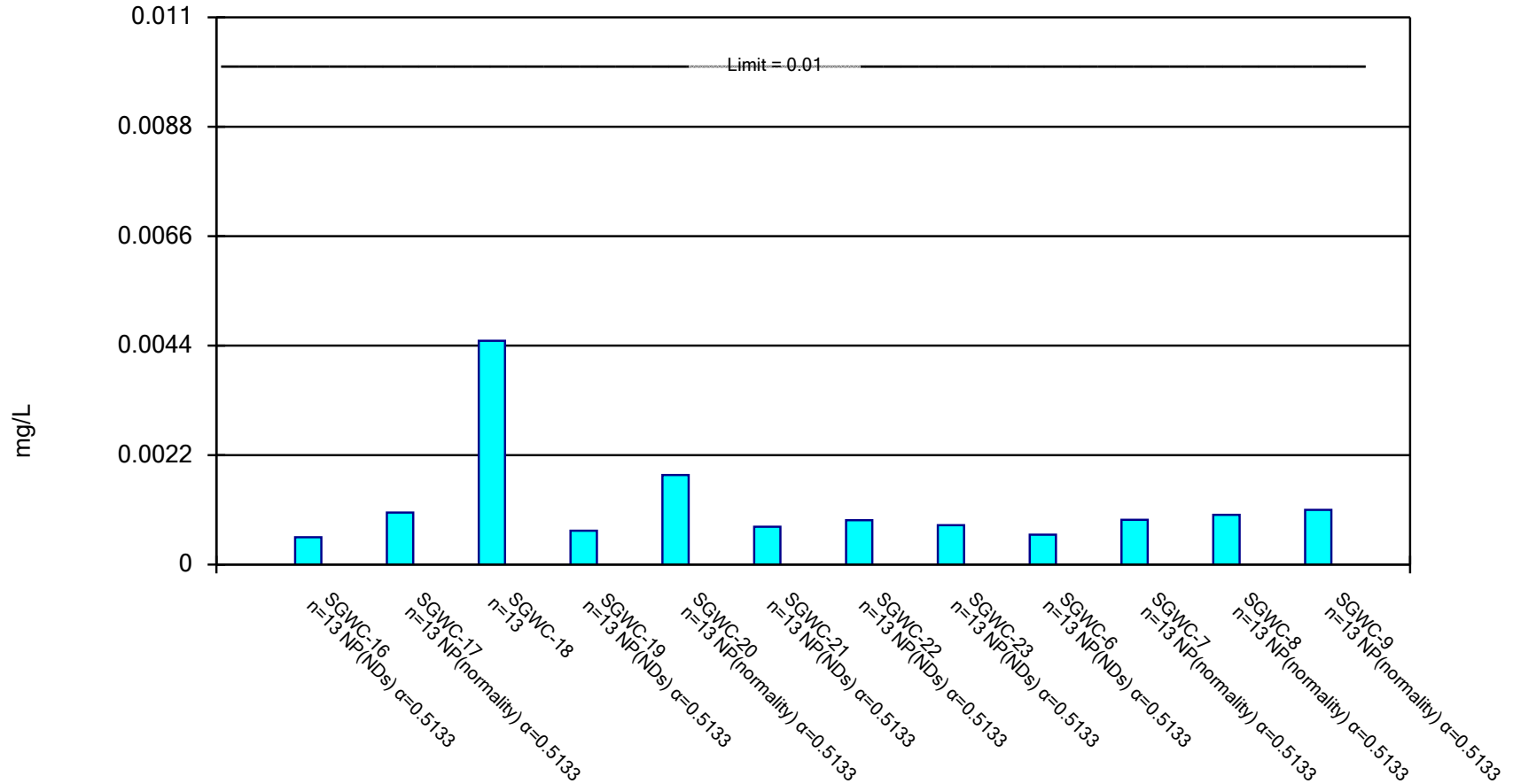
Constituent: Arsenic    Analysis Run 6/28/2019 12:17 PM    View: Interwell Confidence Interval

Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

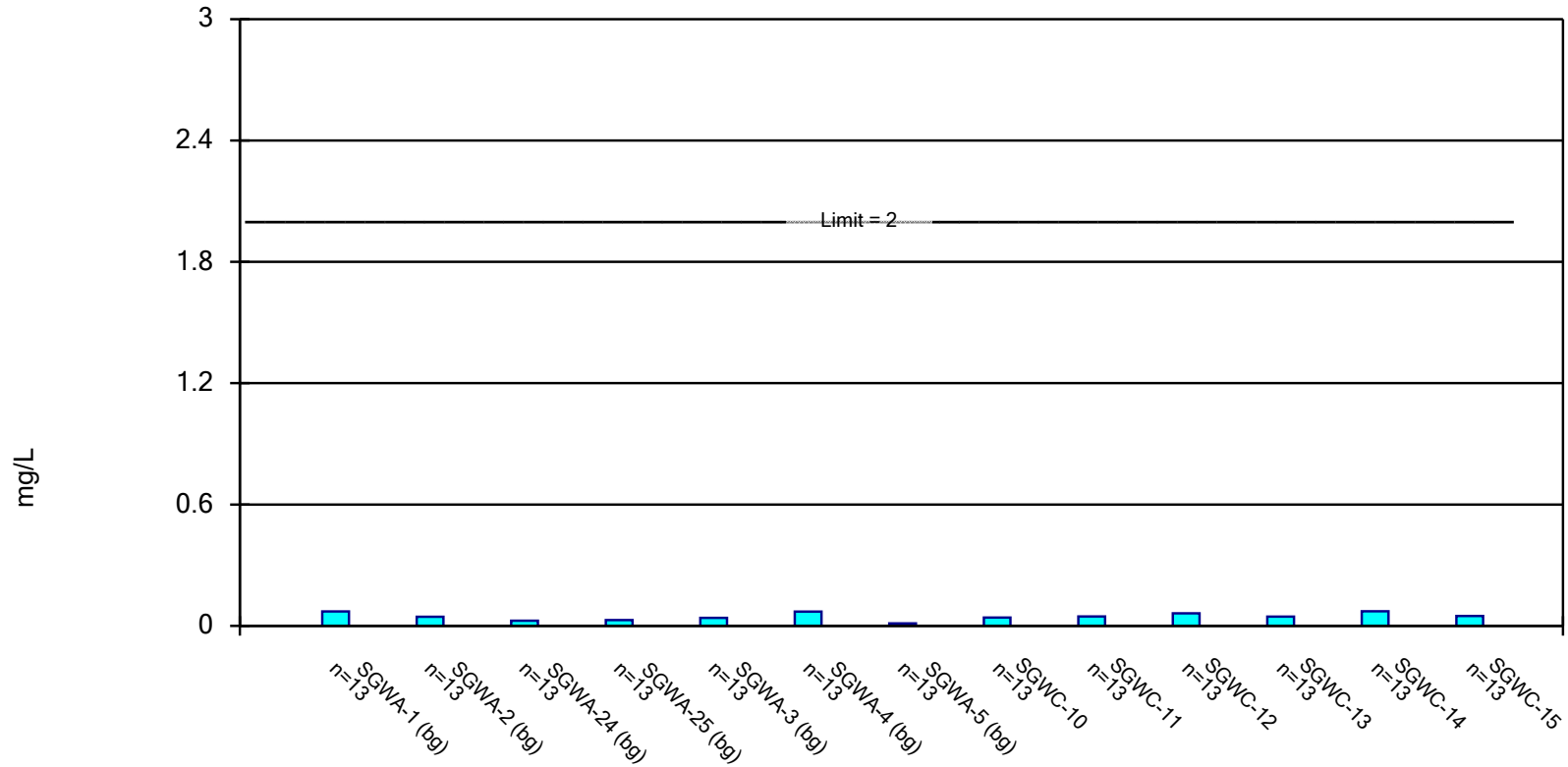


Constituent: Arsenic Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric Tolerance Interval

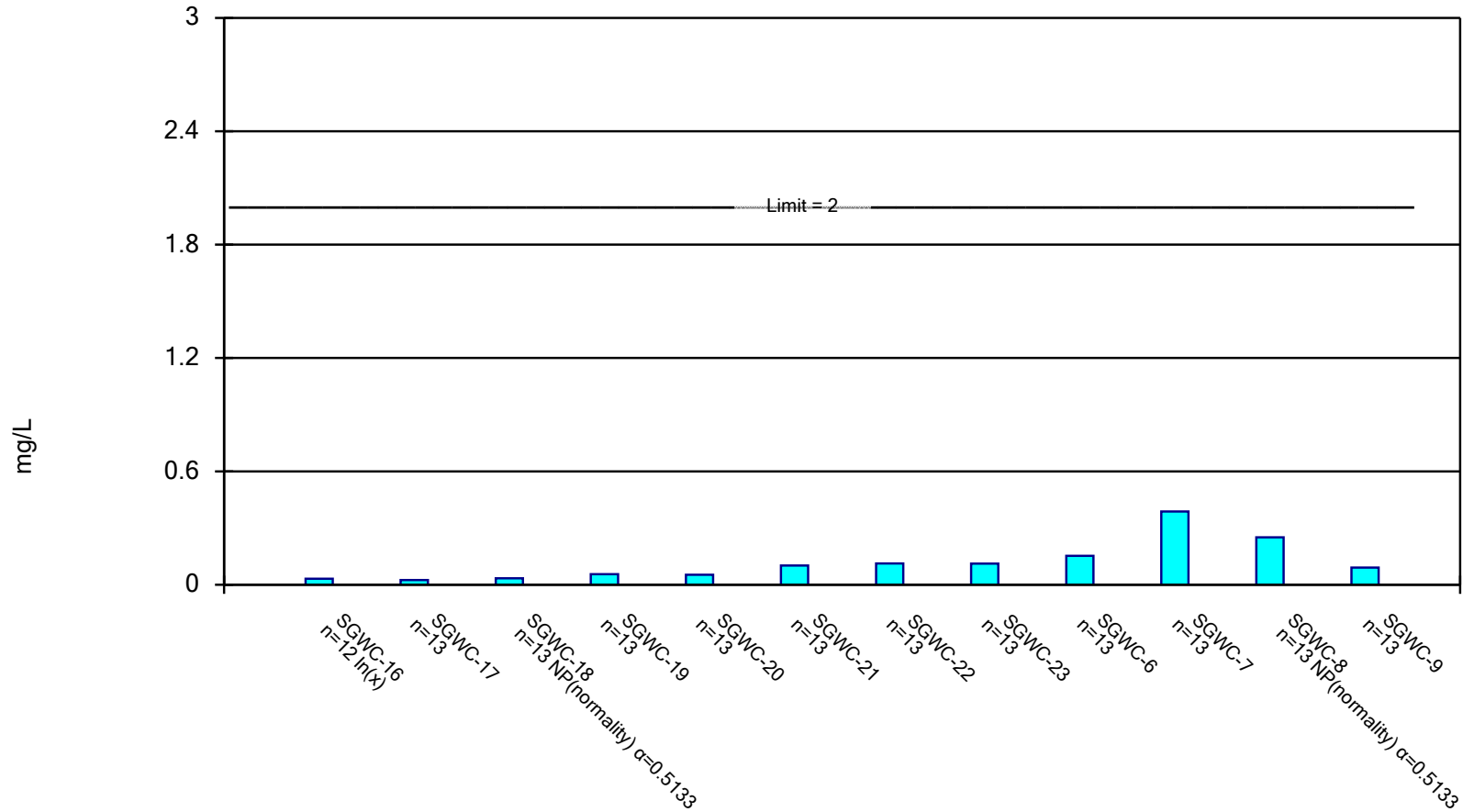
Compliance Limit is not exceeded. Per-well alpha = 0.05. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

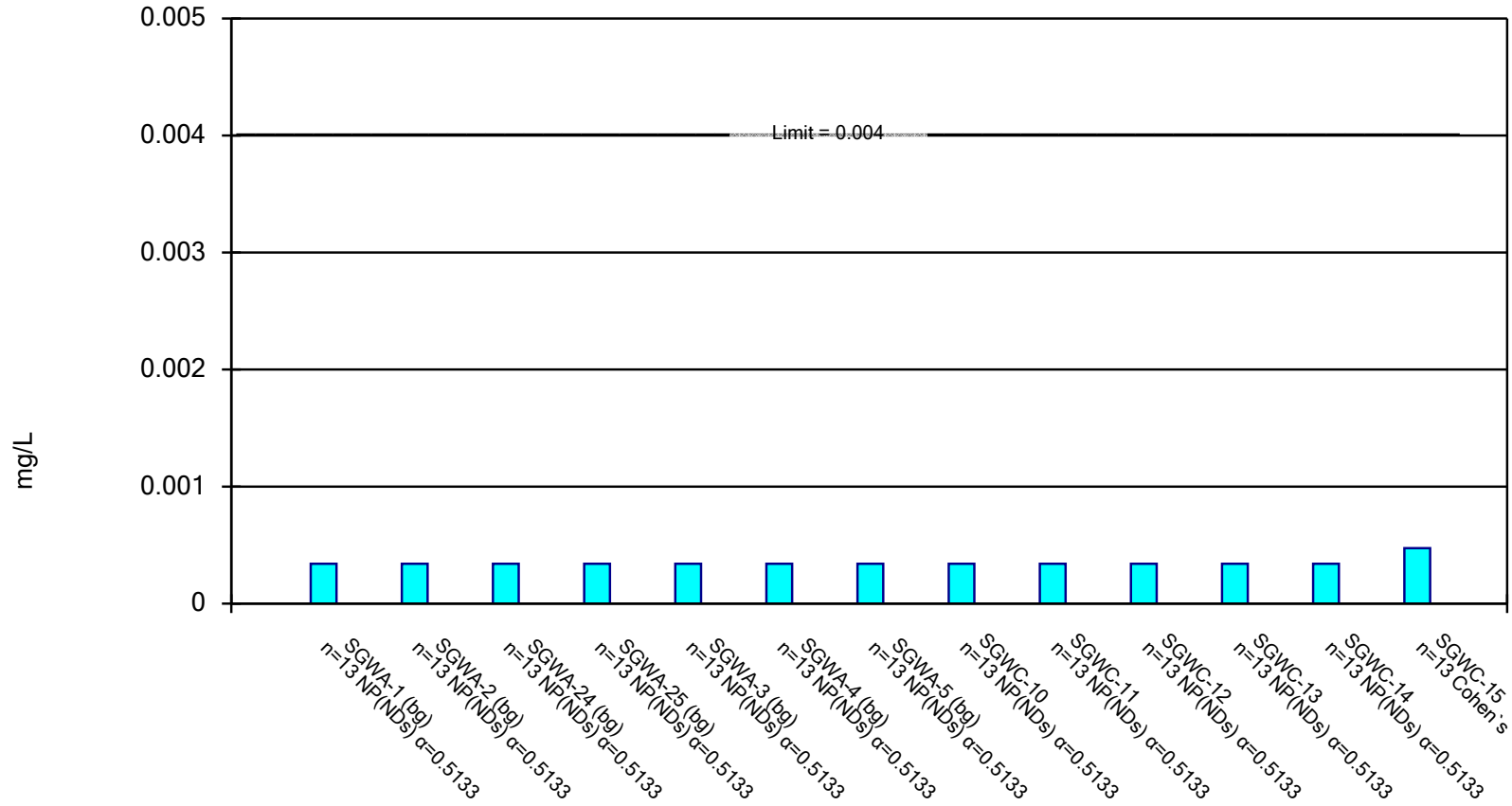
Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium    Analysis Run 6/28/2019 12:17 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

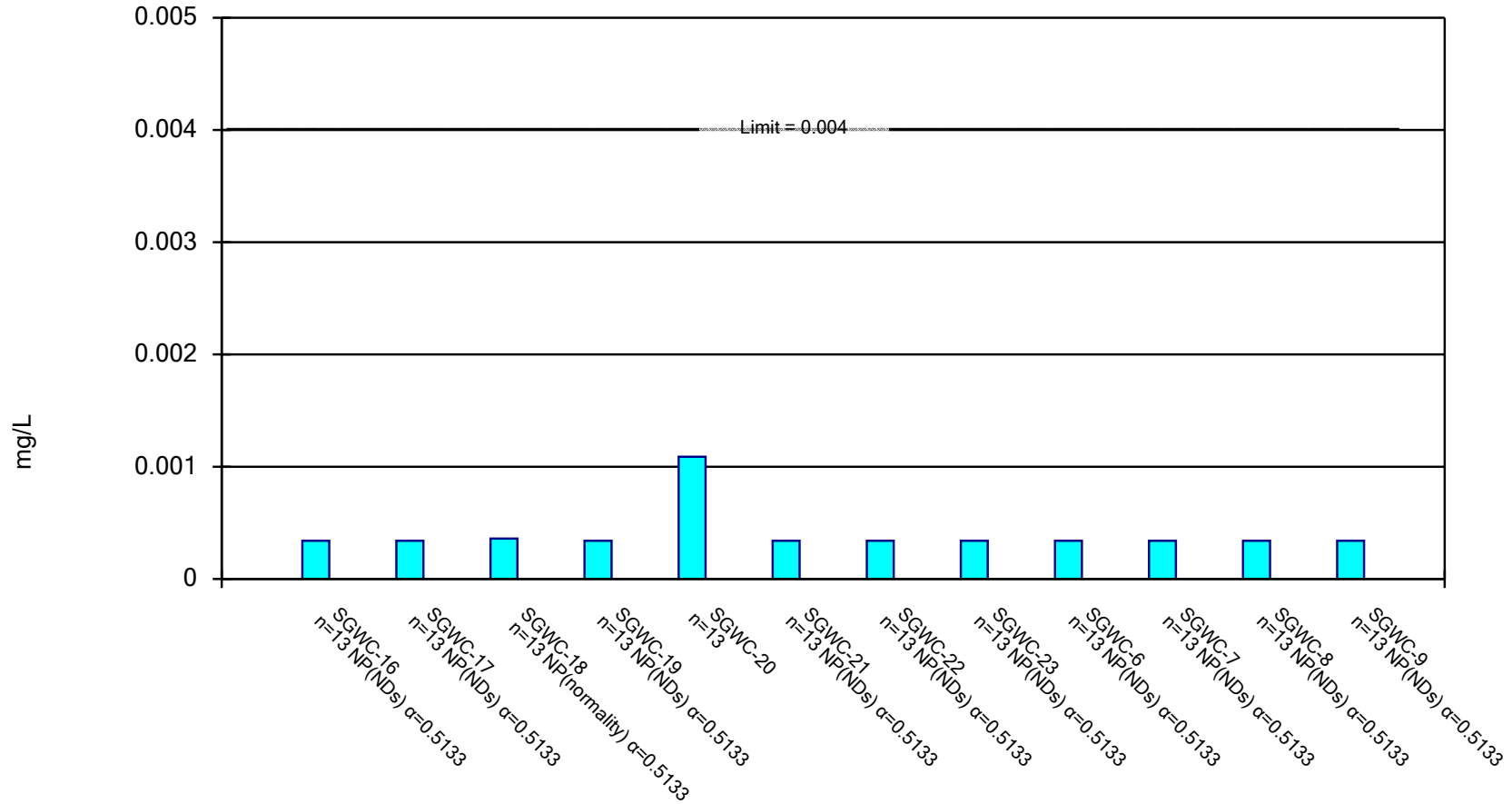


Constituent: Beryllium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

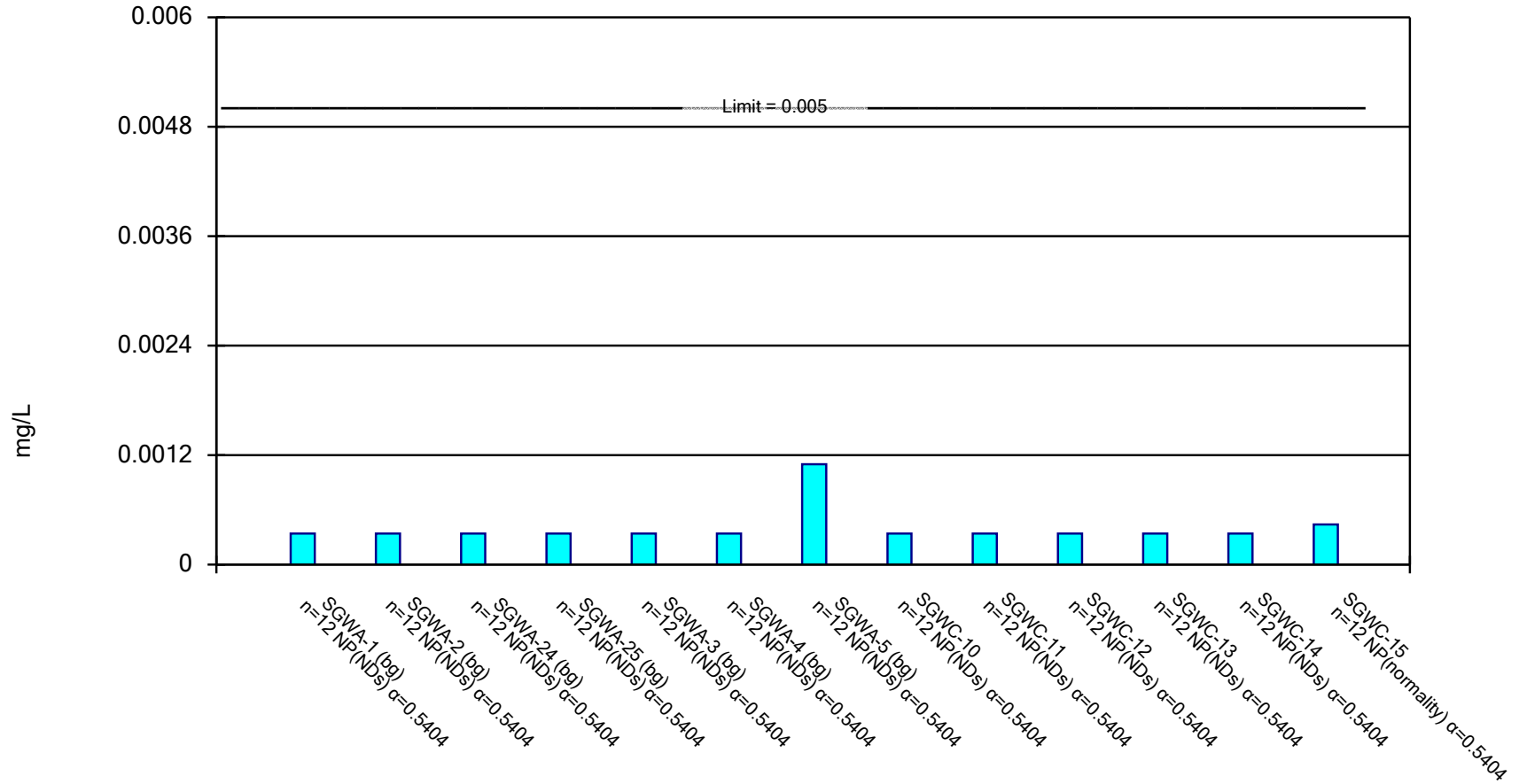


Constituent: Beryllium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

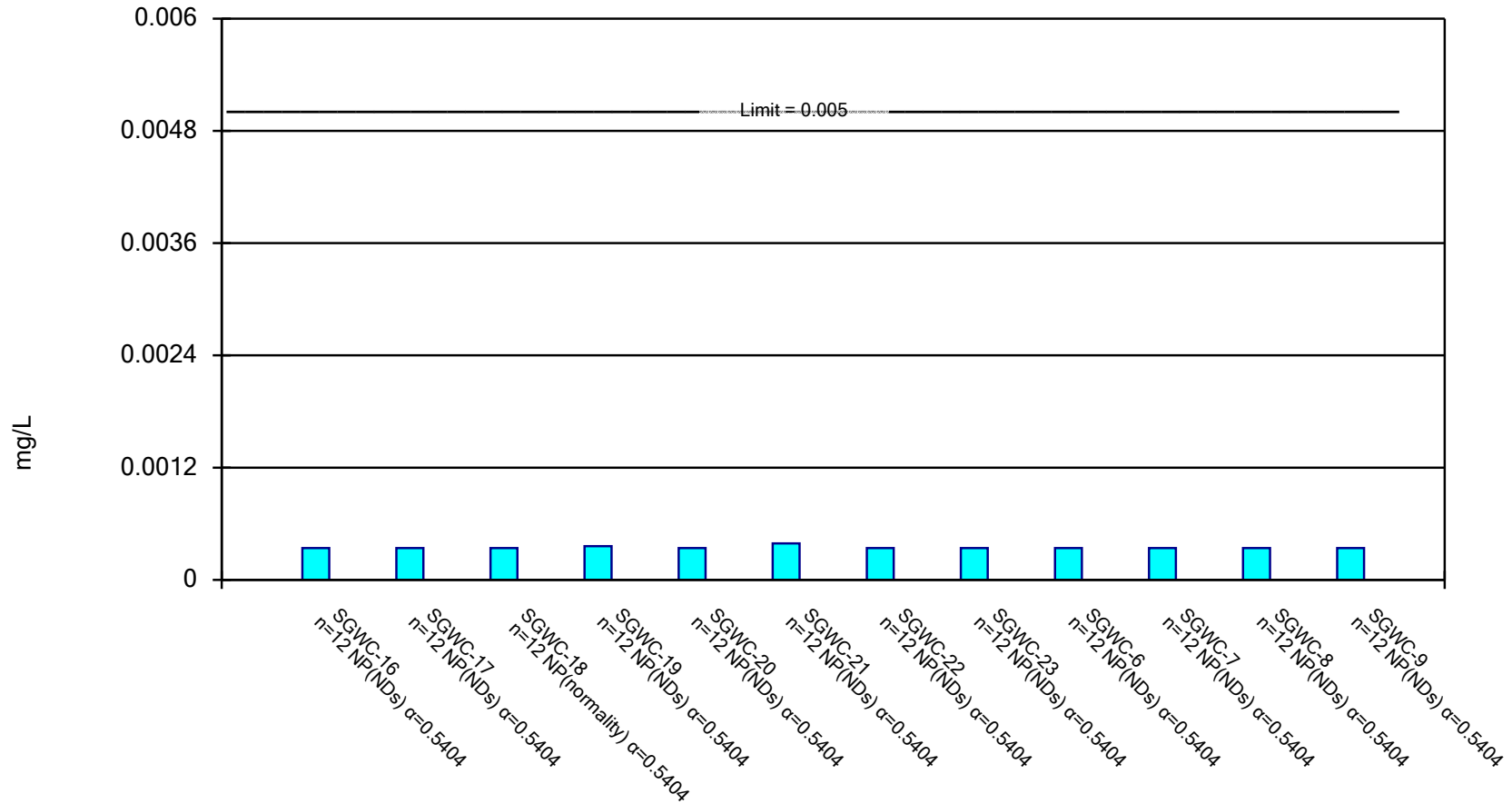


Constituent: Cadmium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

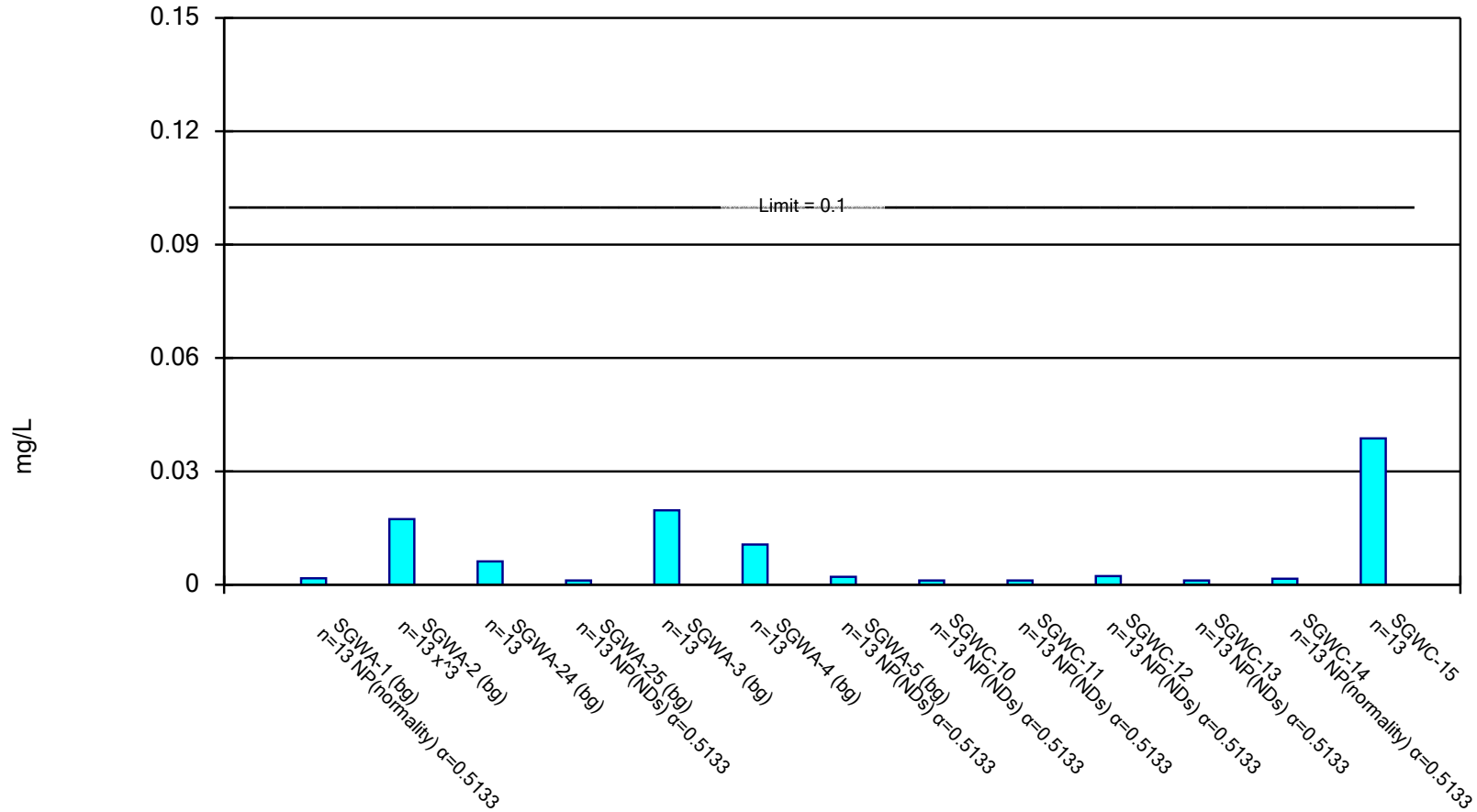


Constituent: Cadmium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



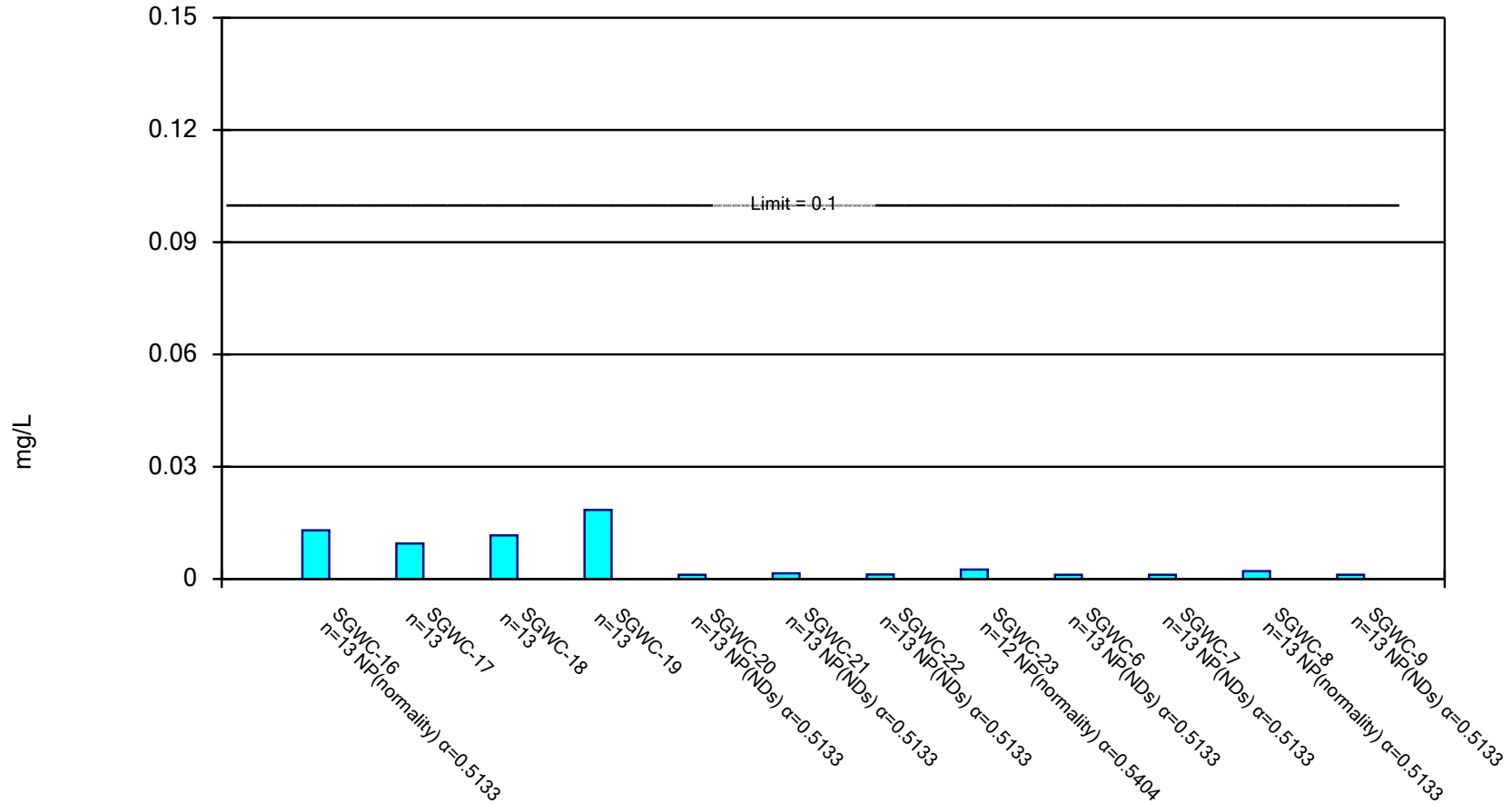
Constituent: Chromium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

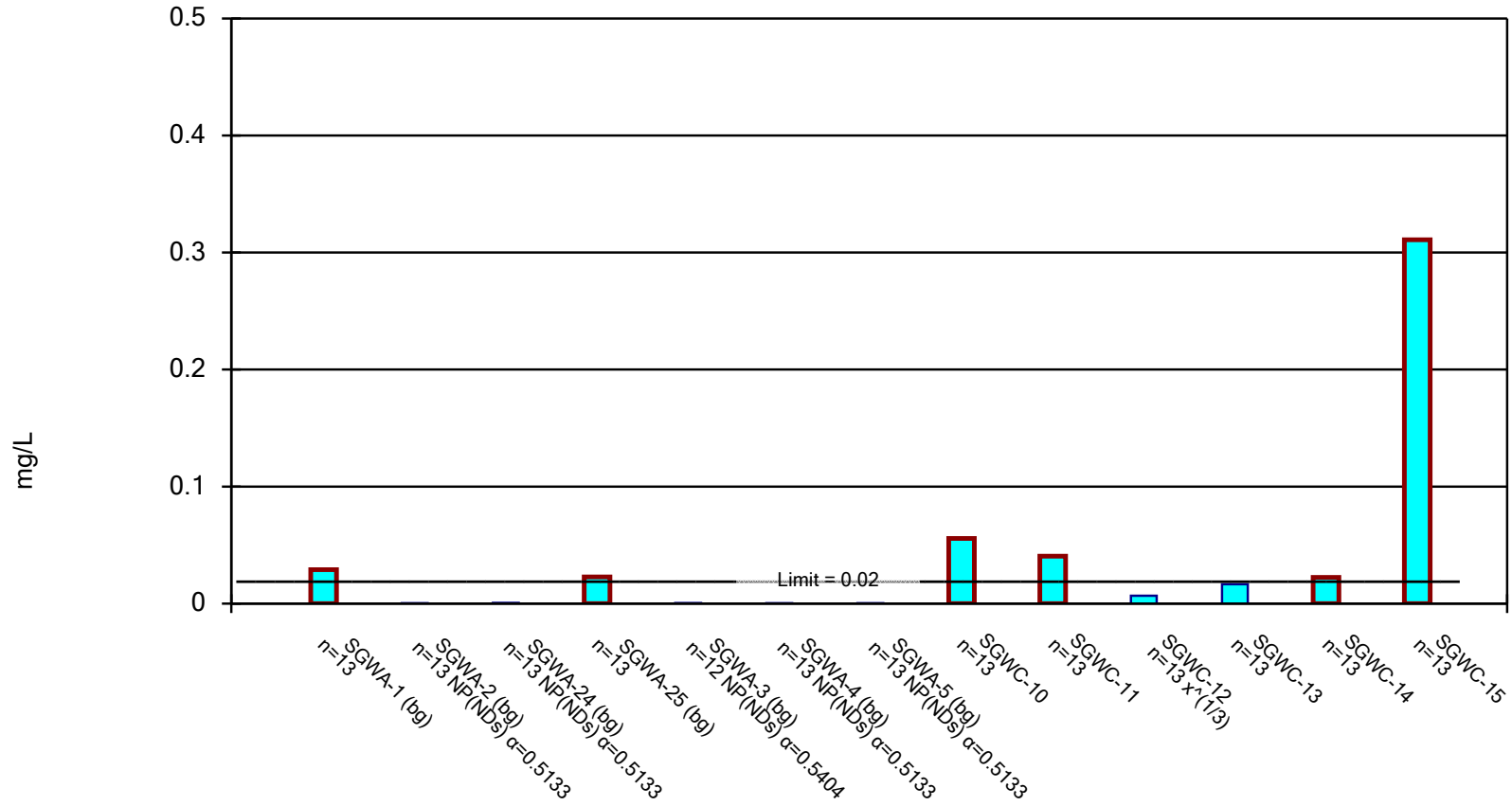


Constituent: Chromium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance limit is exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

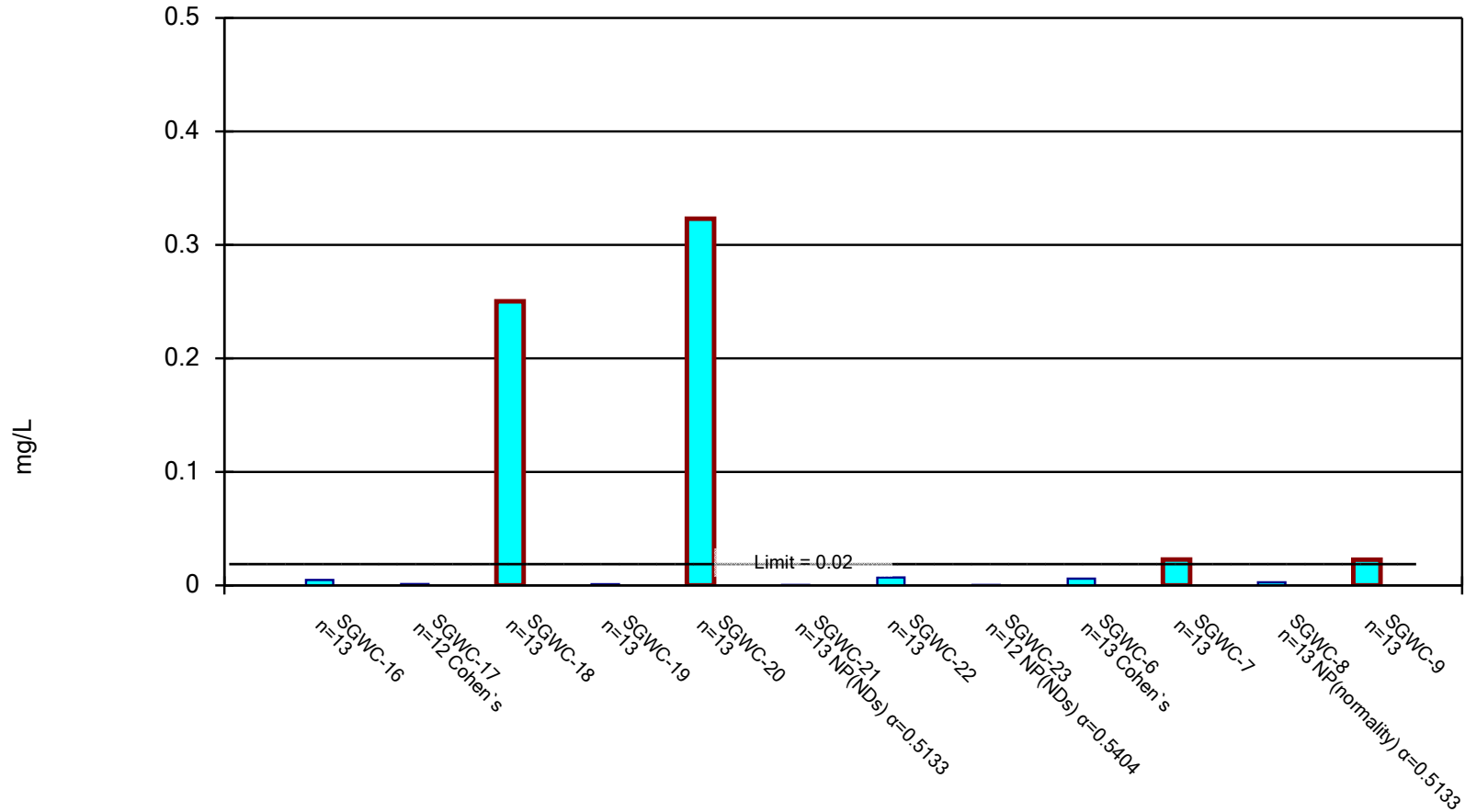


Constituent: Cobalt Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

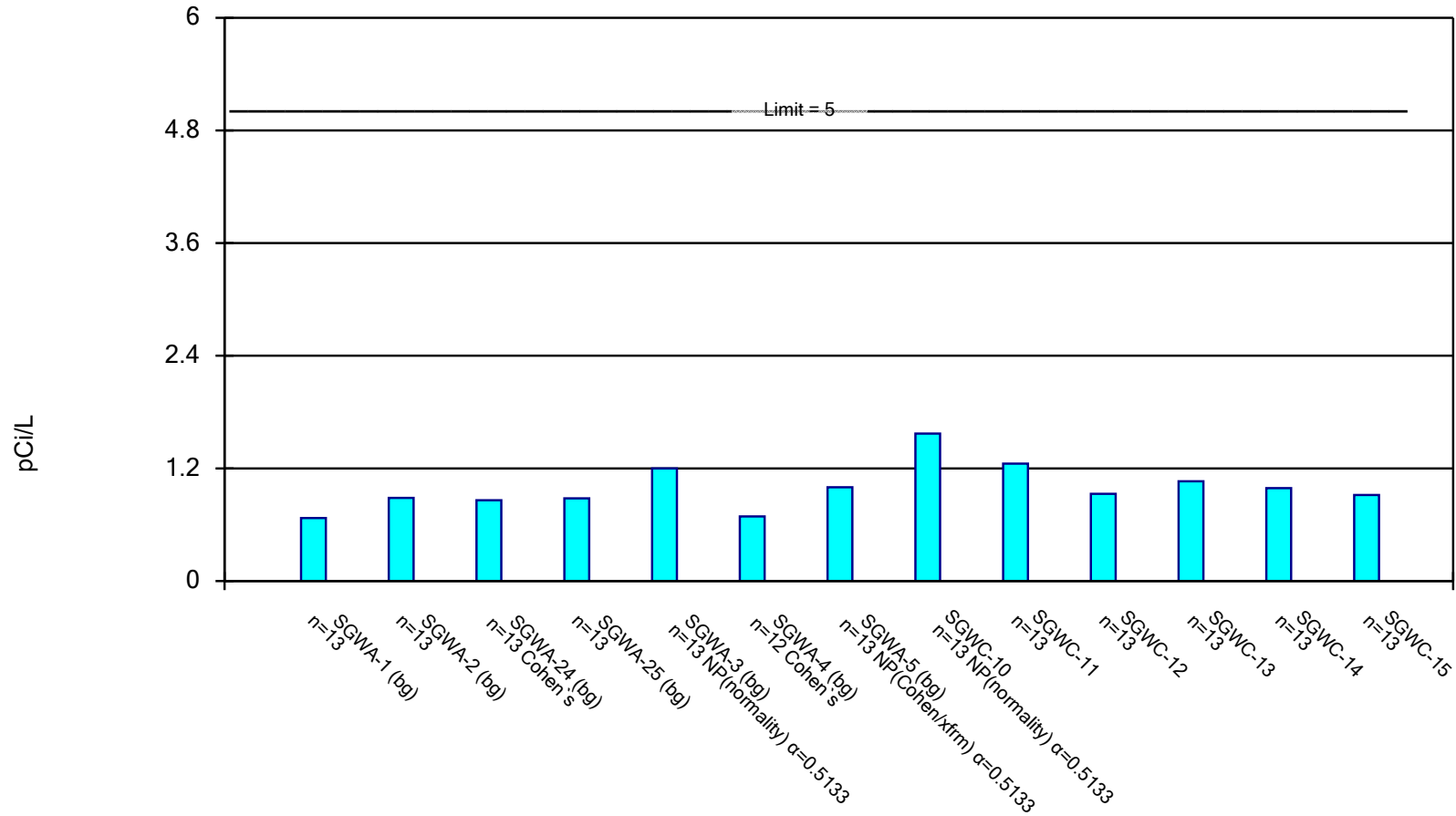
Compliance limit is exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

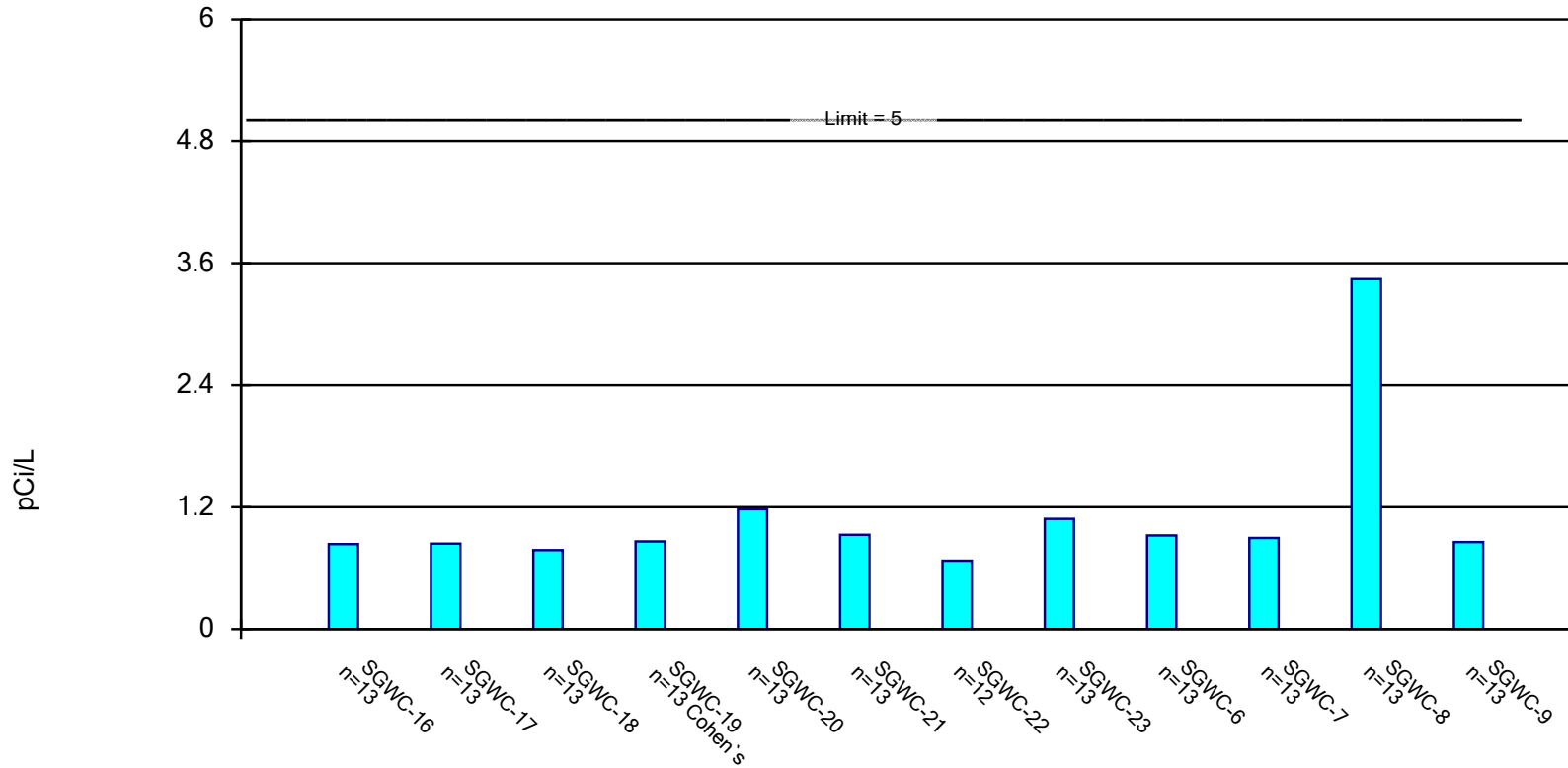


Constituent: Combined Radium 226 + 228 Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence I

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Tolerance Interval

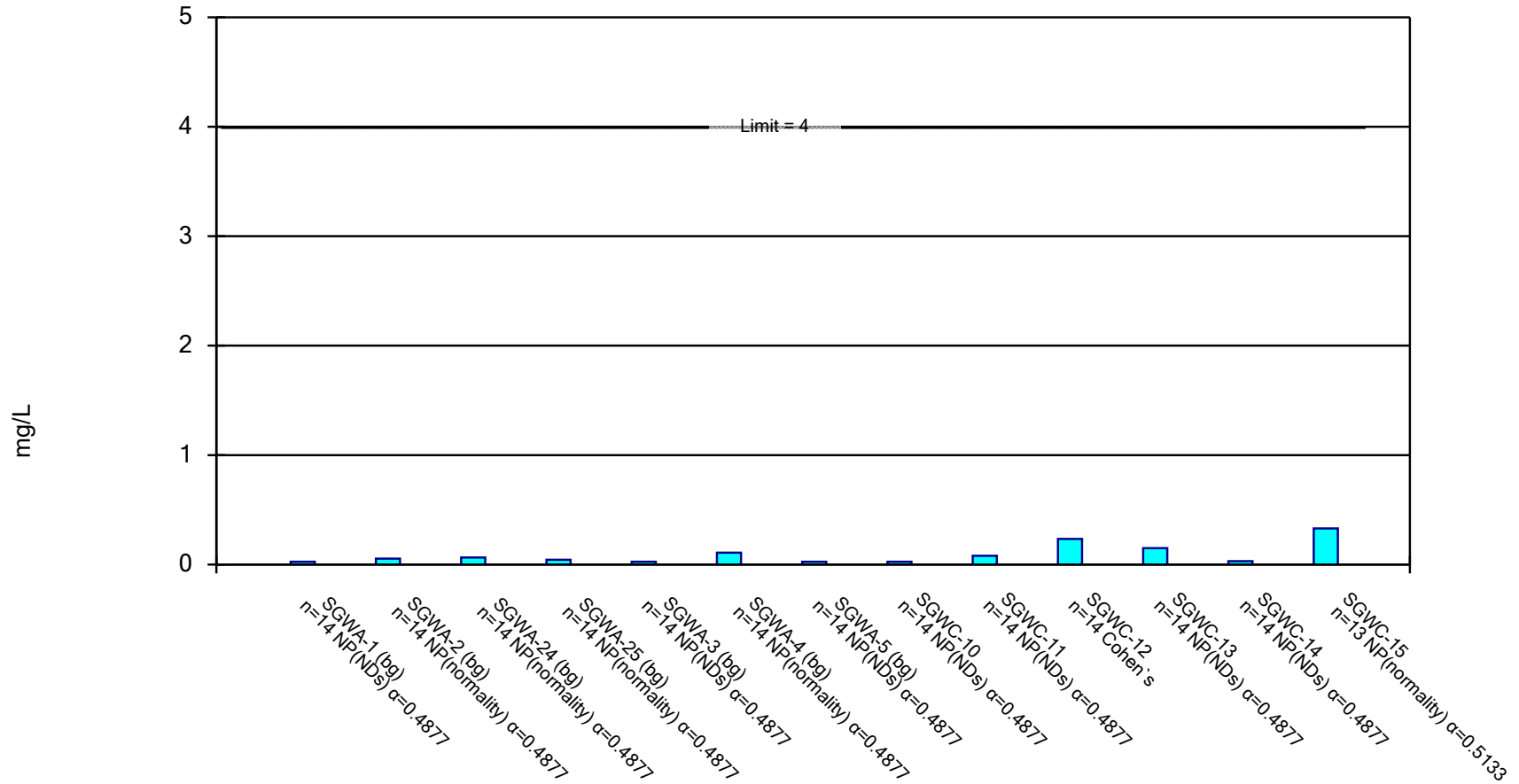
Compliance Limit is not exceeded. Per-well alpha = 0.05. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228    Analysis Run 6/28/2019 12:17 PM    View: Interwell Confidence I  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

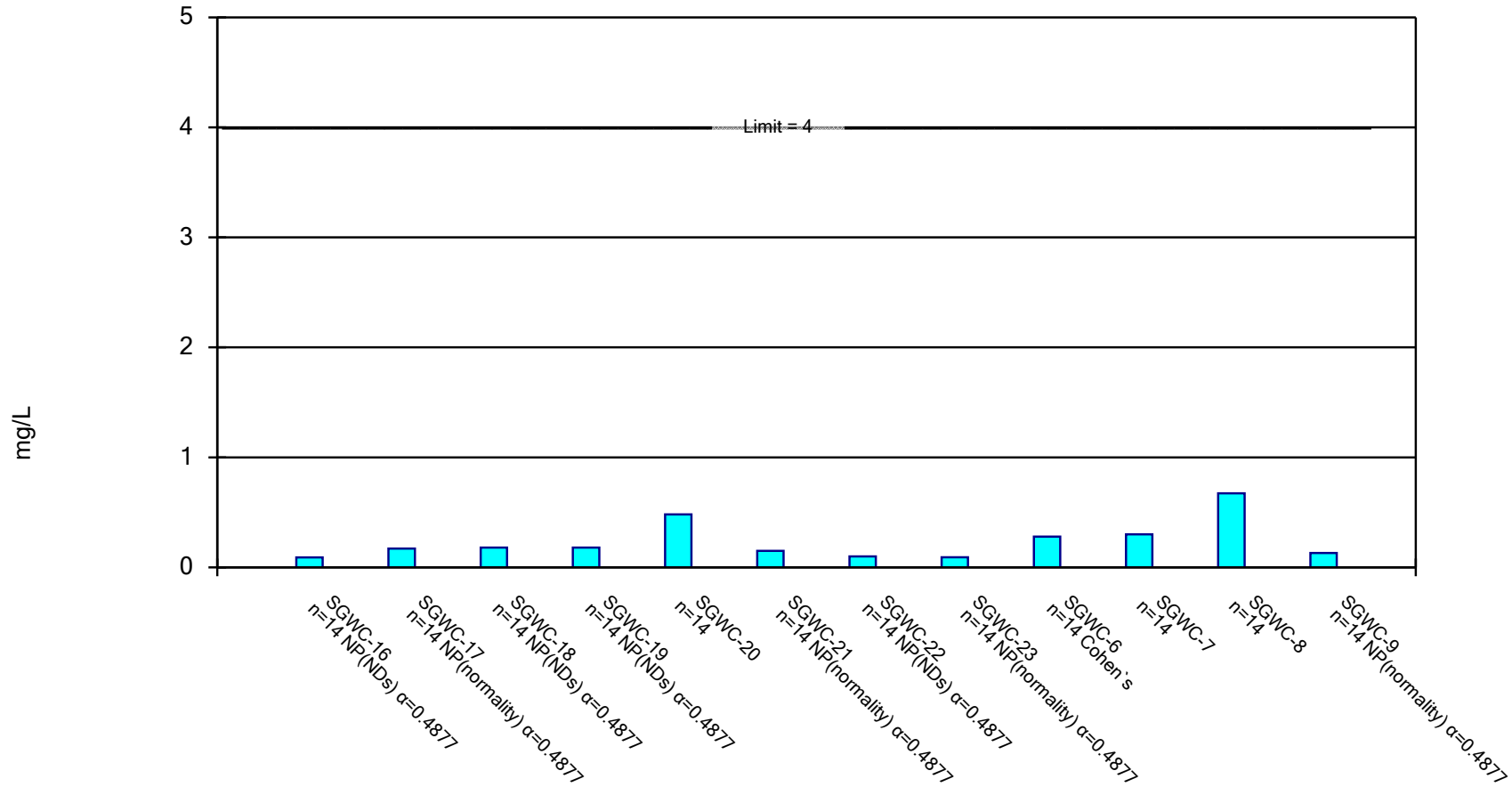


Constituent: Fluoride Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

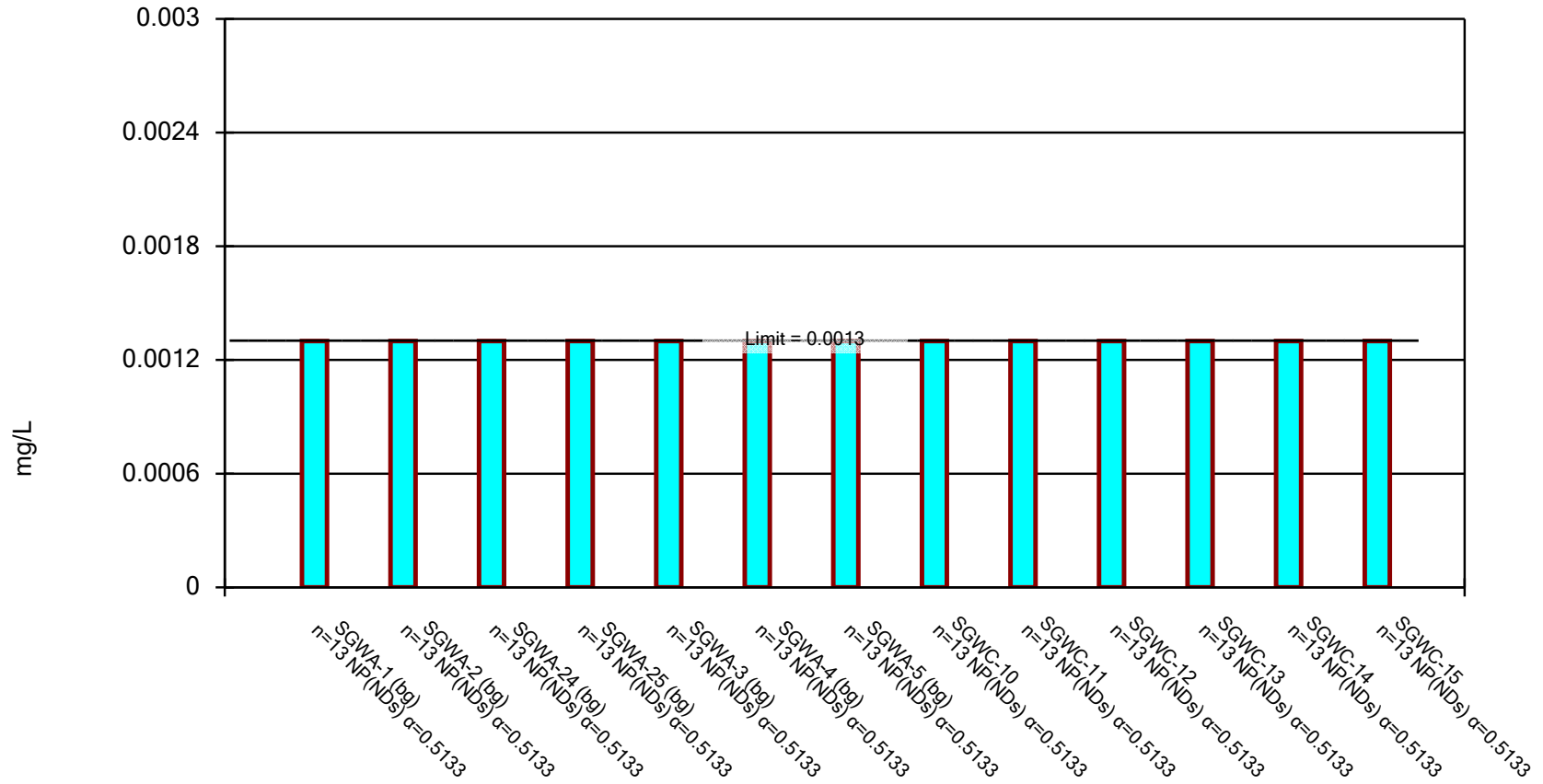


Constituent: Fluoride Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Tolerance Interval

Compliance limit is exceeded. Normality Test: , alpha based on n.



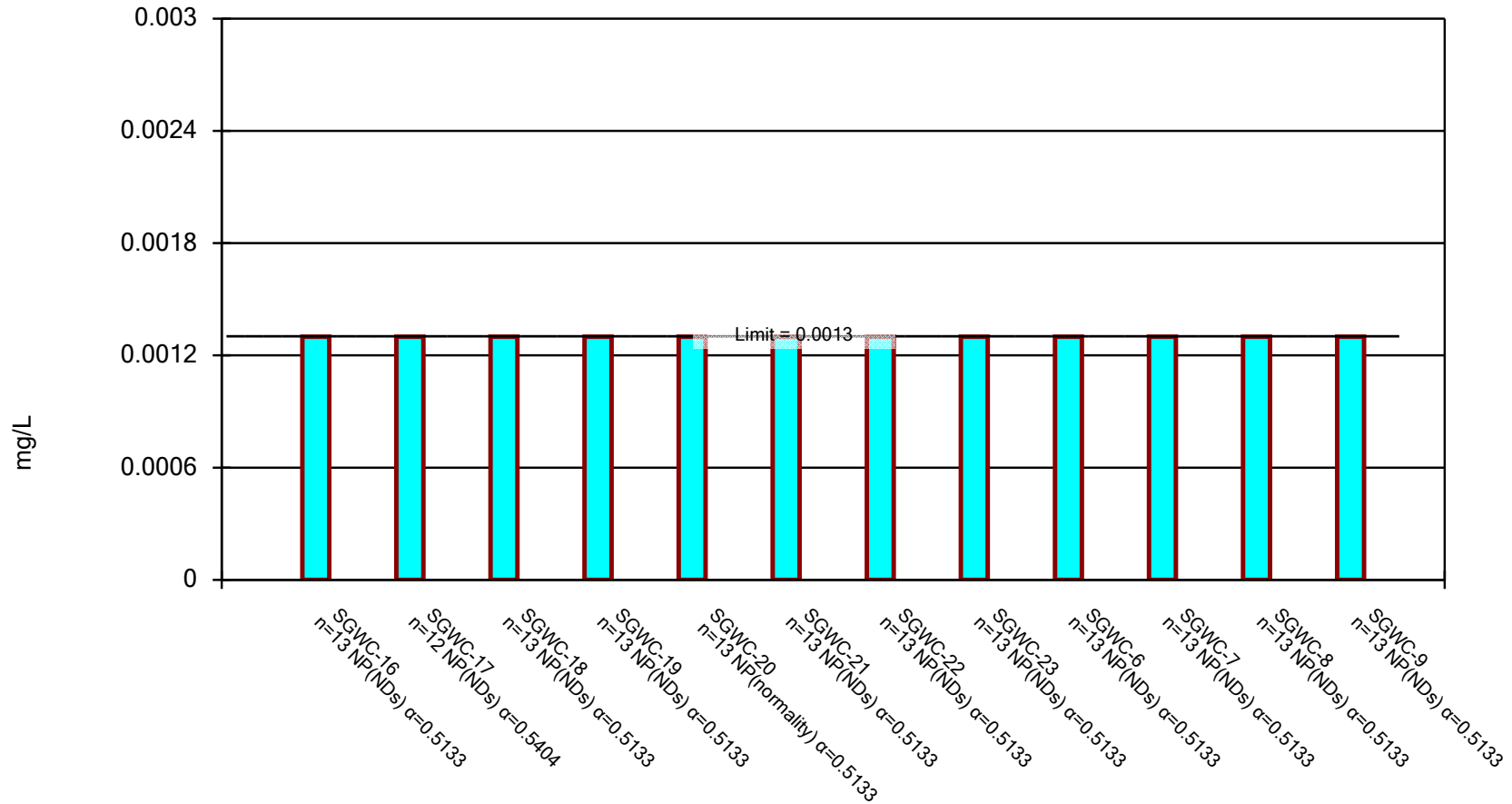
Constituent: Lead Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Non-Parametric Tolerance Interval

Compliance limit is exceeded. Normality Test: Shapiro Wilk, alpha based on n.

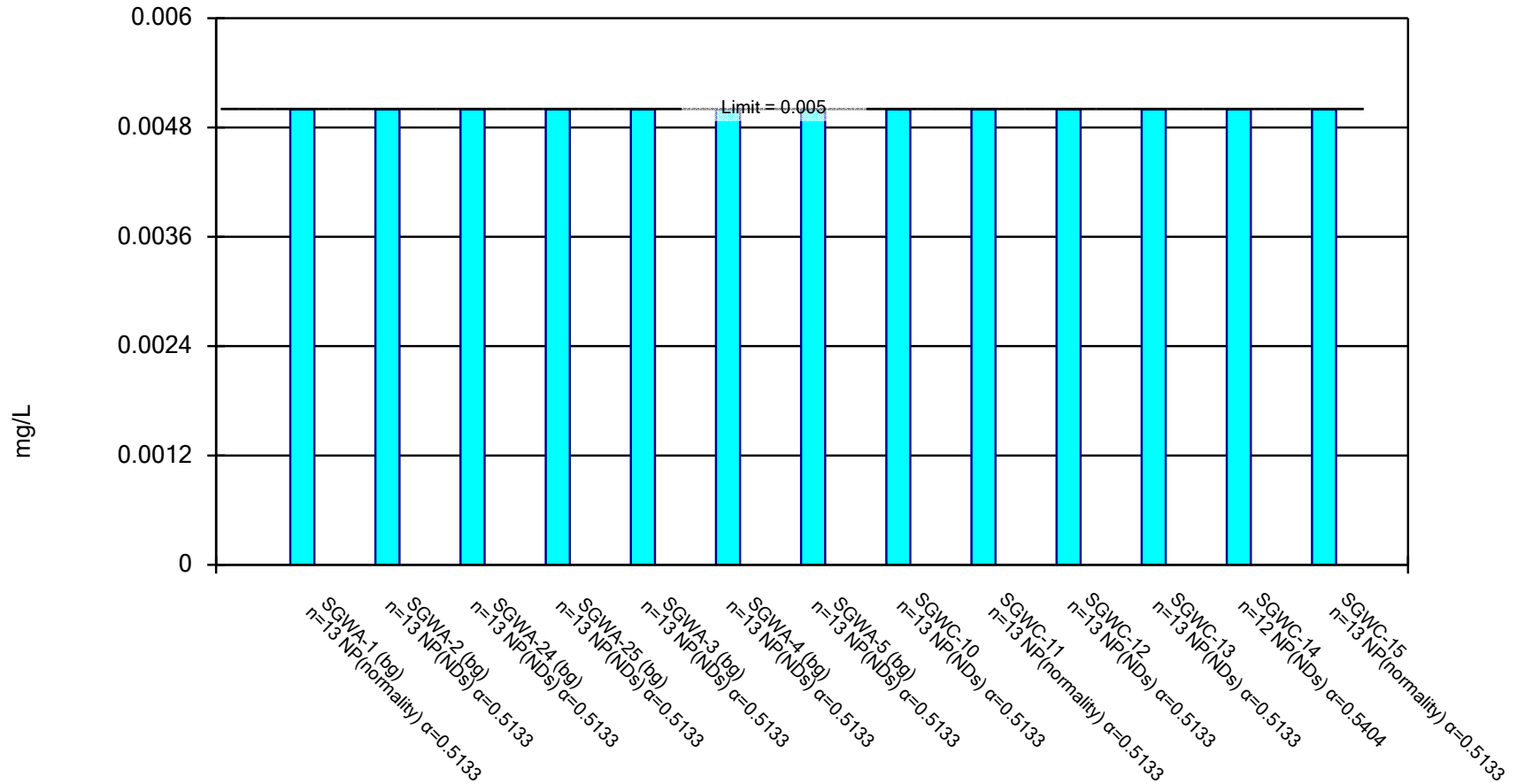


Constituent: Lead Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

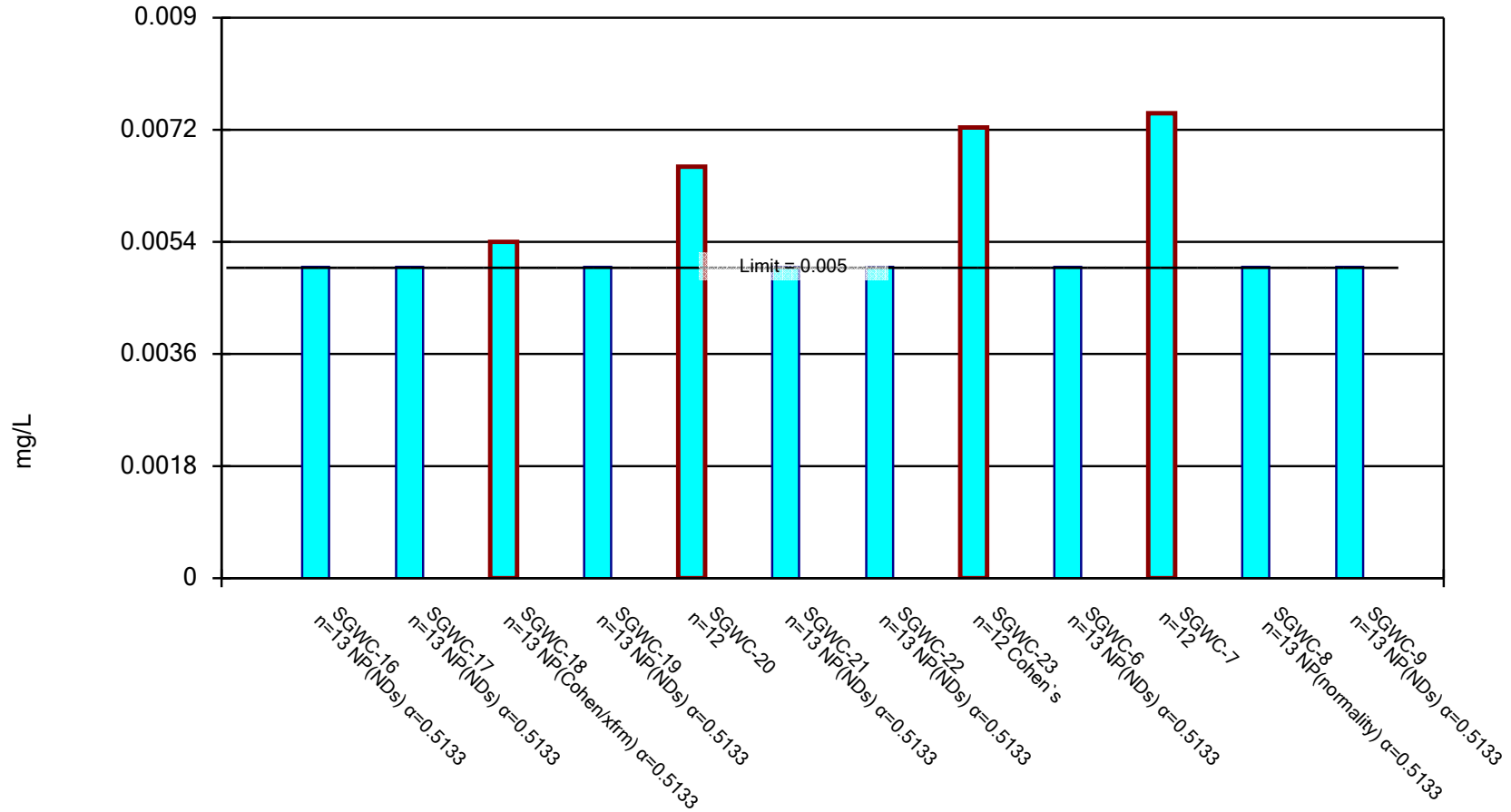


Constituent: Lithium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance limit is exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

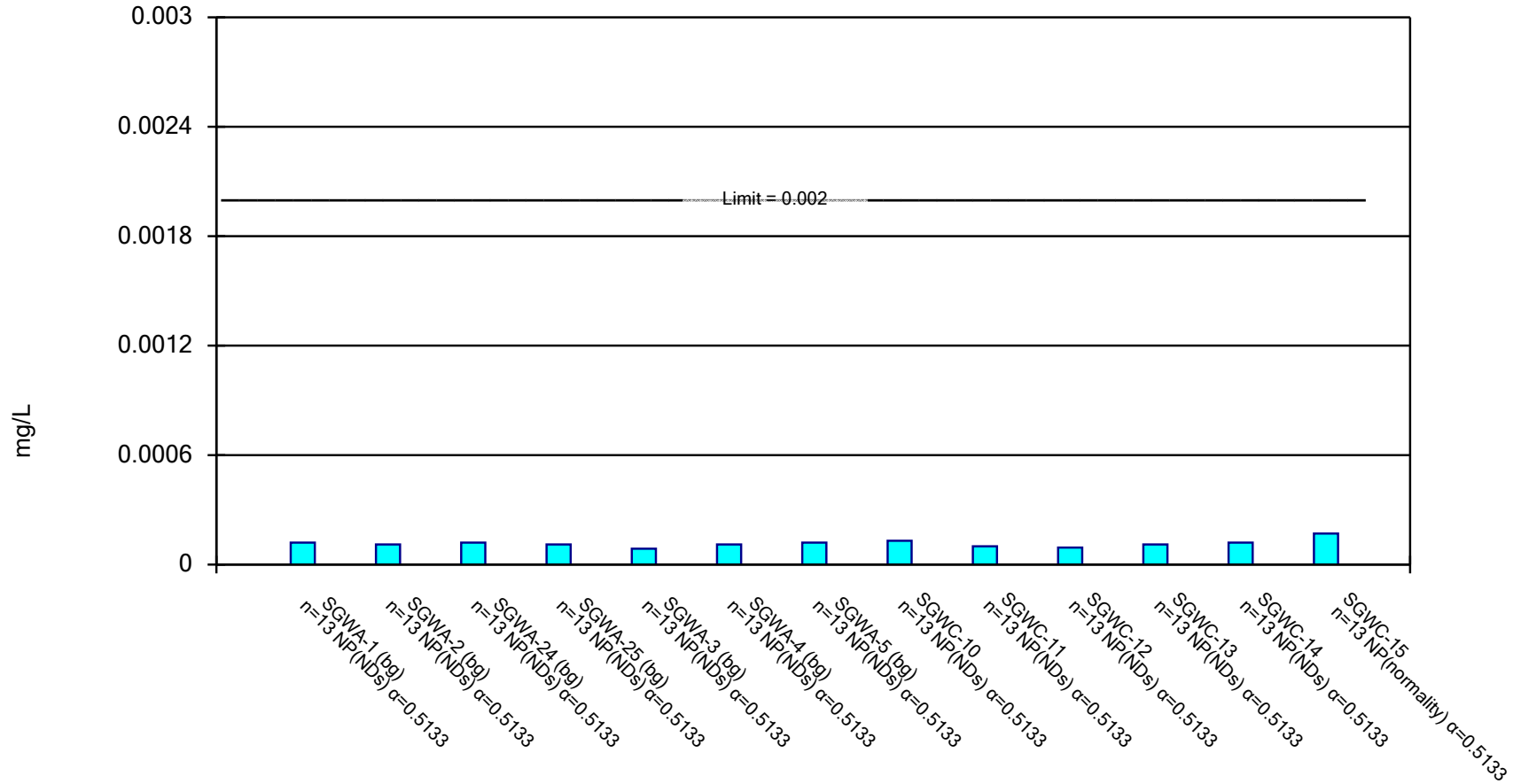


Constituent: Lithium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

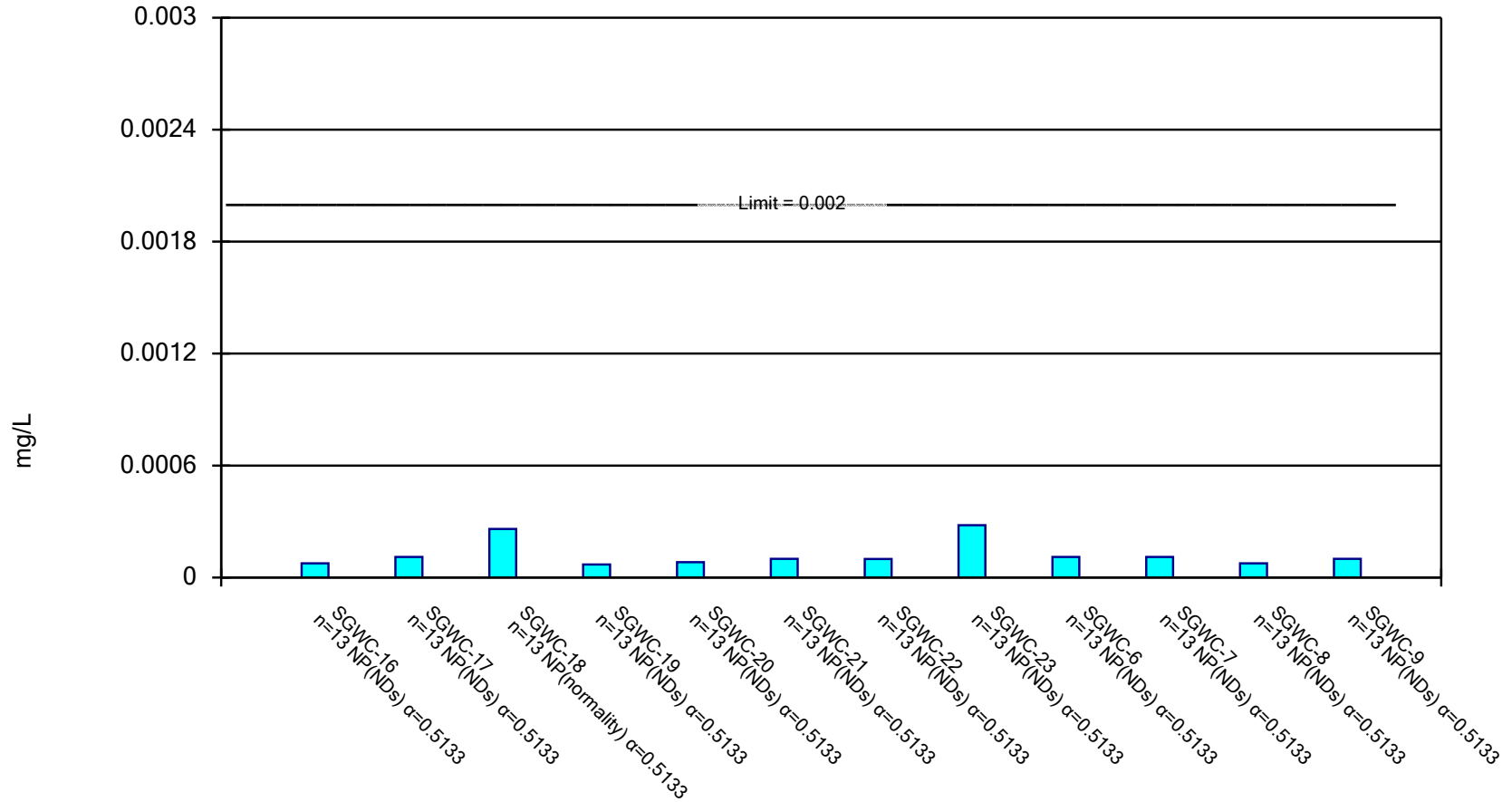
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury    Analysis Run 6/28/2019 12:17 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

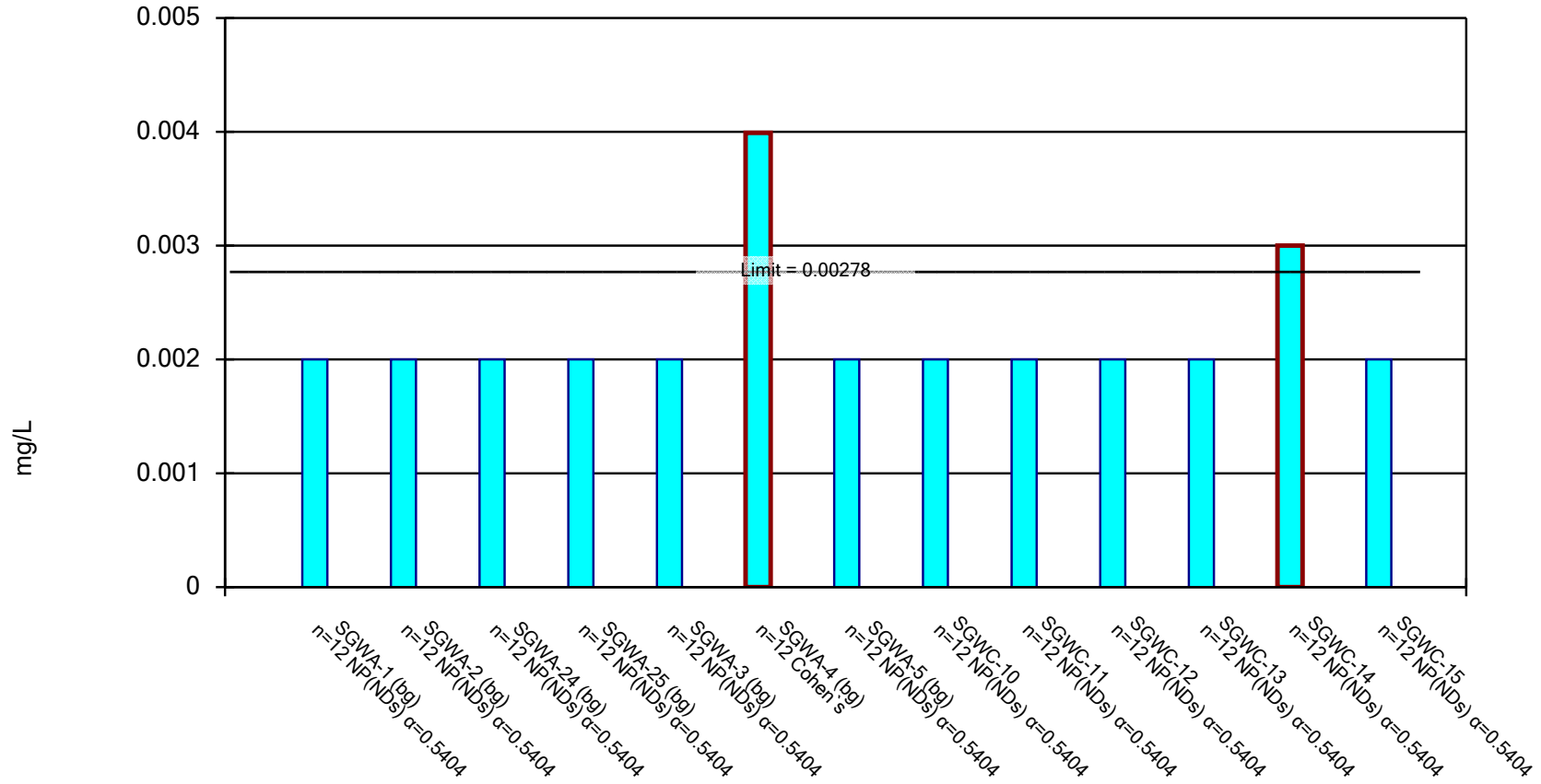
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury    Analysis Run 6/28/2019 12:17 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance limit is exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

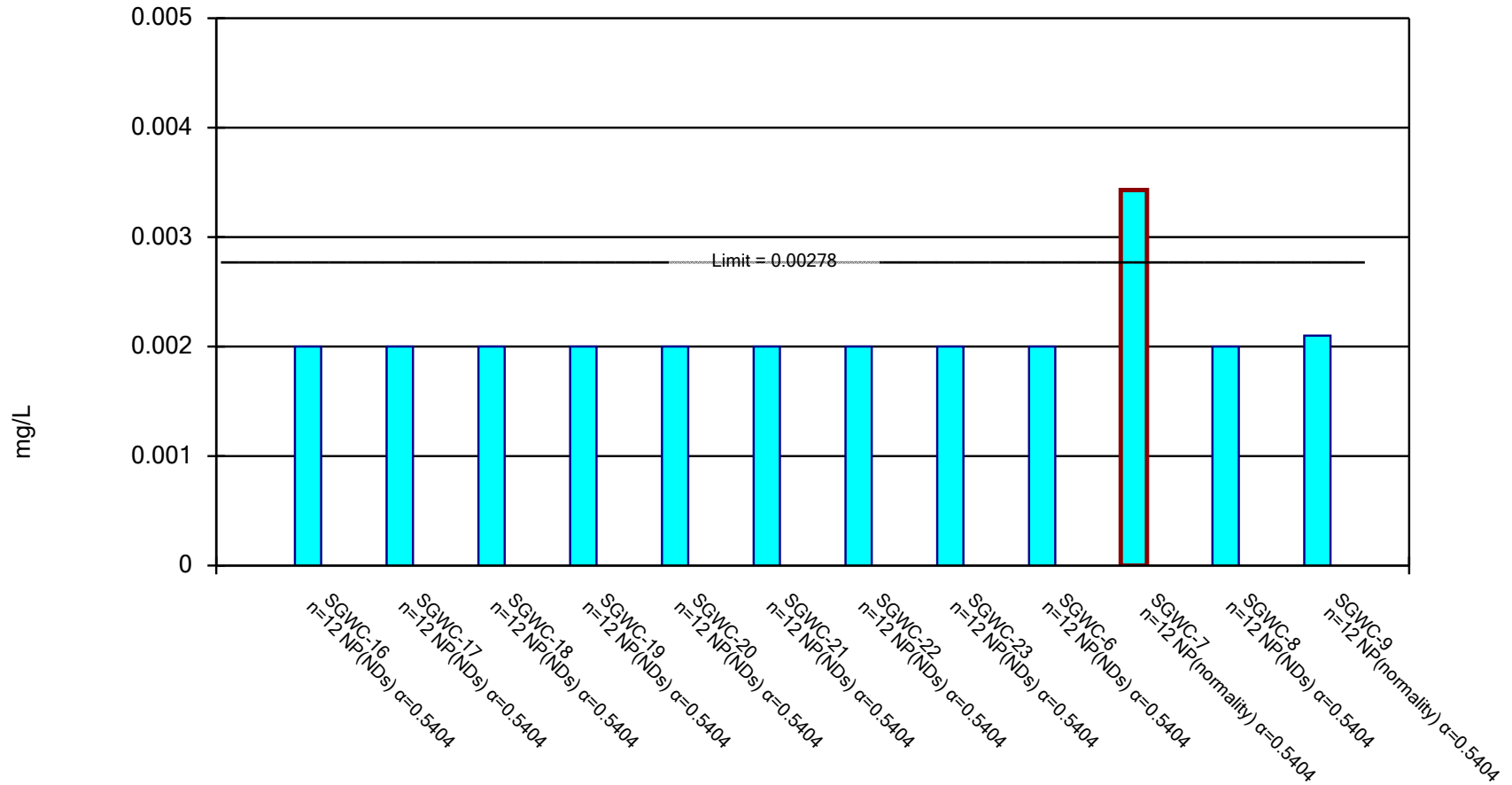


Constituent: Molybdenum Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

Compliance limit is exceeded. Normality Test: Shapiro Wilk, alpha based on n.

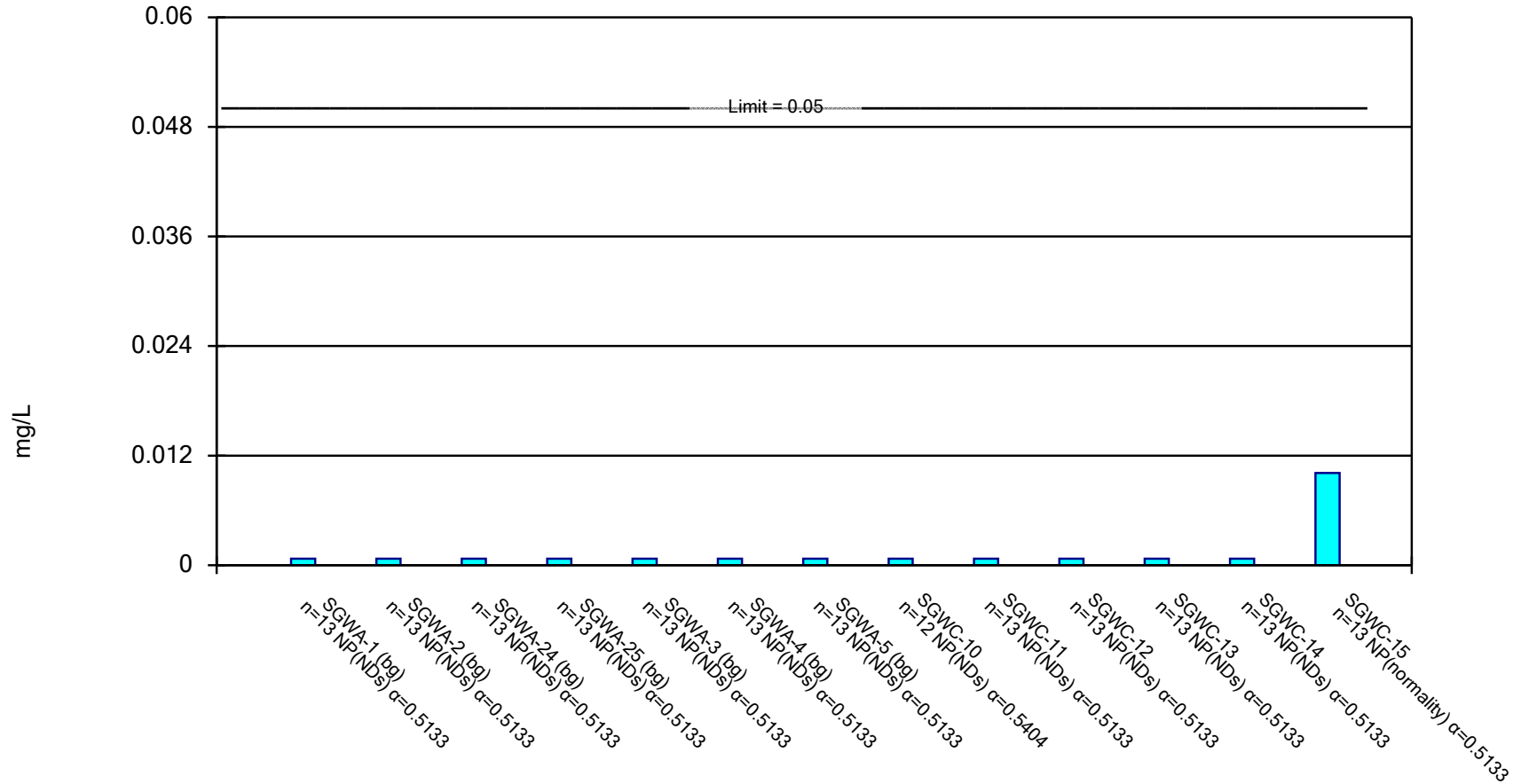


Constituent: Molybdenum Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



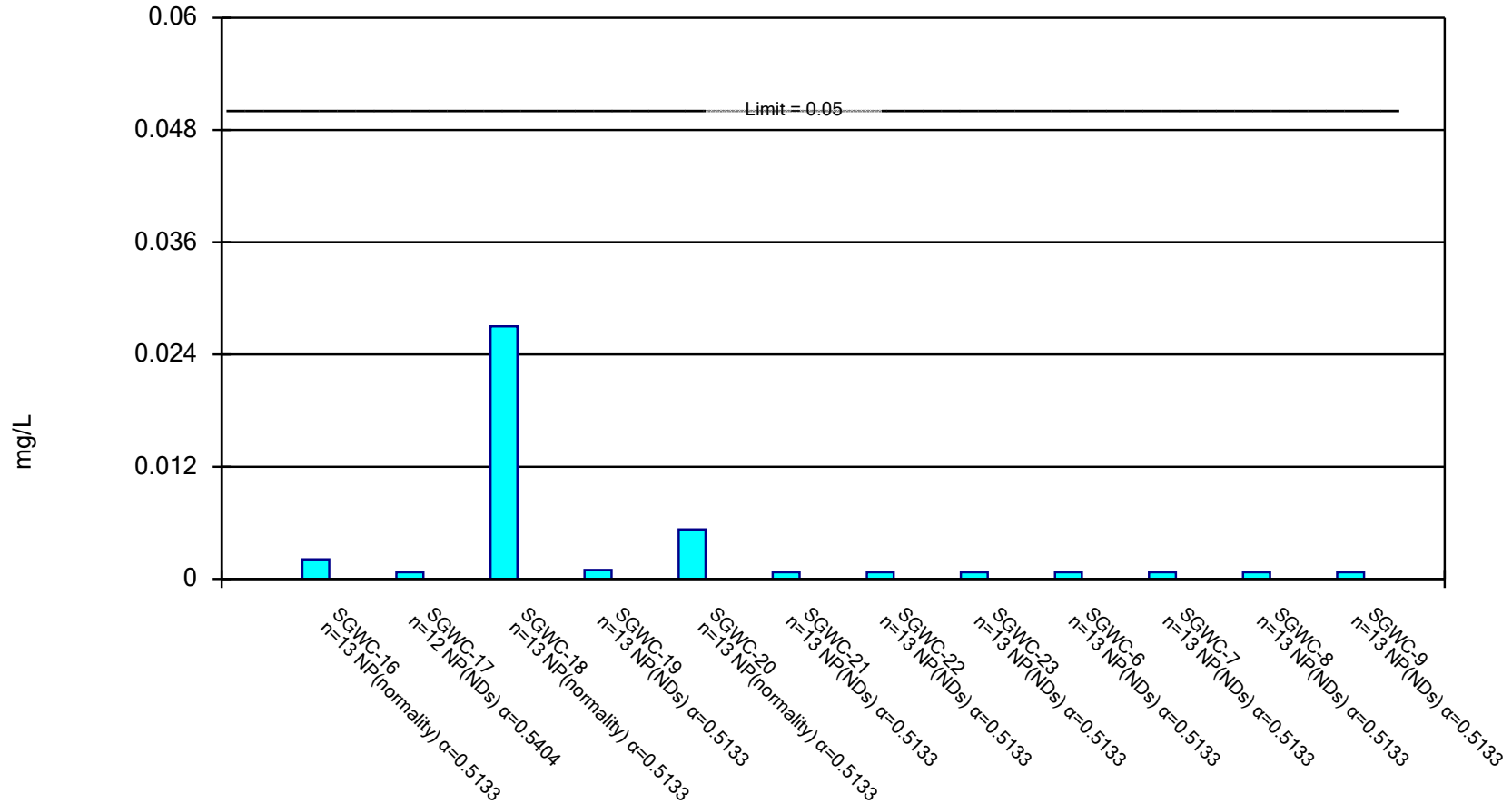
Constituent: Selenium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



### Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

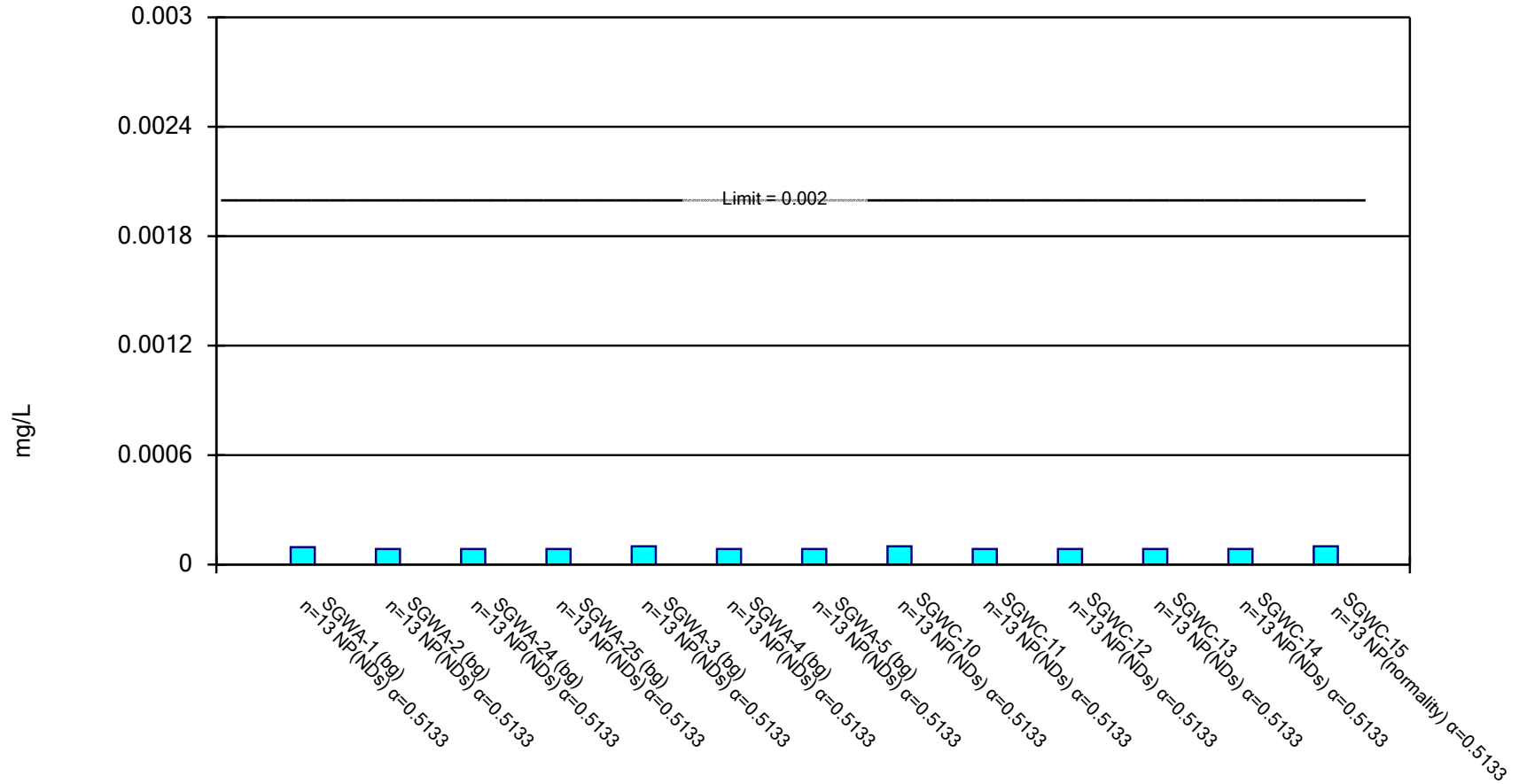


Constituent: Selenium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Tolerance Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

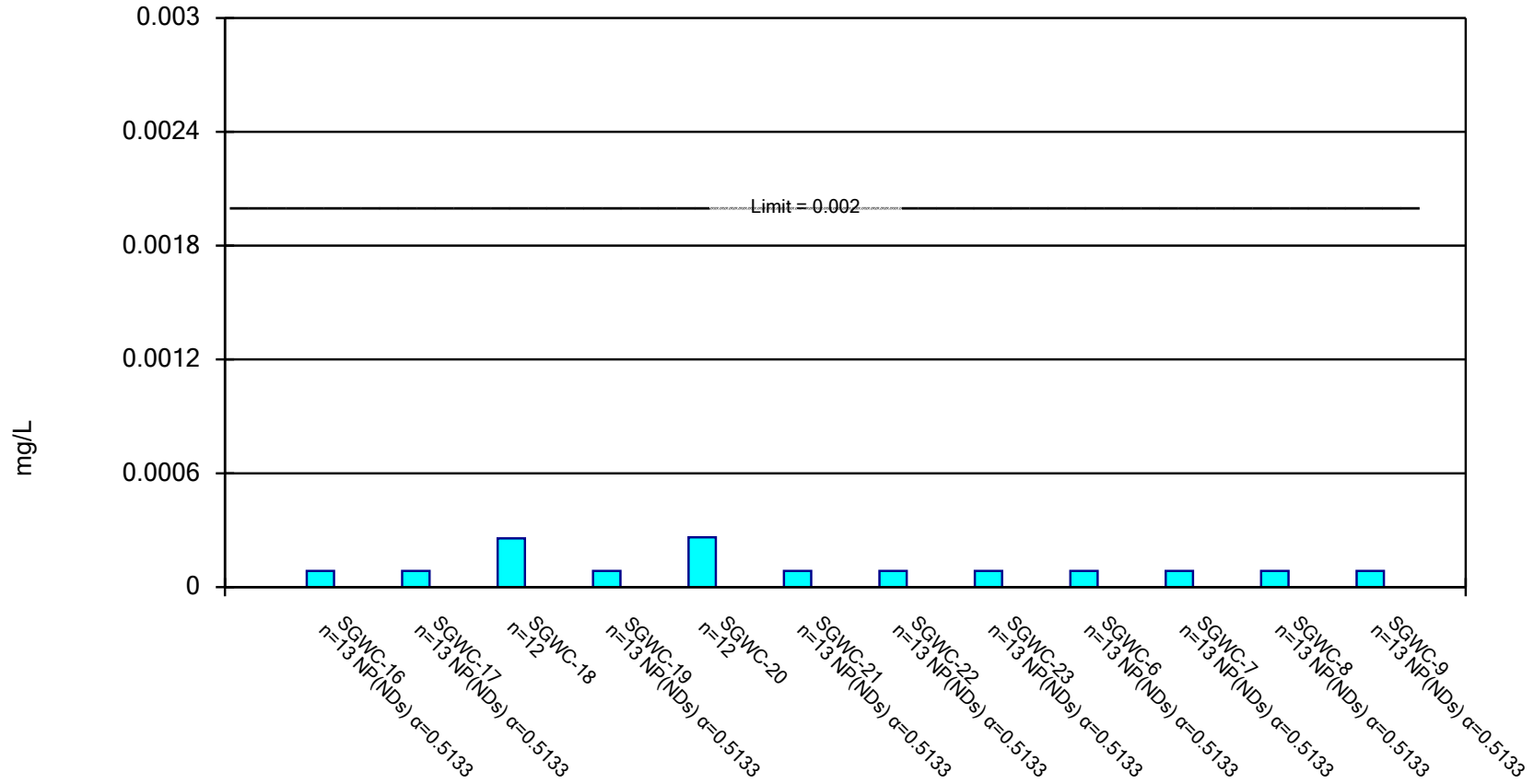


Constituent: Thallium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Tolerance Interval

Compliance Limit is not exceeded. Per-well alpha = 0.05 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

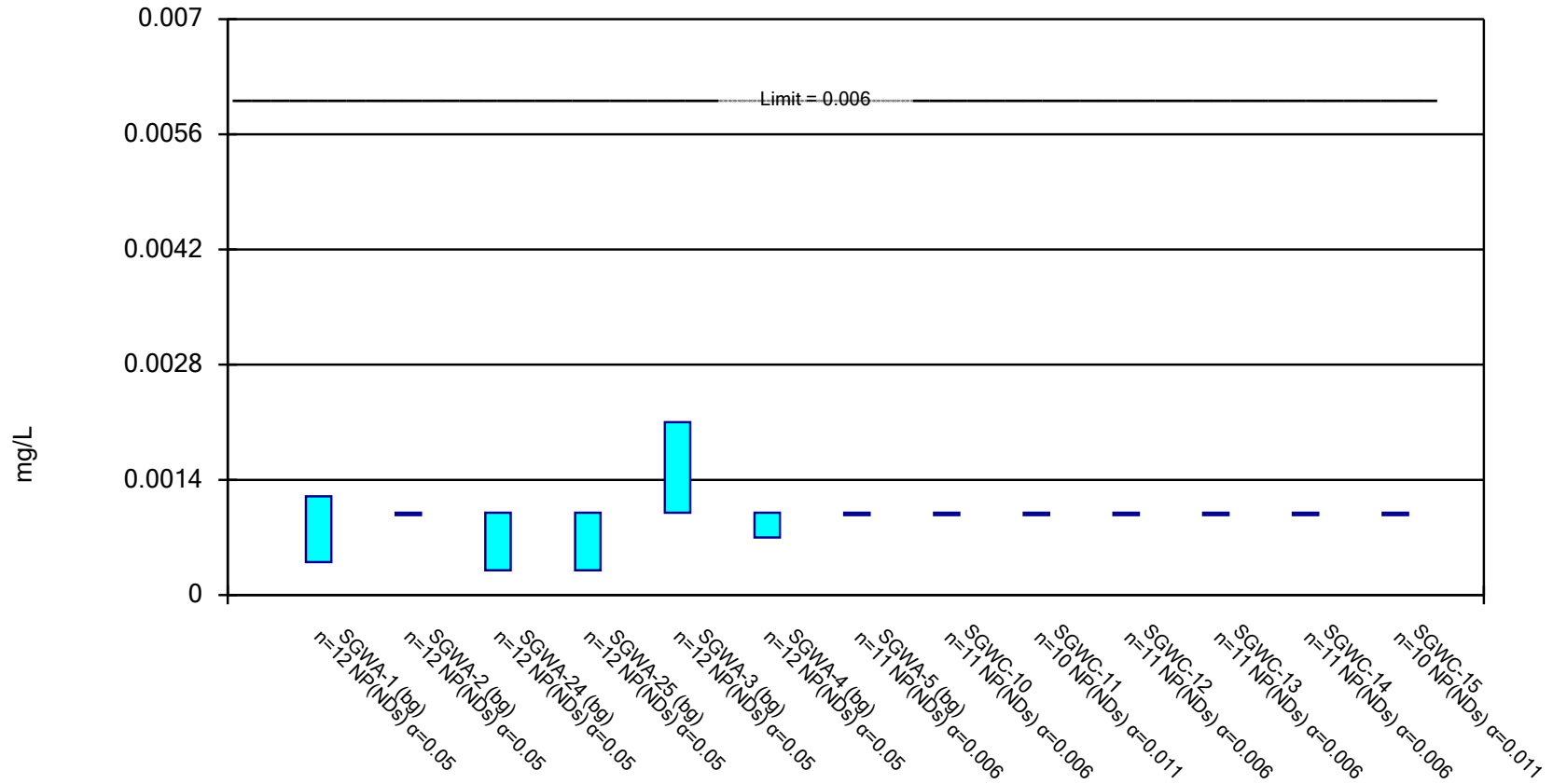


Constituent: Thallium Analysis Run 6/28/2019 12:17 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

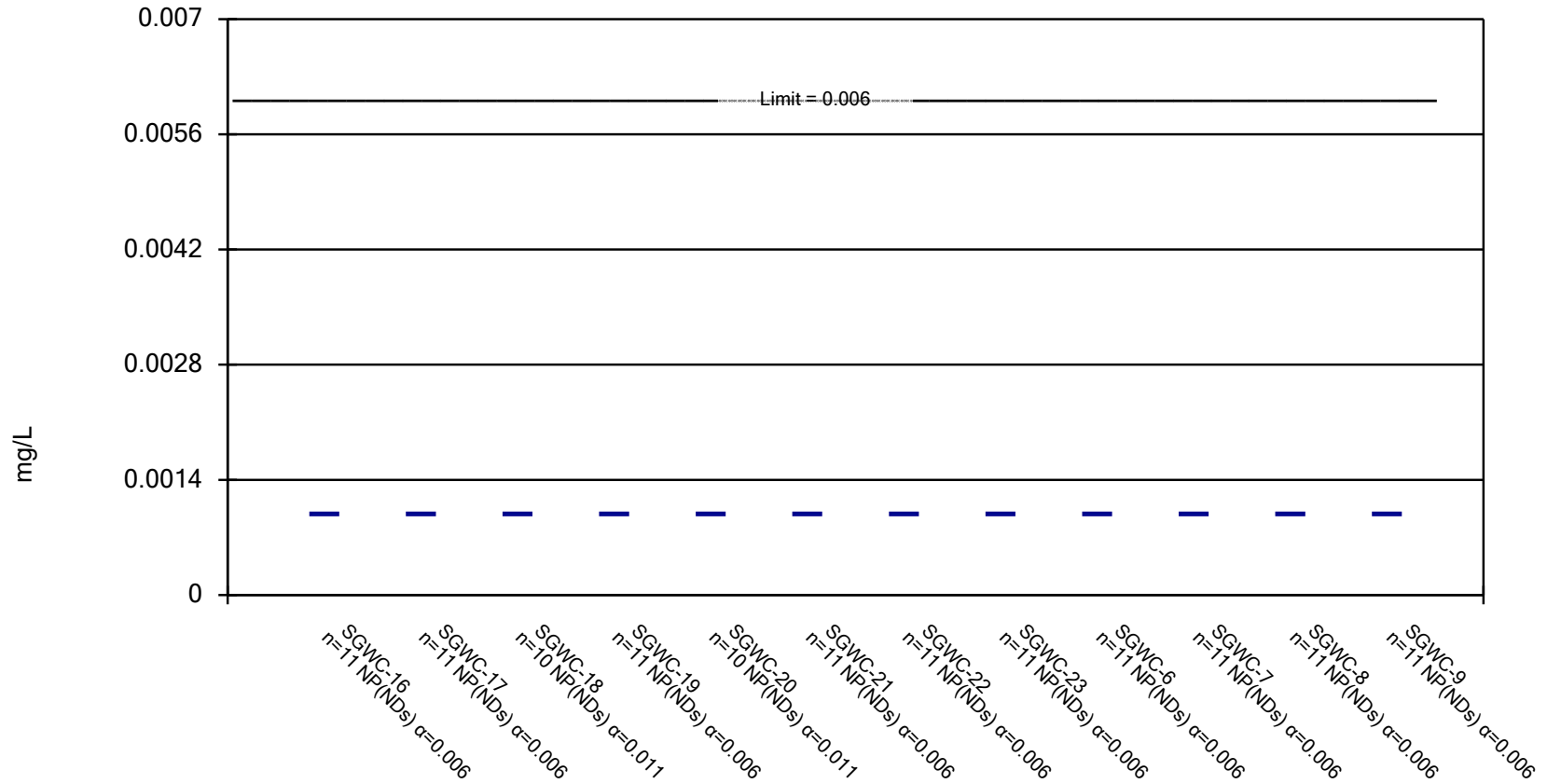


Constituent: Antimony Analysis Run 6/28/2019 12:33 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

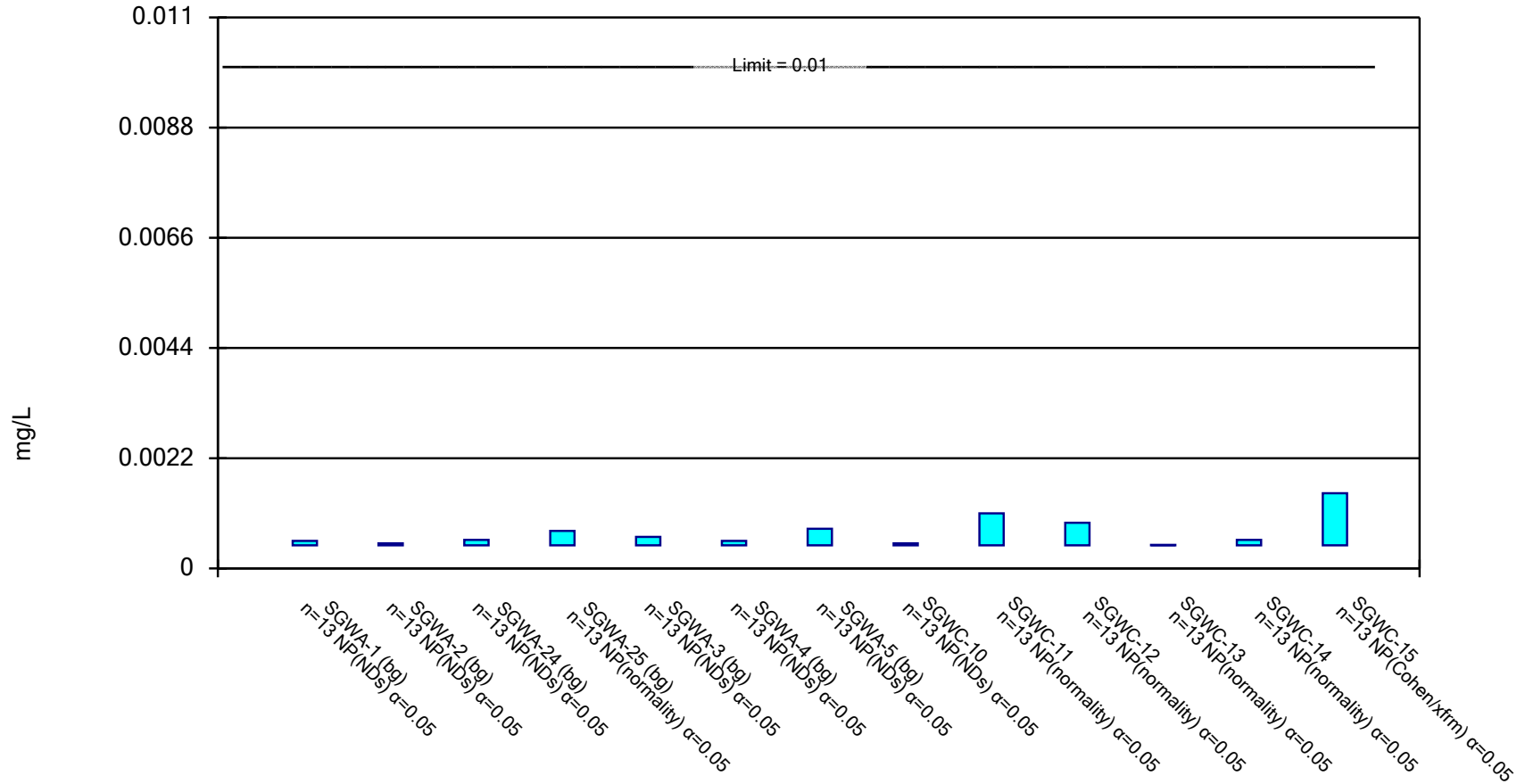


Constituent: Antimony Analysis Run 6/28/2019 12:33 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

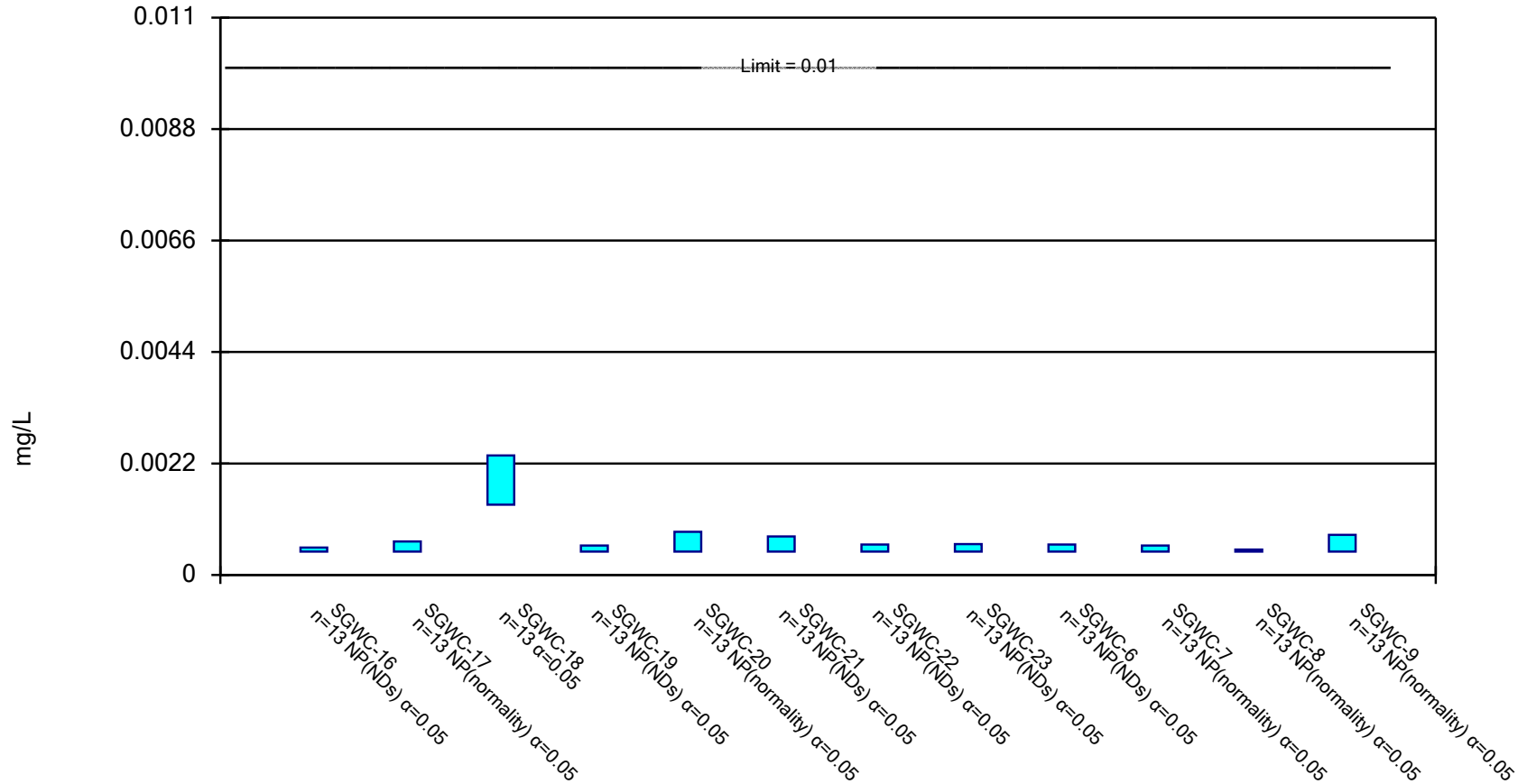


Constituent: Arsenic Analysis Run 6/28/2019 12:33 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

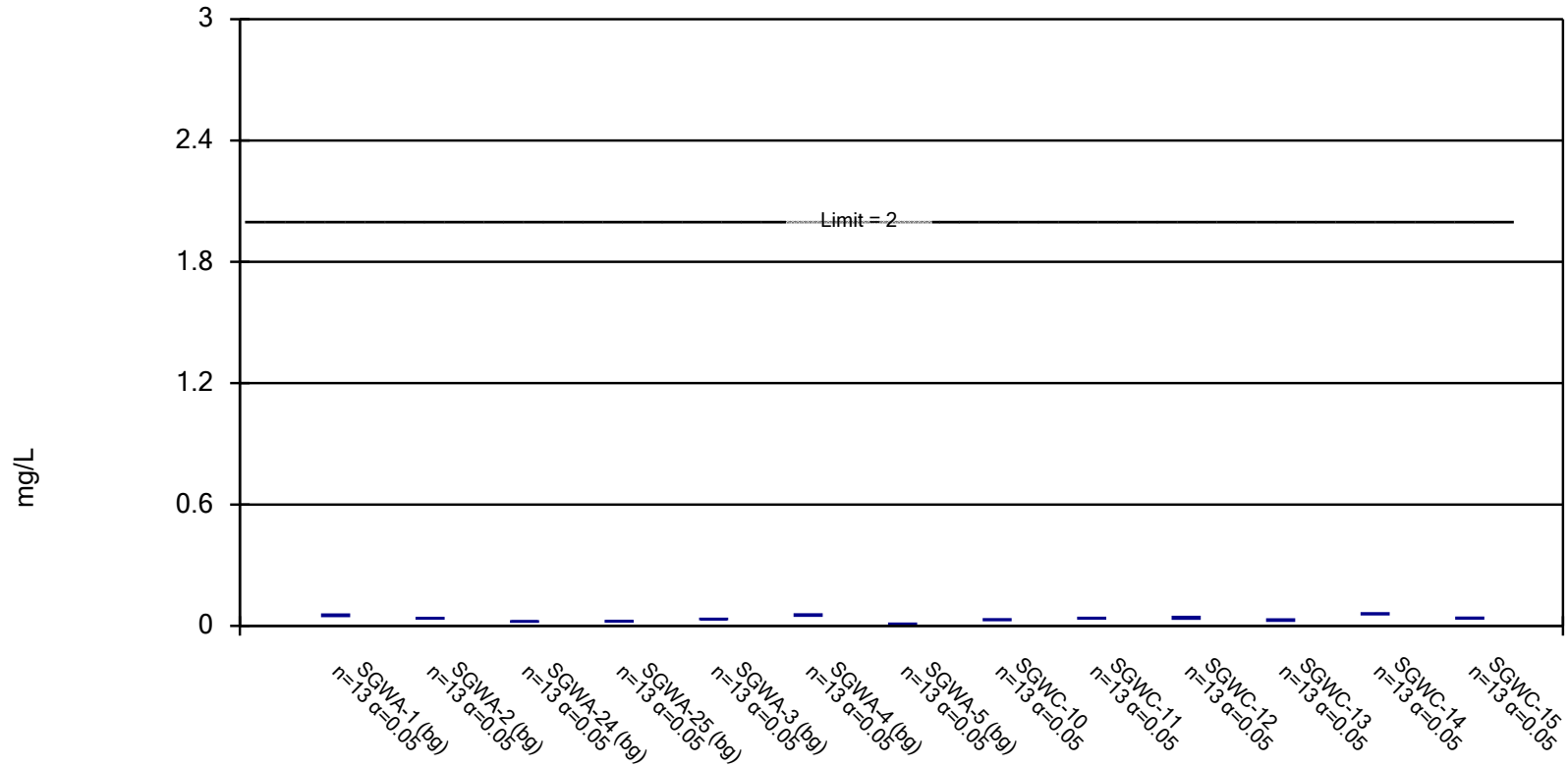


Constituent: Arsenic Analysis Run 6/28/2019 12:33 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

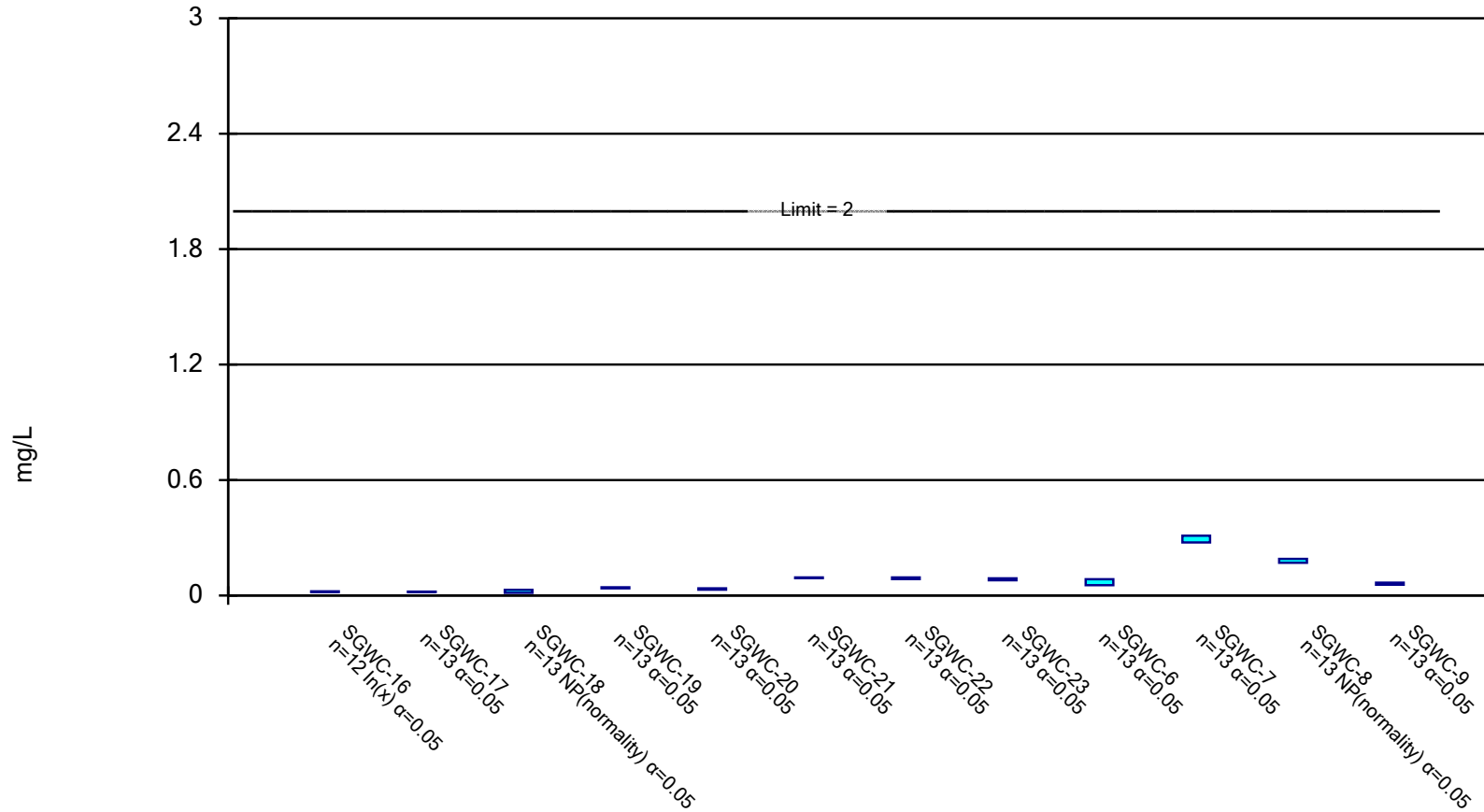


Constituent: Barium    Analysis Run 6/28/2019 12:34 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

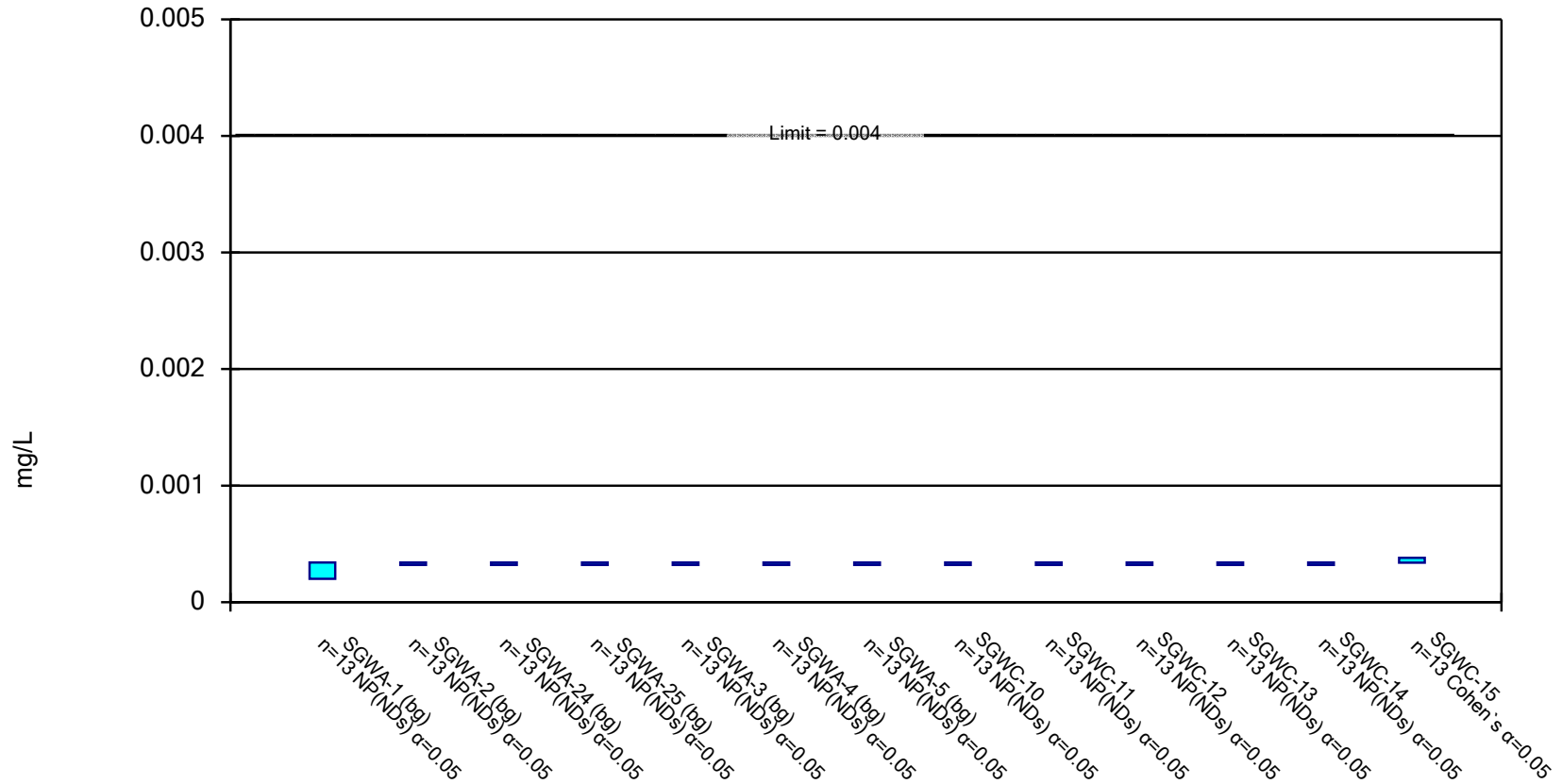


Constituent: Barium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

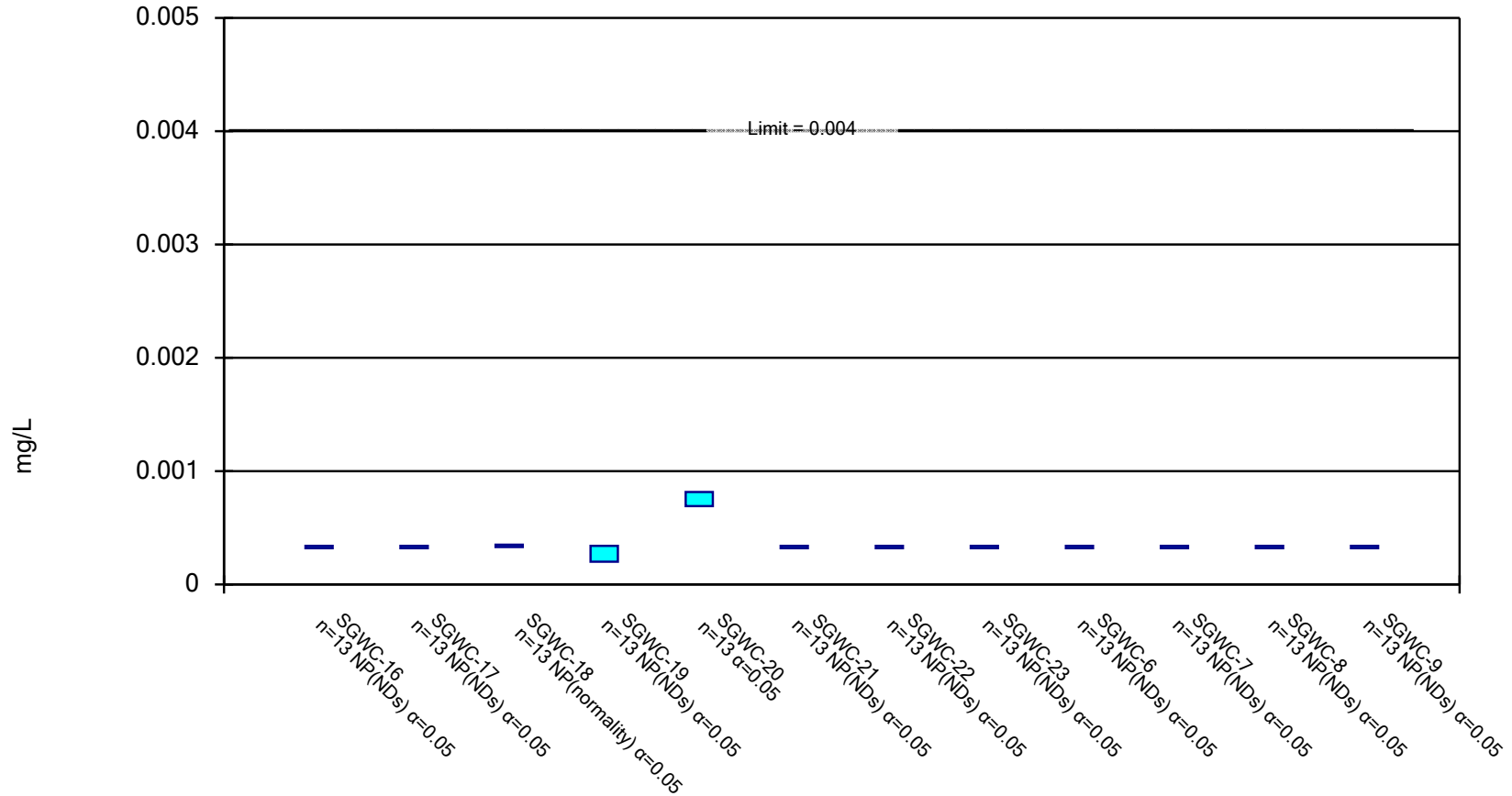


Constituent: Beryllium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

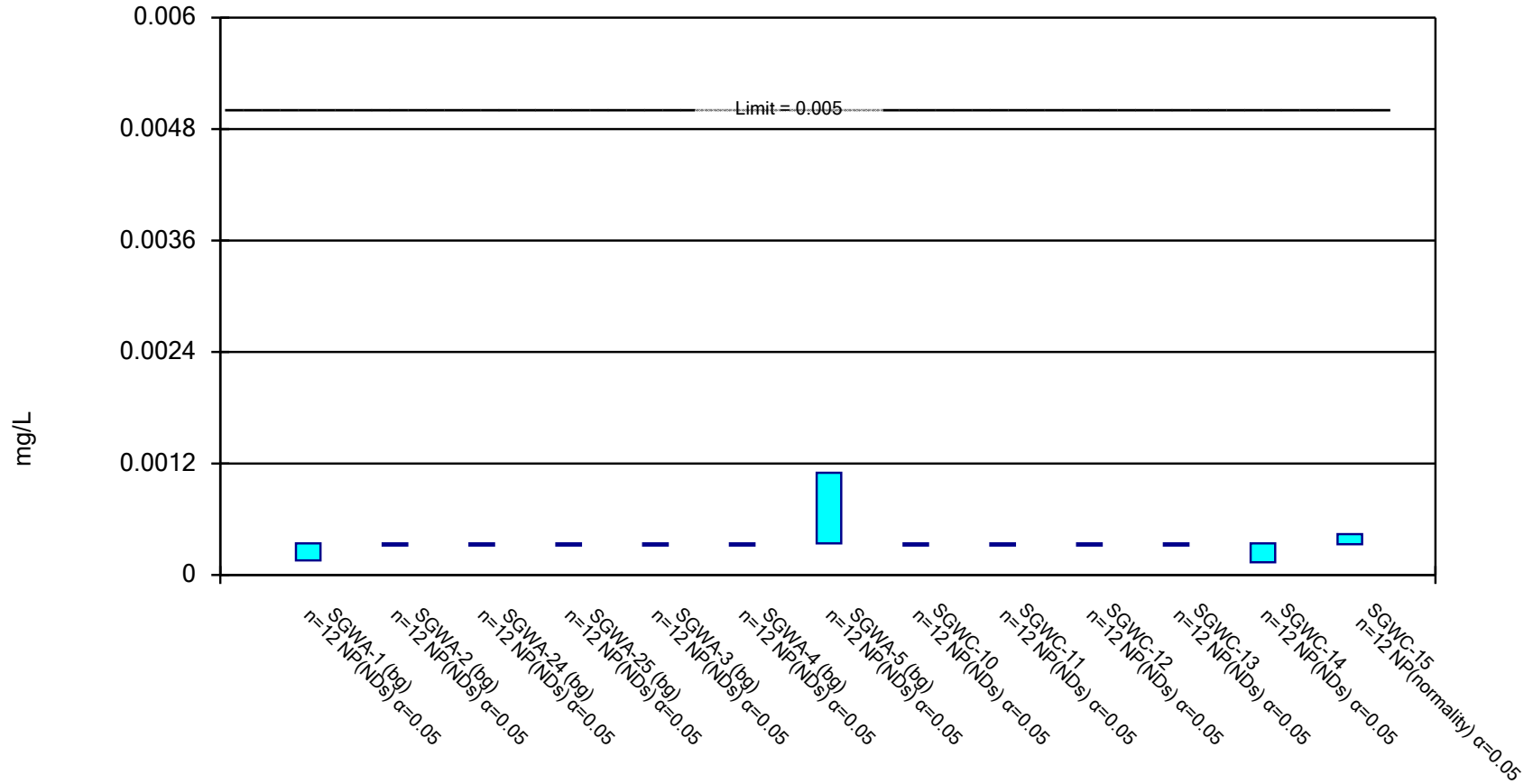


Constituent: Beryllium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

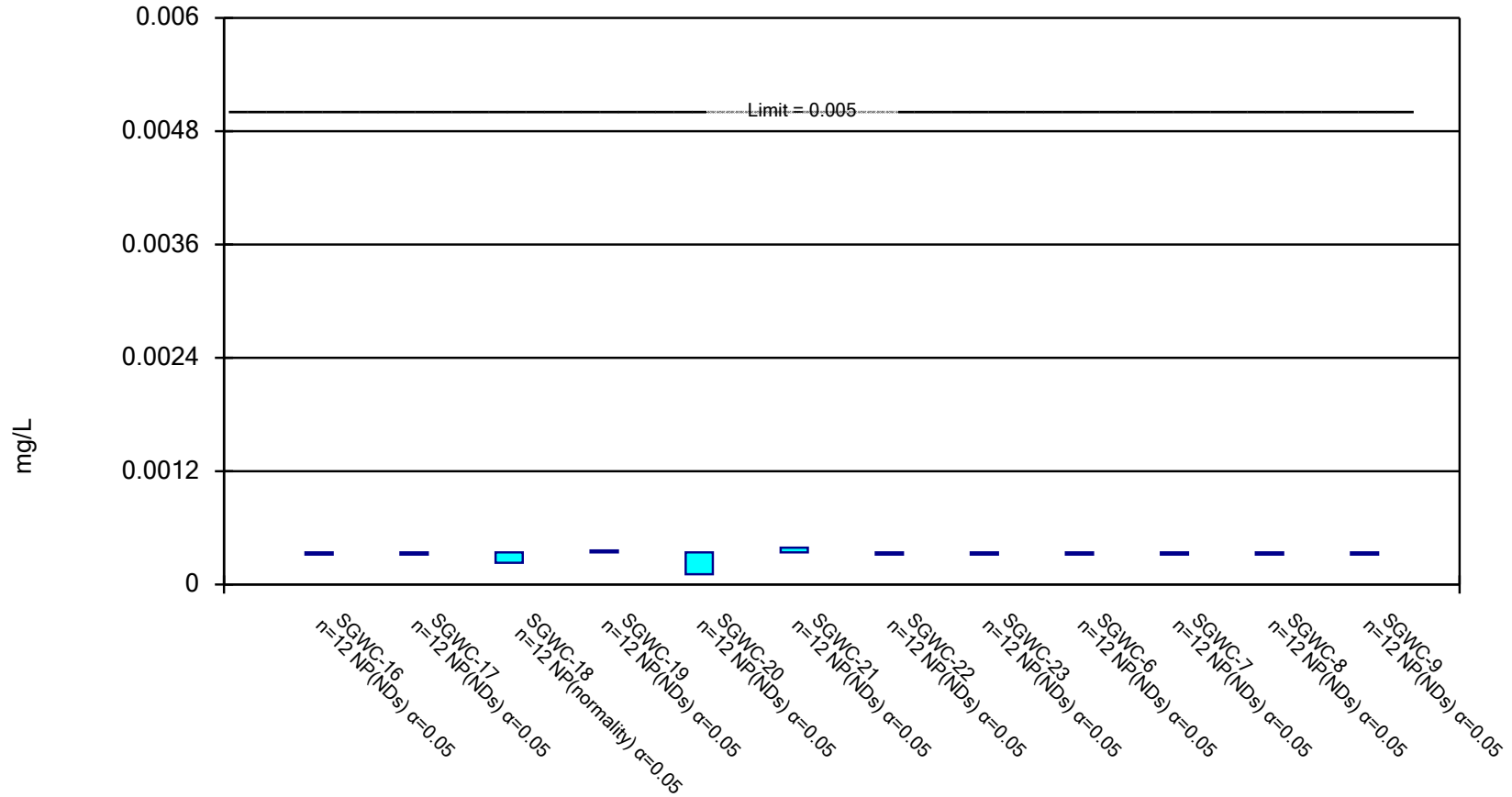


Constituent: Cadmium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

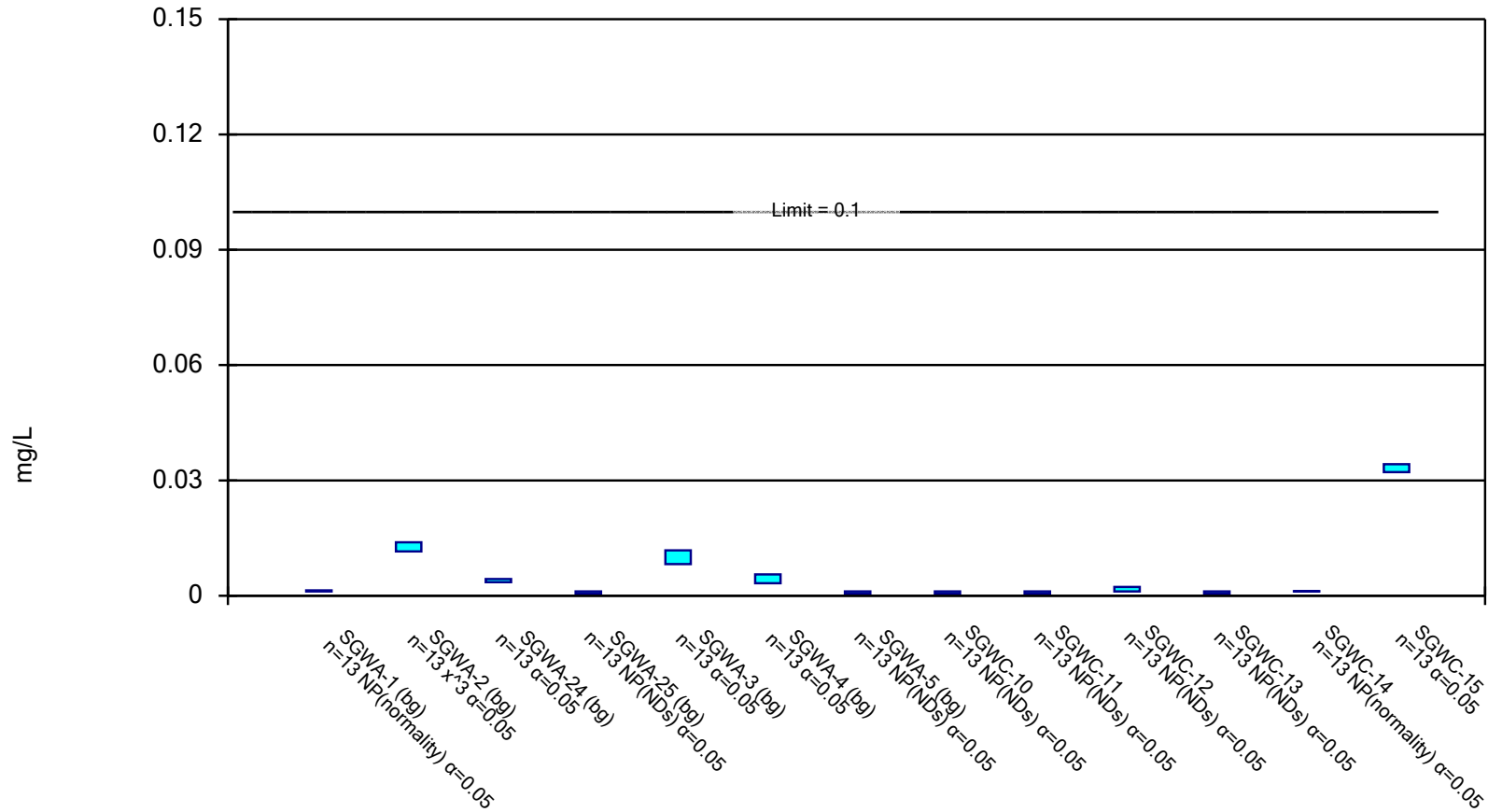


Constituent: Cadmium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

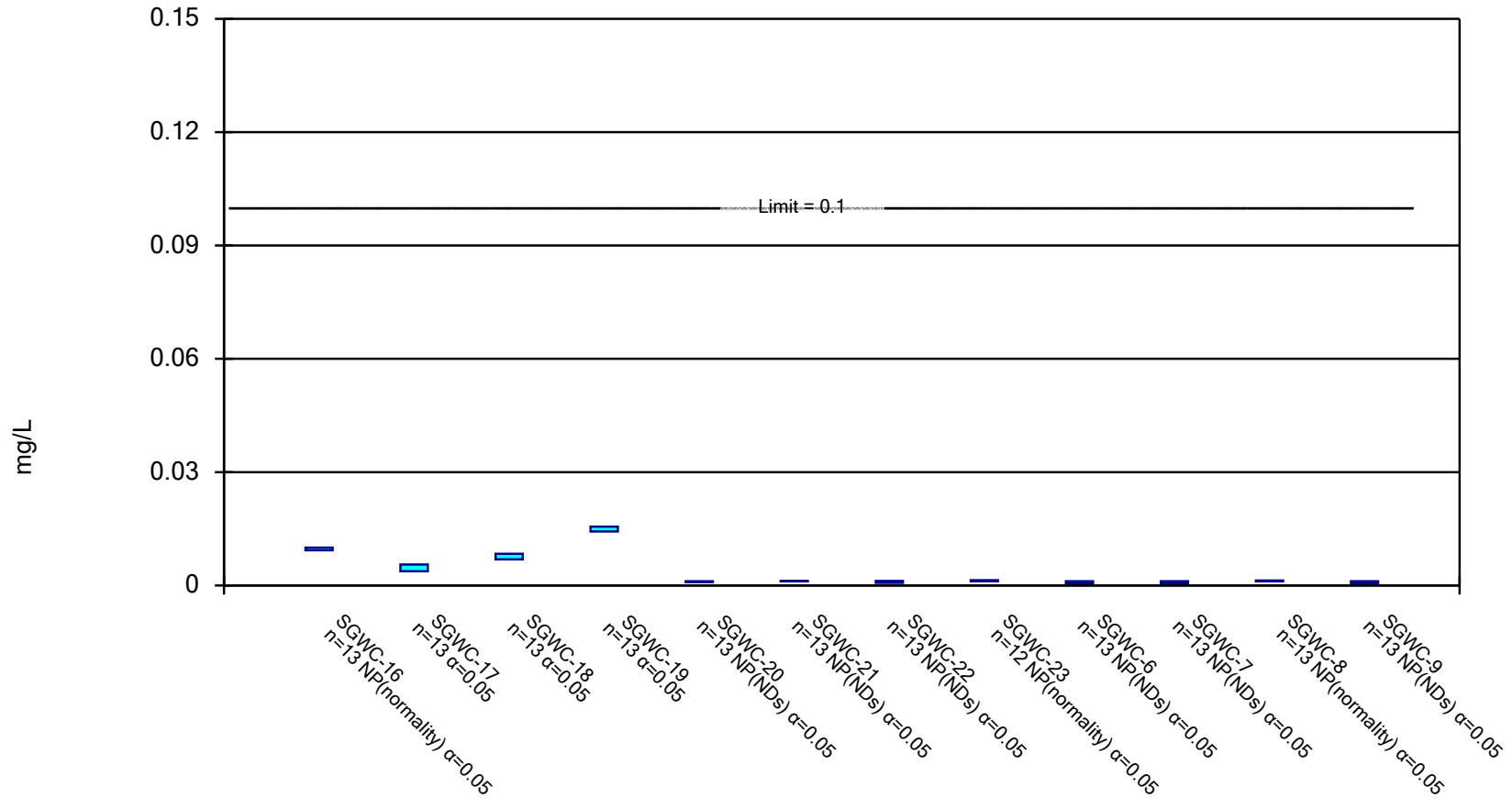


Constituent: Chromium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

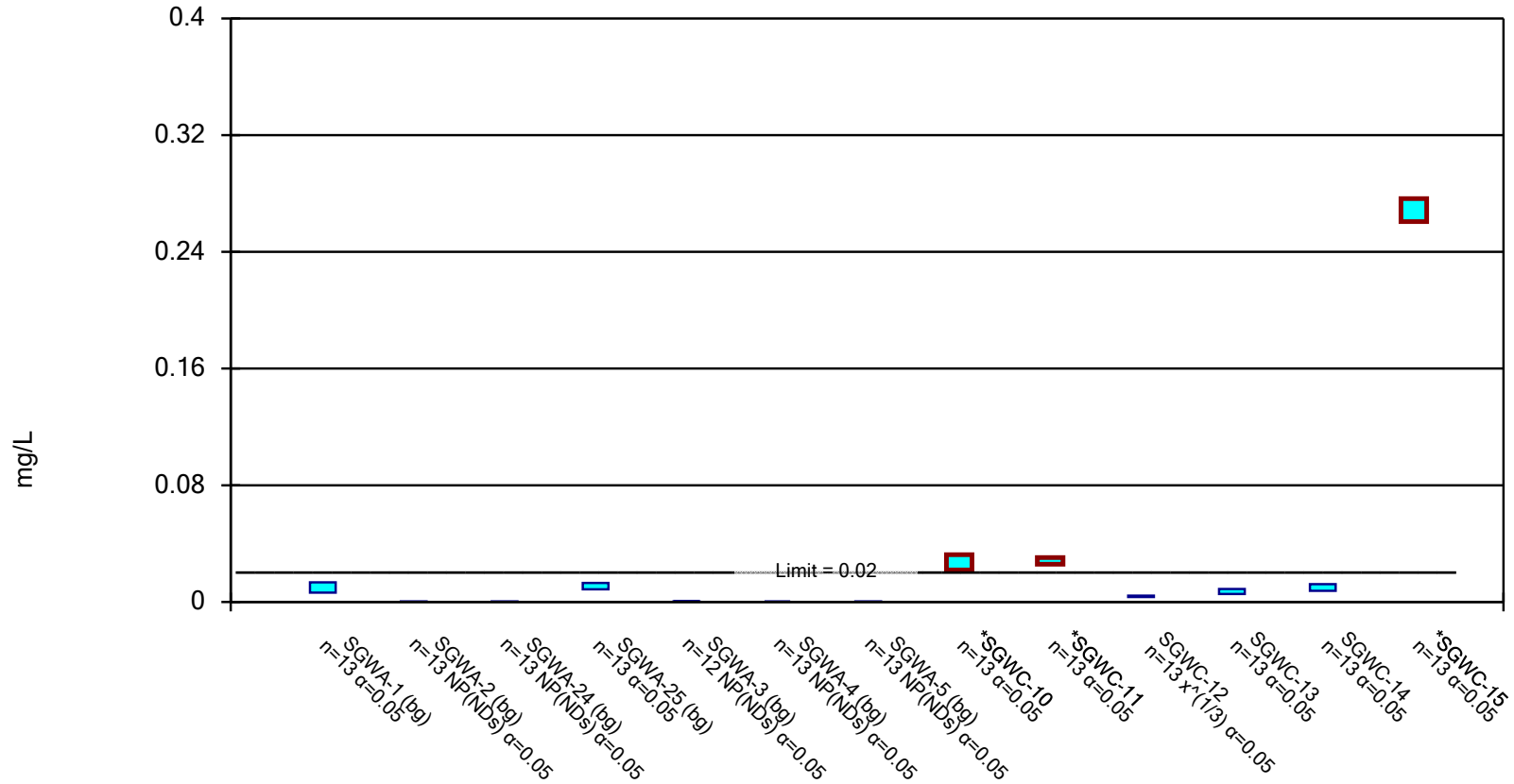


Constituent: Chromium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.

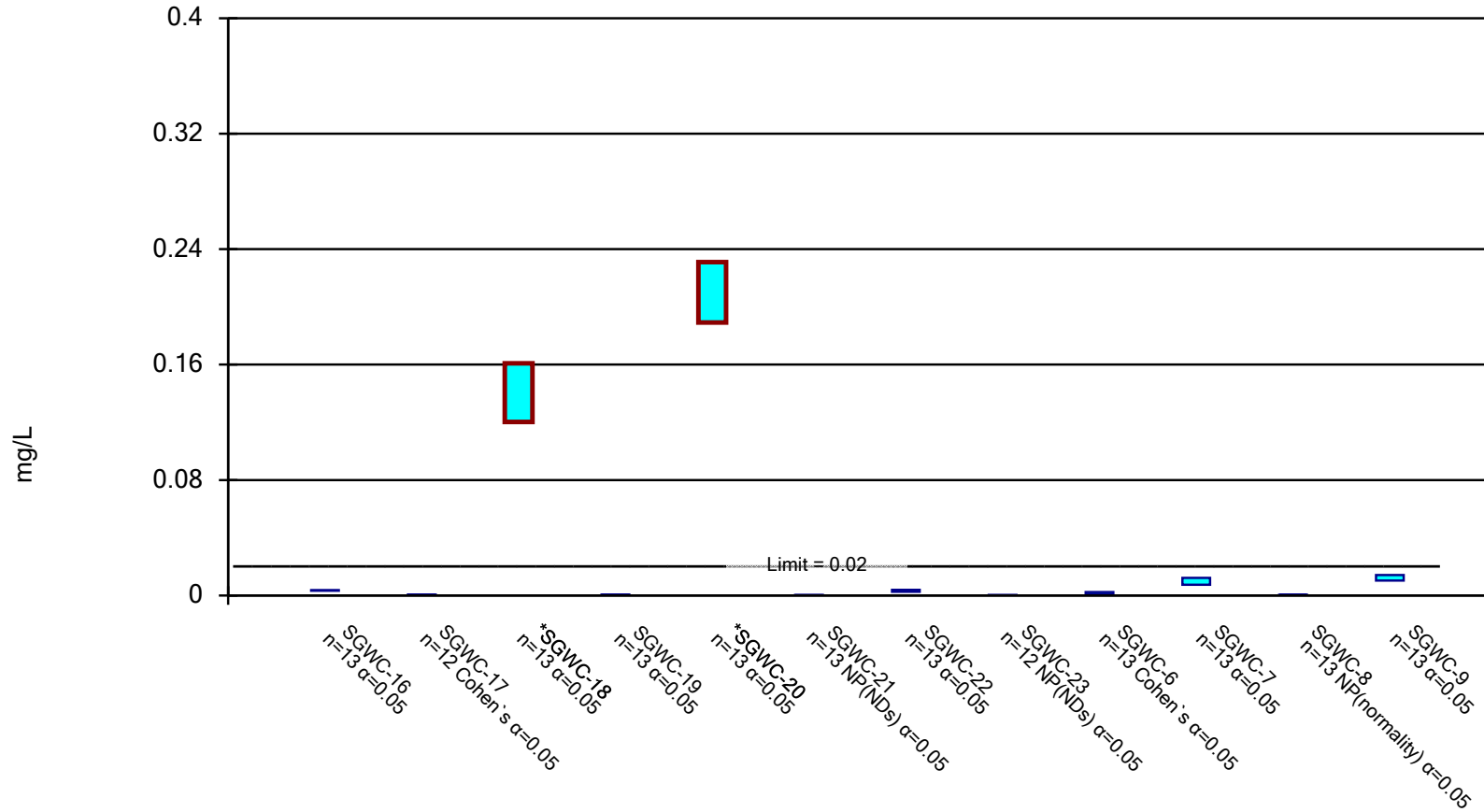


Constituent: Cobalt Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

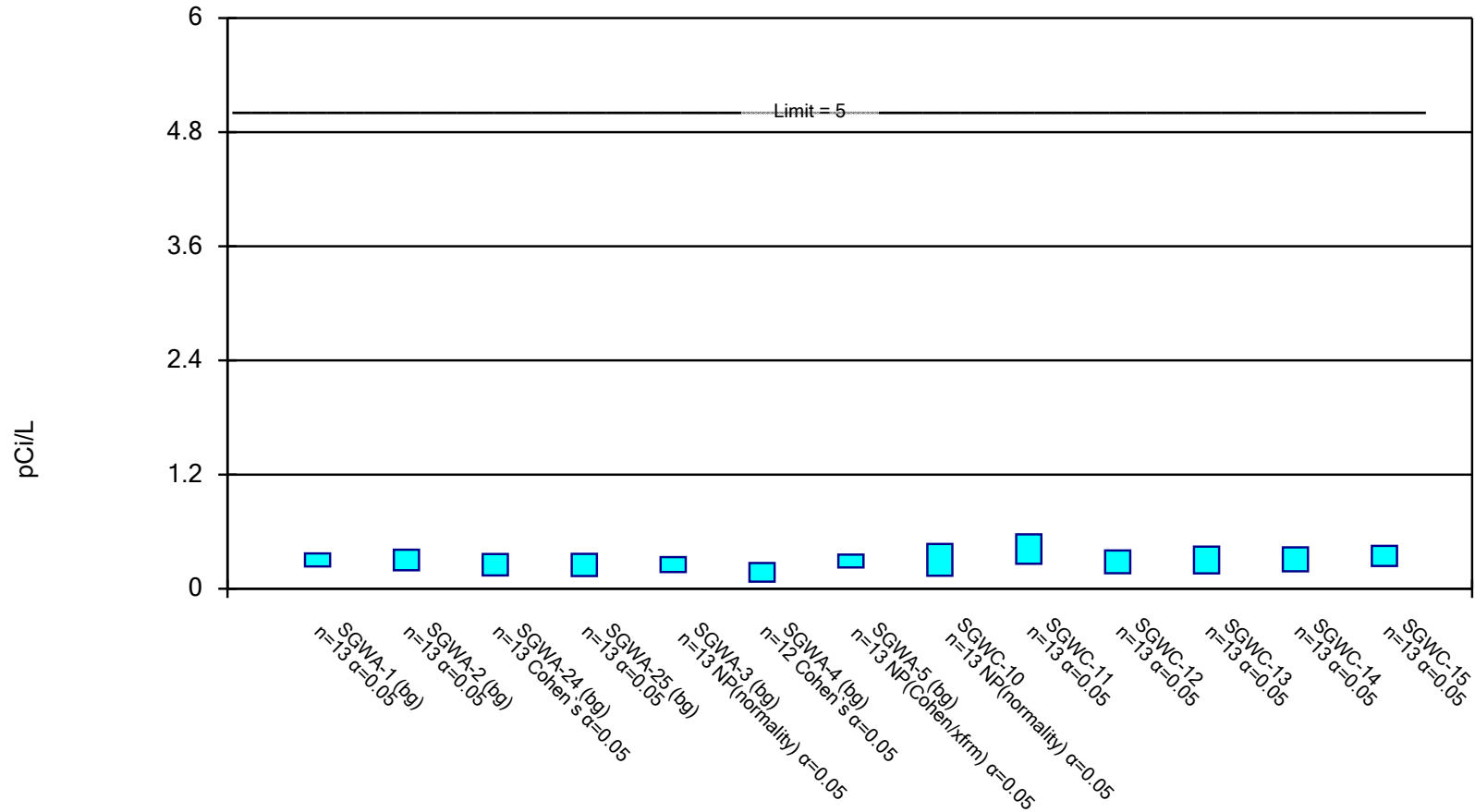
Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

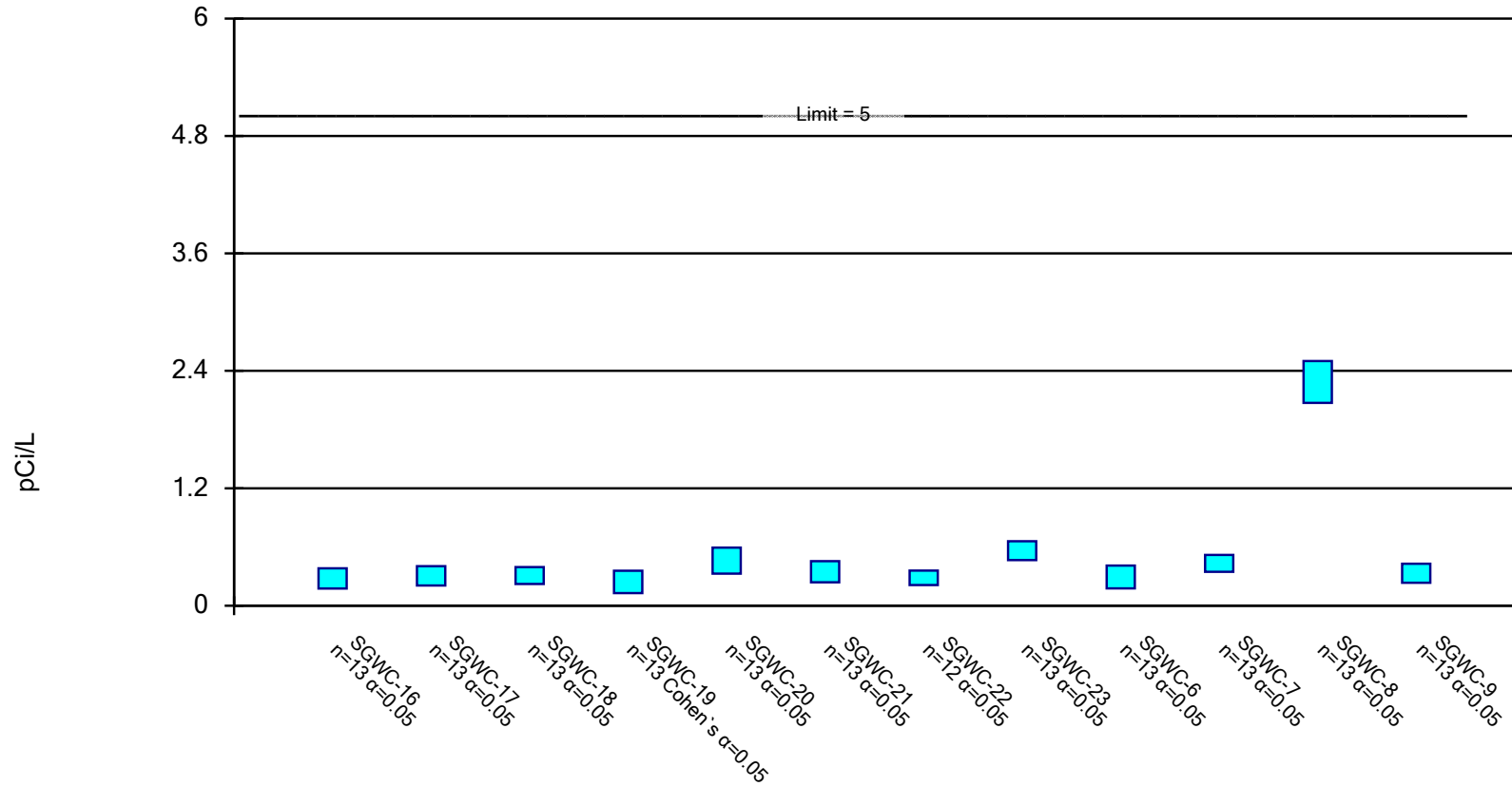


Constituent: Combined Radium 226 + 228 Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence I

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

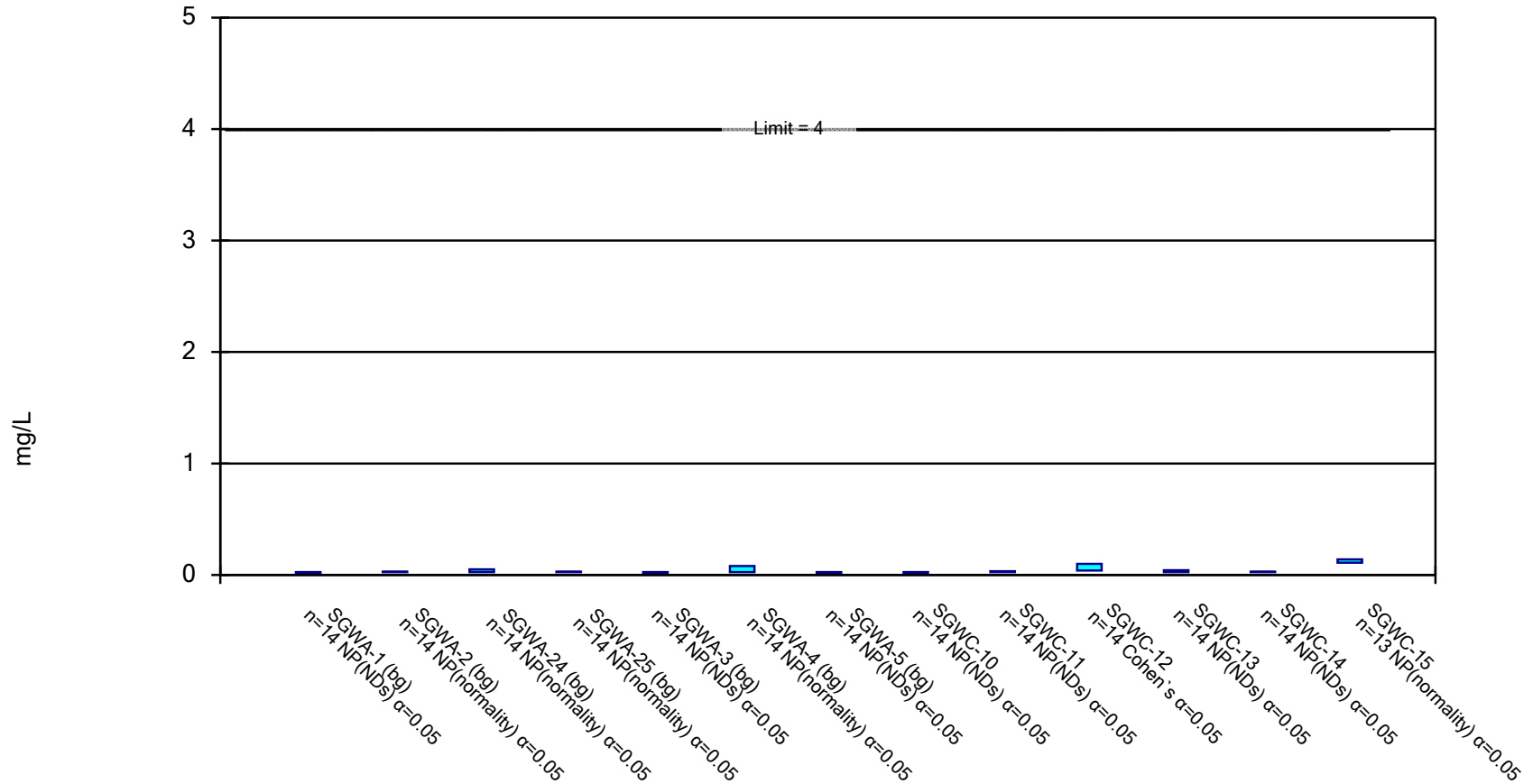


Constituent: Combined Radium 226 + 228 Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence I

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

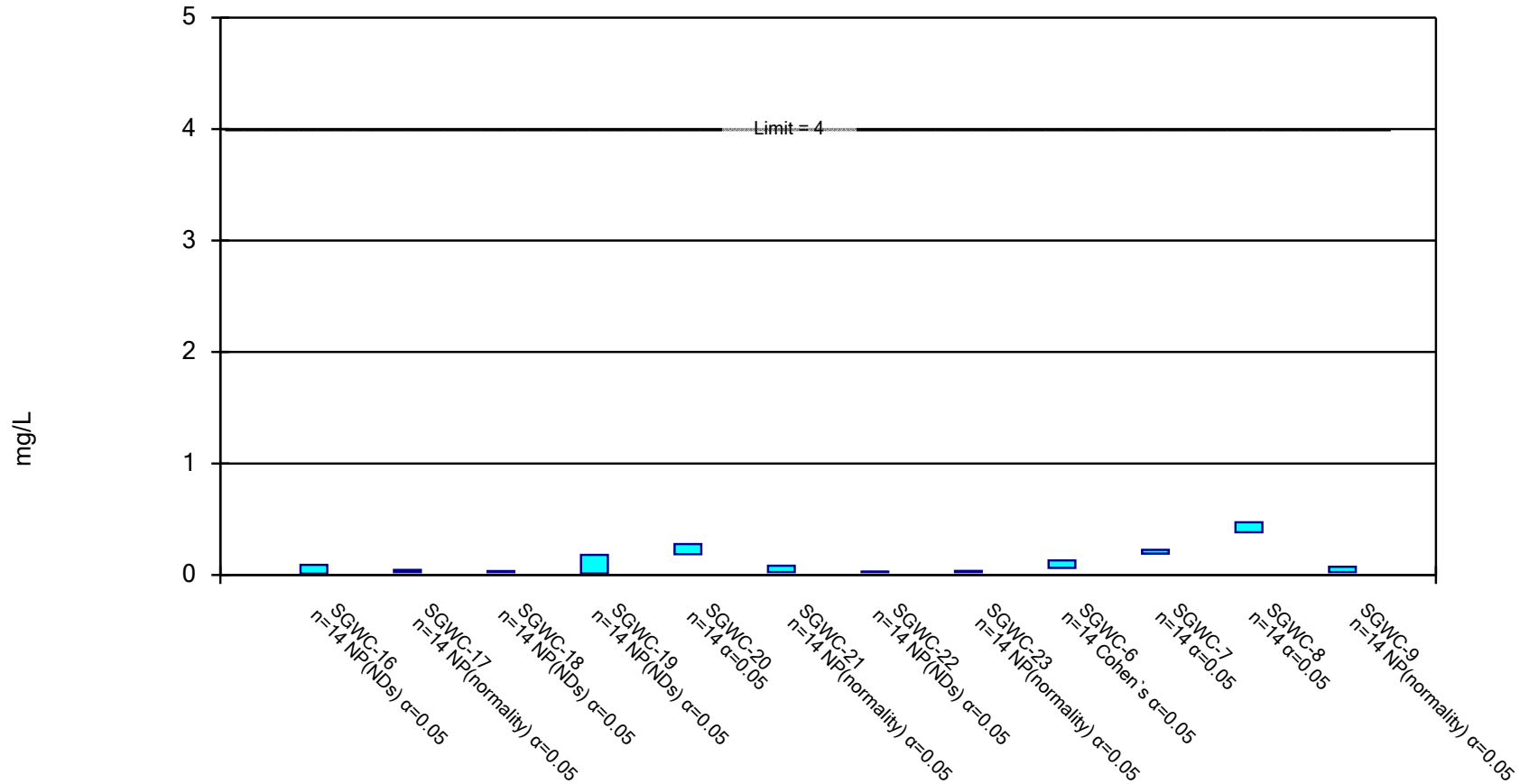


Constituent: Fluoride Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

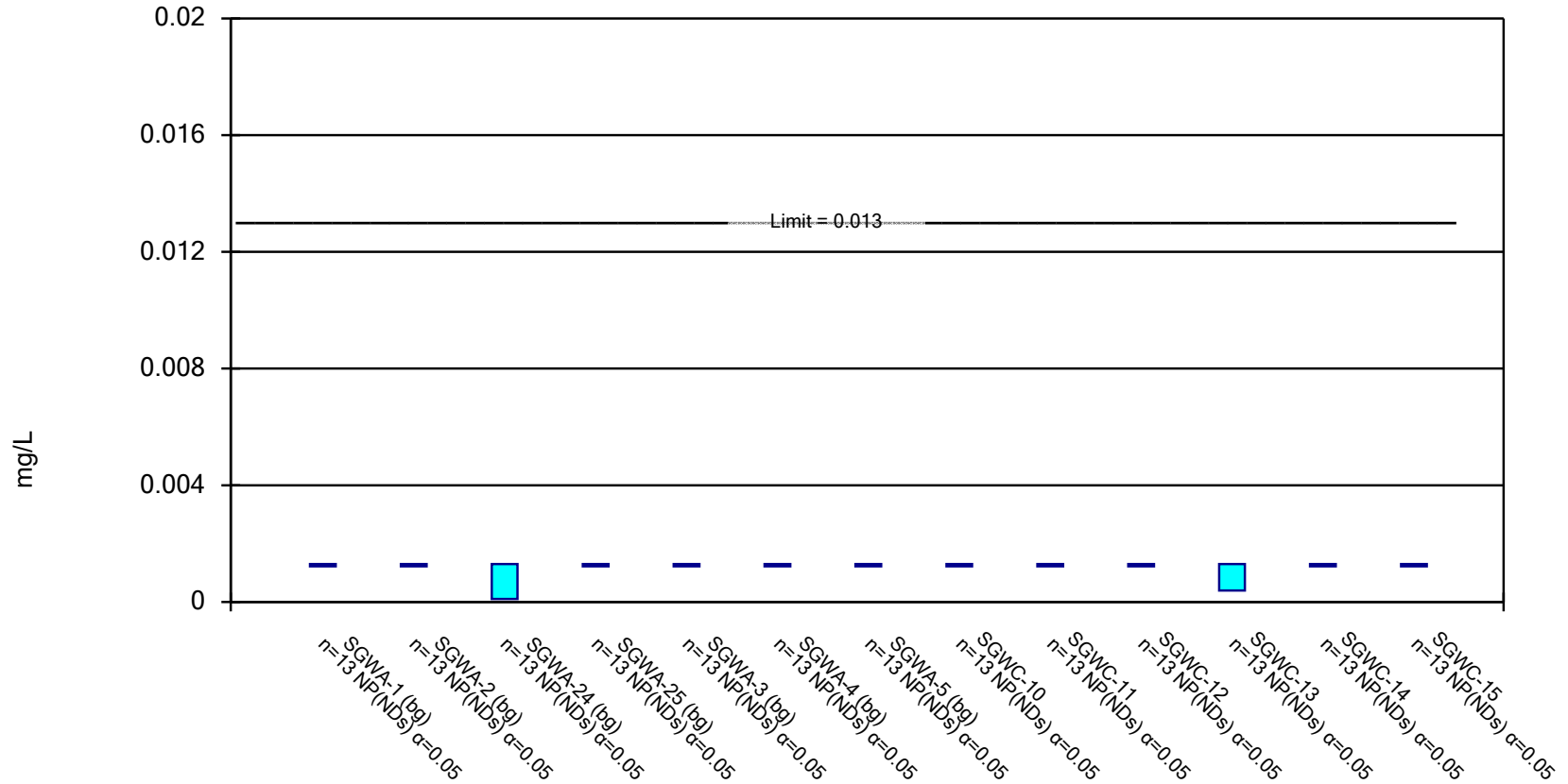


Constituent: Fluoride Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

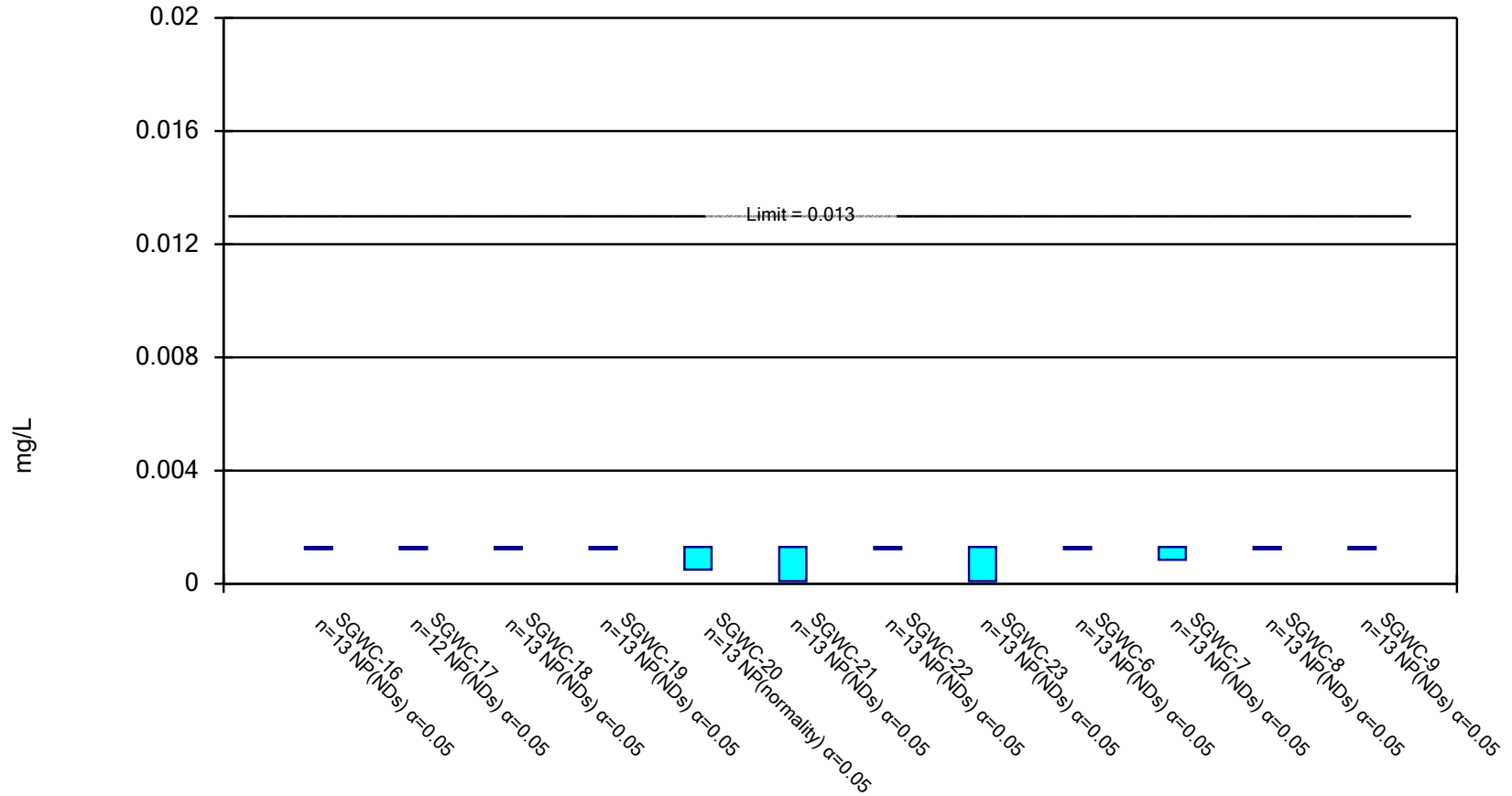


Constituent: Lead Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

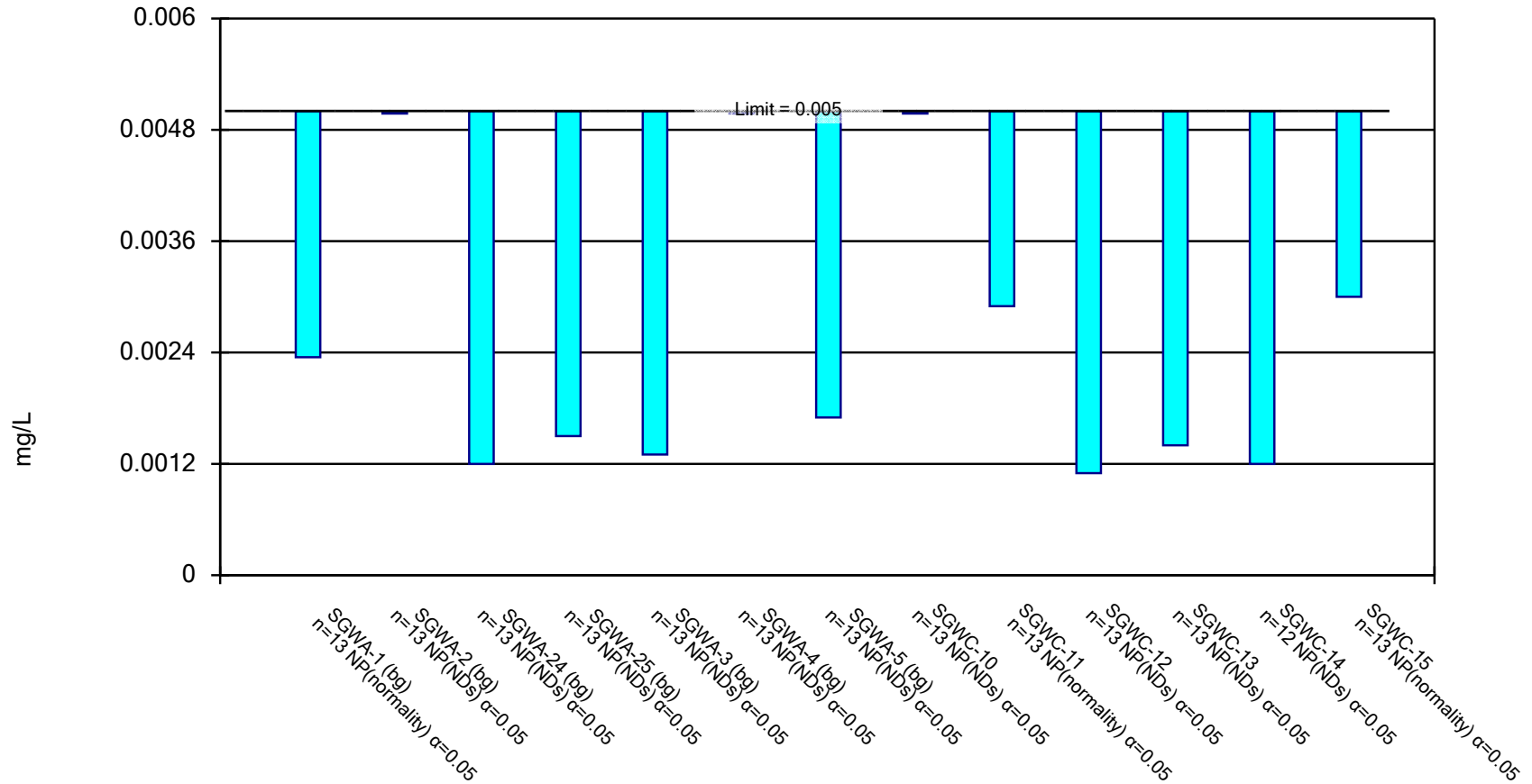


Constituent: Lead Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



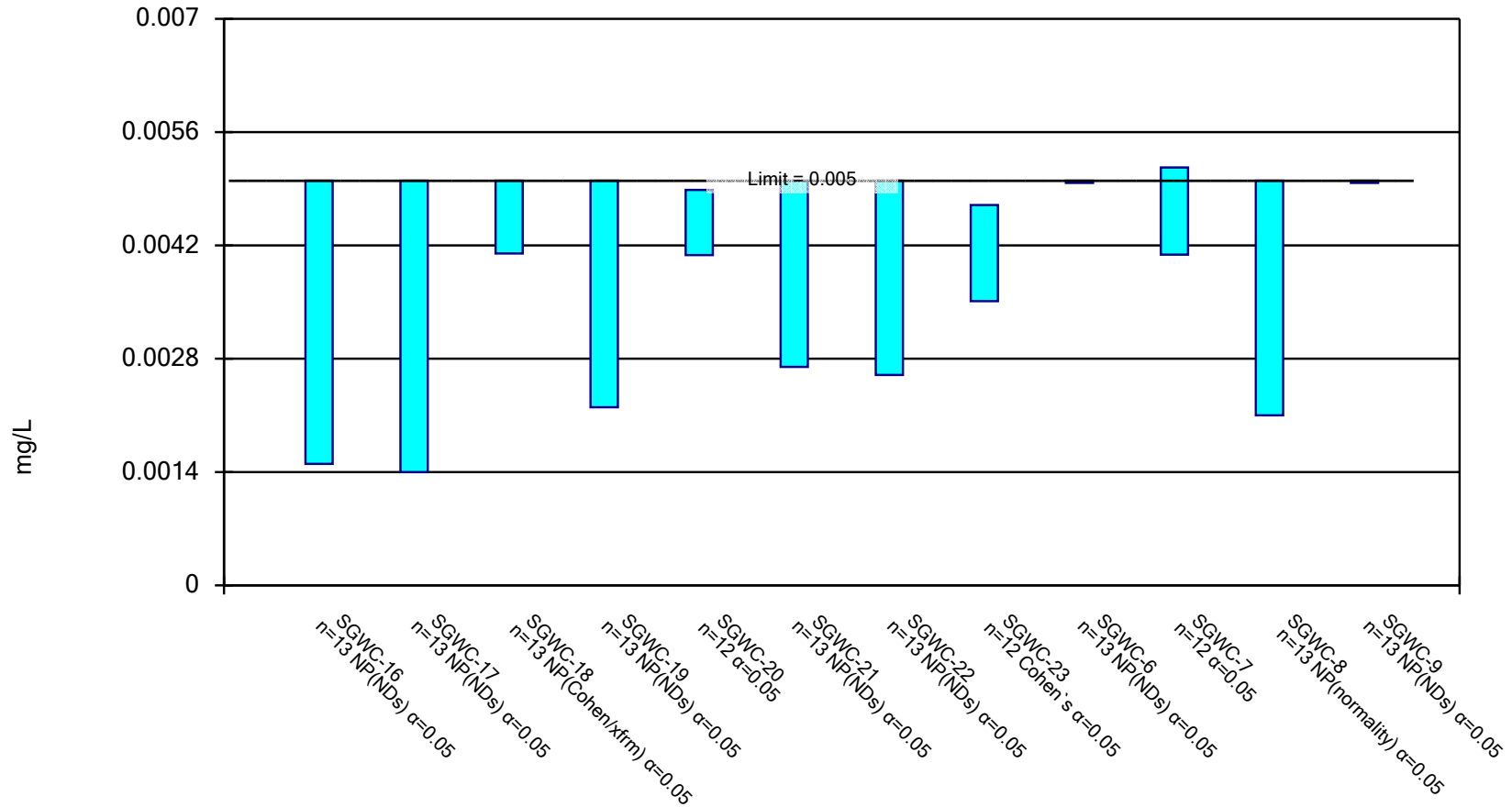
Constituent: Lithium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

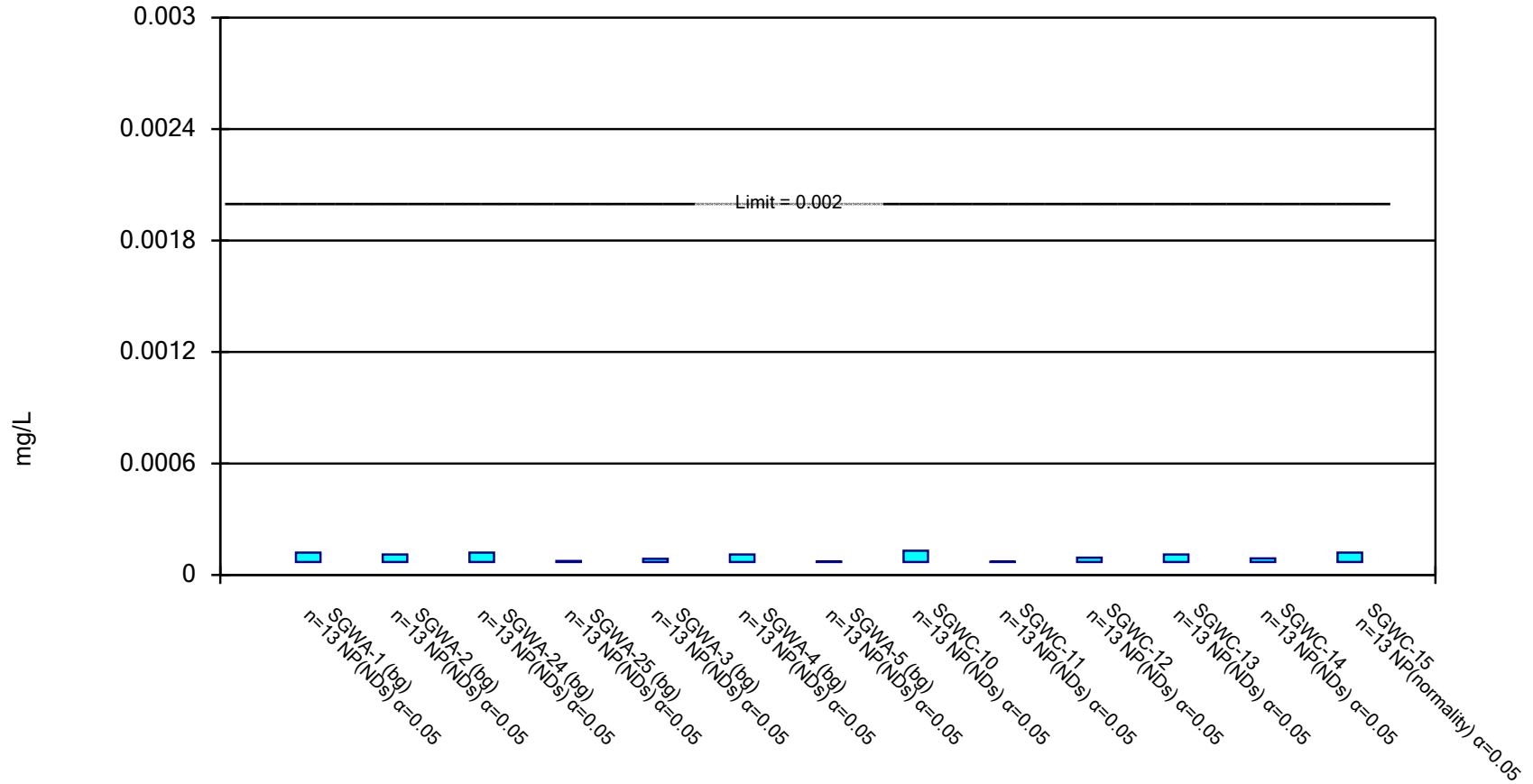


Constituent: Lithium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

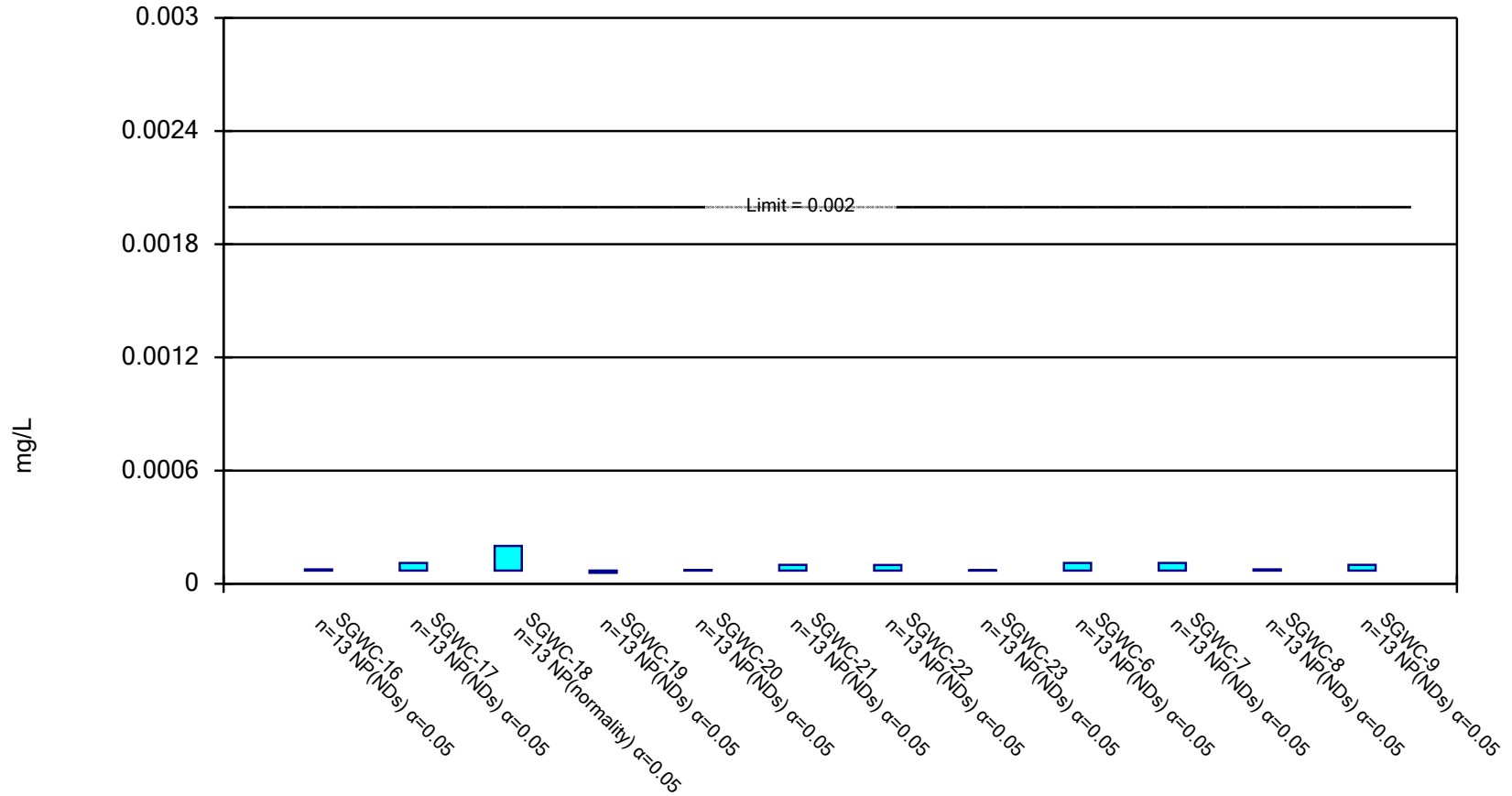
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

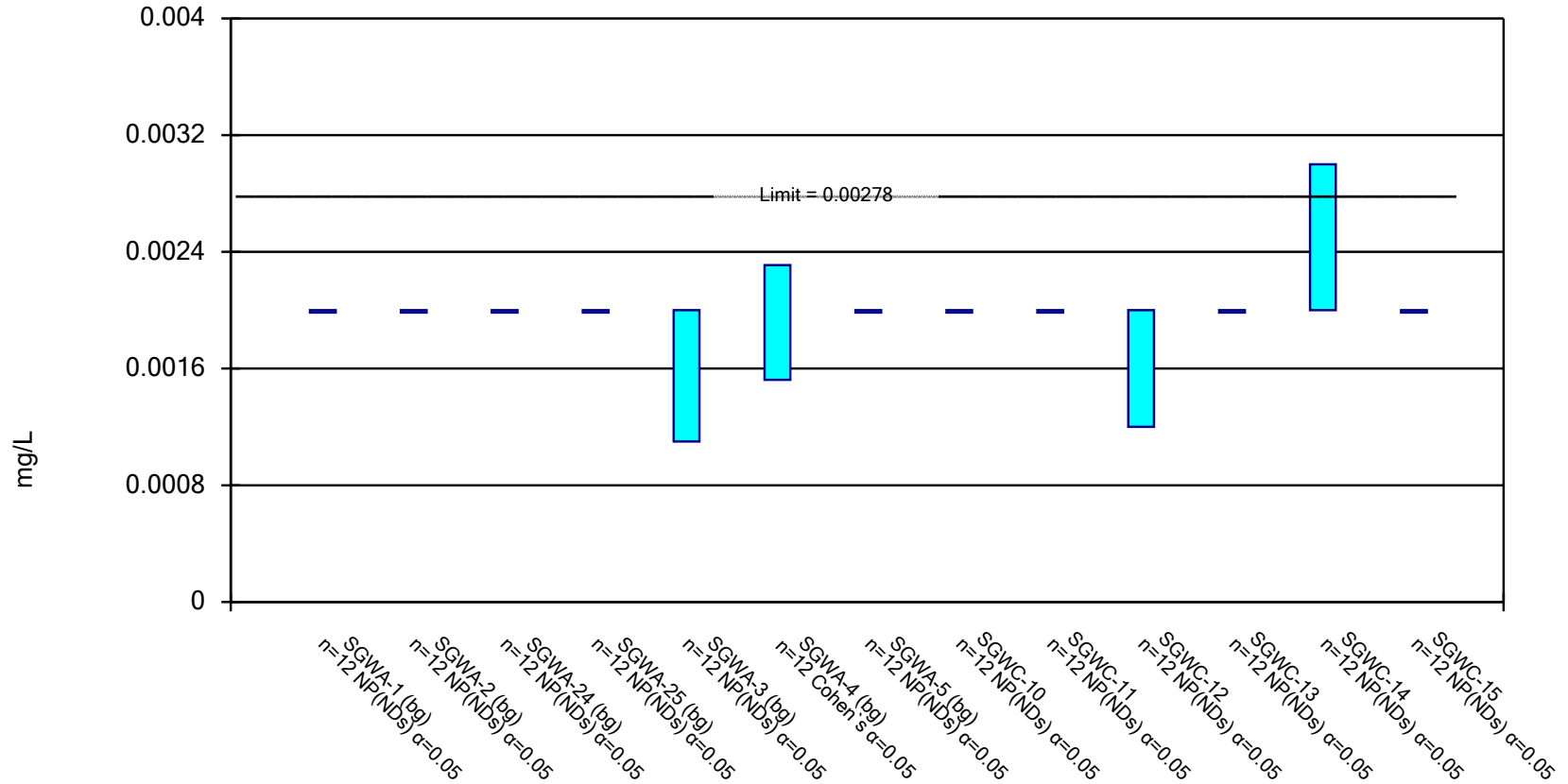
Compliance Limit is not exceeded.



Constituent: Mercury    Analysis Run 6/28/2019 12:34 PM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

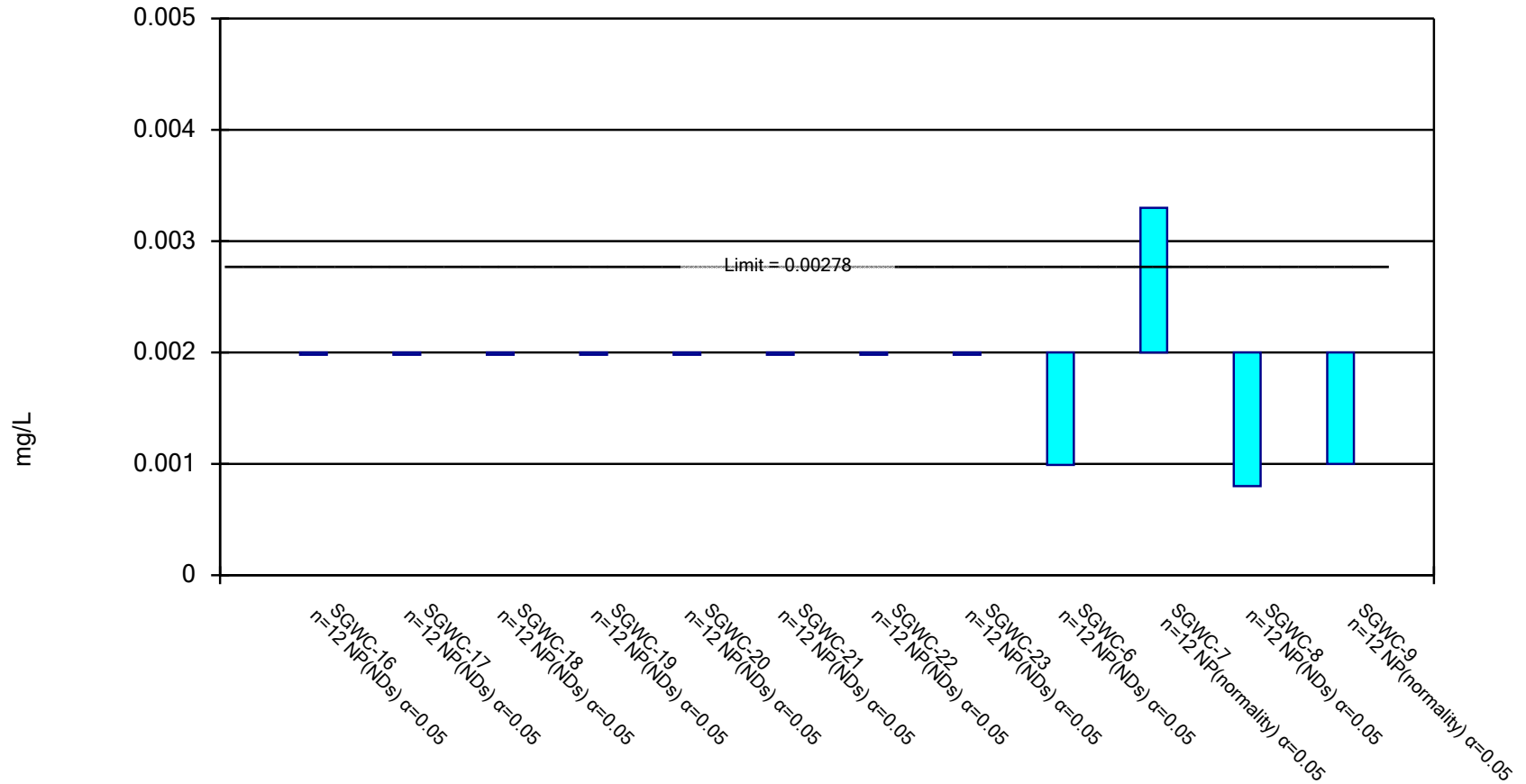


Constituent: Molybdenum Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

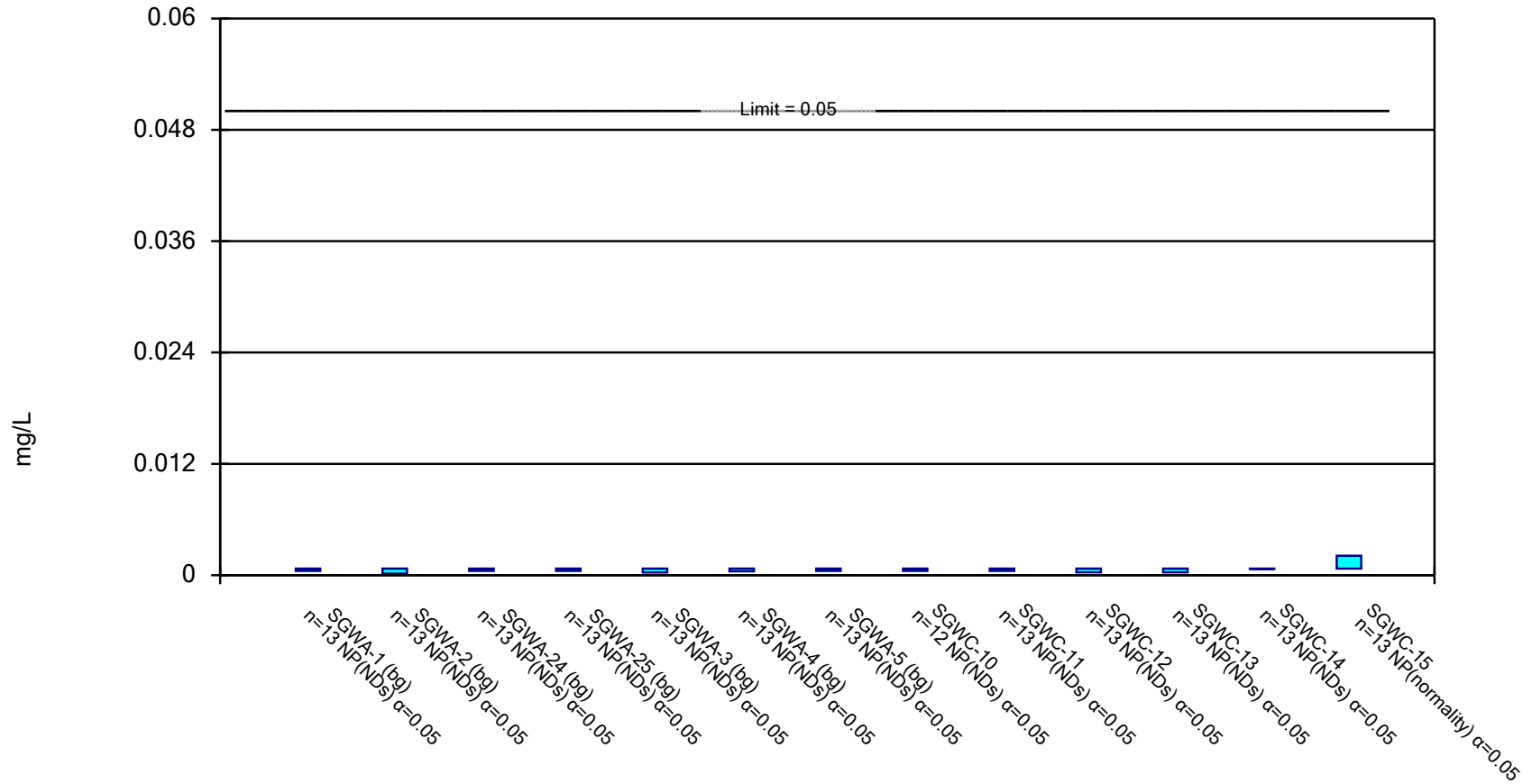


Constituent: Molybdenum Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

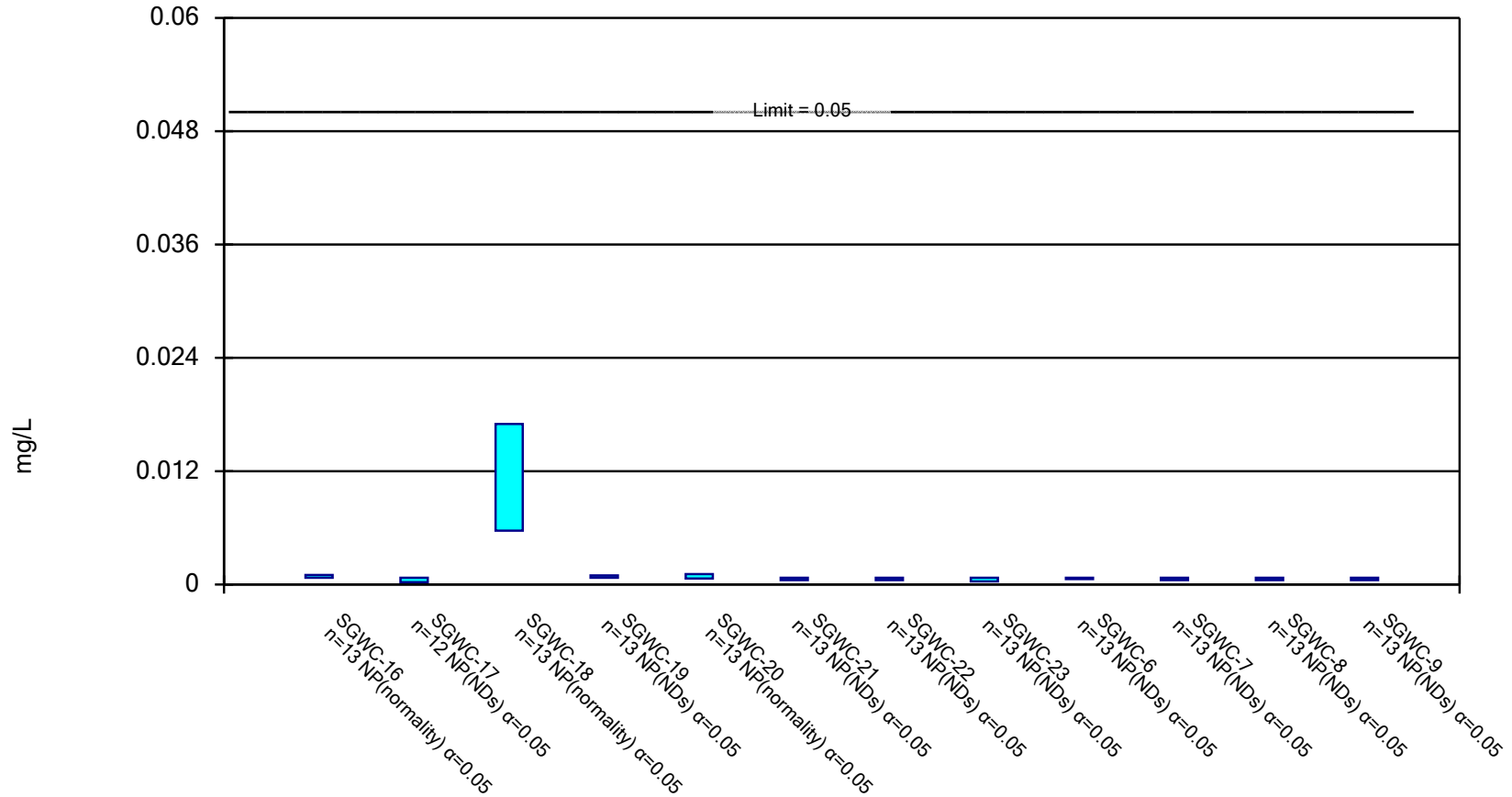


Constituent: Selenium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

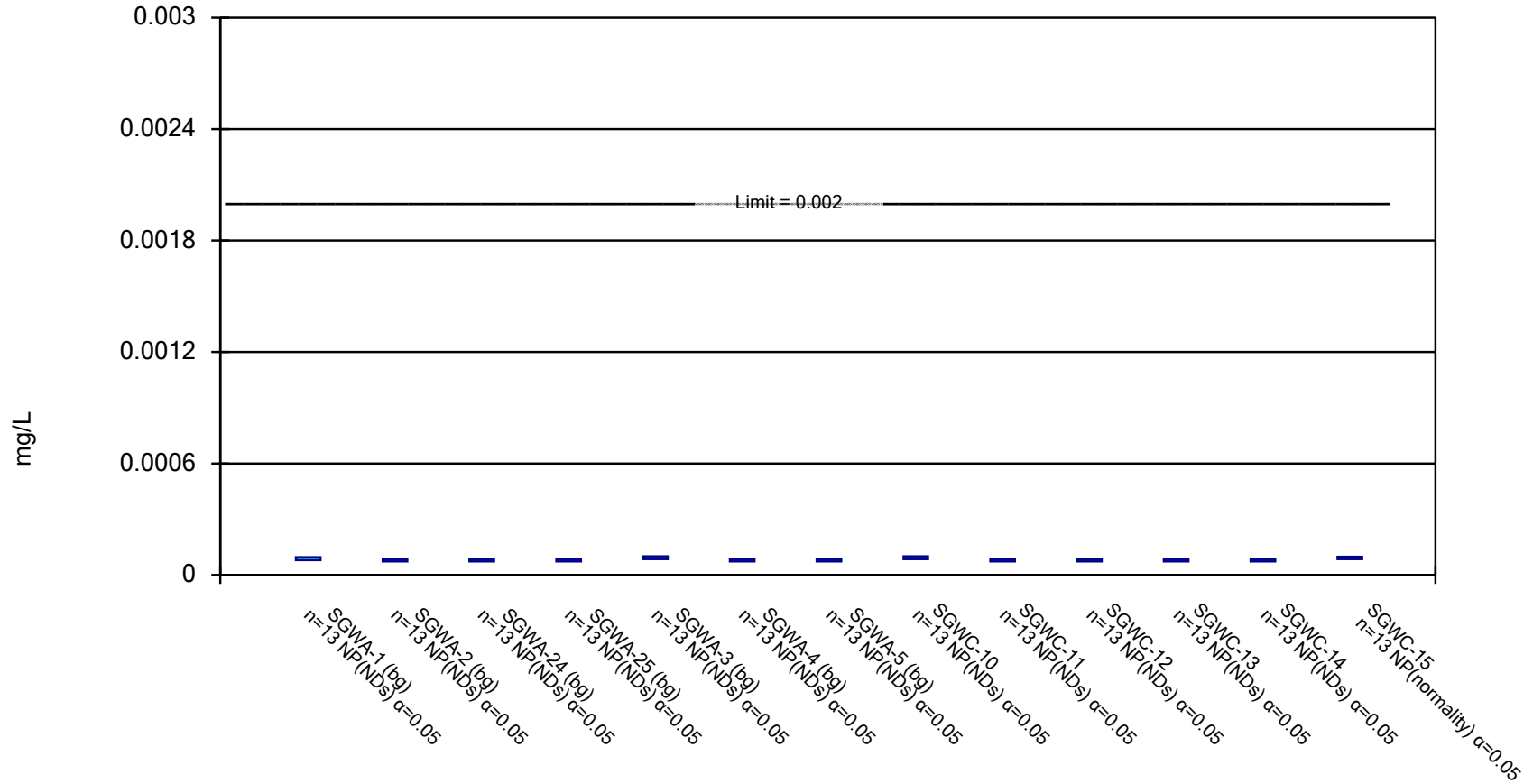


Constituent: Selenium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



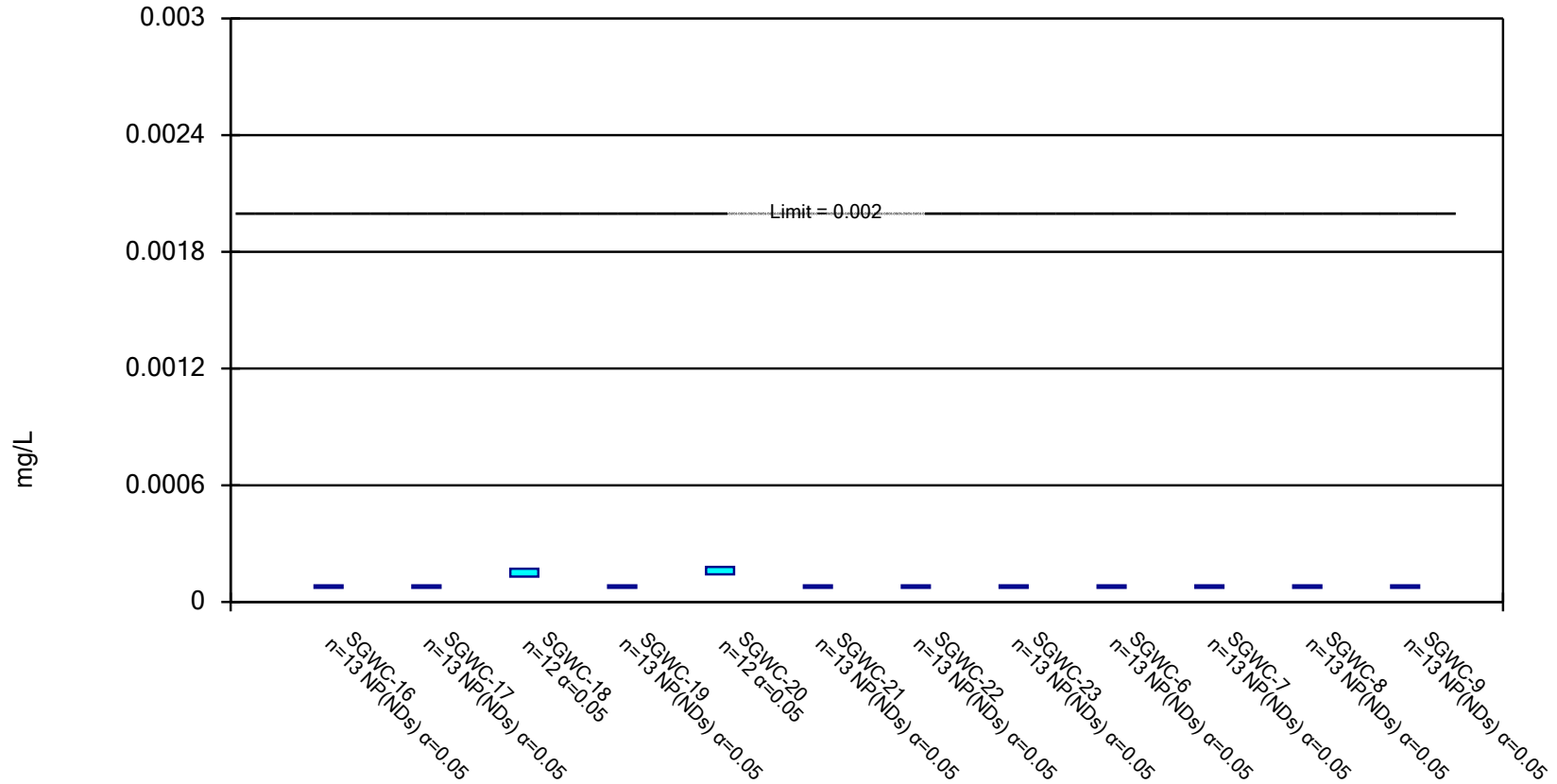
Constituent: Thallium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium Analysis Run 6/28/2019 12:34 PM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Cobalt (mg/L)	SGWC-10	0.03244	0.02191	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-11	0.03044	0.02587	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-15	0.2764	0.2608	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-18	0.1609	0.1202	0.02	Yes	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-20	0.231	0.1892	0.02	Yes	13	0	No	0.05	Param.

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	SGWA-1 (bg)	0.0012	0.0004	0.006	No	12	83.33	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-2 (bg)	0.001	0.001	0.006	No	12	100	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-24 (bg)	0.001	0.0003	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-25 (bg)	0.001	0.0003	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-3 (bg)	0.0021	0.001	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-4 (bg)	0.001	0.0007	0.006	No	12	91.67	No	0.05	NP (NDs)
Antimony (mg/L)	SGWA-5 (bg)	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-10	0.001	0.001	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-11	0.001	0.001	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-12	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-13	0.001	0.001	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-14	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-15	0.001	0.001	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-16	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-17	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-18	0.001	0.001	0.006	No	10	90	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-19	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-20	0.001	0.001	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-21	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-22	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-23	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-6	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-7	0.001	0.001	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-8	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-9	0.001	0.001	0.006	No	11	100	No	0.006	NP (NDs)
Arsenic (mg/L)	SGWA-1 (bg)	0.00055	0.00046	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-2 (bg)	0.0005	0.00046	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-24 (bg)	0.00057	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-25 (bg)	0.00075	0.00046	0.01	No	13	38.46	No	0.05	NP (normality)
Arsenic (mg/L)	SGWA-3 (bg)	0.00063	0.00046	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-4 (bg)	0.00055	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWA-5 (bg)	0.00079	0.00046	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-10	0.0005	0.00046	0.01	No	13	76.92	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-11	0.0011	0.00046	0.01	No	13	30.77	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-12	0.00091	0.00046	0.01	No	13	46.15	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-13	0.00047	0.00046	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-14	0.00057	0.00046	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-15	0.0015	0.00046	0.01	No	13	30.77	No	0.05	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-16	0.00054	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-17	0.00066	0.00046	0.01	No	13	61.54	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-18	0.002359	0.001387	0.01	No	13	0	No	0.05	Param.
Arsenic (mg/L)	SGWC-19	0.00058	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-20	0.00085	0.00046	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-21	0.00076	0.00046	0.01	No	13	92.31	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-22	0.0006	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-23	0.00061	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-6	0.0006	0.00046	0.01	No	13	84.62	No	0.05	NP (NDs)
Arsenic (mg/L)	SGWC-7	0.00058	0.00046	0.01	No	13	61.54	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-8	0.0005	0.00046	0.01	No	13	69.23	No	0.05	NP (normality)
Arsenic (mg/L)	SGWC-9	0.00079	0.00046	0.01	No	13	46.15	No	0.05	NP (normality)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	SGWA-1 (bg)	0.05593	0.04912	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-2 (bg)	0.03864	0.03599	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-24 (bg)	0.02207	0.02052	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-25 (bg)	0.02366	0.02151	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-3 (bg)	0.03503	0.03301	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-4 (bg)	0.05691	0.05071	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWA-5 (bg)	0.01061	0.009881	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-10	0.03245	0.02858	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-11	0.03967	0.03653	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-12	0.04404	0.03573	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-13	0.0317	0.02531	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-14	0.06174	0.05707	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-15	0.04028	0.03641	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-16	0.02141	0.01779	2	No	12	0	ln(x)	0.05	Param.
Barium (mg/L)	SGWC-17	0.02022	0.01806	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-18	0.029	0.0138	2	No	13	0	No	0.05	NP (normality)
Barium (mg/L)	SGWC-19	0.04289	0.03699	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-20	0.03686	0.02979	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-21	0.09368	0.08997	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-22	0.09397	0.08551	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-23	0.08903	0.07876	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-6	0.08447	0.05327	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-7	0.3104	0.2755	2	No	13	0	No	0.05	Param.
Barium (mg/L)	SGWC-8	0.19	0.17	2	No	13	0	No	0.05	NP (normality)
Barium (mg/L)	SGWC-9	0.06681	0.05594	2	No	13	0	No	0.05	Param.
Beryllium (mg/L)	SGWA-1 (bg)	0.00034	0.0002	0.004	No	13	92.31	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-2 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-24 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-25 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-3 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-4 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWA-5 (bg)	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-10	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-11	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-12	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-13	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-14	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-15	0.0003808	0.0003386	0.004	No	13	23.08	No	0.05	Param.
Beryllium (mg/L)	SGWC-16	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-17	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-18	0.00035	0.00033	0.004	No	13	69.23	No	0.05	NP (normality)
Beryllium (mg/L)	SGWC-19	0.00034	0.0002	0.004	No	13	84.62	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-20	0.0008153	0.0006912	0.004	No	13	0	No	0.05	Param.
Beryllium (mg/L)	SGWC-21	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-22	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-23	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-6	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-7	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-8	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)
Beryllium (mg/L)	SGWC-9	0.00034	0.00034	0.004	No	13	100	No	0.05	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cadmium (mg/L)	SGWA-1 (bg)	0.00034	0.000156	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-2 (bg)	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-24 (bg)	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-25 (bg)	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-3 (bg)	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-4 (bg)	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWA-5 (bg)	0.0011	0.00034	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-10	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-11	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-12	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-13	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-14	0.00034	0.000136	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-15	0.00044	0.00033	0.005	No	12	66.67	No	0.05	NP (normality)
Cadmium (mg/L)	SGWC-16	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-17	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-18	0.00034	0.00023	0.005	No	12	75	No	0.05	NP (normality)
Cadmium (mg/L)	SGWC-19	0.00036	0.00034	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-20	0.00034	0.000108	0.005	No	12	83.33	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-21	0.00039	0.00034	0.005	No	12	91.67	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-22	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-23	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-6	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-7	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-8	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Cadmium (mg/L)	SGWC-9	0.00034	0.00034	0.005	No	12	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWA-1 (bg)	0.0014	0.0011	0.1	No	13	69.23	No	0.05	NP (normality)
Chromium (mg/L)	SGWA-2 (bg)	0.0139	0.01152	0.1	No	13	0	x^3	0.05	Param.
Chromium (mg/L)	SGWA-24 (bg)	0.004344	0.003507	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-25 (bg)	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWA-3 (bg)	0.0118	0.008221	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-4 (bg)	0.005565	0.003261	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWA-5 (bg)	0.0011	0.0011	0.1	No	13	76.92	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-10	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-11	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-12	0.0023	0.0011	0.1	No	13	92.31	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-13	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-14	0.0012	0.0011	0.1	No	13	69.23	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-15	0.03421	0.03216	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-16	0.01	0.0093	0.1	No	13	0	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-17	0.005546	0.003754	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-18	0.008385	0.006909	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-19	0.01559	0.01429	0.1	No	13	0	No	0.05	Param.
Chromium (mg/L)	SGWC-20	0.0011	0.0009	0.1	No	13	92.31	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-21	0.0012	0.0011	0.1	No	13	84.62	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-22	0.0012	0.0007	0.1	No	13	76.92	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-23	0.0014	0.0011	0.1	No	12	50	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-6	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-7	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)
Chromium (mg/L)	SGWC-8	0.0013	0.0011	0.1	No	13	53.85	No	0.05	NP (normality)
Chromium (mg/L)	SGWC-9	0.0011	0.0011	0.1	No	13	100	No	0.05	NP (NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	SGWA-1 (bg)	0.01348	0.006417	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-2 (bg)	0.0004	0.0004	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-24 (bg)	0.0004	0.0004	0.02	No	13	76.92	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-25 (bg)	0.01307	0.008664	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-3 (bg)	0.00051	0.0004	0.02	No	12	91.67	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-4 (bg)	0.00041	0.0004	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWA-5 (bg)	0.0004	0.0004	0.02	No	13	100	No	0.05	NP (NDs)
<b>Cobalt (mg/L)</b>	<b>SGWC-10</b>	<b>0.03244</b>	<b>0.02191</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
<b>Cobalt (mg/L)</b>	<b>SGWC-11</b>	<b>0.03044</b>	<b>0.02587</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-12	0.004296	0.00344	0.02	No	13	0	x^(1/3)	0.05	Param.
Cobalt (mg/L)	SGWC-13	0.008913	0.005426	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-14	0.0122	0.007597	0.02	No	13	0	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-15</b>	<b>0.2764</b>	<b>0.2608</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-16	0.003718	0.003256	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-17	0.0006166	0.000396	0.02	No	12	25	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-18</b>	<b>0.1609</b>	<b>0.1202</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-19	0.0005962	0.0003884	0.02	No	13	53.85	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-20</b>	<b>0.231</b>	<b>0.1892</b>	<b>0.02</b>	<b>Yes</b>	<b>13</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-21	0.0004	0.00011	0.02	No	13	92.31	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWC-22	0.003961	0.002599	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-23	0.0004	0.0004	0.02	No	12	100	No	0.05	NP (NDs)
Cobalt (mg/L)	SGWC-6	0.002361	0.0007227	0.02	No	13	23.08	No	0.05	Param.
Cobalt (mg/L)	SGWC-7	0.0122	0.0074	0.02	No	13	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-8	0.00049	0.0004	0.02	No	13	69.23	No	0.05	NP (normality)
Cobalt (mg/L)	SGWC-9	0.01418	0.01032	0.02	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-1 (bg)	0.3712	0.2348	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-2 (bg)	0.4103	0.1945	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-24 (bg)	0.3648	0.1393	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-25 (bg)	0.3664	0.133	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-3 (bg)	0.332	0.175	5	No	13	15.38	No	0.05	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWA-4 (bg)	0.2693	0.07354	5	No	12	16.67	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-5 (bg)	0.358	0.224	5	No	13	15.38	No	0.05	NP (Cohens/xfrm)
Combined Radium 226 + 228 (pCi/L)	SGWC-10	0.47	0.136	5	No	13	7.692	No	0.05	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWC-11	0.5714	0.2628	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-12	0.4026	0.1635	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-13	0.4429	0.161	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-14	0.4349	0.1832	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-15	0.451	0.2393	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-16	0.3814	0.175	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-17	0.404	0.2059	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-18	0.3948	0.2215	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-19	0.3575	0.1285	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-20	0.5935	0.3277	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-21	0.4546	0.2396	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-22	0.3586	0.2116	5	No	12	8.333	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-23	0.6592	0.4662	5	No	13	7.692	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-6	0.4096	0.177	5	No	13	15.38	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-7	0.5181	0.346	5	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-8	2.5	2.072	5	No	13	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-9	0.4284	0.234	5	No	13	7.692	No	0.05	Param.

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Fluoride (mg/L)	SGWA-1 (bg)	0.026	0.026	4	No	14	100	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWA-2 (bg)	0.03	0.026	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-24 (bg)	0.05	0.026	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-25 (bg)	0.03	0.026	4	No	14	71.43	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-3 (bg)	0.026	0.026	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWA-4 (bg)	0.08	0.026	4	No	14	57.14	No	0.05	NP (normality)
Fluoride (mg/L)	SGWA-5 (bg)	0.026	0.0188	4	No	14	92.86	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-10	0.026	0.019	4	No	14	92.86	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-11	0.033	0.026	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-12	0.09934	0.0399	4	No	14	28.57	No	0.05	Param.
Fluoride (mg/L)	SGWC-13	0.042	0.026	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-14	0.03	0.026	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-15	0.14	0.11	4	No	13	7.692	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-16	0.09	0.011	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-17	0.045	0.026	4	No	14	64.29	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-18	0.0343	0.026	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-19	0.18	0.0126	4	No	14	85.71	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-20	0.2765	0.1857	4	No	14	7.143	No	0.05	Param.
Fluoride (mg/L)	SGWC-21	0.083	0.026	4	No	14	50	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-22	0.029	0.026	4	No	14	78.57	No	0.05	NP (NDs)
Fluoride (mg/L)	SGWC-23	0.036	0.026	4	No	14	64.29	No	0.05	NP (normality)
Fluoride (mg/L)	SGWC-6	0.1299	0.06374	4	No	14	21.43	No	0.05	Param.
Fluoride (mg/L)	SGWC-7	0.2248	0.1916	4	No	14	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-8	0.4718	0.3828	4	No	14	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-9	0.074	0.026	4	No	14	64.29	No	0.05	NP (normality)
Lead (mg/L)	SGWA-1 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-2 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-24 (bg)	0.0013	0.0001	0.013	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-25 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-3 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-4 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWA-5 (bg)	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-10	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-11	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-12	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-13	0.0013	0.00039	0.013	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-14	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-15	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-16	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-17	0.0013	0.0013	0.013	No	12	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-18	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-19	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-20	0.0013	0.0005	0.013	No	13	69.23	No	0.05	NP (normality)
Lead (mg/L)	SGWC-21	0.0013	0.00009	0.013	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-22	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-23	0.0013	0.00009	0.013	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-6	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-7	0.0013	0.00085	0.013	No	13	92.31	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-8	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)
Lead (mg/L)	SGWC-9	0.0013	0.0013	0.013	No	13	100	No	0.05	NP (NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (mg/L)	SGWA-1 (bg)	0.005	0.00235	0.005	No	13	69.23	No	0.05	NP (normality)
Lithium (mg/L)	SGWA-2 (bg)	0.005	0.005	0.005	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-24 (bg)	0.005	0.0012	0.005	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-25 (bg)	0.005	0.0015	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-3 (bg)	0.005	0.0013	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-4 (bg)	0.005	0.005	0.005	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWA-5 (bg)	0.005	0.0017	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-10	0.005	0.005	0.005	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-11	0.005	0.0029	0.005	No	13	53.85	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-12	0.005	0.0011	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-13	0.005	0.0014	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-14	0.005	0.0012	0.005	No	12	83.33	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-15	0.005	0.003	0.005	No	13	53.85	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-16	0.005	0.0015	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-17	0.005	0.0014	0.005	No	13	92.31	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-18	0.005	0.0041	0.005	No	13	46.15	No	0.05	NP (Cohens/xfrm)
Lithium (mg/L)	SGWC-19	0.005	0.0022	0.005	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-20	0.004886	0.004081	0.005	No	12	8.333	No	0.05	Param.
Lithium (mg/L)	SGWC-21	0.005	0.0027	0.005	No	13	76.92	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-22	0.005	0.0026	0.005	No	13	84.62	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-23	0.004698	0.003512	0.005	No	12	25	No	0.05	Param.
Lithium (mg/L)	SGWC-6	0.005	0.005	0.005	No	13	100	No	0.05	NP (NDs)
Lithium (mg/L)	SGWC-7	0.005163	0.004087	0.005	No	12	0	No	0.05	Param.
Lithium (mg/L)	SGWC-8	0.005	0.0021	0.005	No	13	61.54	No	0.05	NP (normality)
Lithium (mg/L)	SGWC-9	0.005	0.005	0.005	No	13	100	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-1 (bg)	0.00012	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-2 (bg)	0.00011	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-24 (bg)	0.00012	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-25 (bg)	0.000075	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-3 (bg)	0.000087	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-4 (bg)	0.00011	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWA-5 (bg)	0.000072	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-10	0.00013	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-11	0.000071	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-12	0.000093	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-13	0.00011	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-14	0.000089	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-15	0.00012	0.00007	0.002	No	13	38.46	No	0.05	NP (normality)
Mercury (mg/L)	SGWC-16	0.000076	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-17	0.00011	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-18	0.0002	0.00007	0.002	No	13	38.46	No	0.05	NP (normality)
Mercury (mg/L)	SGWC-19	0.00007	0.00007	0.002	No	13	100	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-20	0.000073	0.00007	0.002	No	13	84.62	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-21	0.0001	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-22	0.000099	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-23	0.000071	0.00007	0.002	No	13	76.92	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-6	0.00011	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-7	0.00011	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-8	0.000076	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)
Mercury (mg/L)	SGWC-9	0.0001	0.00007	0.002	No	13	92.31	No	0.05	NP (NDs)



## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

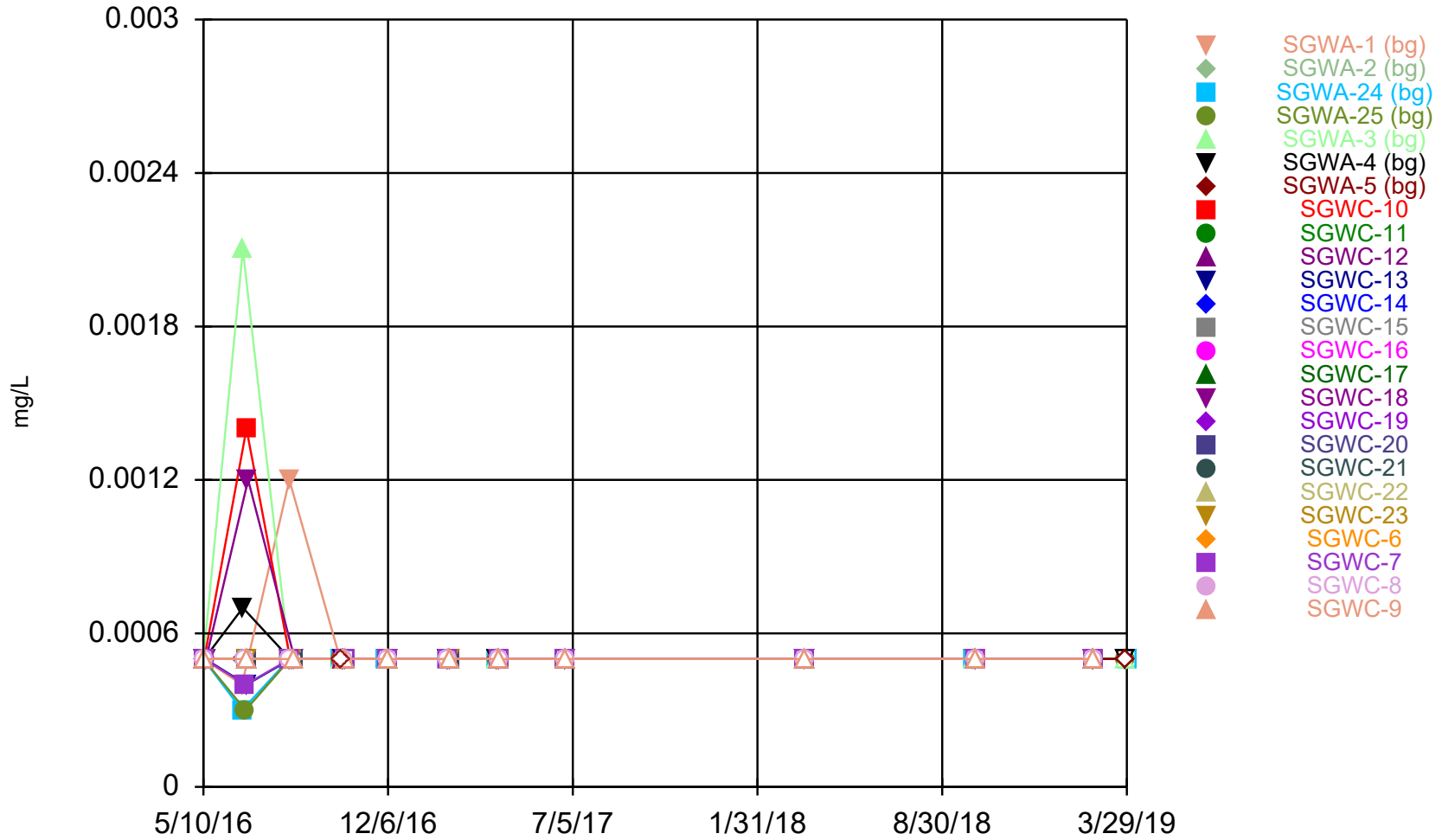
Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Molybdenum (mg/L)	SGWA-1 (bg)	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-2 (bg)	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-24 (bg)	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-25 (bg)	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-3 (bg)	0.002	0.0011	0.00278	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWA-4 (bg)	0.002309	0.001522	0.00278	No	12	33.33	No	0.05	Param.
Molybdenum (mg/L)	SGWA-5 (bg)	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-10	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-11	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-12	0.002	0.0012	0.00278	No	12	83.33	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-13	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-14	0.003	0.002	0.00278	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-15	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-16	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-17	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-18	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-19	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-20	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-21	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-22	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-23	0.002	0.002	0.00278	No	12	100	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-6	0.002	0.00099	0.00278	No	12	83.33	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-7	0.0033	0.002	0.00278	No	12	33.33	No	0.05	NP (normality)
Molybdenum (mg/L)	SGWC-8	0.002	0.0008	0.00278	No	12	91.67	No	0.05	NP (NDs)
Molybdenum (mg/L)	SGWC-9	0.002	0.001	0.00278	No	12	50	No	0.05	NP (normality)
Selenium (mg/L)	SGWA-1 (bg)	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-2 (bg)	0.00071	0.00017	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-24 (bg)	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-25 (bg)	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-3 (bg)	0.00071	0.00029	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-4 (bg)	0.00071	0.00041	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWA-5 (bg)	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-10	0.00071	0.00071	0.05	No	12	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-11	0.00071	0.00046	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-12	0.00071	0.00031	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-13	0.00071	0.0003	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-14	0.00071	0.00066	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-15	0.0021	0.00071	0.05	No	13	23.08	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-16	0.001	0.00071	0.05	No	13	61.54	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-17	0.00071	0.00024	0.05	No	12	91.67	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-18	0.017	0.0057	0.05	No	13	0	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-19	0.00096	0.00071	0.05	No	13	92.31	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-20	0.0011	0.00064	0.05	No	13	53.85	No	0.05	NP (normality)
Selenium (mg/L)	SGWC-21	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-22	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-23	0.00071	0.00033	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-6	0.00071	0.00057	0.05	No	13	84.62	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-7	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-8	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)
Selenium (mg/L)	SGWC-9	0.00071	0.00071	0.05	No	13	100	No	0.05	NP (NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 6/28/2019, 12:37 PM

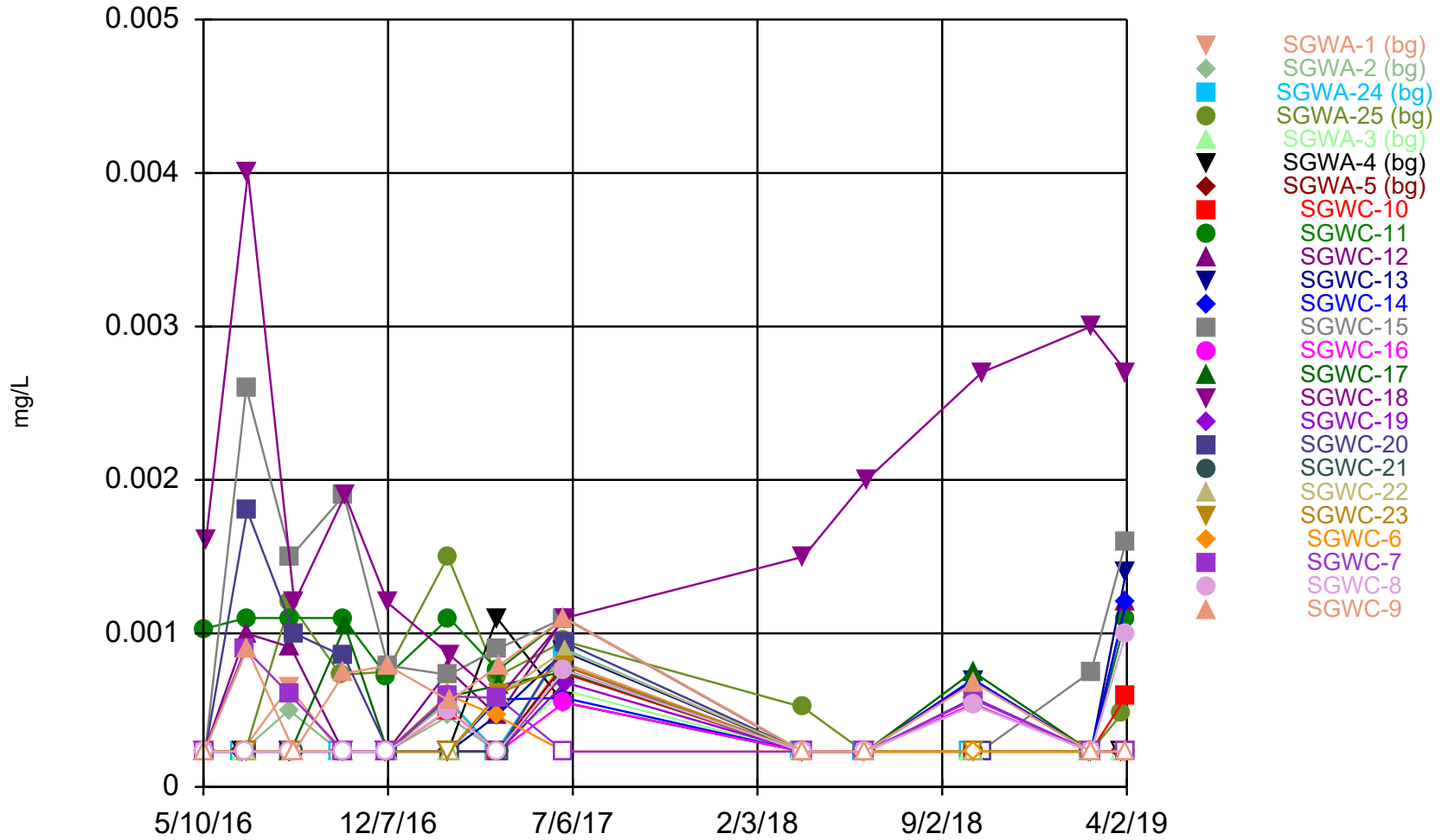
<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	SGWA-1 (bg)	0.000095	0.00008	0.002	No	13	84.62	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-2 (bg)	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-24 (bg)	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-25 (bg)	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-3 (bg)	0.0001	0.000085	0.002	No	13	92.31	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-4 (bg)	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWA-5 (bg)	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-10	0.0001	0.000085	0.002	No	13	92.31	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-11	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-12	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-13	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-14	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-15	0.000098	0.000085	0.002	No	13	46.15	No	0.05	NP (normality)
Thallium (mg/L)	SGWC-16	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-17	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-18	0.0001706	0.0001303	0.002	No	12	0	No	0.05	Param.
Thallium (mg/L)	SGWC-19	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-20	0.00018	0.0001416	0.002	No	12	0	No	0.05	Param.
Thallium (mg/L)	SGWC-21	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-22	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-23	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-6	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-7	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-8	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)
Thallium (mg/L)	SGWC-9	0.000085	0.000085	0.002	No	13	100	No	0.05	NP (NDs)

### Time Series



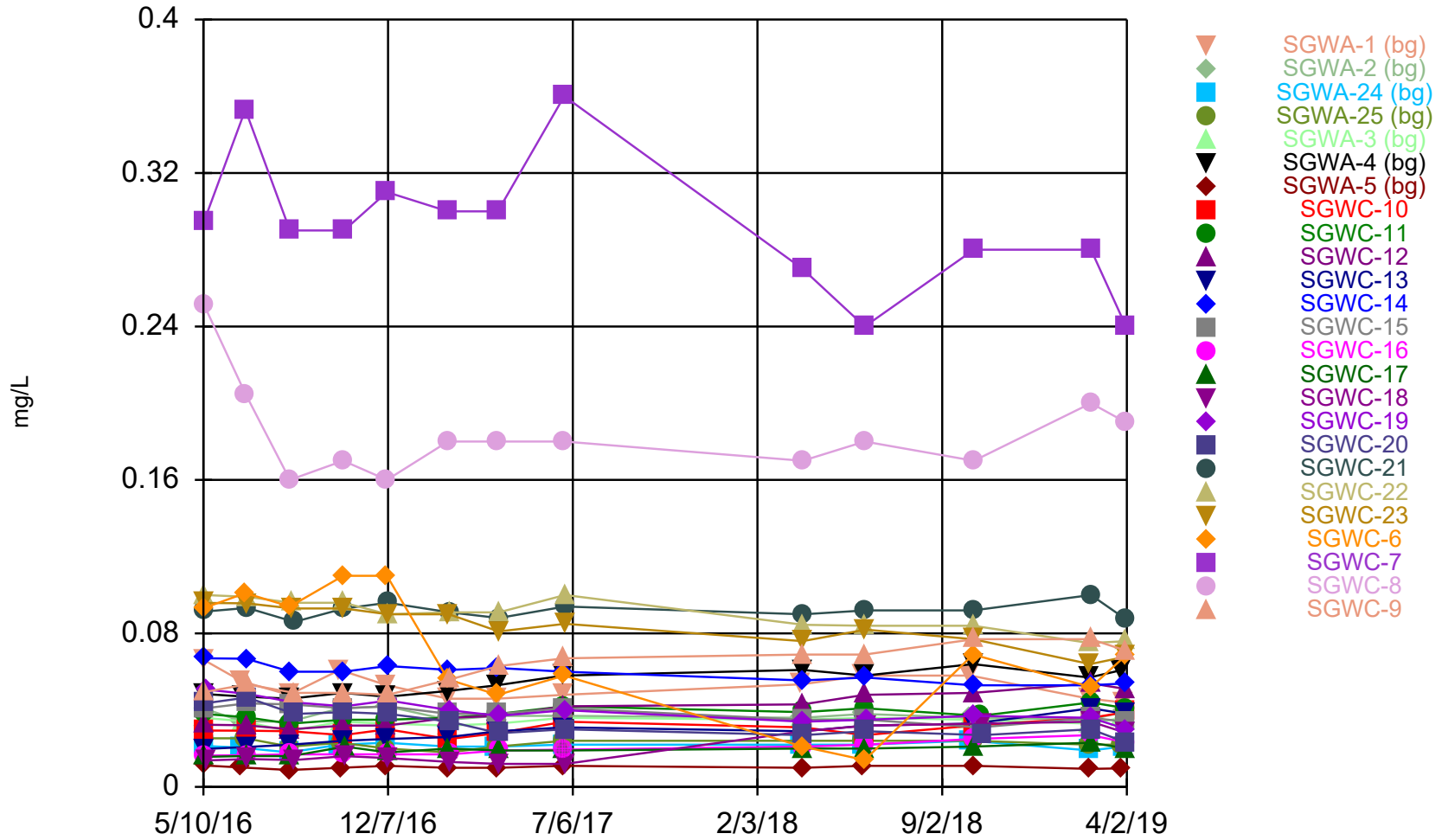
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Arsenic    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

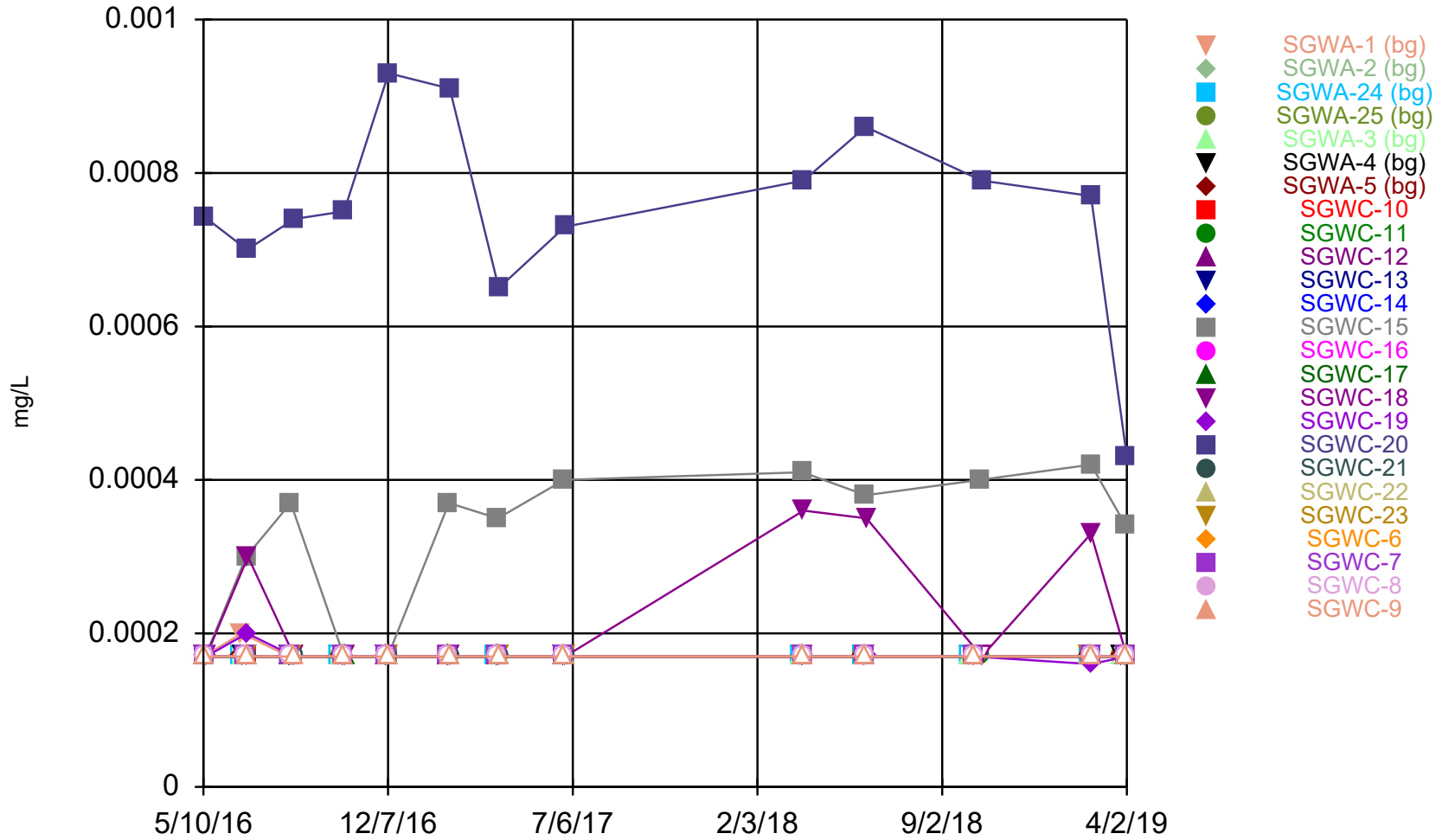
### Time Series



Constituent: Barium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval

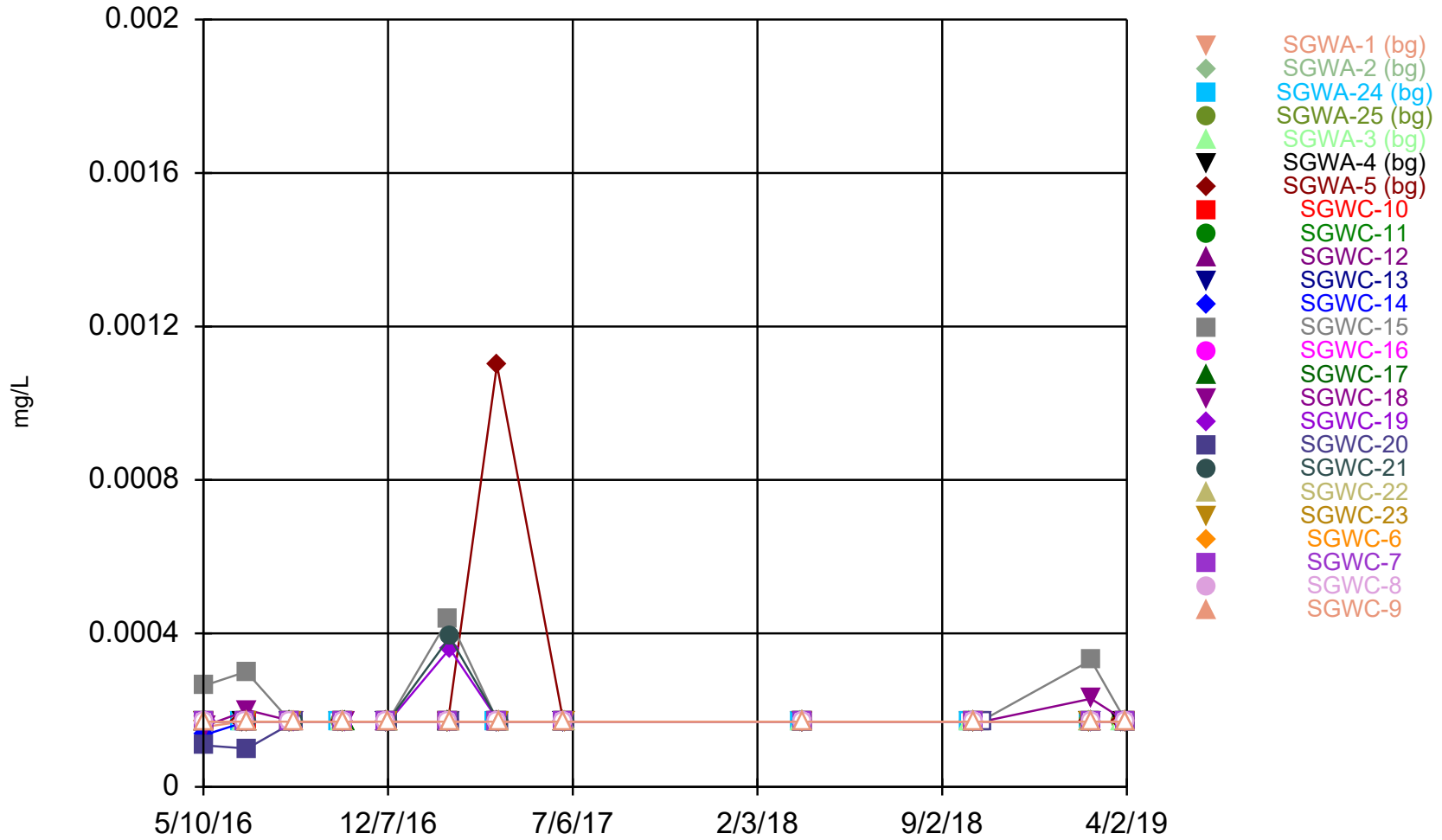
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



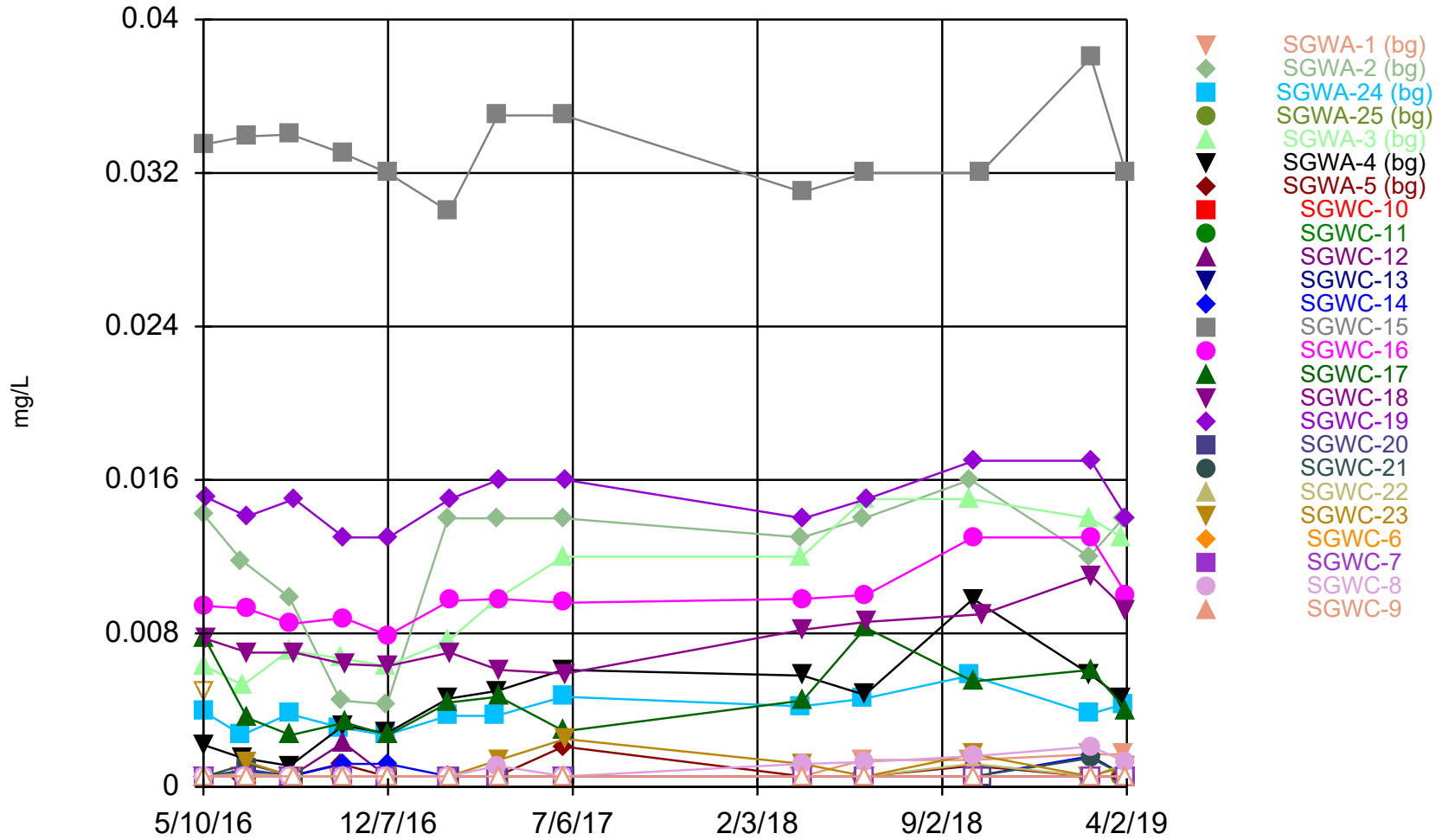
Constituent: Beryllium    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Cadmium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series

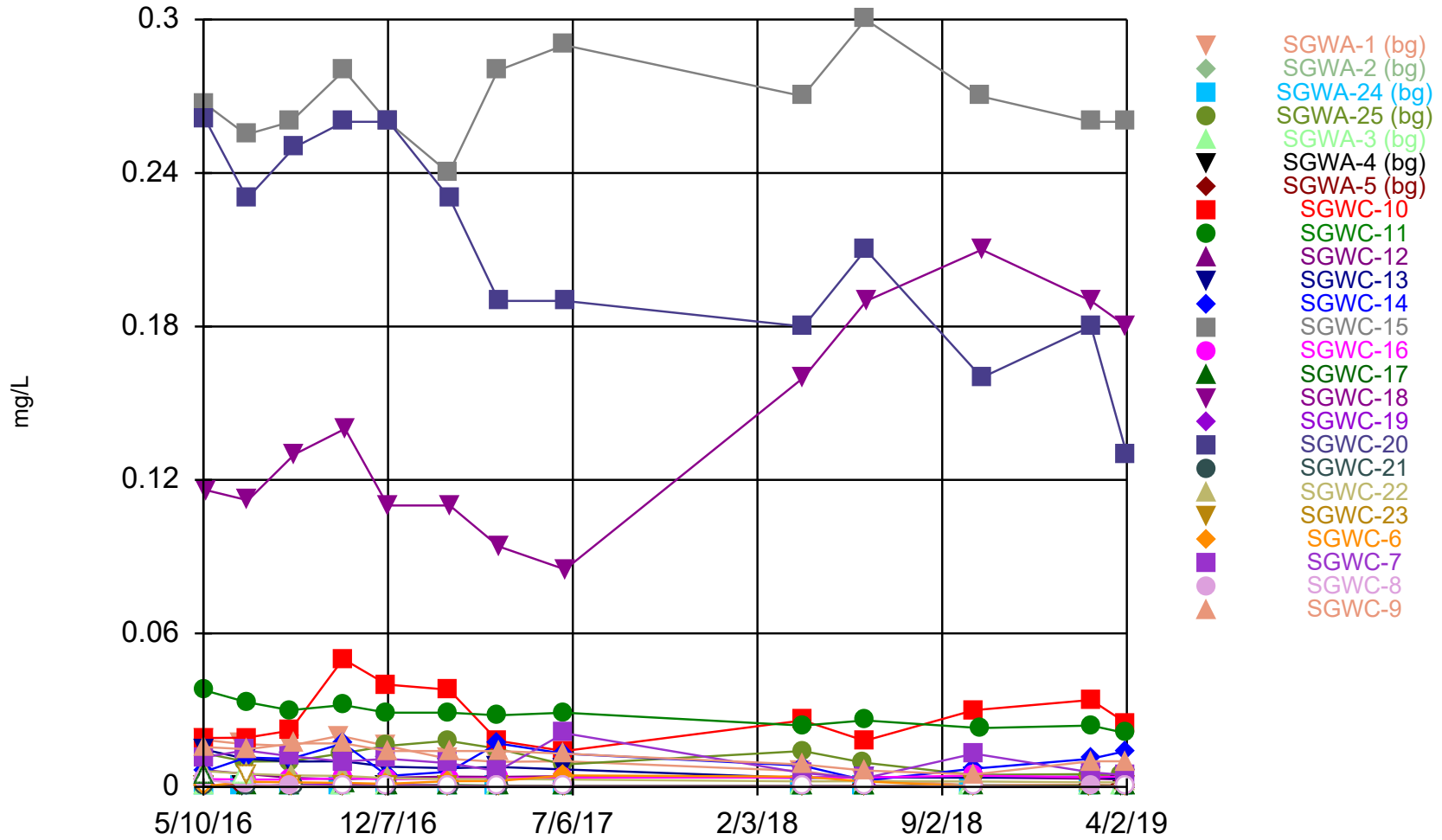


Constituent: Chromium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

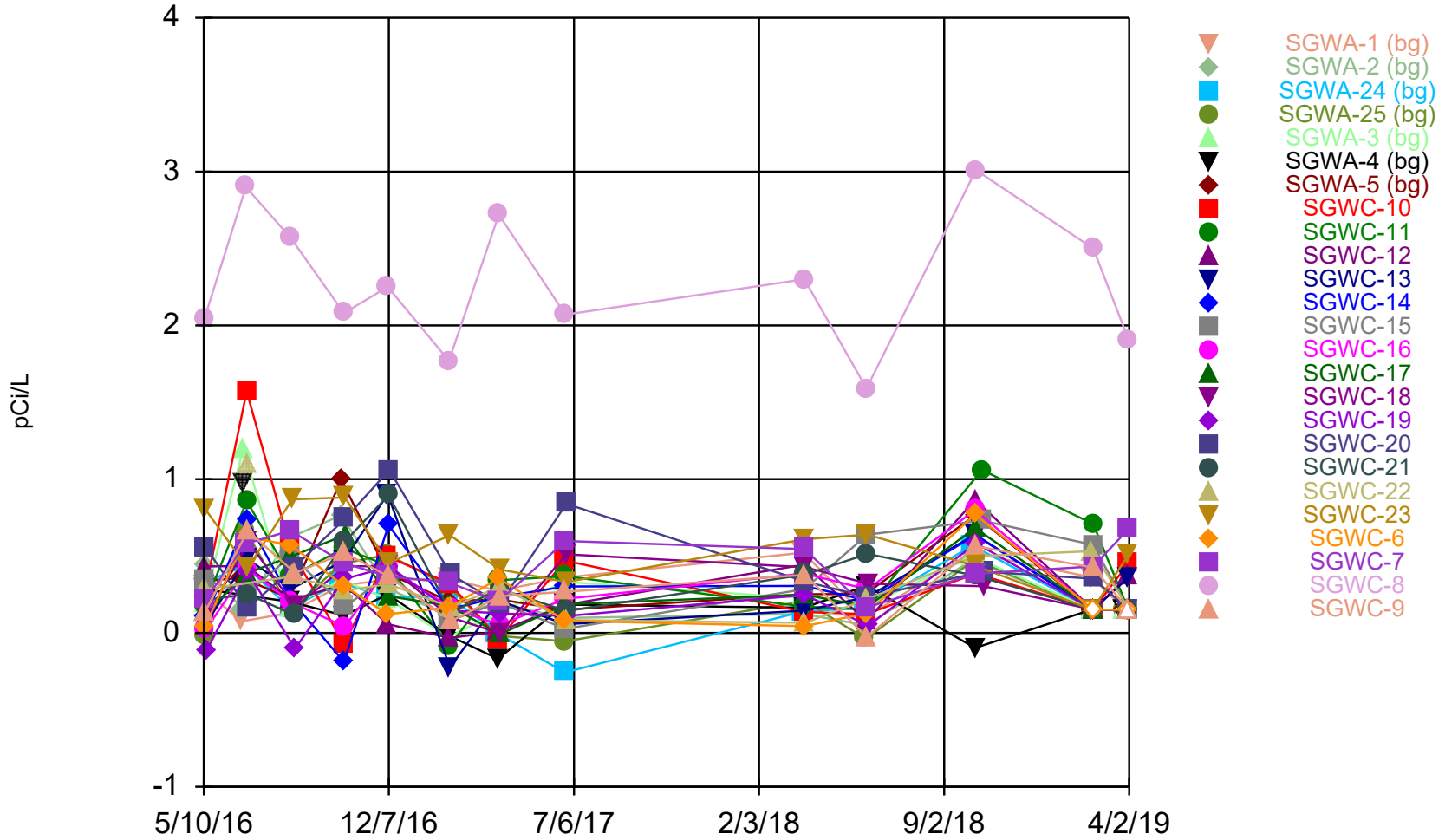


### Time Series



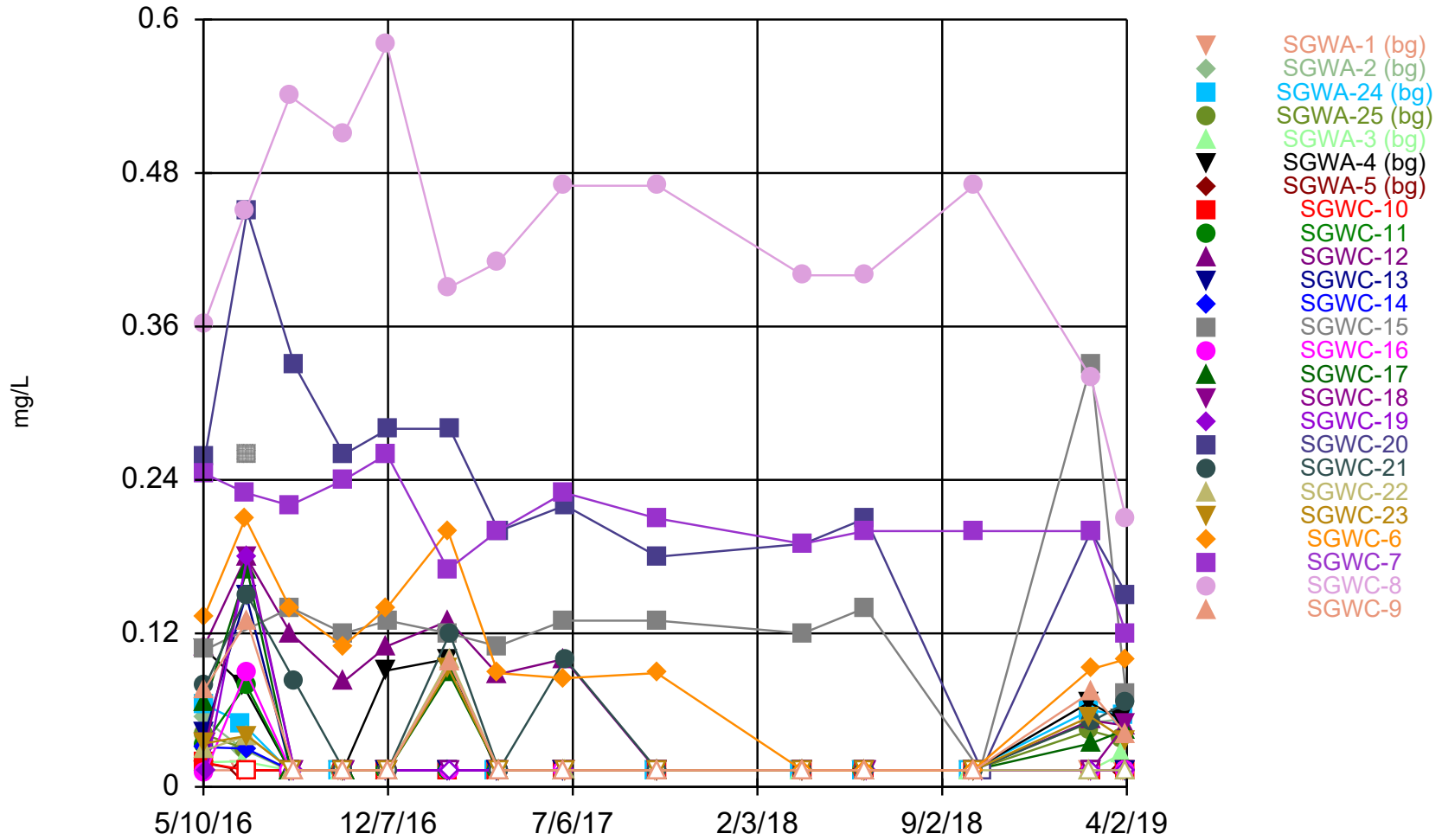
Constituent: Cobalt    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Combined Radium 226 + 228    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Int  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

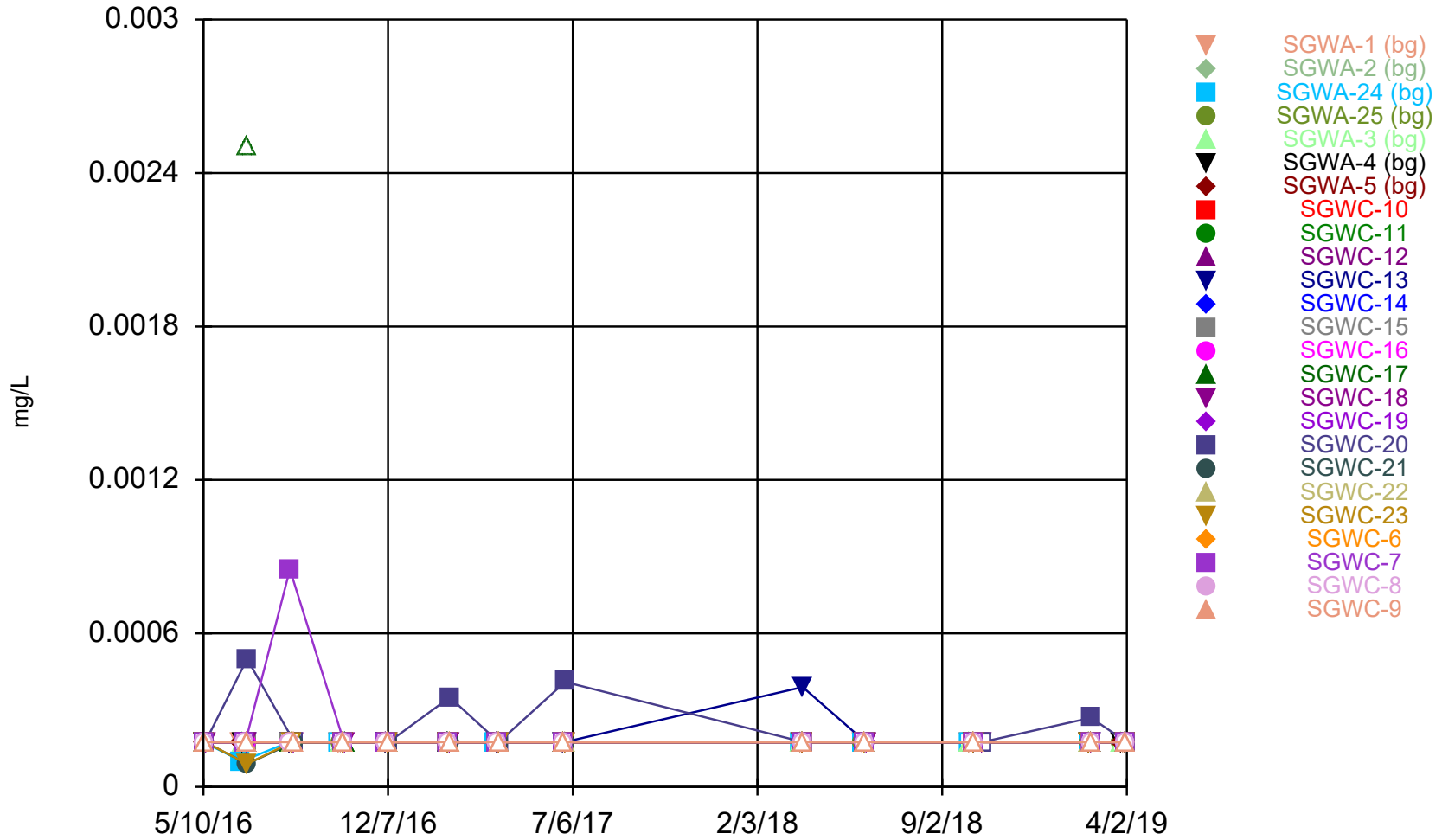
### Time Series



Constituent: Fluoride    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Interval

Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

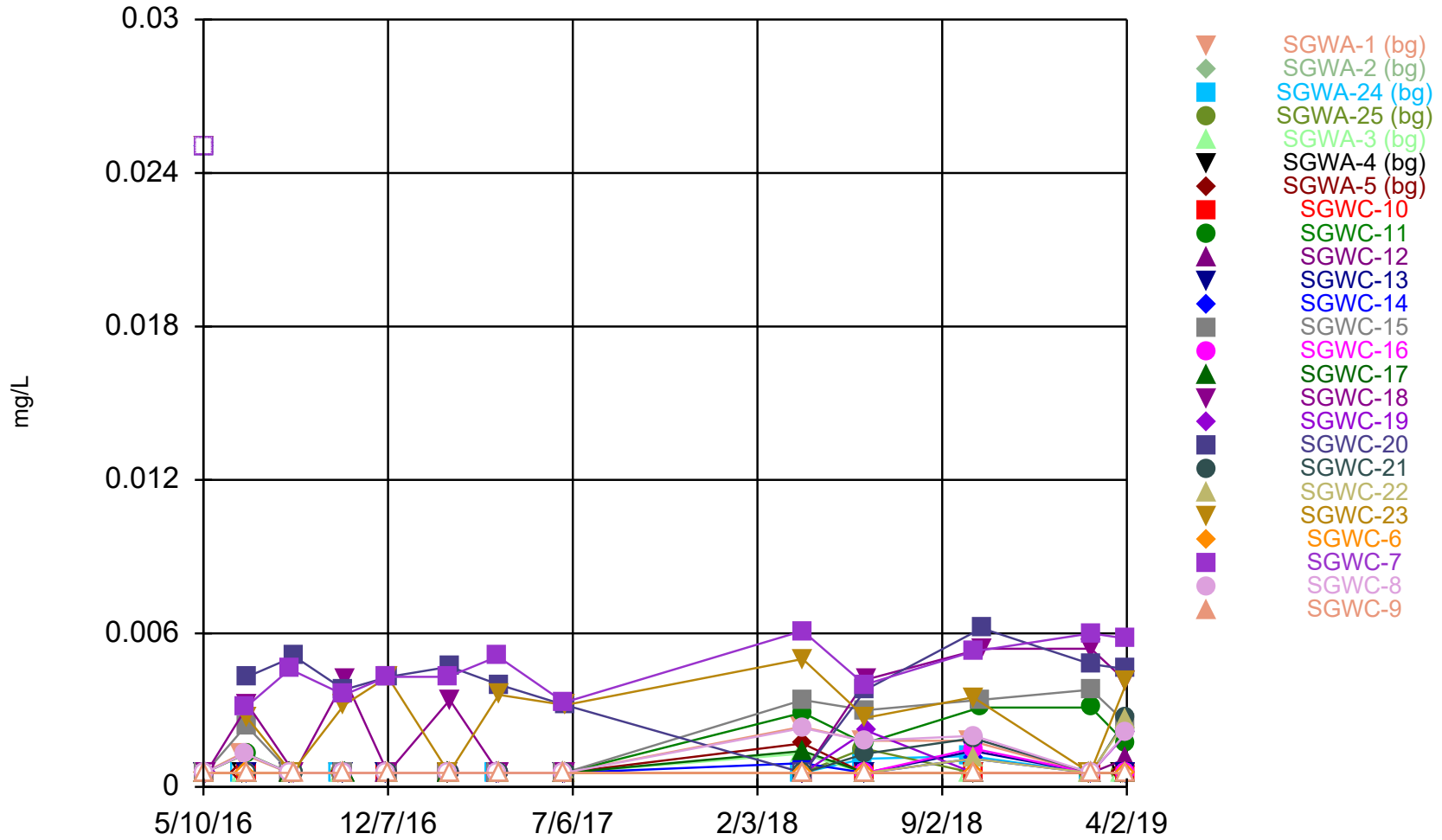
### Time Series



Constituent: Lead Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval

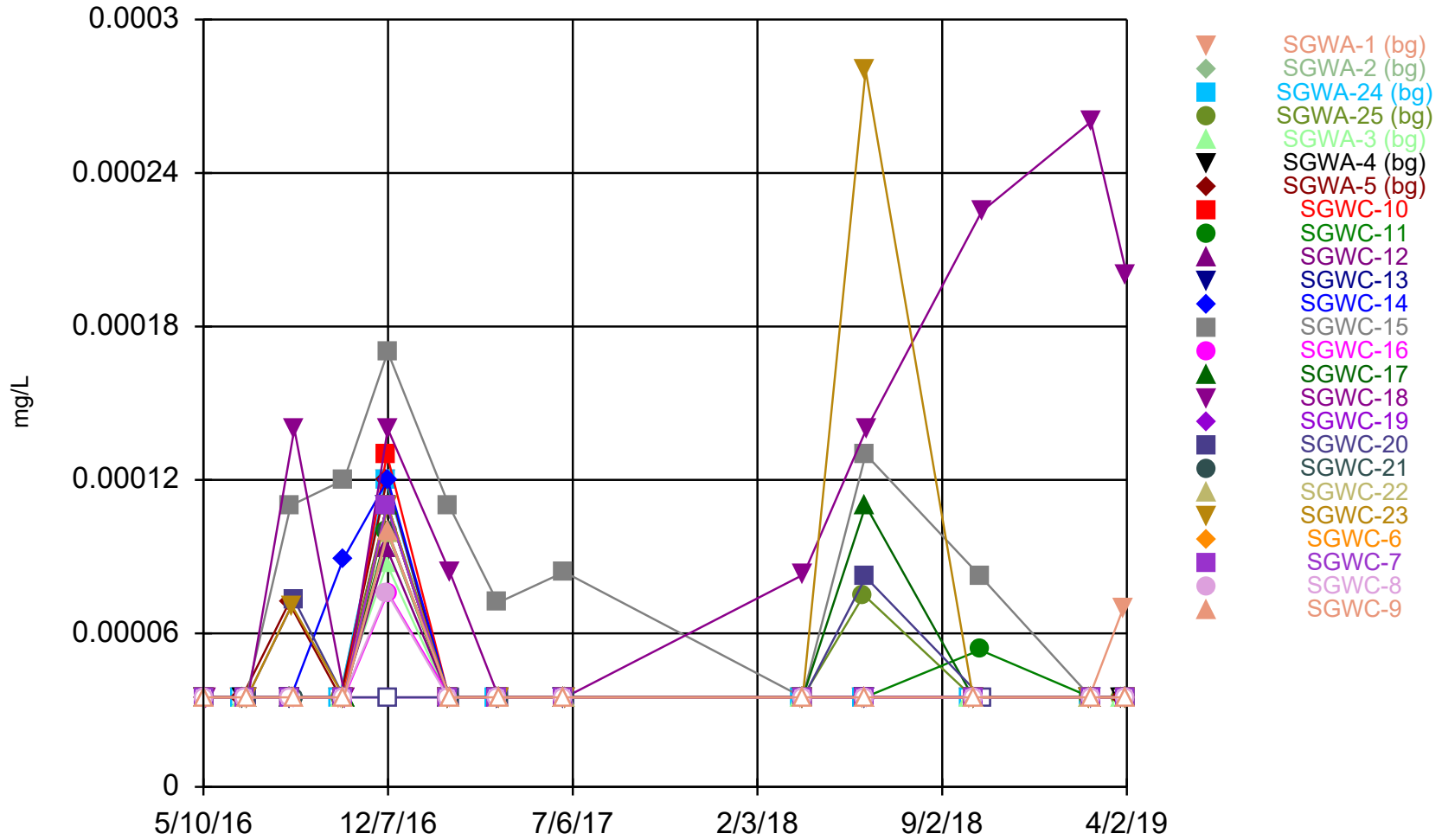
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Lithium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

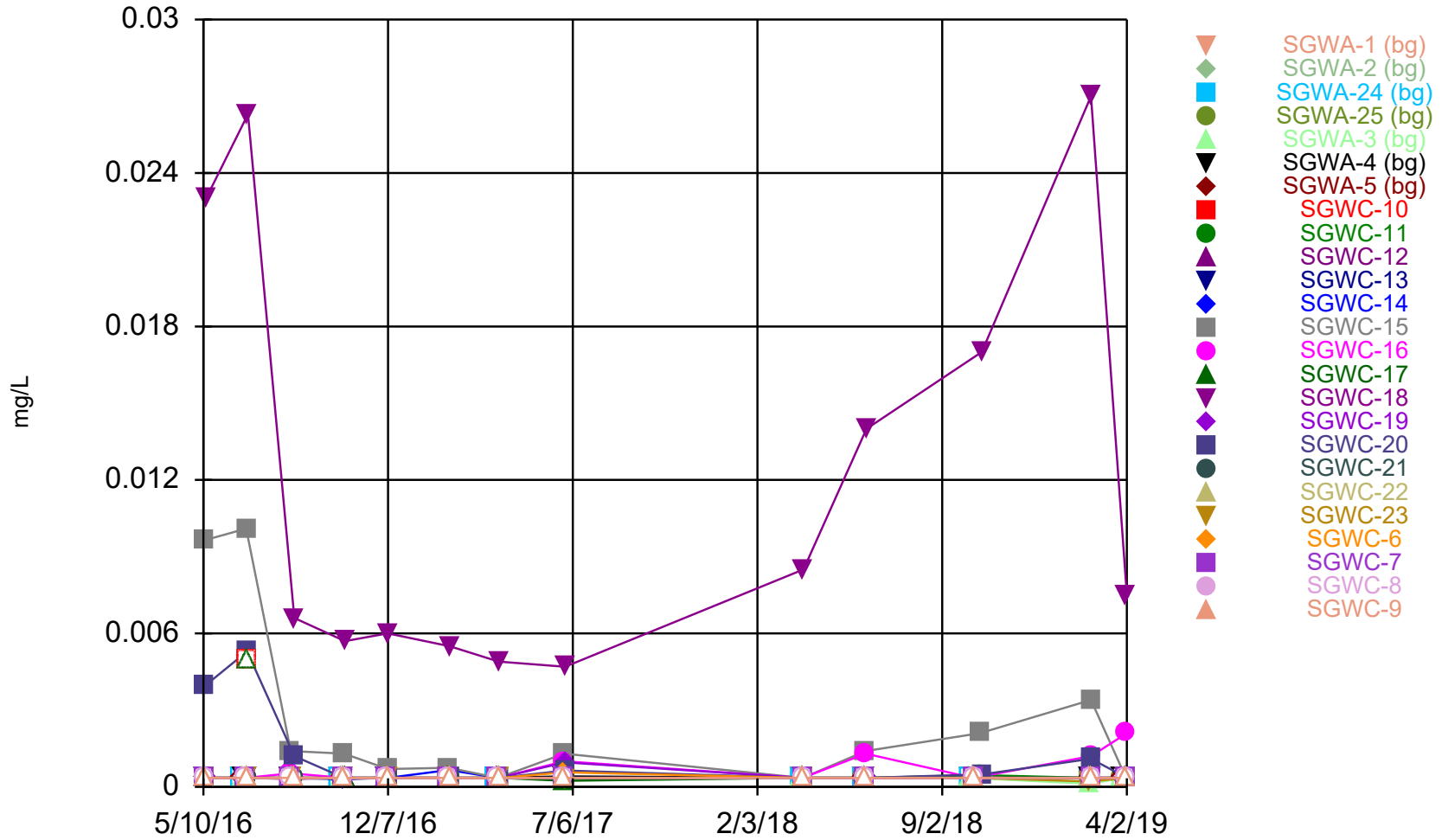
### Time Series



Constituent: Mercury    Analysis Run 5/20/2019 9:58 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



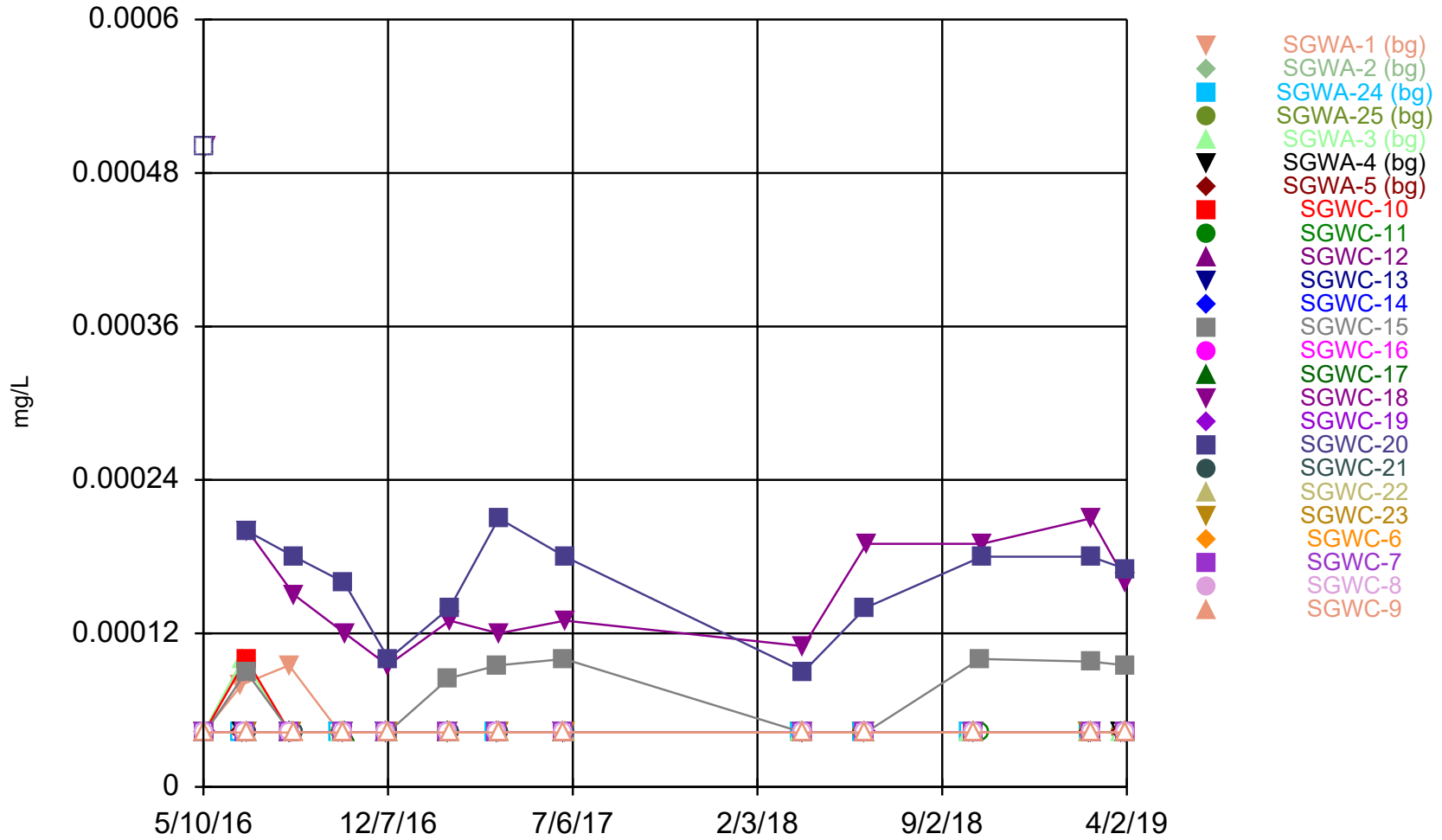
### Time Series



Constituent: Selenium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



### Time Series



Constituent: Thallium Analysis Run 5/20/2019 9:58 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

**APPENDIX B**

# STATISTICAL ANALYSES

September 2019

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 11/11/2019, 4:04 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	SGWC-11	0.089	n/a	9/16/2019	0.39	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-13	0.089	n/a	9/17/2019	0.43	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-14	0.089	n/a	9/17/2019	1.4	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-15	0.089	n/a	9/17/2019	1.4	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-16	0.089	n/a	9/17/2019	0.55	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-17	0.089	n/a	9/17/2019	0.43	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-18	0.089	n/a	9/17/2019	5	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-19	0.089	n/a	9/17/2019	1.8	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-20	0.089	n/a	9/17/2019	1.8	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-21	0.089	n/a	9/17/2019	1.1	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-22	0.089	n/a	9/18/2019	0.52	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-23	0.089	n/a	9/18/2019	0.54	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-8	0.089	n/a	9/17/2019	0.11	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-9	0.089	n/a	9/16/2019	1.6	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Calcium (mg/L)	SGWC-12	19	n/a	9/16/2019	23	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-14	19	n/a	9/17/2019	38	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-17	19	n/a	9/17/2019	51	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-18	19	n/a	9/17/2019	87	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-19	19	n/a	9/17/2019	44	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-21	19	n/a	9/17/2019	30	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-22	19	n/a	9/18/2019	27	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-23	19	n/a	9/18/2019	26	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-8	19	n/a	9/17/2019	52	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-9	19	n/a	9/16/2019	56	Yes	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Chloride (mg/L)	SGWC-10	3.202	n/a	9/17/2019	9.7	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-11	3.202	n/a	9/16/2019	7.9	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-12	3.202	n/a	9/16/2019	9.3	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-13	3.202	n/a	9/17/2019	8.4	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-14	3.202	n/a	9/17/2019	11	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-15	3.202	n/a	9/17/2019	10	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-16	3.202	n/a	9/17/2019	8.4	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-17	3.202	n/a	9/17/2019	8.3	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-18	3.202	n/a	9/17/2019	13	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-19	3.202	n/a	9/17/2019	7.4	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-20	3.202	n/a	9/17/2019	11	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-21	3.202	n/a	9/17/2019	10	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-22	3.202	n/a	9/18/2019	10	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-23	3.202	n/a	9/18/2019	9.7	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-7	3.202	n/a	9/17/2019	3.8	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-8	3.202	n/a	9/17/2019	12	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Chloride (mg/L)	SGWC-9	3.202	n/a	9/16/2019	14	Yes	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
Fluoride (mg/L)	SGWC-7	0.15	n/a	9/17/2019	0.2	Yes	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-8	0.15	n/a	9/17/2019	0.47	Yes	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
pH (S.U.)	SGWC-15	7.087	5.241	9/17/2019	4.65	Yes	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-18	7.087	5.241	9/17/2019	4.77	Yes	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-20	7.087	5.241	9/17/2019	4.37	Yes	76	0	None	No	0.000209	Param Inter 1 of 2
Sulfate (mg/L)	SGWC-12	3.75	n/a	9/16/2019	44	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-13	3.75	n/a	9/17/2019	79	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-14	3.75	n/a	9/17/2019	200	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-15	3.75	n/a	9/17/2019	220	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 11/11/2019, 4:04 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Sulfate (mg/L)	SGWC-16	3.75	n/a	9/17/2019	33	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-17	3.75	n/a	9/17/2019	200	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-18	3.75	n/a	9/17/2019	1100	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-19	3.75	n/a	9/17/2019	260	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-20	3.75	n/a	9/17/2019	220	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-21	3.75	n/a	9/17/2019	99	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-22	3.75	n/a	9/18/2019	100	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-23	3.75	n/a	9/18/2019	95	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-7	3.75	n/a	9/17/2019	8.7	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-8	3.75	n/a	9/17/2019	77	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-9	3.75	n/a	9/16/2019	310	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Total Dissolved Solids (mg/L)	SGWC-14	200	n/a	9/17/2019	310	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-15	200	n/a	9/17/2019	320	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-17	200	n/a	9/17/2019	380	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-18	200	n/a	9/17/2019	1600	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-19	200	n/a	9/17/2019	400	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-20	200	n/a	9/17/2019	320	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-21	200	n/a	9/17/2019	290	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-22	200	n/a	9/18/2019	470	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-23	200	n/a	9/18/2019	490	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-8	200	n/a	9/17/2019	380	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-9	200	n/a	9/16/2019	550	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 11/11/2019, 4:04 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	SGWC-10	0.089	n/a	9/17/2019	0.077	No	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Boron (mg/L)</b>	<b>SGWC-11</b>	<b>0.089</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>0.39</b>	<b>Yes</b>	<b>78</b>	<b>93.59</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
Boron (mg/L)	SGWC-12	0.089	n/a	9/16/2019	0.0195ND	No	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Boron (mg/L)</b>	<b>SGWC-13</b>	<b>0.089</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>0.43</b>	<b>Yes</b>	<b>78</b>	<b>93.59</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
Boron (mg/L)	SGWC-14	0.089	n/a	9/17/2019	1.4	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-15	0.089	n/a	9/17/2019	1.4	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-16	0.089	n/a	9/17/2019	0.55	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-17	0.089	n/a	9/17/2019	0.43	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-18	0.089	n/a	9/17/2019	5	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-19	0.089	n/a	9/17/2019	1.8	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-20	0.089	n/a	9/17/2019	1.8	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-21	0.089	n/a	9/17/2019	1.1	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-22	0.089	n/a	9/18/2019	0.52	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-23	0.089	n/a	9/18/2019	0.54	Yes	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-6	0.089	n/a	9/16/2019	0.04	No	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Boron (mg/L)	SGWC-7	0.089	n/a	9/17/2019	0.0195ND	No	78	93.59	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Boron (mg/L)</b>	<b>SGWC-8</b>	<b>0.089</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>0.11</b>	<b>Yes</b>	<b>78</b>	<b>93.59</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Boron (mg/L)</b>	<b>SGWC-9</b>	<b>0.089</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>1.6</b>	<b>Yes</b>	<b>78</b>	<b>93.59</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
Calcium (mg/L)	SGWC-10	19	n/a	9/17/2019	0.79	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-11	19	n/a	9/16/2019	1.9	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
<b>Calcium (mg/L)</b>	<b>SGWC-12</b>	<b>19</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>23</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
Calcium (mg/L)	SGWC-13	19	n/a	9/17/2019	17	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
<b>Calcium (mg/L)</b>	<b>SGWC-14</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>38</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
Calcium (mg/L)	SGWC-15	19	n/a	9/17/2019	17	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-16	19	n/a	9/17/2019	1	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
<b>Calcium (mg/L)</b>	<b>SGWC-17</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>51</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Calcium (mg/L)</b>	<b>SGWC-18</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>87</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Calcium (mg/L)</b>	<b>SGWC-19</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>44</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
Calcium (mg/L)	SGWC-20	19	n/a	9/17/2019	14	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
<b>Calcium (mg/L)</b>	<b>SGWC-21</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>30</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Calcium (mg/L)</b>	<b>SGWC-22</b>	<b>19</b>	<b>n/a</b>	<b>9/18/2019</b>	<b>27</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Calcium (mg/L)</b>	<b>SGWC-23</b>	<b>19</b>	<b>n/a</b>	<b>9/18/2019</b>	<b>26</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
Calcium (mg/L)	SGWC-6	19	n/a	9/16/2019	8.9	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
Calcium (mg/L)	SGWC-7	19	n/a	9/17/2019	16	No	75	0	n/a	n/a	0.000...	NP Inter (normality) ...
<b>Calcium (mg/L)</b>	<b>SGWC-8</b>	<b>19</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>52</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Calcium (mg/L)</b>	<b>SGWC-9</b>	<b>19</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>56</b>	<b>Yes</b>	<b>75</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (normality) ...</b>
<b>Chloride (mg/L)</b>	<b>SGWC-10</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>9.7</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-11</b>	<b>3.202</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>7.9</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-12</b>	<b>3.202</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>9.3</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-13</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>8.4</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-14</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>11</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-15</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>10</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-16</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>8.4</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-17</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>8.3</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-18</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>13</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-19</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>7.4</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-20</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>11</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-21</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>10</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-22</b>	<b>3.202</b>	<b>n/a</b>	<b>9/18/2019</b>	<b>10</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-23</b>	<b>3.202</b>	<b>n/a</b>	<b>9/18/2019</b>	<b>9.7</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>

# Prediction Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 11/11/2019, 4:04 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Chloride (mg/L)	SGWC-6	3.202	n/a	9/16/2019	1.9	No	76	0	None	ln(x)	0.000418	Param Inter 1 of 2
<b>Chloride (mg/L)</b>	<b>SGWC-7</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>3.8</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-8</b>	<b>3.202</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>12</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
<b>Chloride (mg/L)</b>	<b>SGWC-9</b>	<b>3.202</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>14</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>ln(x)</b>	<b>0.000418</b>	<b>Param Inter 1 of 2</b>
Fluoride (mg/L)	SGWC-10	0.15	n/a	9/17/2019	0.013ND	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-11	0.15	n/a	9/16/2019	0.013ND	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-12	0.15	n/a	9/16/2019	0.065	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-13	0.15	n/a	9/17/2019	0.04	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-14	0.15	n/a	9/17/2019	0.028	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-15	0.15	n/a	9/17/2019	0.1	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-16	0.15	n/a	9/17/2019	0.013ND	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-17	0.15	n/a	9/17/2019	0.047	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-18	0.15	n/a	9/17/2019	0.034	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-19	0.15	n/a	9/17/2019	0.013ND	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-20	0.15	n/a	9/17/2019	0.14	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-21	0.15	n/a	9/17/2019	0.077	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-22	0.15	n/a	9/18/2019	0.028	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-23	0.15	n/a	9/18/2019	0.044	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	SGWC-6	0.15	n/a	9/16/2019	0.099	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Fluoride (mg/L)</b>	<b>SGWC-7</b>	<b>0.15</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>0.2</b>	<b>Yes</b>	<b>90</b>	<b>70</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Fluoride (mg/L)</b>	<b>SGWC-8</b>	<b>0.15</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>0.47</b>	<b>Yes</b>	<b>90</b>	<b>70</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
Fluoride (mg/L)	SGWC-9	0.15	n/a	9/16/2019	0.057	No	90	70	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
pH (S.U.)	SGWC-10	7.087	5.241	9/17/2019	5.31	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-11	7.087	5.241	9/16/2019	5.32	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-12	7.087	5.241	9/16/2019	6.18	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-13	7.087	5.241	9/17/2019	5.98	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-14	7.087	5.241	9/17/2019	5.78	No	76	0	None	No	0.000209	Param Inter 1 of 2
<b>pH (S.U.)</b>	<b>SGWC-15</b>	<b>7.087</b>	<b>5.241</b>	<b>9/17/2019</b>	<b>4.65</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.000209</b>	<b>Param Inter 1 of 2</b>
pH (S.U.)	SGWC-16	7.087	5.241	9/17/2019	5.26	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-17	7.087	5.241	9/17/2019	6.23	No	76	0	None	No	0.000209	Param Inter 1 of 2
<b>pH (S.U.)</b>	<b>SGWC-18</b>	<b>7.087</b>	<b>5.241</b>	<b>9/17/2019</b>	<b>4.77</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.000209</b>	<b>Param Inter 1 of 2</b>
pH (S.U.)	SGWC-19	7.087	5.241	9/17/2019	5.55	No	76	0	None	No	0.000209	Param Inter 1 of 2
<b>pH (S.U.)</b>	<b>SGWC-20</b>	<b>7.087</b>	<b>5.241</b>	<b>9/17/2019</b>	<b>4.37</b>	<b>Yes</b>	<b>76</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.000209</b>	<b>Param Inter 1 of 2</b>
pH (S.U.)	SGWC-21	7.087	5.241	9/17/2019	6.27	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-22	7.087	5.241	9/18/2019	5.66	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-23	7.087	5.241	9/18/2019	5.97	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-6	7.087	5.241	9/16/2019	6.26	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-7	7.087	5.241	9/17/2019	6.41	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-8	7.087	5.241	9/17/2019	6.5	No	76	0	None	No	0.000209	Param Inter 1 of 2
pH (S.U.)	SGWC-9	7.087	5.241	9/16/2019	6.11	No	76	0	None	No	0.000209	Param Inter 1 of 2
Sulfate (mg/L)	SGWC-10	3.75	n/a	9/17/2019	2.3	No	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-11	3.75	n/a	9/16/2019	0.72	No	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
<b>Sulfate (mg/L)</b>	<b>SGWC-12</b>	<b>3.75</b>	<b>n/a</b>	<b>9/16/2019</b>	<b>44</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-13</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>79</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-14</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>200</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-15</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>220</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-16</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>33</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-17</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>200</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-18</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>1100</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>
<b>Sulfate (mg/L)</b>	<b>SGWC-19</b>	<b>3.75</b>	<b>n/a</b>	<b>9/17/2019</b>	<b>260</b>	<b>Yes</b>	<b>78</b>	<b>55.13</b>	<b>n/a</b>	<b>n/a</b>	<b>0.000...</b>	<b>NP Inter (NDs) 1 of 2</b>

# Prediction Limit

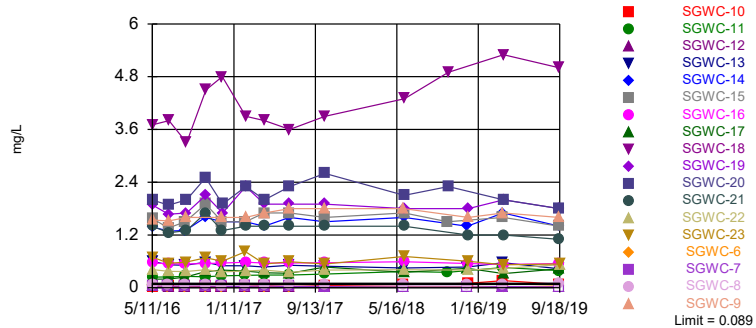
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 11/11/2019, 4:04 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	ND Adj.	Transform	Alpha	Method
Sulfate (mg/L)	SGWC-20	3.75	n/a	9/17/2019	220	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-21	3.75	n/a	9/17/2019	99	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-22	3.75	n/a	9/18/2019	100	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-23	3.75	n/a	9/18/2019	95	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-6	3.75	n/a	9/16/2019	0.53	No	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-7	3.75	n/a	9/17/2019	8.7	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-8	3.75	n/a	9/17/2019	77	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	SGWC-9	3.75	n/a	9/16/2019	310	Yes	78	55.13	n/a	n/a	0.000...	NP Inter (NDs) 1 of 2
Total Dissolved Solids (mg/L)	SGWC-10	200	n/a	9/17/2019	17	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-11	200	n/a	9/16/2019	5ND	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-12	200	n/a	9/16/2019	200	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-13	200	n/a	9/17/2019	170	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-14	200	n/a	9/17/2019	310	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-15	200	n/a	9/17/2019	320	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-16	200	n/a	9/17/2019	59	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-17	200	n/a	9/17/2019	380	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-18	200	n/a	9/17/2019	1600	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-19	200	n/a	9/17/2019	400	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-20	200	n/a	9/17/2019	320	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-21	200	n/a	9/17/2019	290	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-22	200	n/a	9/18/2019	470	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-23	200	n/a	9/18/2019	490	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-6	200	n/a	9/16/2019	76	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-7	200	n/a	9/17/2019	140	No	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-8	200	n/a	9/17/2019	380	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...
Total Dissolved Solids (mg/L)	SGWC-9	200	n/a	9/16/2019	550	Yes	78	2.564	n/a	n/a	0.000...	NP Inter (normality) ...

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Hollow symbols indicate censored values.

Exceeds Limit: SGWC-11, SGWC-13,  
SGWC-14, SGWC-15, SGWC-16, SGWC-17

Prediction Limit  
Interwell Non-parametric



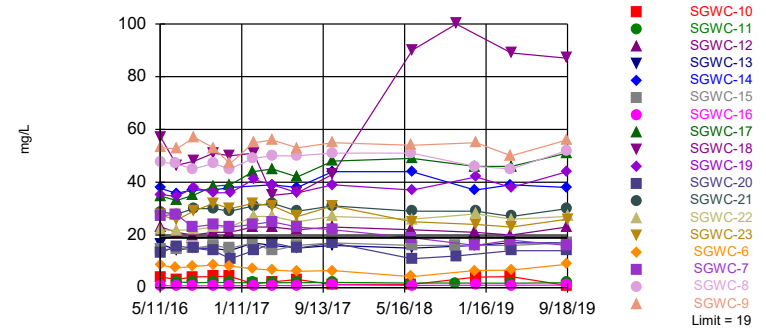
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 78 background values. 93.59% NDs. Annual per-constituent alpha = 0.01113. Individual comparison alpha = 0.0003109 (1 of 2). Comparing 18 points to limit.

Constituent: Boron Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

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Exceeds Limit: SGWC-12, SGWC-14,  
SGWC-17, SGWC-18, SGWC-19, SGWC-21

Prediction Limit  
Interwell Non-parametric



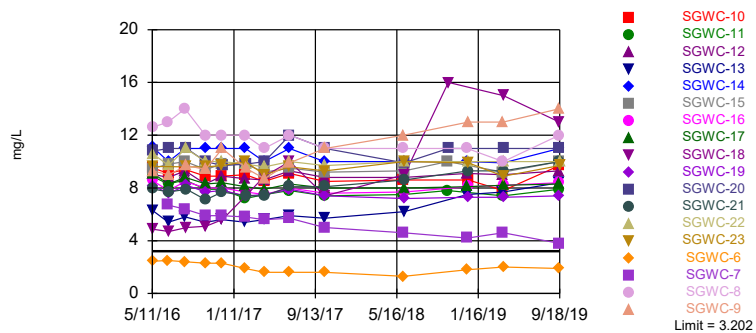
Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 75 background values. Annual per-constituent alpha = 0.01204. Individual comparison alpha = 0.0003365 (1 of 2). Comparing 18 points to limit.

Constituent: Calcium Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

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Exceeds Limit: SGWC-10, SGWC-11,  
SGWC-12, SGWC-13, SGWC-14, SGWC-15

Prediction Limit  
Interwell Parametric



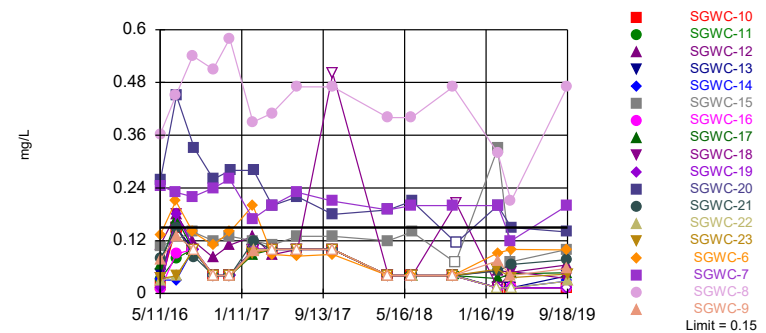
Background Data Summary (based on natural log transformation): Mean=0.5726, Std. Dev.=0.2777, n=76. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9637, critical = 0.957. Kappa = 2.129 (c=7, w=18, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000418. Comparing 18 points to limit.

Constituent: Chloride Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Sanitas™ v.9.6.23 For the statistical analyses of ground water by Golder Associates only. UG

Exceeds Limit: SGWC-7, SGWC-8

Prediction Limit  
Interwell Non-parametric



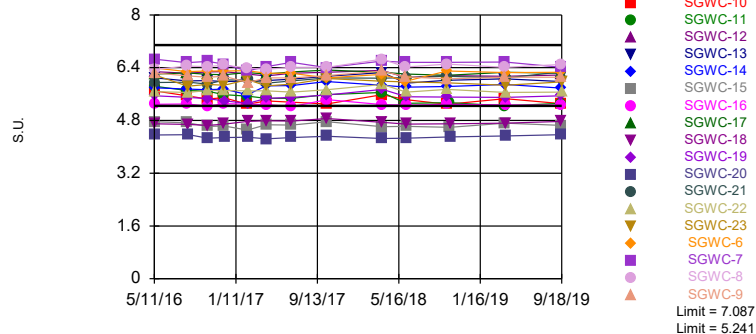
Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 90 background values. 70% NDs. Annual per-constituent alpha = 0.0084. Individual comparison alpha = 0.0002343 (1 of 2). Comparing 18 points to limit.

Constituent: Fluoride Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Exceeds Limits: SGWC-15, SGWC-18, SGWC-20

Prediction Limit  
Interwell Parametric

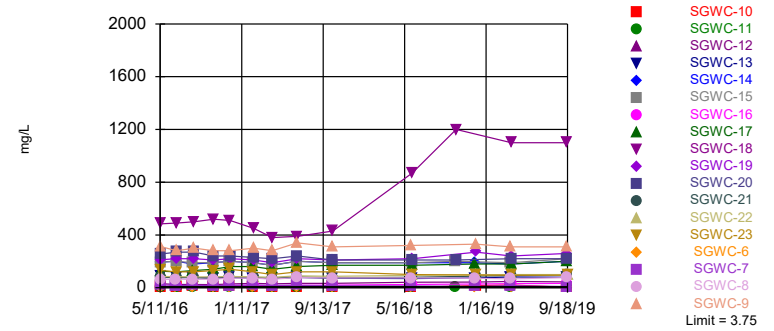


Background Data Summary: Mean=6.164, Std. Dev.=0.4335, n=76. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9586, critical = 0.957. Kappa = 2.129 (c=7, w=18, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000209. Comparing 18 points to limit.

Constituent: pH Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Exceeds Limit: SGWC-12, SGWC-13, SGWC-14, SGWC-15, SGWC-16, SGWC-17

Prediction Limit  
Interwell Non-parametric

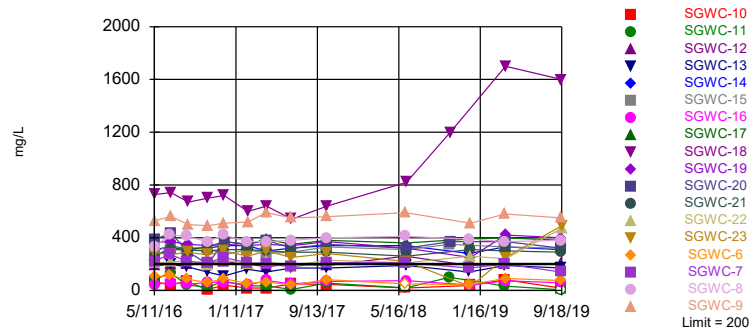


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 78 background values. 55.13% NDs. Annual per-constituent alpha = 0.01113. Individual comparison alpha = 0.0003109 (1 of 2). Comparing 18 points to limit.

Constituent: Sulfate Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Exceeds Limit: SGWC-14, SGWC-15, SGWC-17, SGWC-18, SGWC-19, SGWC-20

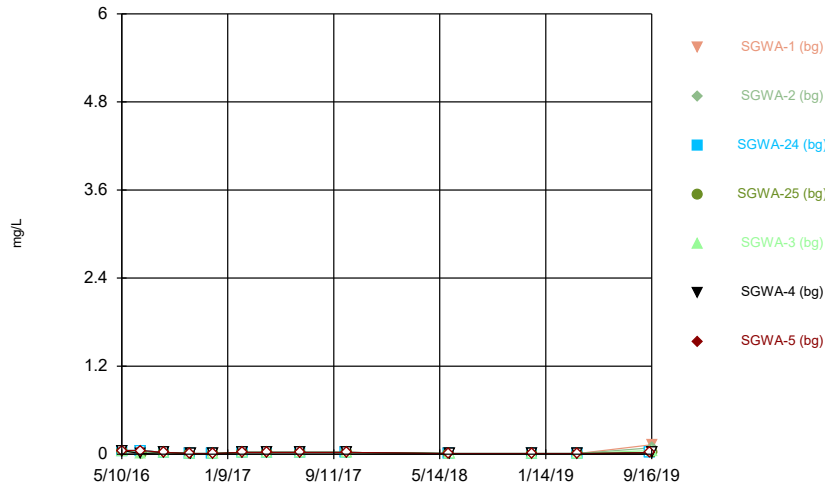
Prediction Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 78 background values. 2.564% NDs. Annual per-constituent alpha = 0.01113. Individual comparison alpha = 0.0003109 (1 of 2). Comparing 18 points to limit.

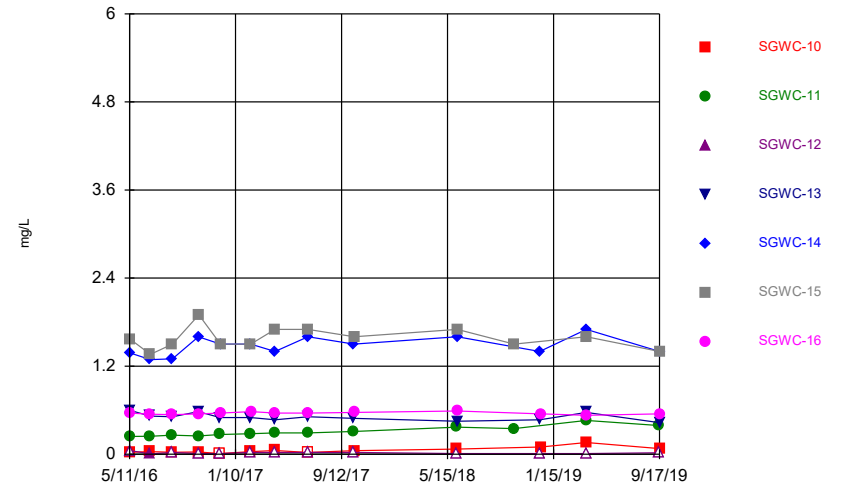
Constituent: Total Dissolved Solids Analysis Run 11/11/2019 3:48 PM View: Ash Pond CCR  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



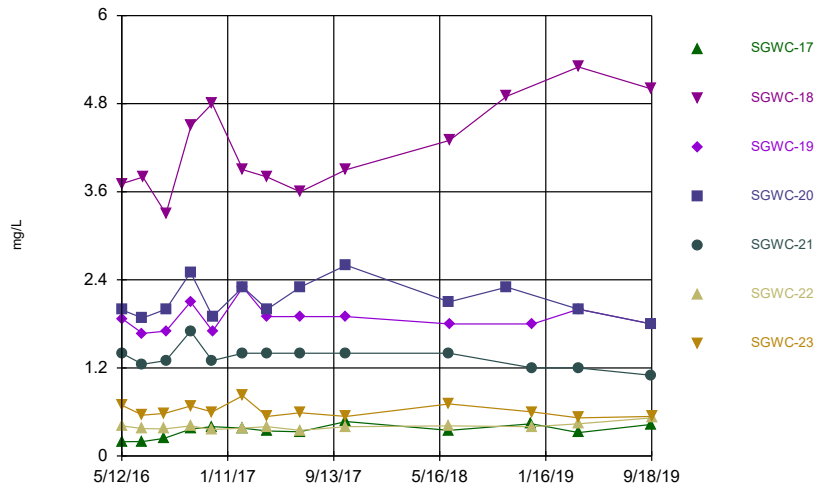
Constituent: Boron Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



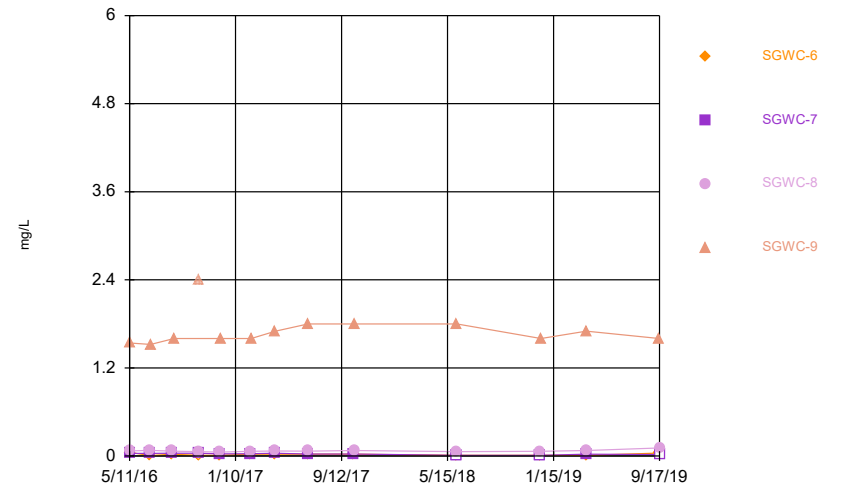
Constituent: Boron Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



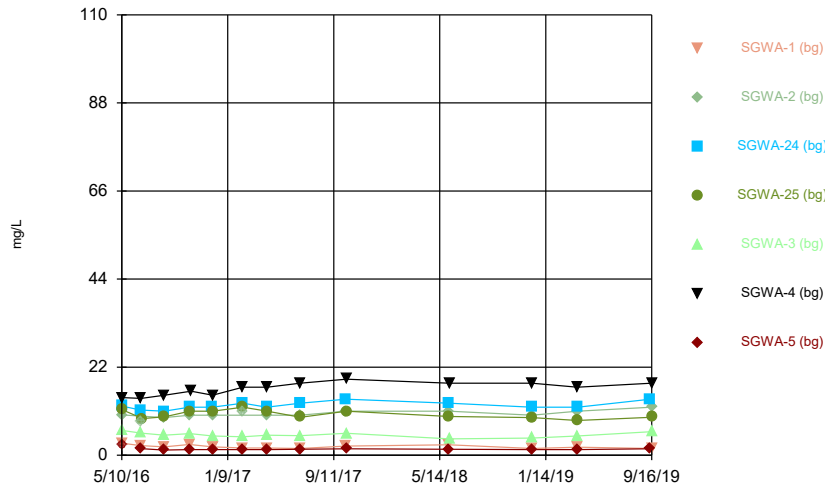
Constituent: Boron Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



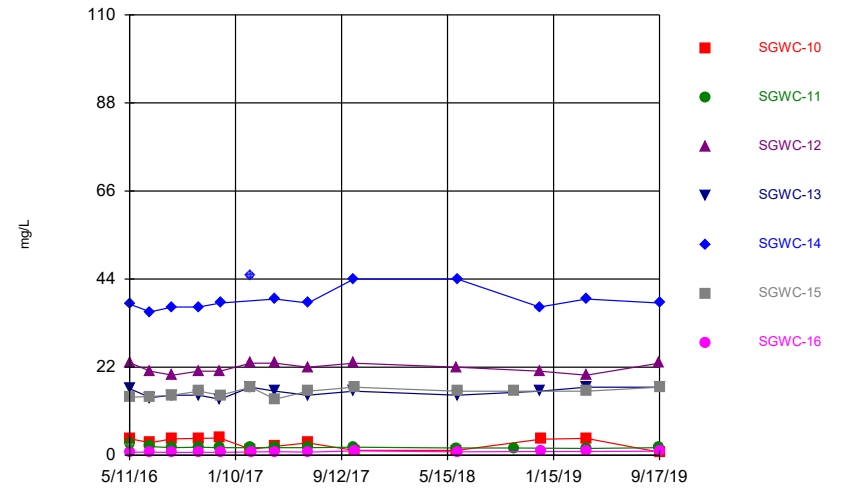
Constituent: Boron Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



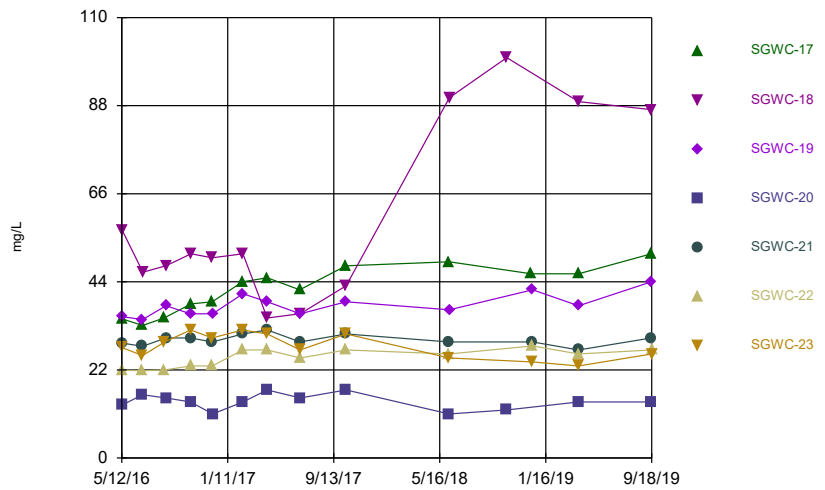
Constituent: Calcium Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



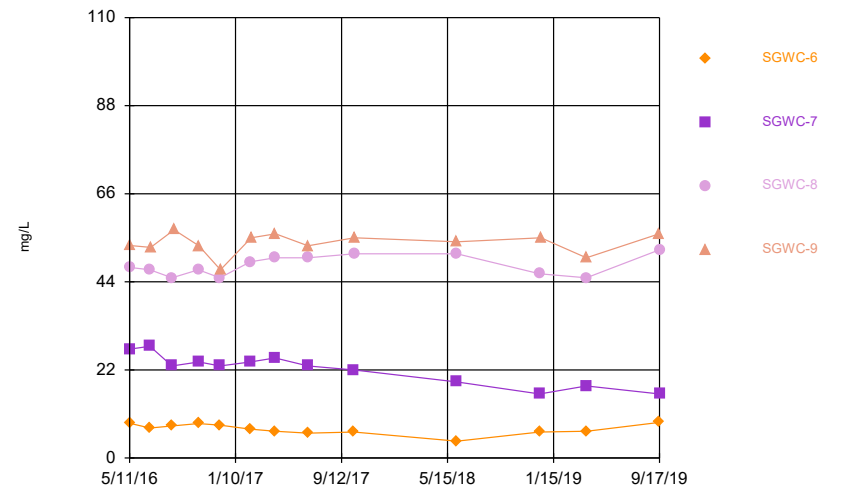
Constituent: Calcium Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



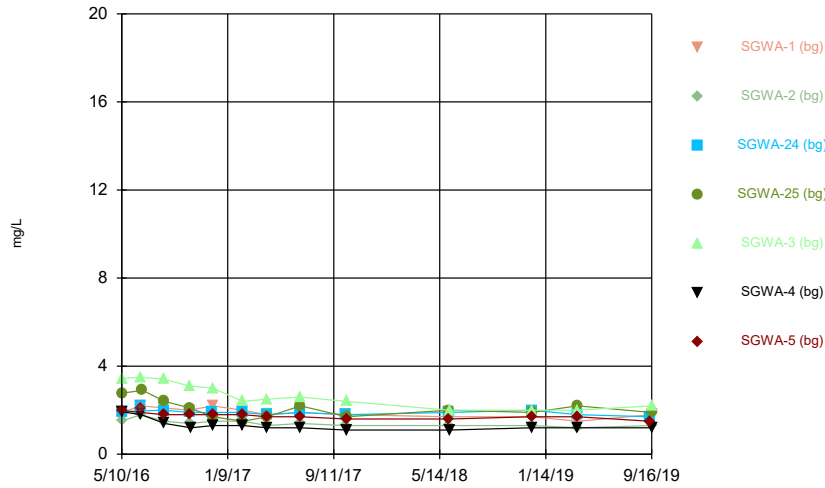
Constituent: Calcium Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



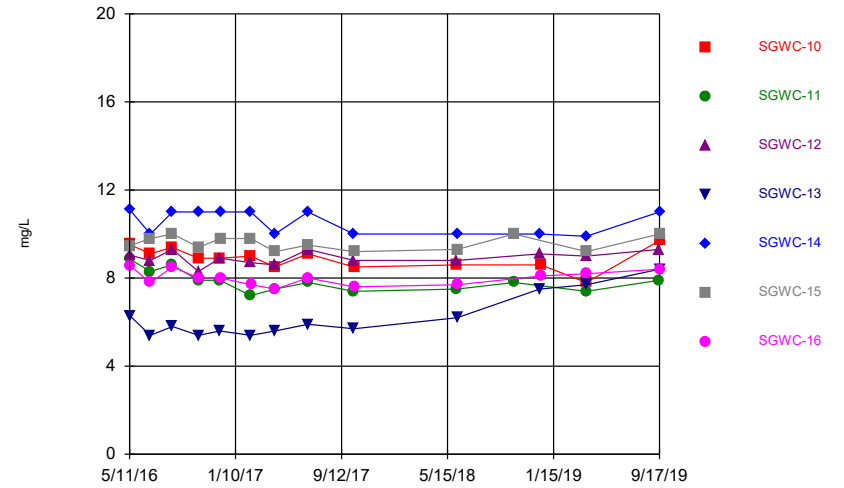
Constituent: Calcium Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



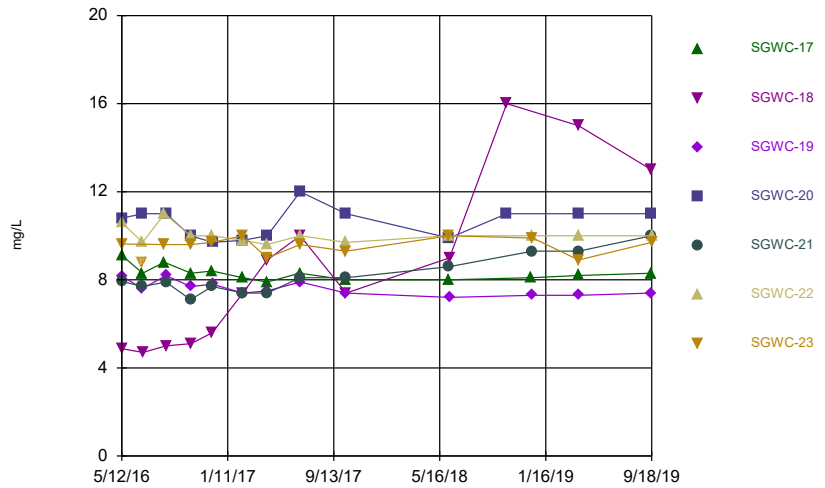
Constituent: Chloride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



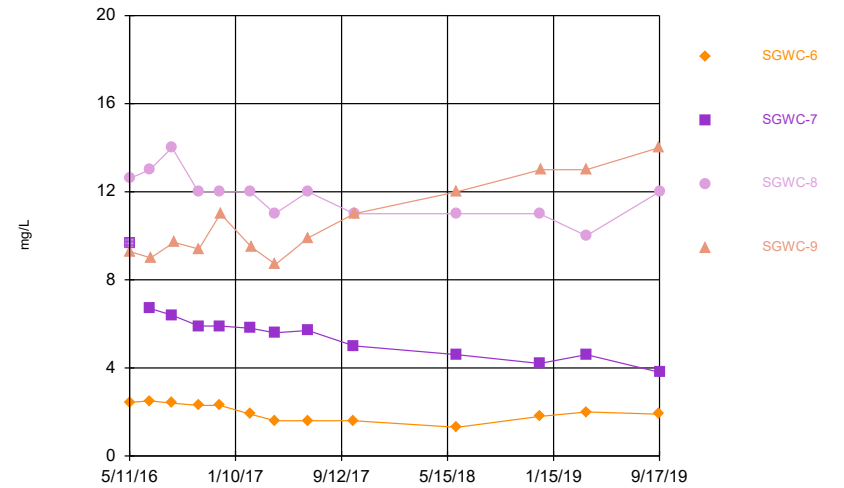
Constituent: Chloride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



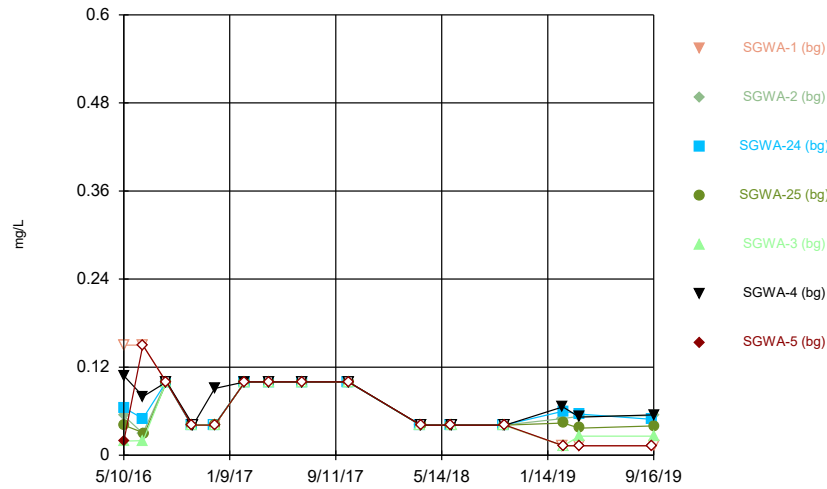
Constituent: Chloride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



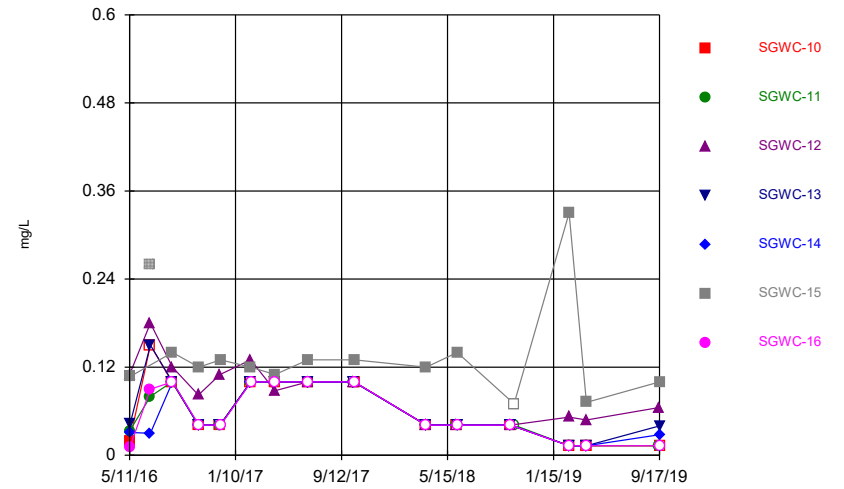
Constituent: Chloride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



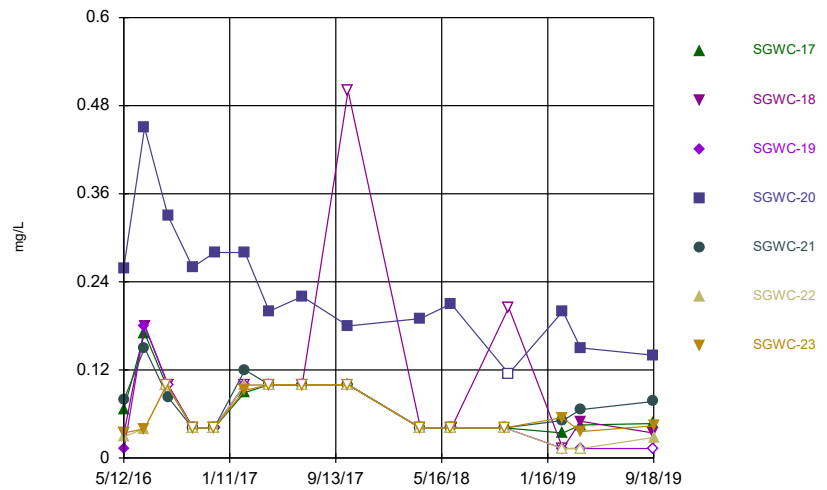
Constituent: Fluoride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



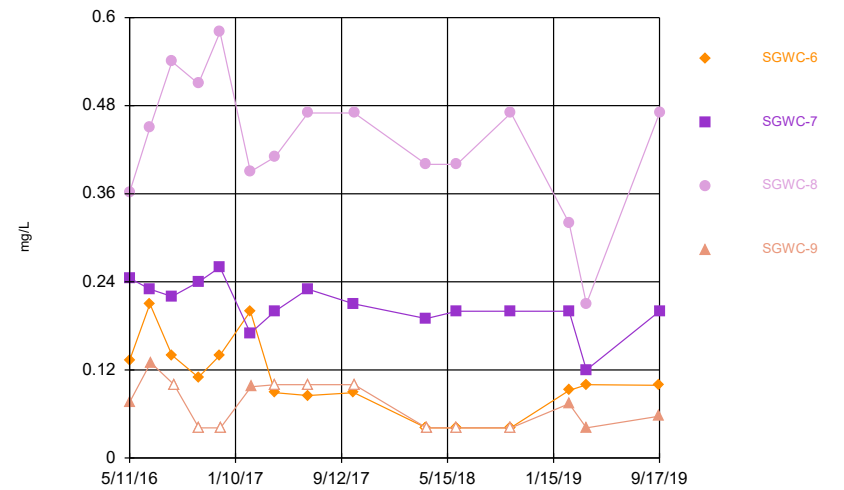
Constituent: Fluoride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



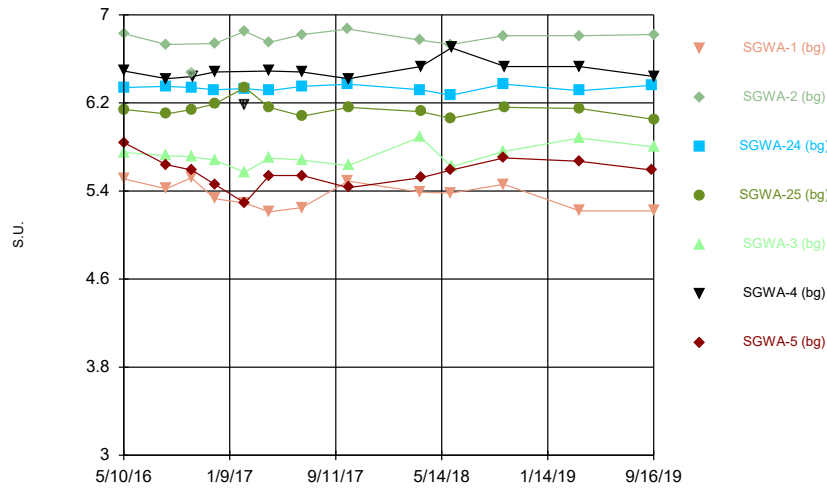
Constituent: Fluoride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



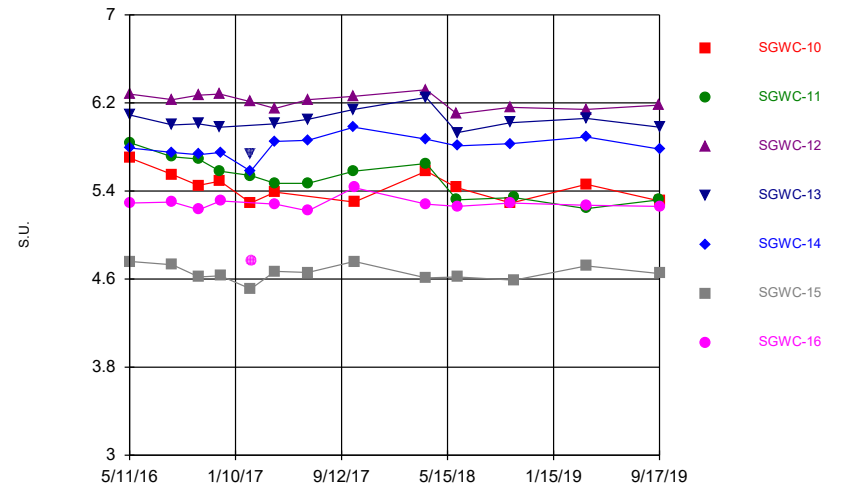
Constituent: Fluoride Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



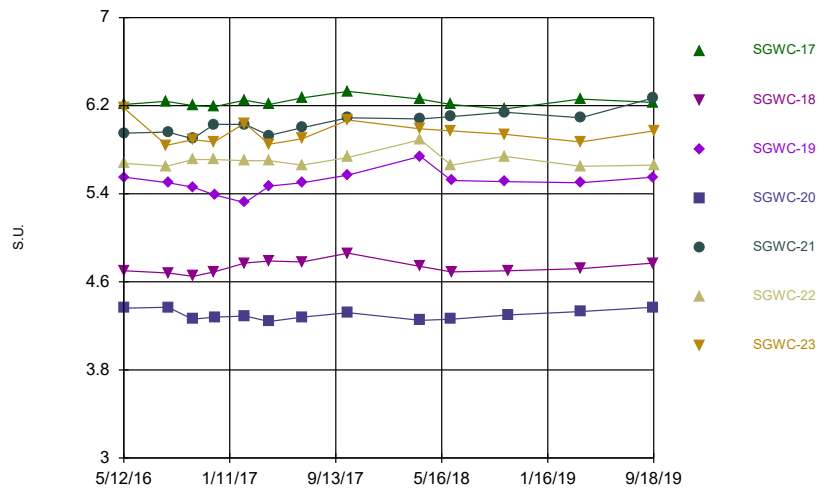
Constituent: pH Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



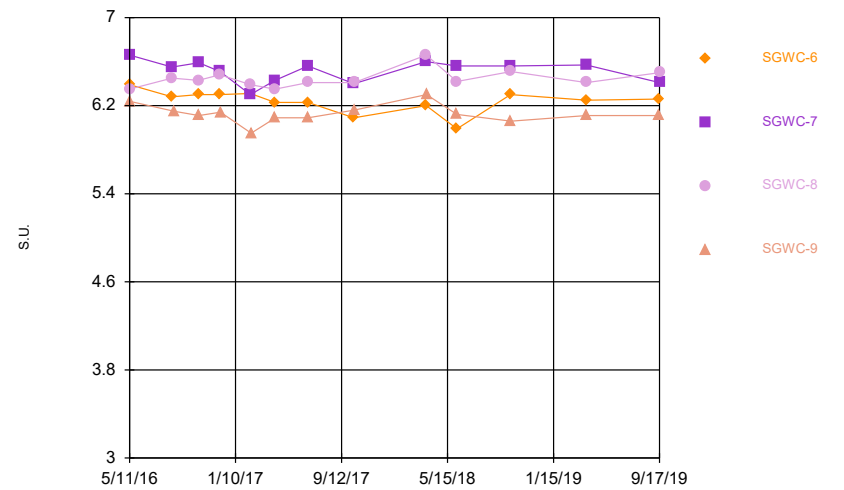
Constituent: pH Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



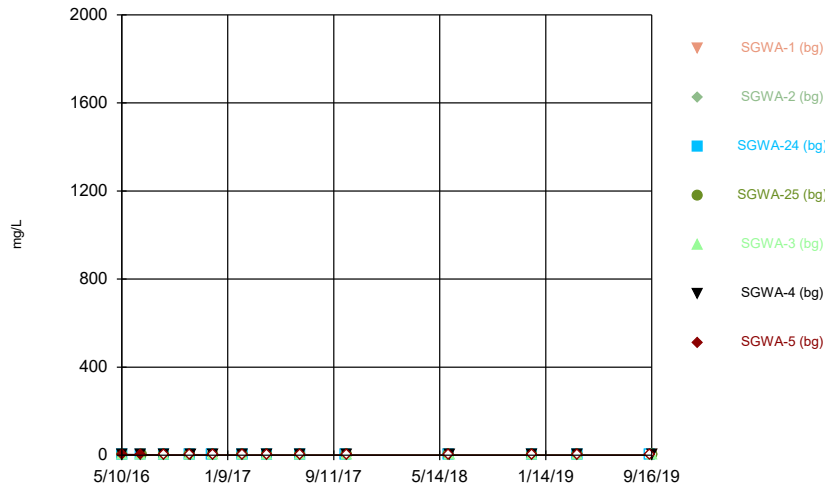
Constituent: pH Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



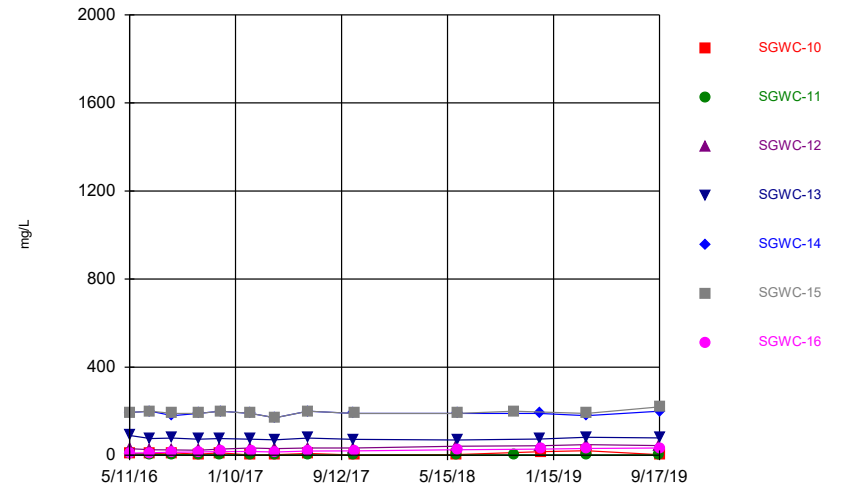
Constituent: pH Analysis Run 11/4/2019 9:56 PM View: App III  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



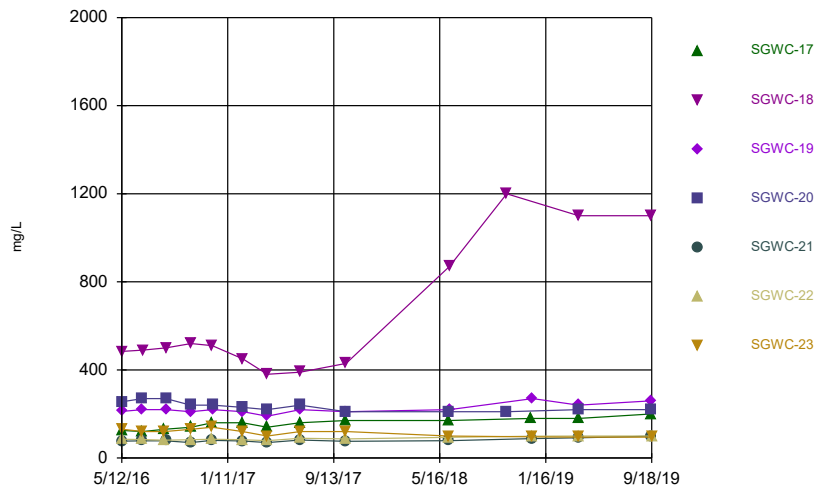
Constituent: Sulfate Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



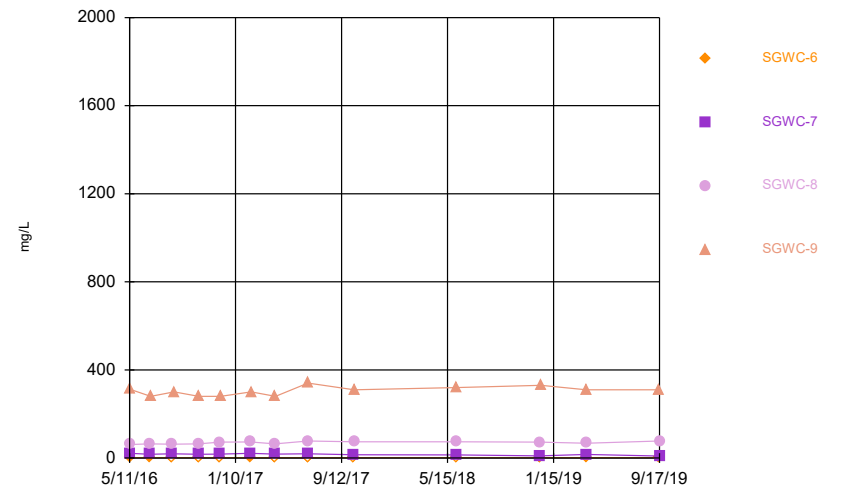
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



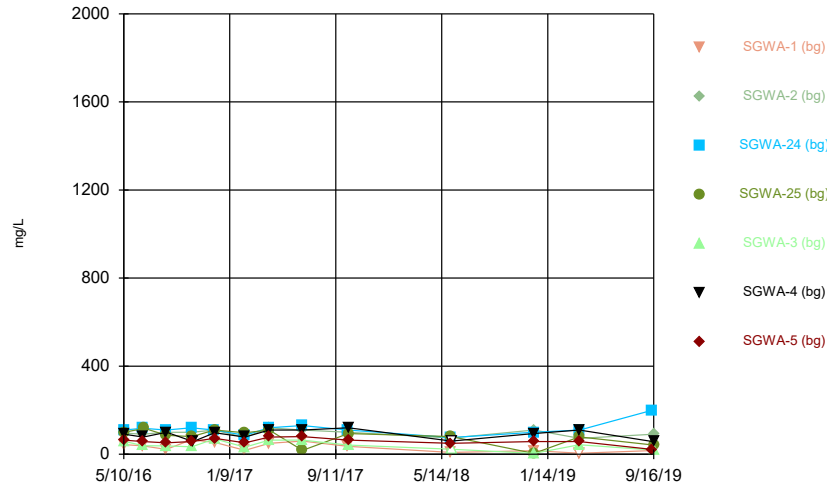
Constituent: Sulfate Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



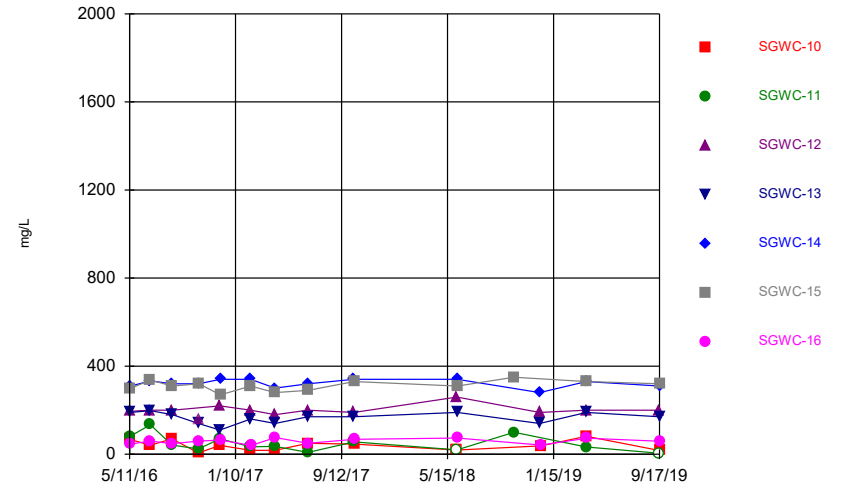
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



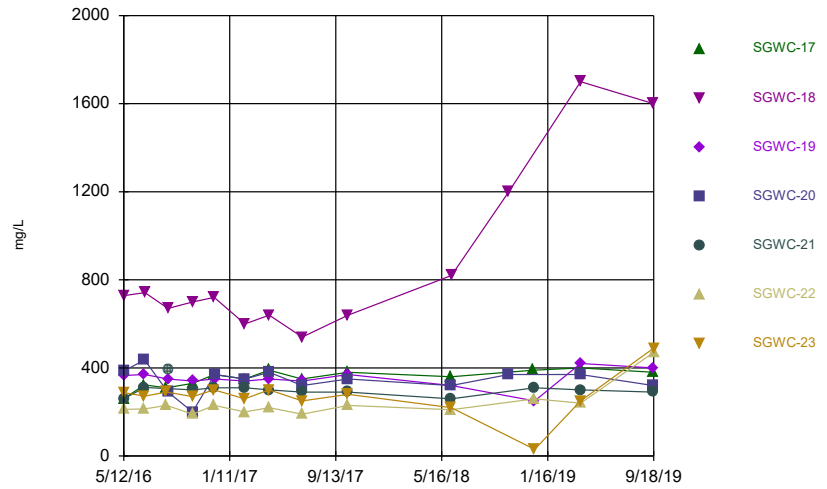
Constituent: Total Dissolved Solids Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



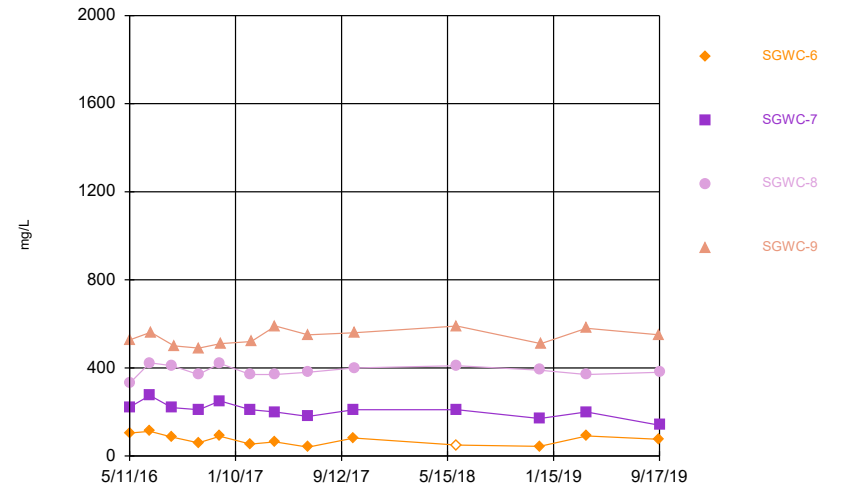
Constituent: Total Dissolved Solids Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Total Dissolved Solids Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Total Dissolved Solids Analysis Run 11/4/2019 9:56 PM View: App III  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

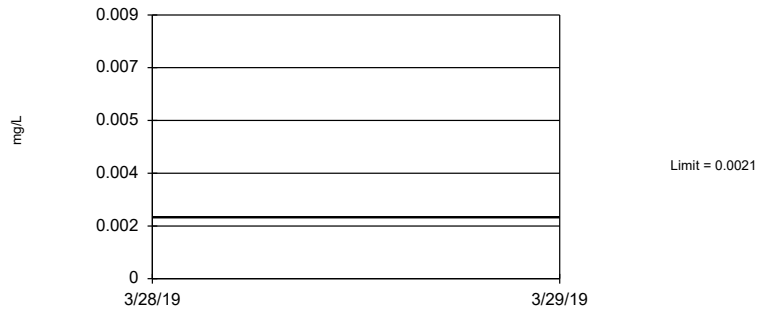


# Tolerance Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:34 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	n/a	0.0021	n/a	n/a	n/a	83	92.77	n/a	0.01416	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0025	n/a	n/a	n/a	98	79.59	n/a	0.00656	NP Inter(NDs)
Barium (mg/L)	n/a	0.06392	n/a	n/a	n/a	98	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0015	n/a	n/a	n/a	98	97.96	n/a	0.00656	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.00125	n/a	n/a	n/a	91	97.8	n/a	0.009394	NP Inter(NDs)
Chromium (mg/L)	n/a	0.019	n/a	n/a	n/a	98	32.65	n/a	0.00656	NP Inter(normal...
Cobalt (mg/L)	n/a	0.02	n/a	n/a	n/a	97	63.92	n/a	0.006905	NP Inter(normal...
Combined Radium 226 + 228 (pCi/L)	n/a	1.2	n/a	n/a	n/a	97	13.4	n/a	0.006905	NP Inter(normal...
Fluoride (mg/L)	n/a	0.15	n/a	n/a	n/a	105	74.29	n/a	0.004581	NP Inter(normal...
Lead (mg/L)	n/a	0.0025	n/a	n/a	n/a	98	96.94	n/a	0.00656	NP Inter(NDs)
Lithium (mg/L)	n/a	0.025	n/a	n/a	n/a	98	89.8	n/a	0.00656	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00025	n/a	n/a	n/a	98	89.8	n/a	0.00656	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.0075	n/a	n/a	n/a	91	89.01	n/a	0.009394	NP Inter(NDs)
Selenium (mg/L)	n/a	0.005	n/a	n/a	n/a	98	95.92	n/a	0.00656	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0005	n/a	n/a	n/a	98	96.94	n/a	0.00656	NP Inter(NDs)

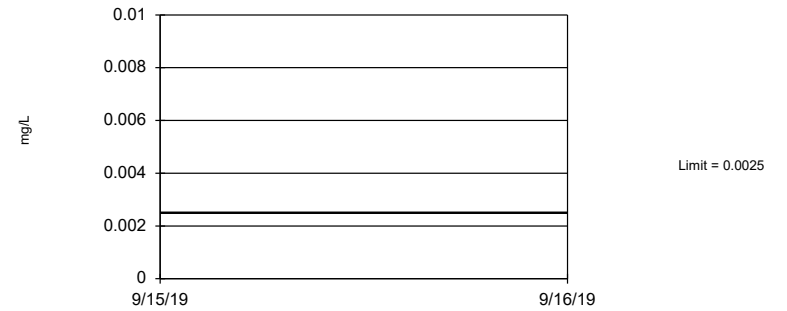
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 83 background values. 92.77% NDs. 94.73% coverage at alpha=0.01; 96.29% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.01416.

Constituent: Antimony Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 79.59% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Arsenic Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

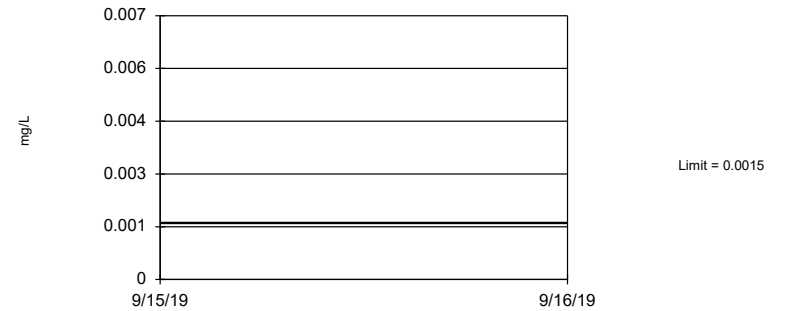
Tolerance Limit  
Interwell Parametric



95% coverage. Background Data Summary: Mean=0.03347, Std. Dev.=0.0158, n=98. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9693, critical = 0.966. Report alpha = 0.05.

Constituent: Barium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

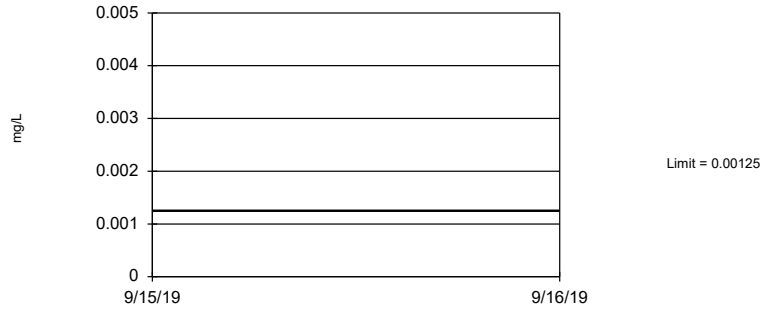
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 97.96% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Beryllium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

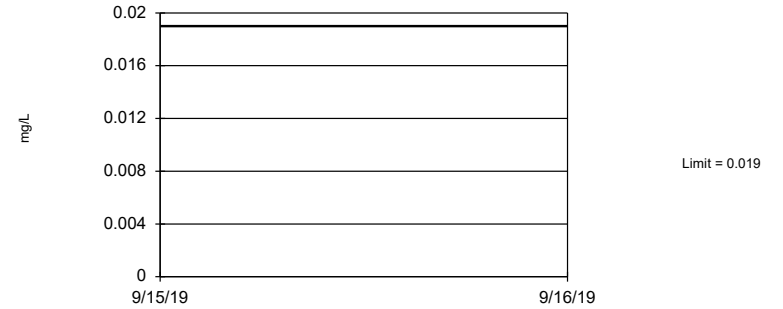
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 97.8% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Cadmium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

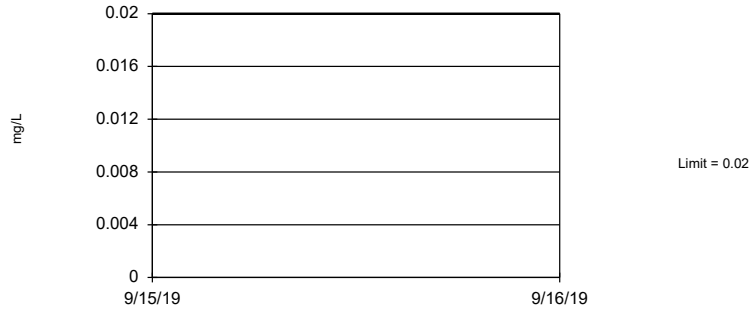
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 98 background values. 32.65% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Chromium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

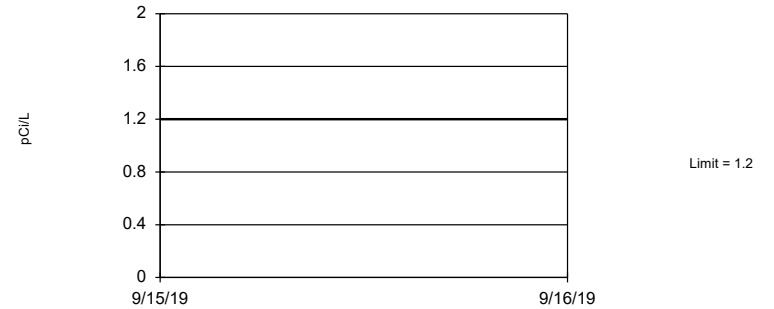
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 97 background values. 63.92% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.006905.

Constituent: Cobalt Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

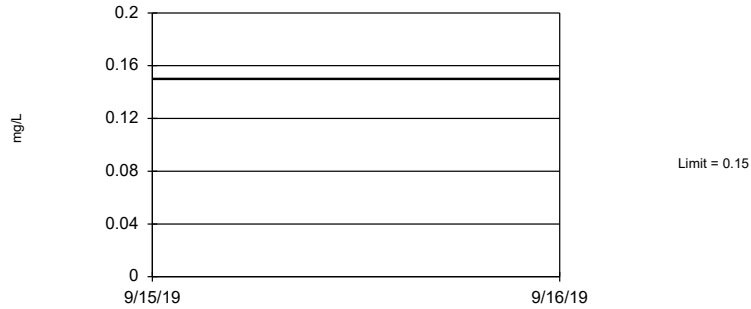
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 97 background values. 13.4% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.006905.

Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Lim  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

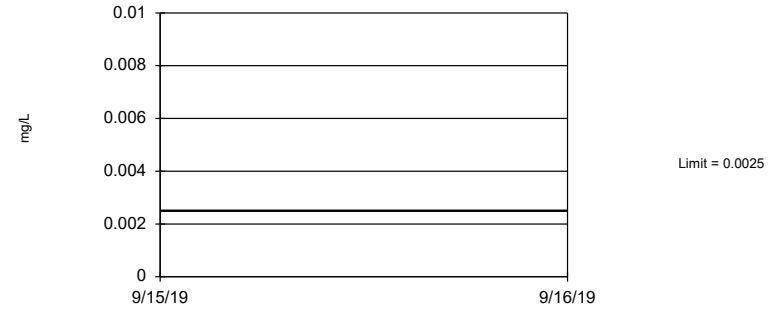
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 105 background values. 74.29% NDs. 95.9% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.004581.

Constituent: Fluoride Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

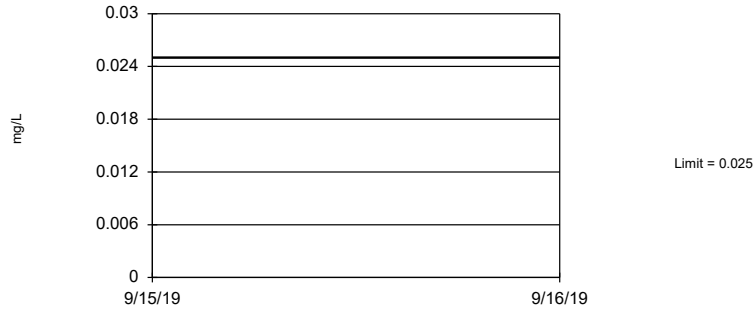
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 96.94% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Lead Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

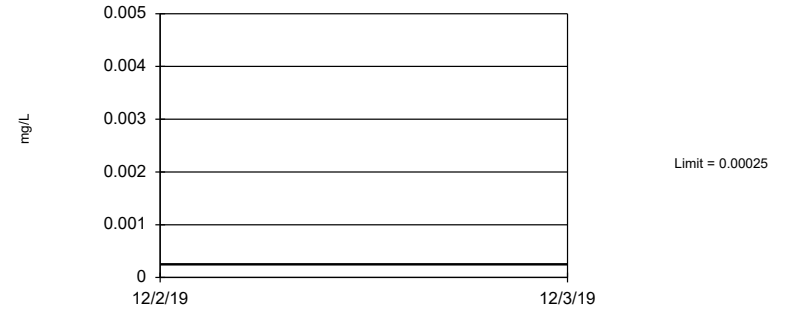
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 89.8% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Lithium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

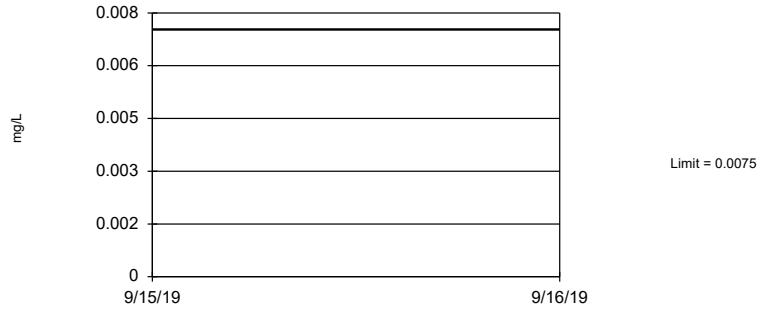
Tolerance Limit  
Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 89.8% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Mercury Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 91 background values. 89.01% NDs. 95.12% coverage at alpha=0.01; 96.68% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.009394.

Constituent: Molybdenum Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

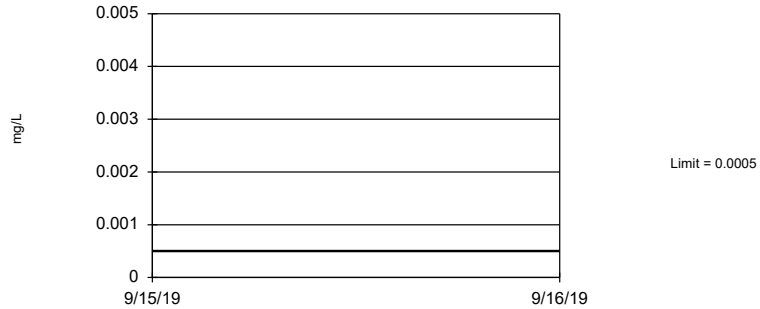
### Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 95.92% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Selenium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 75%. Limit is highest of 98 background values. 96.94% NDs. 95.51% coverage at alpha=0.01; 97.07% coverage at alpha=0.05; 99.41% coverage at alpha=0.5. Report alpha = 0.00656.

Constituent: Thallium Analysis Run 1/13/2020 3:32 PM View: Interwell Tolerance Limits  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:43 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Cobalt (mg/L)	SGWC-11	0.03107	0.02436	0.02	Yes	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-15	0.2795	0.2579	0.02	Yes	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-18	0.1702	0.1137	0.02	Yes	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-20	0.2369	0.1718	0.02	Yes	14	0	No	0.01	Param.

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:43 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	SGWA-1 (bg)	0.0015	0.0004	0.006	No	12	83.33	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-2 (bg)	0.0015	0.00019	0.006	No	12	100	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-24 (bg)	0.0015	0.0003	0.006	No	12	91.67	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-25 (bg)	0.0015	0.0003	0.006	No	12	91.67	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-3 (bg)	0.0015	0.00019	0.006	No	12	91.67	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-4 (bg)	0.0015	0.00019	0.006	No	12	91.67	No	0.01	NP (NDs)
Antimony (mg/L)	SGWA-5 (bg)	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-10	0.0014	0.0005	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-11	0.0015	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-12	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-13	0.00125	0.0004	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-14	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-15	0.0015	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-16	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-17	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-18	0.00125	0.0005	0.006	No	10	90	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-19	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-20	0.0015	0.0005	0.006	No	10	100	No	0.011	NP (NDs)
Antimony (mg/L)	SGWC-21	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-22	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-23	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-6	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-7	0.00125	0.0004	0.006	No	11	90.91	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-8	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Antimony (mg/L)	SGWC-9	0.0015	0.0005	0.006	No	11	100	No	0.006	NP (NDs)
Arsenic (mg/L)	SGWA-1 (bg)	0.00081	0.00016	0.01	No	14	78.57	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWA-2 (bg)	0.00089	0.00016	0.01	No	14	78.57	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWA-24 (bg)	0.0009	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWA-25 (bg)	0.0015	0.00023	0.01	No	14	42.86	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWA-3 (bg)	0.0025	0.00016	0.01	No	14	92.86	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWA-4 (bg)	0.0011	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWA-5 (bg)	0.00079	0.00016	0.01	No	14	92.86	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-10	0.00074	0.00016	0.01	No	14	78.57	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-11	0.0011	0.00016	0.01	No	14	35.71	No	0.01	NP (normality)
Arsenic (mg/L)	SGWC-12	0.0011	0.00016	0.01	No	14	50	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-13	0.0014	0.00016	0.01	No	14	71.43	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-14	0.0012	0.00016	0.01	No	14	71.43	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-15	0.004403	0.001005	0.01	No	14	28.57	No	0.01	Param.
Arsenic (mg/L)	SGWC-16	0.0025	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-17	0.001045	0.00016	0.01	No	14	64.29	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-18	0.002643	0.00125	0.01	No	14	0	No	0.01	Param.
Arsenic (mg/L)	SGWC-19	0.00068	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-20	0.001	0.00023	0.01	No	14	64.29	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-21	0.00076	0.00016	0.01	No	14	92.86	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-22	0.00089	0.00016	0.01	No	14	78.57	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-23	0.00079	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-6	0.00065	0.00016	0.01	No	14	85.71	No	0.01	NP (NDs)
Arsenic (mg/L)	SGWC-7	0.00065	0.00016	0.01	No	14	64.29	No	0.01	NP (normality)
Arsenic (mg/L)	SGWC-8	0.001	0.00023	0.01	No	14	64.29	No	0.01	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-9	0.0009	0.00016	0.01	No	14	50	No	0.01	NP (Cohens/xfrm)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:43 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	SGWA-1 (bg)	0.05697	0.04743	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-2 (bg)	0.0402	0.03553	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-24 (bg)	0.02283	0.02028	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-25 (bg)	0.02477	0.02118	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-3 (bg)	0.03644	0.0326	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-4 (bg)	0.05987	0.04978	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWA-5 (bg)	0.01097	0.009769	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-10	0.03308	0.02773	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-11	0.04112	0.03606	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-12	0.04691	0.03459	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-13	0.03367	0.02442	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-14	0.06247	0.05472	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-15	0.04082	0.03525	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-16	0.02359	0.0173	2	No	13	0	sqrt(x)	0.01	Param.
Barium (mg/L)	SGWC-17	0.02141	0.0177	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-18	0.032	0.013	2	No	14	0	No	0.01	NP (normality)
Barium (mg/L)	SGWC-19	0.04375	0.03542	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-20	0.03785	0.02761	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-21	0.09493	0.08946	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-22	0.09513	0.08267	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-23	0.09044	0.07507	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-6	0.09763	0.04884	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-7	0.3153	0.2616	2	No	14	0	No	0.01	Param.
Barium (mg/L)	SGWC-8	0.2	0.16	2	No	14	0	No	0.01	NP (normality)
Barium (mg/L)	SGWC-9	0.07091	0.05497	2	No	14	0	x^2	0.01	Param.
Beryllium (mg/L)	SGWA-1 (bg)	0.00125	0.00008	0.004	No	14	85.71	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-2 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-24 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-25 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-3 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-4 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWA-5 (bg)	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-10	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-11	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-12	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-13	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-14	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-15	0.00042	0.0003	0.004	No	14	21.43	No	0.01	NP (normality)
Beryllium (mg/L)	SGWC-16	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-17	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-18	0.00125	0.00017	0.004	No	14	64.29	No	0.01	NP (normality)
Beryllium (mg/L)	SGWC-19	0.00125	0.00016	0.004	No	14	85.71	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-20	0.0008323	0.000648	0.004	No	14	0	No	0.01	Param.
Beryllium (mg/L)	SGWC-21	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-22	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-23	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-6	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-7	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-8	0.0015	0.00008	0.004	No	14	92.86	No	0.01	NP (NDs)
Beryllium (mg/L)	SGWC-9	0.0015	0.00009	0.004	No	14	100	No	0.01	NP (NDs)



## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:43 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cadmium (mg/L)	SGWA-1 (bg)	0.00125	0.000156	0.005	No	13	92.31	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-2 (bg)	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-24 (bg)	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-25 (bg)	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-3 (bg)	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-4 (bg)	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWA-5 (bg)	0.00125	0.000065	0.005	No	13	92.31	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-10	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-11	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-12	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-13	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-14	0.00125	0.000136	0.005	No	13	92.31	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-15	0.00125	0.00017	0.005	No	13	61.54	No	0.01	NP (normality)
Cadmium (mg/L)	SGWC-16	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-17	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-18	0.00125	0.00016	0.005	No	13	69.23	No	0.01	NP (normality)
Cadmium (mg/L)	SGWC-19	0.00125	0.000065	0.005	No	13	92.31	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-20	0.00125	0.0001	0.005	No	13	84.62	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-21	0.00125	0.000065	0.005	No	13	92.31	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-22	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-23	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-6	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-7	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-8	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Cadmium (mg/L)	SGWC-9	0.00125	0.000065	0.005	No	13	100	No	0.01	NP (NDs)
Chromium (mg/L)	SGWA-1 (bg)	0.005	0.00055	0.1	No	14	64.29	No	0.01	NP (normality)
Chromium (mg/L)	SGWA-2 (bg)	0.01435	0.01105	0.1	No	14	0	x^3	0.01	Param.
Chromium (mg/L)	SGWA-24 (bg)	0.004703	0.003387	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWA-25 (bg)	0.0015	0.00055	0.1	No	14	92.86	No	0.01	NP (NDs)
Chromium (mg/L)	SGWA-3 (bg)	0.01365	0.007659	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWA-4 (bg)	0.006184	0.002926	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWA-5 (bg)	0.0023	0.00055	0.1	No	14	71.43	No	0.01	NP (Cohens/xfrm)
Chromium (mg/L)	SGWC-10	0.005	0.00055	0.1	No	14	100	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-11	0.005	0.00055	0.1	No	14	100	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-12	0.0023	0.00055	0.1	No	14	92.86	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-13	0.0017	0.00055	0.1	No	14	92.86	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-14	0.0016	0.00055	0.1	No	14	64.29	No	0.01	NP (normality)
Chromium (mg/L)	SGWC-15	0.03504	0.03187	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWC-16	0.013	0.0088	0.1	No	14	0	No	0.01	NP (normality)
Chromium (mg/L)	SGWC-17	0.006245	0.003505	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWC-18	0.009085	0.006688	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWC-19	0.01606	0.01411	0.1	No	14	0	No	0.01	Param.
Chromium (mg/L)	SGWC-20	0.0022	0.00055	0.1	No	14	85.71	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-21	0.0015	0.00055	0.1	No	14	78.57	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-22	0.0024	0.00055	0.1	No	14	71.43	No	0.01	NP (normality)
Chromium (mg/L)	SGWC-23	0.003109	0.001664	0.1	No	13	46.15	No	0.01	Param.
Chromium (mg/L)	SGWC-6	0.005	0.00055	0.1	No	14	100	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-7	0.005	0.00055	0.1	No	14	100	No	0.01	NP (NDs)
Chromium (mg/L)	SGWC-8	0.0031	0.0011	0.1	No	14	50	No	0.01	NP (Cohens/xfrm)
Chromium (mg/L)	SGWC-9	0.005	0.00055	0.1	No	14	100	No	0.01	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:43 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	SGWA-1 (bg)	0.01446	0.004215	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWA-2 (bg)	0.00125	0.0000375	0.02	No	14	92.86	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWA-24 (bg)	0.00125	0.00018	0.02	No	14	71.43	No	0.01	NP (Cohens/xfrm)
Cobalt (mg/L)	SGWA-25 (bg)	0.01368	0.007147	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWA-3 (bg)	0.00125	0.0000375	0.02	No	13	92.31	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWA-4 (bg)	0.005	0.0000375	0.02	No	14	92.86	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWA-5 (bg)	0.005	0.0000375	0.02	No	14	100	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWC-10	0.03412	0.01949	0.02	No	14	0	No	0.01	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-11</b>	<b>0.03107</b>	<b>0.02436</b>	<b>0.02</b>	<b>Yes</b>	<b>14</b>	<b>0</b>	<b>No</b>	<b>0.01</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-12	0.004384	0.003222	0.02	No	14	0	ln(x)	0.01	Param.
Cobalt (mg/L)	SGWC-13	0.009393	0.004264	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-14	0.01304	0.006709	0.02	No	14	0	No	0.01	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-15</b>	<b>0.2795</b>	<b>0.2579</b>	<b>0.02</b>	<b>Yes</b>	<b>14</b>	<b>0</b>	<b>No</b>	<b>0.01</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-16	0.003884	0.003192	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-17	0.0006556	0.000357	0.02	No	13	23.08	No	0.01	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-18</b>	<b>0.1702</b>	<b>0.1137</b>	<b>0.02</b>	<b>Yes</b>	<b>14</b>	<b>0</b>	<b>No</b>	<b>0.01</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-19	0.00125	0.00013	0.02	No	14	50	No	0.01	NP (Cohens/xfrm)
<b>Cobalt (mg/L)</b>	<b>SGWC-20</b>	<b>0.2369</b>	<b>0.1718</b>	<b>0.02</b>	<b>Yes</b>	<b>14</b>	<b>0</b>	<b>No</b>	<b>0.01</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-21	0.005	0.00011	0.02	No	14	85.71	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWC-22	0.004156	0.002221	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-23	0.00125	0.00013	0.02	No	13	92.31	No	0.01	NP (NDs)
Cobalt (mg/L)	SGWC-6	0.007251	0.001057	0.02	No	14	21.43	No	0.01	Param.
Cobalt (mg/L)	SGWC-7	0.01287	0.005891	0.02	No	14	0	No	0.01	Param.
Cobalt (mg/L)	SGWC-8	0.00125	0.00014	0.02	No	14	64.29	No	0.01	NP (normality)
Cobalt (mg/L)	SGWC-9	0.01486	0.008043	0.02	No	14	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-1 (bg)	0.3845	0.1857	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-2 (bg)	0.4288	0.06559	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-24 (bg)	0.3586	0.08081	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-25 (bg)	0.3802	0.04559	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-3 (bg)	0.345	0.1615	5	No	14	14.29	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWA-4 (bg)	0.3473	0.0257	5	No	13	15.38	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-5 (bg)	0.4196	0.1786	5	No	14	14.29	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-10	0.496	0.123	5	No	14	7.143	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWC-11	0.6138	0.1752	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-12	0.4693	0.1194	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-13	0.4793	0.08439	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-14	0.4646	0.1114	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-15	0.4931	0.1919	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-16	0.4325	0.1199	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-17	0.498	0.167	5	No	14	14.29	No	0.01	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWC-18	0.4276	0.172	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-19	0.3458	0.06643	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-20	0.651	0.2662	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-21	0.4697	0.13	5	No	14	14.29	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-22	0.3723	0.156	5	No	13	7.692	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-23	0.686	0.3873	5	No	14	7.143	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-6	0.384	0.09613	5	No	14	14.29	sqrt(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-7	0.5453	0.3059	5	No	14	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-8	2.567	1.97	5	No	14	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-9	0.4496	0.1288	5	No	14	7.143	No	0.01	Param.

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:44 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	SGWA-1 (bg)	0.15	0.013	4	No	15	100	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWA-2 (bg)	0.1	0.041	4	No	15	66.67	No	0.01	NP (normality)
Fluoride (mg/L)	SGWA-24 (bg)	0.1	0.041	4	No	15	66.67	No	0.01	NP (normality)
Fluoride (mg/L)	SGWA-25 (bg)	0.1	0.04	4	No	15	66.67	No	0.01	NP (normality)
Fluoride (mg/L)	SGWA-3 (bg)	0.1	0.02	4	No	15	73.33	No	0.01	NP (normality)
Fluoride (mg/L)	SGWA-4 (bg)	0.1	0.041	4	No	15	53.33	No	0.01	NP (normality)
Fluoride (mg/L)	SGWA-5 (bg)	0.1	0.013	4	No	15	93.33	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-10	0.1	0.013	4	No	15	93.33	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-11	0.1	0.013	4	No	15	86.67	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-12	0.1857	0.08715	4	No	15	26.67	No	0.01	Param.
Fluoride (mg/L)	SGWC-13	0.1	0.04	4	No	15	80	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-14	0.1	0.028	4	No	15	80	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-15	0.14	0.1	4	No	14	7.143	No	0.01	NP (normality)
Fluoride (mg/L)	SGWC-16	0.1	0.013	4	No	15	86.67	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-17	0.1	0.041	4	No	15	60	No	0.01	NP (normality)
Fluoride (mg/L)	SGWC-18	0.18	0.0343	4	No	15	73.33	No	0.01	NP (Cohens/xfrm)
Fluoride (mg/L)	SGWC-19	0.1	0.013	4	No	15	86.67	No	0.01	NP (NDs)
Fluoride (mg/L)	SGWC-20	0.288	0.1739	4	No	15	6.667	No	0.01	Param.
Fluoride (mg/L)	SGWC-21	0.2446	0.107	4	No	15	46.67	No	0.01	Param.
Fluoride (mg/L)	SGWC-22	0.1	0.028	4	No	15	73.33	No	0.01	NP (normality)
Fluoride (mg/L)	SGWC-23	0.1	0.04	4	No	15	60	No	0.01	NP (normality)
Fluoride (mg/L)	SGWC-6	0.1428	0.07584	4	No	15	20	No	0.01	Param.
Fluoride (mg/L)	SGWC-7	0.2306	0.1847	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	SGWC-8	0.492	0.3683	4	No	15	0	No	0.01	Param.
Fluoride (mg/L)	SGWC-9	0.1	0.041	4	No	15	60	No	0.01	NP (normality)
Lead (mg/L)	SGWA-1 (bg)	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-2 (bg)	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-24 (bg)	0.00065	0.00014	0.0025	No	14	85.71	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-25 (bg)	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-3 (bg)	0.0025	0.00017	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-4 (bg)	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWA-5 (bg)	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-10	0.0025	0.00013	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-11	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-12	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-13	0.0025	0.000065	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-14	0.0025	0.00016	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-15	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-16	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-17	0.00065	0.000065	0.0025	No	13	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-18	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-19	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-20	0.00065	0.000175	0.0025	No	14	64.29	No	0.01	NP (normality)
Lead (mg/L)	SGWC-21	0.00065	0.00009	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-22	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-23	0.00065	0.00009	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-6	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-7	0.00085	0.000065	0.0025	No	14	92.86	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-8	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)
Lead (mg/L)	SGWC-9	0.0025	0.000065	0.0025	No	14	100	No	0.01	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:44 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (mg/L)	SGWA-1 (bg)	0.0034	0.00155	0.025	No	14	64.29	No	0.01	NP (normality)
Lithium (mg/L)	SGWA-2 (bg)	0.025	0.00055	0.025	No	14	100	No	0.01	NP (NDs)
Lithium (mg/L)	SGWA-24 (bg)	0.025	0.0011	0.025	No	14	85.71	No	0.01	NP (NDs)
Lithium (mg/L)	SGWA-25 (bg)	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWA-3 (bg)	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWA-4 (bg)	0.025	0.00055	0.025	No	14	100	No	0.01	NP (NDs)
Lithium (mg/L)	SGWA-5 (bg)	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-10	0.025	0.00055	0.025	No	14	100	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-11	0.0031	0.0016	0.025	No	14	57.14	No	0.01	NP (normality)
Lithium (mg/L)	SGWC-12	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-13	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-14	0.0025	0.000925	0.025	No	13	84.62	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-15	0.0037	0.0024	0.025	No	14	50	No	0.01	NP (normality)
Lithium (mg/L)	SGWC-16	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-17	0.025	0.00055	0.025	No	14	92.86	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-18	0.0054	0.0025	0.025	No	14	42.86	No	0.01	NP (normality)
Lithium (mg/L)	SGWC-19	0.025	0.00155	0.025	No	14	85.71	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-20	0.004935	0.003627	0.025	No	13	7.692	No	0.01	Param.
Lithium (mg/L)	SGWC-21	0.0027	0.00155	0.025	No	14	78.57	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-22	0.0026	0.00155	0.025	No	14	85.71	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-23	0.004915	0.003306	0.025	No	13	23.08	No	0.01	Param.
Lithium (mg/L)	SGWC-6	0.025	0.00055	0.025	No	14	100	No	0.01	NP (NDs)
Lithium (mg/L)	SGWC-7	0.005388	0.003905	0.025	No	13	0	No	0.01	Param.
Lithium (mg/L)	SGWC-8	0.0025	0.00155	0.025	No	14	64.29	No	0.01	NP (normality)
Lithium (mg/L)	SGWC-9	0.025	0.00055	0.025	No	14	100	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-1 (bg)	0.00012	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-2 (bg)	0.00011	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-24 (bg)	0.00012	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-25 (bg)	0.00011	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-3 (bg)	0.00025	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-4 (bg)	0.00011	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWA-5 (bg)	0.00012	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-10	0.00013	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-11	0.0001	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-12	0.00025	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-13	0.00011	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-14	0.00012	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-15	0.00017	0.00005	0.002	No	14	42.86	No	0.01	NP (Cohens/xfrm)
Mercury (mg/L)	SGWC-16	0.00025	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-17	0.00011	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-18	0.0005144	0.0001545	0.002	No	14	35.71	No	0.01	Param.
Mercury (mg/L)	SGWC-19	0.00025	0.000035	0.002	No	14	100	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-20	0.00025	0.000035	0.002	No	14	85.71	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-21	0.0001	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-22	0.00025	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-23	0.00025	0.000035	0.002	No	14	78.57	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-6	0.00011	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-7	0.00011	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-8	0.00025	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)
Mercury (mg/L)	SGWC-9	0.0001	0.000035	0.002	No	14	92.86	No	0.01	NP (NDs)

## Confidence Interval

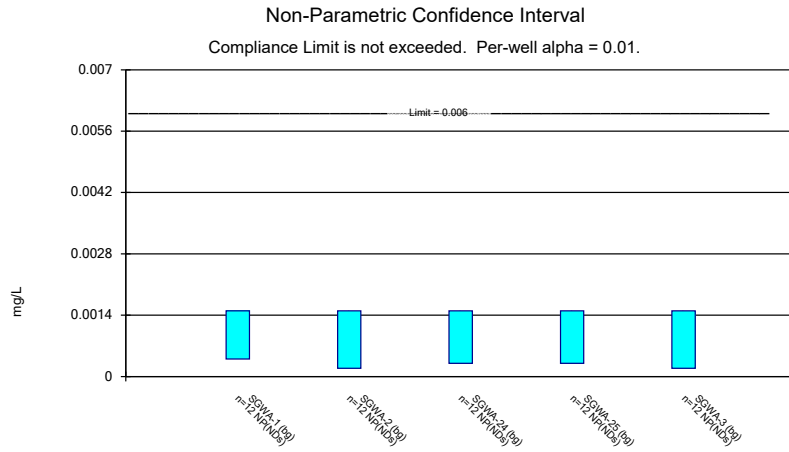
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:44 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Molybdenum (mg/L)	SGWA-1 (bg)	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWA-2 (bg)	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWA-24 (bg)	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWA-25 (bg)	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWA-3 (bg)	0.0075	0.000305	0.0075	No	13	92.31	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWA-4 (bg)	0.00278	0.00069	0.0075	No	13	30.77	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWA-5 (bg)	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-10	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-11	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-12	0.0075	0.000305	0.0075	No	13	84.62	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-13	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-14	0.0075	0.000305	0.0075	No	13	92.31	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-15	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-16	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-17	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-18	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-19	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-20	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-21	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-22	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-23	0.0075	0.000305	0.0075	No	13	100	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-6	0.0075	0.000305	0.0075	No	13	84.62	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-7	0.00343	0.001	0.0075	No	13	30.77	No	0.01	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWC-8	0.0075	0.000305	0.0075	No	13	92.31	No	0.01	NP (NDs)
Molybdenum (mg/L)	SGWC-9	0.005	0.00067	0.0075	No	13	46.15	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	SGWA-1 (bg)	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-2 (bg)	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-24 (bg)	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-25 (bg)	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-3 (bg)	0.00075	0.00012	0.05	No	14	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-4 (bg)	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWA-5 (bg)	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-10	0.00075	0.00012	0.05	No	13	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-11	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-12	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-13	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-14	0.00075	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-15	0.0034	0.00065	0.05	No	14	28.57	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-16	0.0021	0.00012	0.05	No	14	64.29	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-17	0.00075	0.00012	0.05	No	13	92.31	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-18	0.0148	0.005558	0.05	No	14	0	ln(x)	0.01	Param.
Selenium (mg/L)	SGWC-19	0.00096	0.00012	0.05	No	14	92.86	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-20	0.0012	0.00012	0.05	No	14	57.14	No	0.01	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-21	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-22	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-23	0.00075	0.00012	0.05	No	14	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-6	0.00075	0.00012	0.05	No	14	85.71	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-7	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-8	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)
Selenium (mg/L)	SGWC-9	0.00075	0.00012	0.05	No	14	100	No	0.01	NP (NDs)

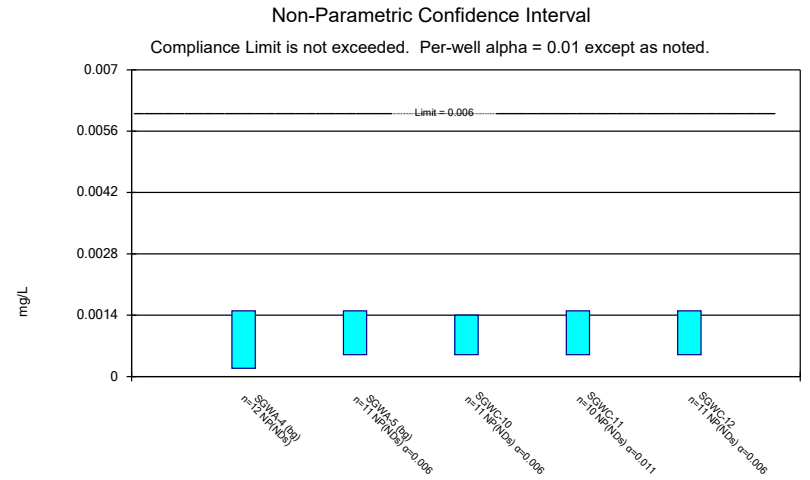
# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 1/13/2020, 3:44 PM

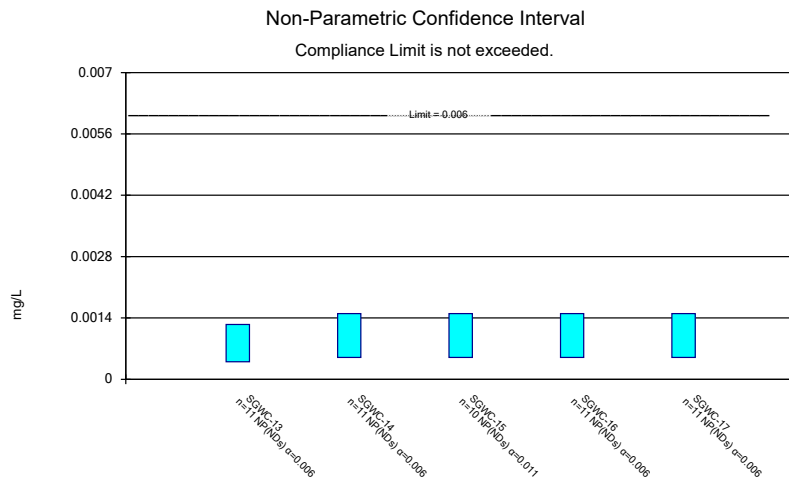
<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	SGWA-1 (bg)	0.00025	0.0000315	0.002	No	14	85.71	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-2 (bg)	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-24 (bg)	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-25 (bg)	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-3 (bg)	0.00025	0.0000315	0.002	No	14	92.86	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-4 (bg)	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWA-5 (bg)	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-10	0.00025	0.0000315	0.002	No	14	92.86	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-11	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-12	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-13	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-14	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-15	0.00016	0.0000425	0.002	No	14	42.86	No	0.01	NP (normality)
Thallium (mg/L)	SGWC-16	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-17	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-18	0.0001925	0.0001236	0.002	No	13	0	No	0.01	Param.
Thallium (mg/L)	SGWC-19	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-20	0.0001929	0.0001364	0.002	No	13	0	No	0.01	Param.
Thallium (mg/L)	SGWC-21	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-22	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-23	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-6	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-7	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-8	0.0005	0.0000315	0.002	No	14	92.86	No	0.01	NP (NDs)
Thallium (mg/L)	SGWC-9	0.0005	0.0000315	0.002	No	14	100	No	0.01	NP (NDs)



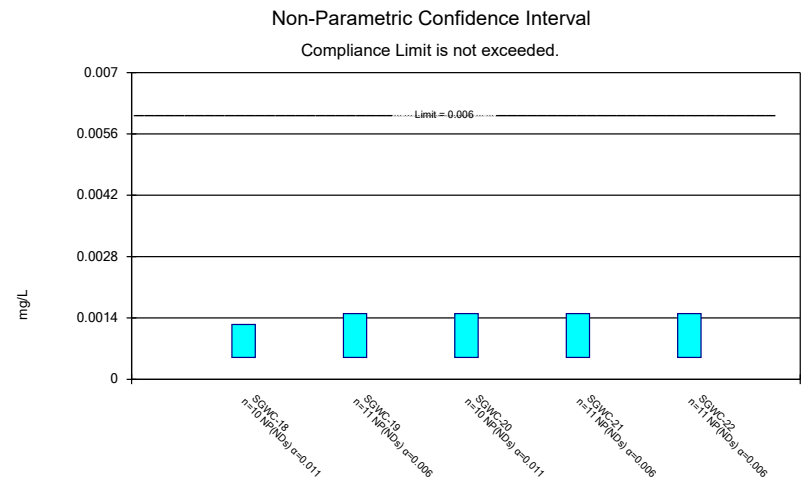
Constituent: Antimony Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Antimony Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



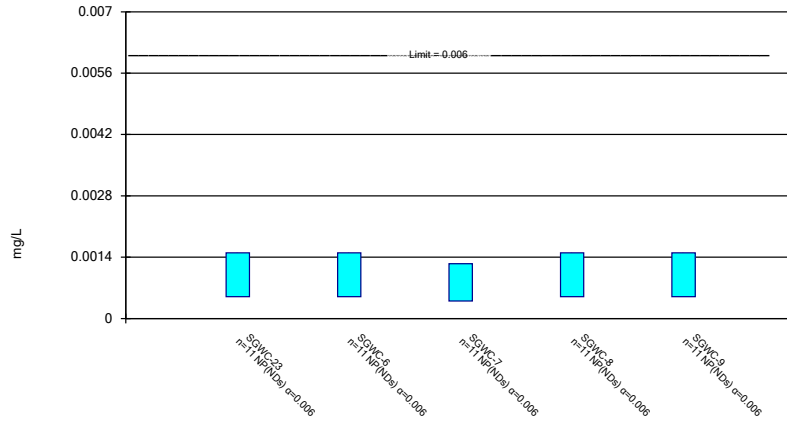
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Antimony Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

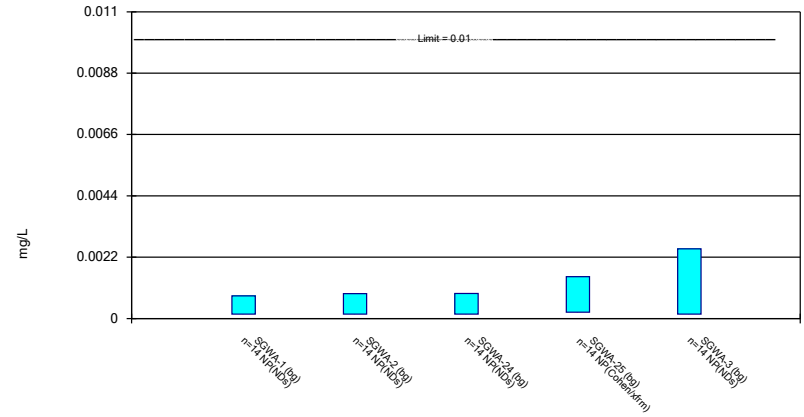
Compliance Limit is not exceeded.



Constituent: Antimony Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

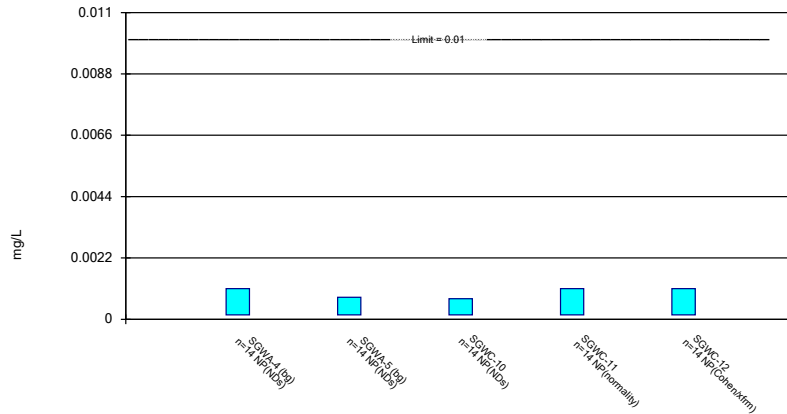
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Arsenic Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

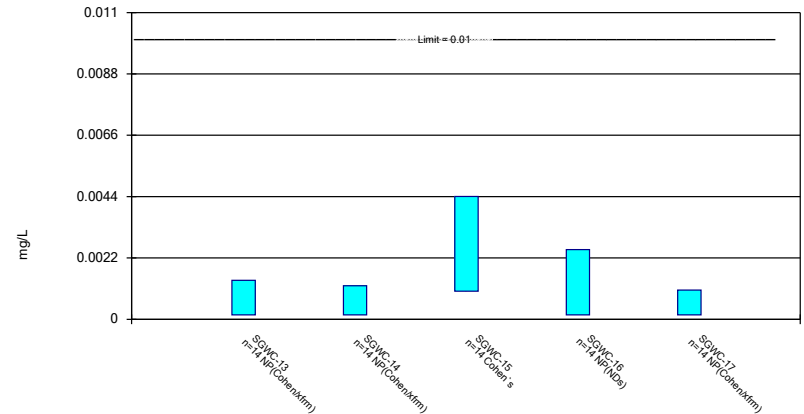
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Arsenic Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

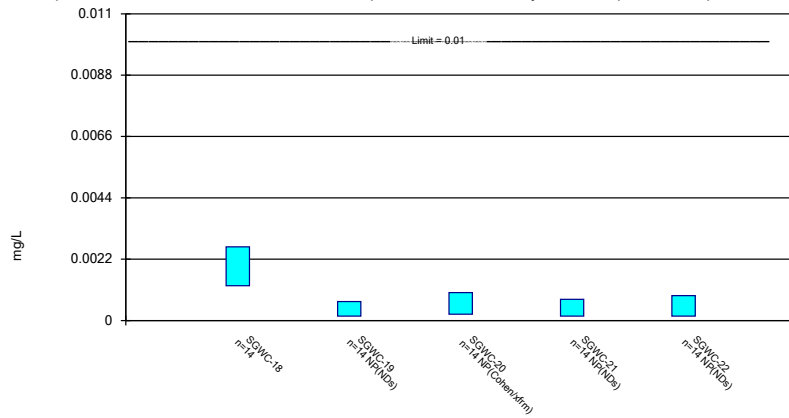


Constituent: Arsenic Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



### Parametric and Non-Parametric (NP) Confidence Interval

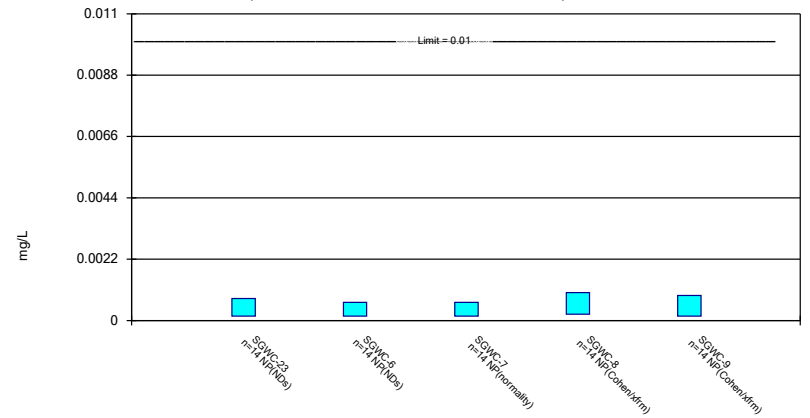
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

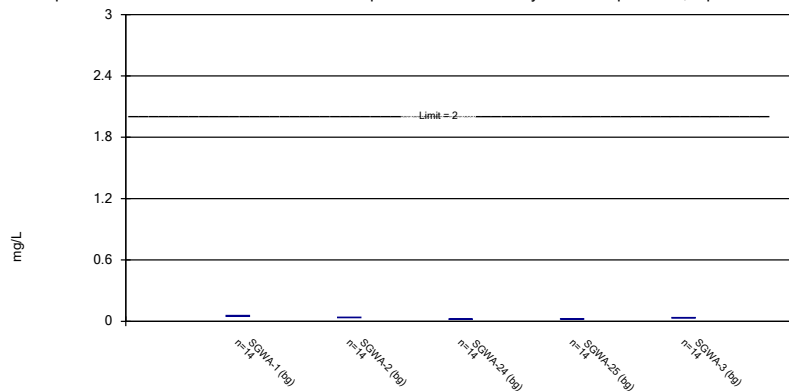
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Arsenic Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

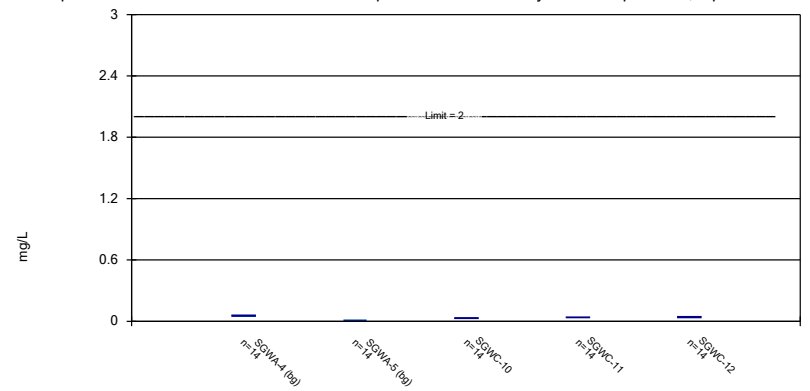
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

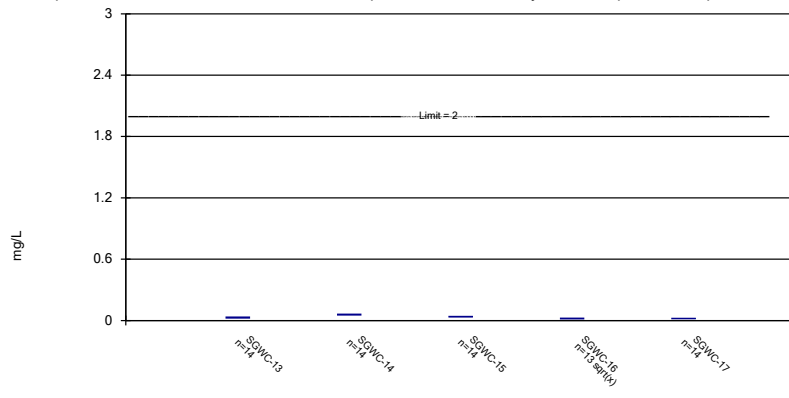
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

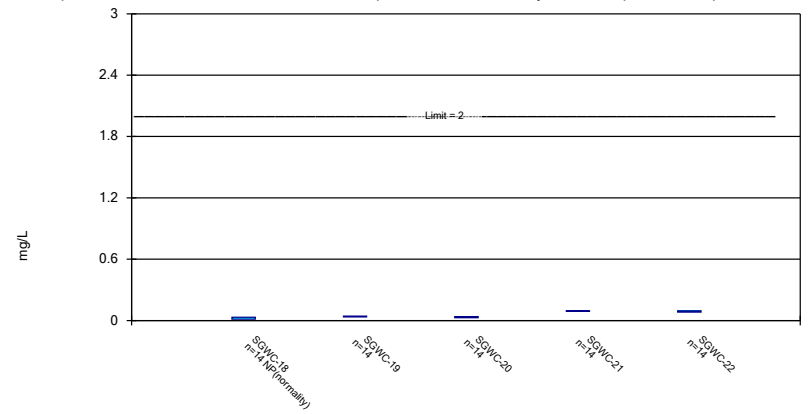
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

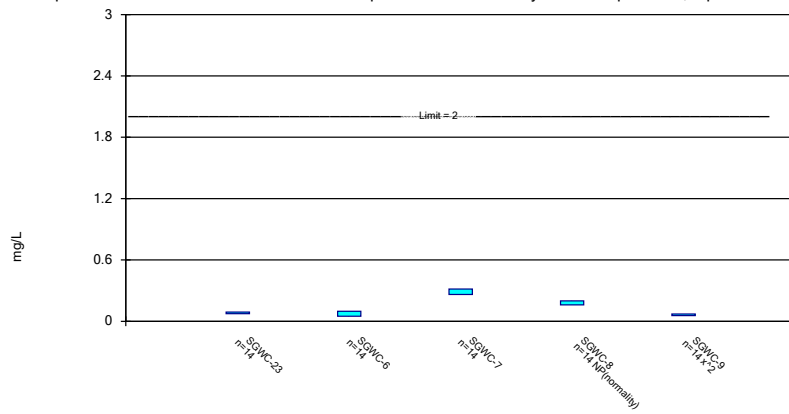
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Constituent: Barium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

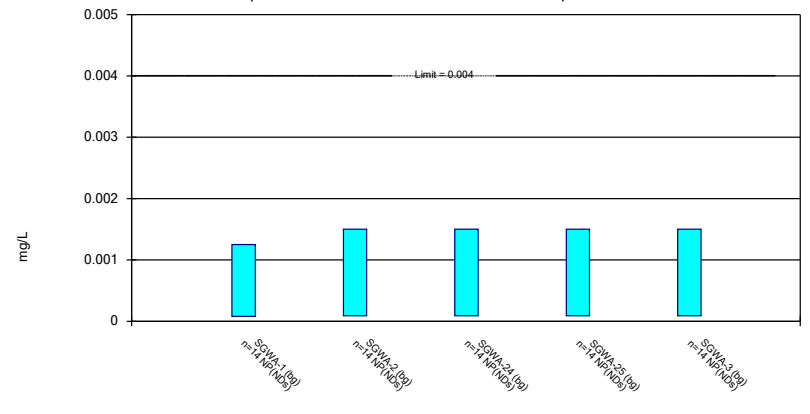
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

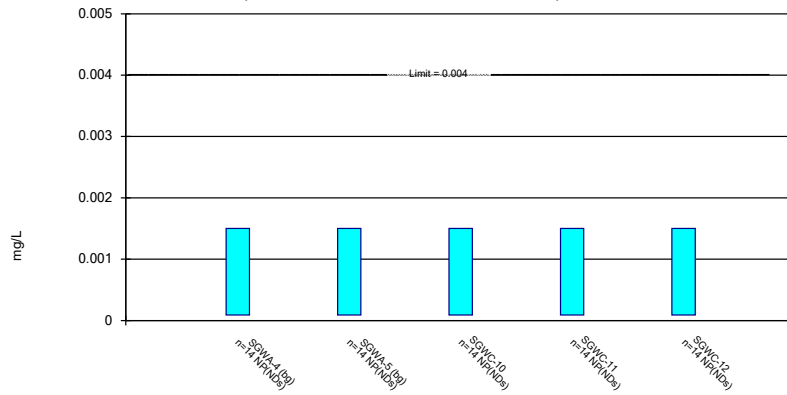
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Beryllium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

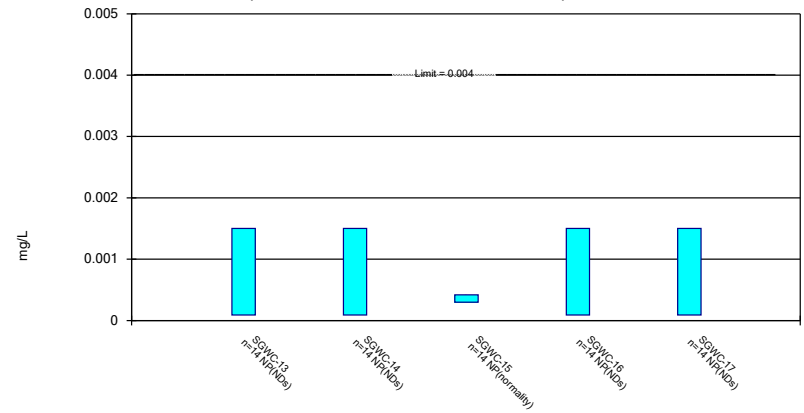
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Beryllium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

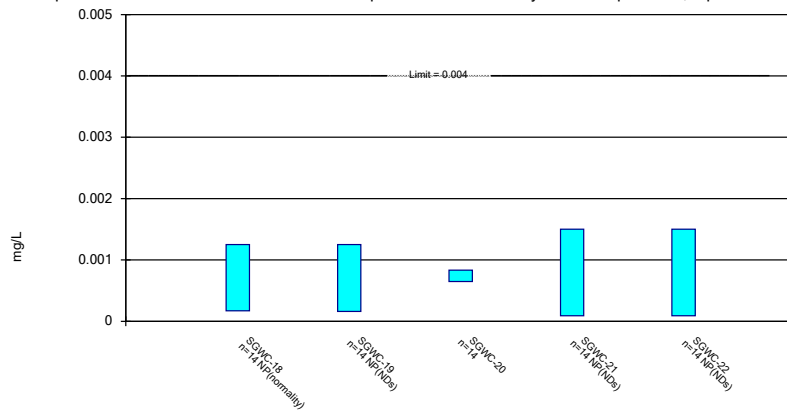
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Constituent: Beryllium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

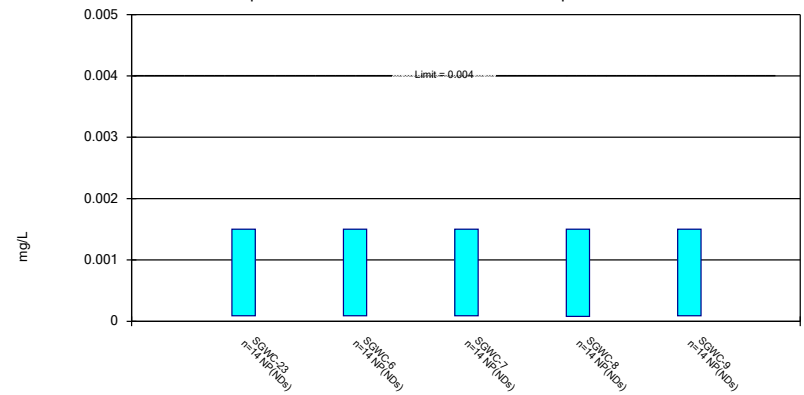
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



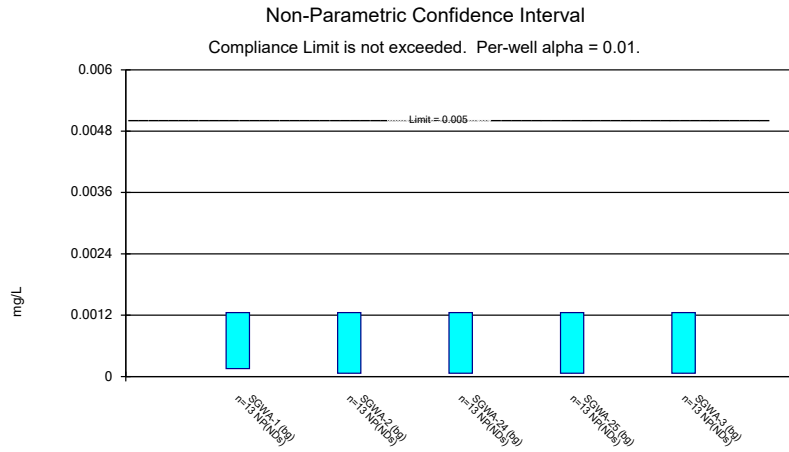
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 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

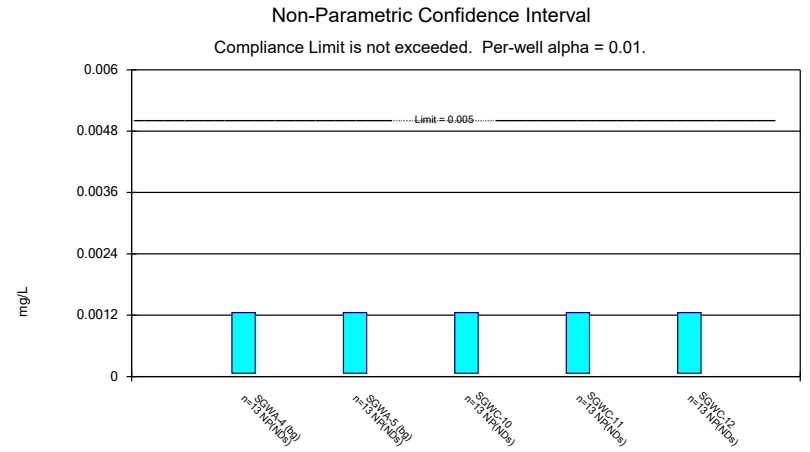
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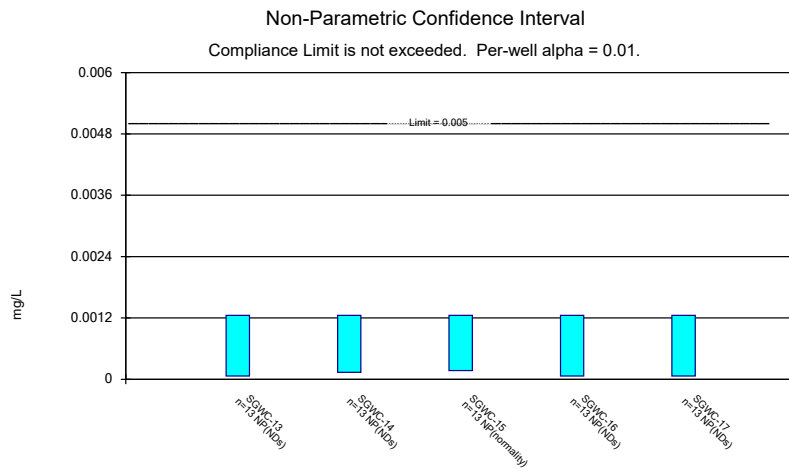
Constituent: Beryllium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



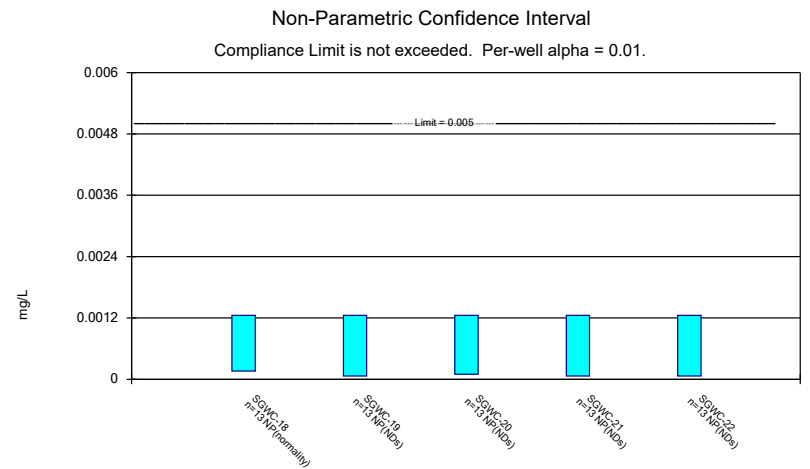
Constituent: Cadmium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Cadmium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



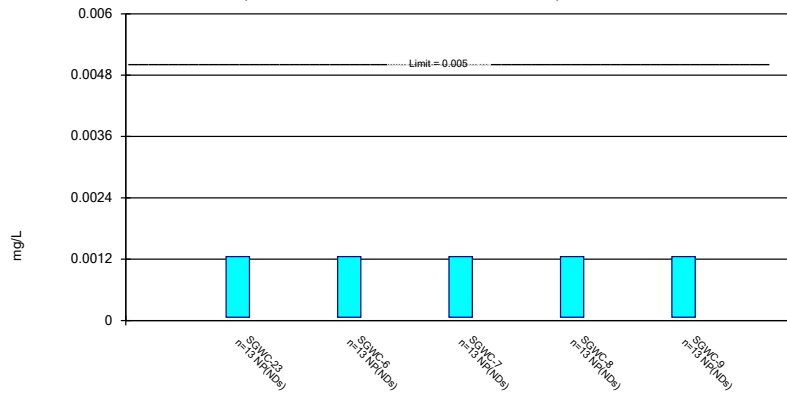
Constituent: Cadmium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Cadmium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

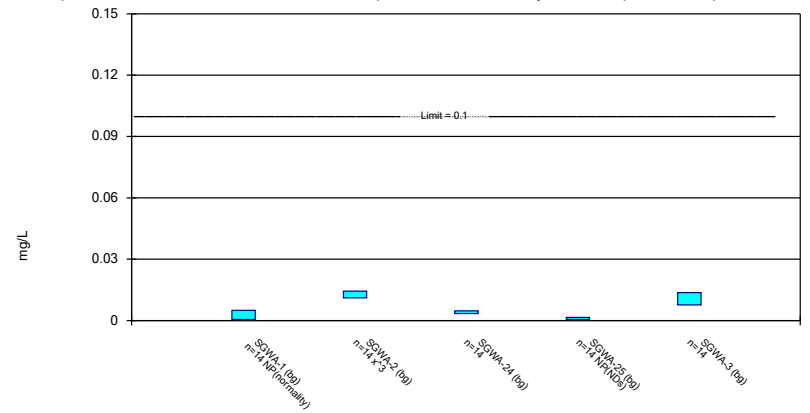
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Cadmium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

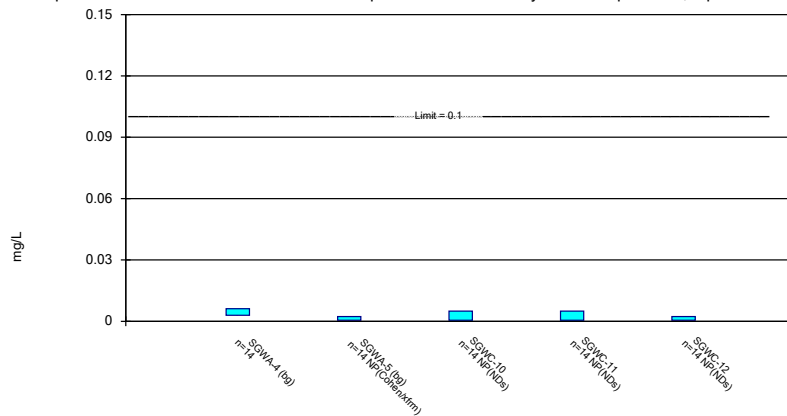
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

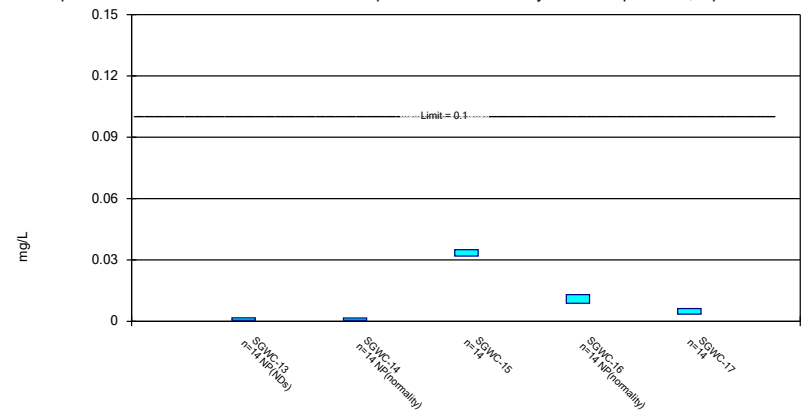
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/13/2020 3:40 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

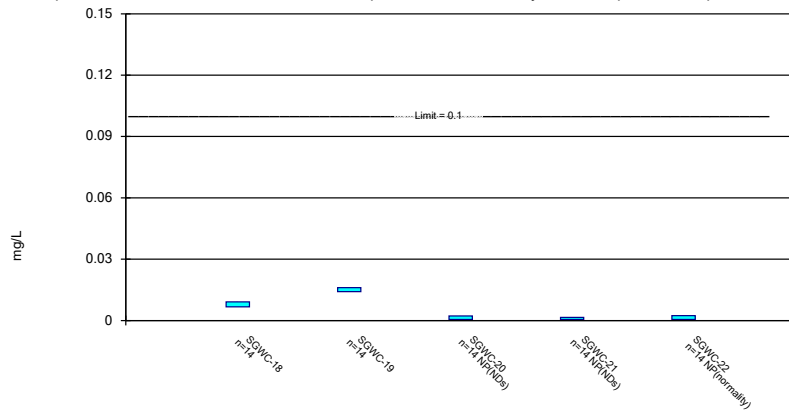
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

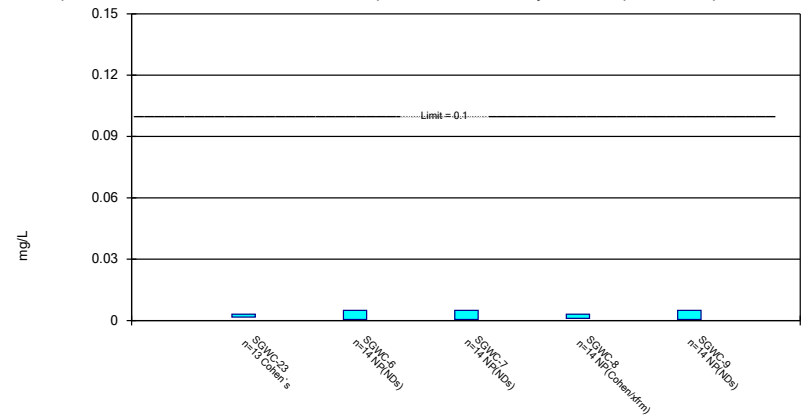
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

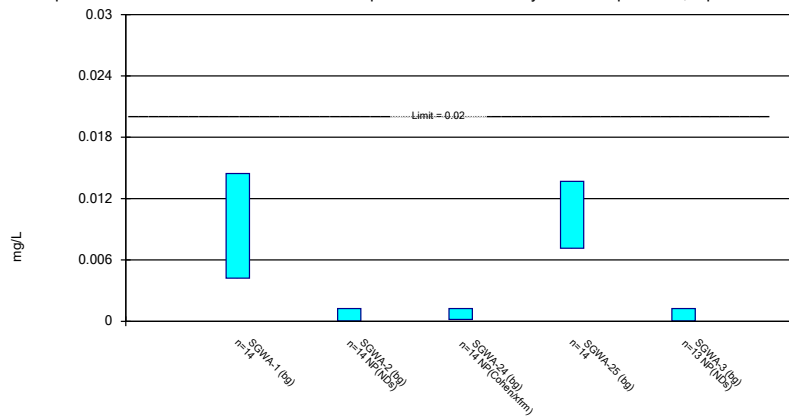
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Chromium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

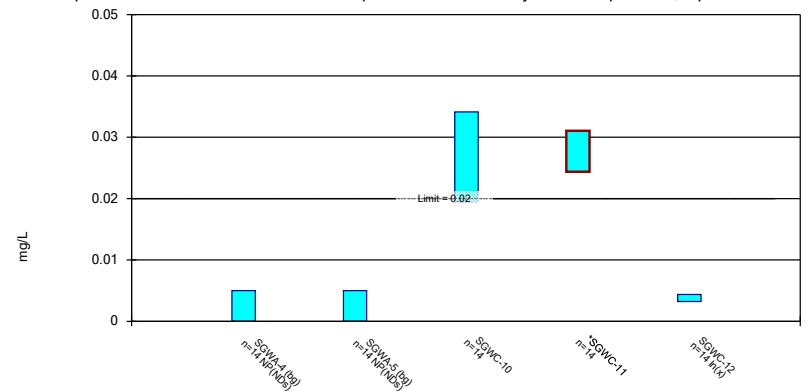
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

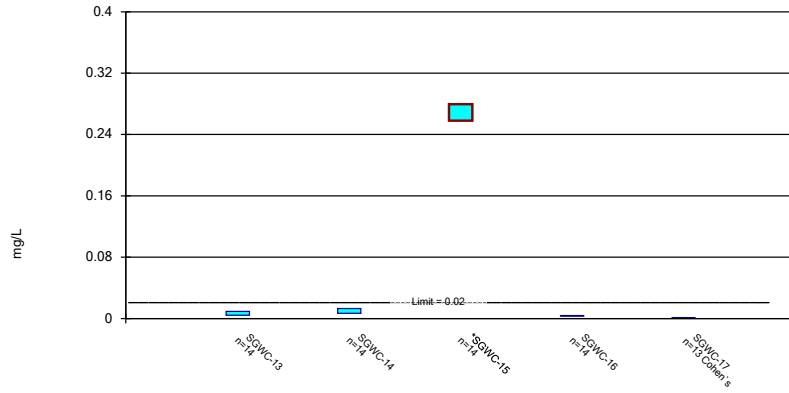
Compliance limit is exceeded.\* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

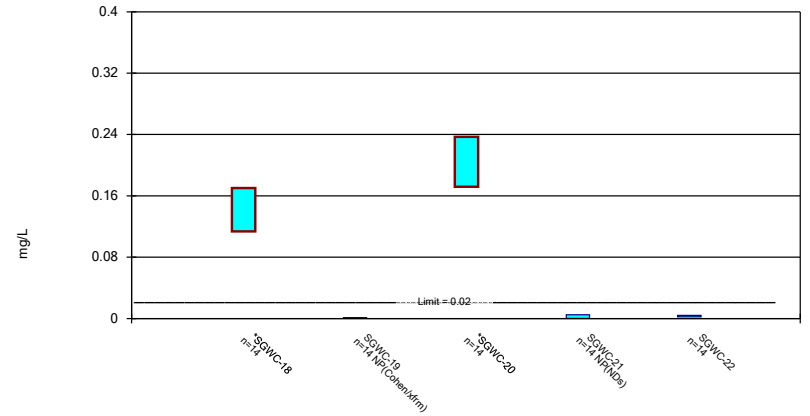
Compliance limit is exceeded.\* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

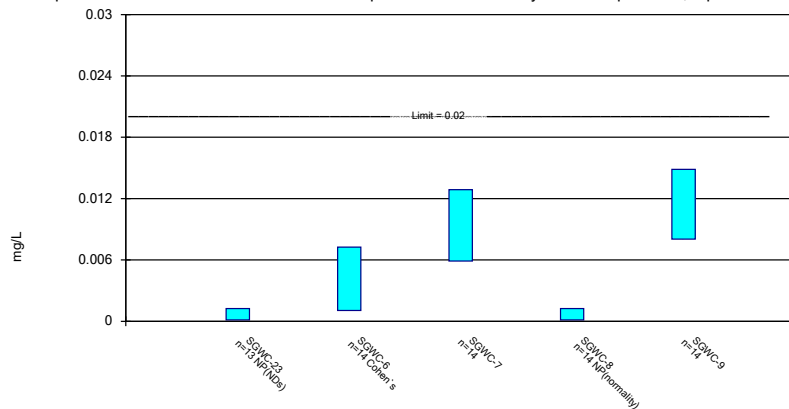
Compliance limit is exceeded.\* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

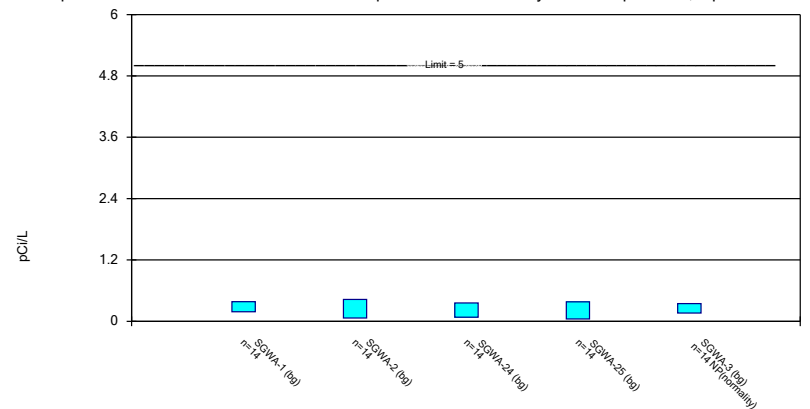
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

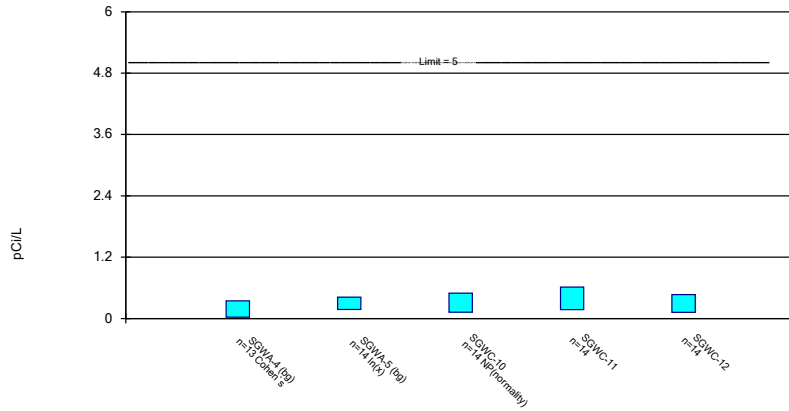
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

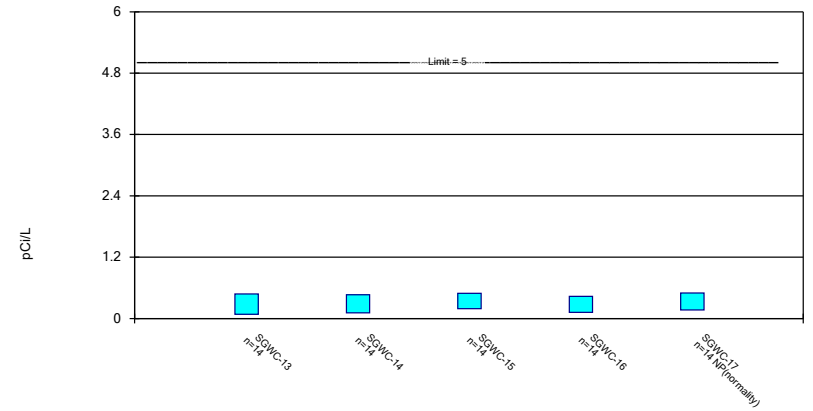
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Int  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric and Non-Parametric (NP) Confidence Interval

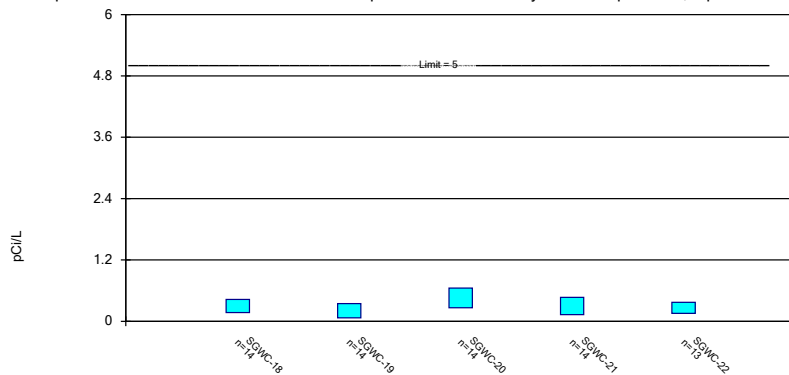
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Int  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric Confidence Interval

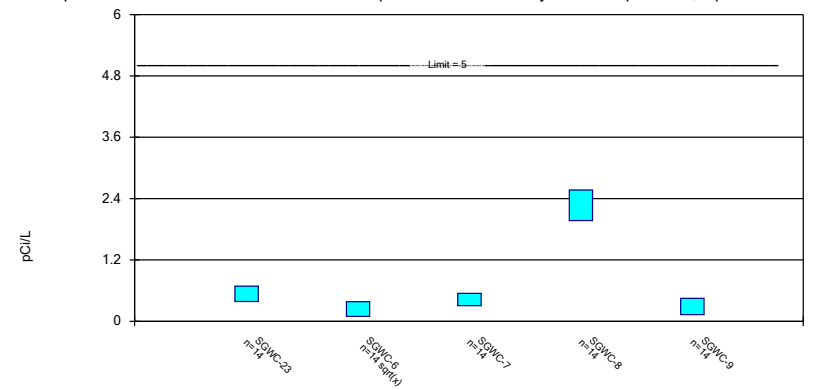
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Int  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

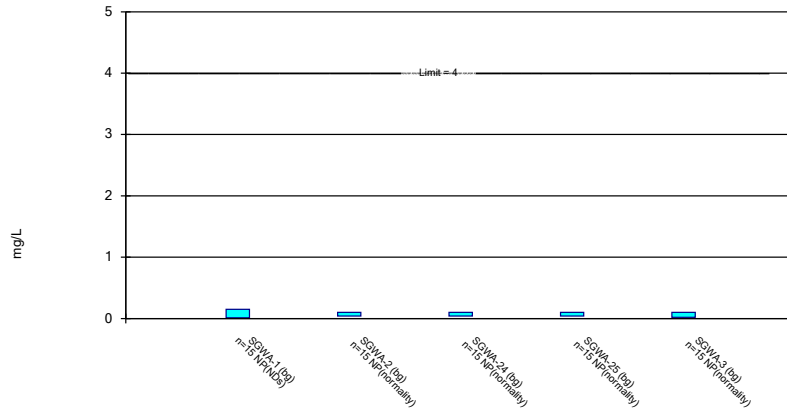


Constituent: Combined Radium 226 + 228 Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Int  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



### Non-Parametric Confidence Interval

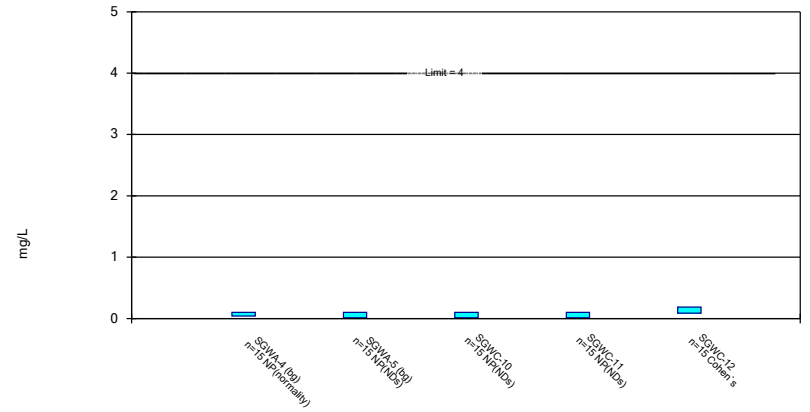
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Fluoride Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

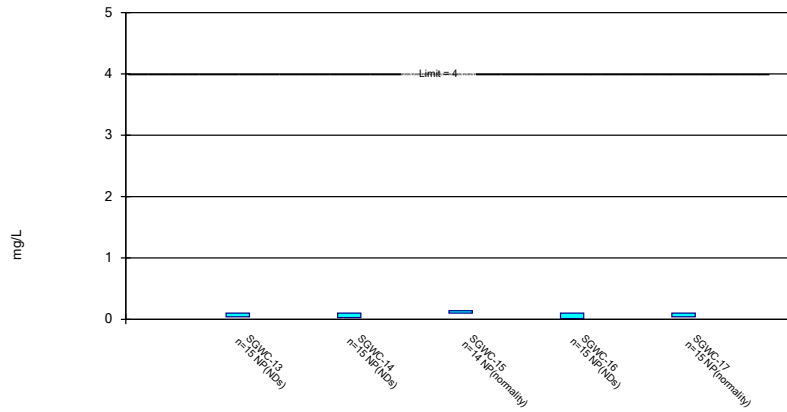
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

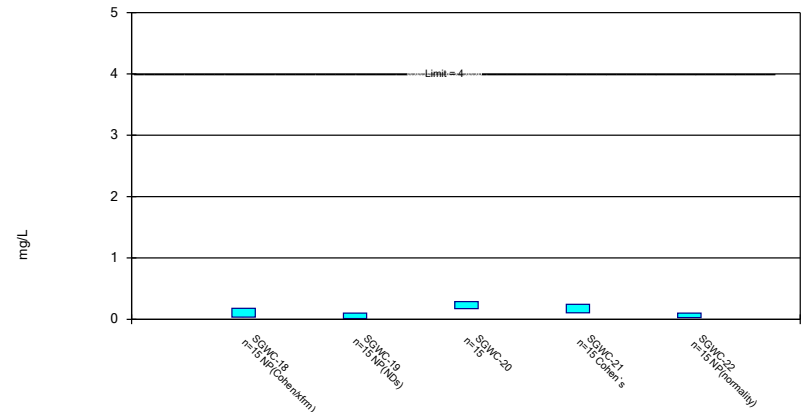
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Fluoride Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

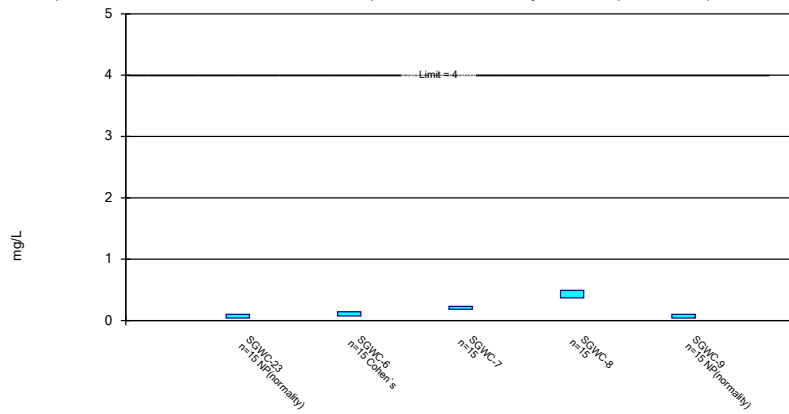
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

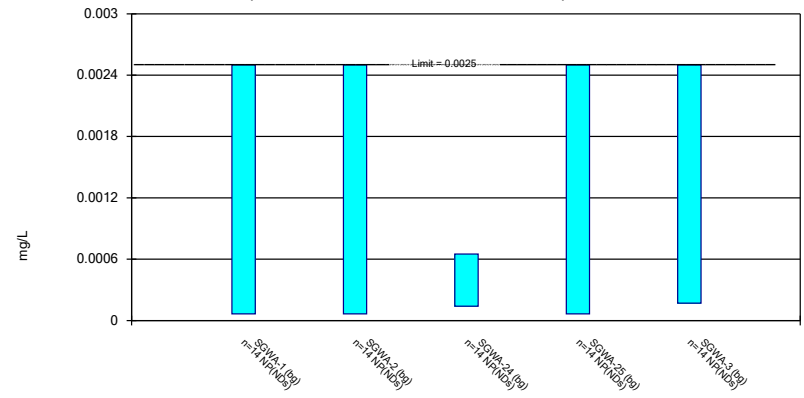
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

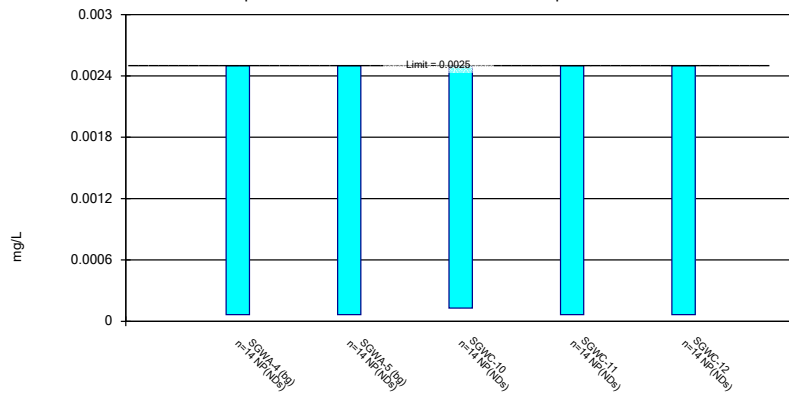
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Lead Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

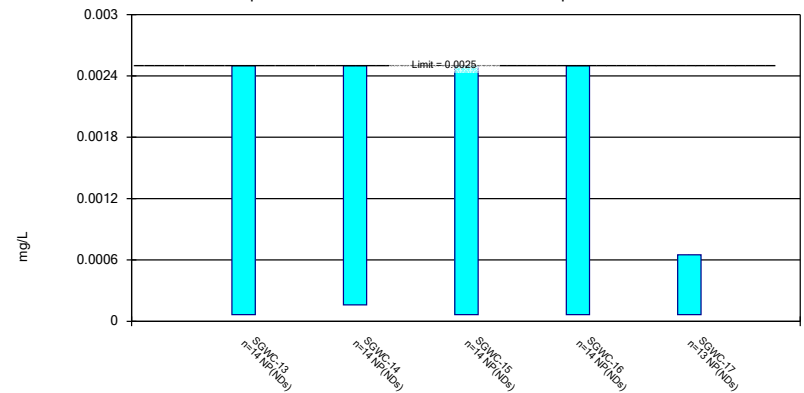
Compliance Limit is not exceeded. Per-well alpha = 0.01.



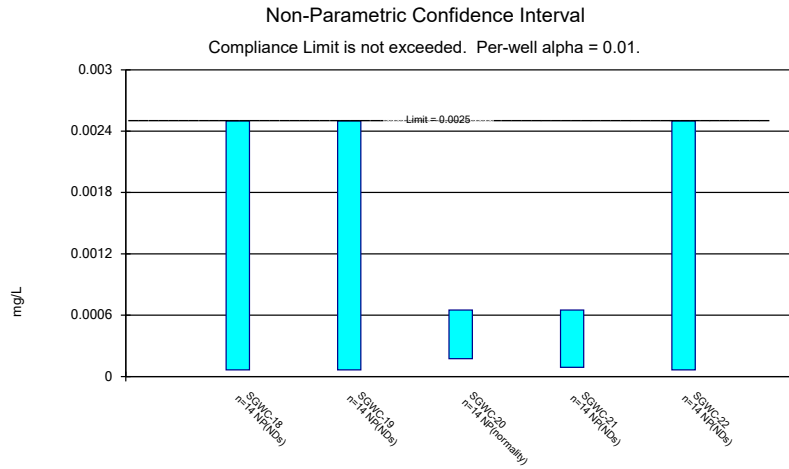
Constituent: Lead Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

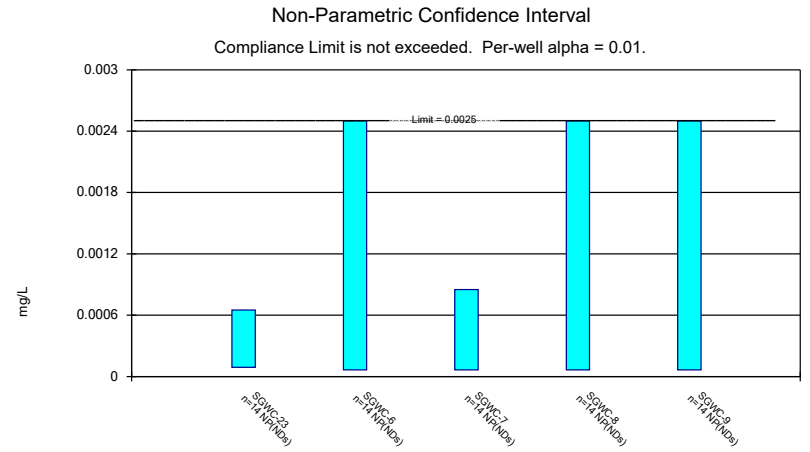
Compliance Limit is not exceeded. Per-well alpha = 0.01.



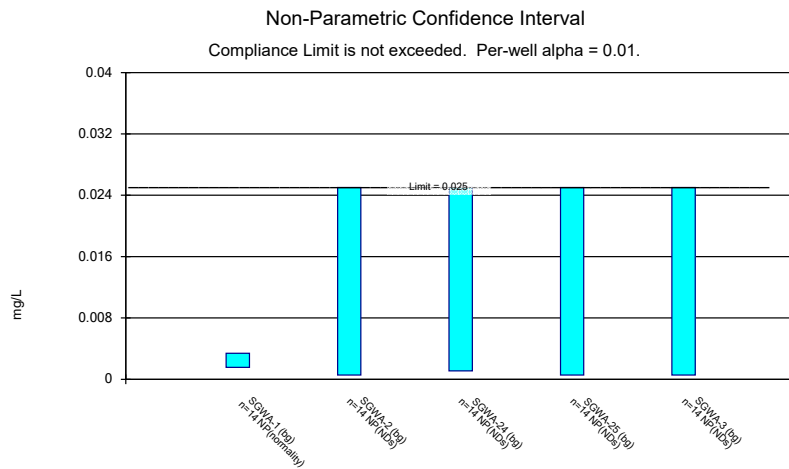
Constituent: Lead Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



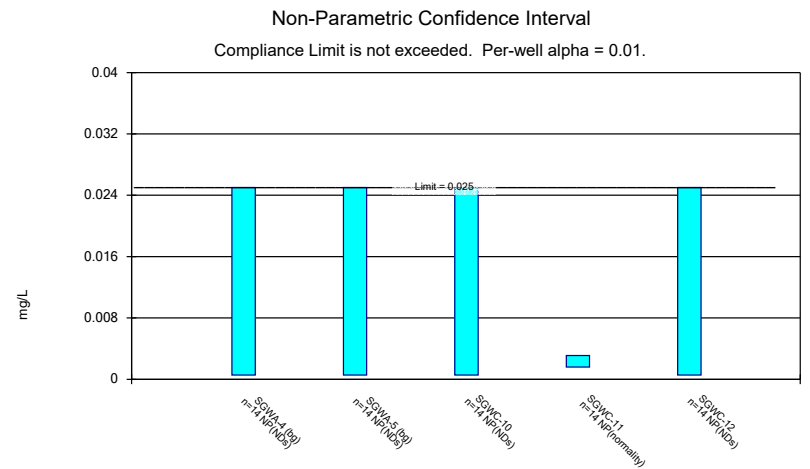
Constituent: Lead Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Lead Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



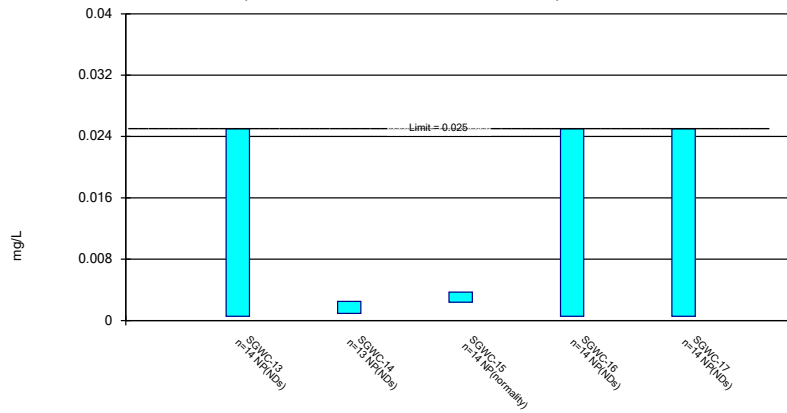
Constituent: Lithium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Lithium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

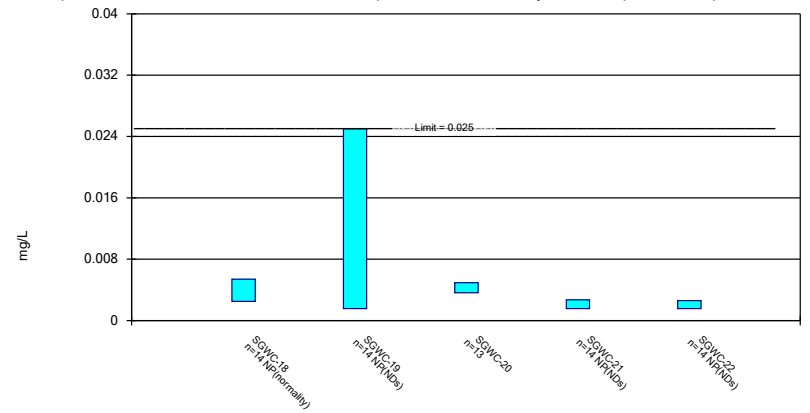
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Lithium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

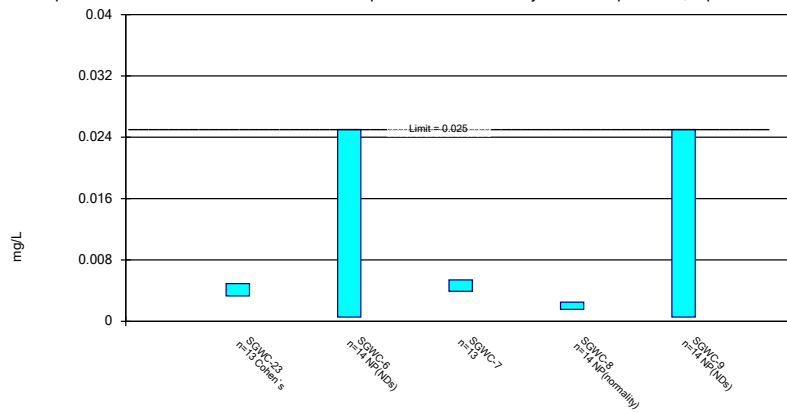
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

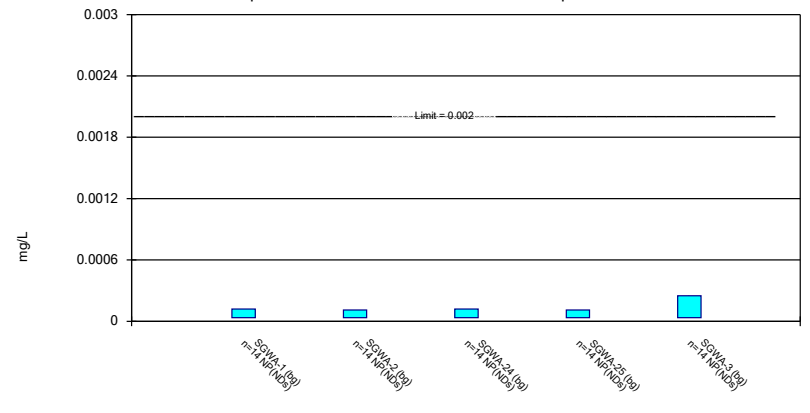
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

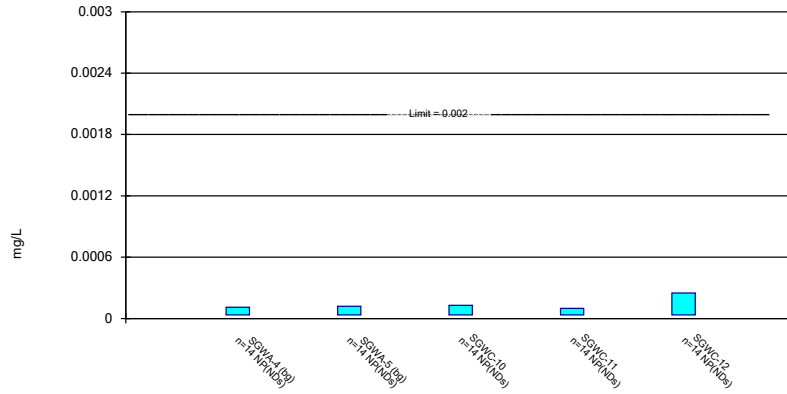
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

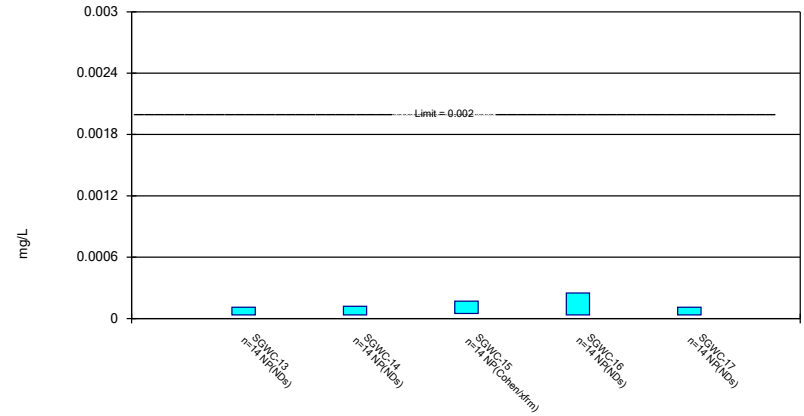
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

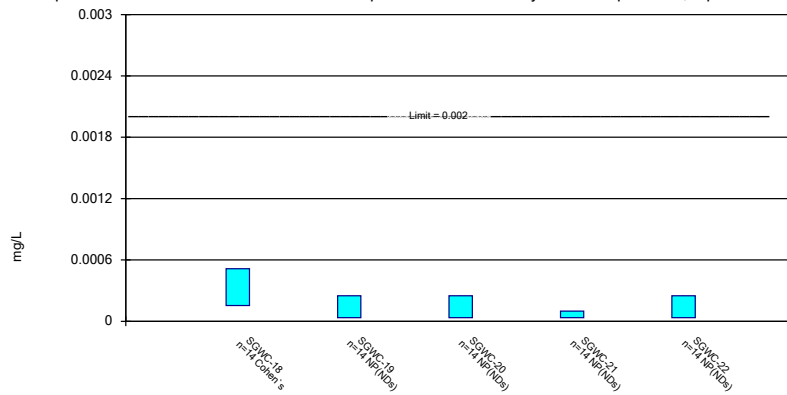
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Mercury Analysis Run 1/13/2020 3:41 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

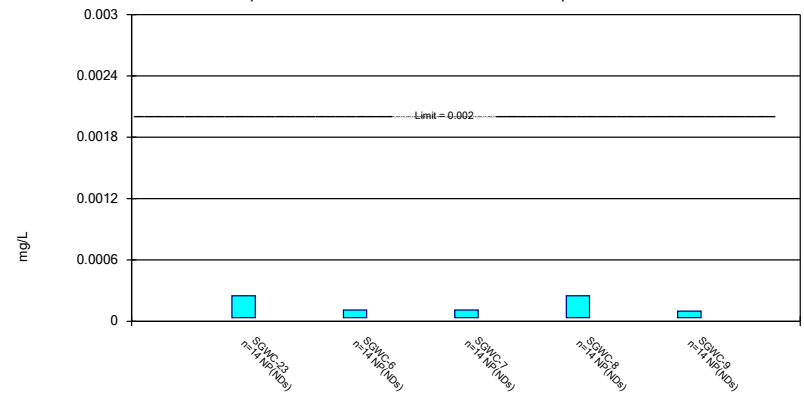
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



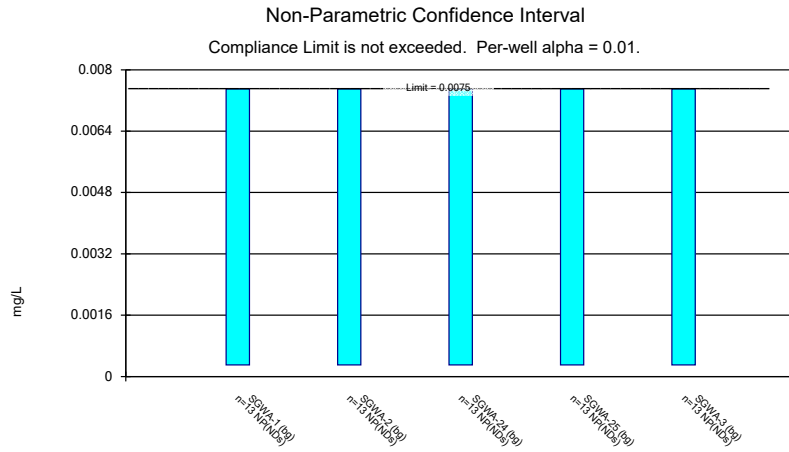
Constituent: Mercury Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

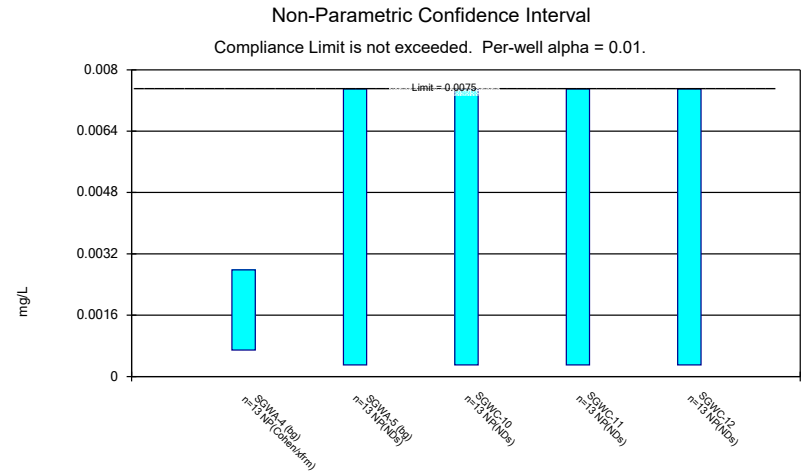
Compliance Limit is not exceeded. Per-well alpha = 0.01.



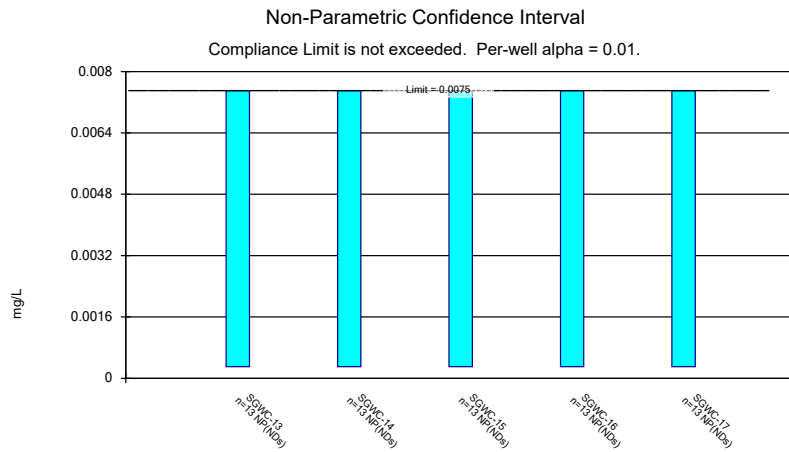
Constituent: Mercury Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



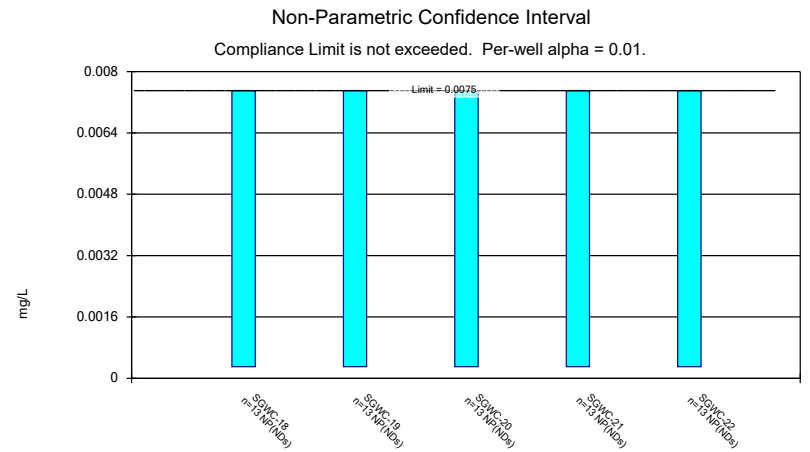
Constituent: Molybdenum Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



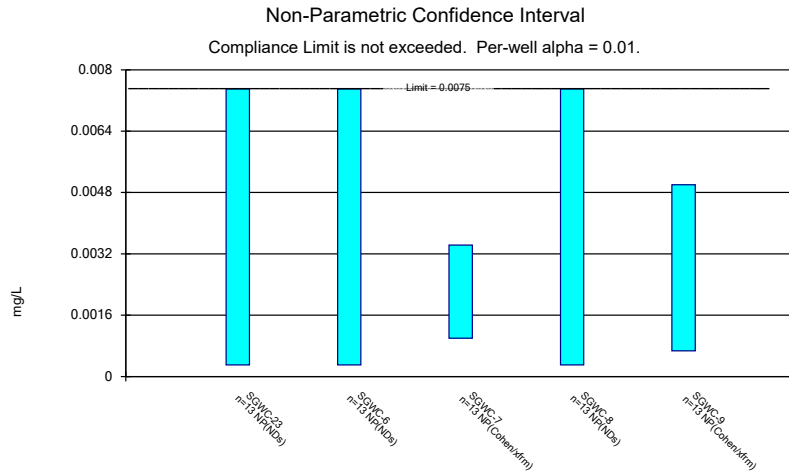
Constituent: Molybdenum Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



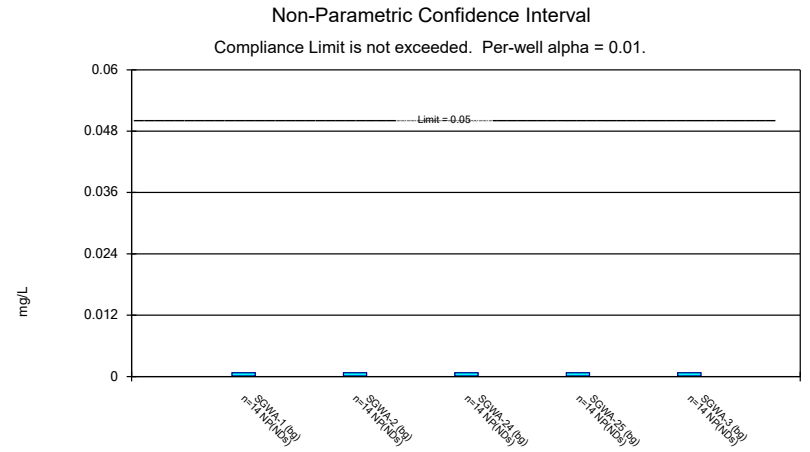
Constituent: Molybdenum Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



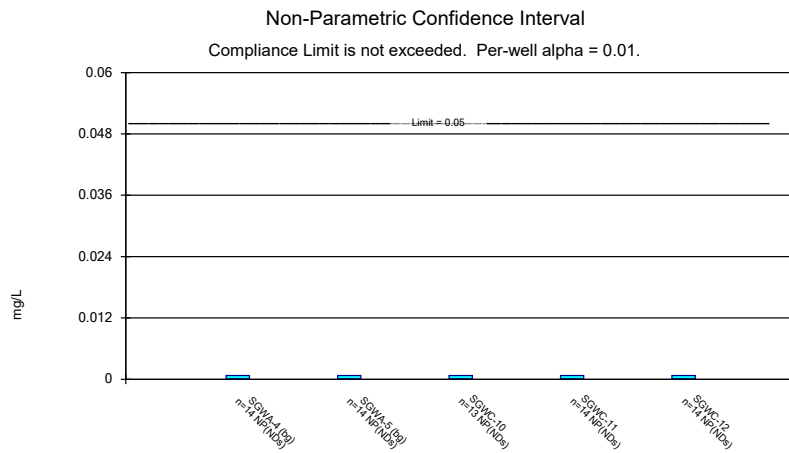
Constituent: Molybdenum Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



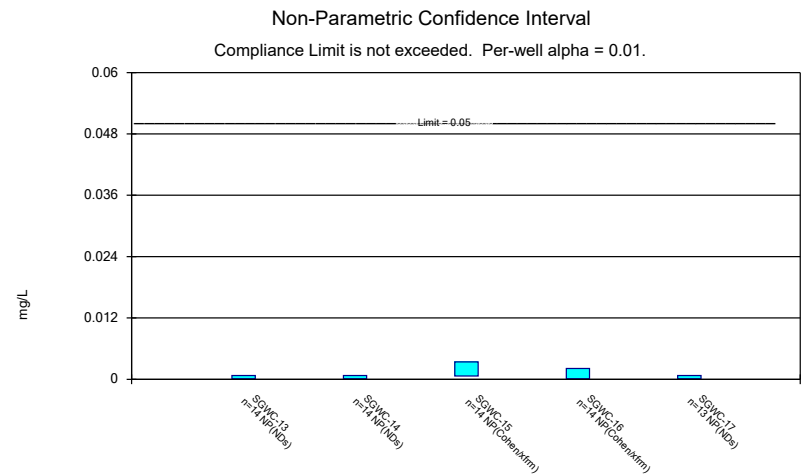
Constituent: Molybdenum Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Selenium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



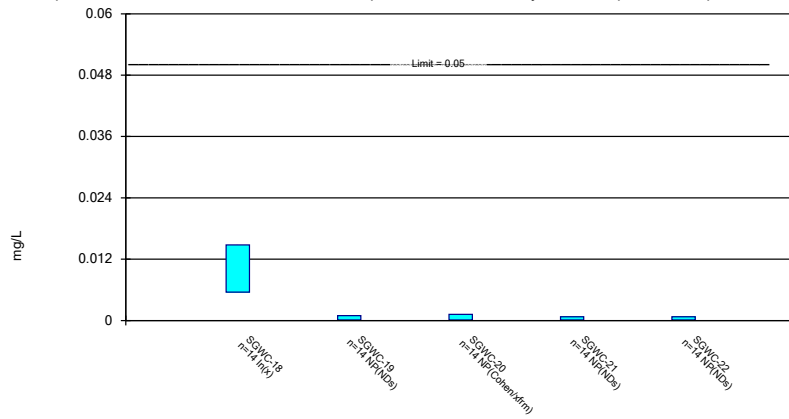
Constituent: Selenium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



Constituent: Selenium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

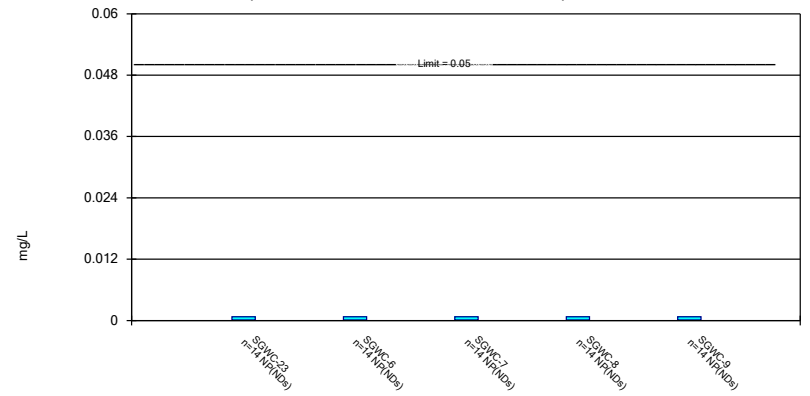
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

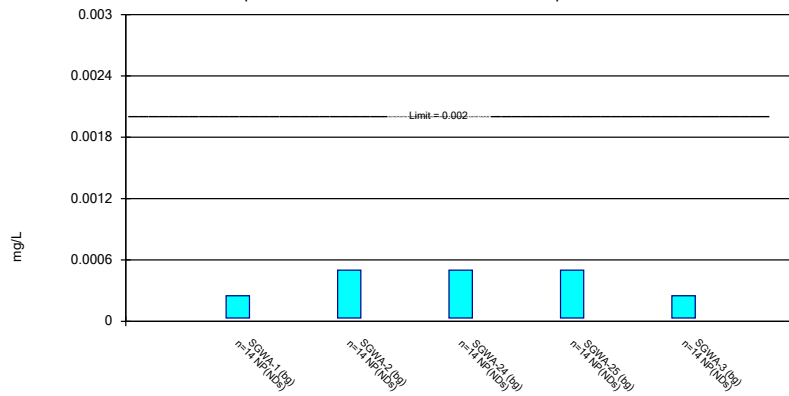
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Selenium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

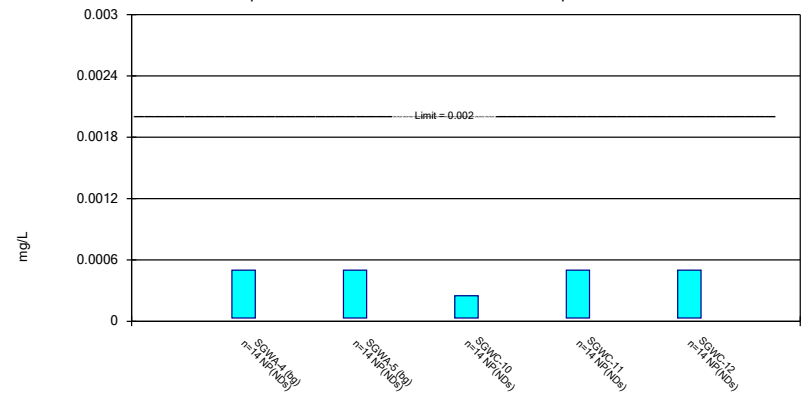
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

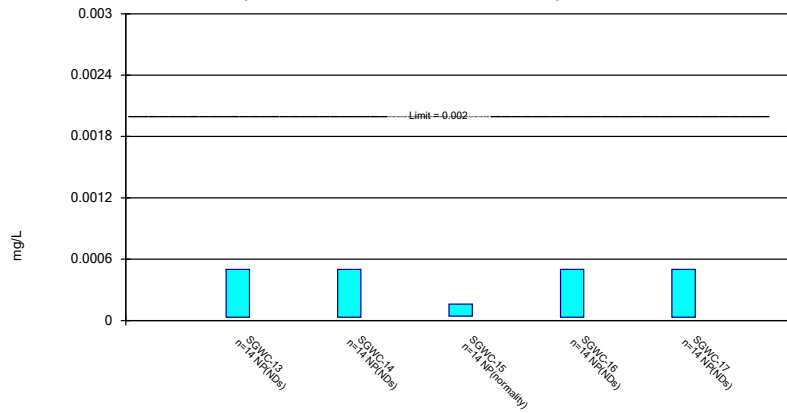


Constituent: Thallium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



### Non-Parametric Confidence Interval

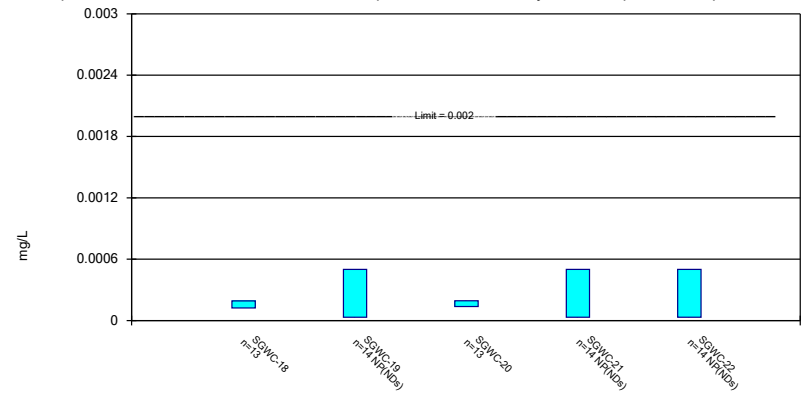
Compliance Limit is not exceeded. Per-well alpha = 0.01.



Constituent: Thallium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric and Non-Parametric (NP) Confidence Interval

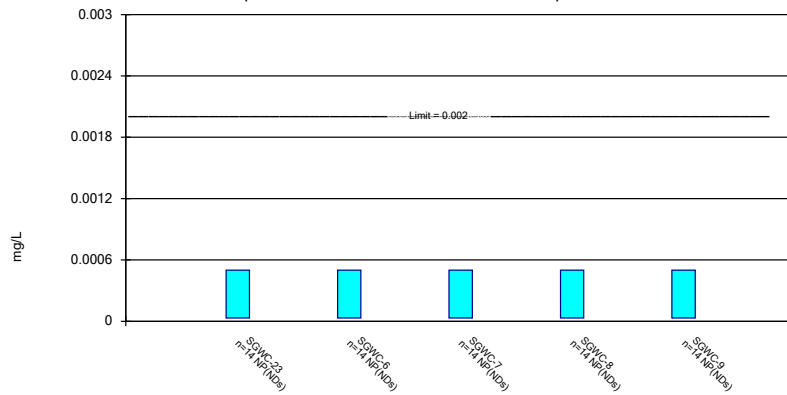
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

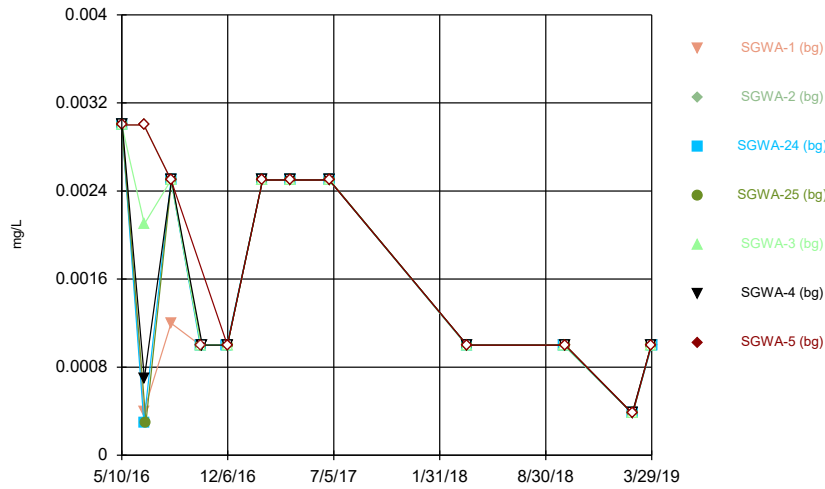
### Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



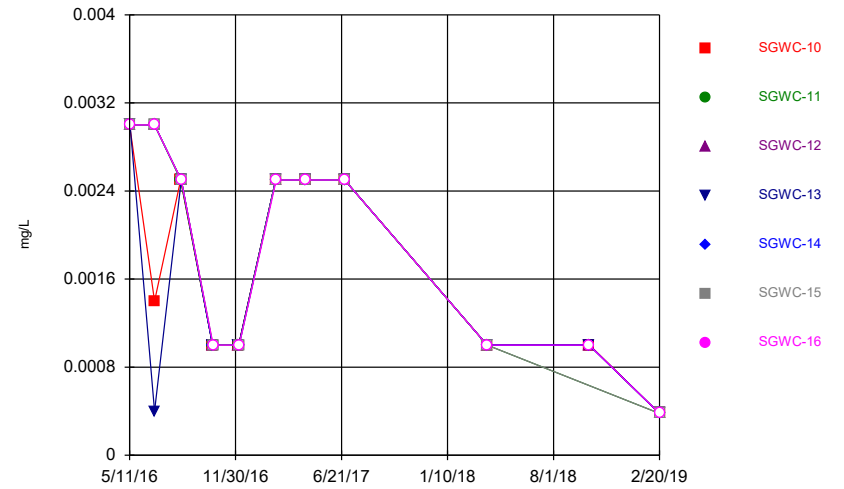
Constituent: Thallium Analysis Run 1/13/2020 3:42 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



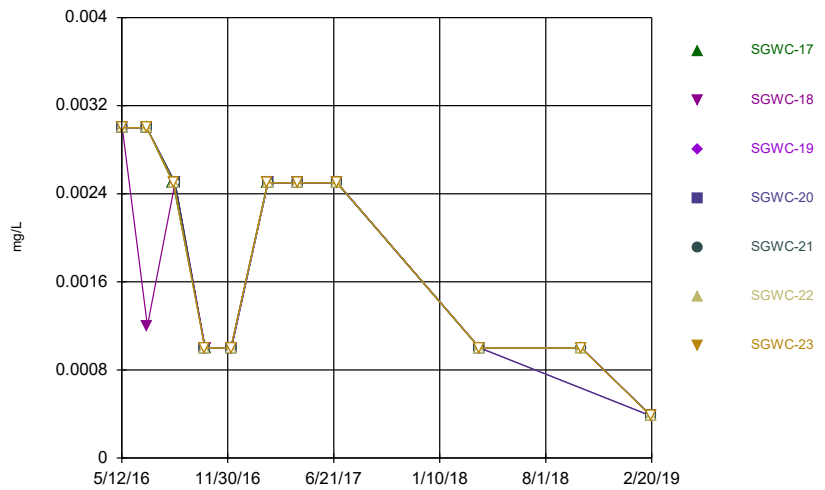
Constituent: Antimony Analysis Run 1/13/2020 7:19 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



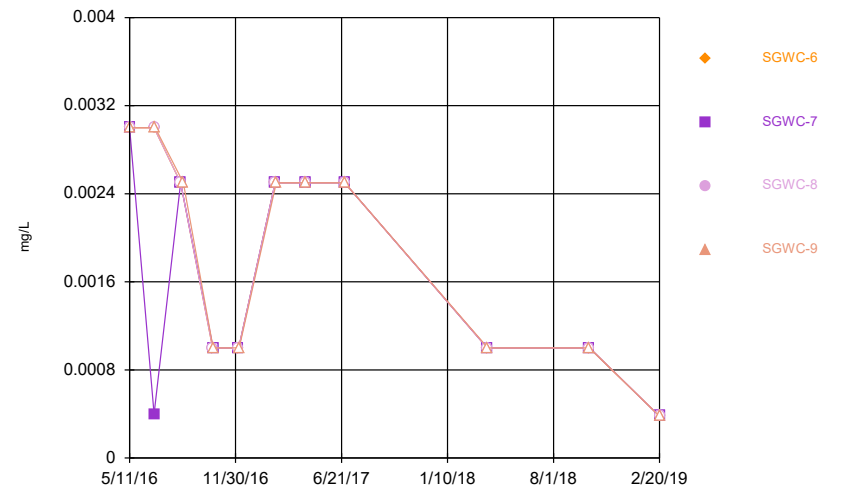
Constituent: Antimony Analysis Run 1/13/2020 7:19 PM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

Time Series



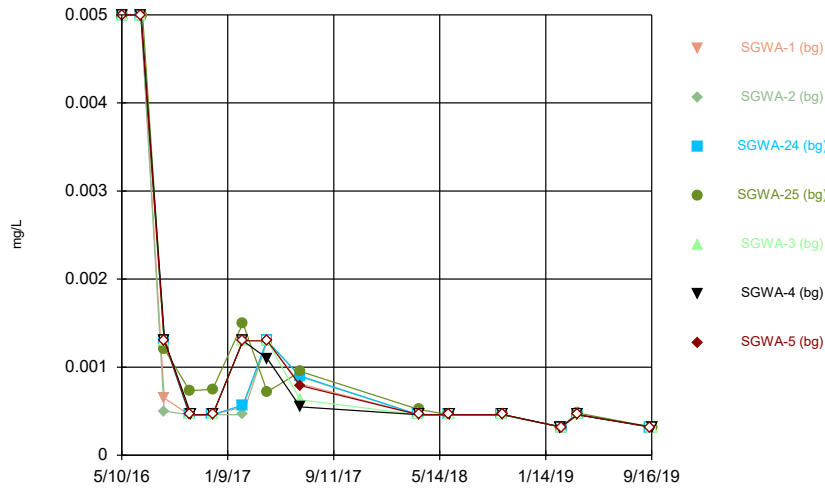
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Time Series



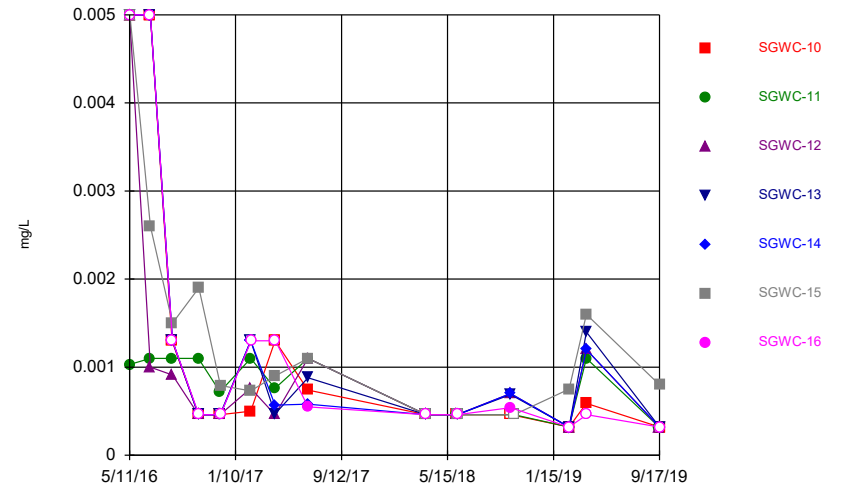
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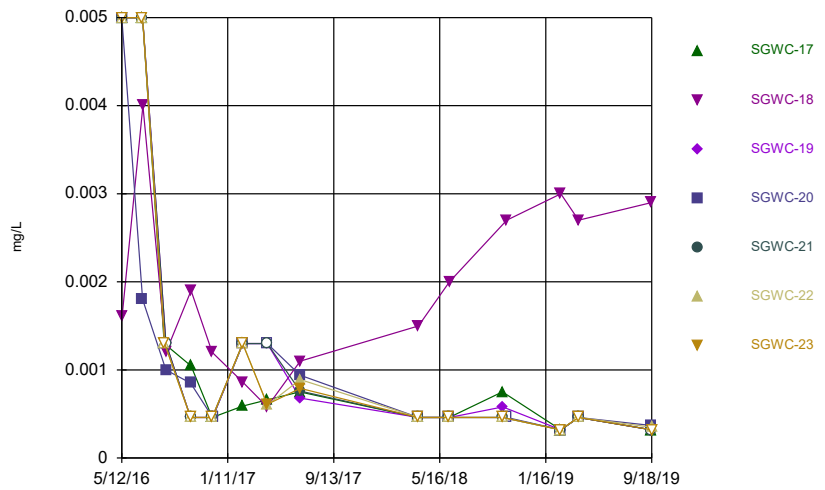
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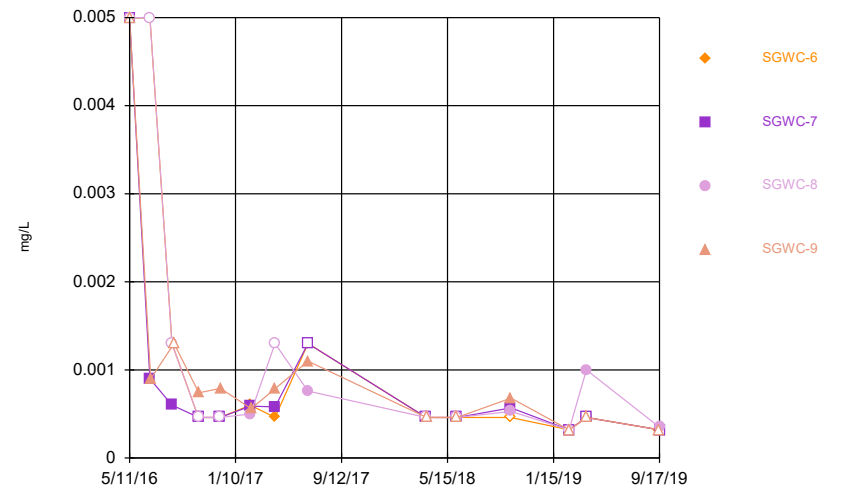
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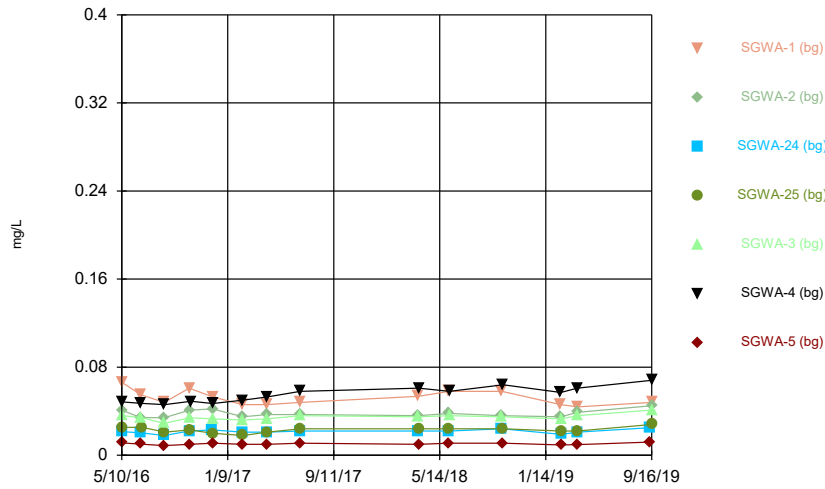
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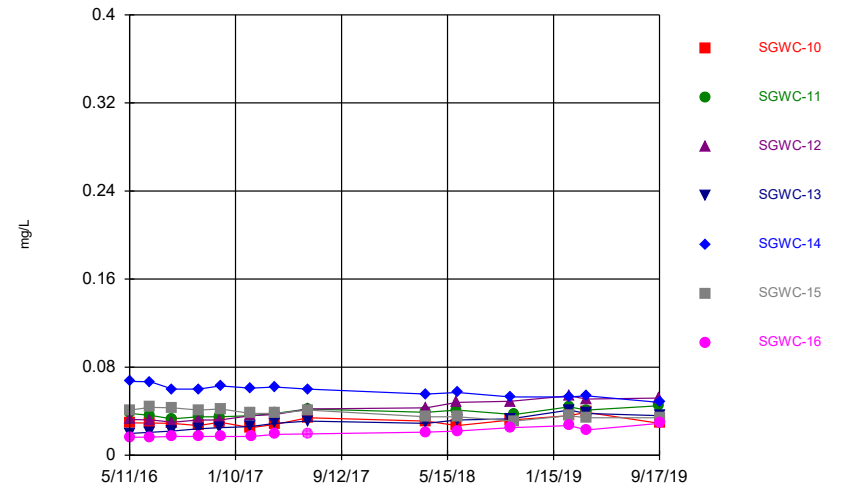
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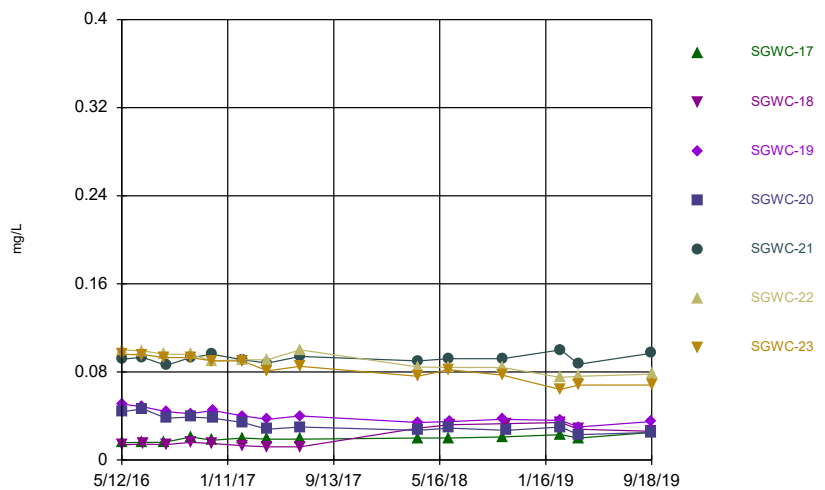
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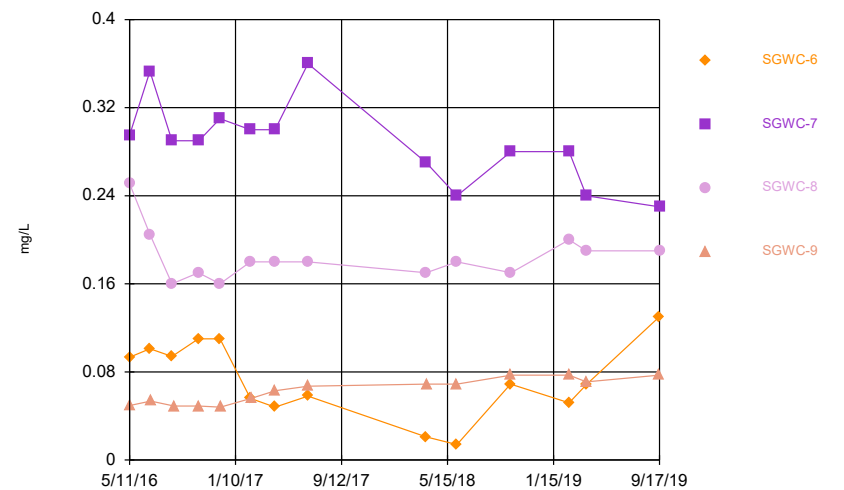
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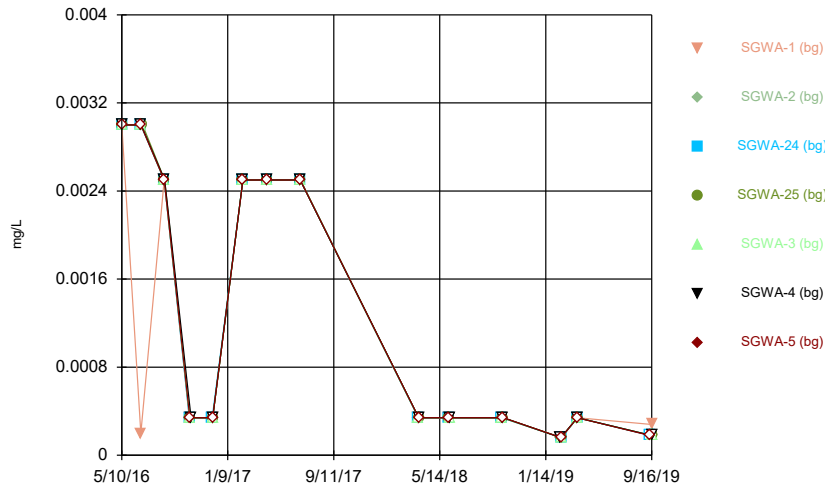
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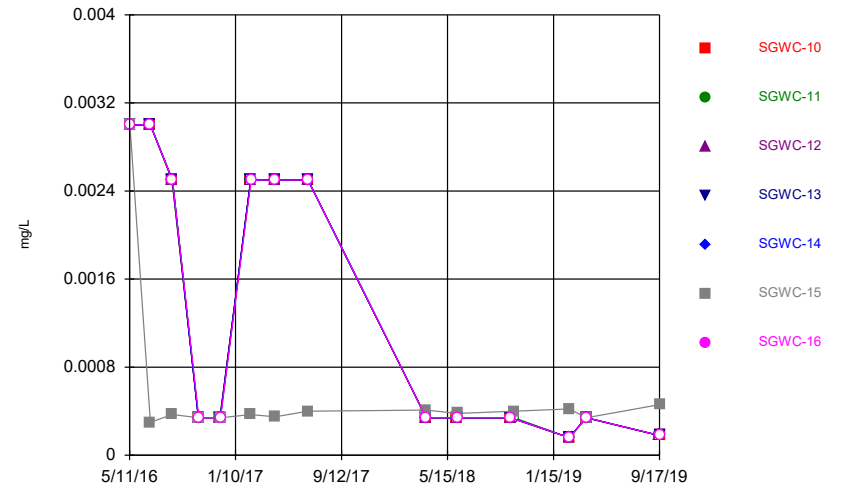
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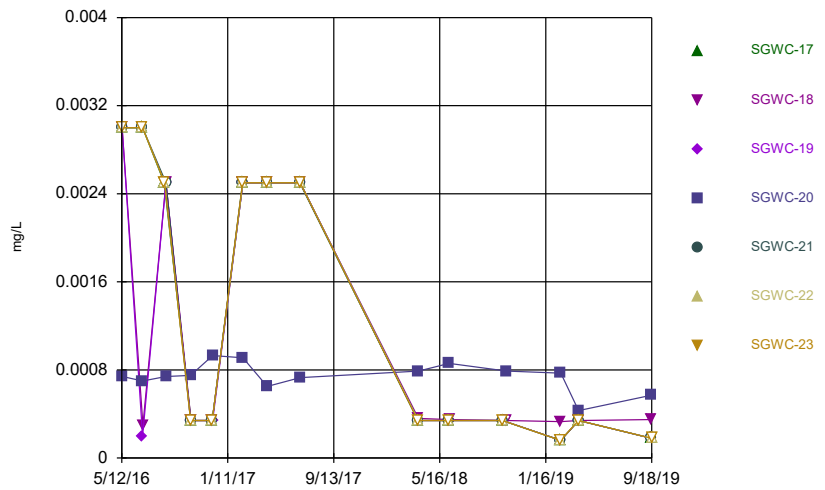
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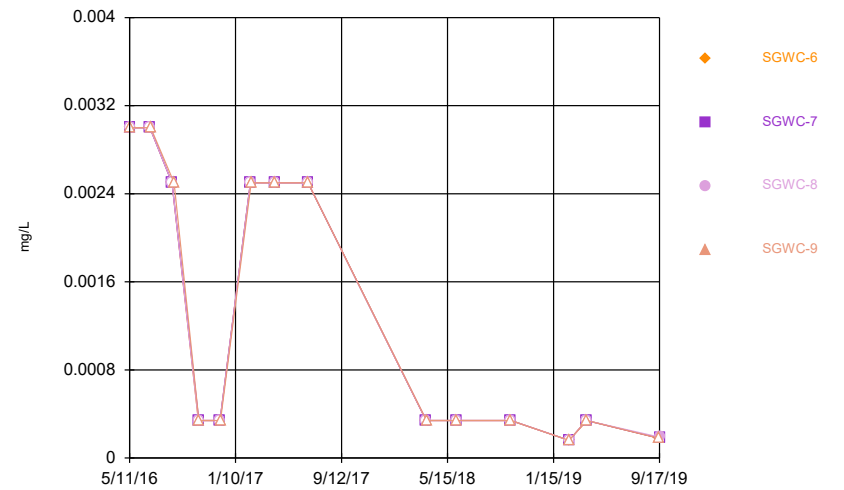
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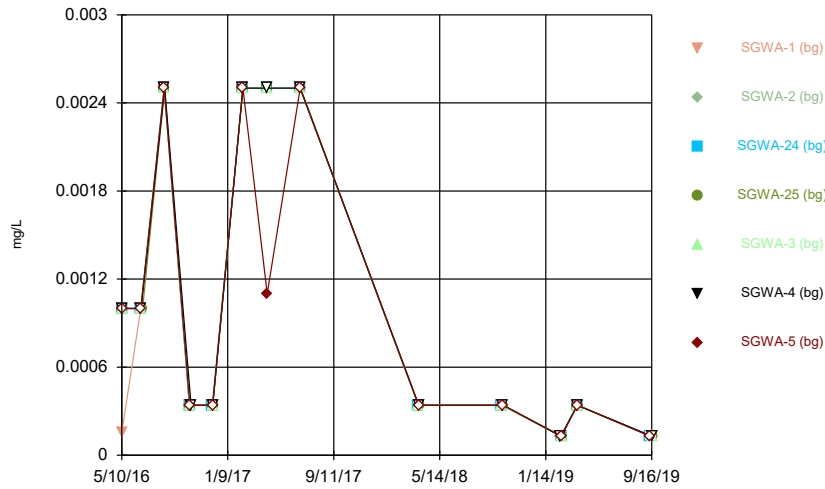
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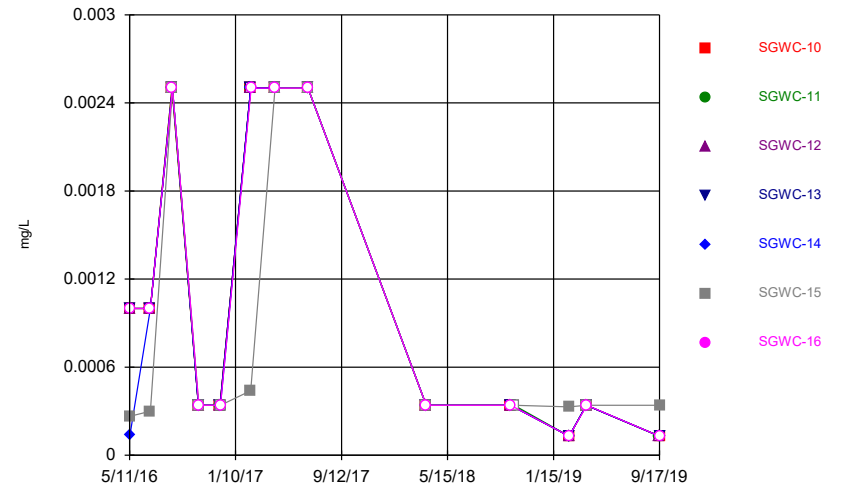
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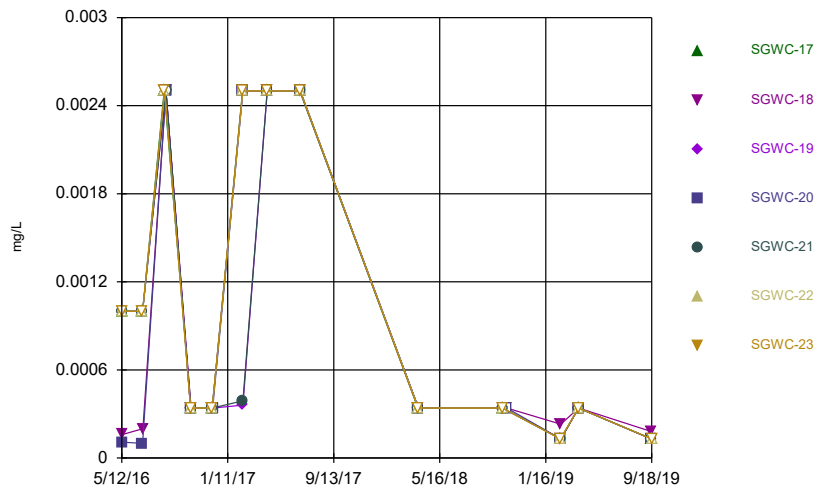
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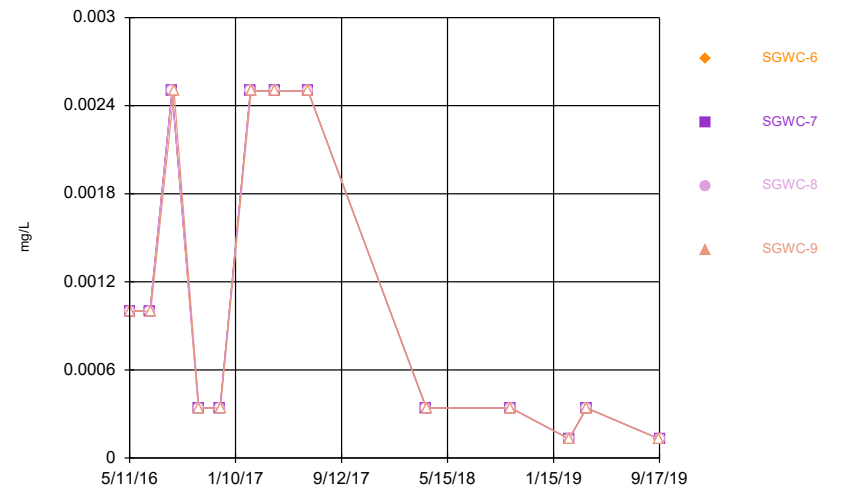
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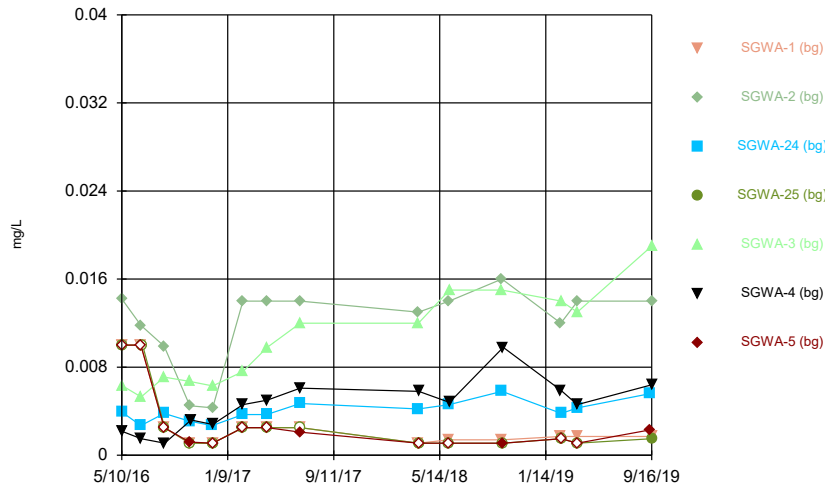
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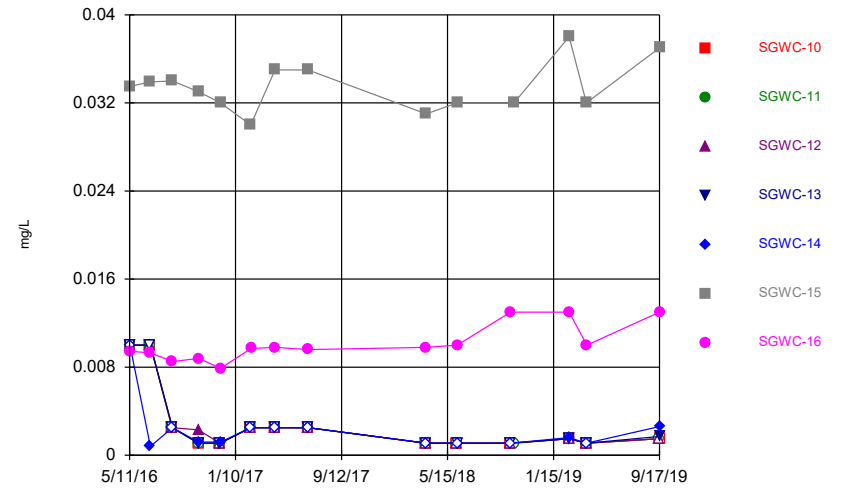
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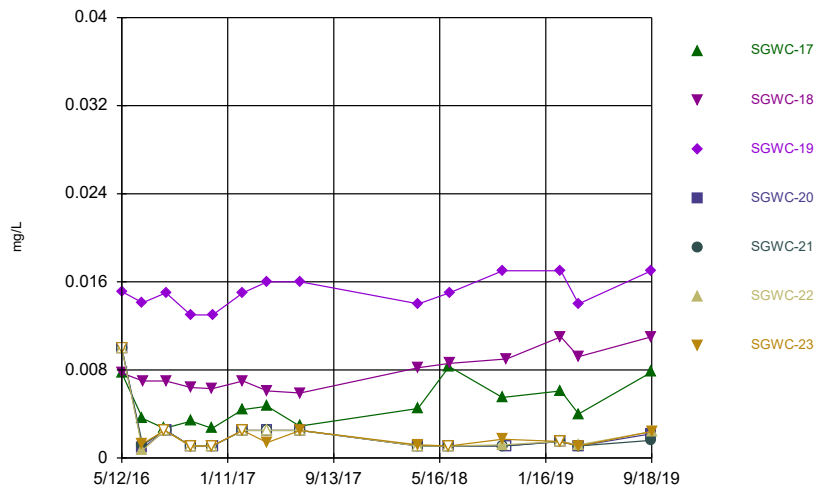
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Time Series



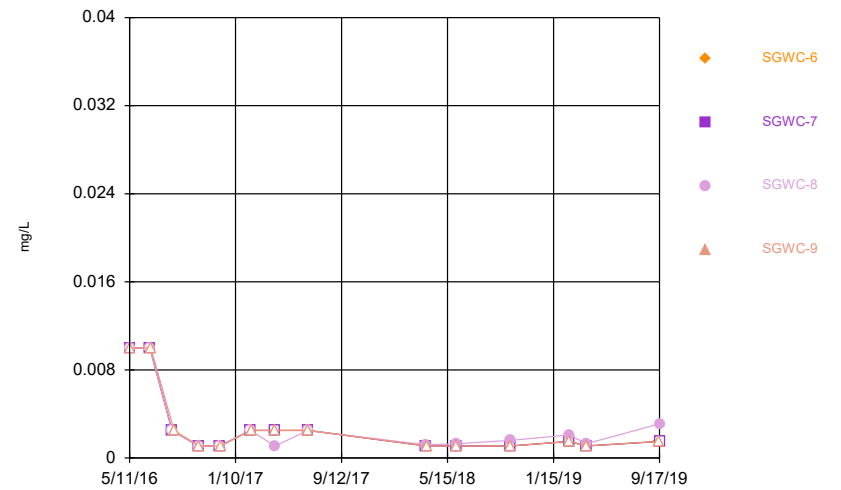
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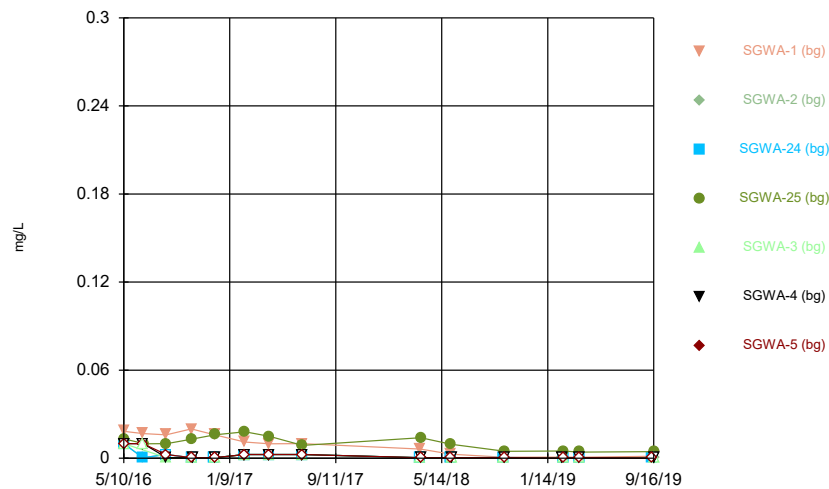
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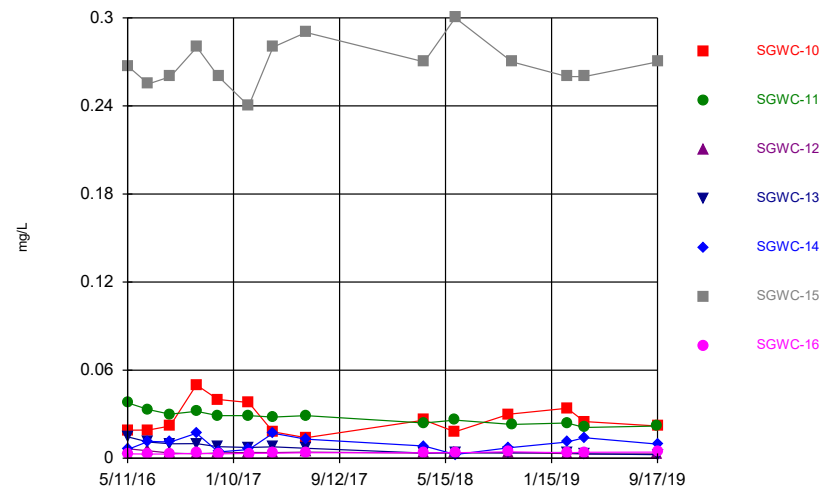
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Time Series



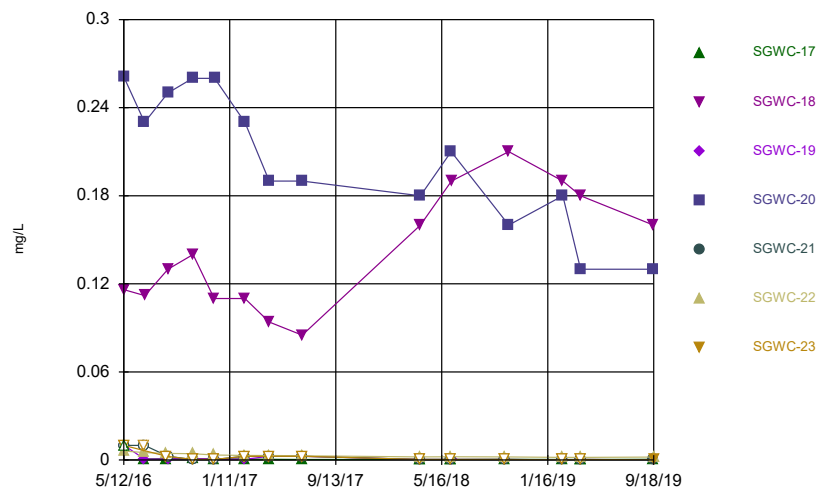
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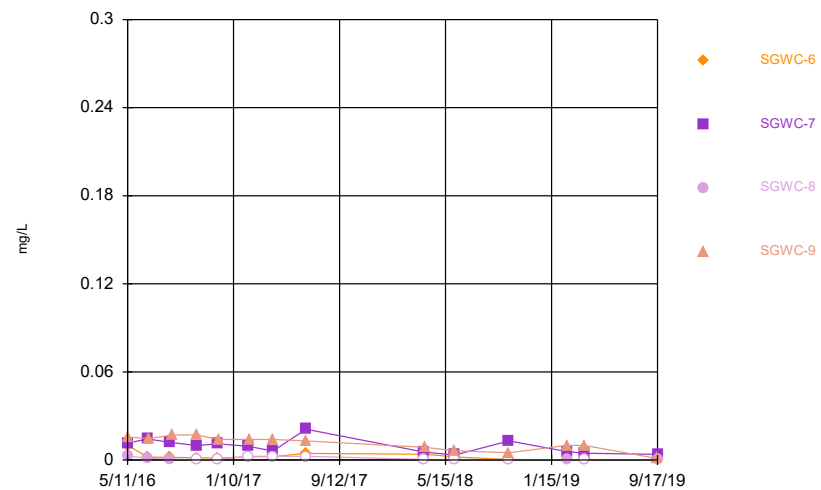
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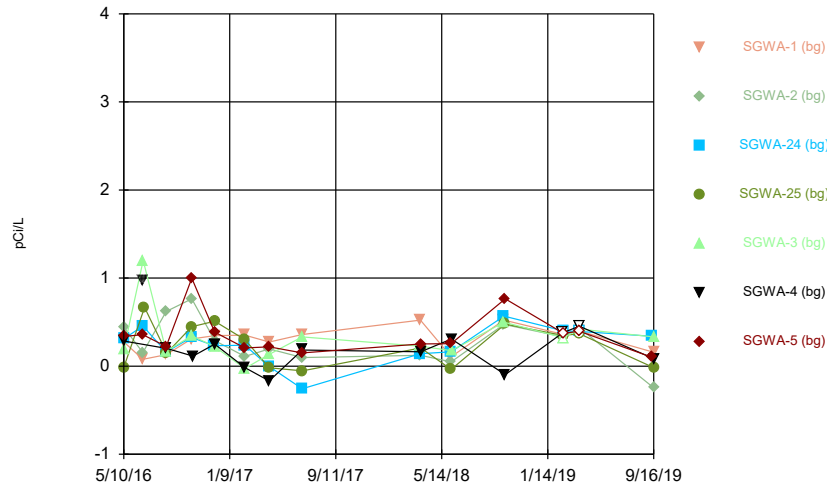
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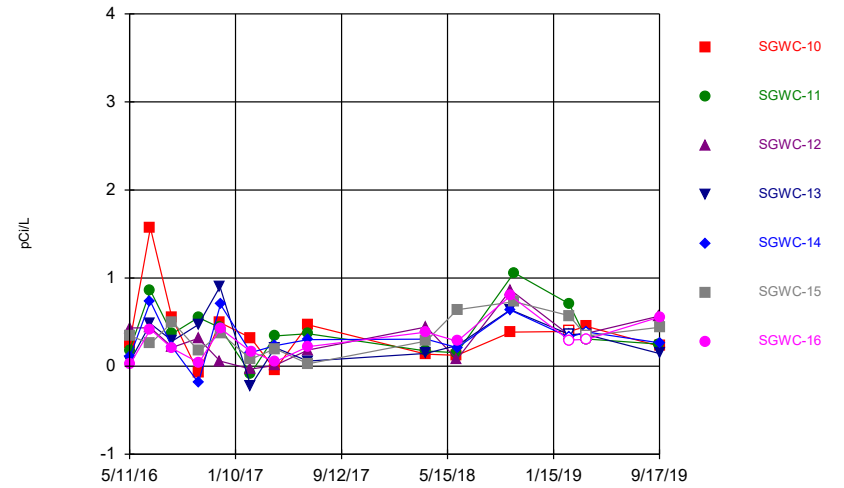


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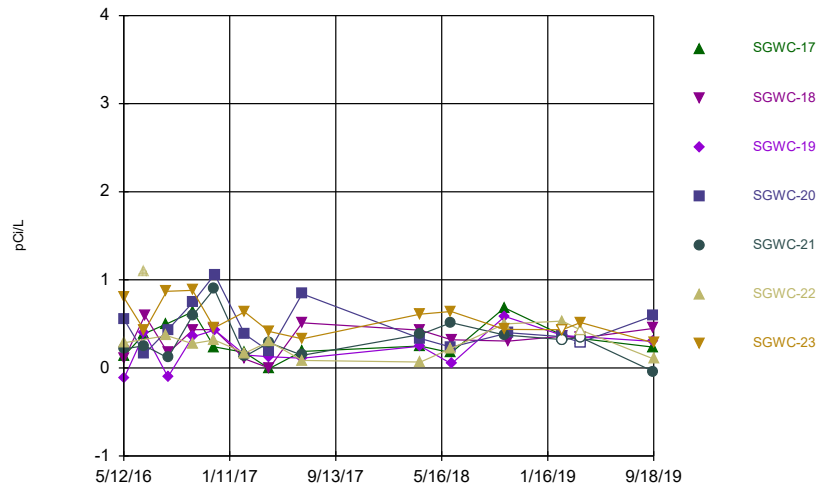
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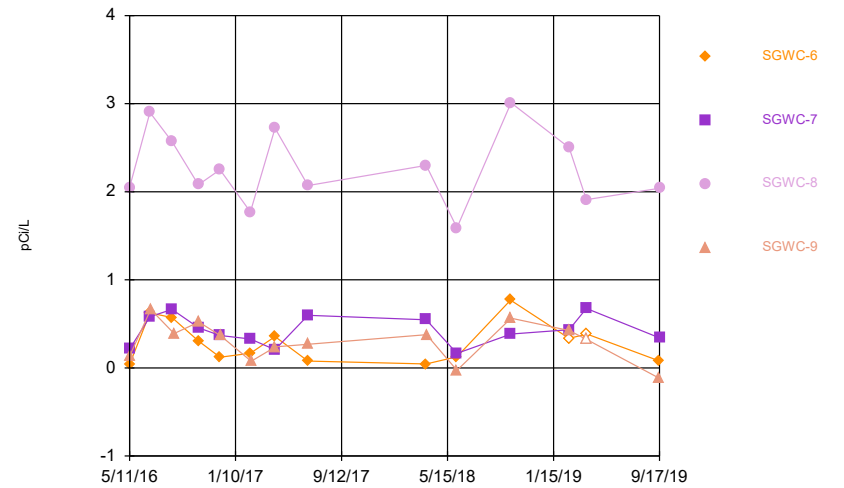
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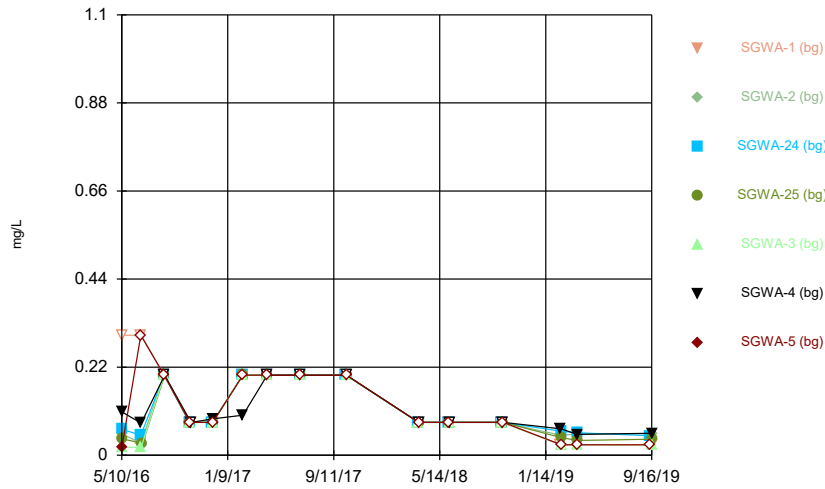
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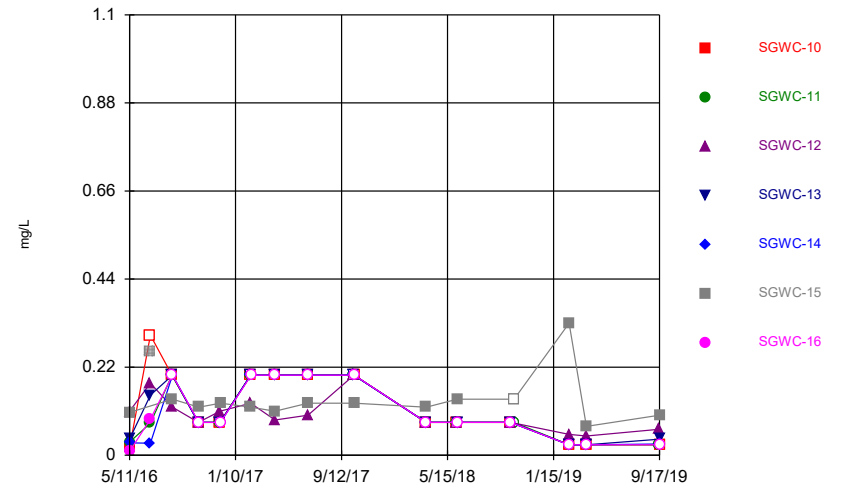
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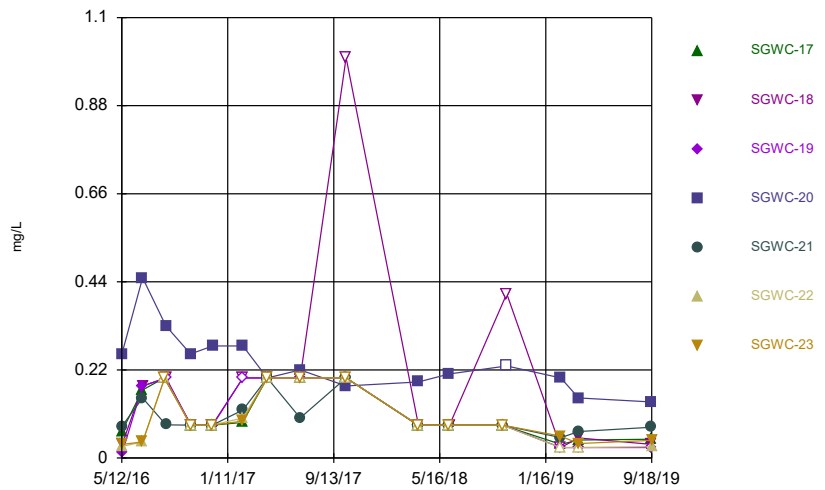
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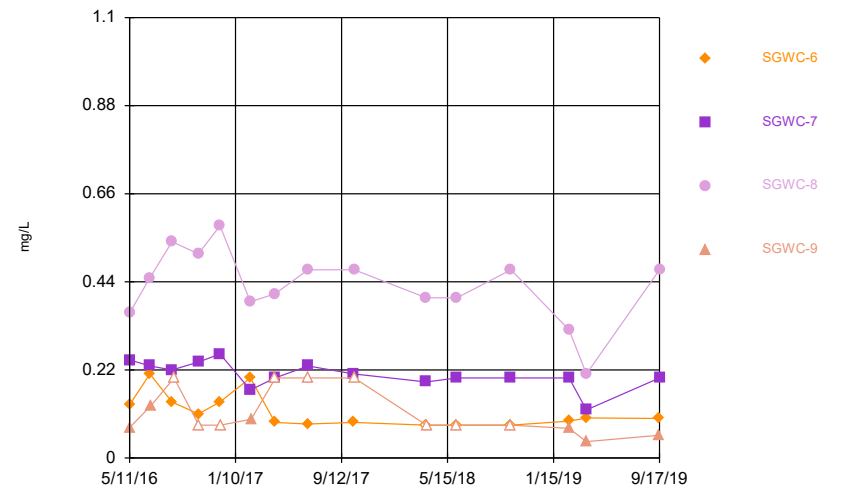
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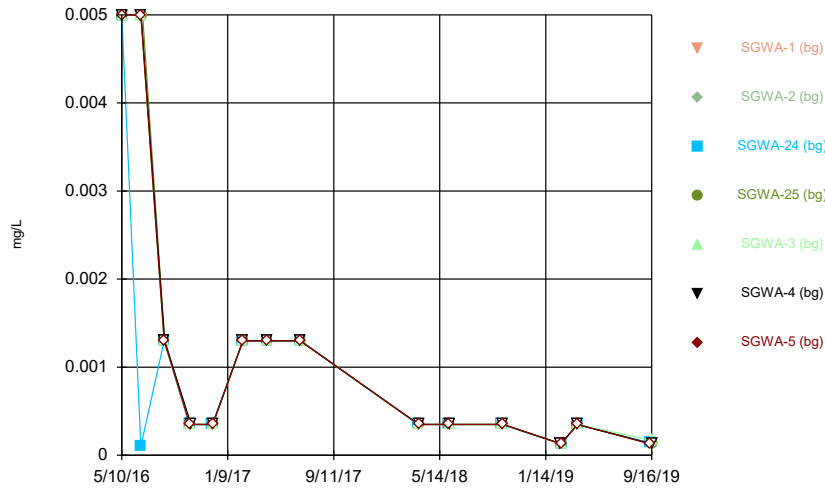
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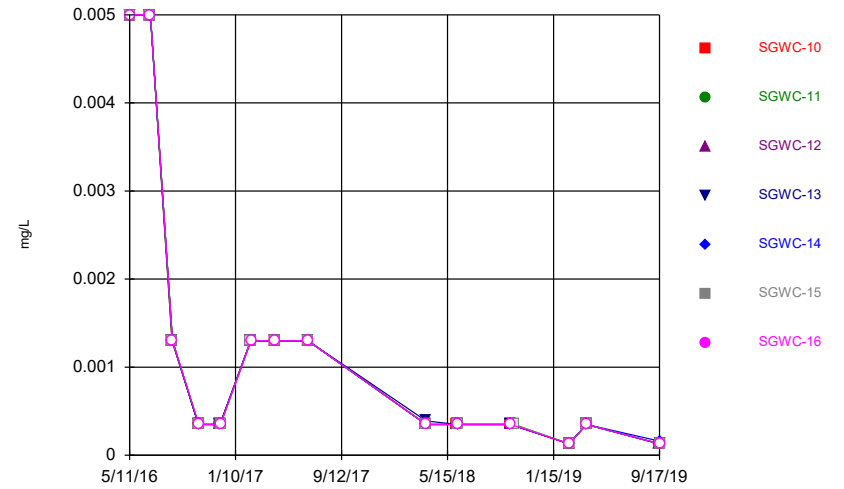
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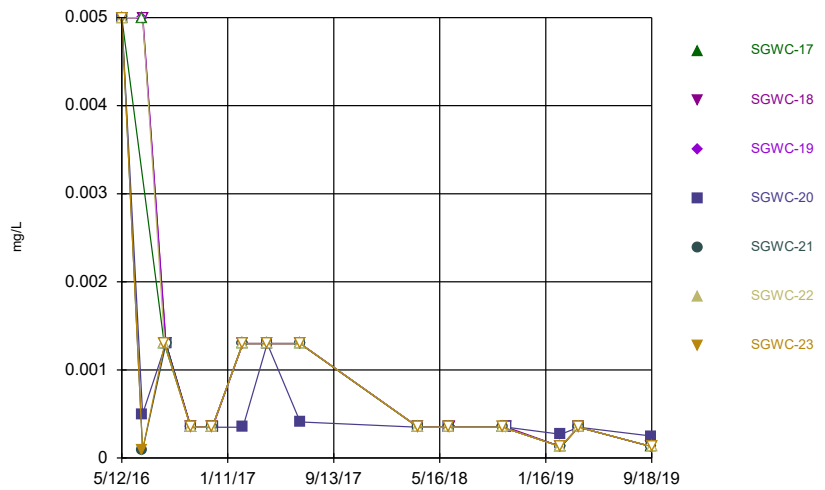
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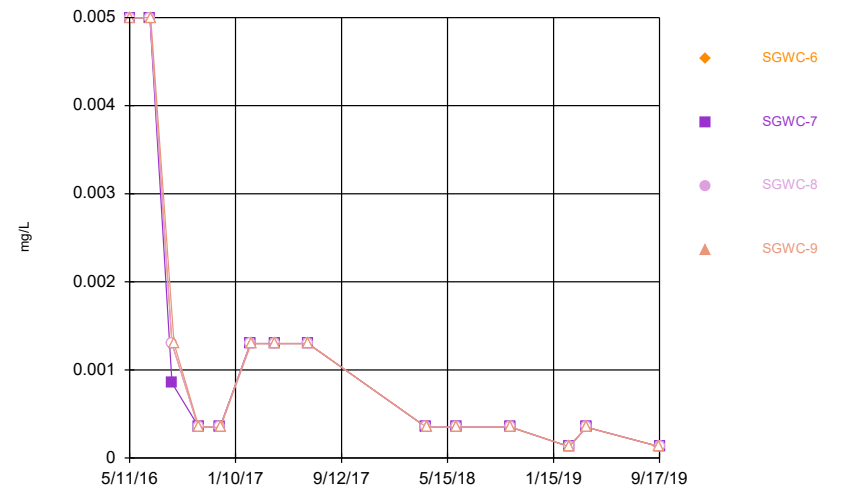
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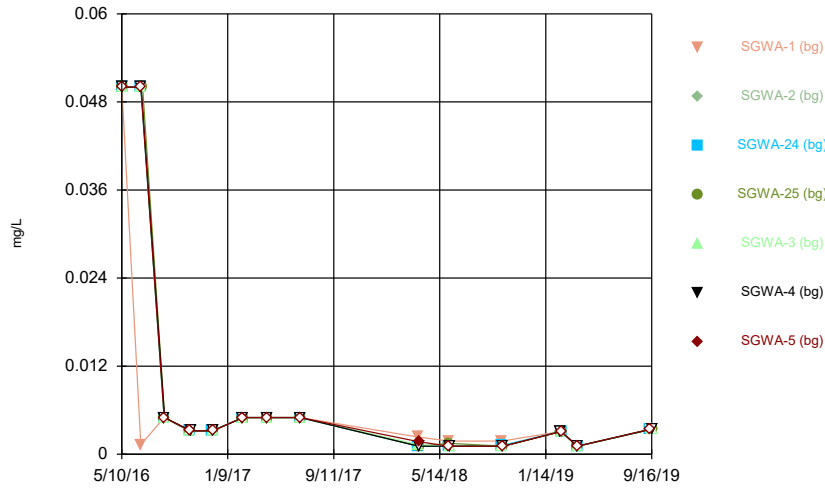
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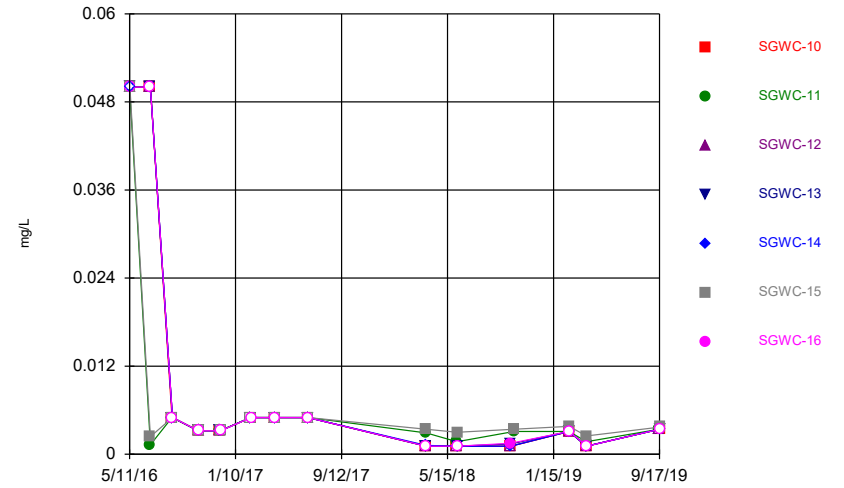
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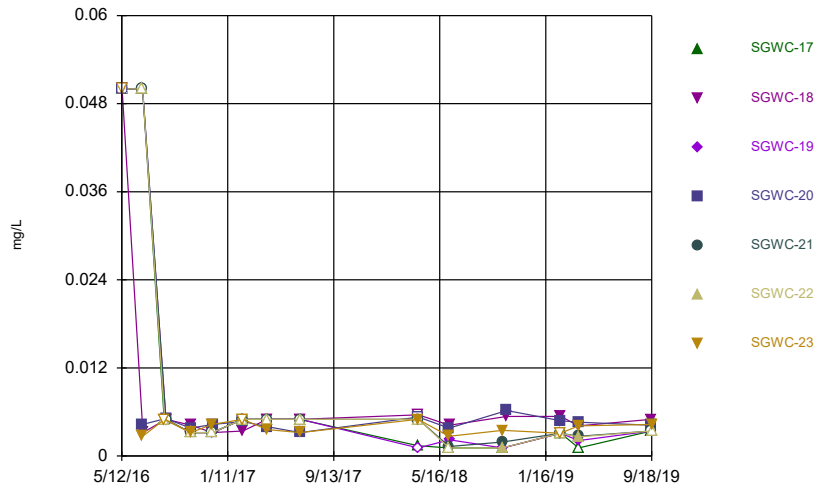
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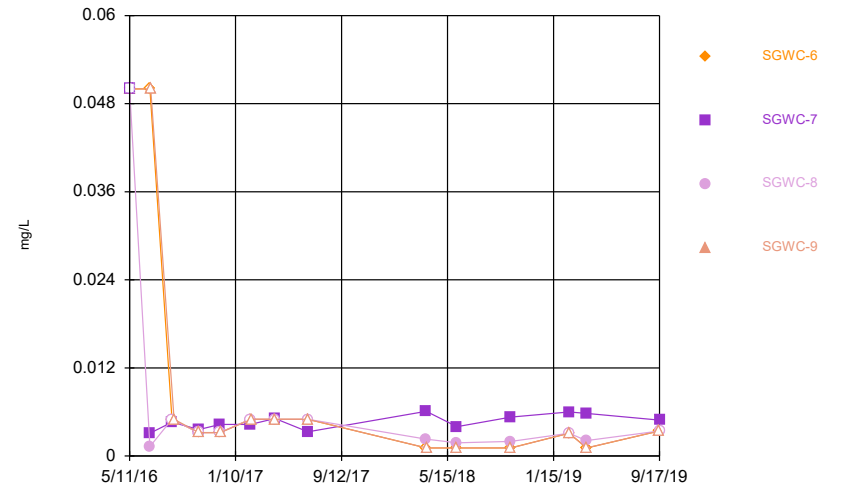
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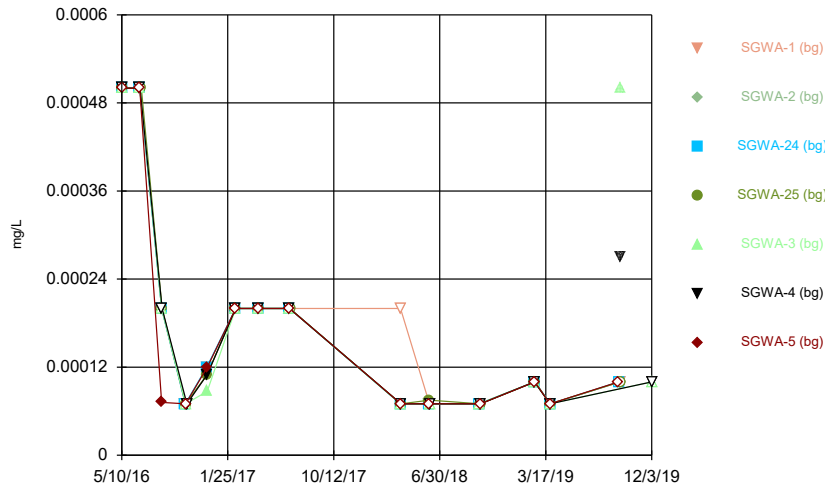
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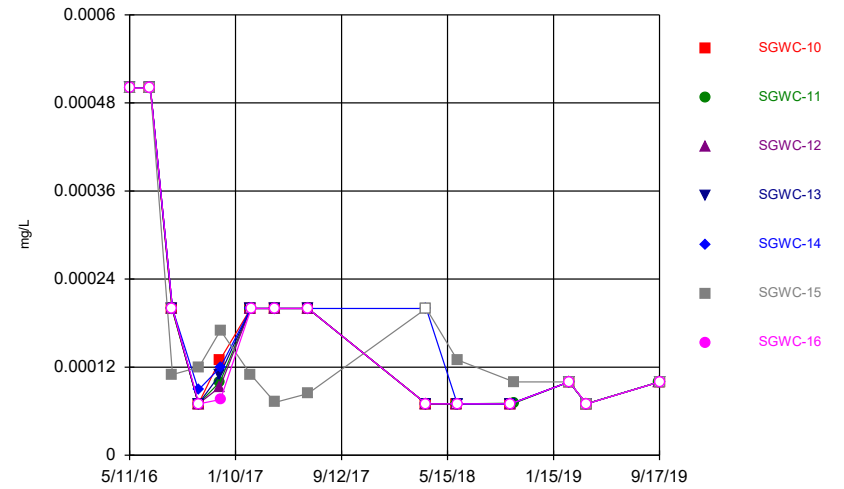
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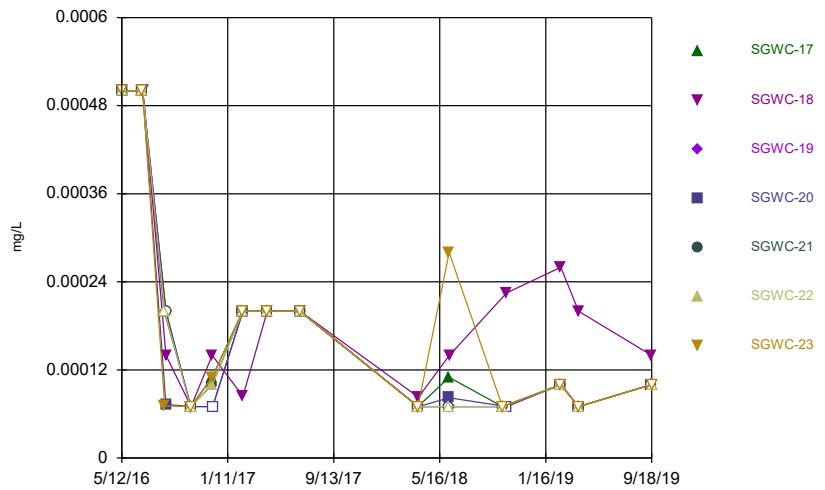
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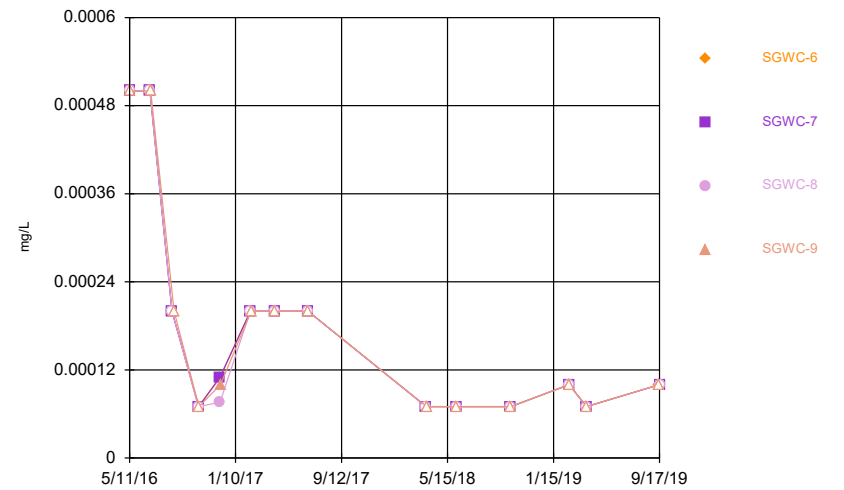
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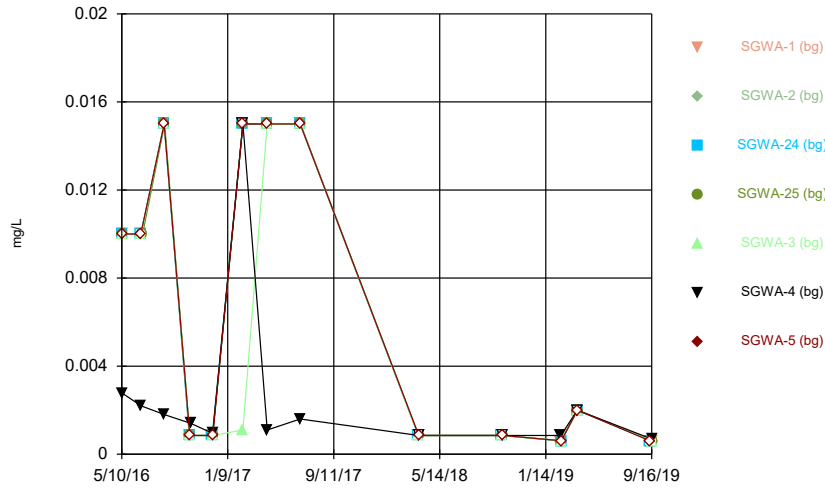
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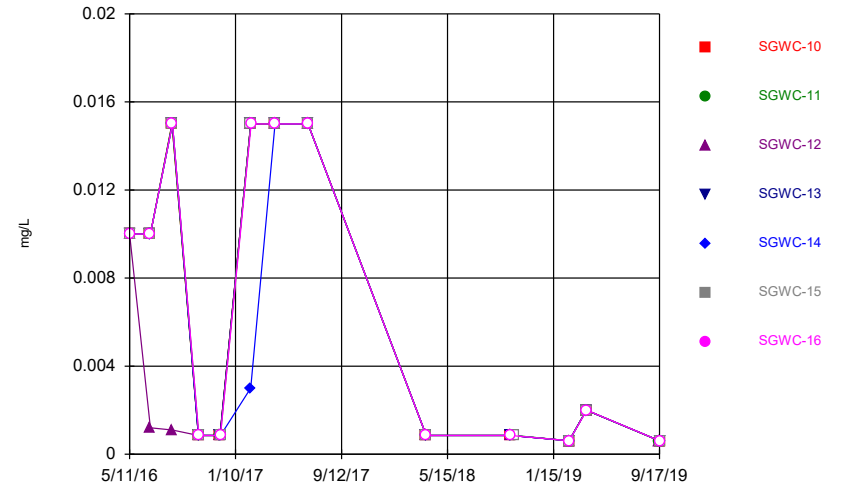
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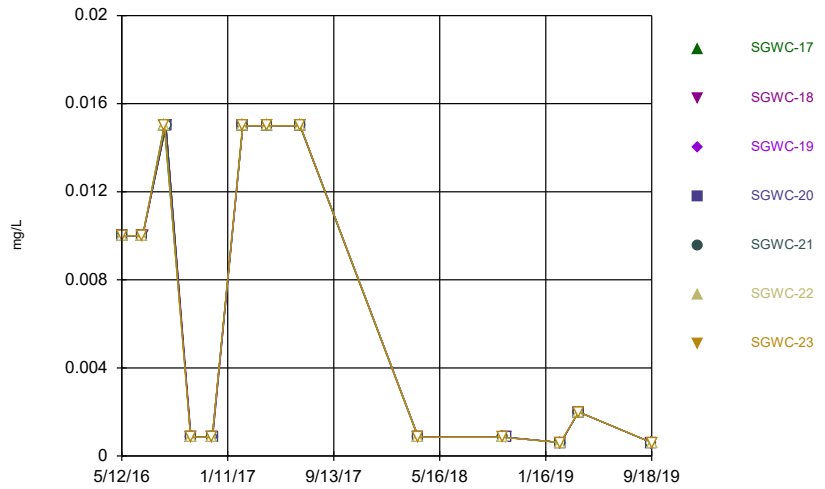
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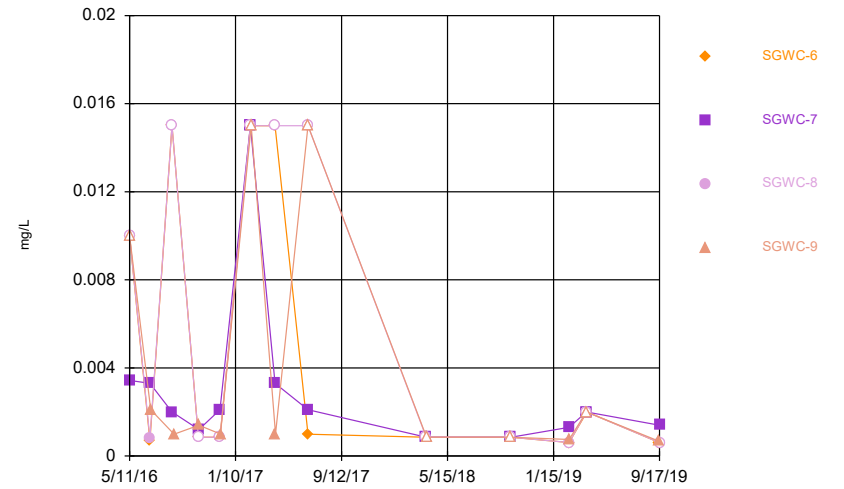
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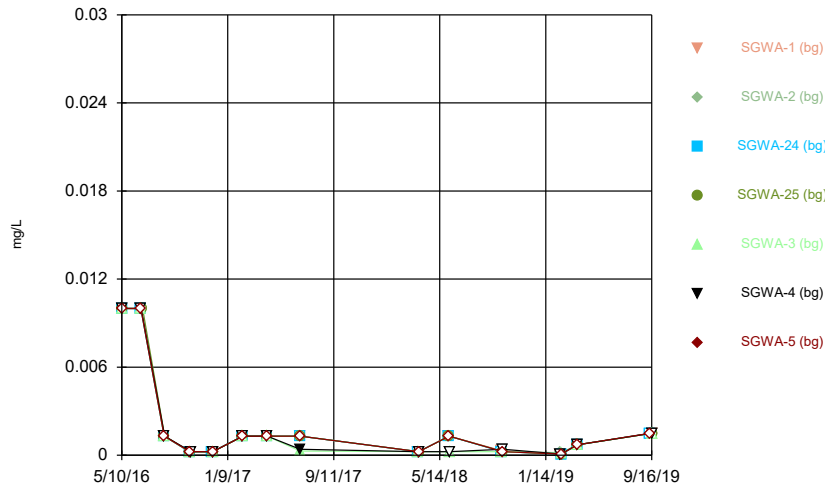
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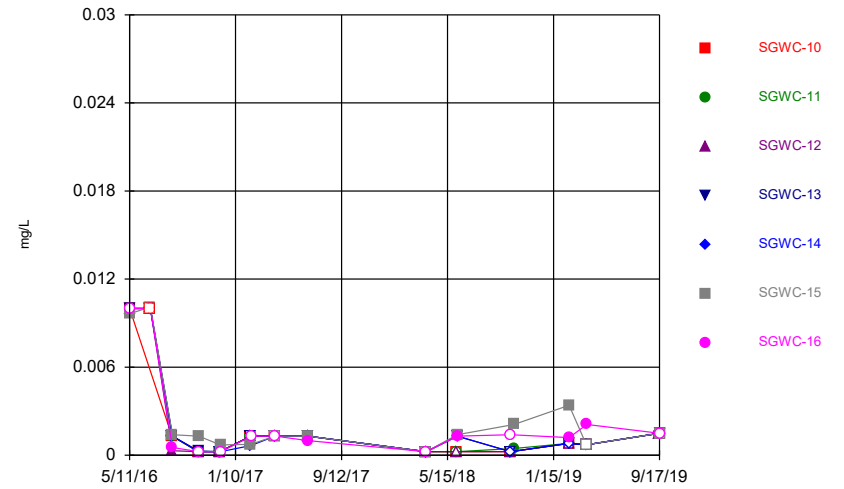
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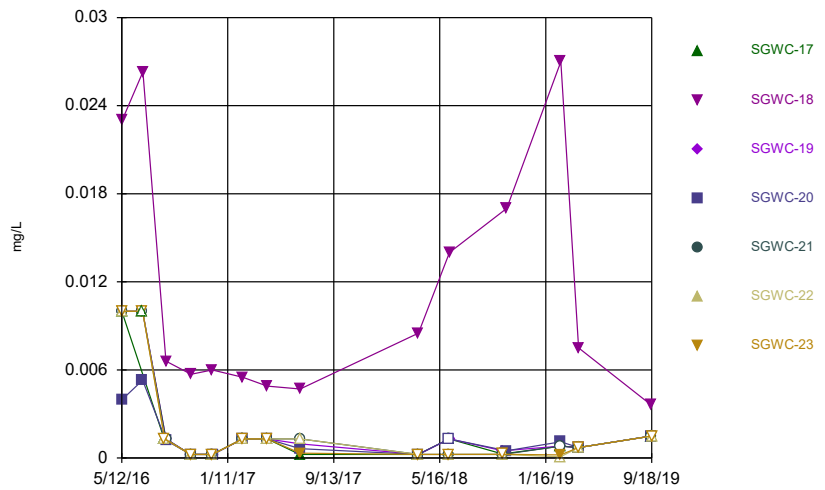
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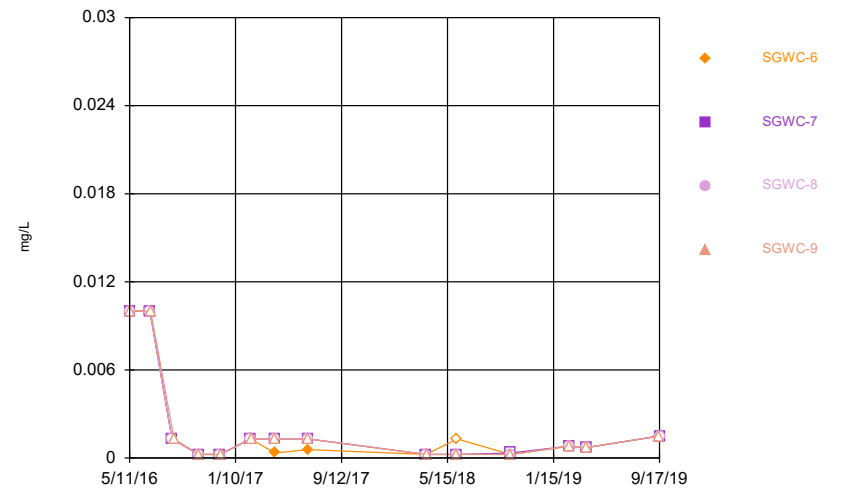
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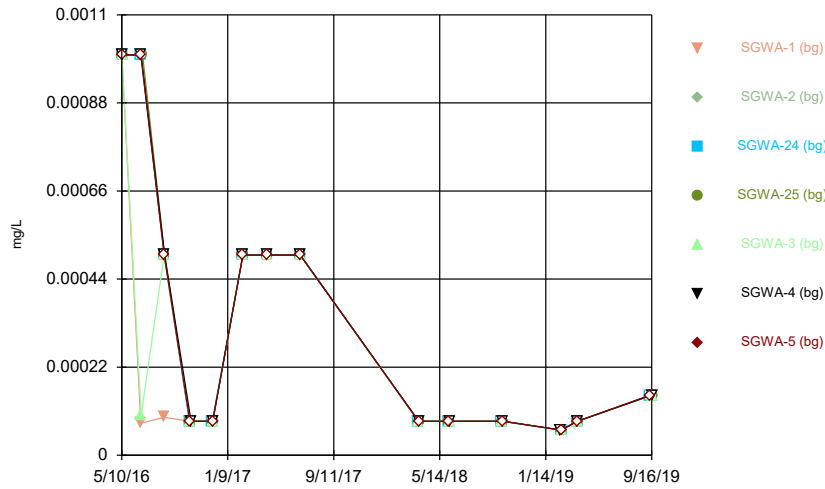
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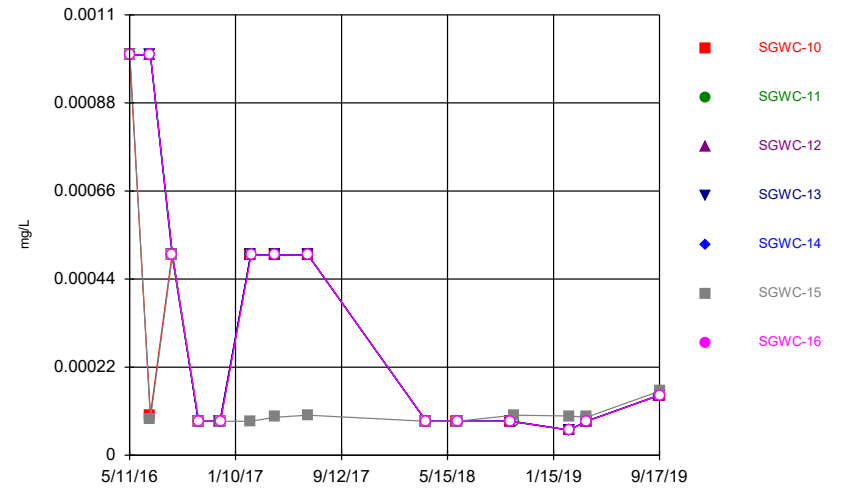
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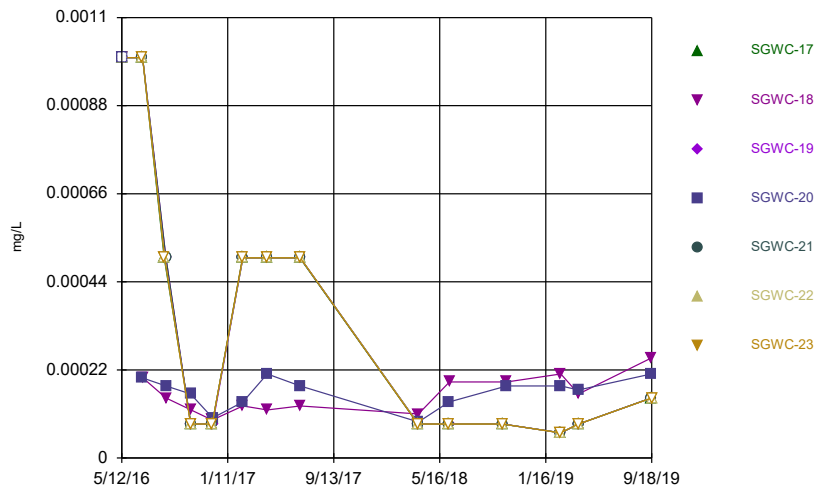
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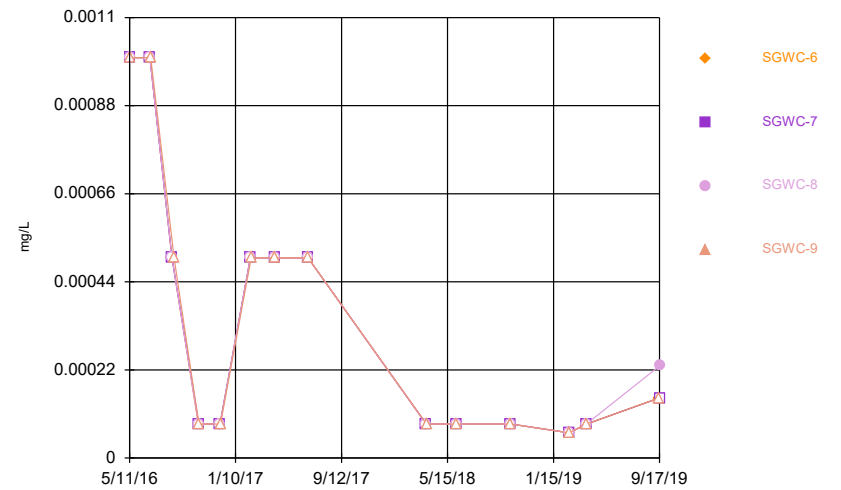
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Constituent: Thallium Analysis Run 1/13/2020 7:20 PM View: Interwell Confidence Interval  
 Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



**APPENDIX C**

# ALTERNATE SOURCE DEMONSTRATION



REPORT

# ALTERNATE SOURCE DEMONSTRATION

*Georgia Power Company Plant Scherer AP-1*

Submitted to:



**Georgia Power Company**

Submitted by:

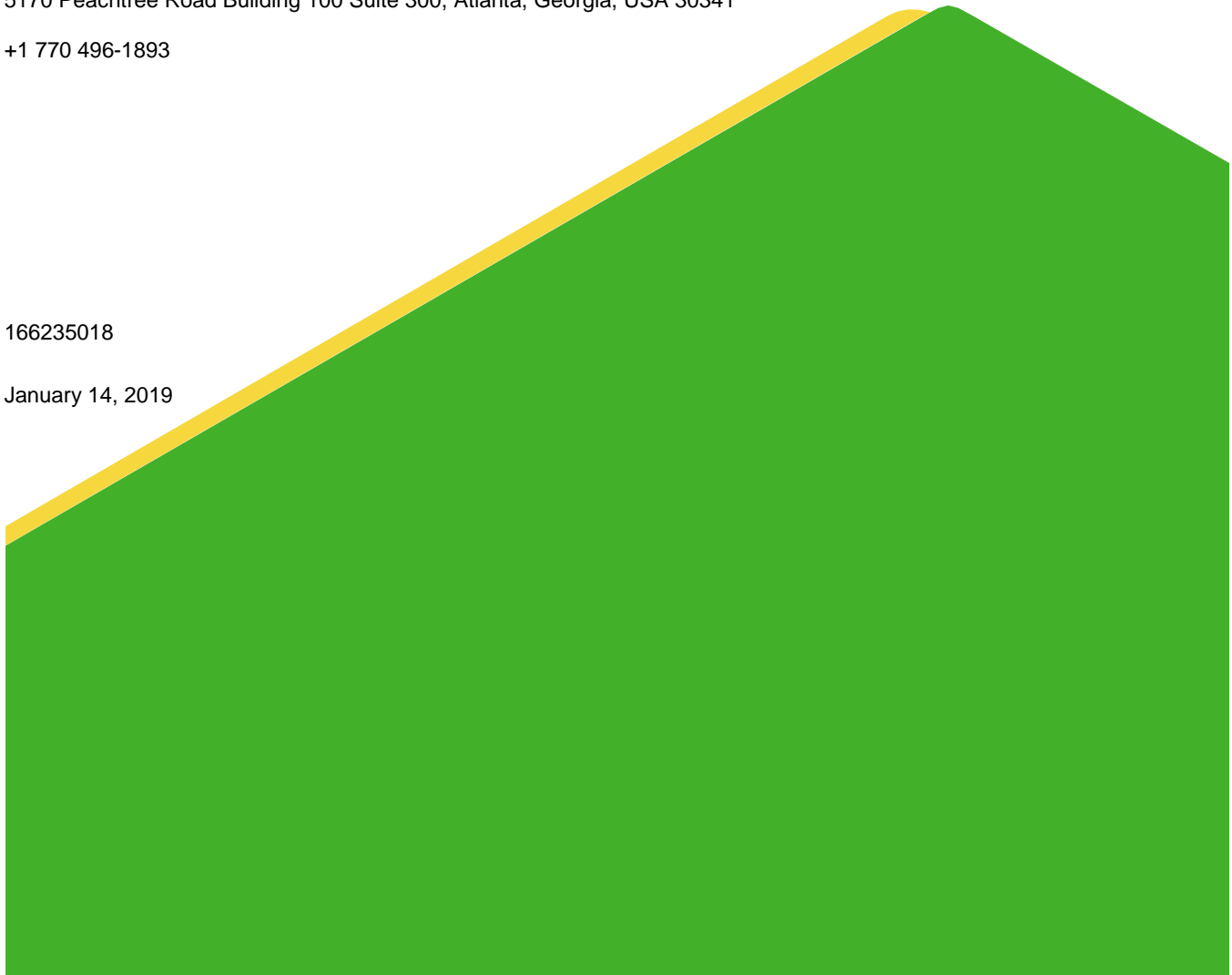
**Golder Associates Inc.**

5170 Peachtree Road Building 100 Suite 300, Atlanta, Georgia, USA 30341

+1 770 496-1893

166235018

January 14, 2019



## Distribution List

Georgia Power Company - Plant Scherer

Joju Abraham, PG - Southern Company Services

Tyler J. Boyles - Georgia Power Company

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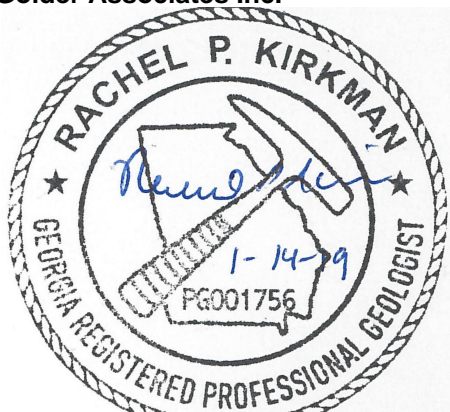
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## Certification

This *Alternate Source Demonstration, Georgia Power Company Plant Scherer AP-1*, Juliette, Monroe County, Georgia, has been prepared in compliance with applicable United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *Alternate Source Demonstration, Georgia Power Company Plant Scherer AP-1*, located at 10986 Georgia 87, Juliette, Monroe County, Georgia 31046 has been prepared to meet the requirements of 40 CFR §257.95(g)(3)(ii).

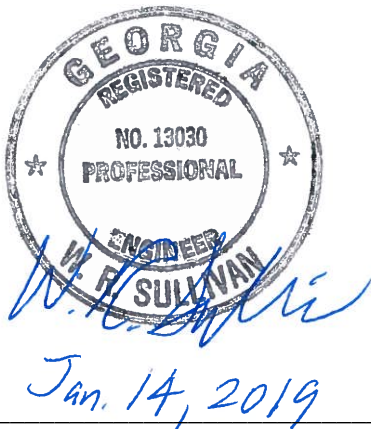
### Golder Associates Inc.



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Georgia Registered Professional Geologist No. 1756

1-14-2019

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1-14-2019

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Date

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[https://golderassociates.sharepoint.com/sites/24912g/project files/200 reports/alternate source demonstrations/ap-1 january 2019\\_asd/final/scherer ap1\\_asd\\_app iv\\_final\\_1.14.2019.docx](https://golderassociates.sharepoint.com/sites/24912g/project%20files/200%20reports/alternate%20source%20demonstrations/ap-1%20january%202019_asd/final/scherer%20ap1_asd_app%20iv_final_1.14.2019.docx)

## 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (40 Code of Federal Regulations [CFR] 257 Subpart D; published in 80 FR 21302-21501, April 17, 2015) (CCR Rule or The Rule), this *Alternate Source Demonstration Plant Scherer AP-1* (ASD) has been prepared to document an alternate source for Statistically Significant Levels (SSLs) calculated at Georgia Power Company's Plant Scherer Ash Pond 1 (AP-1) during assessment monitoring. This document satisfies the requirements of §257.95(g)(3)(ii) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSL and that the SSL was the result of an alternate source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

As documented by this report, the SSLs for cobalt are attributed to naturally-occurring cobalt in subsurface aquifer materials and are not caused by a release from the CCR unit.

## 2.0 SITE DESCRIPTION AND BACKGROUND

Plant Scherer is located in northeast Monroe County, GA, and is operated by the Georgia Power Company (GPC). The Plant is located approximately 5 miles south of Juliette, GA. The property occupies more than 12,000 acres and is bounded on the south by Lake Juliette. A site location map is included as Figure 1, Site Location Map.

### 2.1 Ash Pond AP-1

An ash pond (AP-1) and a cooling pond have been developed on site, and AP-1 is situated on a topographic high and occupies approximately 476 acres.

The groundwater monitoring system for AP-1 consists of twenty-five (25) monitoring wells screened in the uppermost aquifer as shown on Figure 2. Five (5) wells are situated upgradient of AP-1. Figure 2, Site Plan and Well Location Map identifies the location of AP-1 at Plant Scherer and shows the monitoring well network for AP-1.

### 2.2 Geologic and Hydrogeologic Setting

The site is situated within the Piedmont Physiographic Province of central Georgia, which is characterized by gently rolling hills and narrow valleys, with locally pronounced linear ridges. AP-1 is located in a topographically high area on the property, with several relatively small, intermittent and perennial creeks and streams surrounding the pond, creating radial surface water drainage downslope of the pond. Topographic relief across the site is greater than 200 feet, with a natural topographic high of over 570 feet above mean sea level (ft. msl) occurring along the topographic ridge west of AP-1, and a topographic low of less than 380 ft. msl in the eastern portion of the site near Berry Creek. Based on geologic mapping at the site, the plant property is primarily underlain by fine- to medium-grained, massive, poorly-jointed, feldspathic biotite gneiss, which has the potential to host iron and manganese oxides (Golder, 2018).

The groundwater table at the site is laterally consistent and generally occurs within overburden overlying fresh bedrock, which consists of residual soils and a transitionally weathered zone typical of Piedmont settings. Chemical weathering of bedrock results in a zone of enhanced permeability, which is referred to as the transitionally weathered zone, and is characterized by heterogeneously interlayered, fresh to completely weathered (saprolitic) rock. Saprolitic soils and/or saprolitic rock range in thickness across the site and the top of rock surface mimics topography. Bedrock aquifer systems are recharged by groundwater that is stored in the overburden, which slowly infiltrates underlying bedrock aquifer systems by moving through preferentially-weathered discontinuities in the bedrock mass, such as foliation/compositional layering, joints, and faults. A potentiometric map for the site is presented as Figure 3, AP-1 Potentiometric Surface Contour Map – October 2018.

### 3.0 SUMMARY OF ANALYTICAL RESULTS AND STATISTICAL ANALYSES

Following the October 2017 sampling event, as part of detection monitoring, Plant Scherer identified statistically-significant increases (SSIs) of Appendix III parameters above the upper prediction limits established based on the site-specific statistical plan. As a result, the AP-1 unit has transitioned to assessment monitoring. The following sections summarize the assessment monitoring plan for AP-1 and present the statistical analysis method for evaluation of assessment monitoring constituents (i.e., Appendix IV parameters) as they pertain to this ASD.

#### 3.1 Statistical Analyses Methods

During assessment monitoring, concentrations of Appendix IV constituents are compared to an applicable Groundwater Protection Standard (GWPS). As described in 40 CFR §257.95(h)(1-3) the GWPS is:

- 1) The maximum contaminant level (MCL) established under §§141.62 and 141.66 of this title (the “MCL”).
- 2) Where an MCL has not been established:
  - i) Cobalt 6 micrograms per liter (ug/l);
  - ii) Lead 15 ug/l;
  - iii) Lithium 40 ug/l; and
  - iv) Molybdenum 100 ug/l.
- 3) Background levels for constituents where the background level is higher than the MCL or rule-specified GWPS.

As specified in 40 CFR §257.95(h), the GWPS is the Maximum Contaminant Level (MCL) or the background concentration for constituents for which an MCL has not been established. Since an MCL has not been established for cobalt, the GWPS is the background concentration. The upper tolerance limits (UTLs) are used to calculate background limits from pooled upgradient well data to determine the background concentration/GWPS. Table 3.1.1, Site-Specific Groundwater Protection Standards, presents the data used for statistical comparison of Appendix IV data at AP-1.

**Table 3.1.1: Site-Specific Groundwater Protection Standards**

Analyte	Units	MCL	Site Specific Upper Tolerance Limit	Site-Specific Groundwater Protection Standard Used for Assessment Monitoring
Cobalt	mg/L	None	0.02	0.02

After the GWPS is established, confidence intervals are then constructed on downgradient wells for each of the Appendix IV parameters using the GWPS for comparison. Only when the entire confidence interval is above a GWPS is the constituent considered to exceed the GWPS.

#### 3.2 Assessment Monitoring

On January 15, 2018, Assessment Monitoring was initiated at Plant Scherer AP-1. Pursuant to 40 CFR §257.95(a) monitoring wells were sampled for all Appendix IV parameters in March as the initial assessment sampling event. In June the first semiannual assessment monitoring event was completed by sampling



monitoring wells for all Appendix III constituents and those Appendix IV constituents that were detected (had a reportable data value) in the initial March 2018 groundwater samples.

The June 2018 Appendix IV data were compared to the GWPS using confidence intervals. Statistical plots presenting the confidence intervals for AP-1 are presented in Appendix A, Statistical Analyses. Additionally, time series plots for Appendix IV groundwater quality data at AP-1 are provided in Appendix A.

### 3.3 Statistically Significant Levels

Review of confidence intervals in Appendix A indicates SSLs of cobalt are identified at monitoring wells SGWC-11, SGWC-15, SGWC-18 and SGWC-20. On October 15, 2018, Plant Scherer provided notification of SSL exceedances as required by 40 CFR §257.95. The next chapter provides documentation of an alternate source for cobalt in site groundwater.

## 4.0 ALTERNATE SOURCE DEMONSTRATION

There are multiple lines of evidence that support the conclusion that the SSLs of cobalt at AP-1 are not the result of impact by AP-1 but from an alternate source instead; specifically, that cobalt is naturally occurring in aquifer materials at the site. The following information supports the conclusion that cobalt SSLs are not the result of a release from AP-1:

- Cobalt has not been detected in porewater samples above the laboratory reporting limit. Cobalt concentrations in porewater samples from AP-1 are estimated and significantly below those detected at groundwater wells.
- Naturally-occurring cobalt is present in soils/sediment, saprolite, and bedrock at Plant Scherer and regionally.
- Naturally-occurring cobalt is present in regional groundwater.
- There are no statistical trends for cobalt in wells exhibiting SSLs.

### 4.1 Pore-water Chemistry

During January 2019, samples of pore-water from within AP-1 were collected and analyzed. Interstitial monitoring probes B-102A, B-102B, B-103A, B-103B, B-104A and B-104B were sampled for total cobalt. These piezometers are screened in the CCR material at AP-1. Results of these analyses are presented in Appendix B, Analytical Data. Review of analytical data reports indicates the absence of cobalt in pore-water samples above laboratory reporting limits. Total cobalt was not detected in pore-water samples above the reporting limit (RL; 0.0025 mg/L). Estimated concentrations, slightly above the MDL (0.000075 mg/L) were identified at interstitial probes B-102A, B-102B, B-103A, B-103B, and B-104A. The estimated concentrations of cobalt in porewater are below the risk-based screening level (0.006 mg/L) and are significantly below concentrations observed in site groundwater. At the measured pH range of AP-1 pore-water (8.7 to 11.9 standard units), cobalt mobility is limited, as described below and graphically presented in Figure 4.2.2. As such, the cobalt in site groundwater cannot reasonably be caused by a release from AP-1.

### 4.2 Naturally-Occurring Cobalt in Aquifer Materials

Naturally-occurring cobalt is present in soils/sediment, saprolite, and bedrock at and near AP-1 as well as at U.S. Geological Survey test holes in Monroe County, GA (Table 4.2.1). For reference, naturally-occurring cobalt in U.S. soils occurs at an average concentration of 29 mg/kg (Shacklette & Boerngen, 1984). Cobalt may be present in mineral form as arsenides, carbonates, sulfides and oxides (Hem, 1989; Smith and Carson, 1981). During weathering of these minerals (i.e., dissolution and/or oxidation), any cobalt is typically released and redistributed to iron or manganese (hydr)oxides (Butt et al., 2000) or other sorbent (e.g., clays, organic matter).

However, under low-pH conditions, the formation of such (hydr)oxides is inhibited, leading to increased dissolved cobalt levels and increased mobility in groundwater (Nordstrom and Alpers, 1999).

Mineralogical results obtained by X-ray diffraction (XRD) from on-site aquifer solids correlate with those reported regionally (included in Appendix B). The mineralogical composition of the saprolitic soils represents a typical weathering profile. The mineralogical compositions of deeper samples are more closely related to the original parent materials and show less indication of weathering. Trace levels of jarosite were identified in some samples corresponding to the intermediate aquifer (64.5ft bgs. and 67.3 ft bgs; PZ-9I and PZ-40I). Jarosite, an acid sulfate salt containing potassium and iron, typically forms during the oxidative weathering of iron-rich sulfide deposits under acidic conditions (Cook, 1978; Nordstrom and Alpers, 1999). Thus, the formation of jarosite during geological weathering at depth may infer historically low-pH conditions in some locations in the saprolite surrounding AP-1. During this weathering, cobalt may have been released as well and remained mobile in a dissolved state in groundwater.

**Table 4.2.1: USGS landscape site #5072 and NGDB rock sample W239273; Monroe County, GA**

Element	Units	Top 5cm	A Horizon	C Horizon <sup>[3]</sup>	Bedrock <sup>[4]</sup>
Cobalt <sup>[2]</sup>	mg/kg <sup>[1]</sup>	21.3	21.3	26.9	87 - 96
Site-specific element data (average of site samples)		Site-specific surface data	Shallow site data (30-40 ft. bgs.)	Intermediate site data (40-65 ft. bgs.)	Bedrock site data (90-106 ft. bgs.)
Cobalt	mg/kg	Not Available	33	22.3	2.9

Notes:

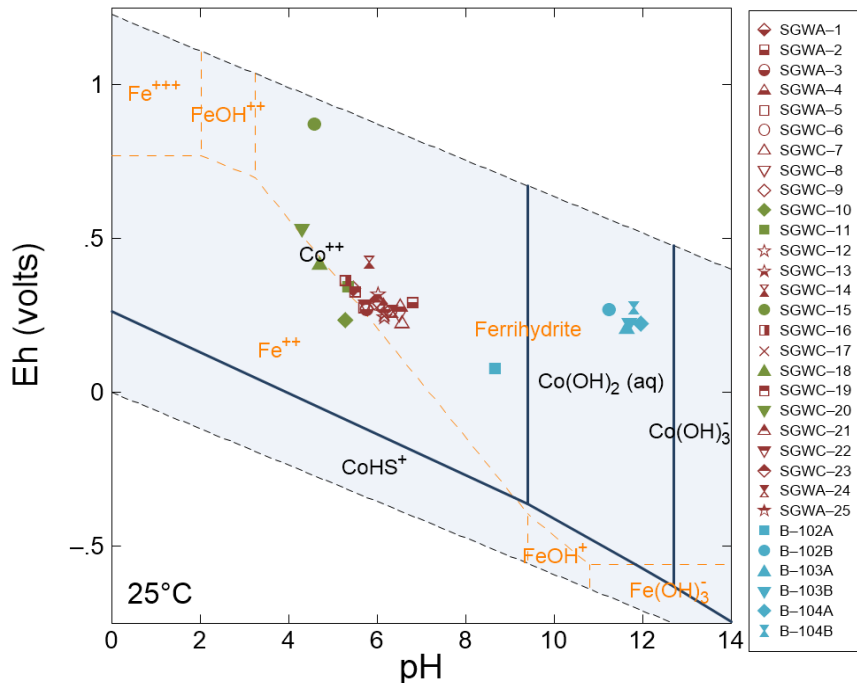
[1] mg/kg – milligrams per kilogram

[2] Data available from US Geological Survey, *Geochemical and Mineralogical Maps for Soils of the Conterminous United States*, Open-File Report 2014-1082 (Appendix C, USGS Open-File Report).

[3] USGS landscape site #5072 is located approximately 8 miles southwest of Plant Scherer.

[4] USGS landscape site #W239273 is located approximately 1,000 feet southeast of Plant Scherer.

Cobalt co-precipitation, adsorption, or inclusion within manganese and iron (hydr)oxides typically controls cobalt mobility in the environment (Hem, 1989). As determined from speciation modeling, at the pH and redox conditions measured in monitoring wells at Plant Scherer, cobalt will form the divalent cation  $Co^{+2}$  when dissolved, as shown in Figure 4.2.1, which is a Pourbaix diagram illustrating cobalt speciation for a range of pH/redox conditions. Superimposed on the cobalt predominance fields are those of iron, including the stability field for ferrihydrite  $[Fe(OH)_3]$ , an iron hydroxide and common host mineral for cobalt. As shown in the figure, under more acidic and reducing conditions, this ferrihydrite dissolves, thereby releasing any sorbed/entrained cobalt (Figure 4.2.1). Monitoring wells SGWC-11, 15, 18, and 20 all have a measured pH and redox combination that locates them in the dissolved  $Fe^{+2}$  field, or on the boundary line where the transition from ferrihydrite to dissolved iron occurs, supporting the presence of ferrihydrite as a likely control on cobalt mobility.

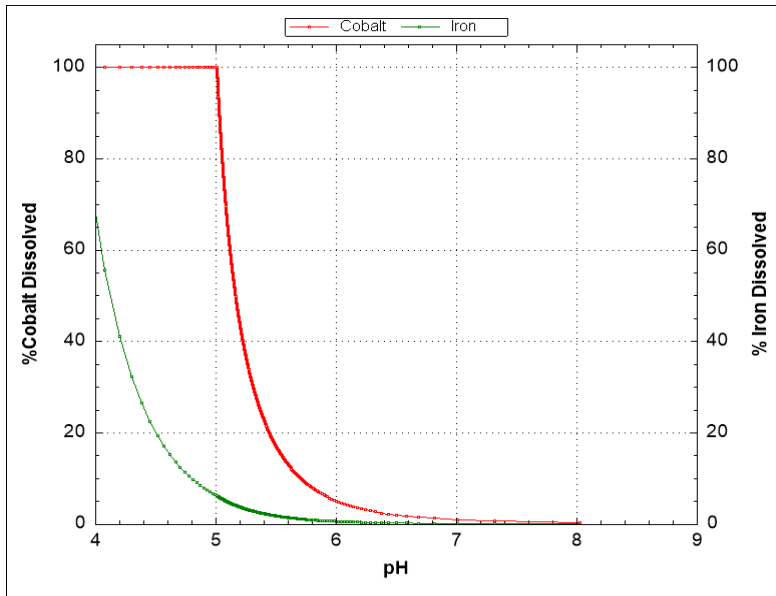


**Figure 4.2.1: Pourbaix diagram demonstrating the speciation and stability fields of cobalt and iron at monitoring wells and pore-water samples at Plant Scherer AP-1**

(Note: Cobalt /Iron adsorptive phase speciation figure created in Geochemist's Workbench "Act2" module using the following parameters:

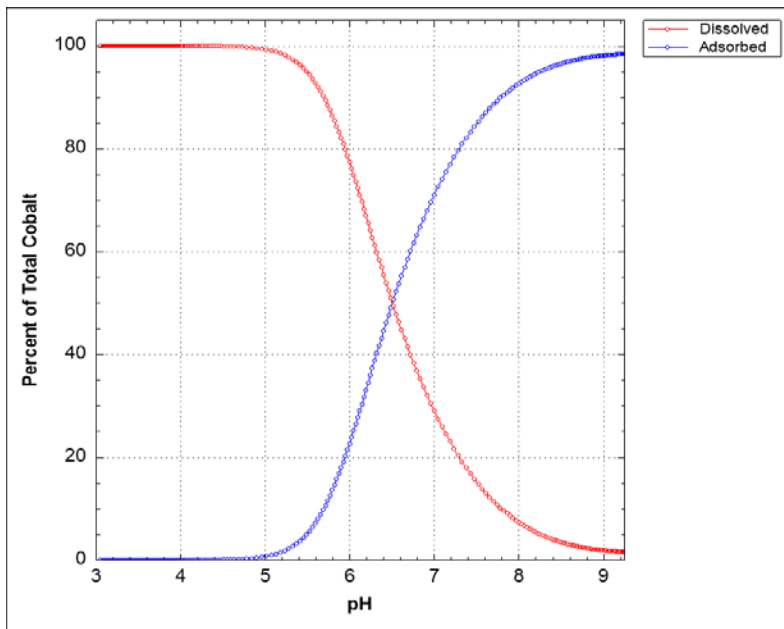
Activity=Molarity;  $a[\text{Co}] = 10^{-6}$ ;  $a[\text{Fe}] = 10^{-5.301}$ ; Generalized parameters: Temperature 25C,  $P = 1.013$  bars;  $a[\text{SO}_4] = 10^{-3}$ ;  $a[\text{Cl}] = 10^{-3}$ ;  $a[\text{Na}] = 10^{-3}$ ;  $a[\text{Mg}] = 10^{-3}$ ;  $a[\text{Ca}] = 10^{-3}$ ).

Geochemical modeling further corroborated the dissolution of solid phase cobalt and iron minerals at low pH (<5) (Figure 4.2.2). The geochemical computer code PHREEQC (Parkhurst and Appelo, 2013) was used to simulate the stability of iron (as ferrihydrite) and cobalt (as cobalt carbonate -  $\text{CoCO}_3$ ) in equilibrium with groundwater in response to changes in pH. Groundwater from monitoring well SGWC-18 was used as the starting solution. Under the conditions modeled, these two minerals are unstable at lower pH (<5), resulting in the presence of dissolved iron and cobalt. Additional geochemical modeling was used to simulate the response of adsorbed cobalt species on ferrihydrite to changes in pH using the same geochemical conditions and groundwater. As seen in Figure 4.2.3, full desorption of any cobalt adsorbed to ferrihydrite occurs at pH < 5. At higher pH, cobalt is more apt to be adsorbed on ferrihydrite and less mobile in groundwater, leading to lower dissolved levels of cobalt in the aquifer. Thus, whether cobalt occurs in the form of a carbonate mineral or is adsorbed to a metal (hydr)oxide, at low pH (<5), cobalt is released to groundwater.



**Figure 4.2.2: A geochemical simulation demonstrating the stability of iron (ferrihydrite) and cobalt (cobalt carbonate) minerals in equilibrium with SGWC-18 groundwater in response to changes in pH**

(Note 0.2 mg/L cobalt; 0.1 mg/L iron)



**Figure 4.2.3: The percent of cobalt dissolved or adsorbed to ferrihydrite in response to changes in pH in groundwater sample SGWC-18**

(Note: Ferrihydrite [10<sup>-5</sup>] strong and -10<sup>-4</sup>] weak sites; 0.2 mg/L cobalt)

Based on the cobalt Pourbaix diagram and the geochemical simulations illustrated in Figures 4.2.1 to 4.2.3, pH is the likely control on dissolved cobalt concentrations and the reason why cobalt is detected above background levels in some monitoring wells around AP-1. This is further demonstrated in Table 4.2.2, which indicates that cobalt is not observed at concentrations above analytical reporting limits where pH is greater than 8. Further, piezometers PZ-17I, PZ-39S, PZ-42I, and PZ-44I, each have pH levels that are circum-neutral and low cobalt levels, even though they are directly adjacent to monitoring wells in which conditions are more acidic and cobalt is observed above background levels. Therefore, it appears that small groundwater pockets exist where low pH (<5) results in elevated levels of naturally-occurring cobalt.

**Table 4.2.2: Cobalt Concentrations vs. pH at Plant Scherer AP-1**

Well ID	Location/Description	pH (S.U.)	Measured Cobalt (mg/L) <sup>[1]</sup>
B-102A	CCR Pore-water	8.7	0.0017J
B-102B	CCR Pore-water	11.2	0.00096 J
B-103A	CCR Pore-water	11.6	0.00078 J
B-103B	CCR Pore-water	11.7	0.00021 J
B-104A	CCR Pore-water	11.9	0.00019 J
B-104B	CCR Pore-water	11.8	< 0.000075
SGWC-10	Downgradient	5.3	0.03
SGWC-11	Downgradient	5.3	0.02
SGWC-15	Downgradient	4.6	0.27
SGWC-18	Downgradient	4.7	0.21
SGWC-20	Downgradient	4.3	0.16
PZ-17I	Adjacent to SGWC-15	7.0	<0.0004
PZ-39S	Adjacent to SGWC-18	7.3	0.0005
PZ-42I	Adjacent to SGWC-20	6.3	0.006
PZ-44I	Adjacent to SGWC-10 and SGWC-11	7.1	0.002

NOTE:

[1] "J" indicates the substance was detected at such low levels that the precision of the laboratory instruments could not produce a reliable value. Therefore, the value displayed (value J) is qualified by the laboratory as an estimated number.

### 4.3 Soil to Groundwater Partitioning

To evaluate reasonably expected concentrations of naturally occurring cobalt in groundwater produced as a result of leaching from the soil samples, soil-to-groundwater partitioning calculations were performed, and are presented in Table 4, Summary of Partitioning Calculations Using EPA Partitioning Coefficients. The K<sub>d</sub> is the ratio of a constituent concentration in the solid to the constituent concentration in surrounding solution, at equilibrium. A literature search of partitioning coefficients (K<sub>d</sub>) was performed, which resulted in wide range of K<sub>d</sub> values for cobalt. Partitioning calculations were performed using the range of published K<sub>d</sub> values. The maximum

concentrations of cobalt in historical groundwater samples for the facility are within or less than the simulated range utilizing the published Kd values (EPA, 1996).

Based on the partitioning calculations presented in Table 4, the concentrations of cobalt measured in soil samples collected within the facility boundary are simulated to produce groundwater concentrations similar to or greater than those observed in samples from downgradient monitoring wells. The table below presents the results of the partitioning calculations and compares them to maximum observed detections and the highest detections from the June 2018 water quality sampling event.

**Table 4.3.1: Summary of Partitioning Calculations Using EPA Partitioning Coefficients for Cobalt**

Well ID/Sample ID	Soil and Rock Cobalt Concentration (mg/kg)	Kd (L/kg)	Groundwater Cobalt Concentration (mg/L)			Maximum Observed Cobalt Concentration in Monitoring Well (mg/L)
		From EPA Regional Screening Level Table (November 2018)	Based on Literature Kd Value	Minimum Calculated Groundwater Concentration (mg/L)	Maximum Calculated Groundwater Concentration (mg/L)	
PZ-36S (31.5')	24	45	0.533	0.051	2.089	0.300 (SGWC-15) 0.210 (SGWC-18) 0.261 (SGWC-20)
PZ-9I (67.3')	9.8		0.218			
PZ-40I (43.4')	36		0.800			
PZ-42I (37.5')	42		0.933			
PZ-42I (92.0')	3.5		0.078			
PZ-44I (29.5')	94		2.089			
PZ-44I (51.5')	21		0.467			
PZ-44I (106')	2.3		0.051			

The partitioning calculations indicate that concentrations of cobalt in native soils in the area around AP-1 are within the range, and exceeding, the observed concentrations of cobalt in site groundwater. As a result, it is likely that the cobalt identified in the groundwater is leaching from the naturally-occurring soils and is not originating from AP-1.

#### 4.4 Naturally-Occurring Cobalt in Regional Groundwater

USGS Publication, *Naturally Occurring Contaminants in the Piedmont and Blue Ridge Crystalline-Rock Aquifers and Piedmont Early Mesozoic Basin Siliciclastic-Rock Aquifers, Eastern United States, 1994-2008*, provides information on naturally-occurring cobalt in regional groundwater. Regional pH in the Piedmont and Blue Ridge Crystalline-Rock aquifers and Piedmont Early Mesozoic Basin Siliciclastic-Rock aquifers range on average between 4.7 to 5.5. Underlying geology strongly controls groundwater pH. Where quartz-rich metamorphic or felsic rocks dominate, up to 81% of groundwater locations have pH values less than 6.5. In these locations low pH also promoted the dissolution of metal (hydr) oxides, a primary component controlling trace metals groundwater.

Constituents of potential concern, including cobalt, were identified on the basis of drinking water exposure guidelines proposed by the USEPA for sources of public drinking water, including MCLs, and health-based

benchmarks (HHBs) (USGS, 2013). This report concludes that at a pH below 6.5, greater than 20 to 50 percent of samples exceed the highest common reporting level (HCRL) or HHB for cobalt in regional groundwater. The report further supports the interpretation that pH is a major factor controlling the chemical composition of groundwater from siliciclastic-rock and crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces. (USGS, 1994-2008). Consistent with the findings of the present study, the report finds that cobalt can be adsorbed by iron and manganese oxides while subsequent dissolution of these minerals under reducing or low-pH conditions will mobilize any sorbed constituents, including cobalt.

## 4.5 Alternate Source Demonstration Summary

The evaluation presented in this document demonstrates the statistically-significant levels of cobalt identified in groundwater are the result of naturally-occurring cobalt present in soils, saprolite and bedrock and not due to releases from the CCR unit.

Based on information provided regarding the regional and local geology as well as natural groundwater conditions, naturally-occurring cobalt is present in soils and saprolite surrounding AP-1. Pockets of low-pH groundwater have led to the release and mobilization of naturally-occurring cobalt into groundwater. The presence of jarosite in the intermediate aquifer indicates the low pH likely represents an historic artefact of sulfide weathering. As such, the low-pH conditions and associated cobalt are not caused by AP-1, as the pore-water in AP -1 is alkaline and contains no or very low detectable cobalt concentrations.

These lines of evidence, namely the lack of cobalt in CCR pore-water, the natural abundance of cobalt in aquifer solids, the natural occurrence of cobalt in upgradient groundwater (topographically higher in the landscape), and the lack of any statistical trends in the analytical data, strongly support a natural source of cobalt to groundwater at the site. Therefore, the CCR unit is not the source for the statistical exceedance of cobalt in the detection monitoring network. This summary serves as an “Alternate Source Demonstration” prepared for Plant Scherer in accordance with §257.95(g)(3)(ii).

## 5.0 CONCLUSIONS

This ASD has been prepared in response to SSLs identified for cobalt in groundwater monitoring wells established for AP-1 at Plant Scherer following the June 2018 sampling event. In accordance with §257.95(g)(3), this ASD addresses SSLs of cobalt at monitoring wells SGWC-10, SGWC-11, SGWC-15, SGWC-18, and SGWC-20.

Review of analytical results and statistical evaluations indicate that the cobalt exceedances identified are not the result of a release from AP-1 at Plant Scherer but can be attributed to naturally-occurring cobalt in subsurface aquifer materials. Therefore, no further action (i.e., Assessment of Corrective Measures) is warranted, and the Plant Scherer AP-1 will remain in Assessment Monitoring.

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**APPENDIX A**

# Statistical Analyses

# Tolerance Limit

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:30 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	n/a	0.0021	n/a	n/a	n/a	62	90.32	n/a	0.04158	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0025	n/a	n/a	n/a	70	72.86	n/a	0.02758	NP Inter(normal...
Barium (mg/L)	n/a	0.06359	n/a	n/a	n/a	70	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0015	n/a	n/a	n/a	70	98.57	n/a	0.02758	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.00125	n/a	n/a	n/a	63	96.83	n/a	0.0395	NP Inter(NDs)
Chromium (mg/L)	n/a	0.015	n/a	n/a	n/a	70	38.57	n/a	0.02758	NP Inter(normal...
Cobalt (mg/L)	n/a	0.02	n/a	n/a	n/a	69	63.77	n/a	0.02904	NP Inter(normal...
Combined Radium 226 + 228 (pCi/L)	n/a	1.2	n/a	n/a	n/a	69	0	n/a	0.02904	NP Inter(normal...
Fluoride (mg/L)	n/a	0.15	n/a	n/a	n/a	77	83.12	n/a	0.01926	NP Inter(NDs)
Lead (mg/L)	n/a	0.0025	n/a	n/a	n/a	70	98.57	n/a	0.02758	NP Inter(NDs)
Lithium (mg/L)	n/a	0.025	n/a	n/a	n/a	70	90	n/a	0.02758	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00025	n/a	n/a	n/a	70	87.14	n/a	0.02758	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.0075	n/a	n/a	n/a	63	87.3	n/a	0.0395	NP Inter(NDs)
Selenium (mg/L)	n/a	0.005	n/a	n/a	n/a	70	97.14	n/a	0.02758	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0005	n/a	n/a	n/a	70	95.71	n/a	0.02758	NP Inter(NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
<b>Cobalt (mg/L)</b>	<b>SGWC-11</b>	<b>0.03203</b>	<b>0.02757</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
<b>Cobalt (mg/L)</b>	<b>SGWC-15</b>	<b>0.2805</b>	<b>0.2599</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
<b>Cobalt (mg/L)</b>	<b>SGWC-18</b>	<b>0.143</b>	<b>0.1064</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
<b>Cobalt (mg/L)</b>	<b>SGWC-20</b>	<b>0.2445</b>	<b>0.2077</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Antimony (mg/L)	SGWA-1 (bg)	0.0015	0.0004	0.006	No	9	77.78	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-2 (bg)	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-24 (bg)	0.0015	0.0003	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-25 (bg)	0.0015	0.0003	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-3 (bg)	0.0021	0.0005	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-4 (bg)	0.0015	0.0005	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWA-5 (bg)	0.0015	0.0005	0.006	No	8	100	No	0.004	NP (NDs)
Antimony (mg/L)	SGWC-10	0.0015	0.0005	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-11	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-12	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-13	0.0015	0.0004	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-14	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-15	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-16	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-17	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-18	0.0015	0.0005	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-19	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-20	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-21	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-22	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-23	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-6	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-7	0.0015	0.0004	0.006	No	9	88.89	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-8	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Antimony (mg/L)	SGWC-9	0.0015	0.0005	0.006	No	9	100	No	0.002	NP (NDs)
Arsenic (mg/L)	SGWA-1 (bg)	0.0025	0.00023	0.01	No	10	70	No	0.011	NP (normality)
Arsenic (mg/L)	SGWA-2 (bg)	0.0025	0.00023	0.01	No	10	70	No	0.011	NP (normality)
Arsenic (mg/L)	SGWA-24 (bg)	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWA-25 (bg)	0.004091	0.001046	0.01	No	10	30	No	0.05	Param.
Arsenic (mg/L)	SGWA-3 (bg)	0.0025	0.00023	0.01	No	10	90	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWA-4 (bg)	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWA-5 (bg)	0.0025	0.00023	0.01	No	10	90	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-10	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-11	0.0011	0.00023	0.01	No	10	20	No	0.011	NP (normality)
Arsenic (mg/L)	SGWC-12	0.0011	0.00023	0.01	No	10	50	No	0.011	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-13	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-14	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-15	0.004264	0.001445	0.01	No	10	30	No	0.05	Param.
Arsenic (mg/L)	SGWC-16	0.0025	0.00023	0.01	No	10	90	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-17	0.0025	0.00023	0.01	No	10	60	No	0.011	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-18	0.002009	0.001051	0.01	No	10	0	sqrt(x)	0.05	Param.
Arsenic (mg/L)	SGWC-19	0.0025	0.00023	0.01	No	10	90	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-20	0.001334	0.0004822	0.01	No	10	60	No	0.05	Param.
Arsenic (mg/L)	SGWC-21	0.0025	0.00023	0.01	No	10	90	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-22	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-23	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-6	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-7	0.0009	0.00023	0.01	No	10	60	No	0.011	NP (Cohens/xfrm)
Arsenic (mg/L)	SGWC-8	0.0025	0.00023	0.01	No	10	80	No	0.011	NP (NDs)
Arsenic (mg/L)	SGWC-9	0.0011	0.00023	0.01	No	10	40	No	0.011	NP (Cohens/xfrm)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Barium (mg/L)	SGWA-1 (bg)	0.05742	0.04954	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-2 (bg)	0.0392	0.03582	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-24 (bg)	0.02207	0.02049	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-25 (bg)	0.02398	0.02114	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-3 (bg)	0.03511	0.03255	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-4 (bg)	0.05489	0.04861	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWA-5 (bg)	0.01074	0.009881	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-10	0.03041	0.02753	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-11	0.03896	0.0357	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-12	0.03993	0.03297	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-13	0.02834	0.02338	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-14	0.06338	0.05908	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-15	0.04154	0.03796	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-16	0.022	0.0163	2	No	9	0	No	0.002	NP (normality)
Barium (mg/L)	SGWC-17	0.0196	0.01736	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-18	0.029	0.012	2	No	10	0	No	0.011	NP (normality)
Barium (mg/L)	SGWC-19	0.04483	0.03841	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-20	0.03926	0.03138	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-21	0.09317	0.08977	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-22	0.09663	0.08969	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-23	0.09211	0.08421	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-6	0.09138	0.04968	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-7	0.3213	0.2803	2	No	10	0	No	0.05	Param.
Barium (mg/L)	SGWC-8	0.205	0.16	2	No	10	0	No	0.011	NP (normality)
Barium (mg/L)	SGWC-9	0.06192	0.0519	2	No	10	0	ln(x)	0.05	Param.
Beryllium (mg/L)	SGWA-1 (bg)	0.00125	0.00017	0.004	No	10	90	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-2 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-24 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-25 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-3 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-4 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWA-5 (bg)	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-10	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-11	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-12	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-13	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-14	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-15	0.00041	0.00017	0.004	No	10	30	No	0.011	NP (normality)
Beryllium (mg/L)	SGWC-16	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-17	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-18	0.00125	0.00017	0.004	No	10	70	No	0.011	NP (normality)
Beryllium (mg/L)	SGWC-19	0.00125	0.00017	0.004	No	10	90	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-20	0.0008333	0.0007271	0.004	No	10	0	No	0.05	Param.
Beryllium (mg/L)	SGWC-21	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-22	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-23	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-6	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-7	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-8	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	SGWC-9	0.0015	0.00017	0.004	No	10	100	No	0.011	NP (NDs)

# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cadmium (mg/L)	SGWA-1 (bg)	0.00125	0.000156	0.005	No	9	88.89	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-2 (bg)	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-24 (bg)	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-25 (bg)	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-3 (bg)	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-4 (bg)	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWA-5 (bg)	0.00125	0.00017	0.005	No	9	88.89	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-10	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-11	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-12	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-13	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-14	0.00125	0.000136	0.005	No	9	88.89	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-15	0.00125	0.00017	0.005	No	9	66.67	No	0.002	NP (normality)
Cadmium (mg/L)	SGWC-16	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-17	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-18	0.00125	0.00016	0.005	No	9	77.78	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-19	0.00125	0.00017	0.005	No	9	88.89	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-20	0.00125	0.0001	0.005	No	9	77.78	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-21	0.00125	0.00017	0.005	No	9	88.89	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-22	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-23	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-6	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-7	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-8	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Cadmium (mg/L)	SGWC-9	0.00125	0.00017	0.005	No	9	100	No	0.002	NP (NDs)
Chromium (mg/L)	SGWA-1 (bg)	0.005	0.00055	0.1	No	10	90	No	0.011	NP (NDs)
Chromium (mg/L)	SGWA-2 (bg)	0.014	0.0043	0.1	No	10	0	No	0.011	NP (normality)
Chromium (mg/L)	SGWA-24 (bg)	0.004122	0.003304	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWA-25 (bg)	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWA-3 (bg)	0.01068	0.006948	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWA-4 (bg)	0.004745	0.002669	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWA-5 (bg)	0.005	0.00055	0.1	No	10	80	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-10	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-11	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-12	0.005	0.00055	0.1	No	10	90	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-13	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-14	0.00125	0.00055	0.1	No	10	70	No	0.011	NP (normality)
Chromium (mg/L)	SGWC-15	0.03391	0.03197	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWC-16	0.009674	0.008892	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWC-17	0.005437	0.003313	0.1	No	10	0	sqrt(x)	0.05	Param.
Chromium (mg/L)	SGWC-18	0.007546	0.006496	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWC-19	0.01524	0.014	0.1	No	10	0	No	0.05	Param.
Chromium (mg/L)	SGWC-20	0.00125	0.00055	0.1	No	10	90	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-21	0.00125	0.00055	0.1	No	10	90	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-22	0.00125	0.00055	0.1	No	10	90	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-23	0.0025	0.00055	0.1	No	9	55.56	No	0.002	NP (normality)
Chromium (mg/L)	SGWC-6	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-7	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)
Chromium (mg/L)	SGWC-8	0.005	0.00055	0.1	No	10	70	No	0.011	NP (normality)
Chromium (mg/L)	SGWC-9	0.005	0.00055	0.1	No	10	100	No	0.011	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Cobalt (mg/L)	SGWA-1 (bg)	0.01595	0.009457	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-2 (bg)	0.00125	0.0002	0.02	No	10	90	No	0.011	NP (NDs)
Cobalt (mg/L)	SGWA-24 (bg)	0.00125	0.0002	0.02	No	10	80	No	0.011	NP (NDs)
Cobalt (mg/L)	SGWA-25 (bg)	0.01454	0.01094	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWA-3 (bg)	0.005	0.0002	0.02	No	9	88.89	No	0.002	NP (NDs)
Cobalt (mg/L)	SGWA-4 (bg)	0.005	0.0002	0.02	No	10	90	No	0.011	NP (NDs)
Cobalt (mg/L)	SGWA-5 (bg)	0.005	0.0002	0.02	No	10	100	No	0.011	NP (NDs)
Cobalt (mg/L)	SGWC-10	0.03339	0.01947	0.02	No	10	0	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-11</b>	<b>0.03203</b>	<b>0.02757</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-12	0.004619	0.003536	0.02	No	10	0	sqrt(x)	0.05	Param.
Cobalt (mg/L)	SGWC-13	0.01017	0.006355	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-14	0.01261	0.006705	0.02	No	10	0	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-15</b>	<b>0.2805</b>	<b>0.2599</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-16	0.003495	0.003111	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-17	0.0006892	0.0004288	0.02	No	9	22.22	No	0.05	Param.
<b>Cobalt (mg/L)</b>	<b>SGWC-18</b>	<b>0.143</b>	<b>0.1064</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-19	0.00125	0.0002	0.02	No	10	50	No	0.011	NP (Cohens/xfrm)
<b>Cobalt (mg/L)</b>	<b>SGWC-20</b>	<b>0.2445</b>	<b>0.2077</b>	<b>0.02</b>	<b>Yes</b>	<b>10</b>	<b>0</b>	<b>No</b>	<b>0.05</b>	<b>Param.</b>
Cobalt (mg/L)	SGWC-21	0.005	0.0002	0.02	No	10	100	No	0.011	NP (NDs)
Cobalt (mg/L)	SGWC-22	0.004449	0.002939	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-23	0.005	0.0002	0.02	No	9	100	No	0.002	NP (NDs)
Cobalt (mg/L)	SGWC-6	0.003437	0.001903	0.02	No	10	10	No	0.05	Param.
Cobalt (mg/L)	SGWC-7	0.01331	0.007511	0.02	No	10	0	No	0.05	Param.
Cobalt (mg/L)	SGWC-8	0.00125	0.0002	0.02	No	10	70	No	0.011	NP (normality)
Cobalt (mg/L)	SGWC-9	0.01542	0.01146	0.02	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-1 (bg)	0.3546	0.1956	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-2 (bg)	0.4268	0.143	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-24 (bg)	0.2907	0.06359	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-25 (bg)	0.3657	0.06644	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-3 (bg)	0.345	-0.026	5	No	10	0	No	0.011	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWA-4 (bg)	0.2418	0.0521	5	No	9	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWA-5 (bg)	0.3948	0.2169	5	No	10	0	ln(x)	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-10	0.548	-0.0725	5	No	10	0	No	0.011	NP (normality)
Combined Radium 226 + 228 (pCi/L)	SGWC-11	0.4835	0.1865	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-12	0.3209	0.1068	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-13	0.4395	0.08482	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-14	0.4345	0.1203	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-15	0.3963	0.1794	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-16	0.3112	0.1309	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-17	0.3778	0.1572	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-18	0.4267	0.192	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-19	0.2756	0.05208	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-20	0.6679	0.3185	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-21	0.498	0.208	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-22	0.297	0.1666	5	No	9	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-23	0.7208	0.4908	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-6	0.3675	0.1195	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-7	0.518	0.3068	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-8	2.468	1.992	5	No	10	0	No	0.05	Param.
Combined Radium 226 + 228 (pCi/L)	SGWC-9	0.4219	0.1804	5	No	10	0	No	0.05	Param.

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Fluoride (mg/L)	SGWA-1 (bg)	0.15	0.041	4	No	11	100	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWA-2 (bg)	0.1	0.03	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWA-24 (bg)	0.1	0.041	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWA-25 (bg)	0.1	0.03	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWA-3 (bg)	0.1	0.0192	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWA-4 (bg)	0.1	0.041	4	No	11	63.64	No	0.006	NP (Cohens/xfrm)
Fluoride (mg/L)	SGWA-5 (bg)	0.1	0.0188	4	No	11	90.91	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-10	0.1	0.019	4	No	11	90.91	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-11	0.1	0.033	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-12	0.1806	0.1142	4	No	11	27.27	No	0.05	Param.
Fluoride (mg/L)	SGWC-13	0.1	0.041	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-14	0.1	0.03	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-15	0.1312	0.1182	4	No	10	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-16	0.1	0.011	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-17	0.1	0.041	4	No	11	72.73	No	0.006	NP (Cohens/xfrm)
Fluoride (mg/L)	SGWC-18	0.18	0.0343	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-19	0.1	0.0126	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	SGWC-20	0.3025	0.2173	4	No	11	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-21	0.1017	0.06118	4	No	11	54.55	No	0.05	Param.
Fluoride (mg/L)	SGWC-22	0.1	0.029	4	No	11	72.73	No	0.006	NP (normality)
Fluoride (mg/L)	SGWC-23	0.1	0.0341	4	No	11	72.73	No	0.006	NP (normality)
Fluoride (mg/L)	SGWC-6	0.1473	0.08814	4	No	11	18.18	No	0.05	Param.
Fluoride (mg/L)	SGWC-7	0.2323	0.2032	4	No	11	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-8	0.4905	0.4153	4	No	11	0	No	0.05	Param.
Fluoride (mg/L)	SGWC-9	0.1	0.041	4	No	11	72.73	No	0.006	NP (normality)
Lead (mg/L)	SGWA-1 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-2 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-24 (bg)	0.00065	0.0001	0.015	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-25 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-3 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-4 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWA-5 (bg)	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-10	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-11	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-12	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-13	0.0025	0.000175	0.015	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-14	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-15	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-16	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-17	0.0025	0.000175	0.015	No	9	100	No	0.002	NP (NDs)
Lead (mg/L)	SGWC-18	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-19	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-20	0.00065	0.000175	0.015	No	10	70	No	0.011	NP (Cohens/xfrm)
Lead (mg/L)	SGWC-21	0.00065	0.00009	0.015	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-22	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-23	0.00065	0.00009	0.015	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-6	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-7	0.0025	0.000175	0.015	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-8	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)
Lead (mg/L)	SGWC-9	0.0025	0.000175	0.015	No	10	100	No	0.011	NP (NDs)



# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Lithium (mg/L)	SGWA-1 (bg)	0.0025	0.0013	0.04	No	10	70	No	0.011	NP (normality)
Lithium (mg/L)	SGWA-2 (bg)	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWA-24 (bg)	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWA-25 (bg)	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWA-3 (bg)	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWA-4 (bg)	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWA-5 (bg)	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-10	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-11	0.0029	0.0013	0.04	No	10	70	No	0.011	NP (normality)
Lithium (mg/L)	SGWC-12	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-13	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-14	0.025	0.00055	0.04	No	9	88.89	No	0.002	NP (NDs)
Lithium (mg/L)	SGWC-15	0.0034	0.0016	0.04	No	10	70	No	0.011	NP (normality)
Lithium (mg/L)	SGWC-16	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-17	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-18	0.0042	0.0016	0.04	No	10	60	No	0.011	NP (normality)
Lithium (mg/L)	SGWC-19	0.025	0.00055	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-20	0.004444	0.003523	0.04	No	9	11.11	No	0.05	Param.
Lithium (mg/L)	SGWC-21	0.025	0.0013	0.04	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-22	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-23	0.004746	0.003265	0.04	No	9	22.22	No	0.05	Param.
Lithium (mg/L)	SGWC-6	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Lithium (mg/L)	SGWC-7	0.004846	0.003688	0.04	No	9	0	No	0.05	Param.
Lithium (mg/L)	SGWC-8	0.0025	0.0013	0.04	No	10	70	No	0.011	NP (normality)
Lithium (mg/L)	SGWC-9	0.025	0.00055	0.04	No	10	100	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-1 (bg)	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-2 (bg)	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-24 (bg)	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-25 (bg)	0.00025	0.000035	0.002	No	10	80	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-3 (bg)	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-4 (bg)	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWA-5 (bg)	0.00025	0.000035	0.002	No	10	80	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-10	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-11	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-12	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-13	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-14	0.00025	0.000035	0.002	No	10	80	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-15	0.00025	0.000072	0.002	No	10	30	No	0.011	NP (Cohens/xfrm)
Mercury (mg/L)	SGWC-16	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-17	0.00025	0.000035	0.002	No	10	80	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-18	0.0006439	0.0002353	0.002	No	10	50	No	0.05	Param.
Mercury (mg/L)	SGWC-19	0.00025	0.000035	0.002	No	10	100	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-20	0.00025	0.000035	0.002	No	10	80	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-21	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-22	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-23	0.00025	0.000035	0.002	No	10	70	No	0.011	NP (Cohens/xfrm)
Mercury (mg/L)	SGWC-6	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-7	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-8	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)
Mercury (mg/L)	SGWC-9	0.00025	0.000035	0.002	No	10	90	No	0.011	NP (NDs)

## Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Molybdenum (mg/L)	SGWA-1 (bg)	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWA-2 (bg)	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWA-24 (bg)	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWA-25 (bg)	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWA-3 (bg)	0.0075	0.000425	0.1	No	9	88.89	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWA-4 (bg)	0.0075	0.000425	0.1	No	9	22.22	No	0.002	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWA-5 (bg)	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-10	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-11	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-12	0.0075	0.000425	0.1	No	9	77.78	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-13	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-14	0.0075	0.000425	0.1	No	9	88.89	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-15	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-16	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-17	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-18	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-19	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-20	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-21	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-22	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-23	0.0075	0.000425	0.1	No	9	100	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-6	0.0075	0.000425	0.1	No	9	77.78	No	0.002	NP (NDs)
Molybdenum (mg/L)	SGWC-7	0.0075	0.000425	0.1	No	9	22.22	No	0.002	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWC-8	0.0075	0.000425	0.1	No	9	88.89	No	0.002	NP (Cohens/xfrm)
Molybdenum (mg/L)	SGWC-9	0.0075	0.000425	0.1	No	9	44.44	No	0.002	NP (Cohens/xfrm)
Selenium (mg/L)	SGWA-1 (bg)	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-2 (bg)	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-24 (bg)	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-25 (bg)	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-3 (bg)	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-4 (bg)	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWA-5 (bg)	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-10	0.005	0.00012	0.05	No	9	100	No	0.002	NP (NDs)
Selenium (mg/L)	SGWC-11	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-12	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-13	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-14	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-15	0.00965	0.00012	0.05	No	10	20	No	0.011	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-16	0.005	0.00012	0.05	No	10	70	No	0.011	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-17	0.005	0.00012	0.05	No	9	88.89	No	0.002	NP (NDs)
Selenium (mg/L)	SGWC-18	0.023	0.0047	0.05	No	10	0	No	0.011	NP (normality)
Selenium (mg/L)	SGWC-19	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-20	0.00396	0.00012	0.05	No	10	60	No	0.011	NP (Cohens/xfrm)
Selenium (mg/L)	SGWC-21	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-22	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-23	0.005	0.00012	0.05	No	10	90	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-6	0.005	0.00012	0.05	No	10	80	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-7	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-8	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)
Selenium (mg/L)	SGWC-9	0.005	0.00012	0.05	No	10	100	No	0.011	NP (NDs)

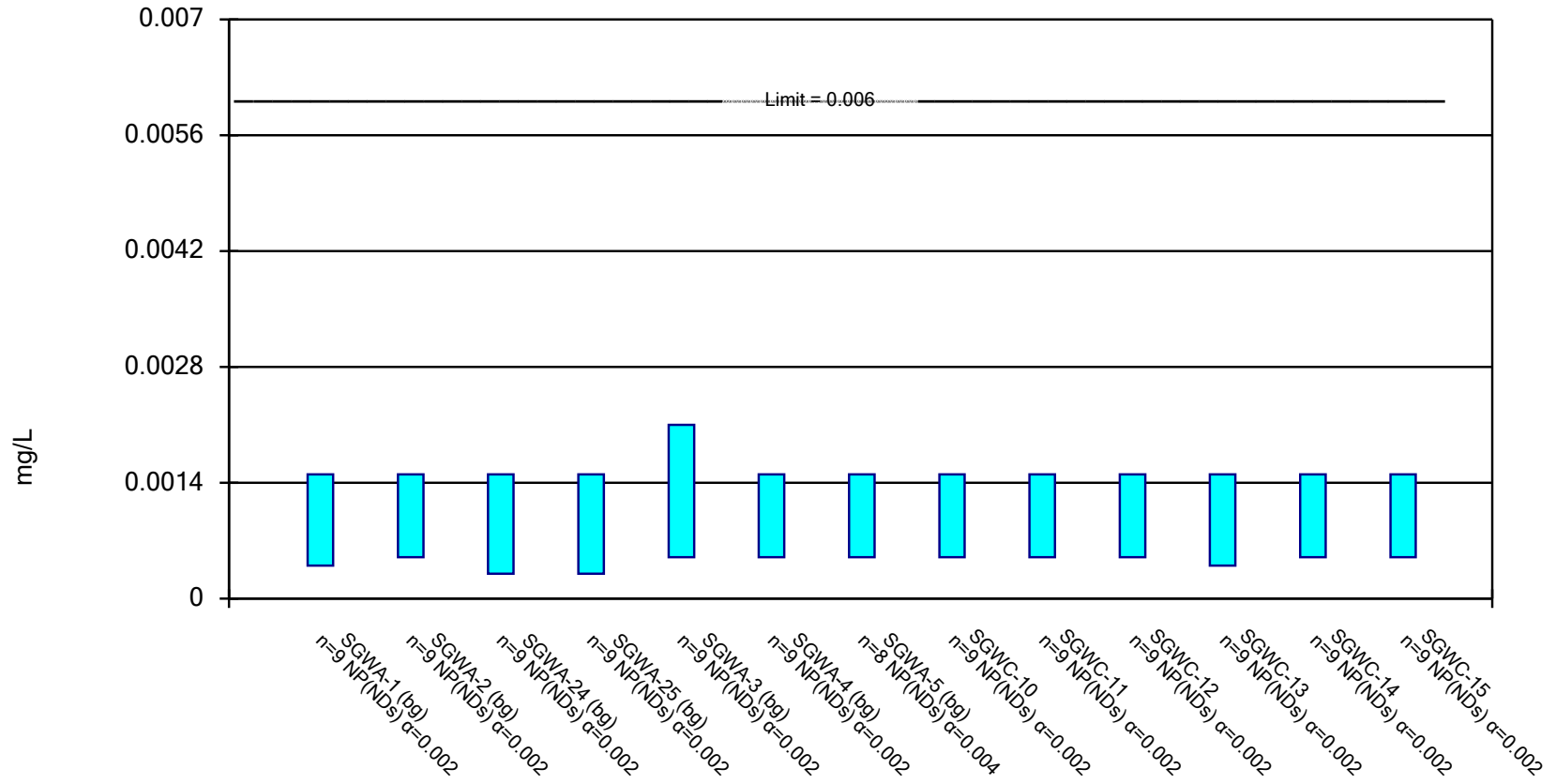
# Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR Printed 10/15/2018, 9:38 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	SGWA-1 (bg)	0.00025	0.0000425	0.002	No	10	80	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-2 (bg)	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-24 (bg)	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-25 (bg)	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-3 (bg)	0.00025	0.0000425	0.002	No	10	90	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-4 (bg)	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWA-5 (bg)	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-10	0.00025	0.0000425	0.002	No	10	90	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-11	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-12	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-13	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-14	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-15	0.00025	0.0000425	0.002	No	10	60	No	0.011	NP (normality)
Thallium (mg/L)	SGWC-16	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-17	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-18	0.0001604	0.0001163	0.002	No	9	0	No	0.05	Param.
Thallium (mg/L)	SGWC-19	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-20	0.0001815	0.0001296	0.002	No	9	0	No	0.05	Param.
Thallium (mg/L)	SGWC-21	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-22	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-23	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-6	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-7	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-8	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)
Thallium (mg/L)	SGWC-9	0.0005	0.0000425	0.002	No	10	100	No	0.011	NP (NDs)

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

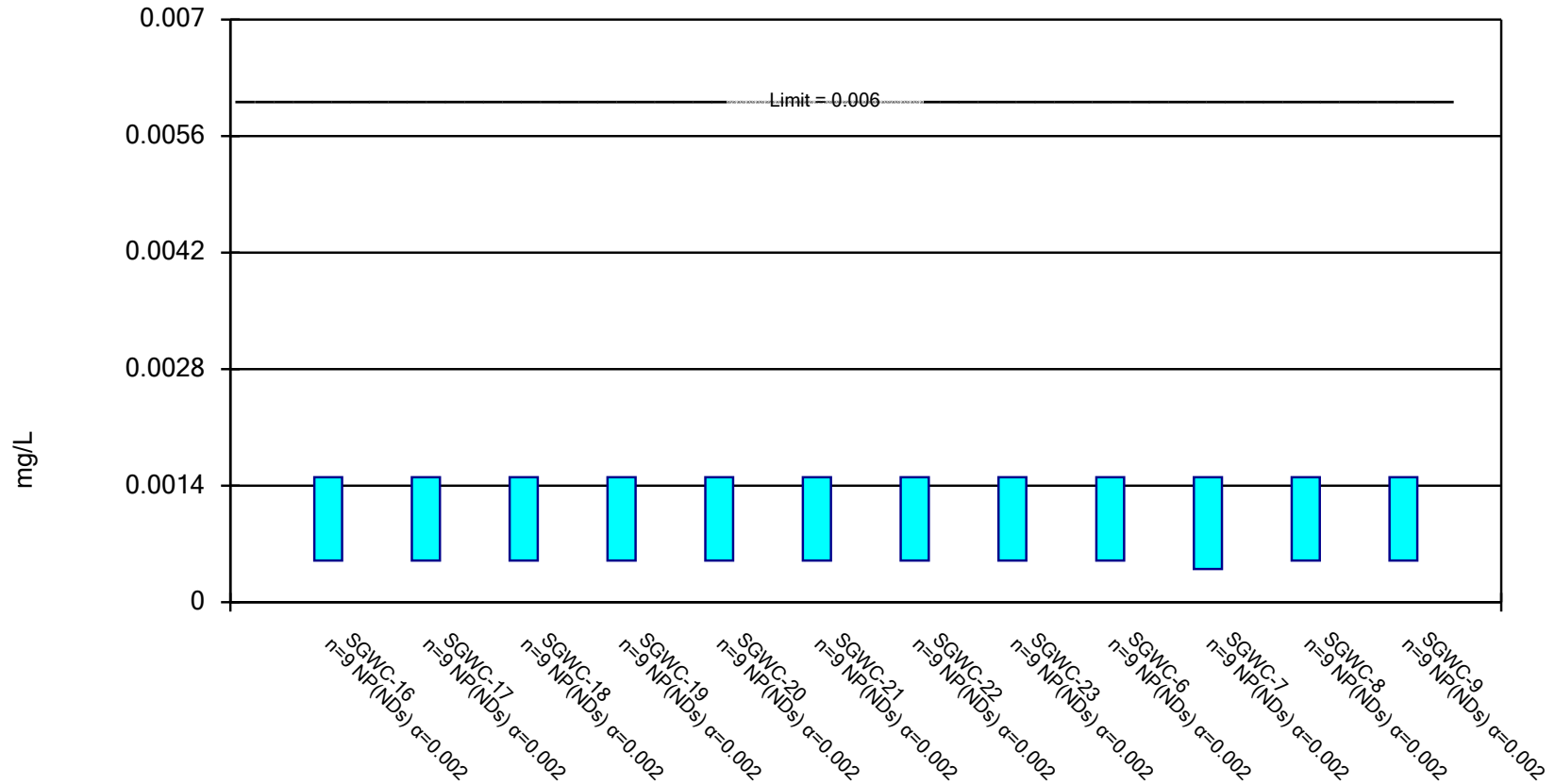


Constituent: Antimony Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

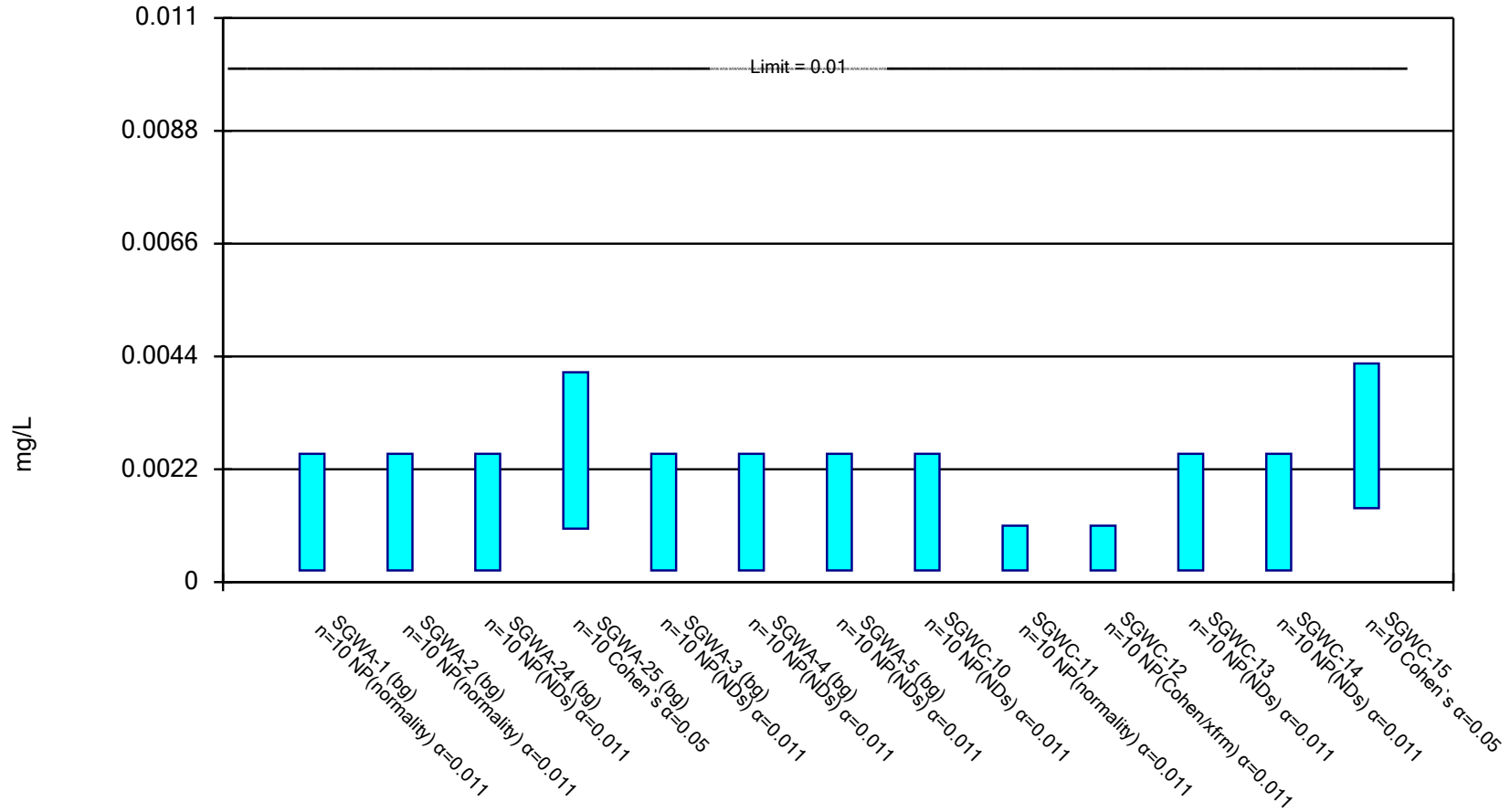


Constituent: Antimony Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

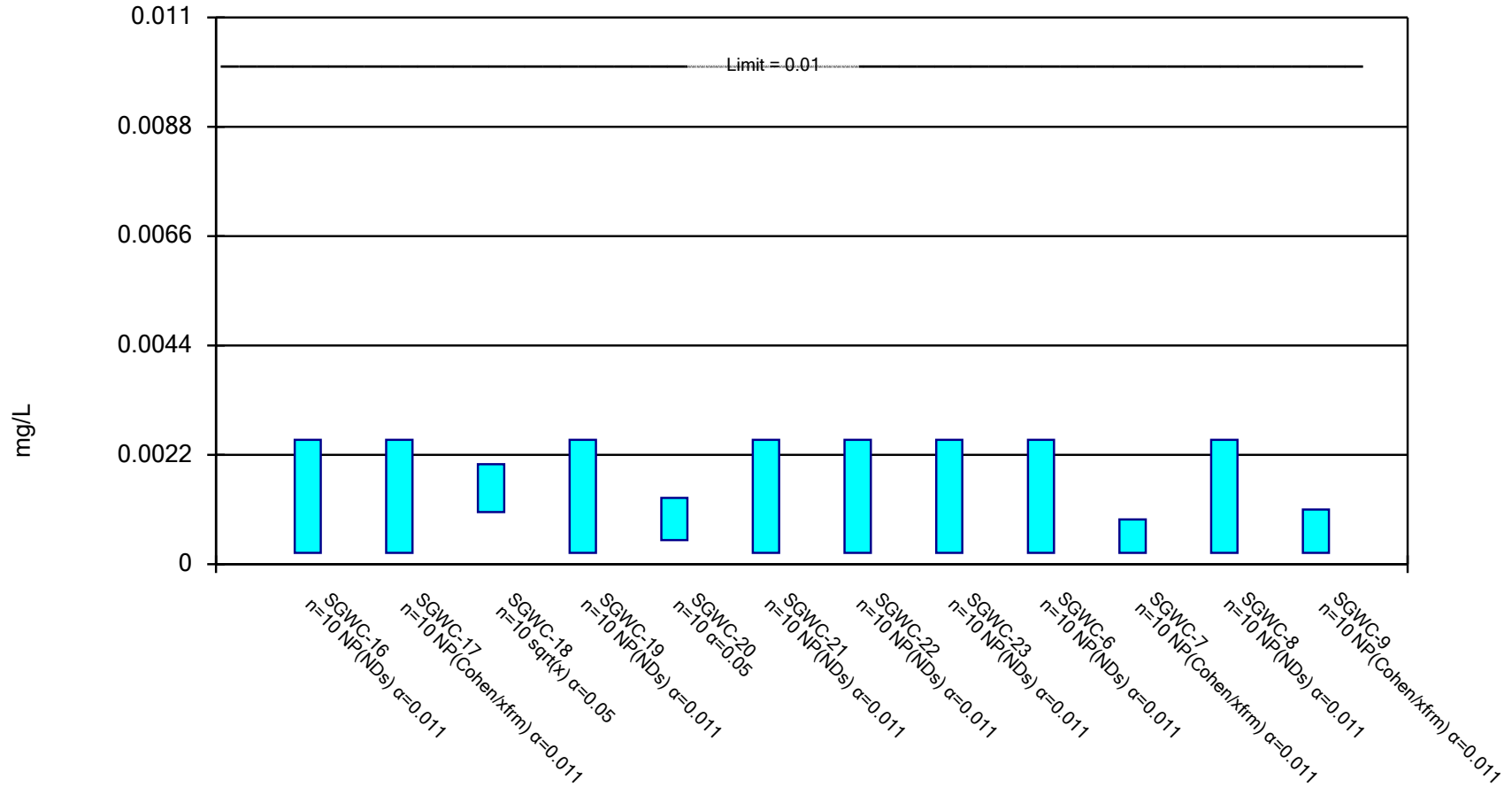


Constituent: Arsenic Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

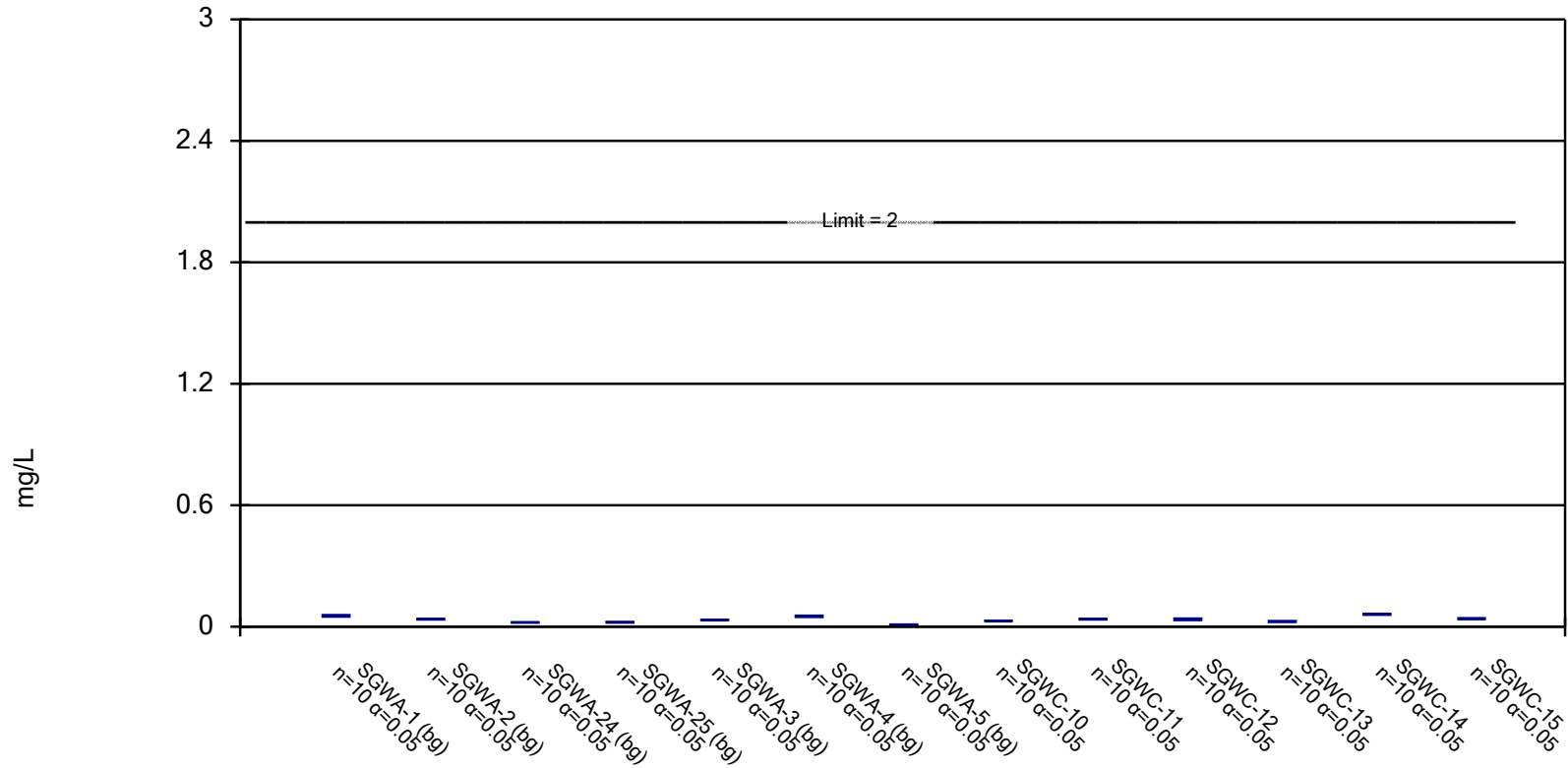


Constituent: Arsenic Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

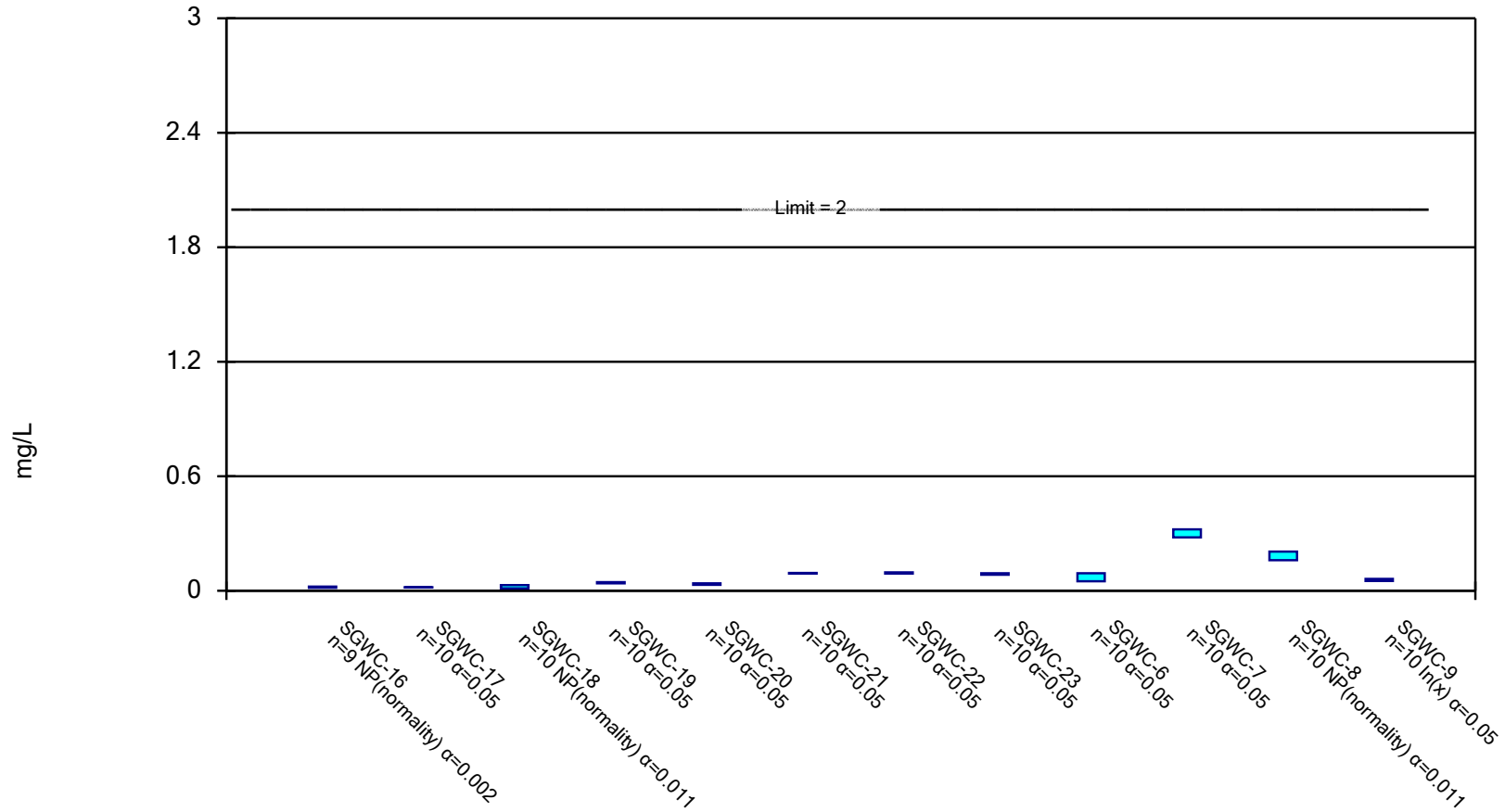


Constituent: Barium    Analysis Run 10/15/2018 9:31 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

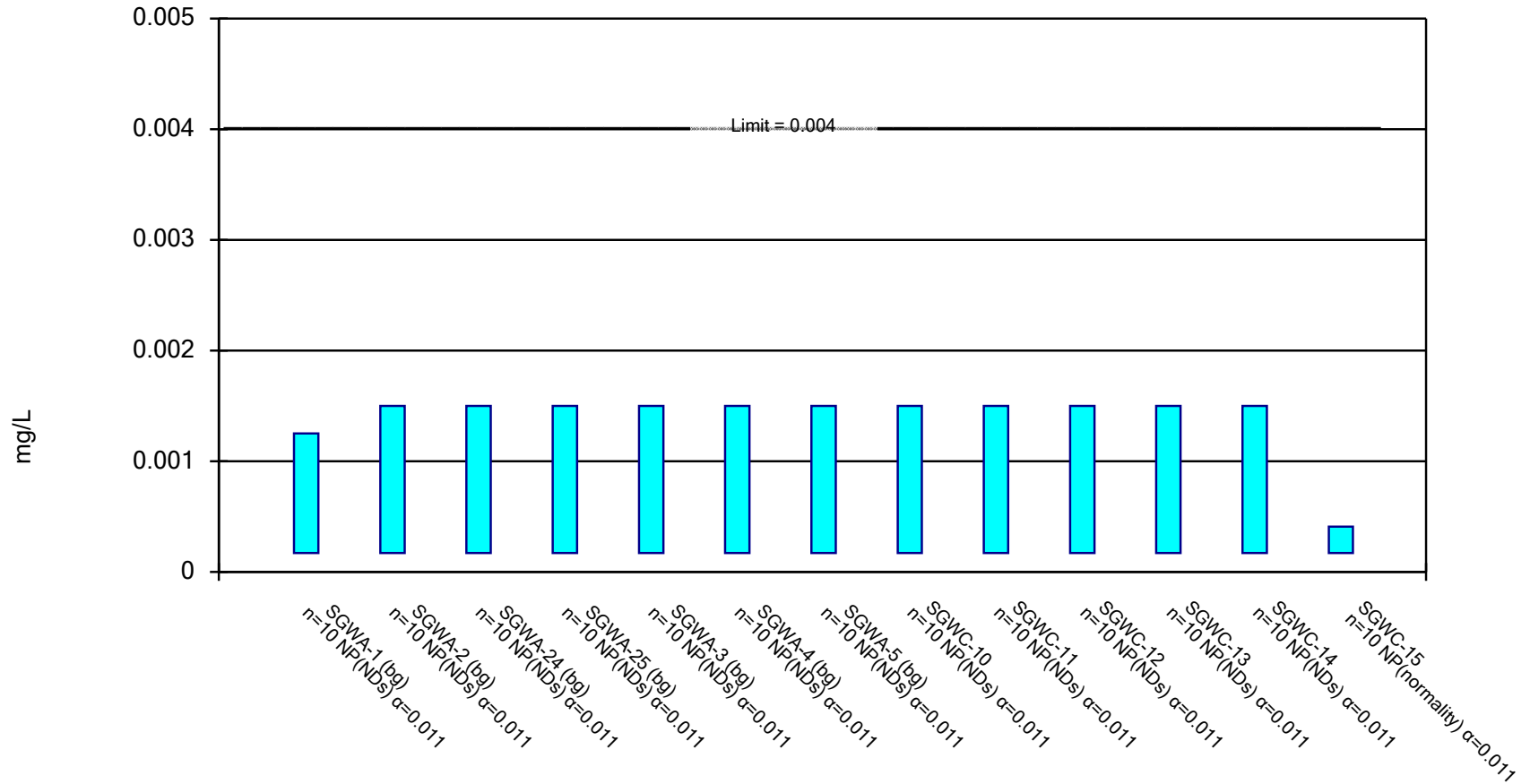
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium    Analysis Run 10/15/2018 9:31 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

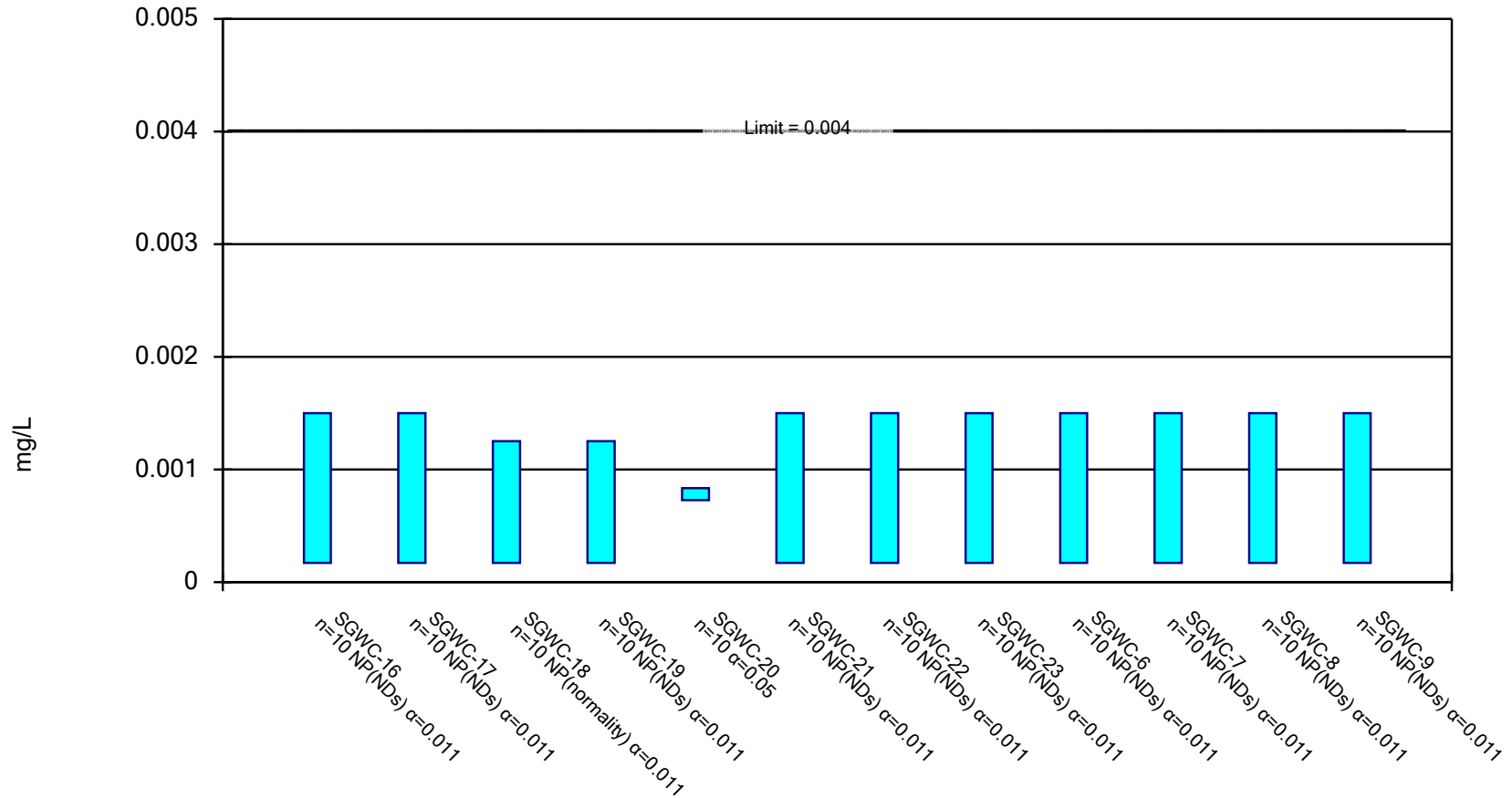


Constituent: Beryllium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

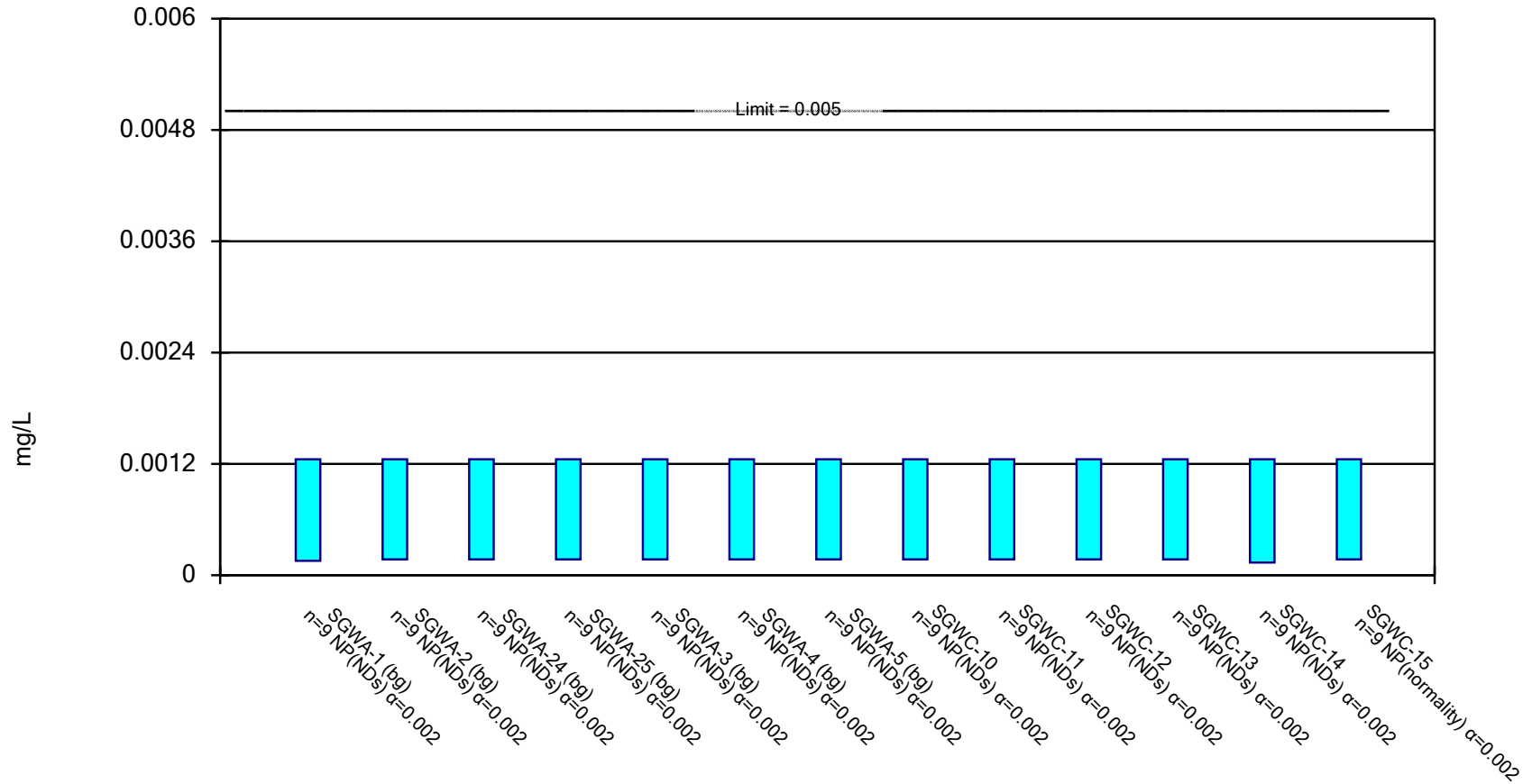


Constituent: Beryllium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

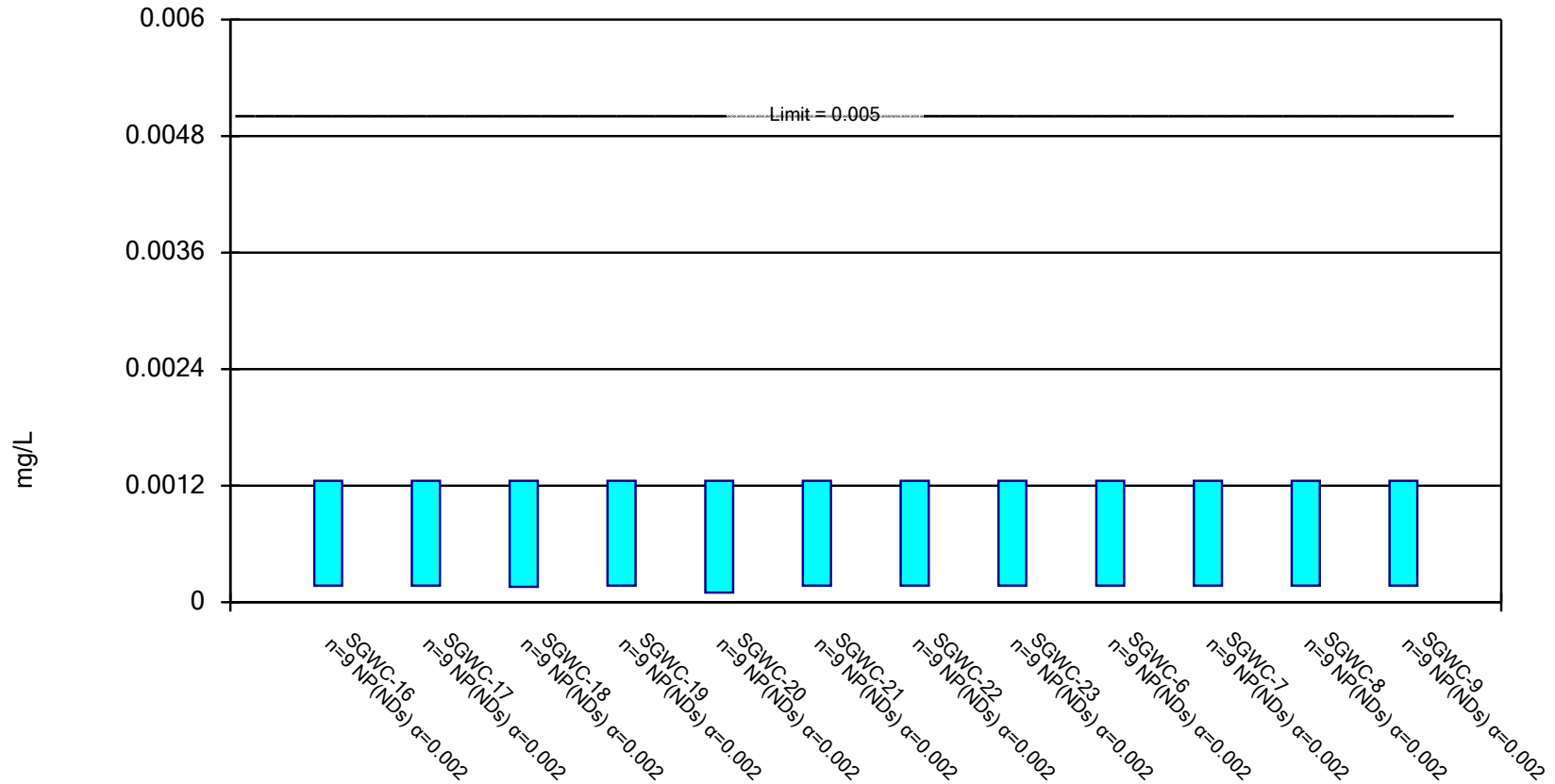


Constituent: Cadmium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

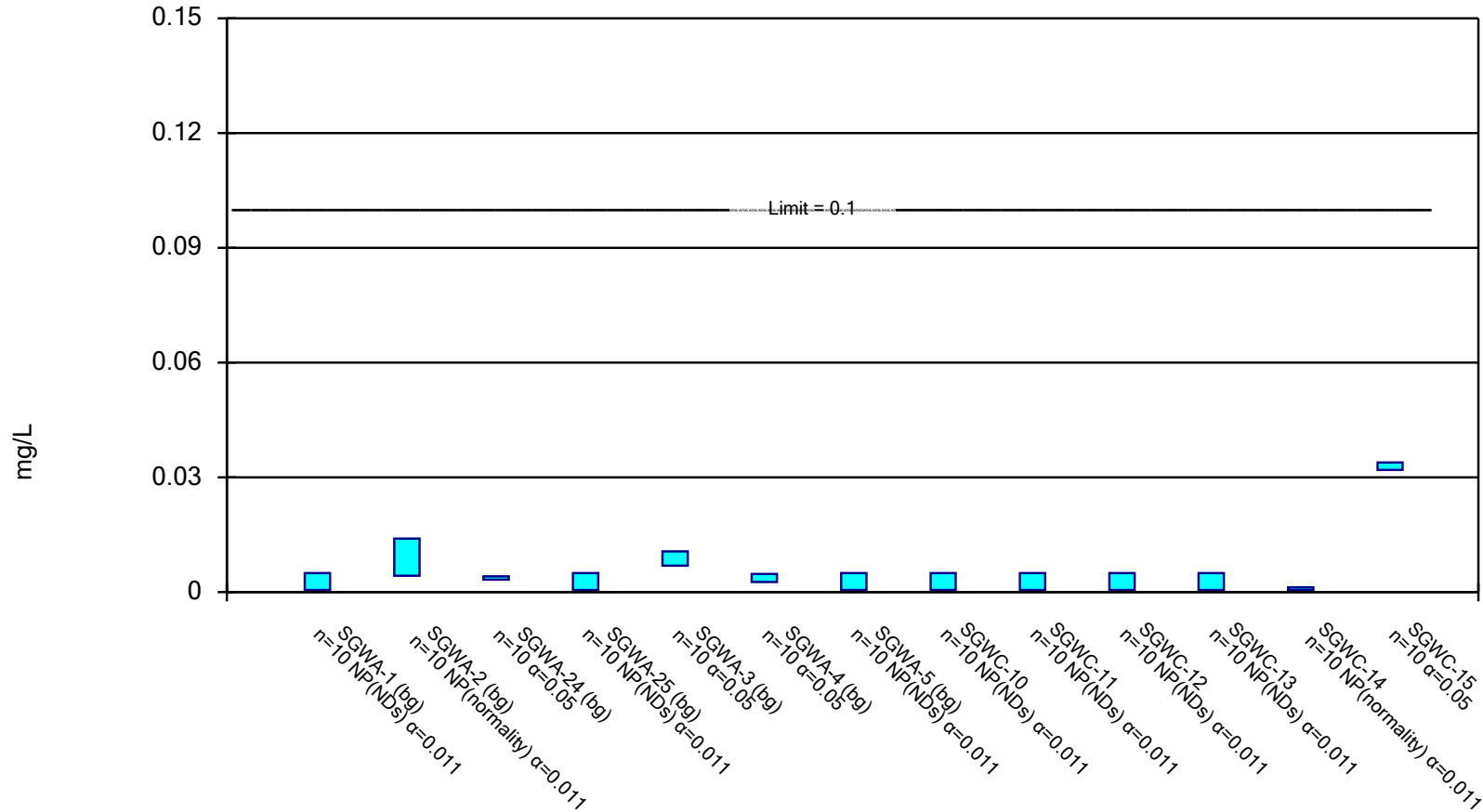


Constituent: Cadmium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

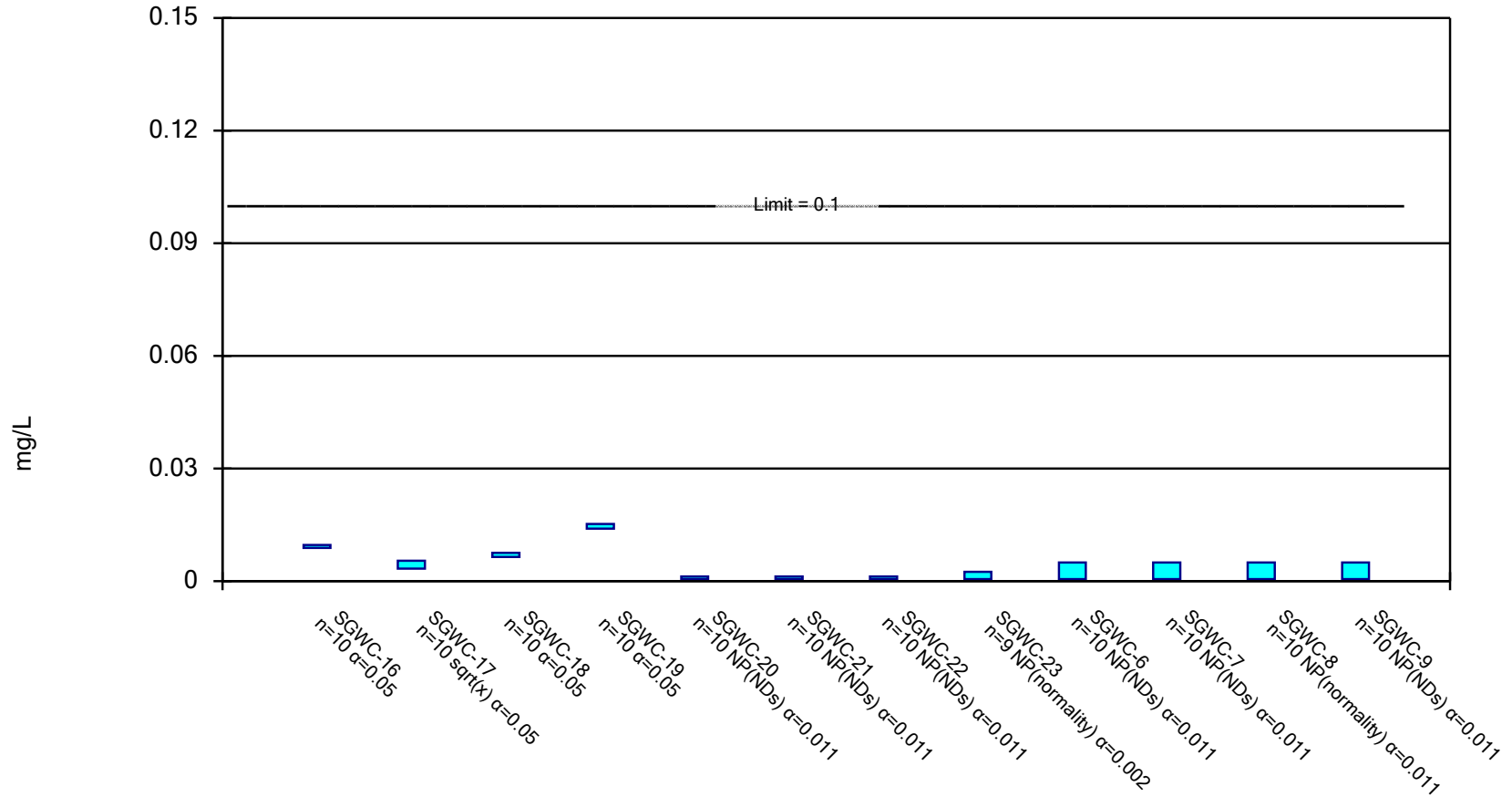


Constituent: Chromium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

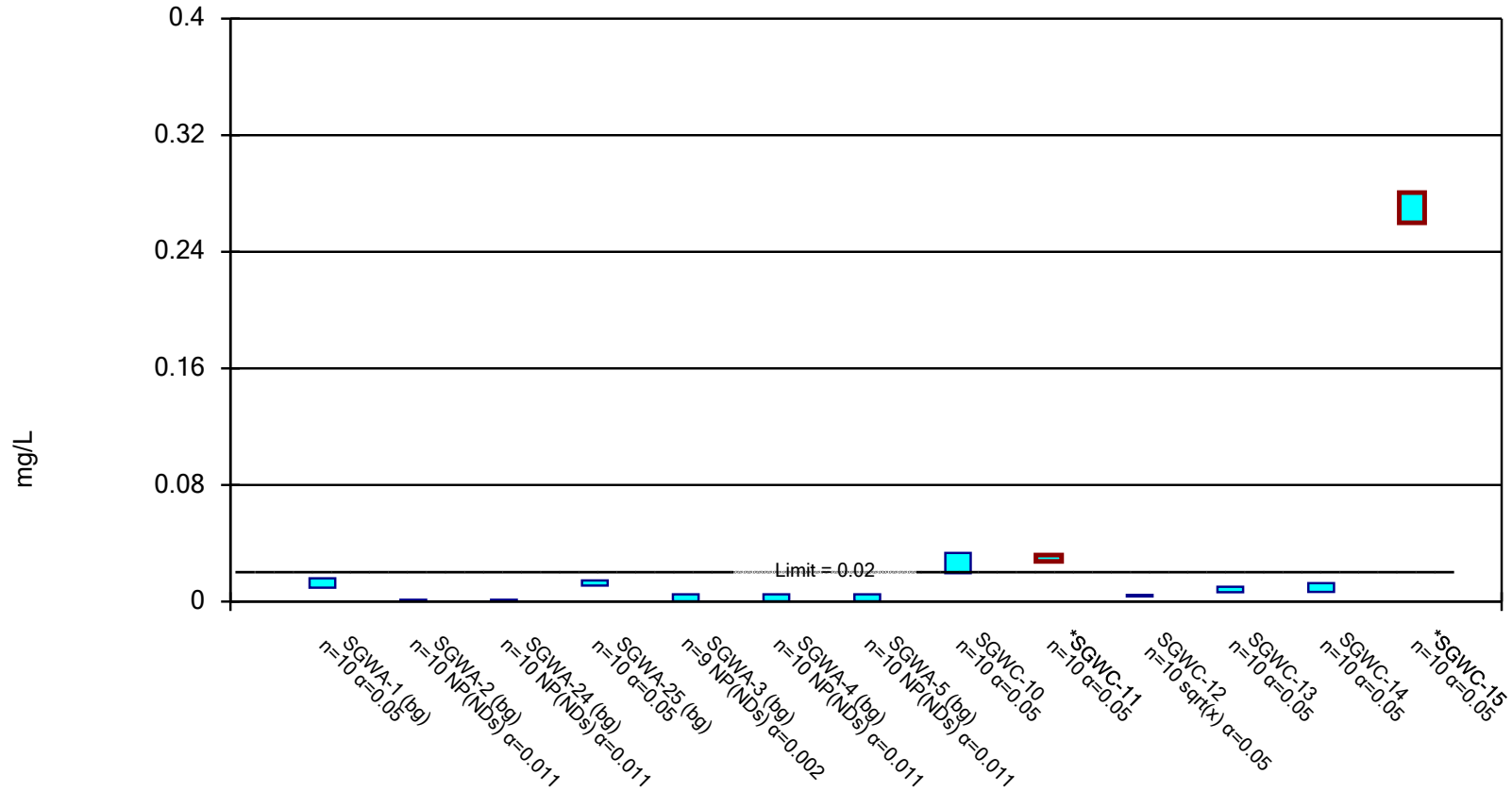


Constituent: Chromium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.



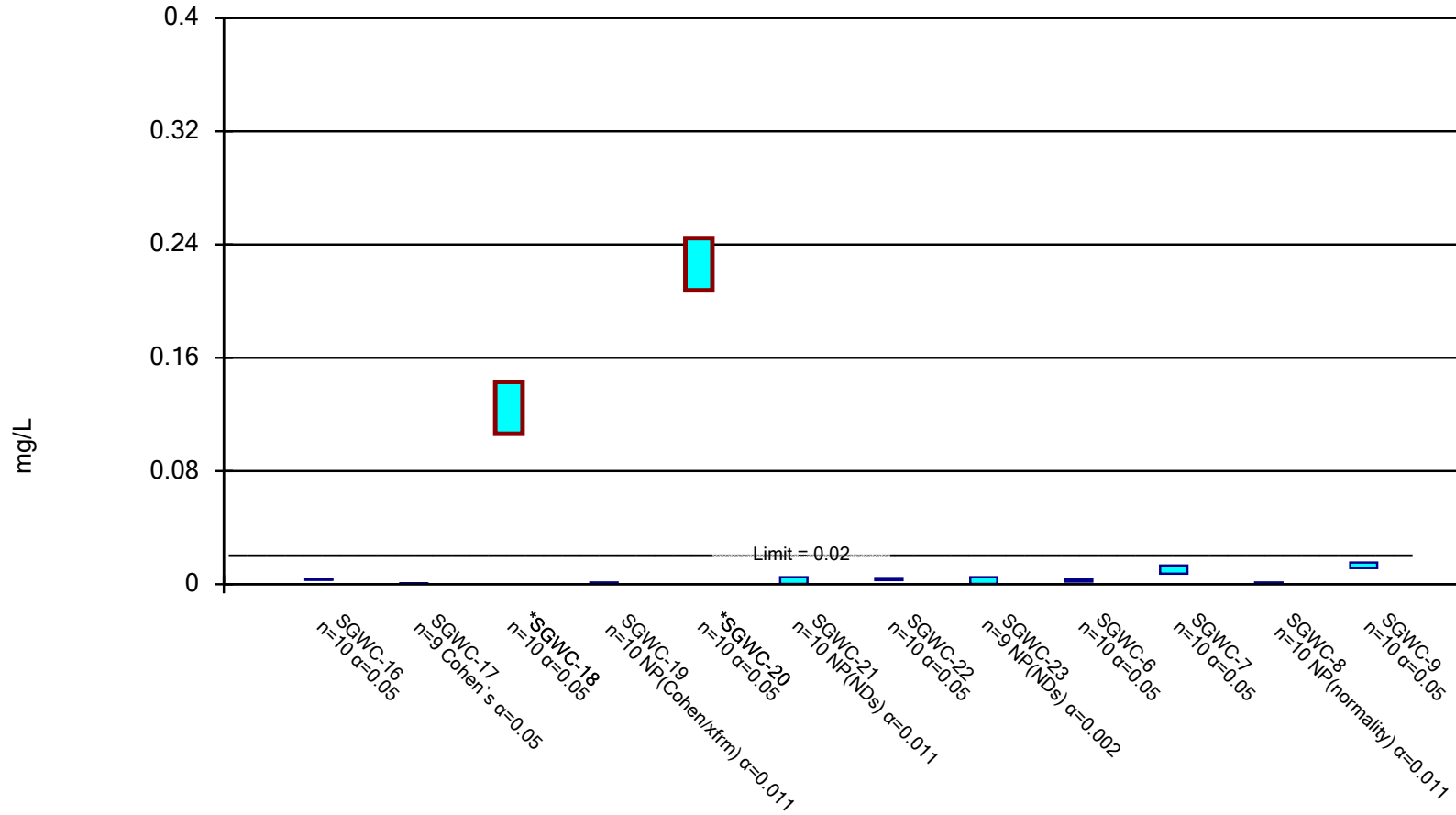
Constituent: Cobalt Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.\* Normality Test: Shapiro Wilk, alpha based on n.

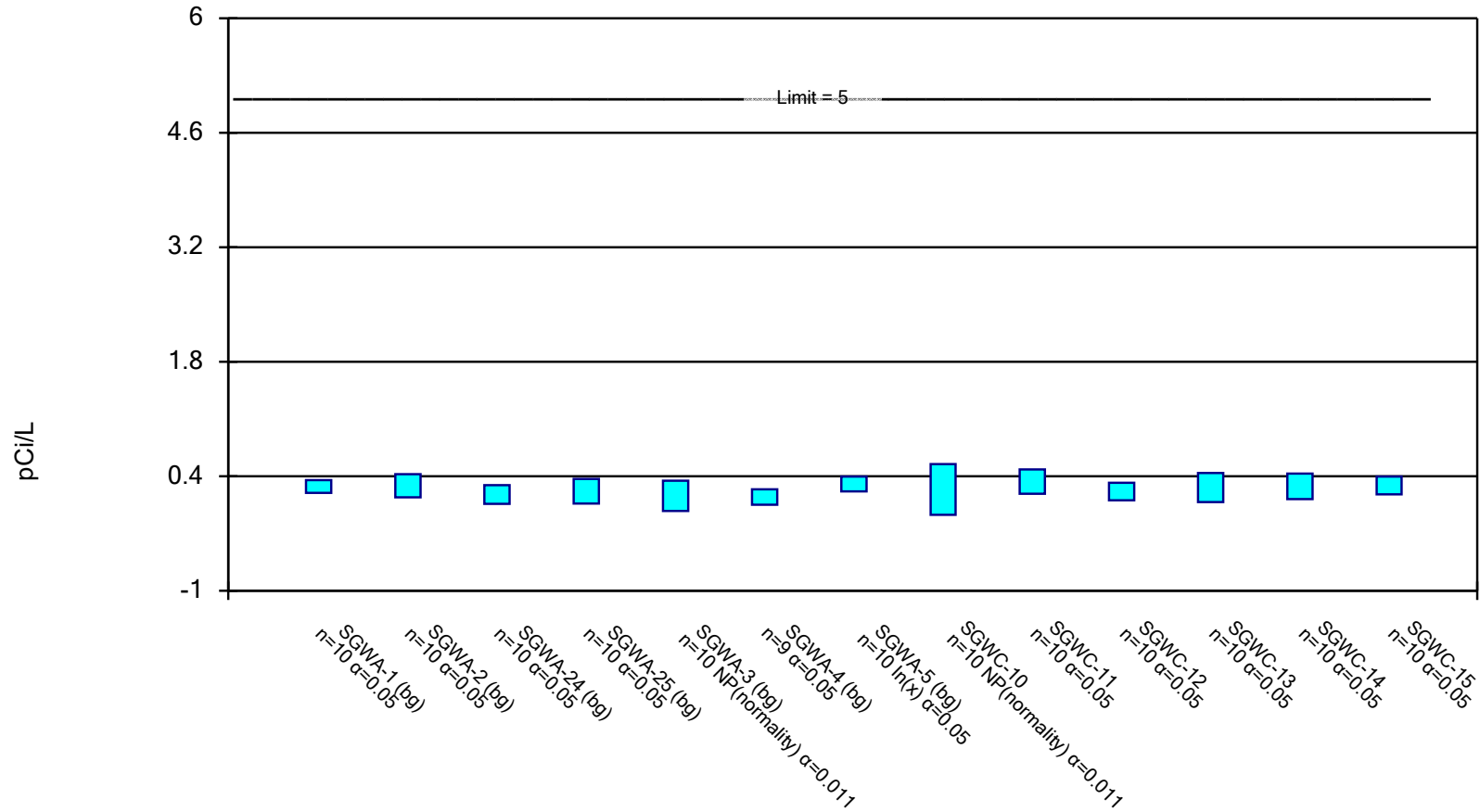


Constituent: Cobalt Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

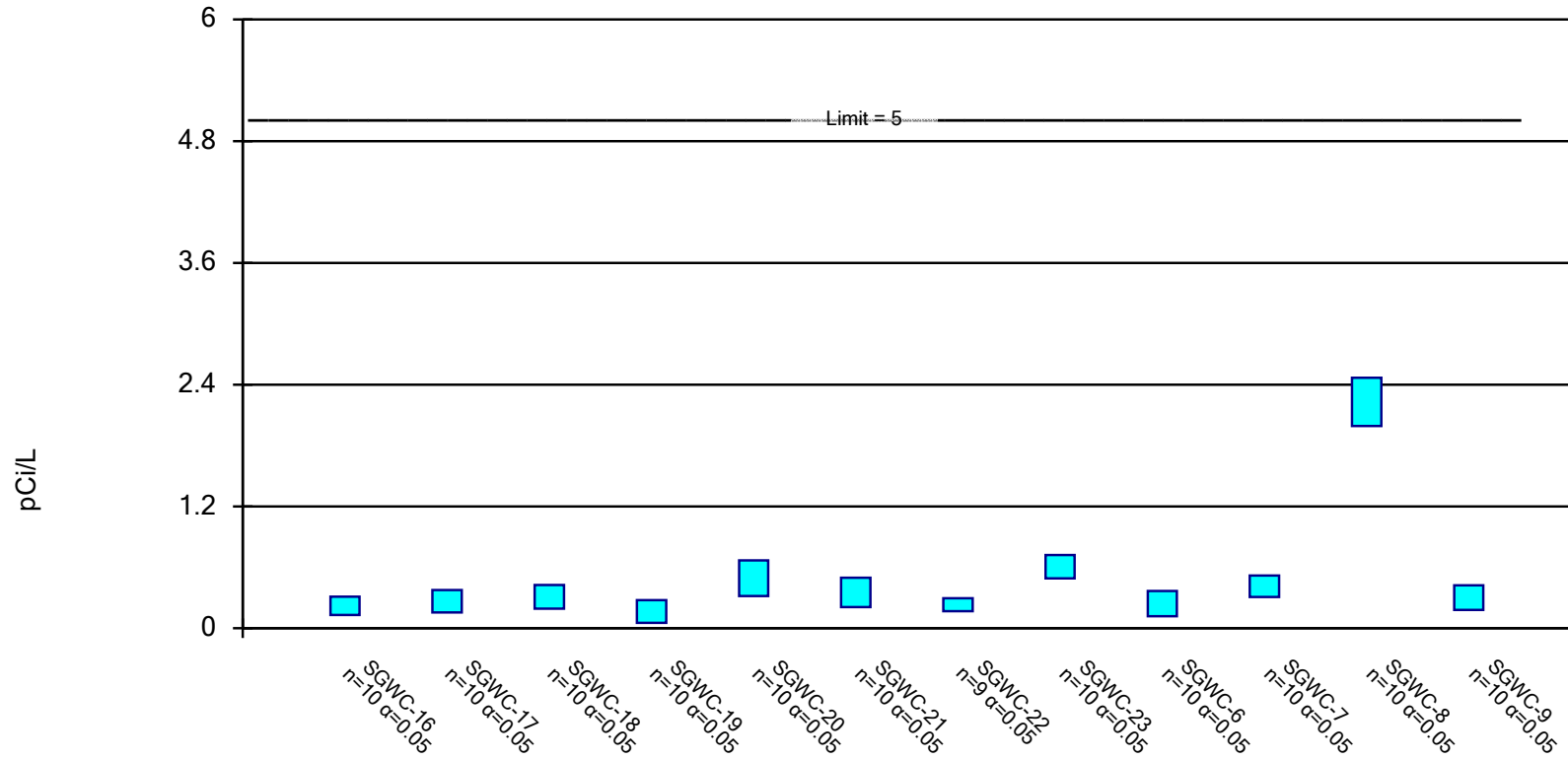


Constituent: Combined Radium 226 + 228 Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence I

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Parametric Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

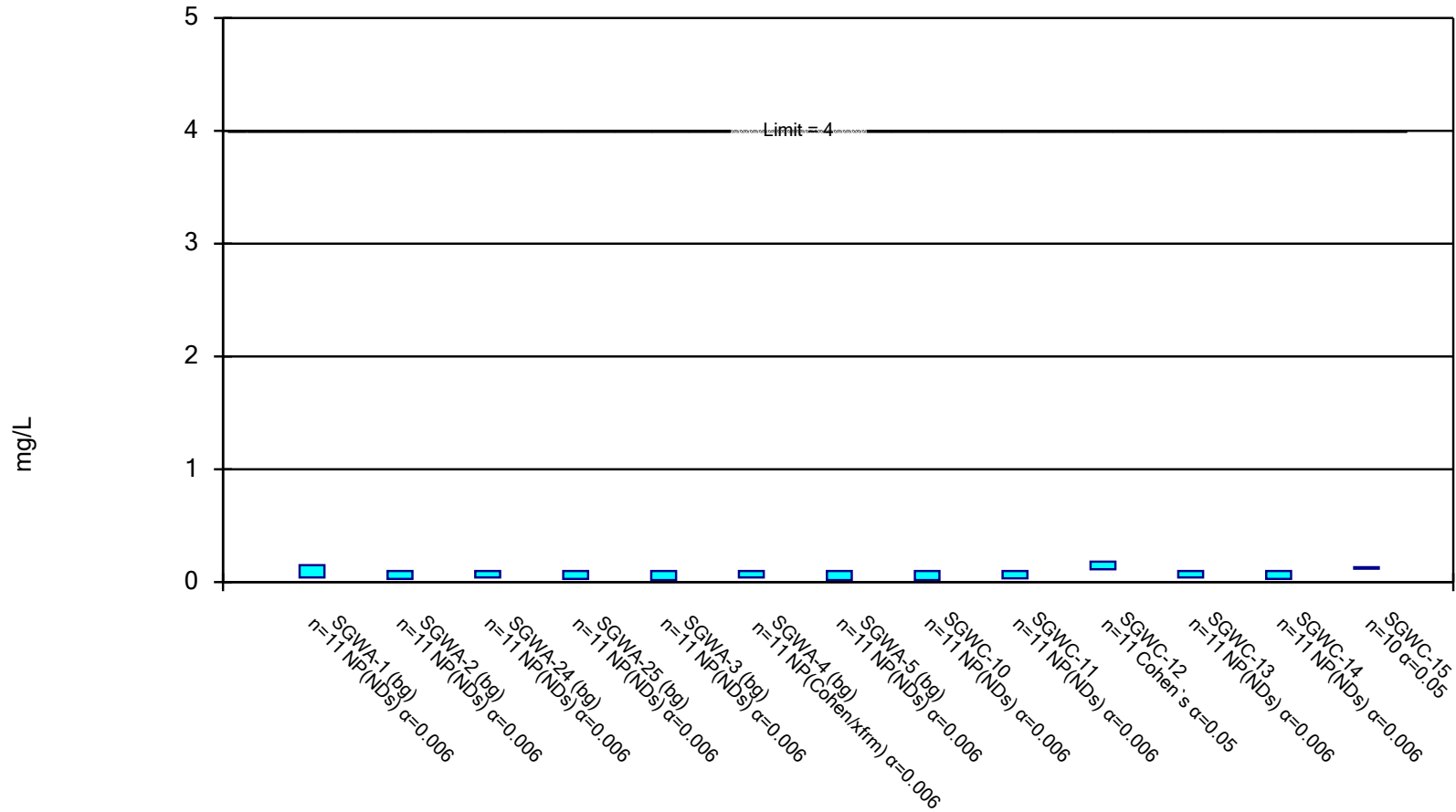


Constituent: Combined Radium 226 + 228 Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence I

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

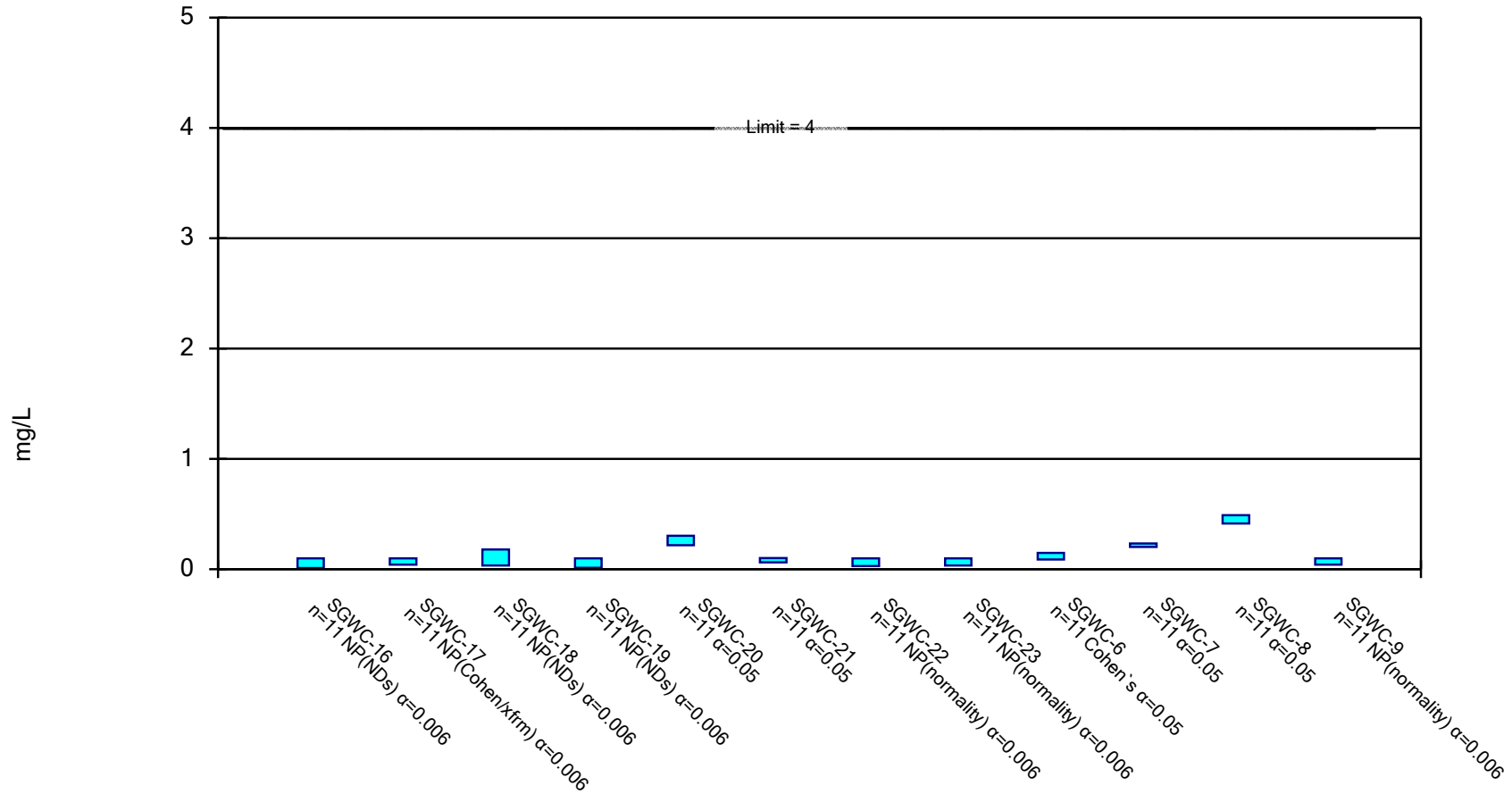


Constituent: Fluoride Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

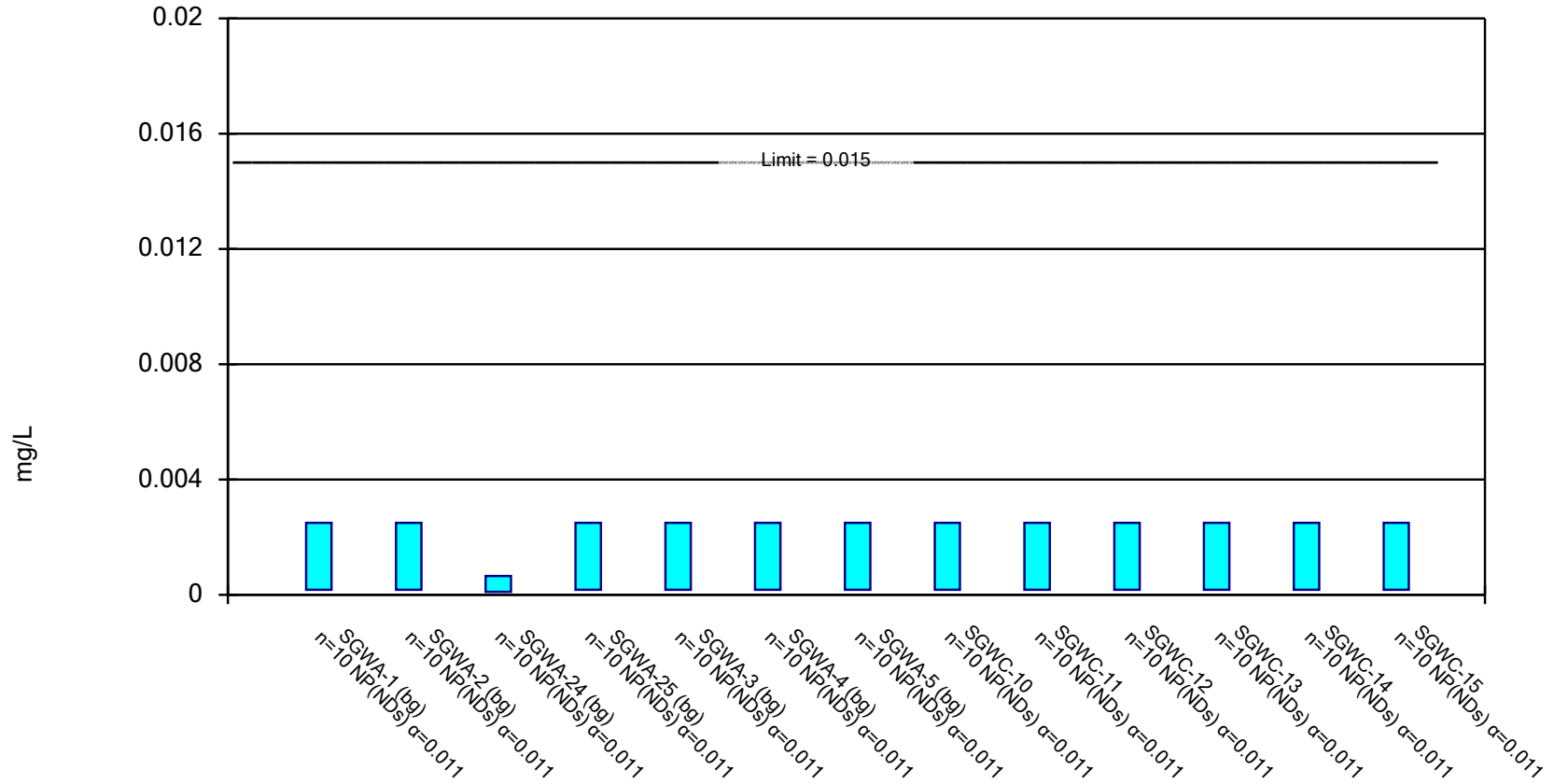


Constituent: Fluoride Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

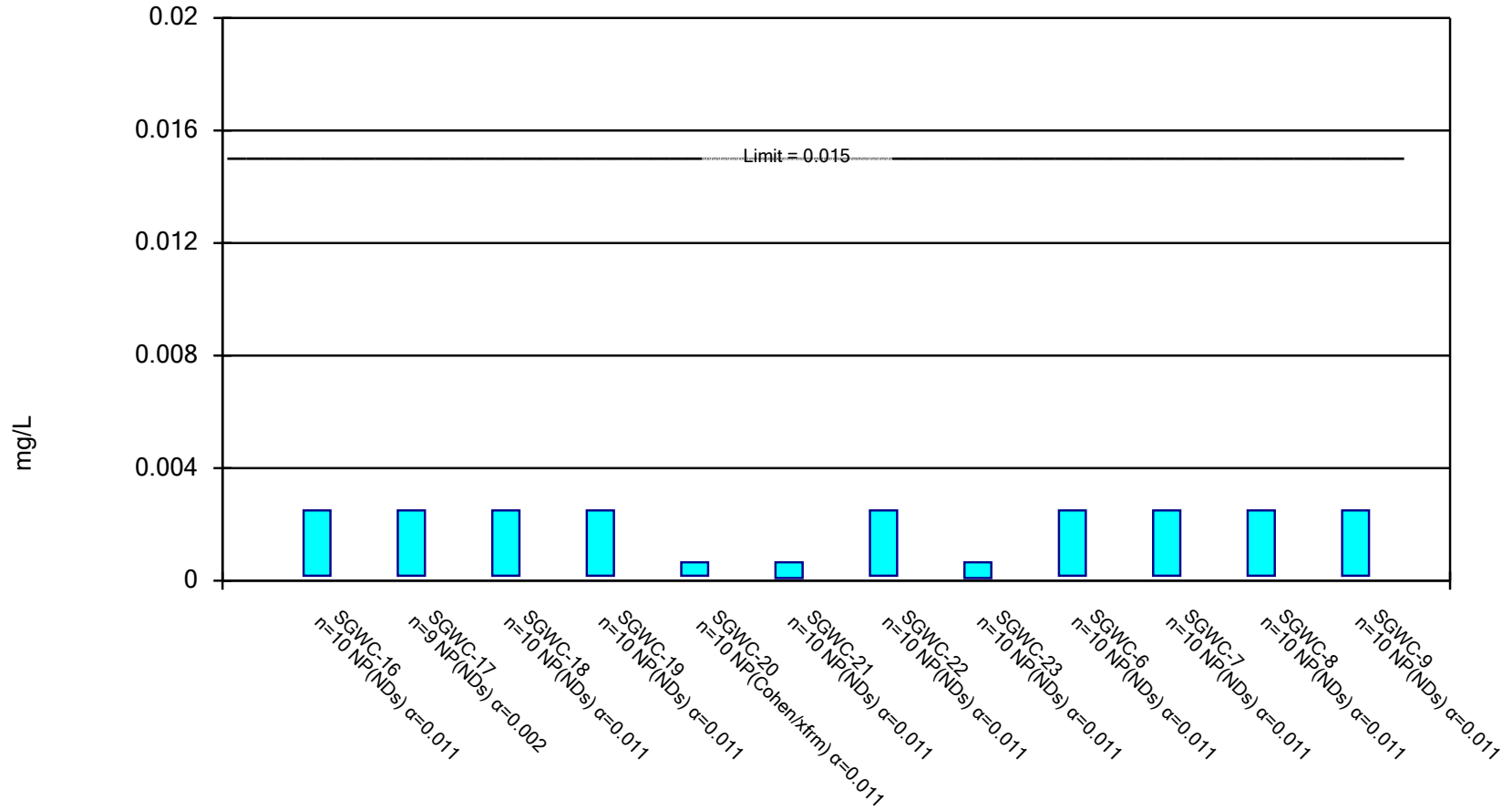


Constituent: Lead Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

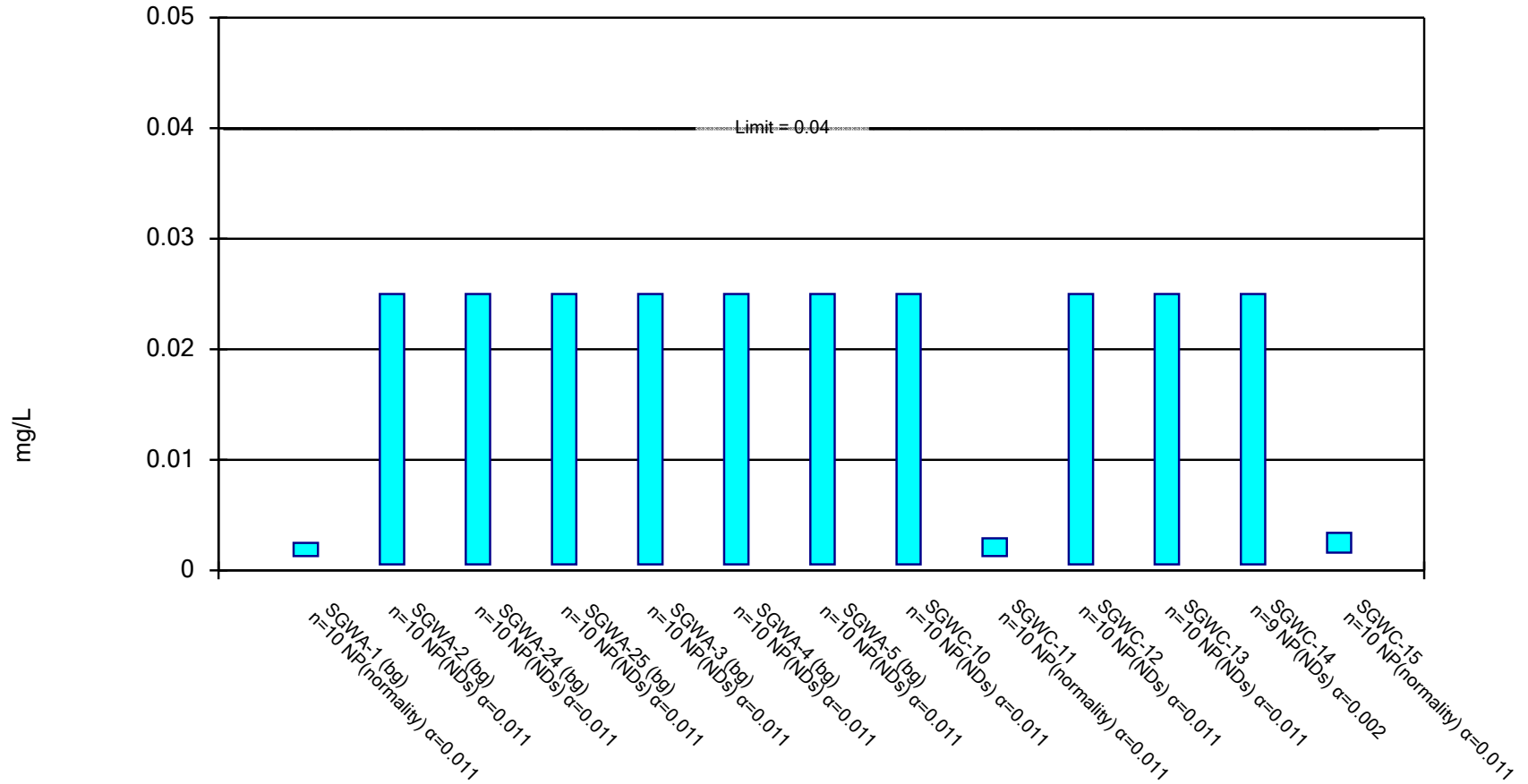


Constituent: Lead Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



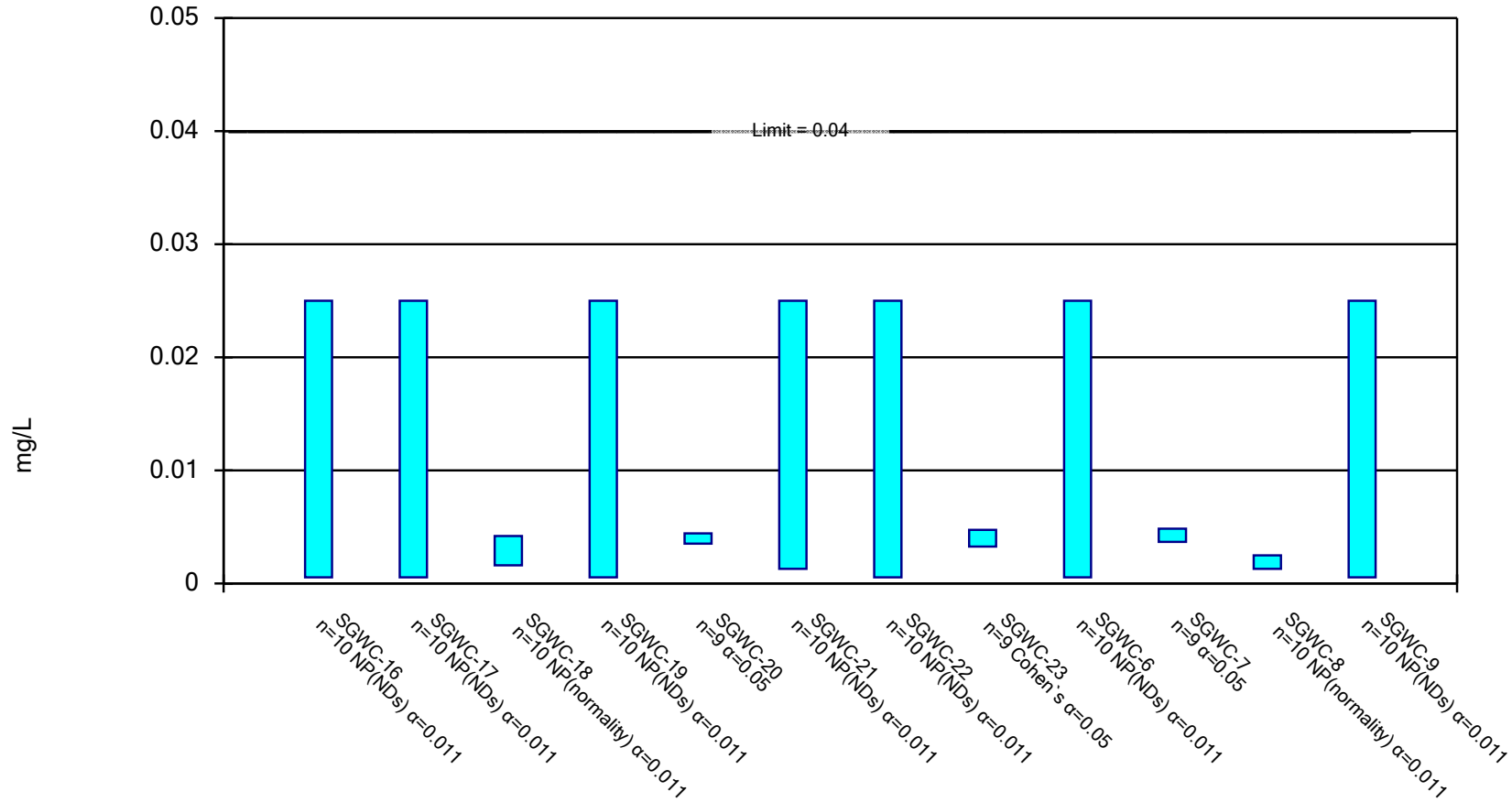
Constituent: Lithium Analysis Run 10/15/2018 9:31 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

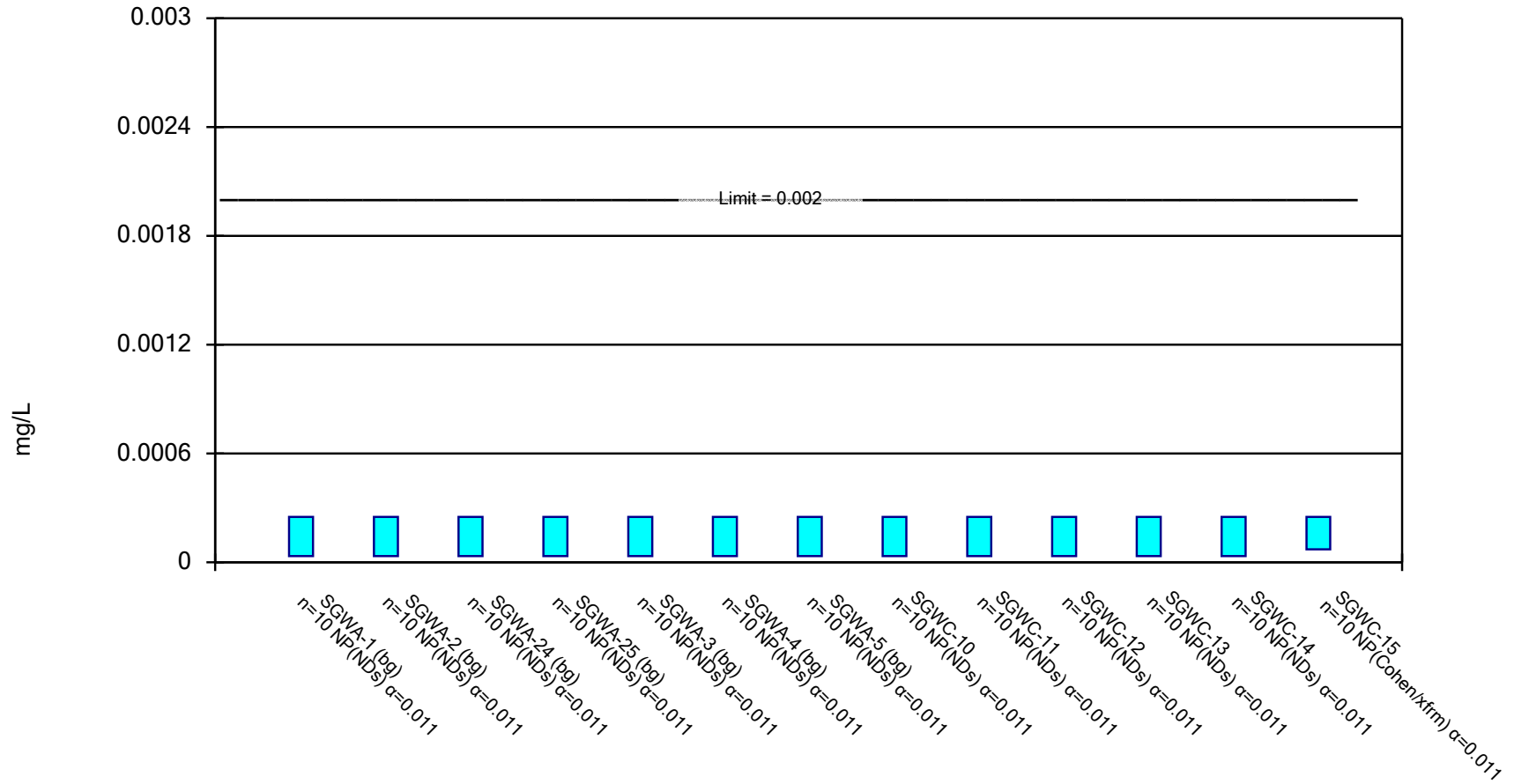


Constituent: Lithium Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

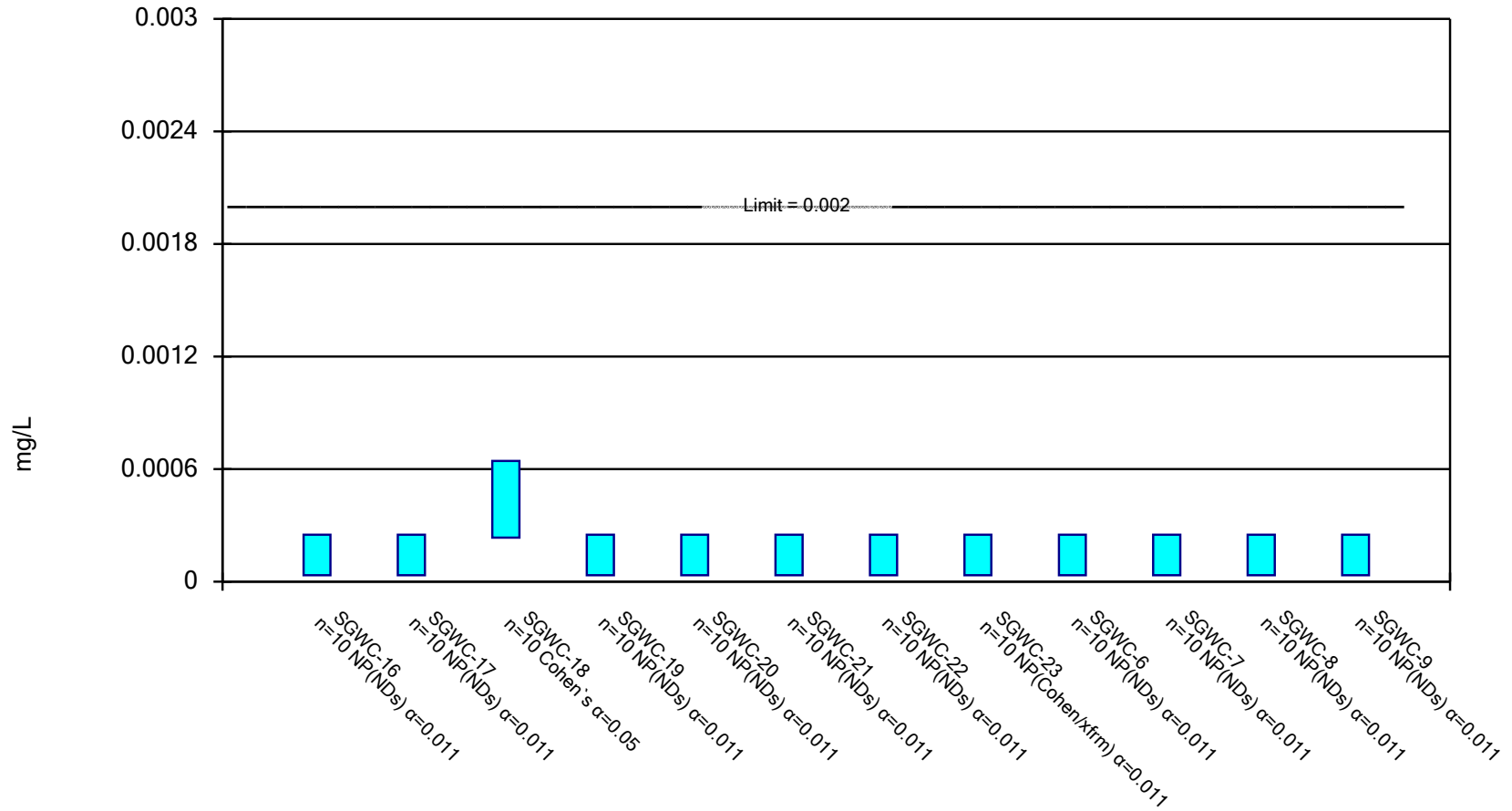


Constituent: Mercury Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.

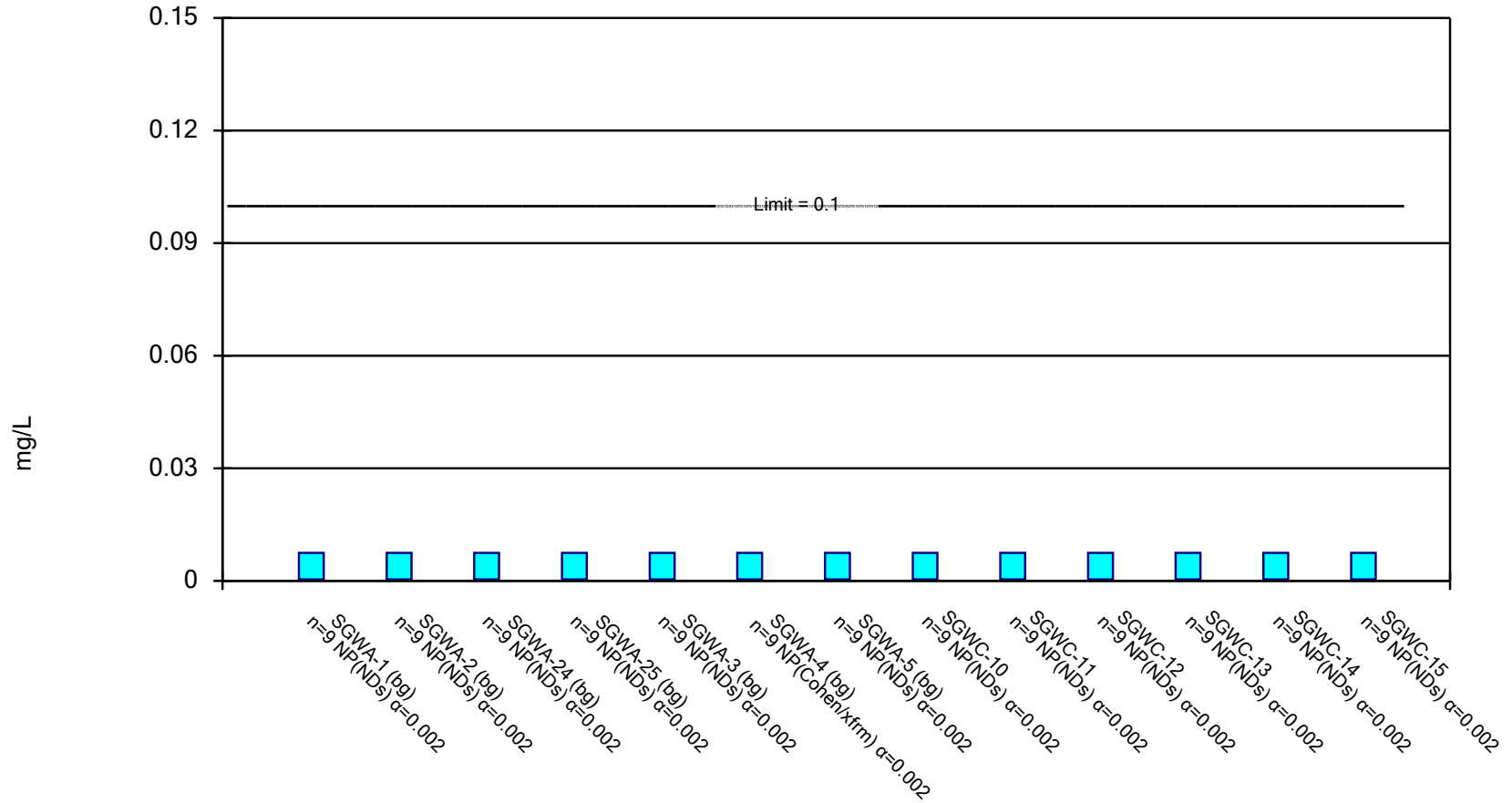


Constituent: Mercury Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

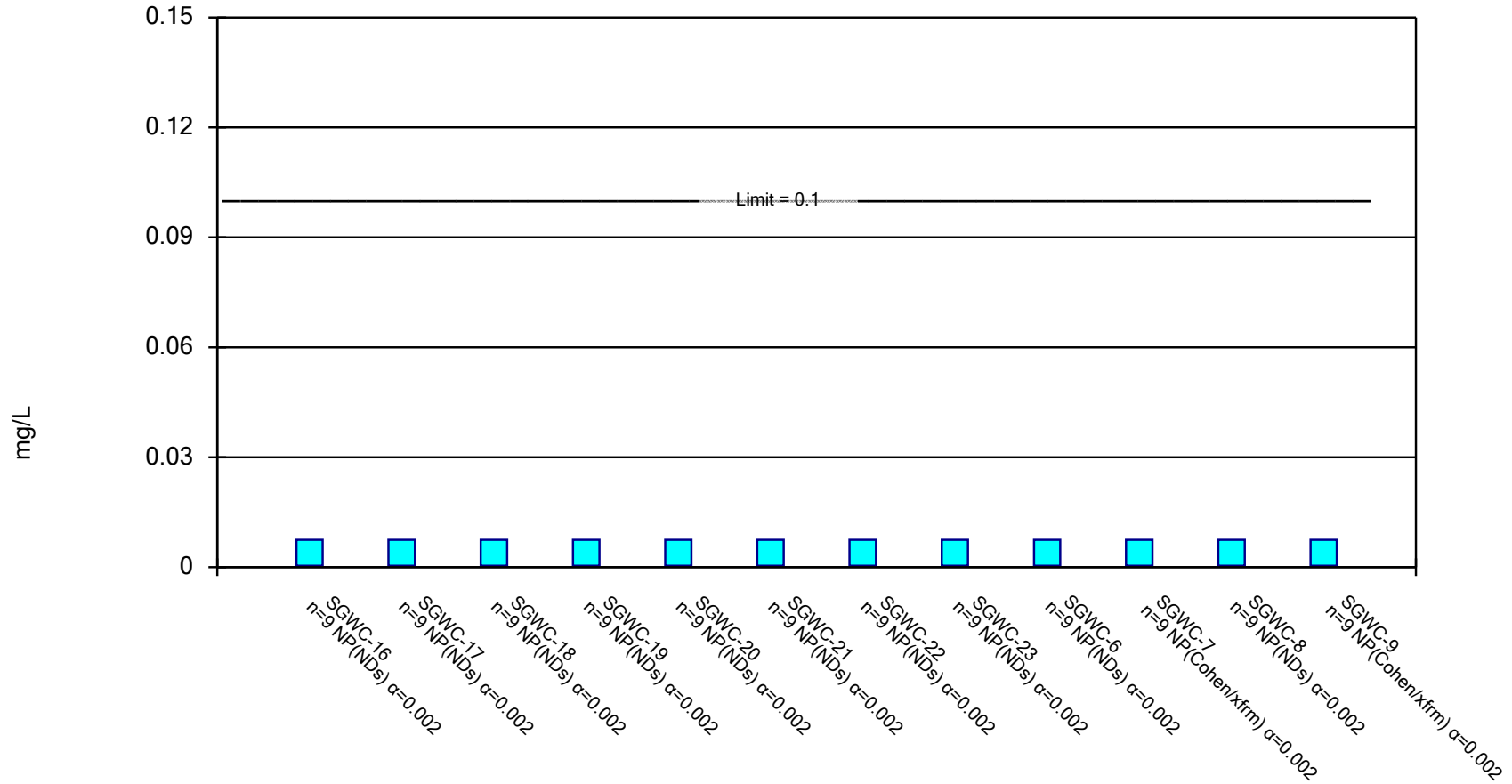


Constituent: Molybdenum Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

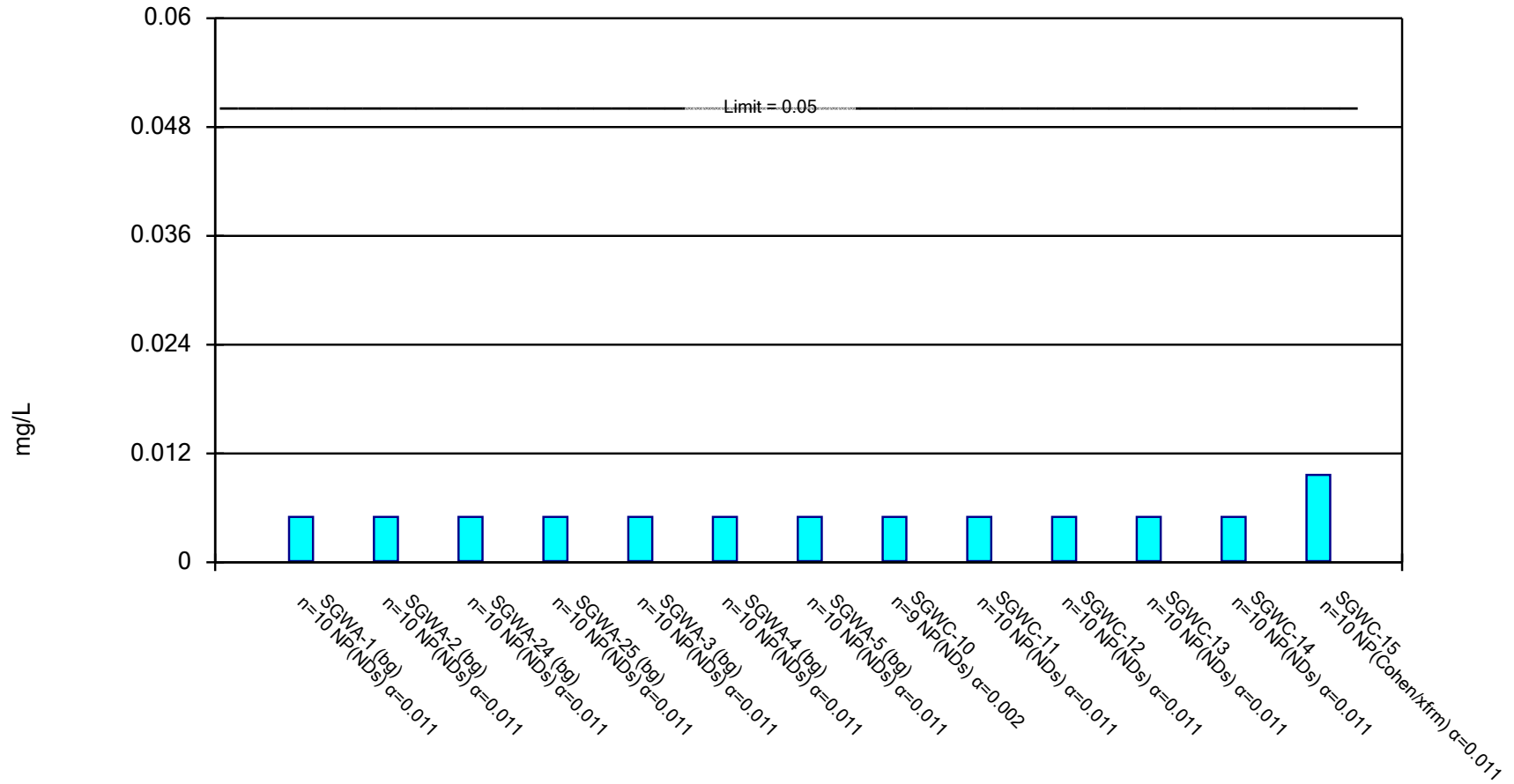


Constituent: Molybdenum Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

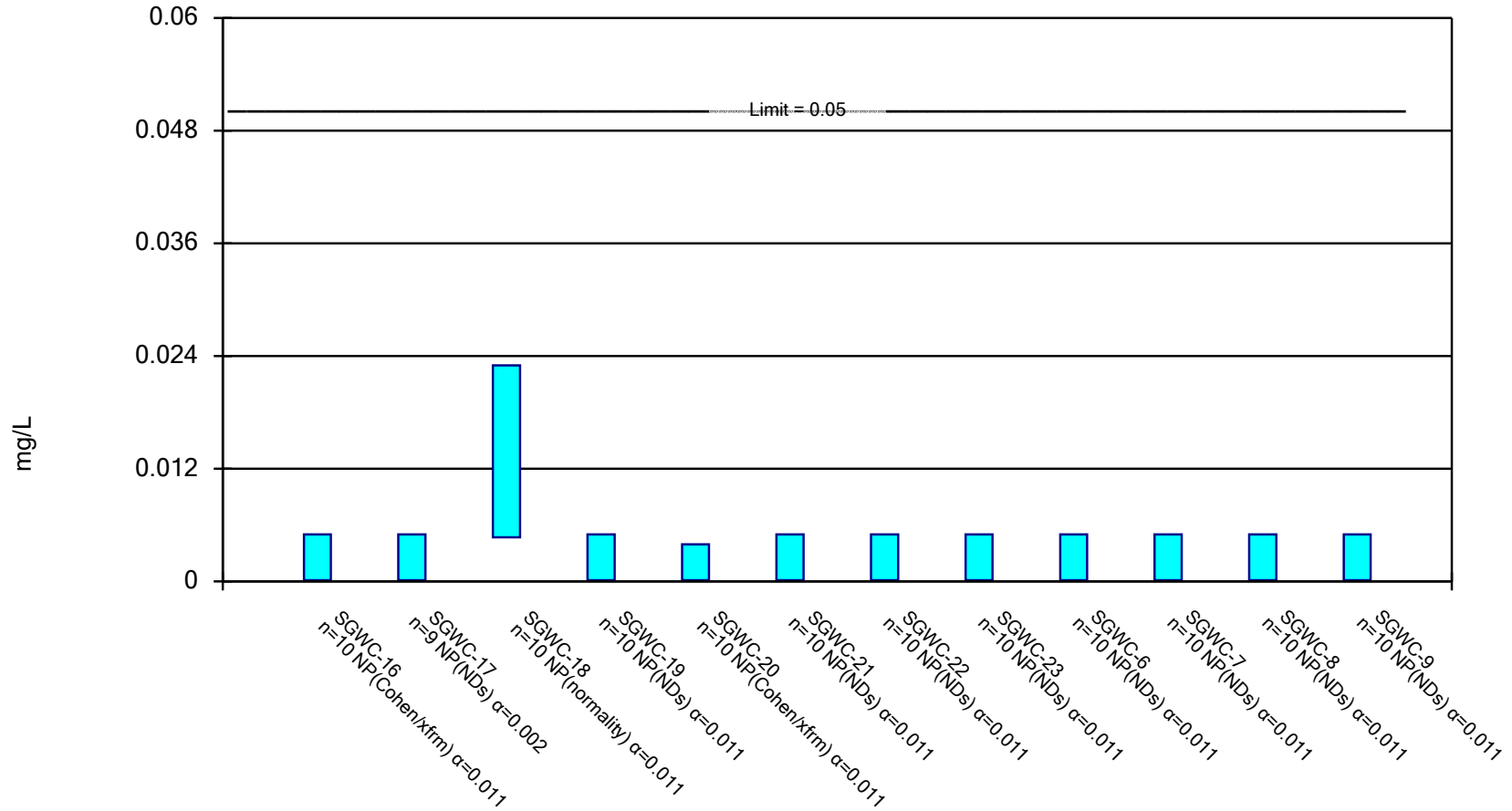


Constituent: Selenium Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

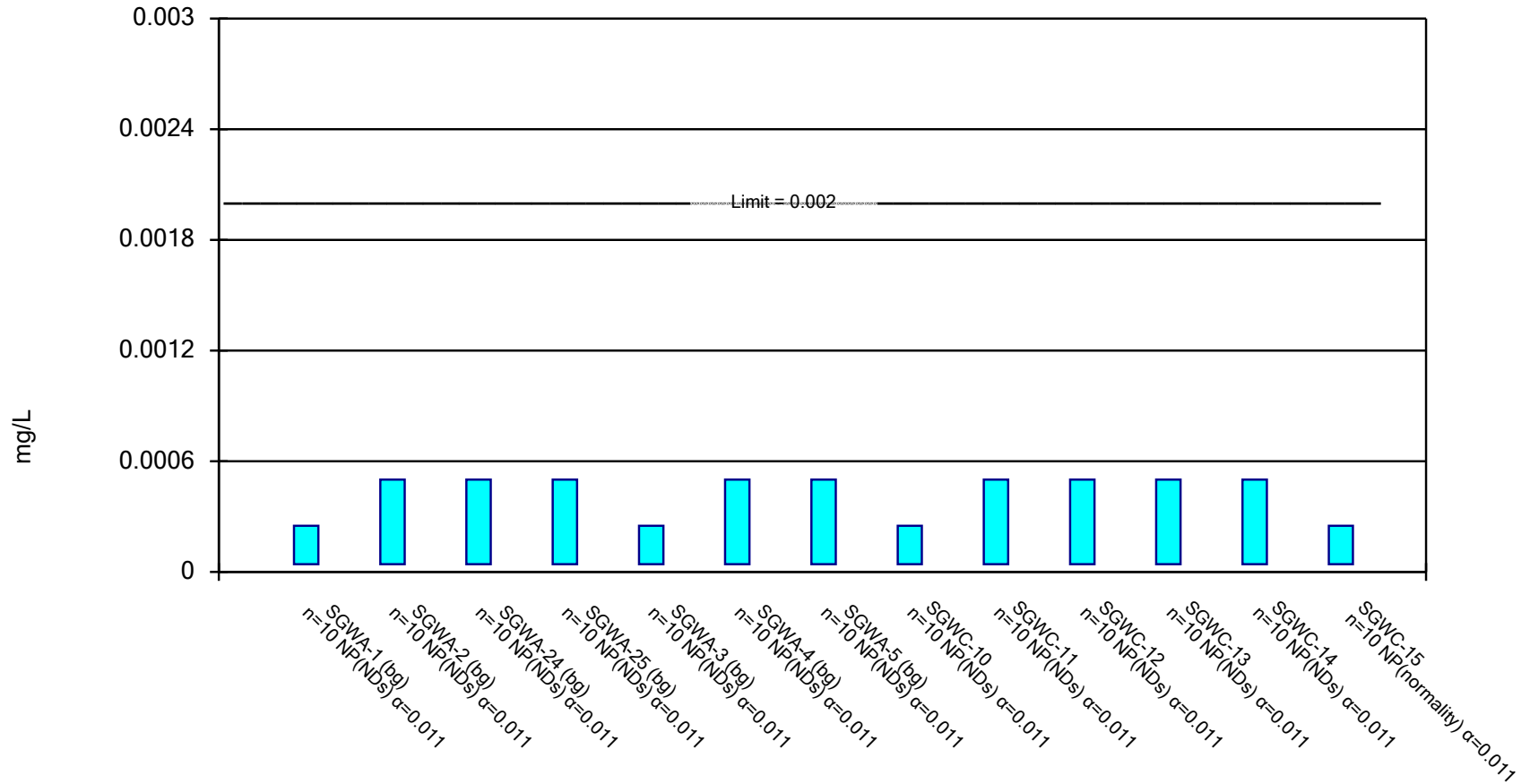


Constituent: Selenium Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

## Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



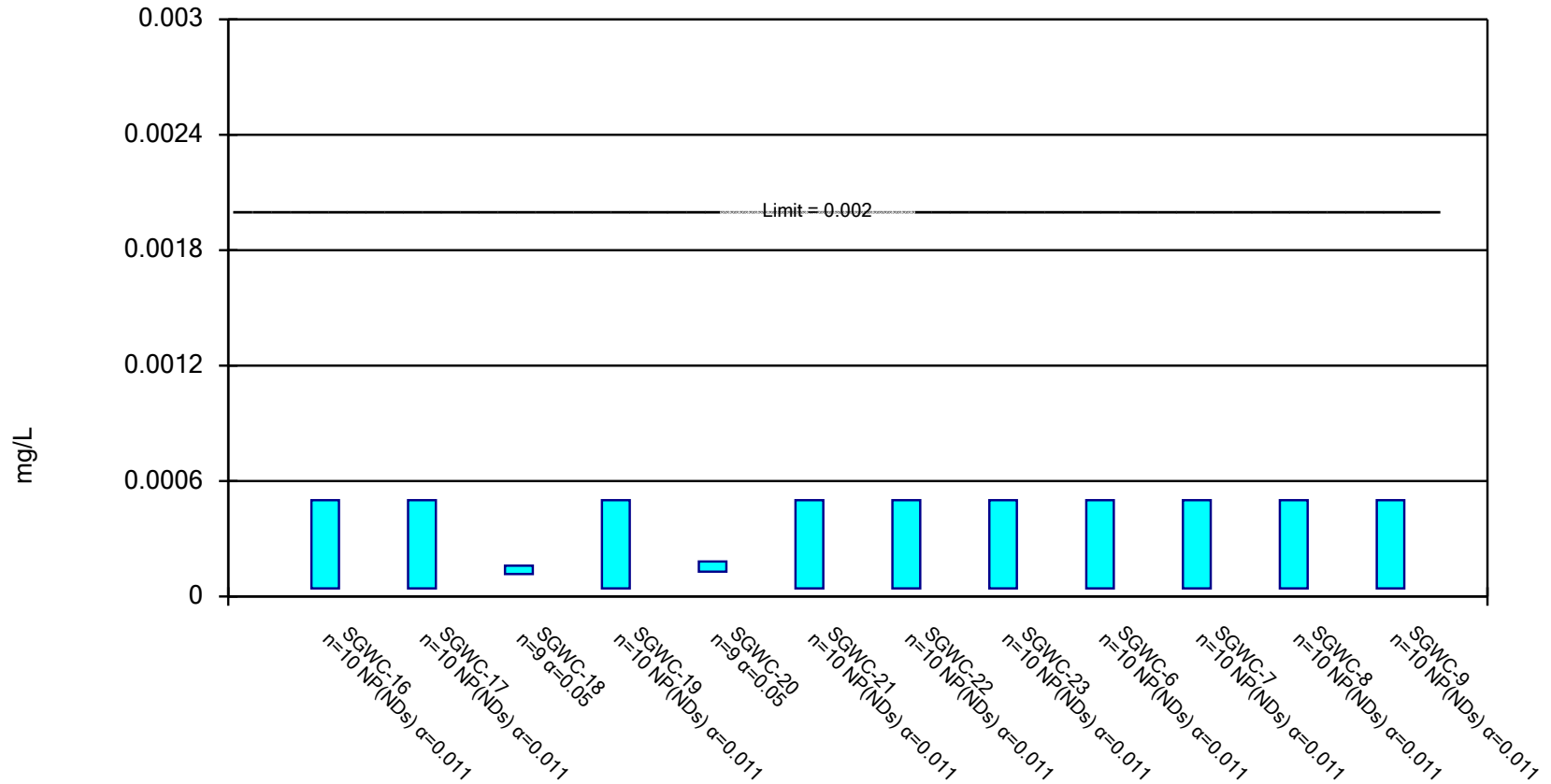
Constituent: Thallium Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR



## Parametric and Non-Parametric (NP) Confidence Interval

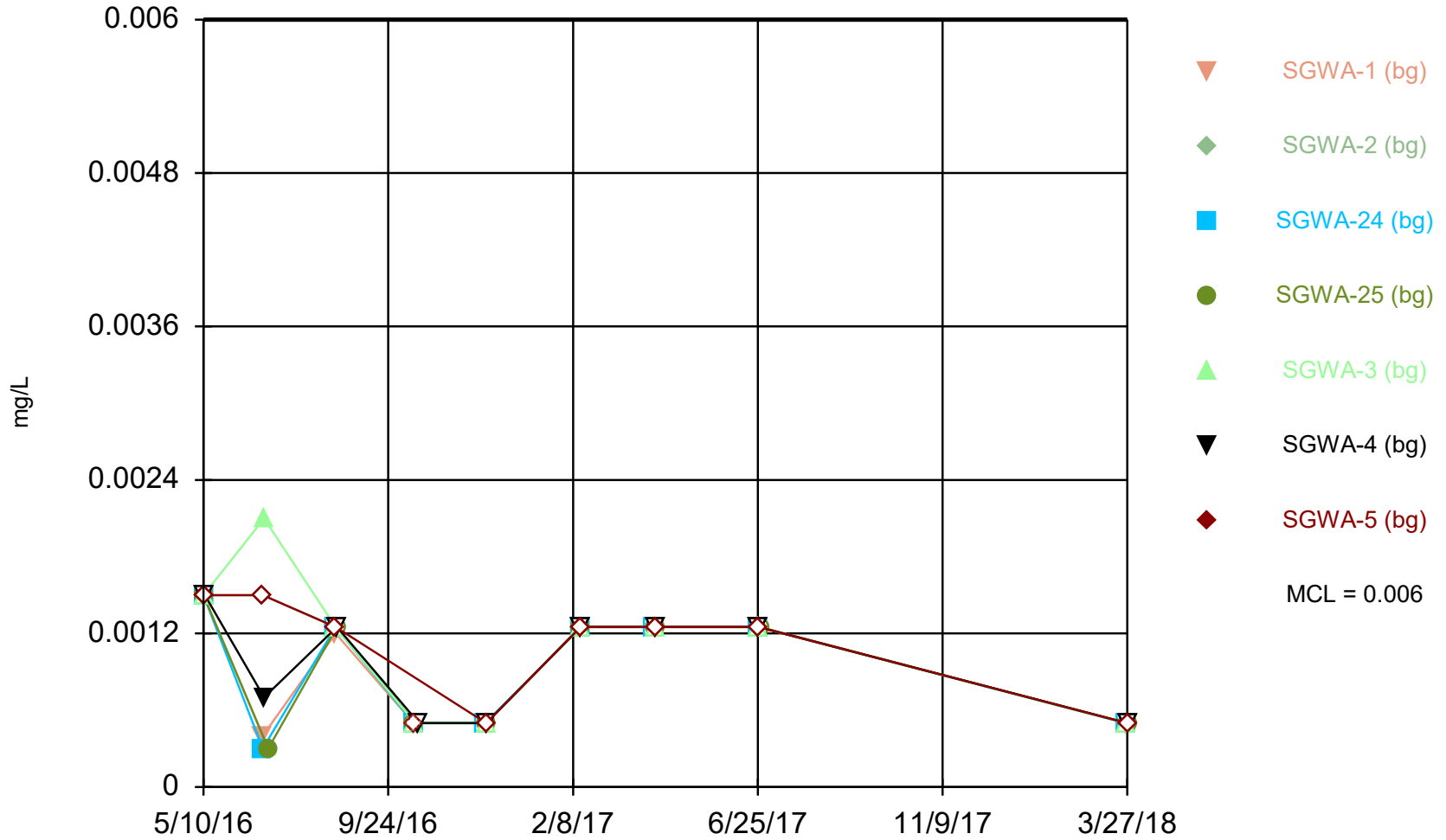
Compliance Limit is not exceeded. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium Analysis Run 10/15/2018 9:32 AM View: Interwell Confidence Interval

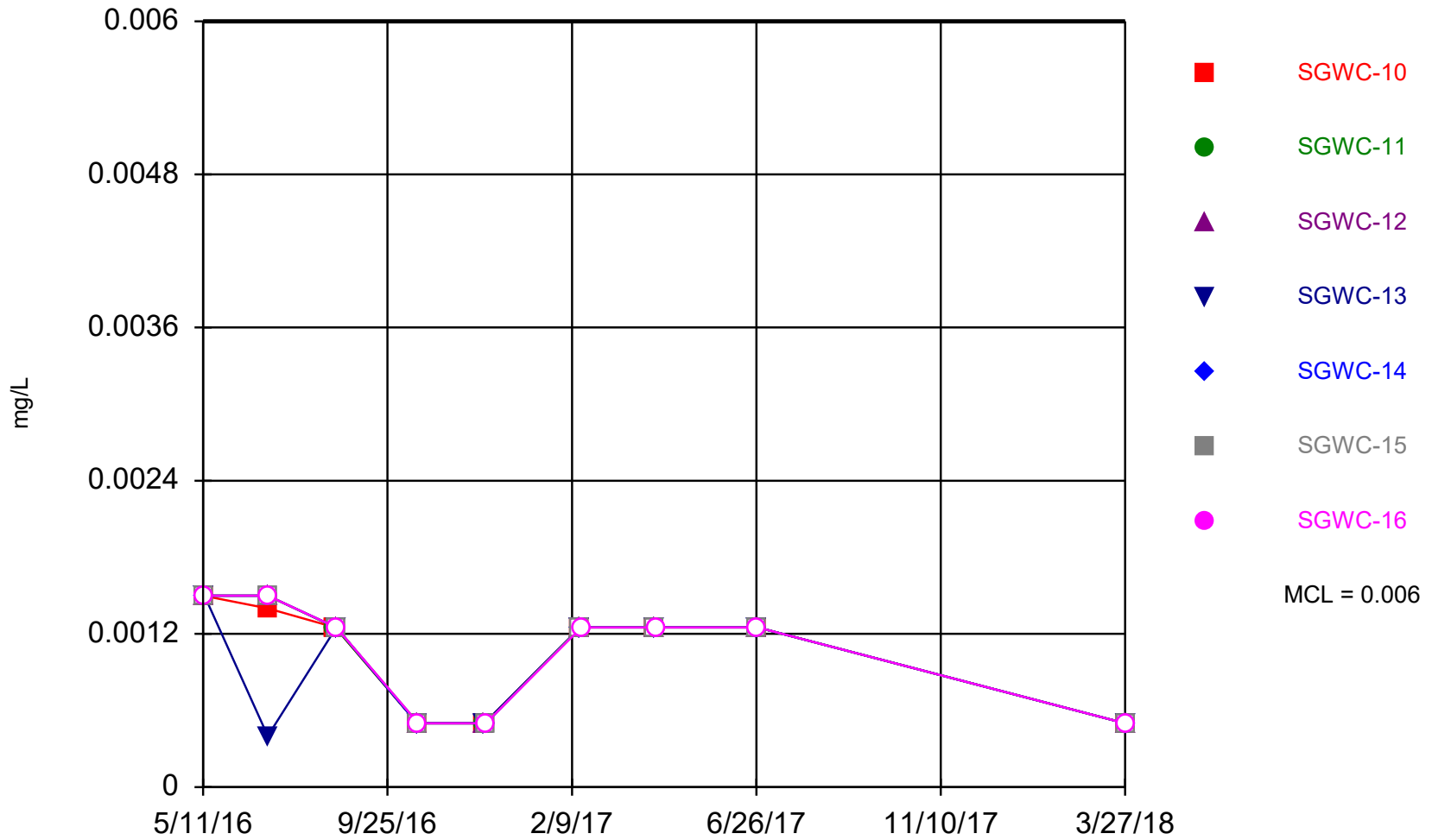
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



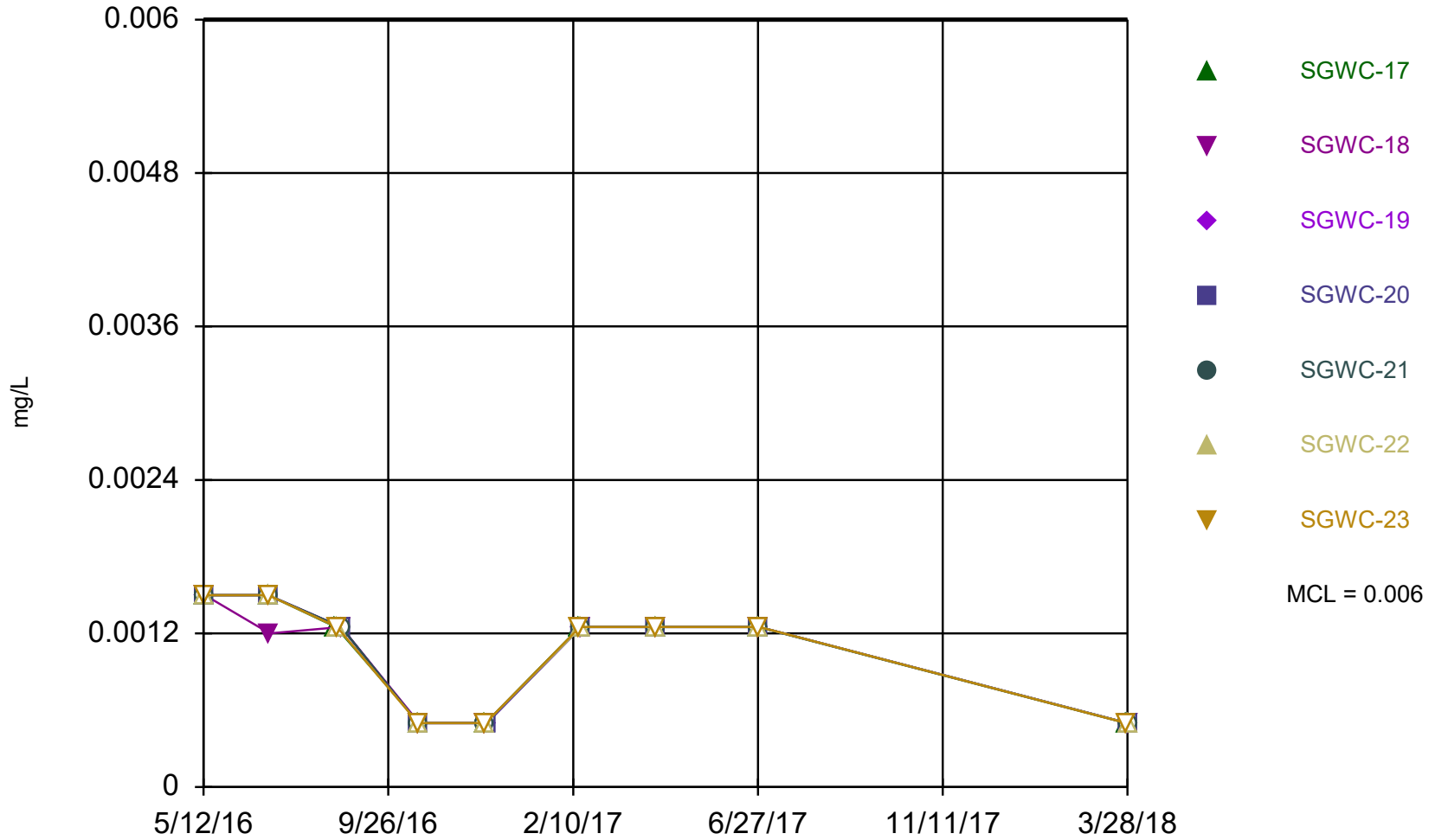
Constituent: Antimony Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



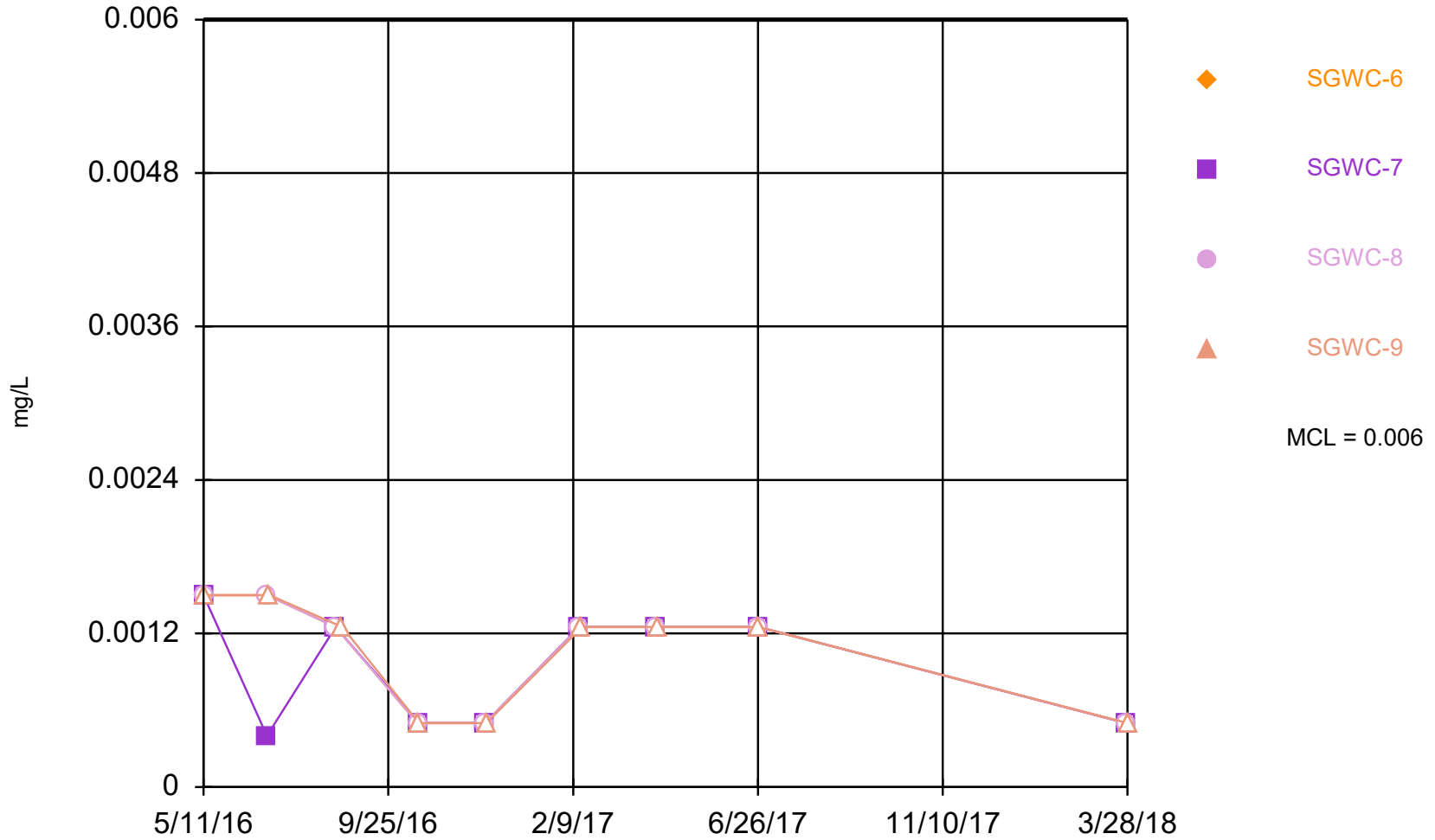
Constituent: Antimony Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



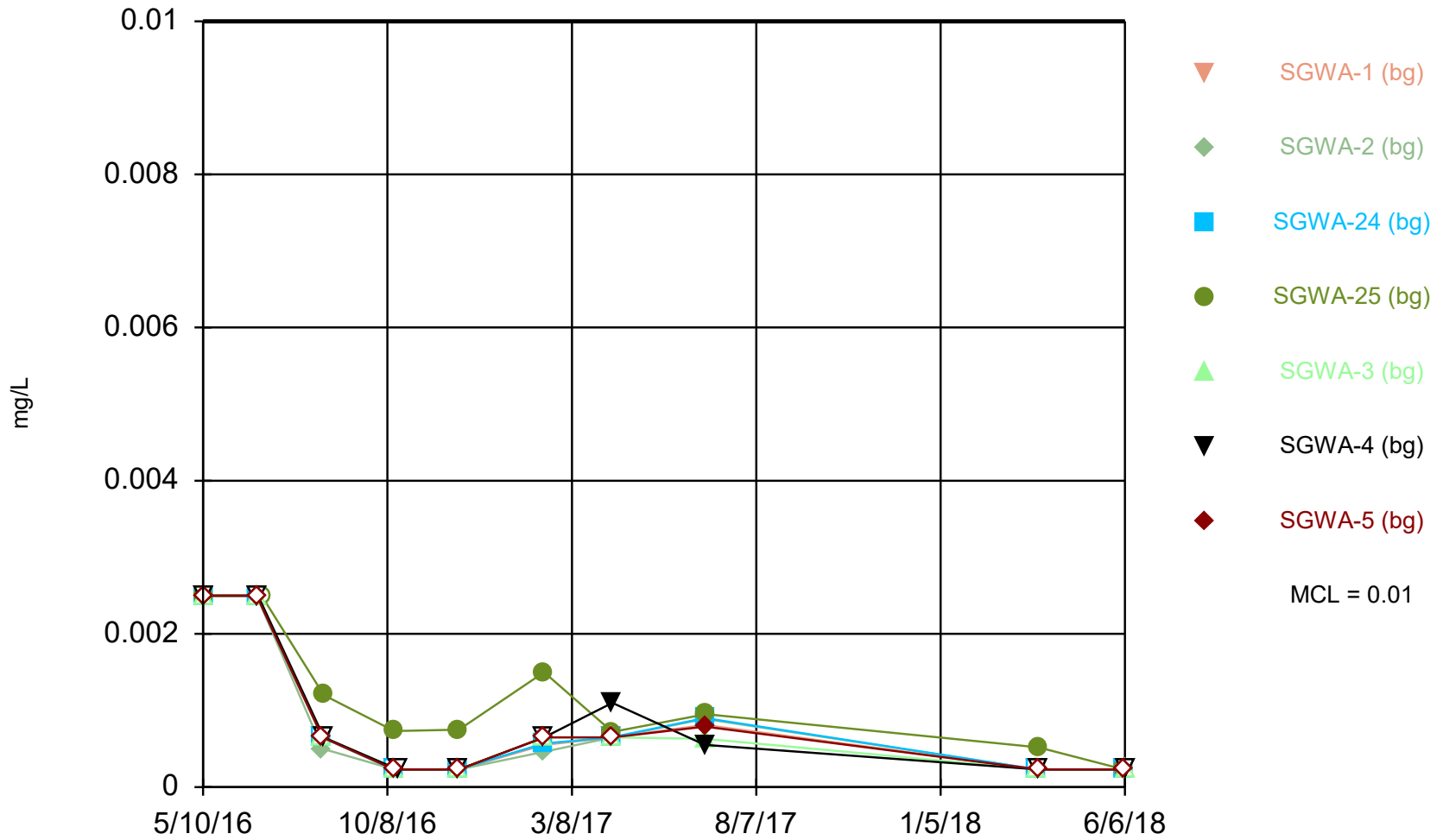
Constituent: Antimony    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



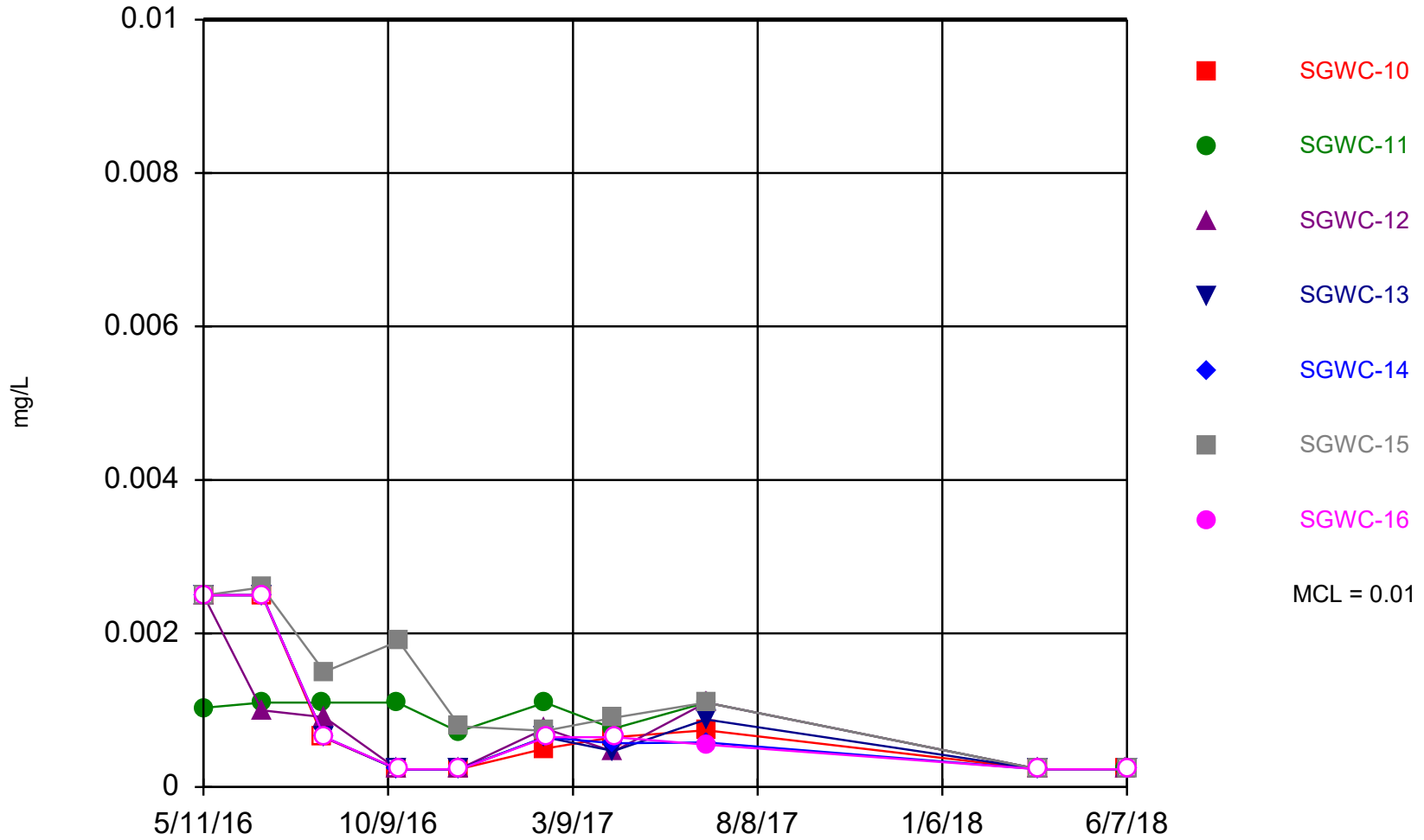
Constituent: Antimony Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



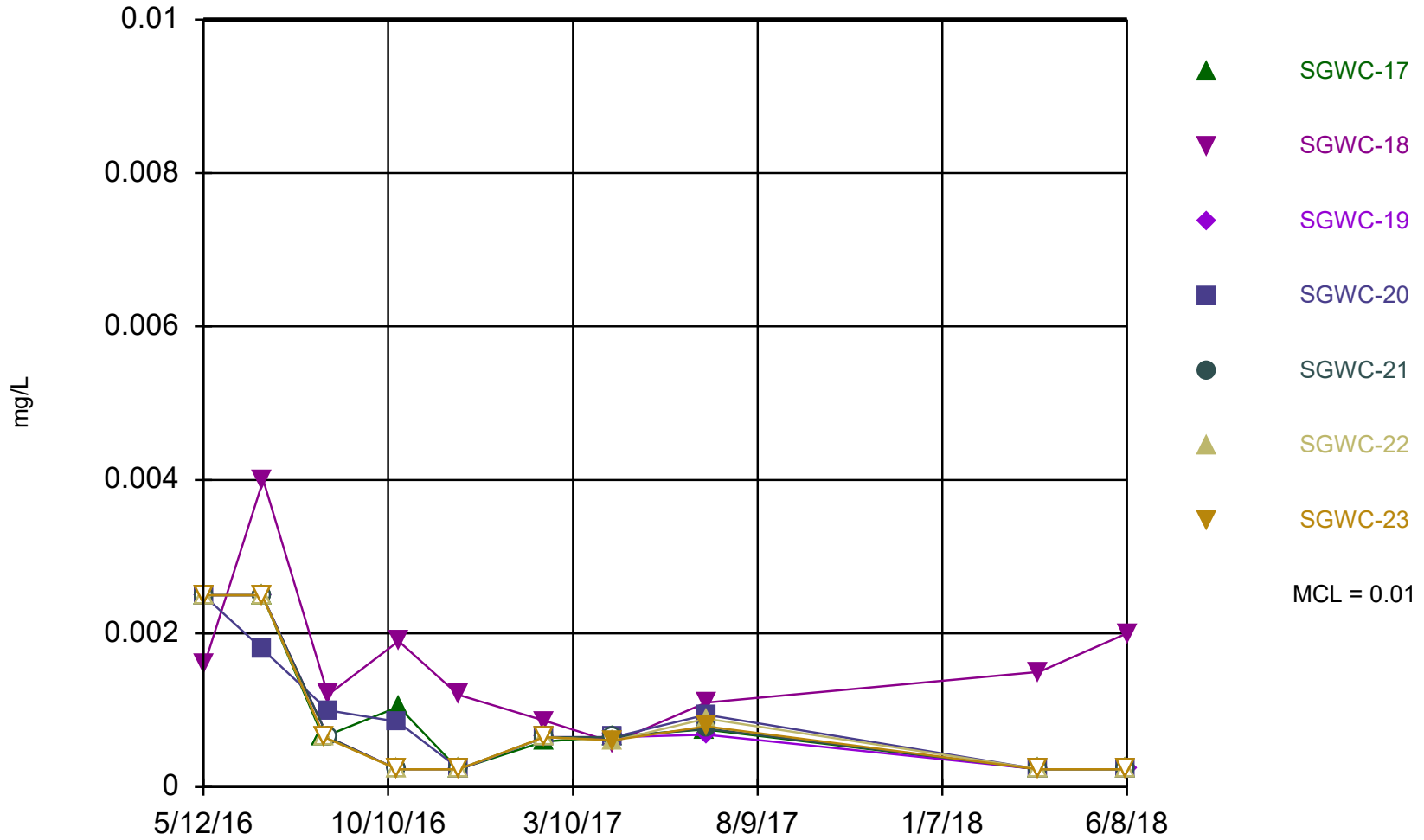
Constituent: Arsenic    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Arsenic Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

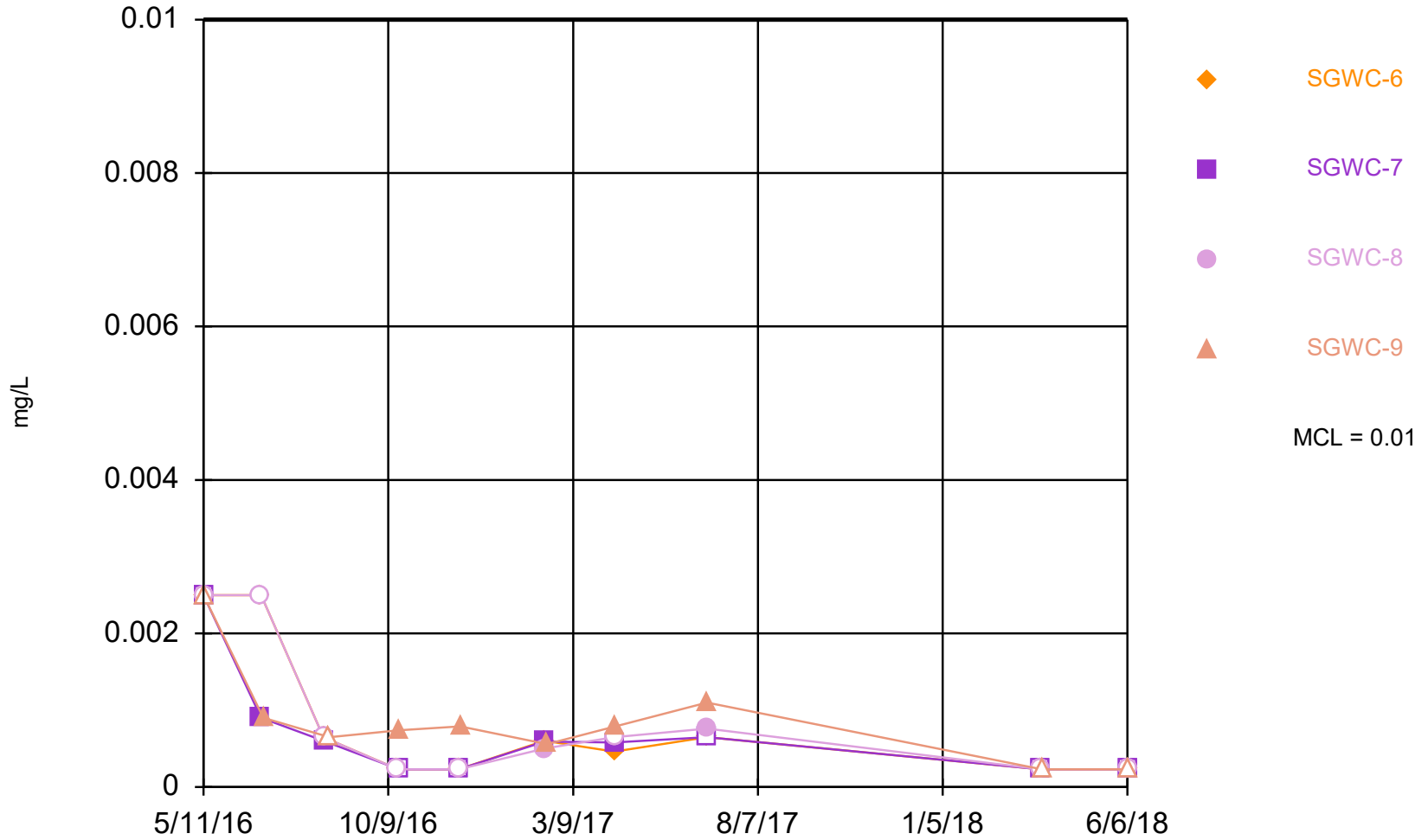
### Time Series



Constituent: Arsenic Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

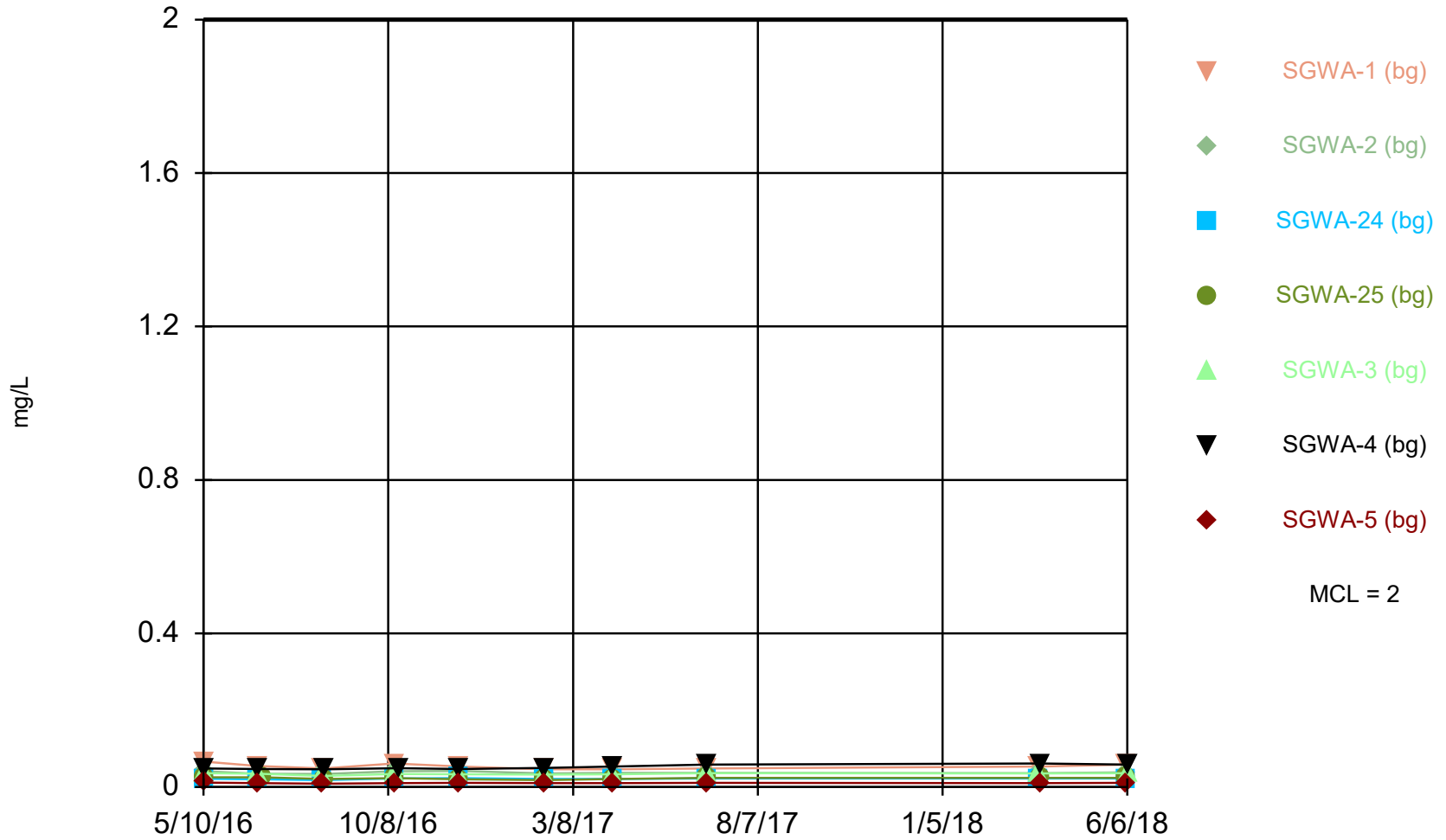


### Time Series



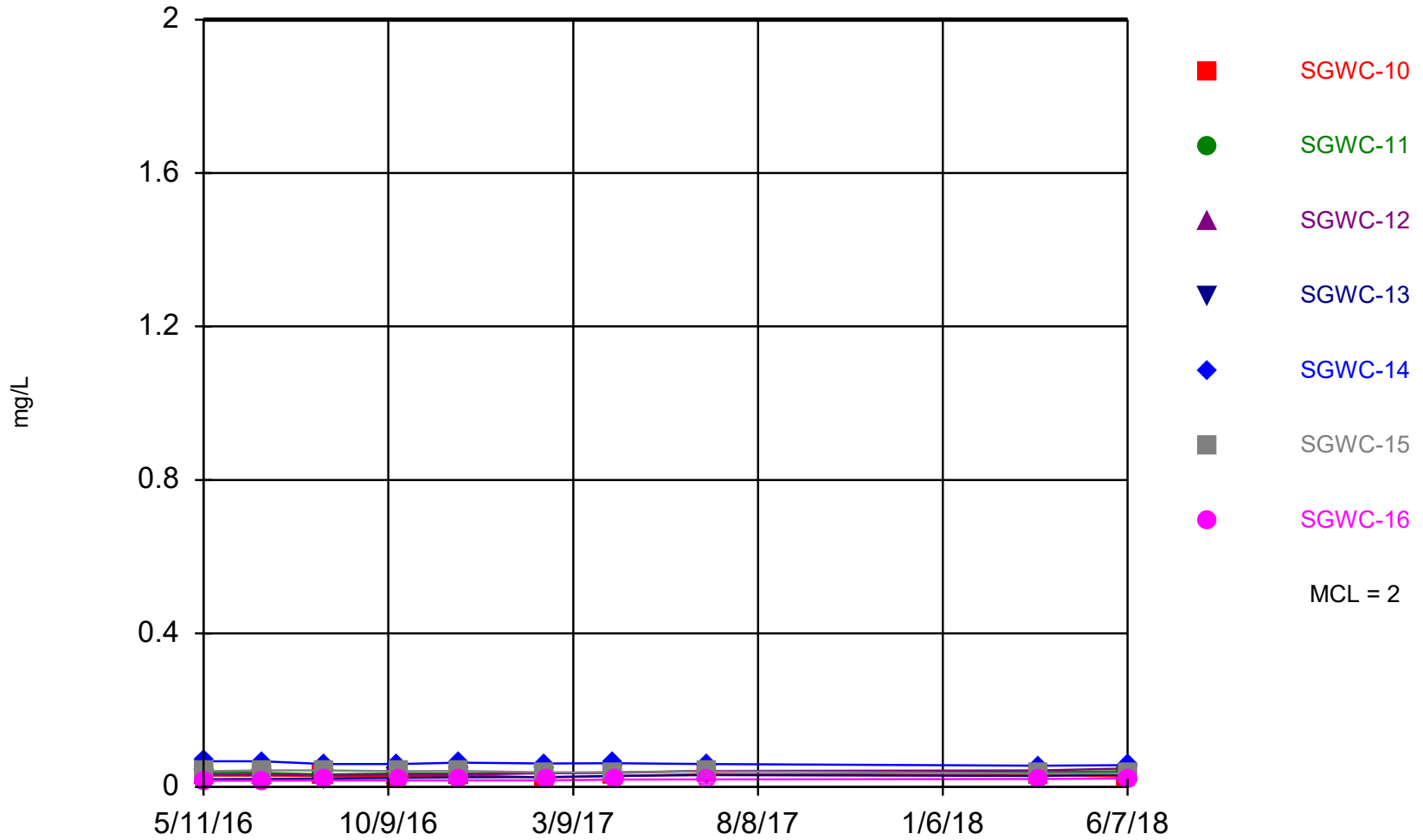
Constituent: Arsenic    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



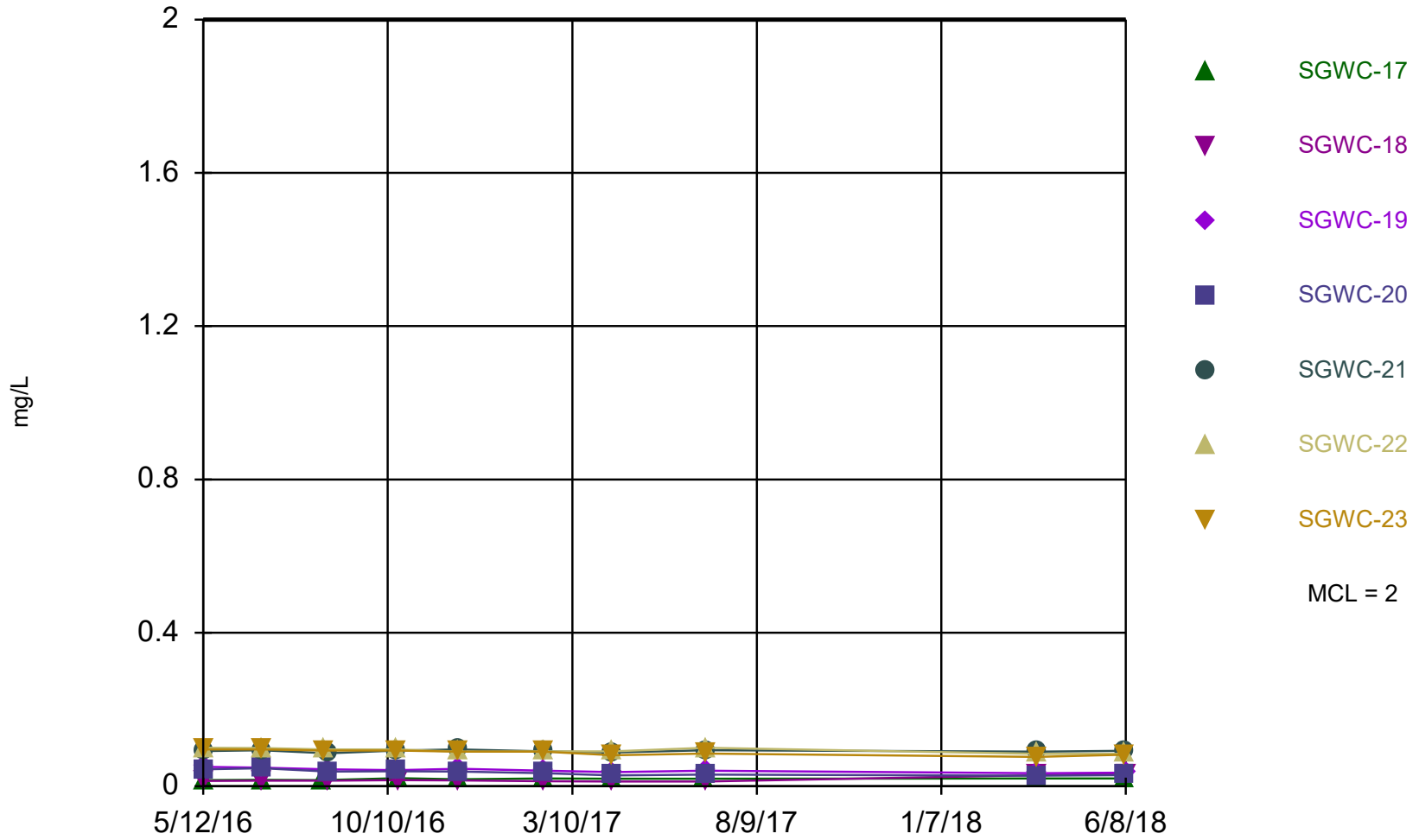
Constituent: Barium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



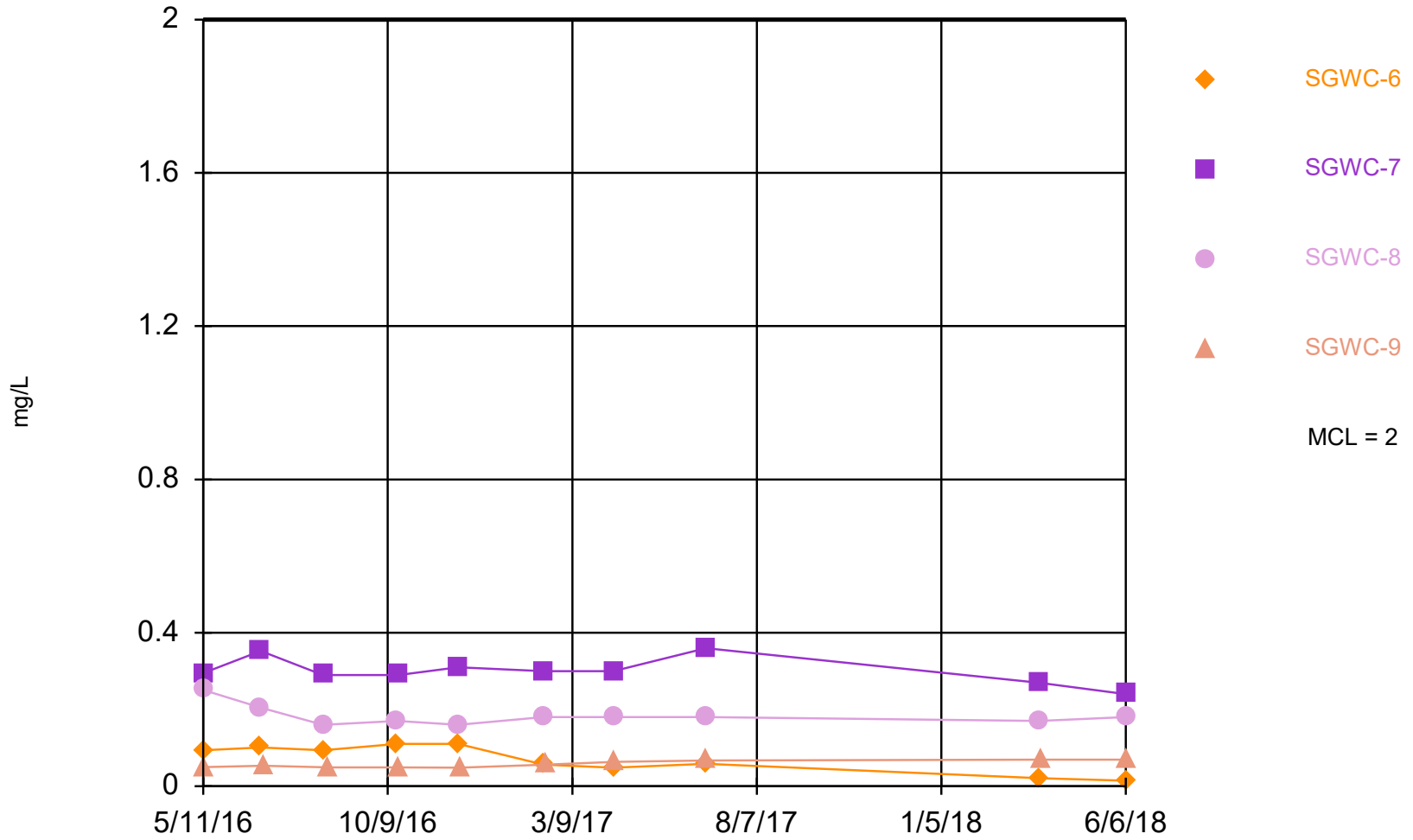
Constituent: Barium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



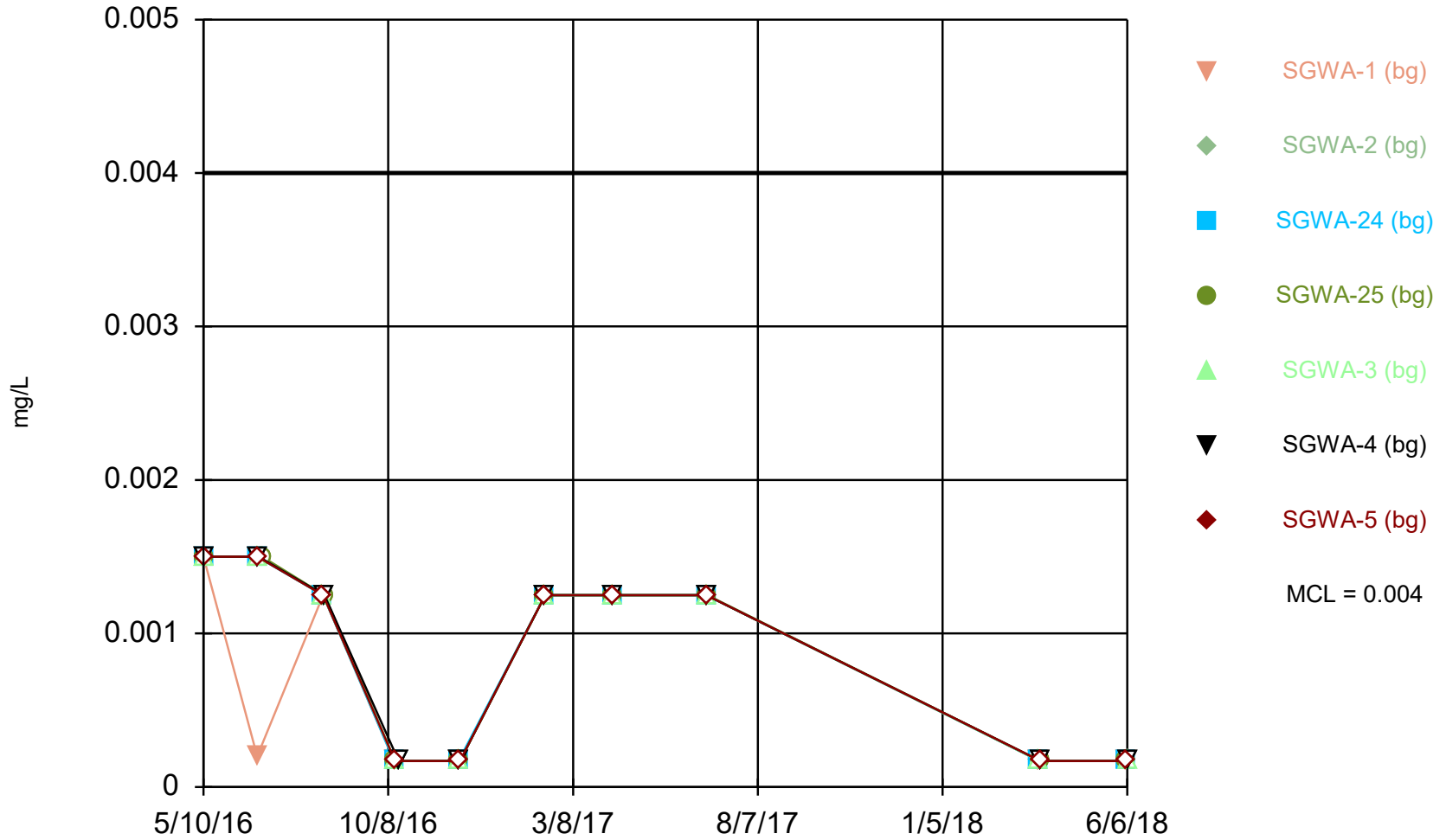
Constituent: Barium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



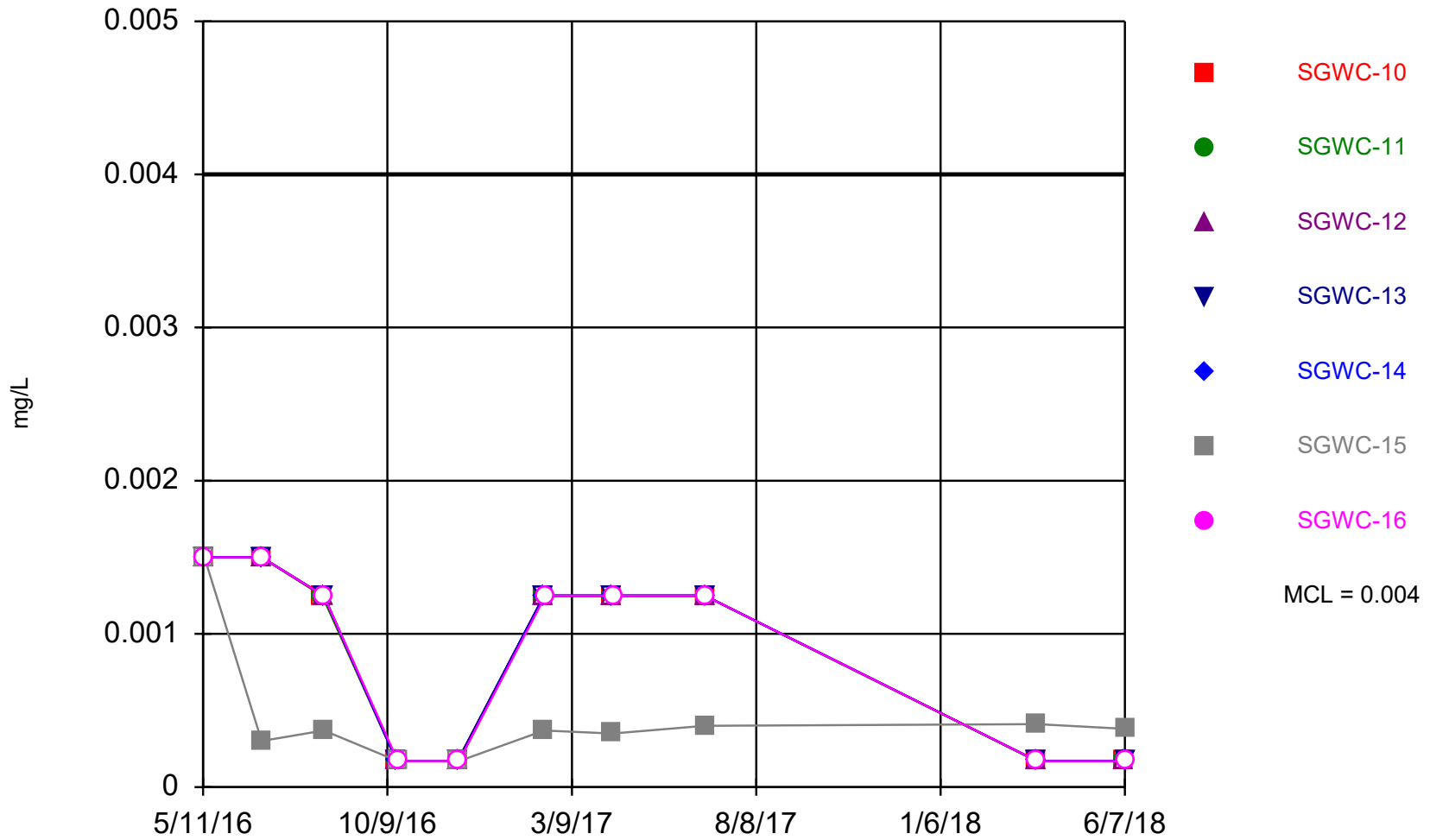
Constituent: Barium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



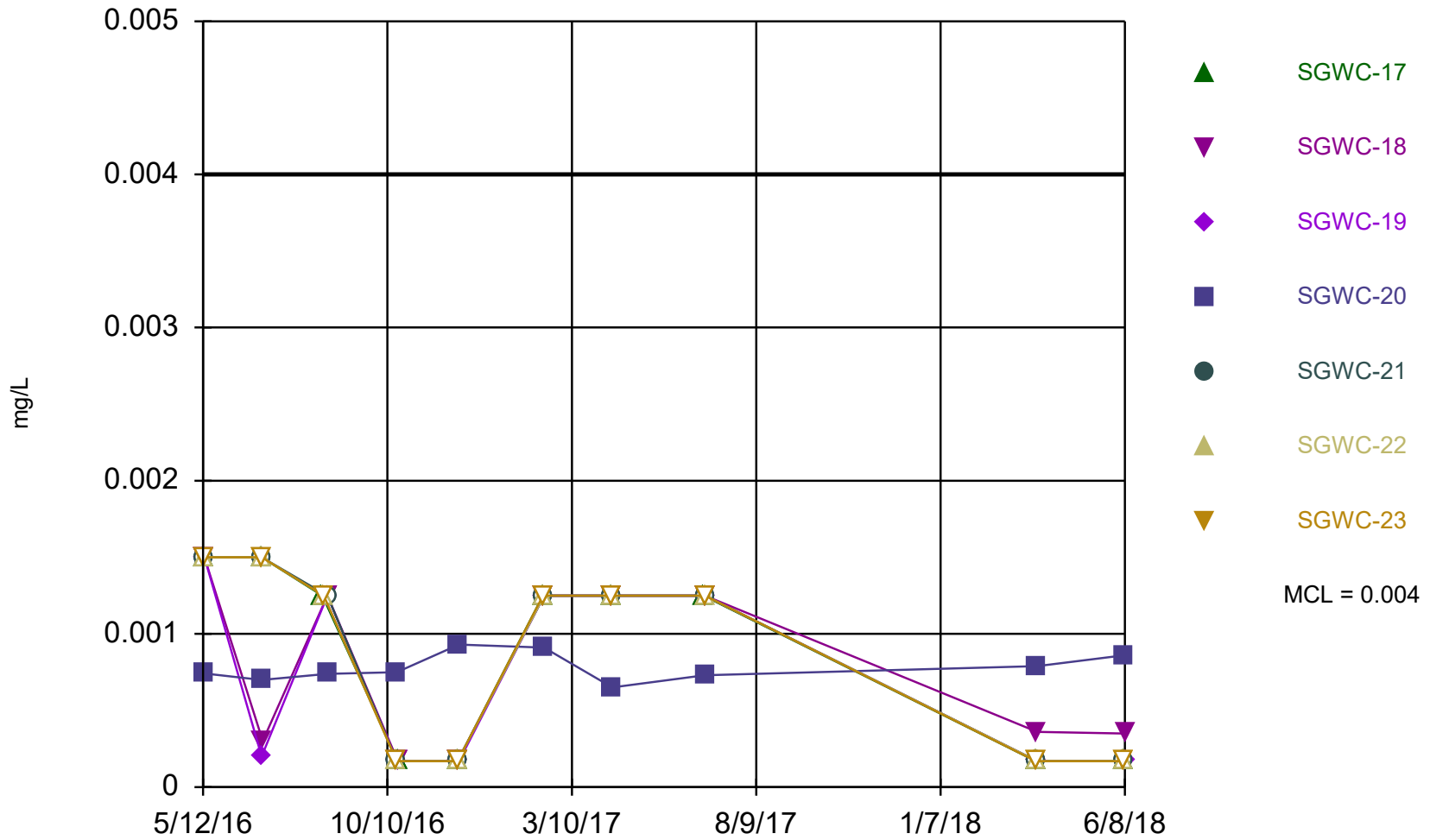
Constituent: Beryllium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Beryllium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

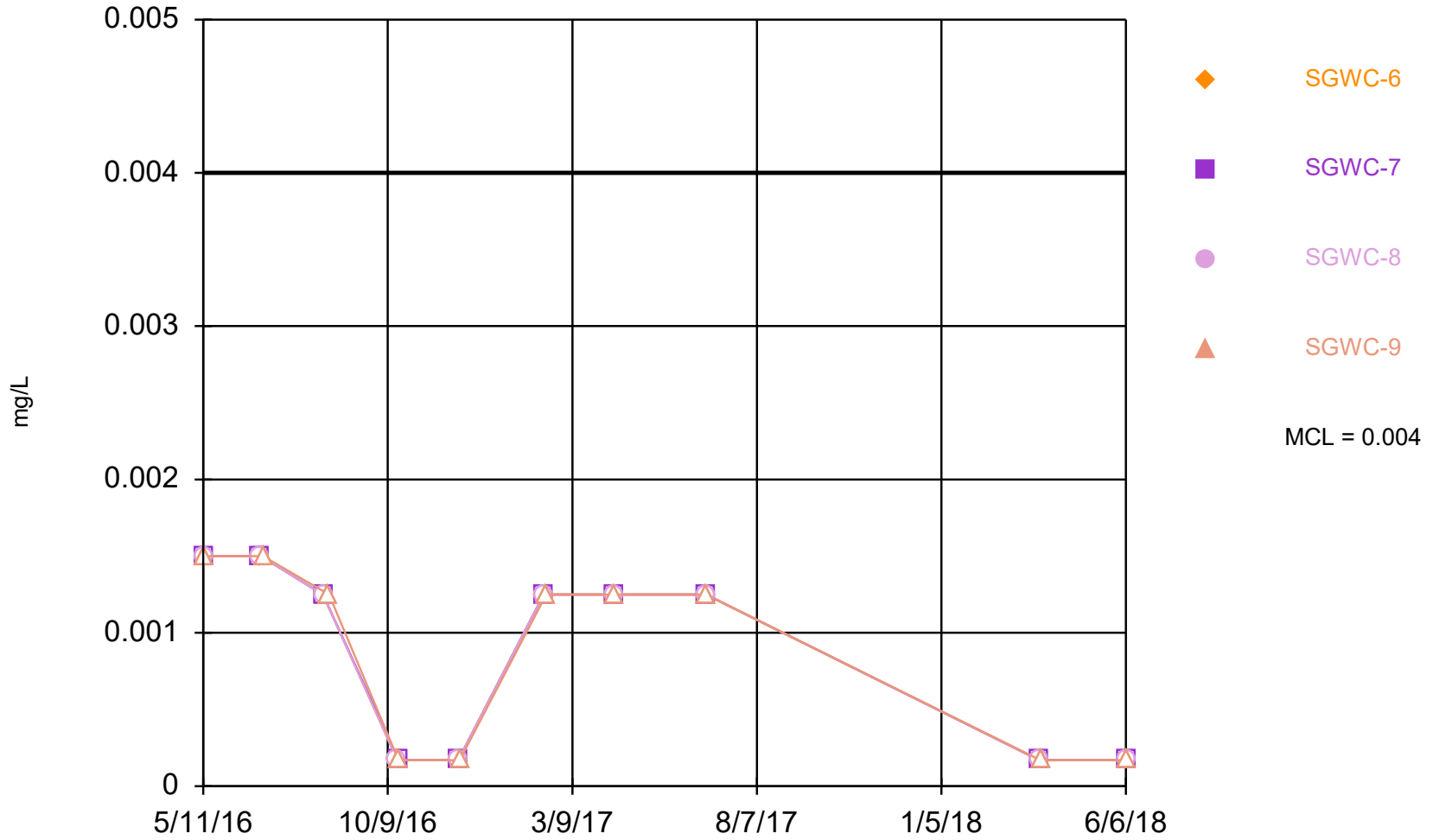
### Time Series



Constituent: Beryllium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

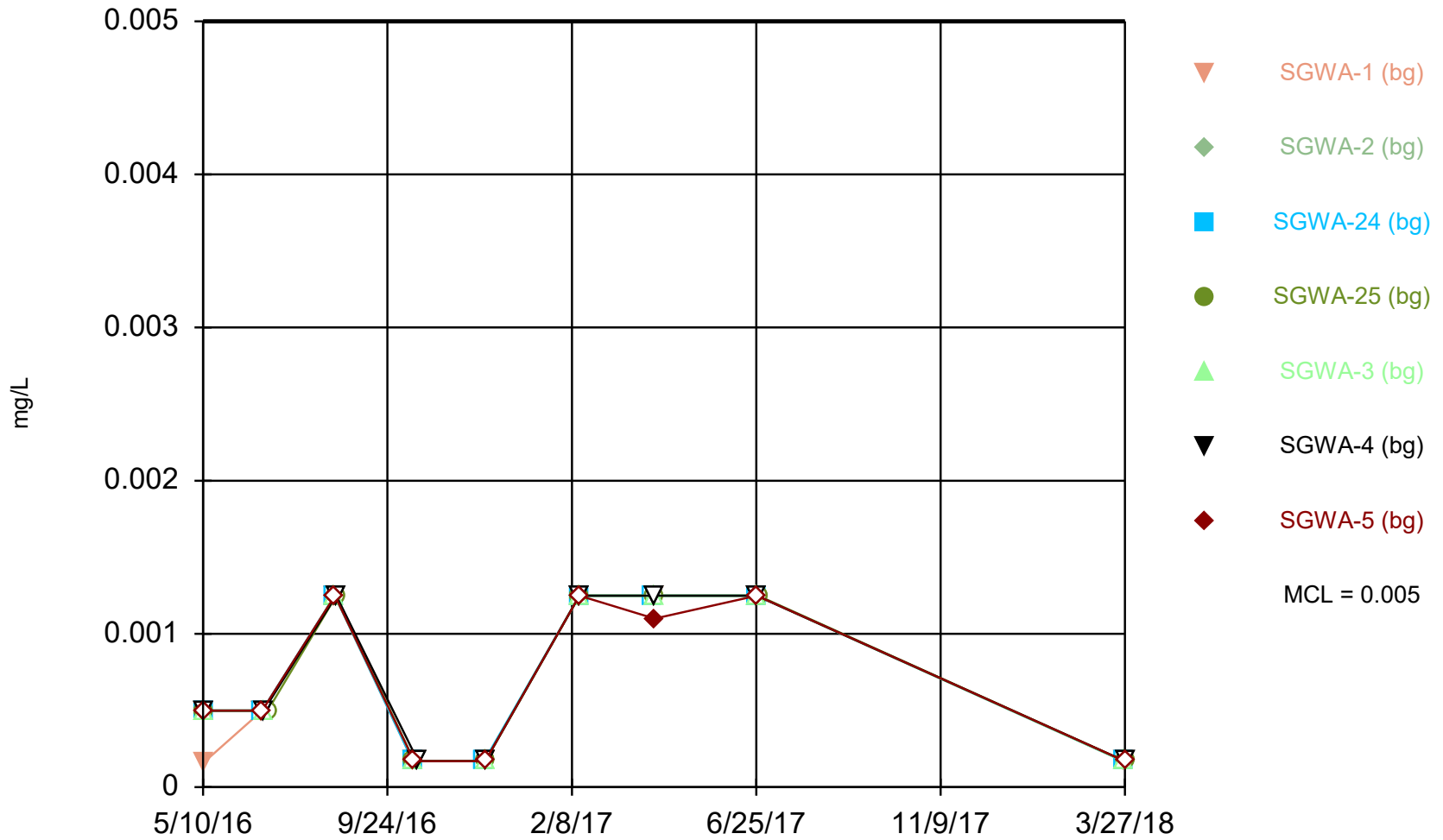


### Time Series



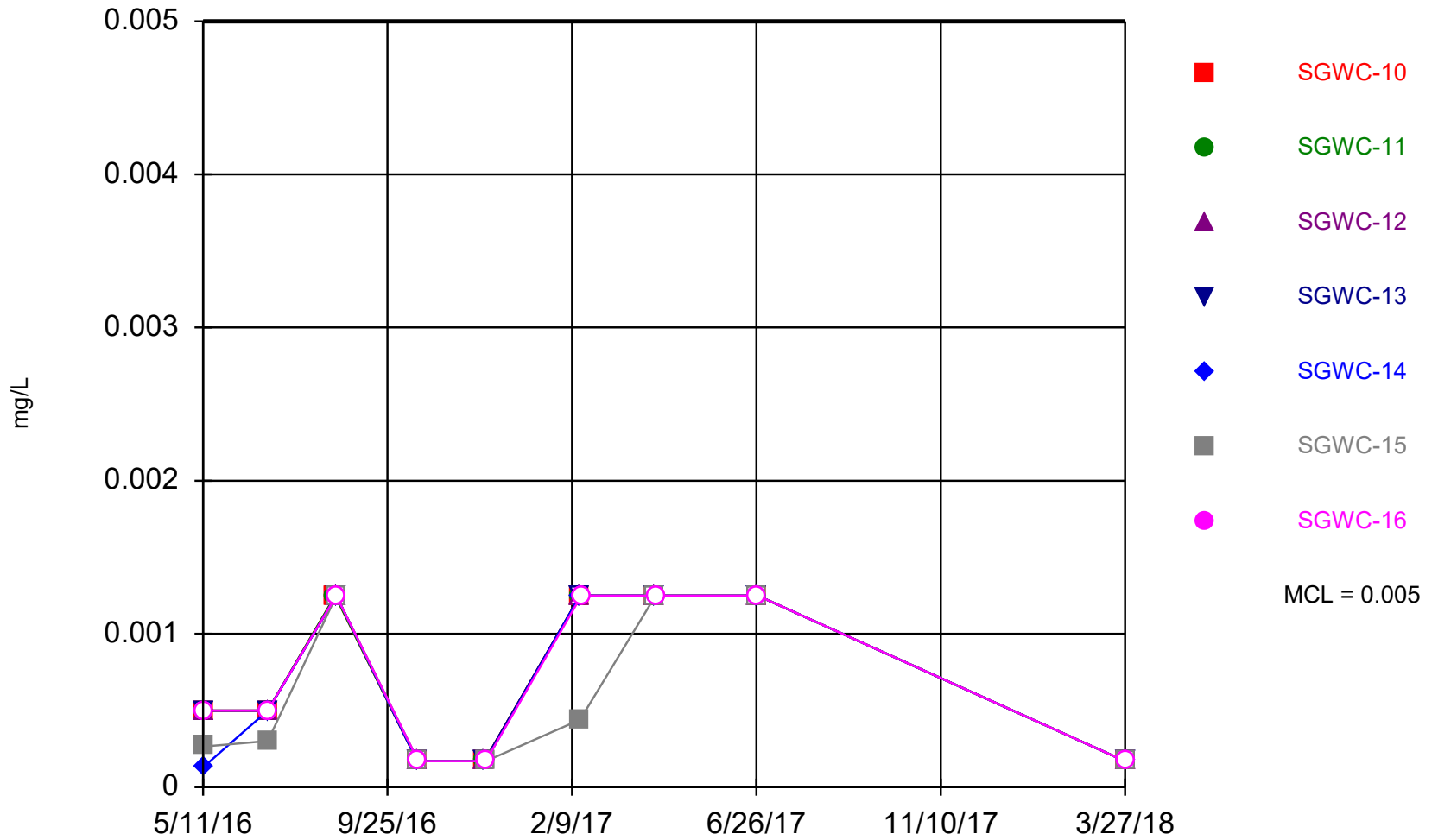
Constituent: Beryllium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



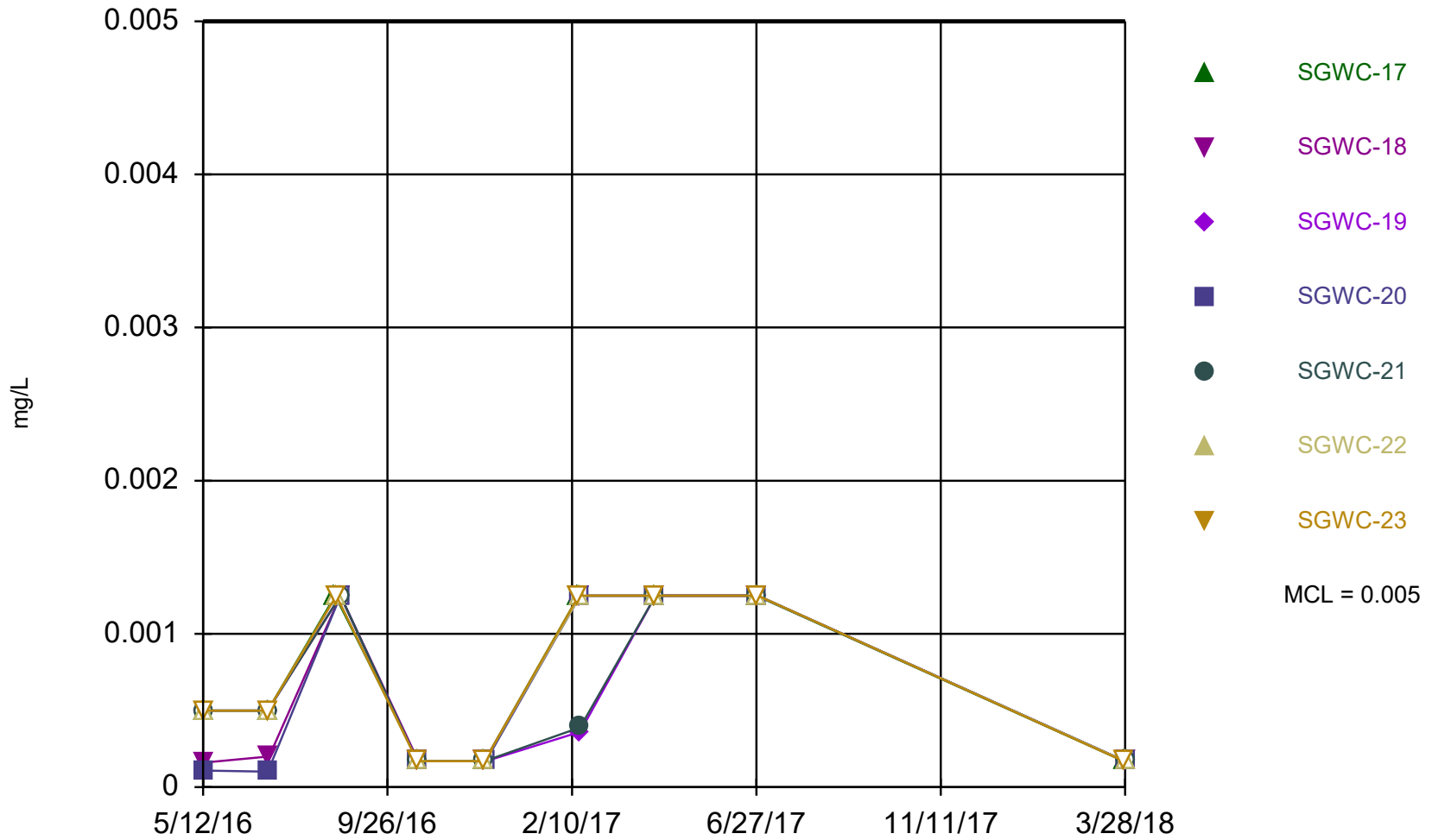
Constituent: Cadmium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



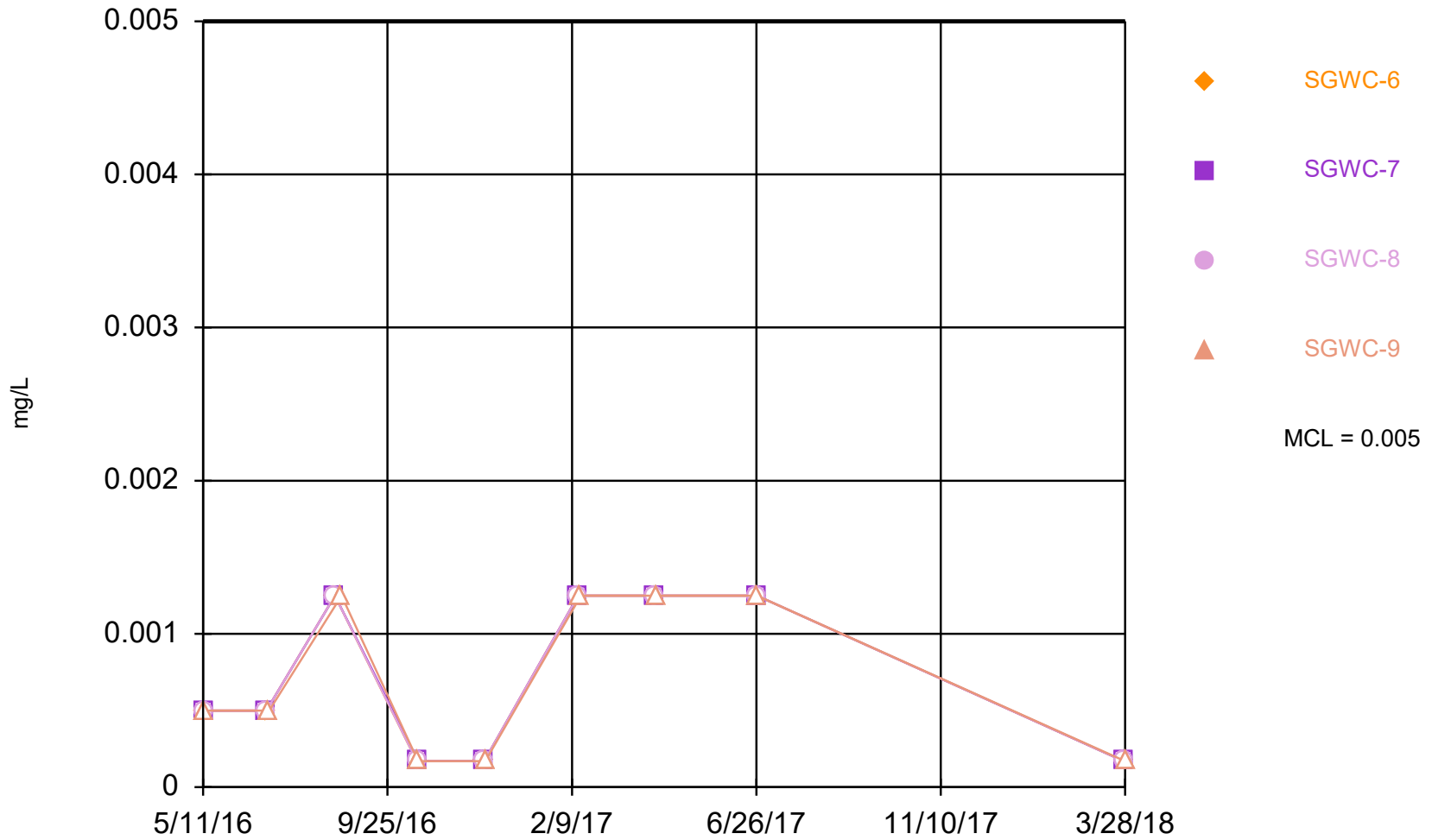
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



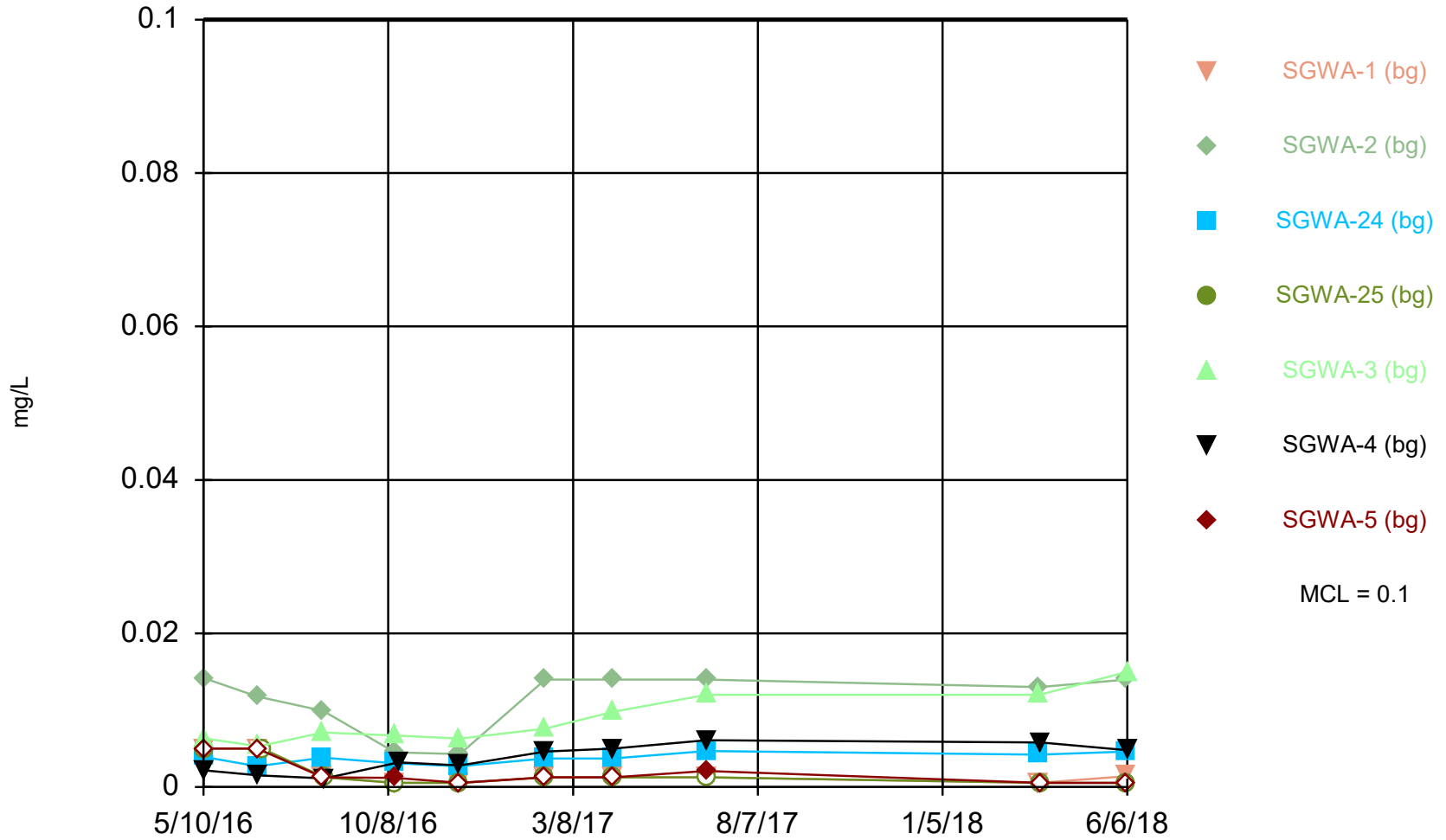
Constituent: Cadmium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



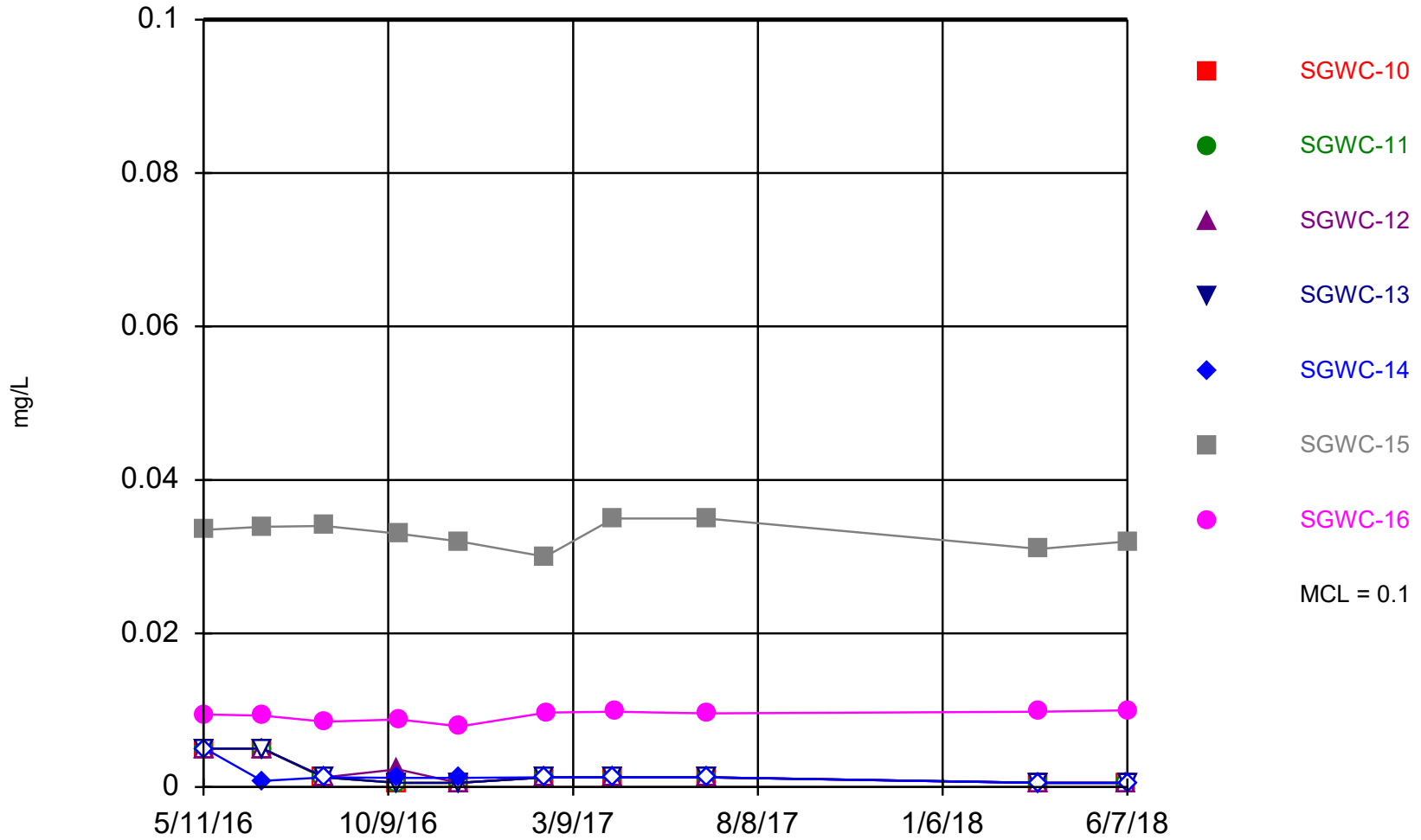
Constituent: Cadmium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



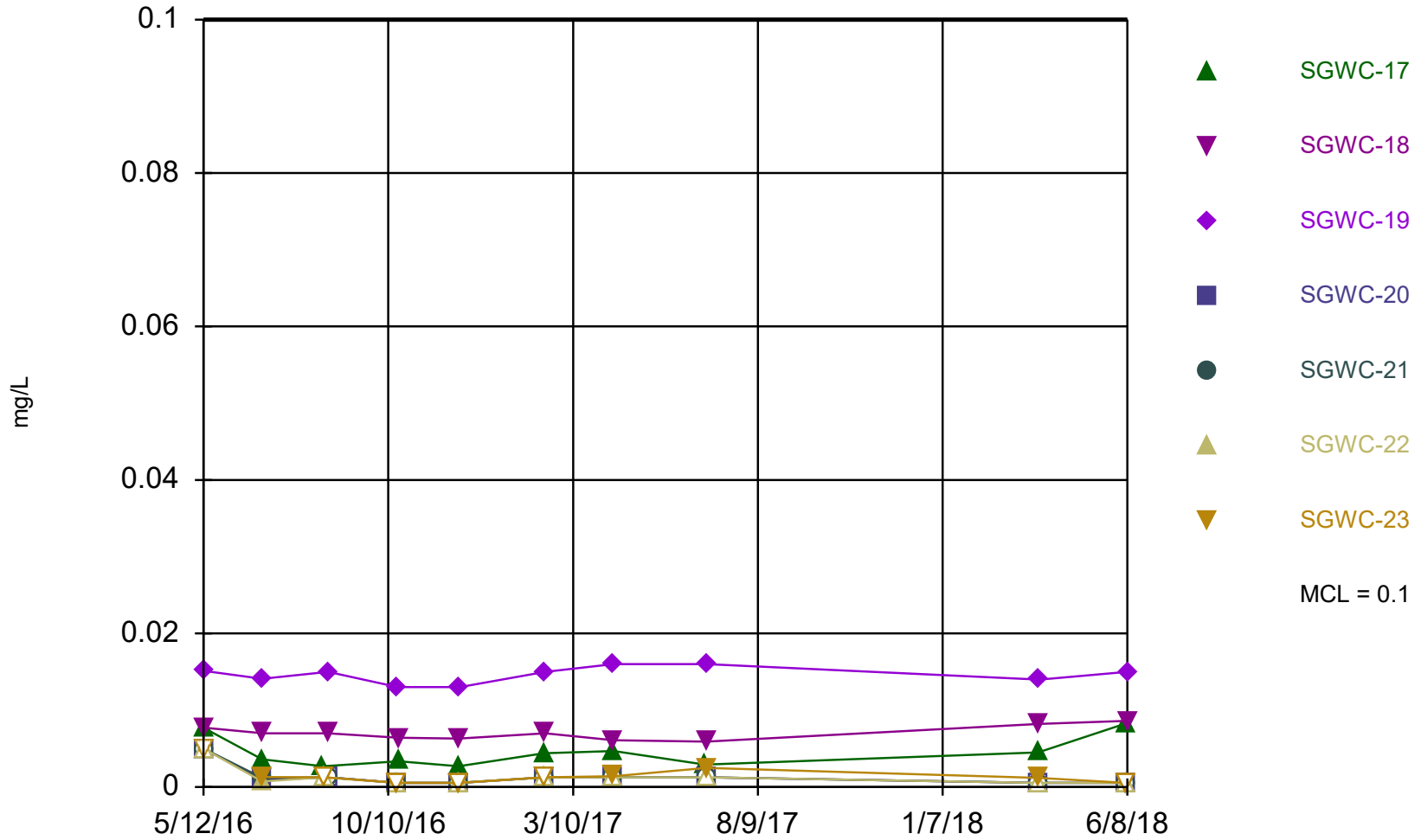
Constituent: Chromium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Chromium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

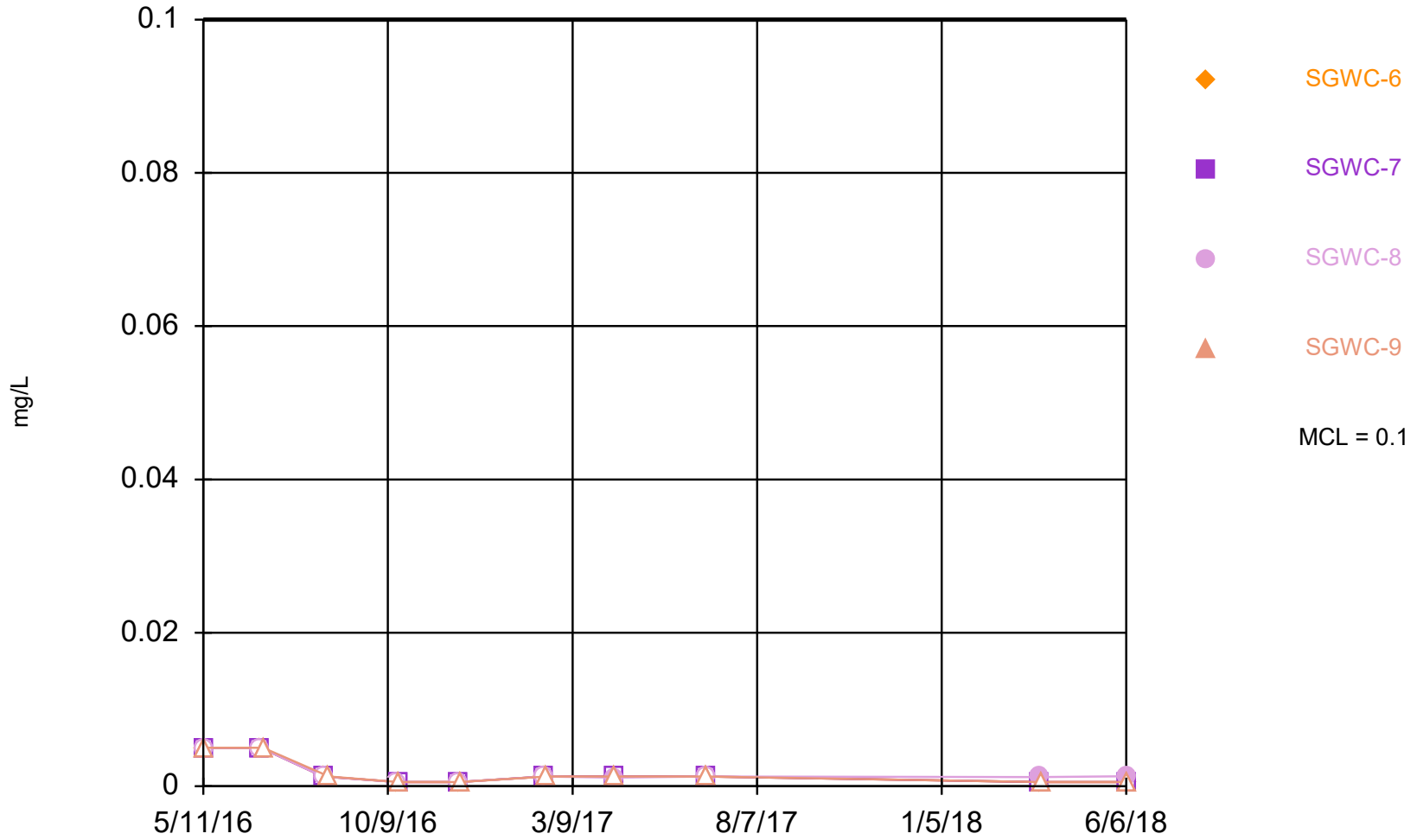
### Time Series



Constituent: Chromium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

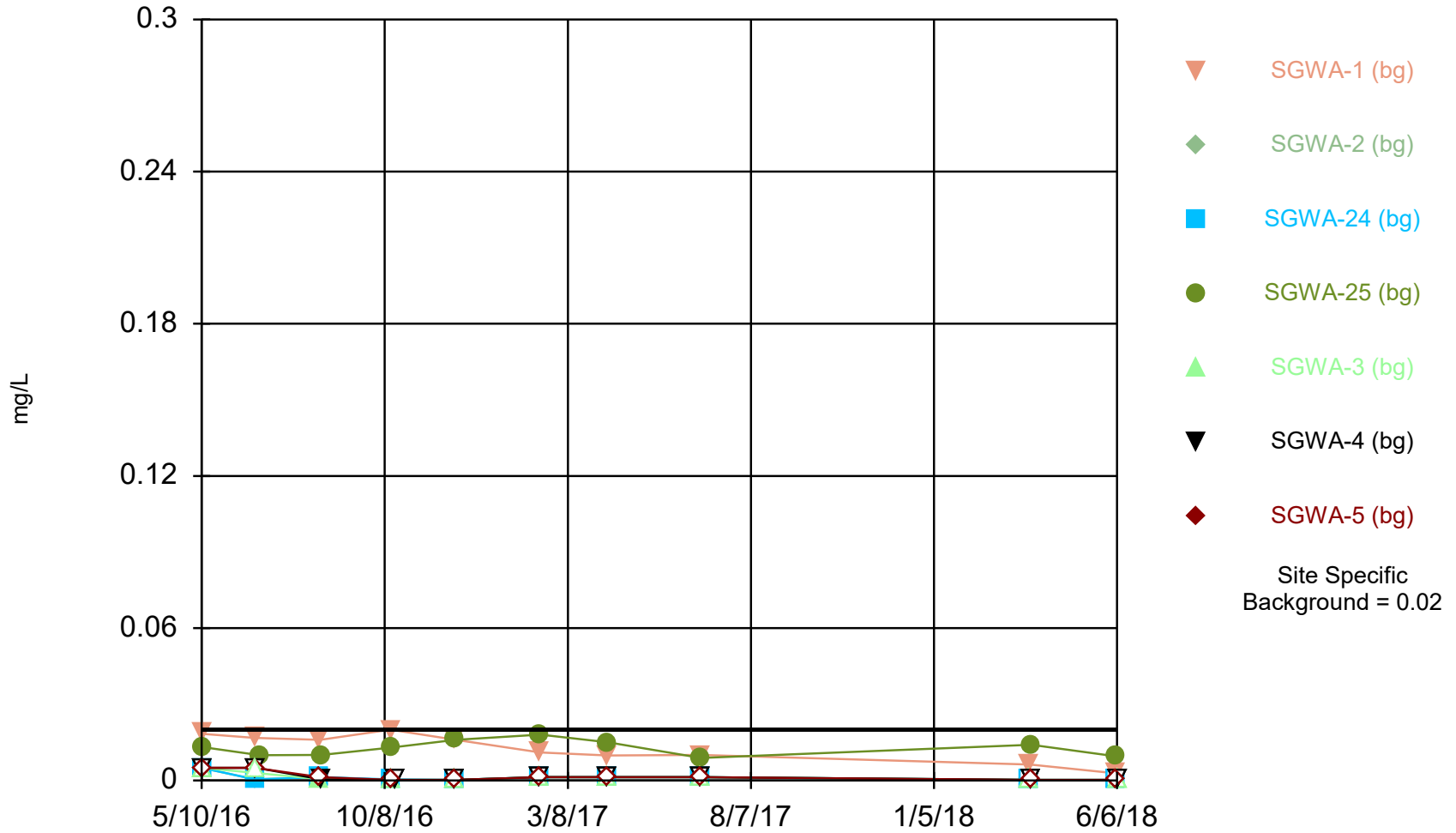


### Time Series



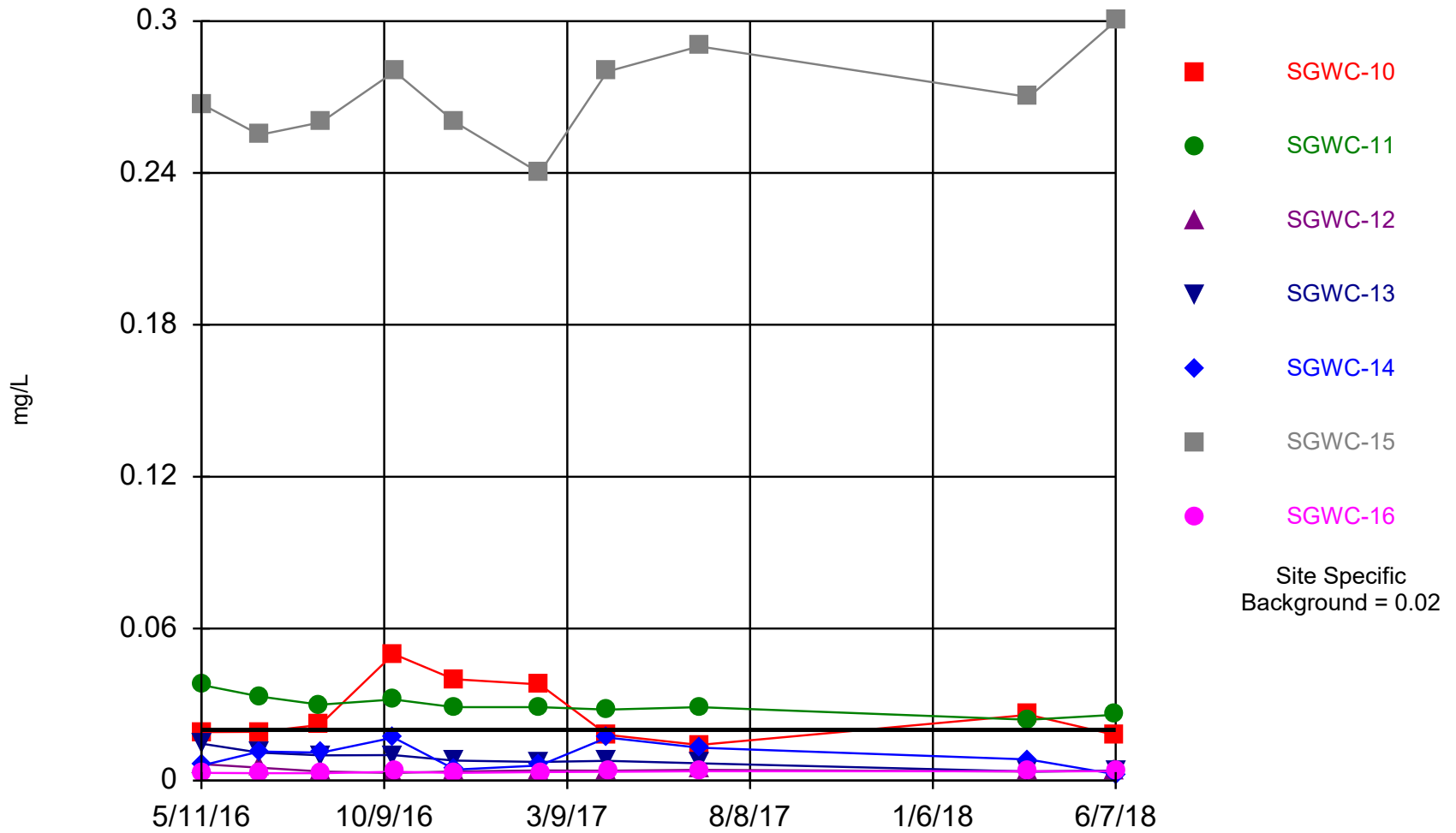
Constituent: Chromium Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



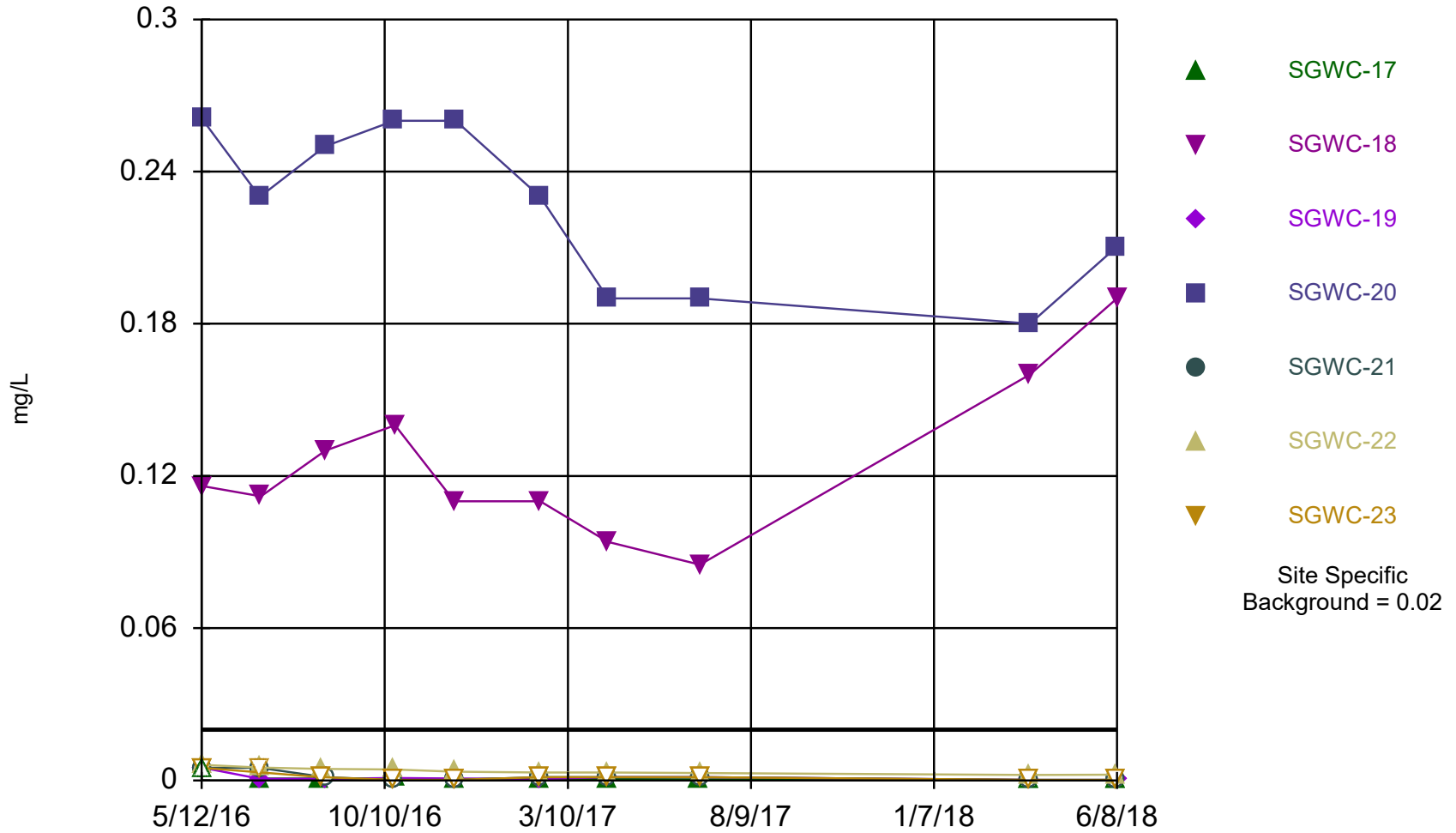
Constituent: Cobalt Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



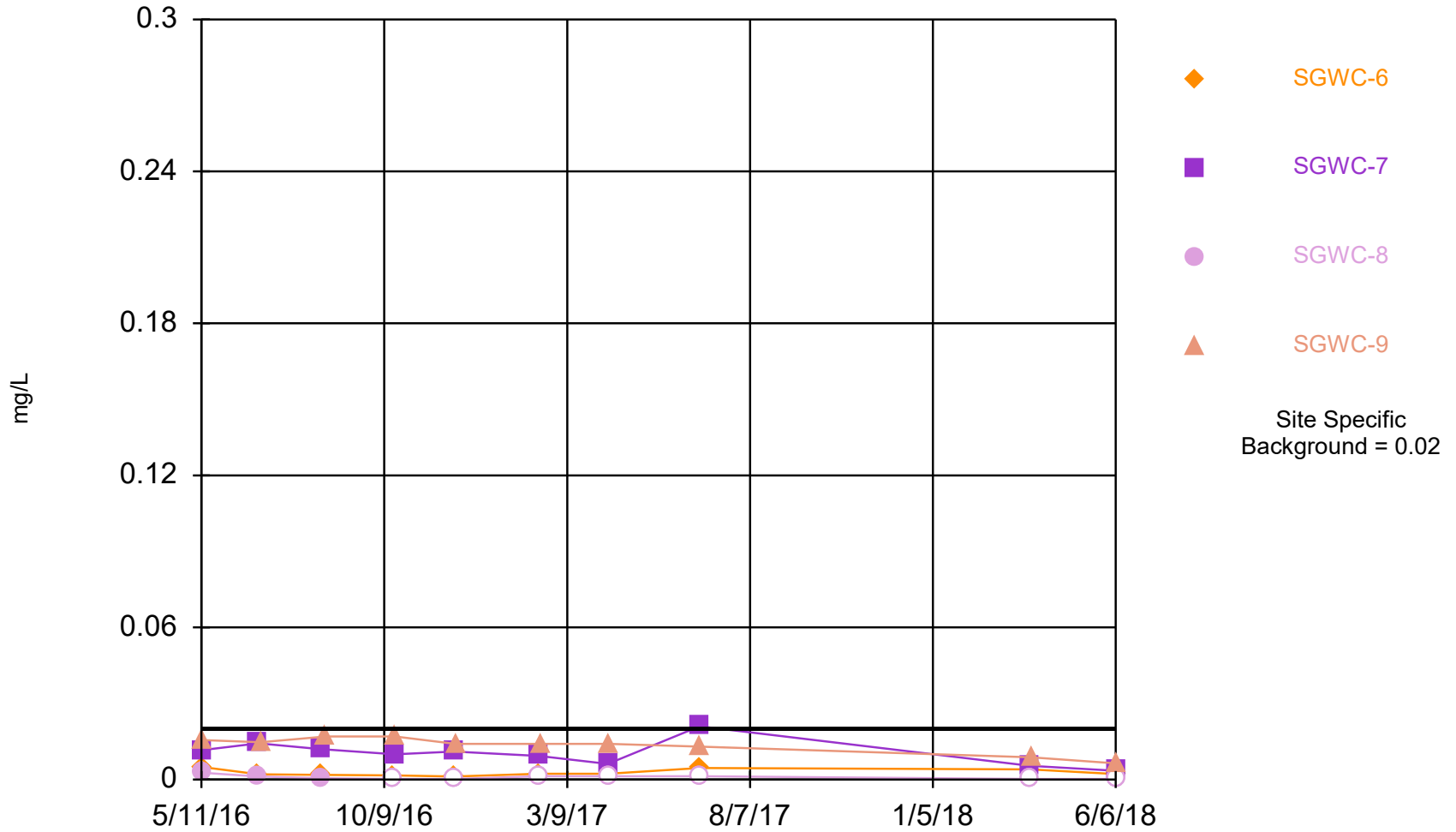
Constituent: Cobalt Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



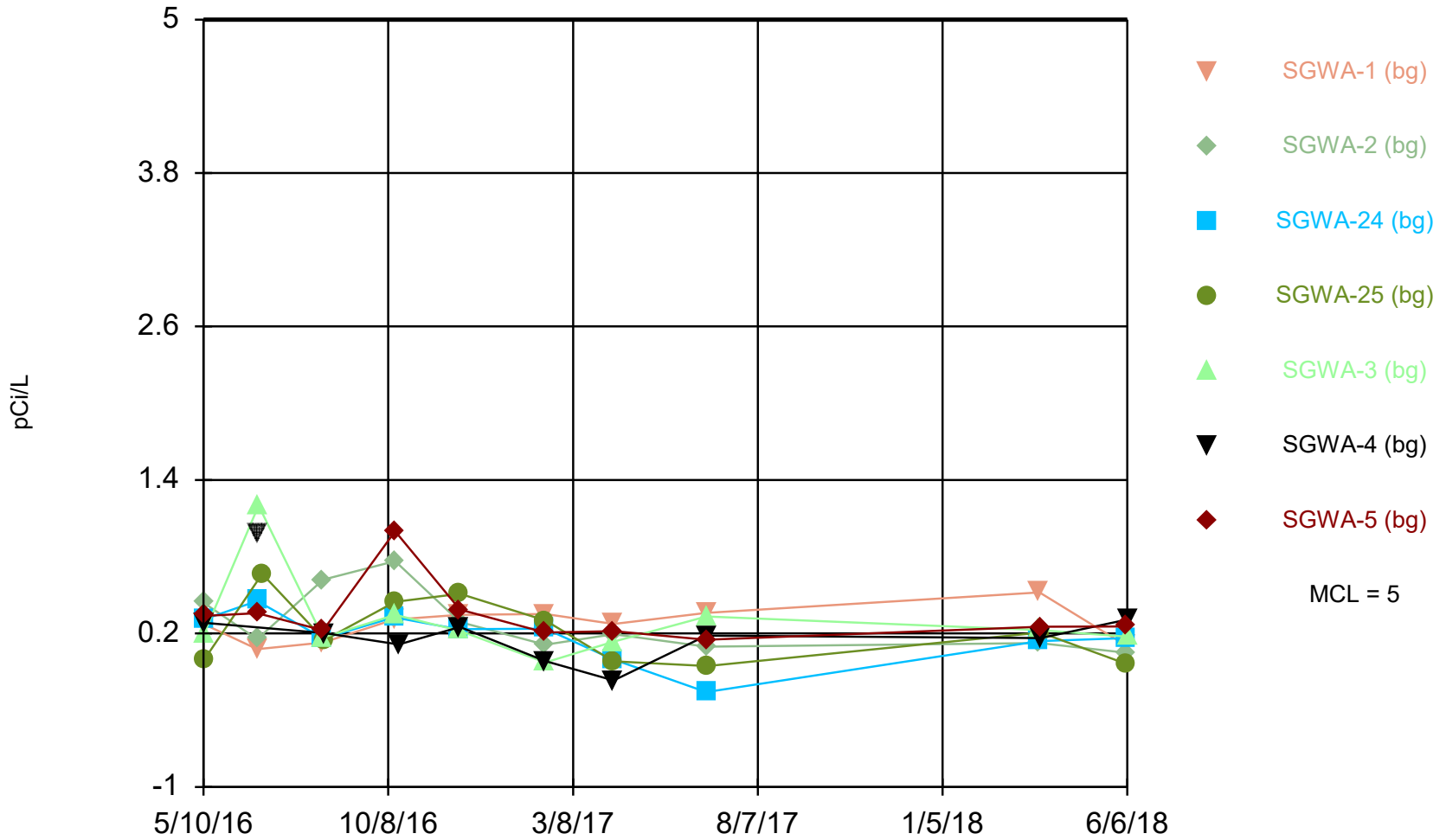
Constituent: Cobalt    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



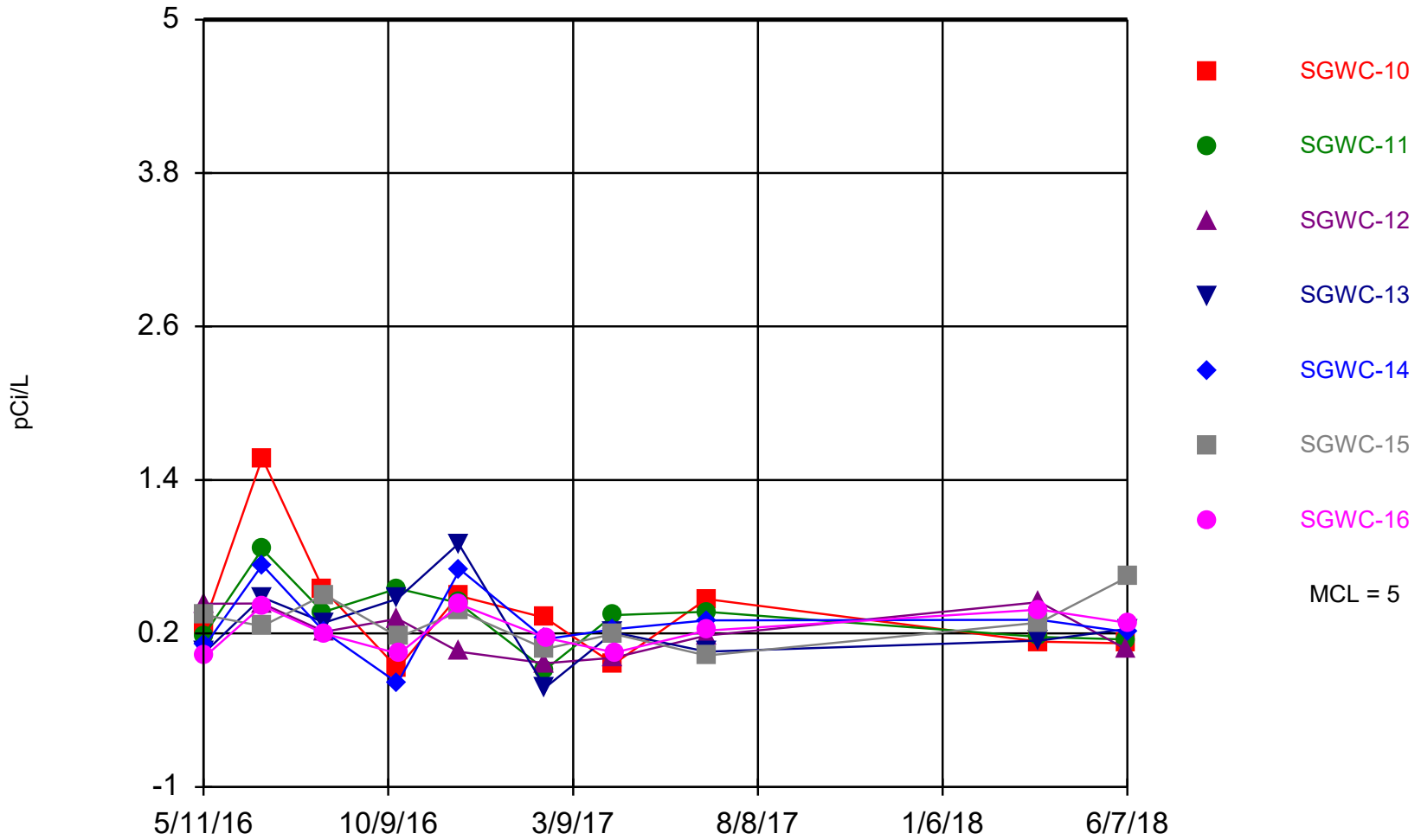
Constituent: Cobalt Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



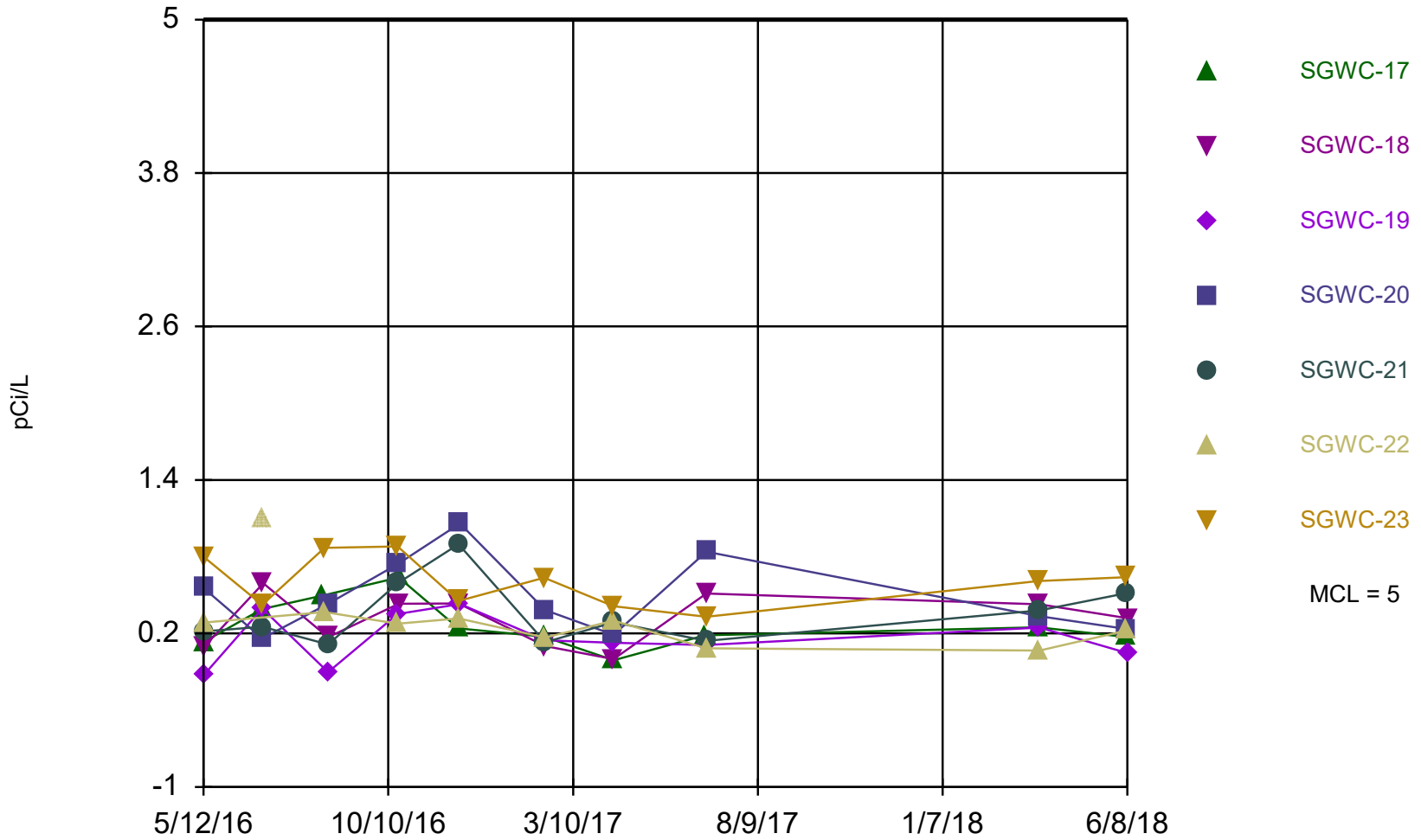
Constituent: Combined Radium 226 + 228 Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence I  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence I  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

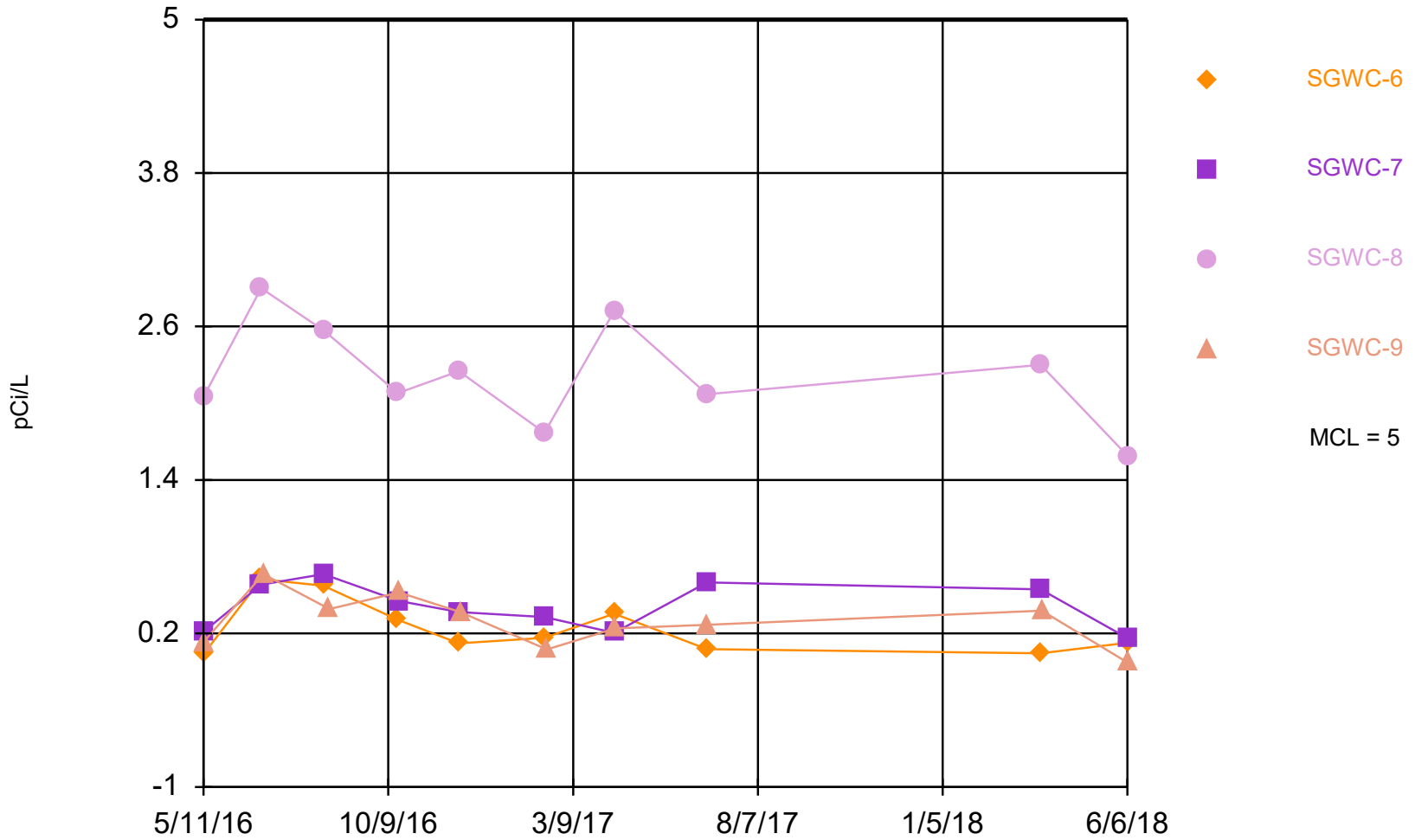
### Time Series



Constituent: Combined Radium 226 + 228 Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence I  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

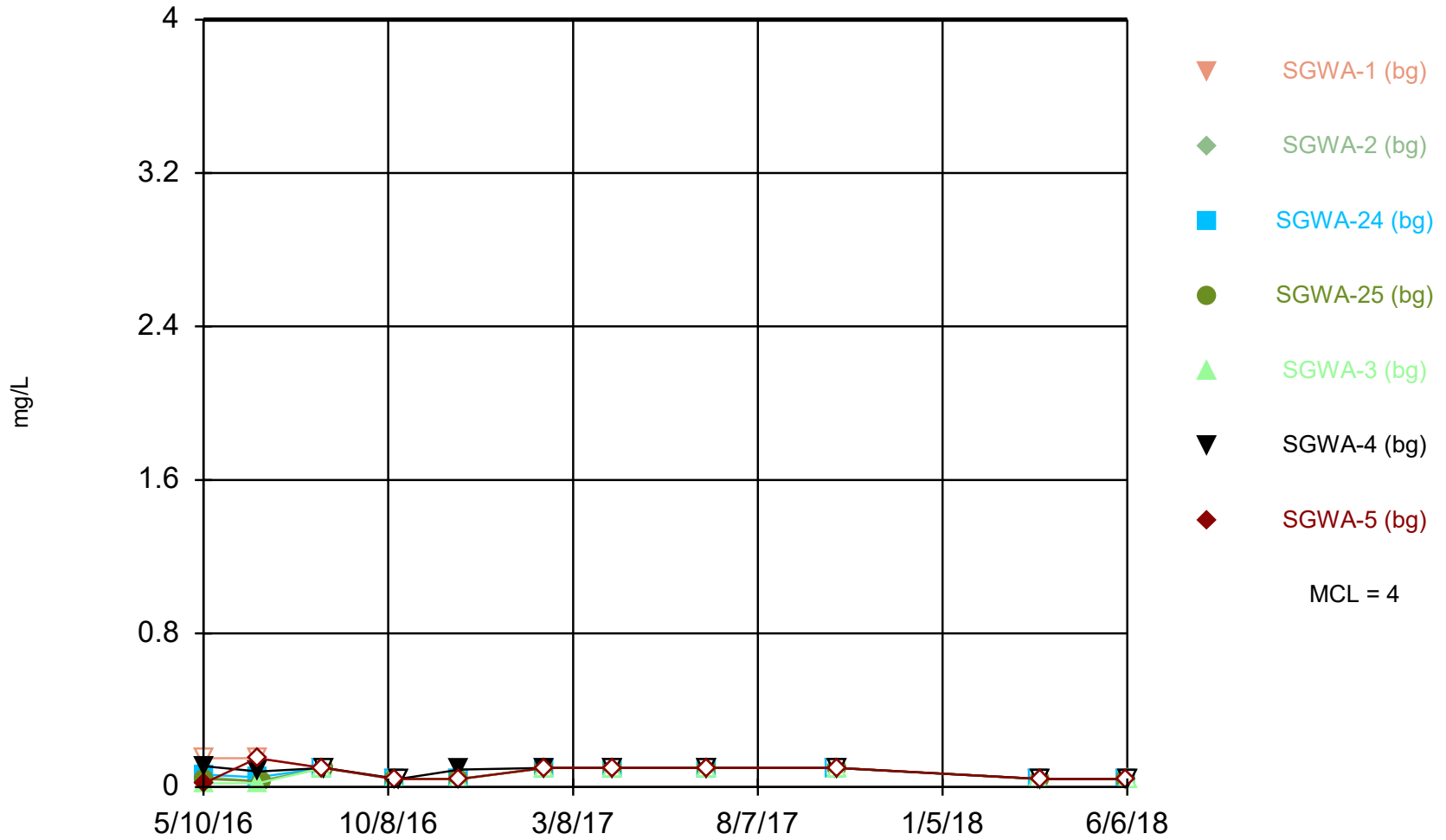


### Time Series



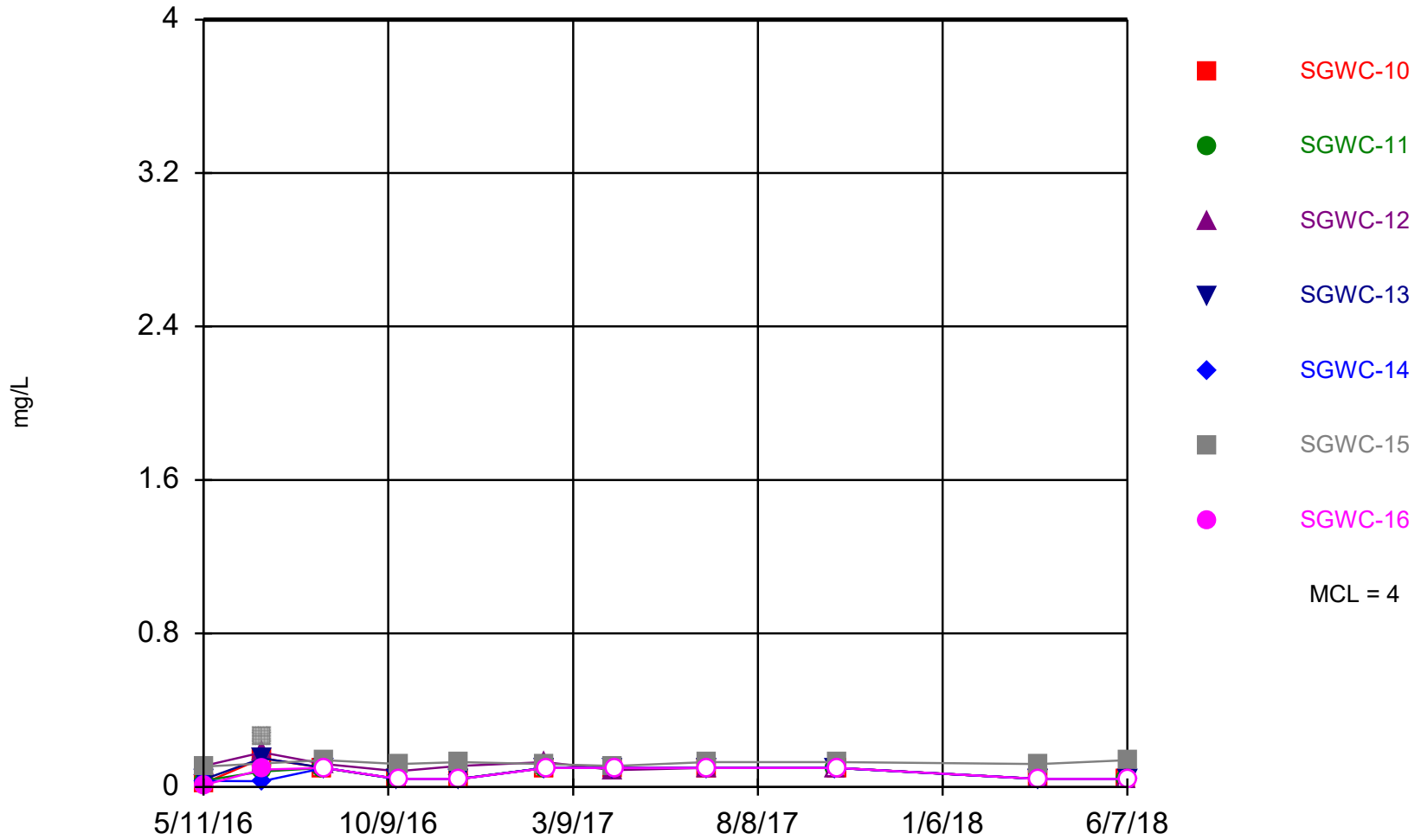
Constituent: Combined Radium 226 + 228    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence I  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



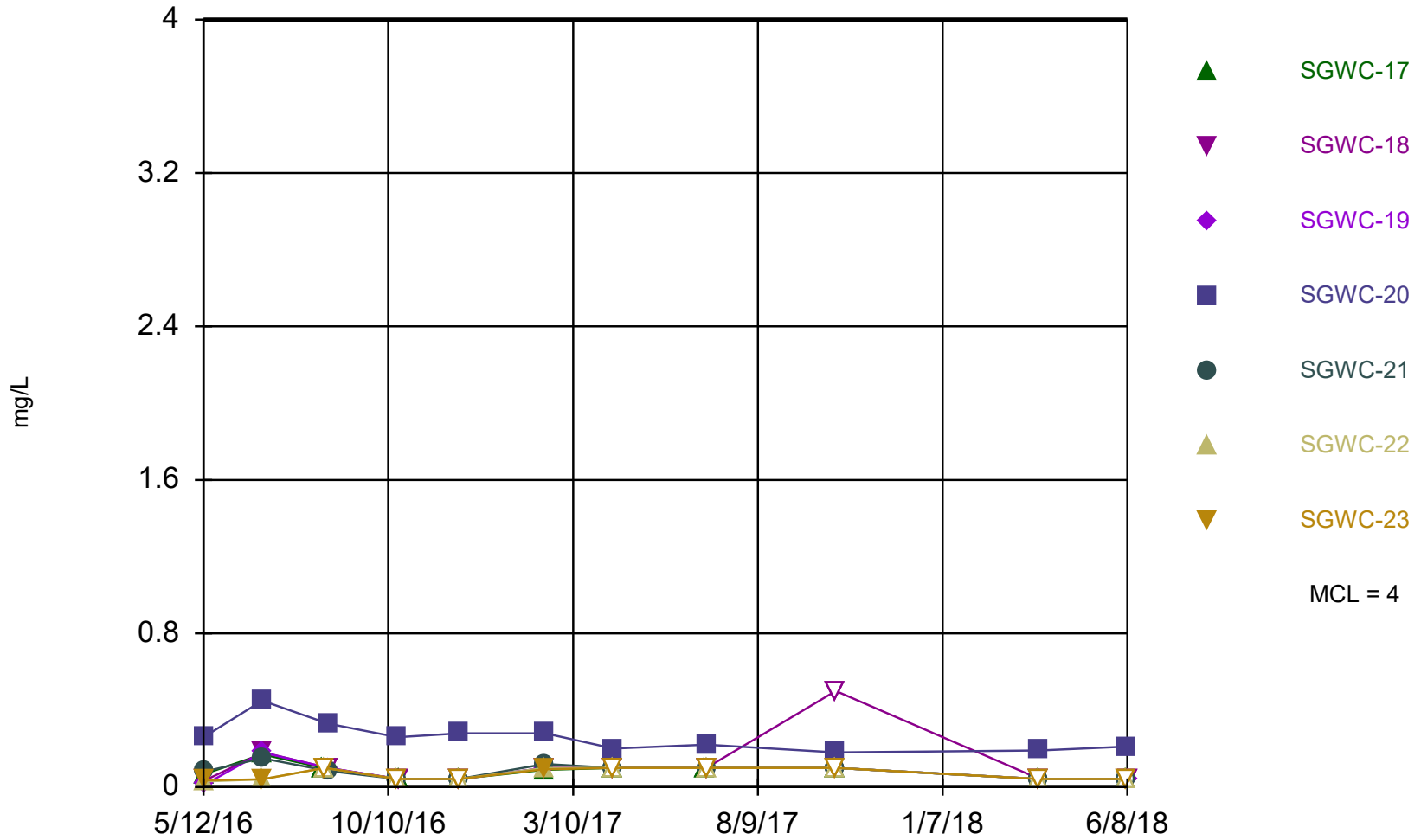
Constituent: Fluoride Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



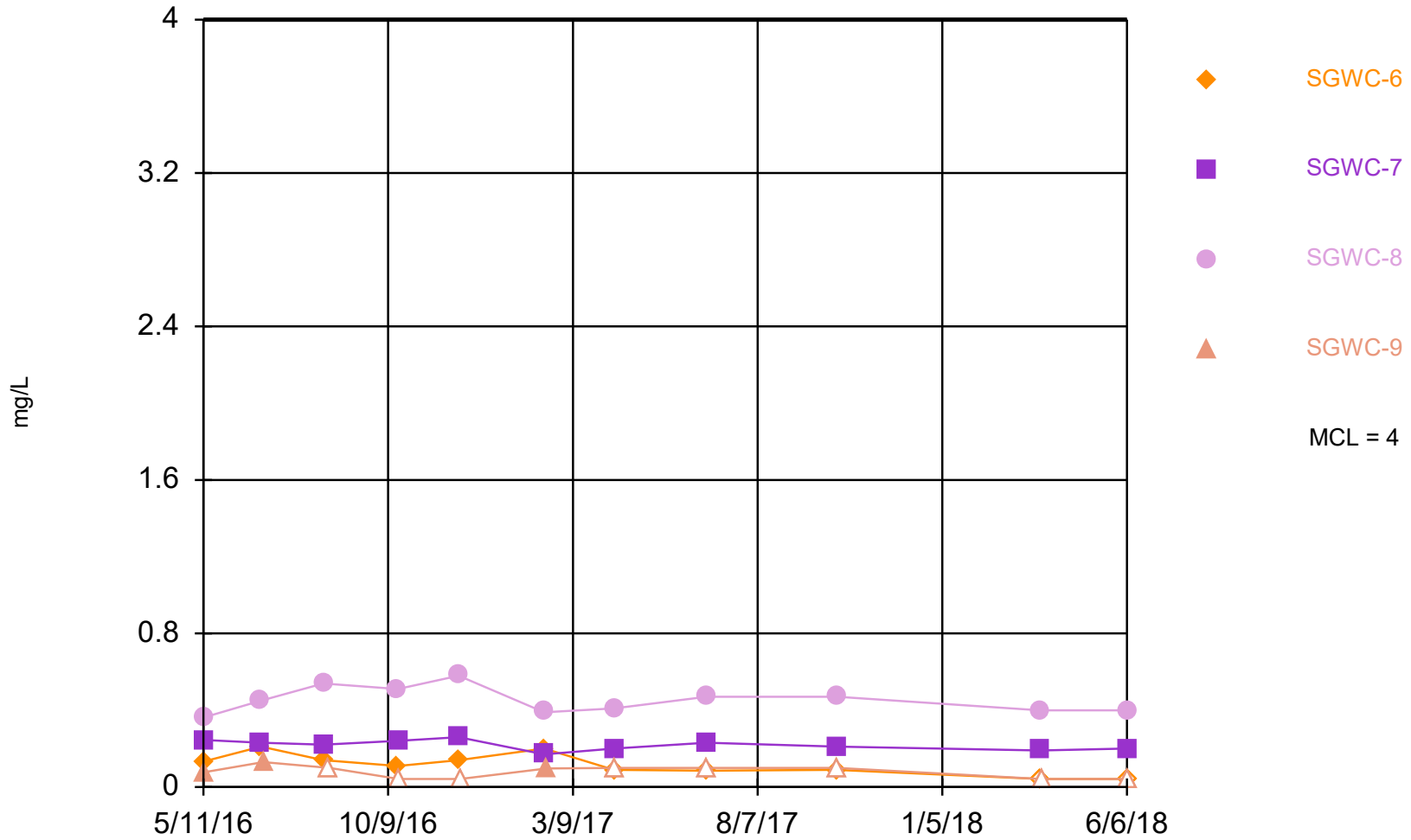
Constituent: Fluoride Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



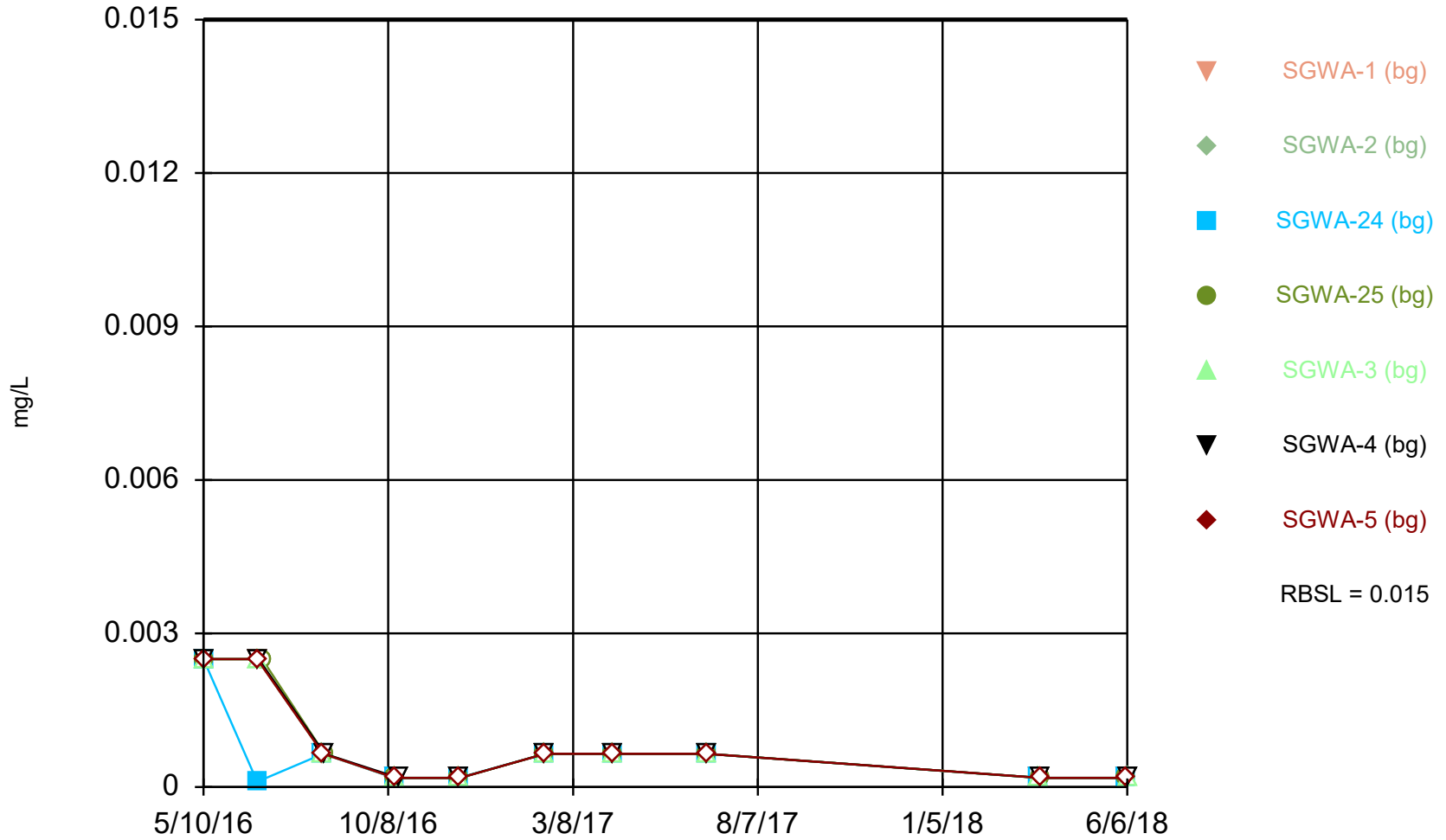
Constituent: Fluoride Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



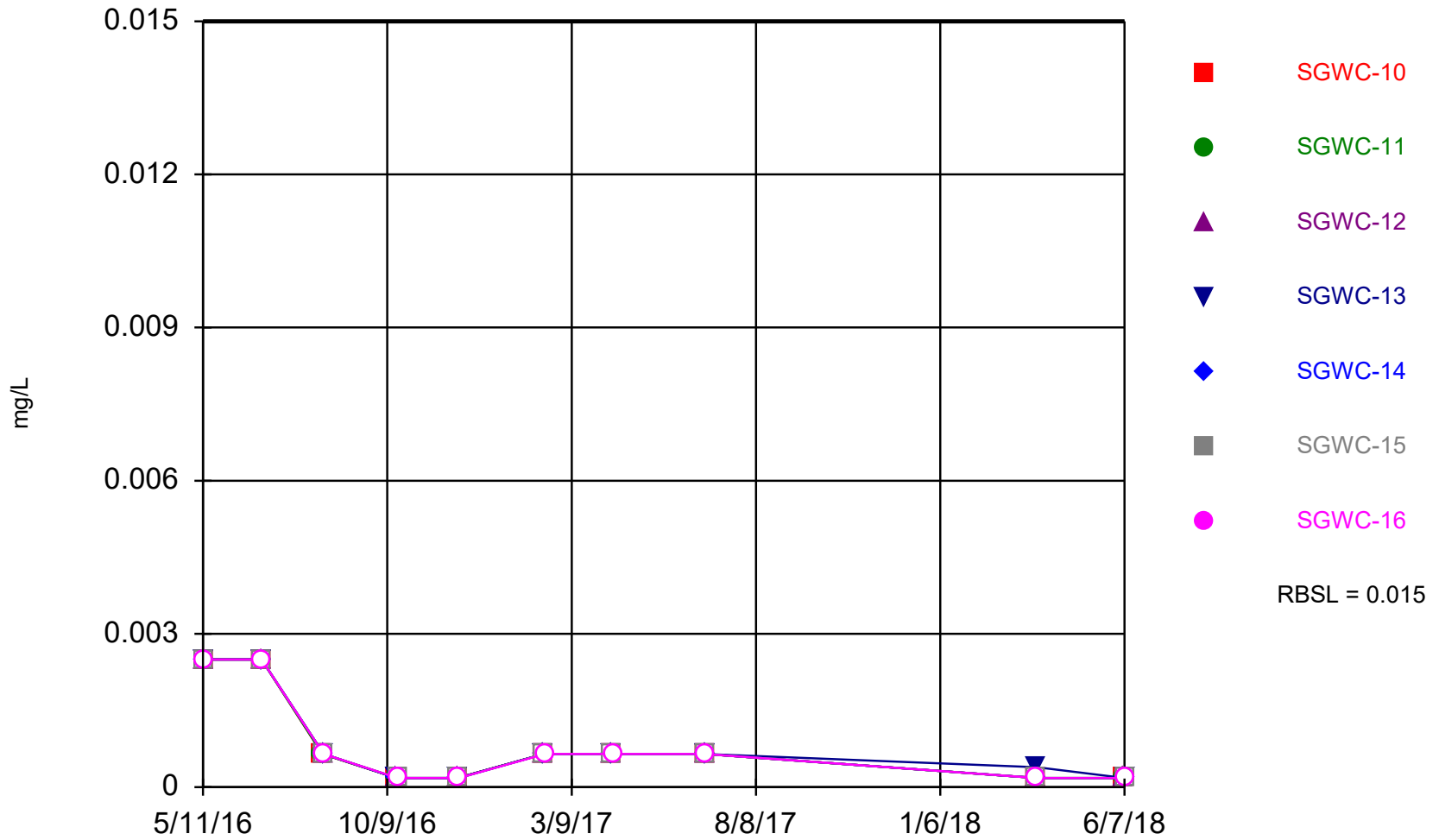
Constituent: Fluoride Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



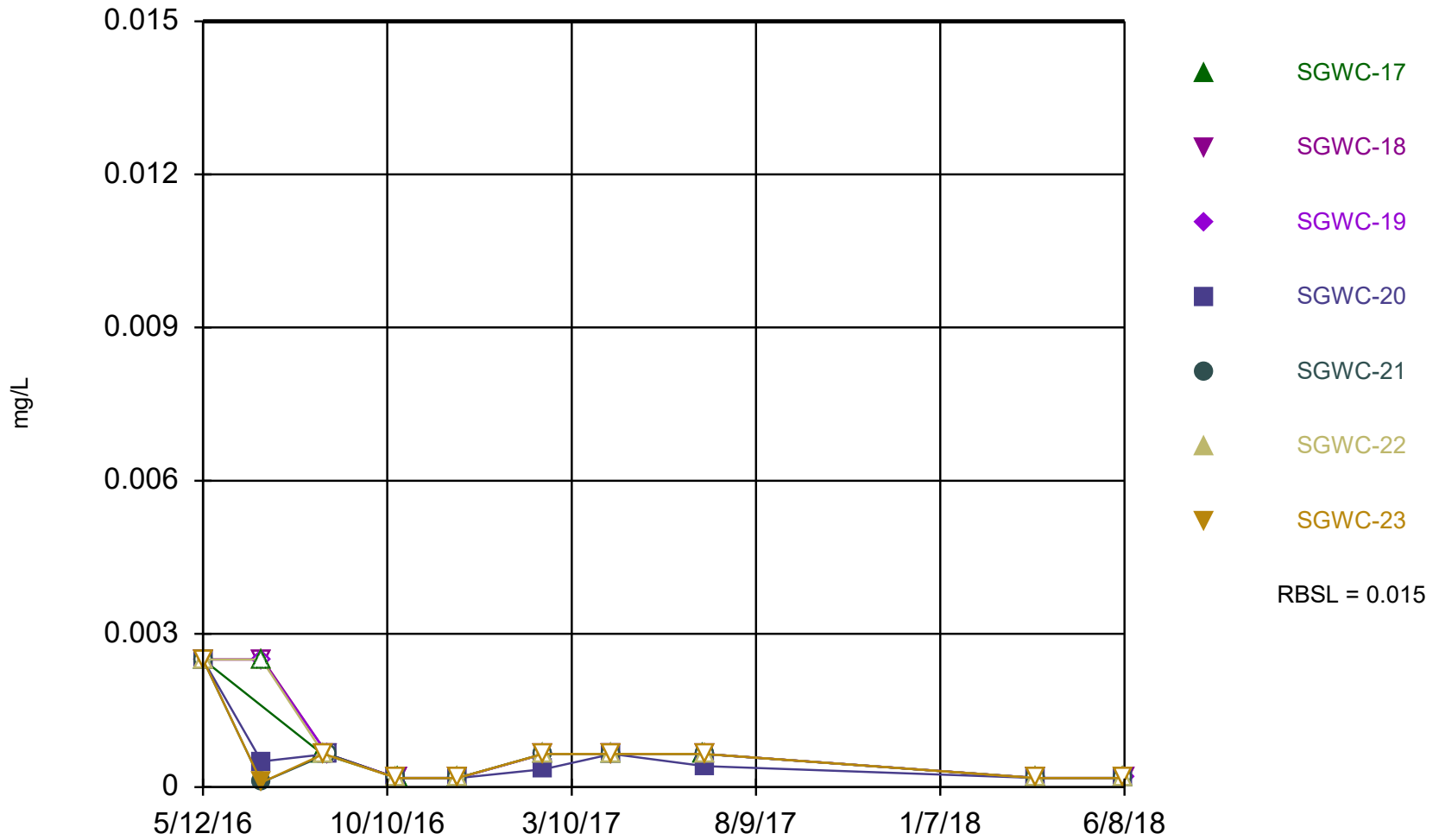
Constituent: Lead Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Lead Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

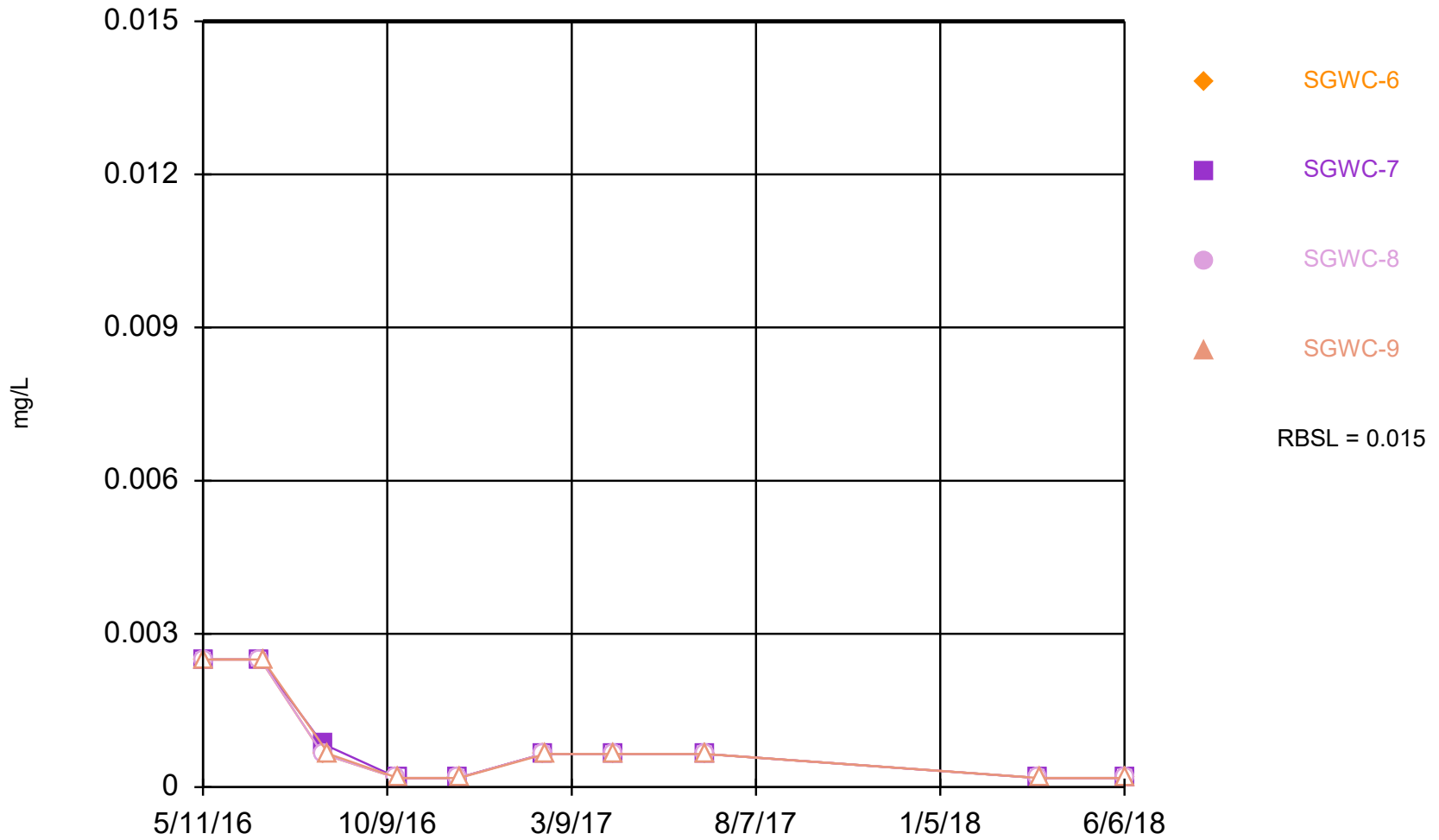
### Time Series



Constituent: Lead Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

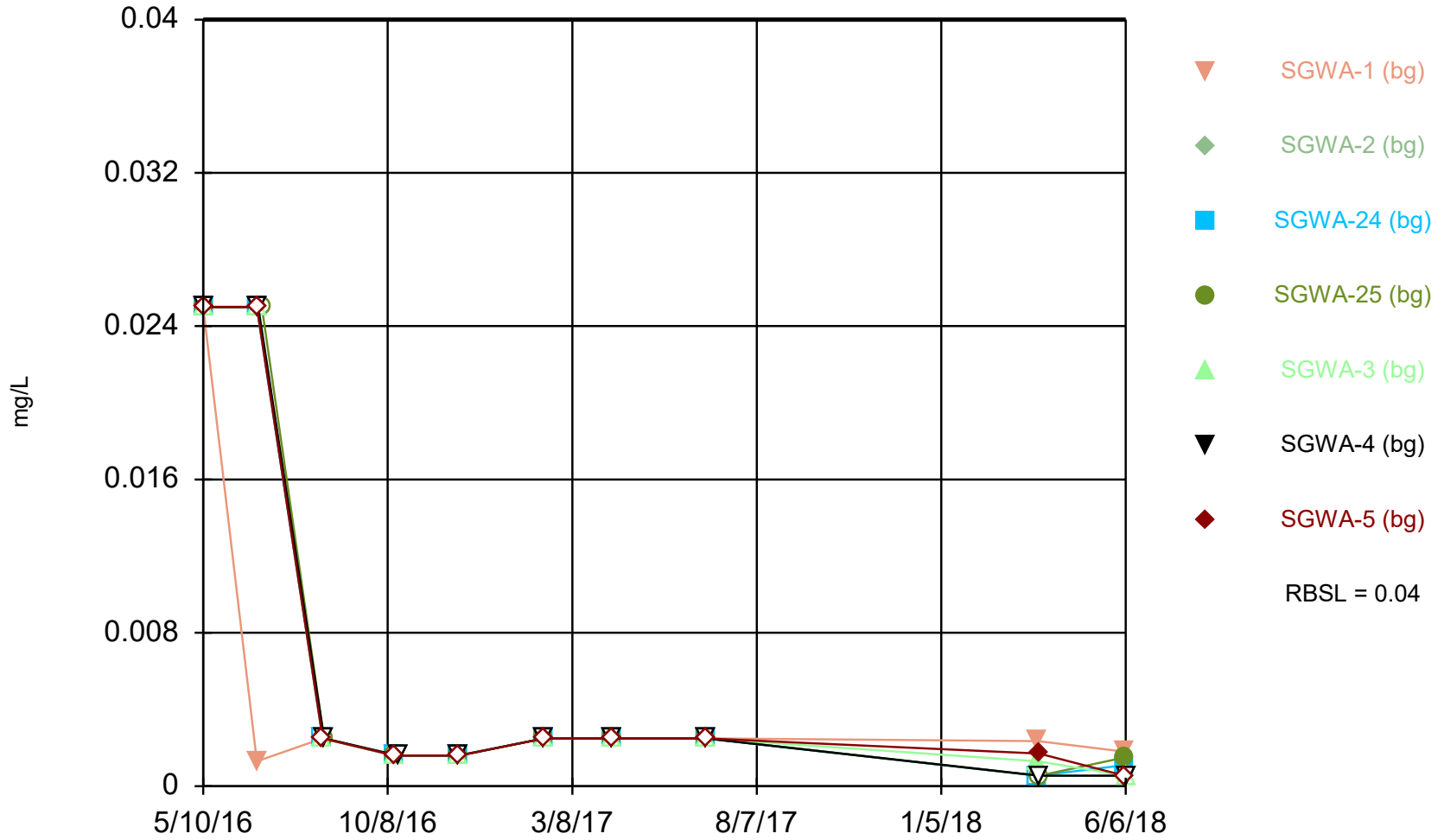


### Time Series



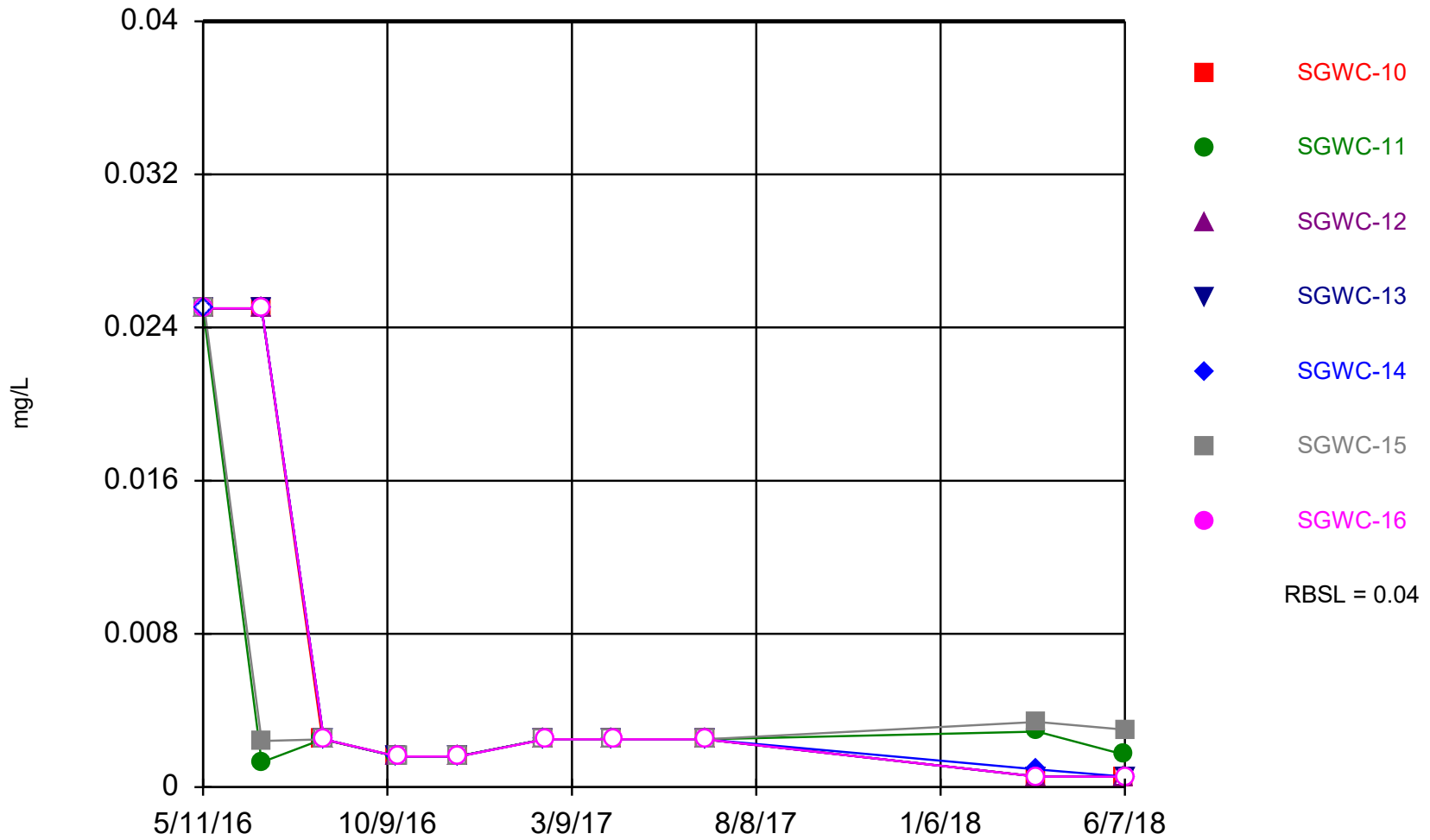
Constituent: Lead Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



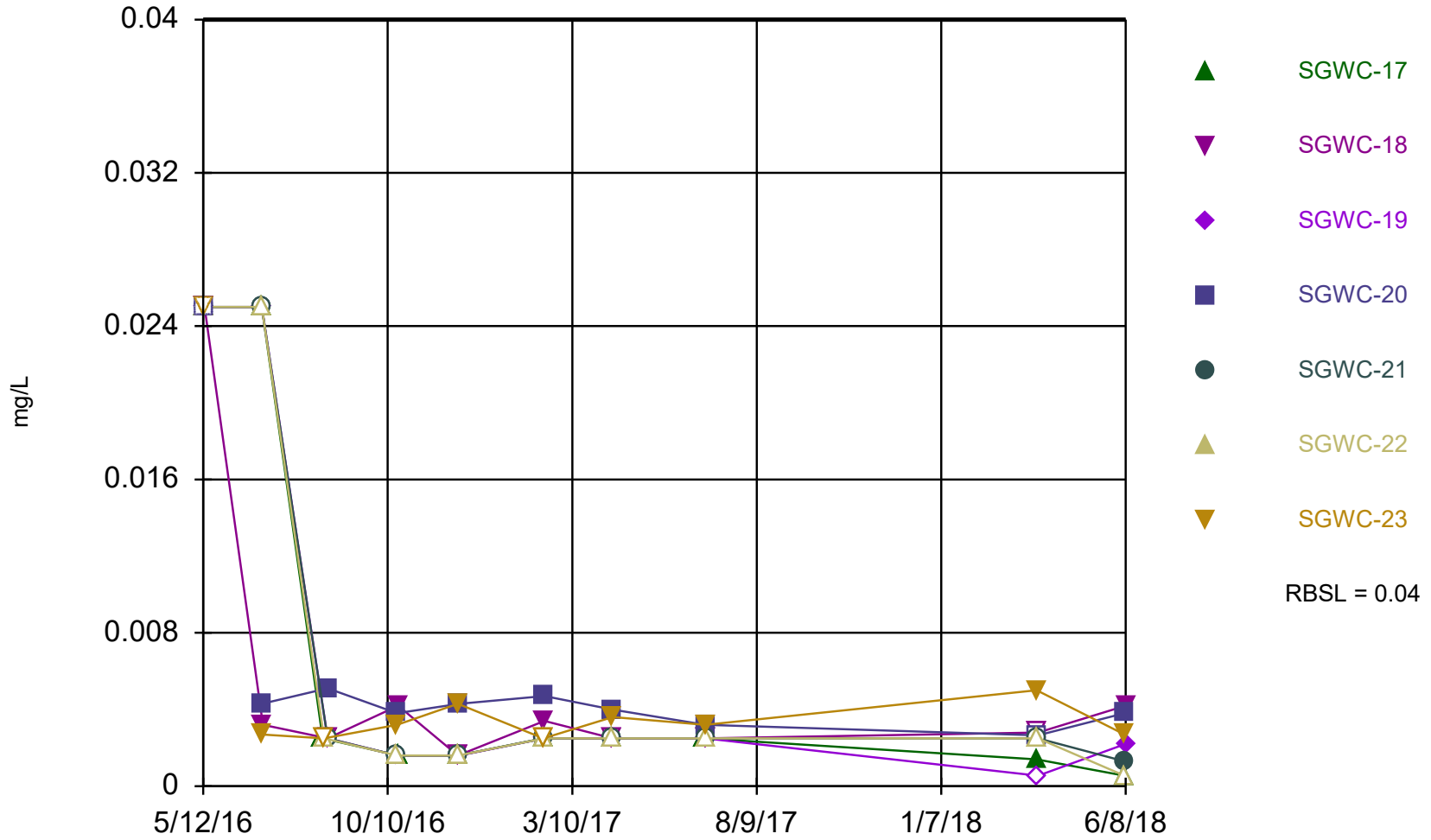
Constituent: Lithium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



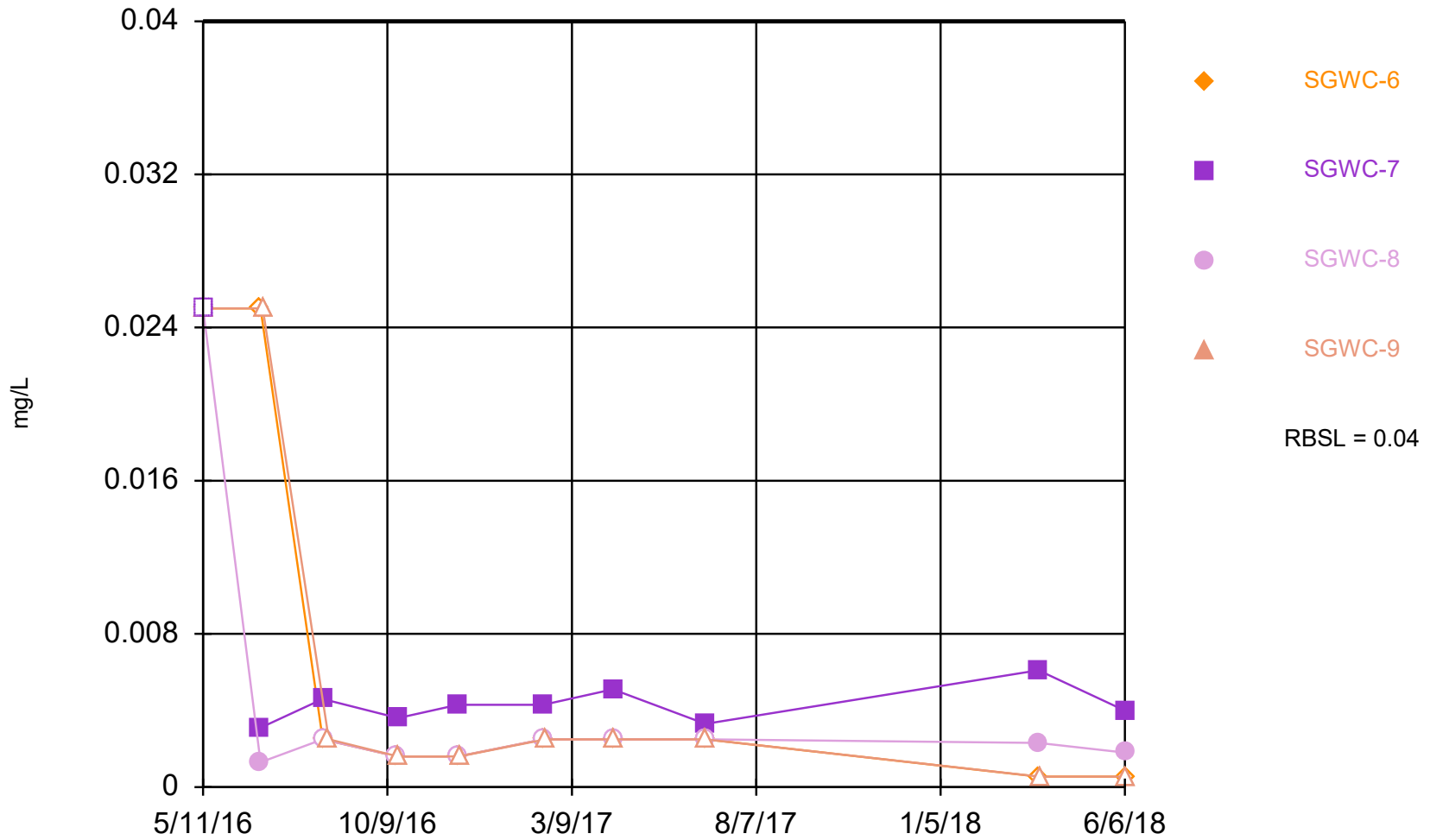
Constituent: Lithium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



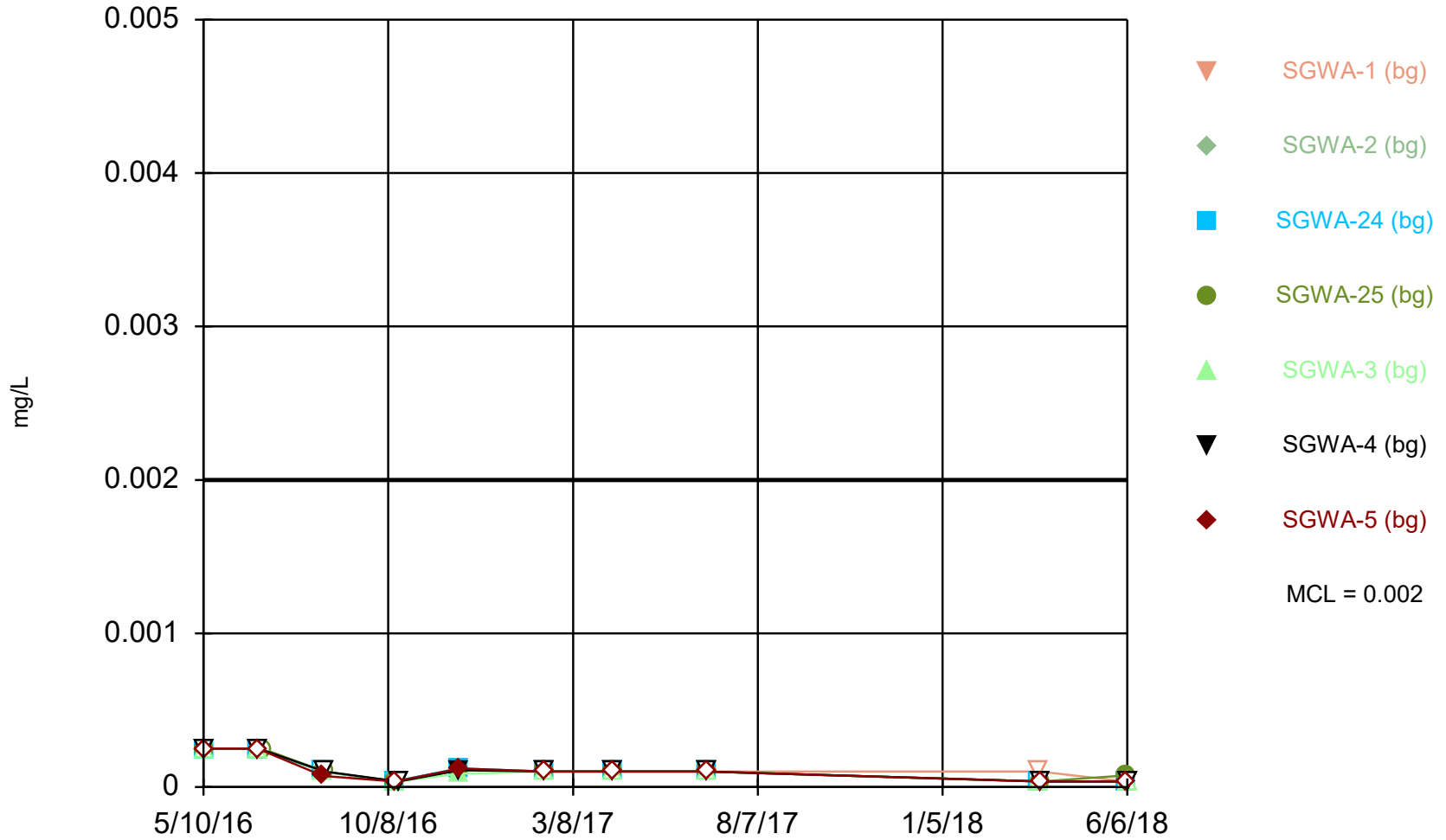
Constituent: Lithium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



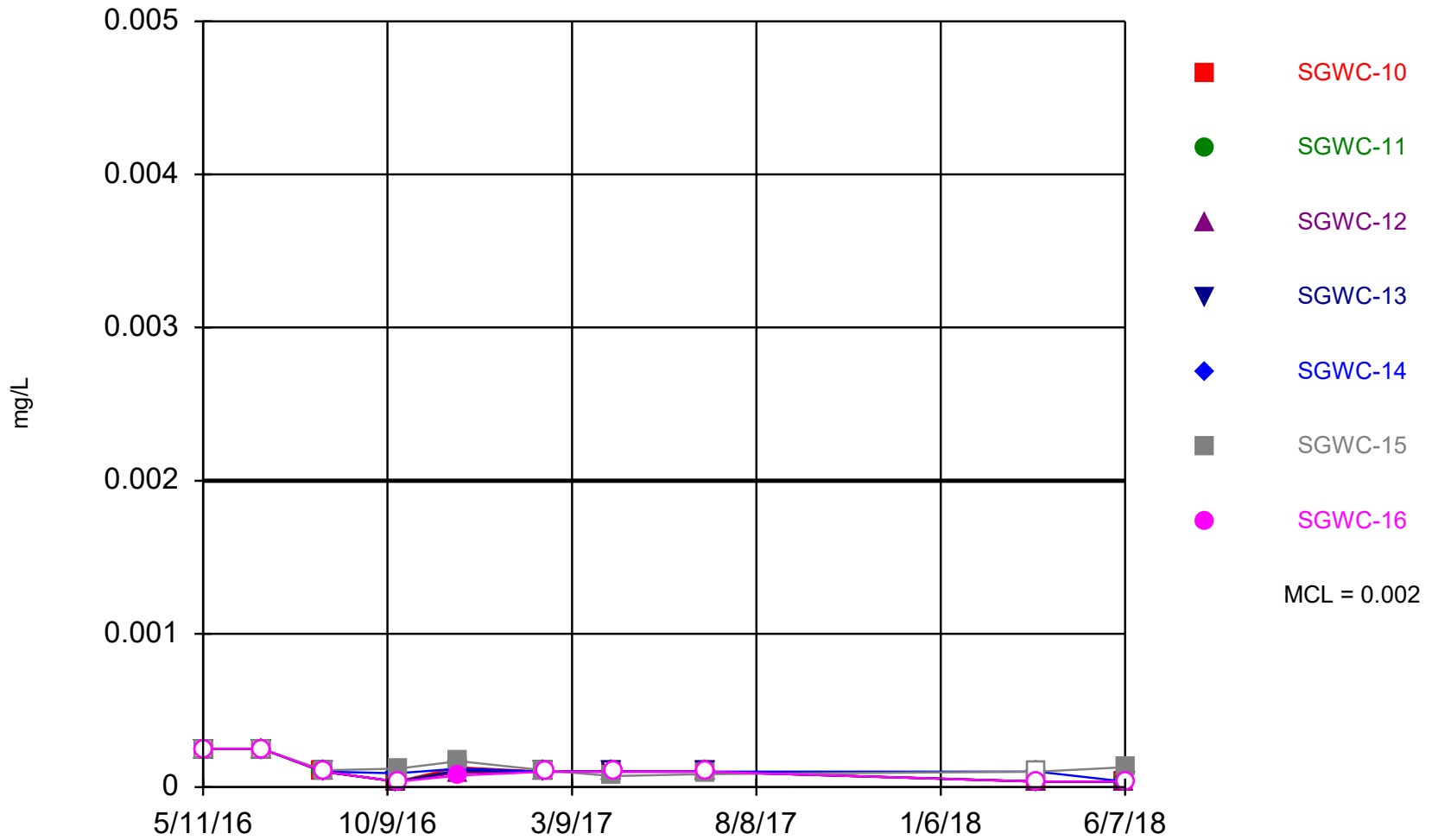
Constituent: Lithium    Analysis Run 10/15/2018 9:39 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



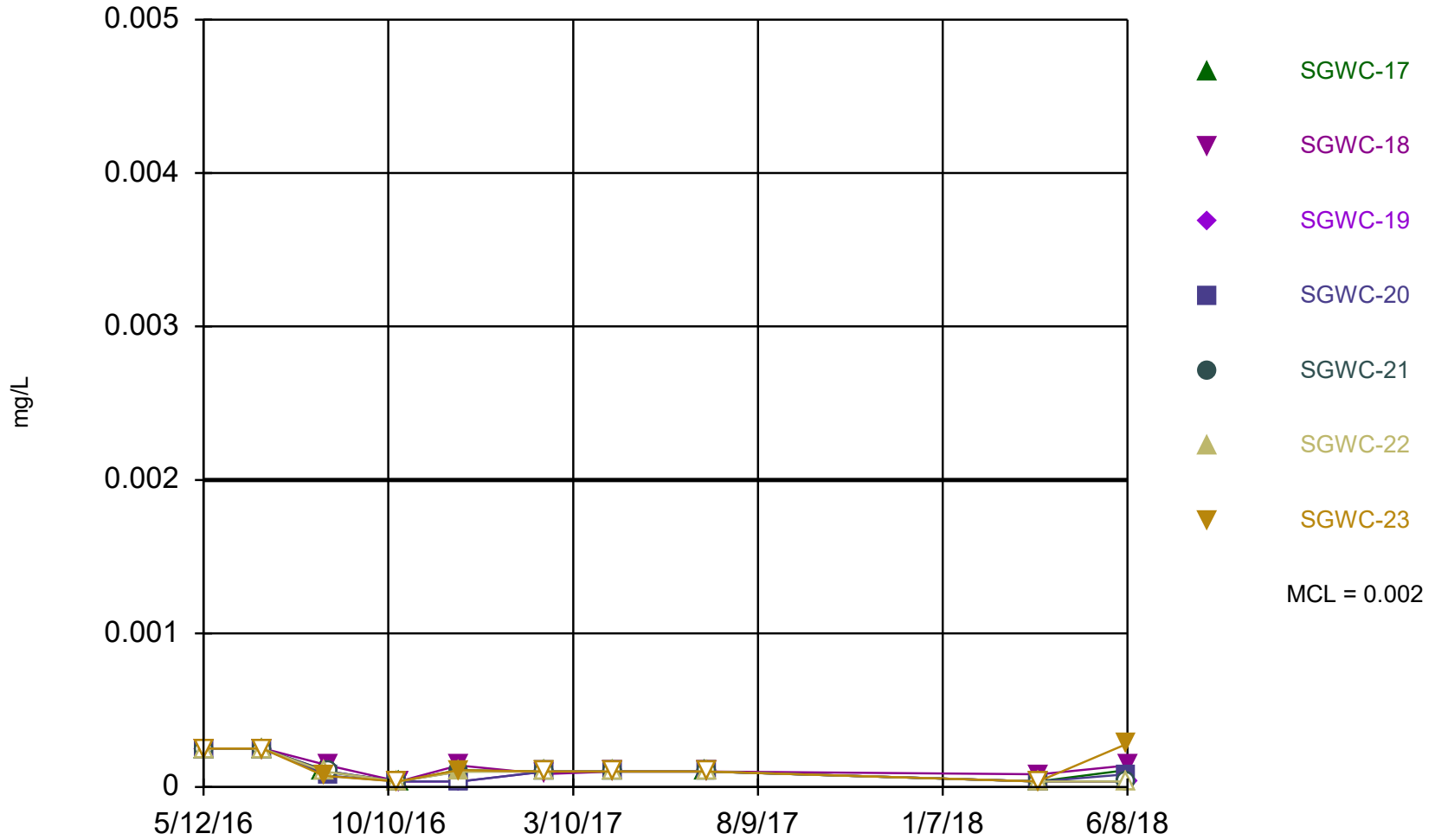
Constituent: Mercury Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Mercury Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

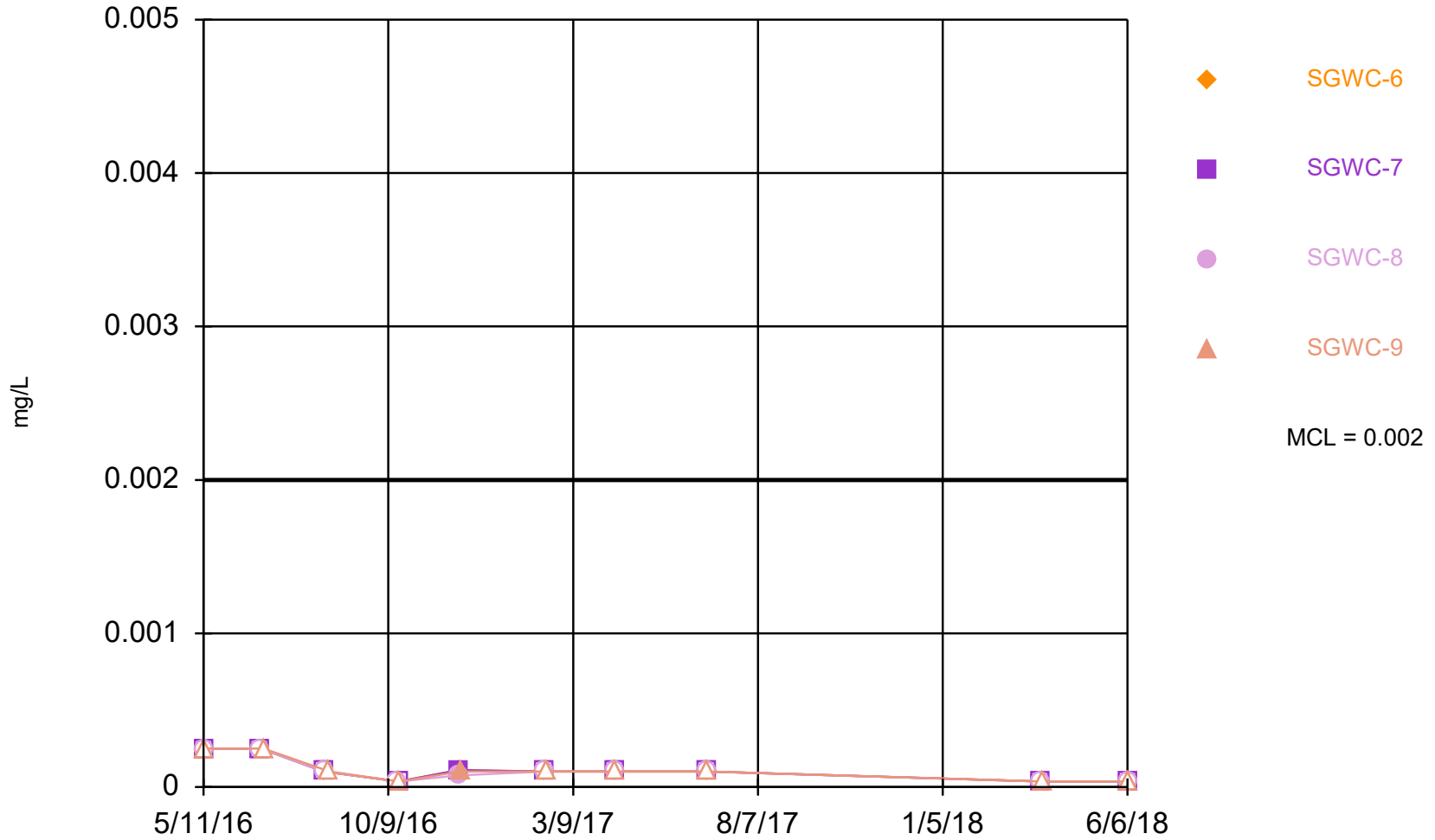
### Time Series



Constituent: Mercury Analysis Run 10/15/2018 9:39 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

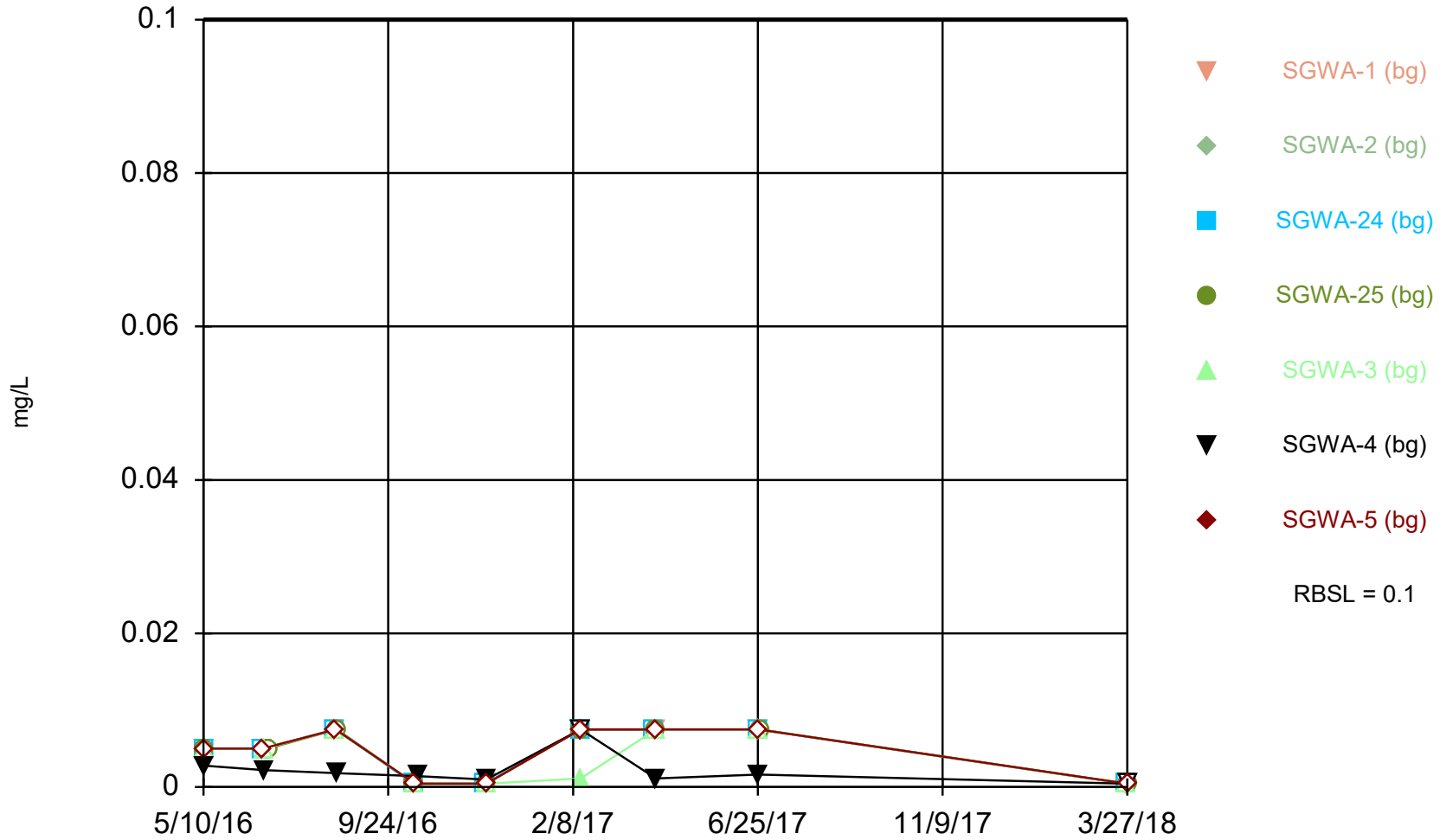


### Time Series



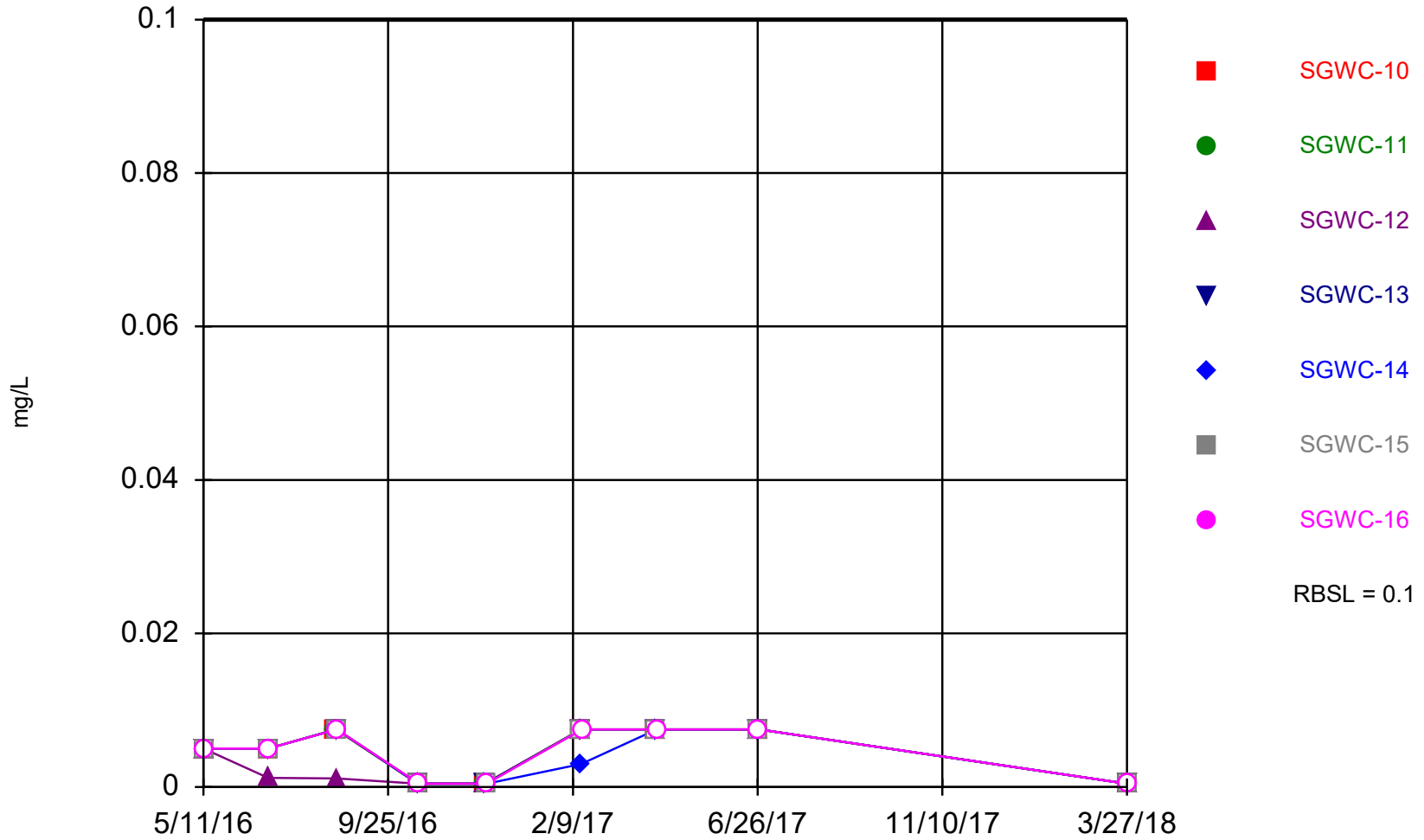
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Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



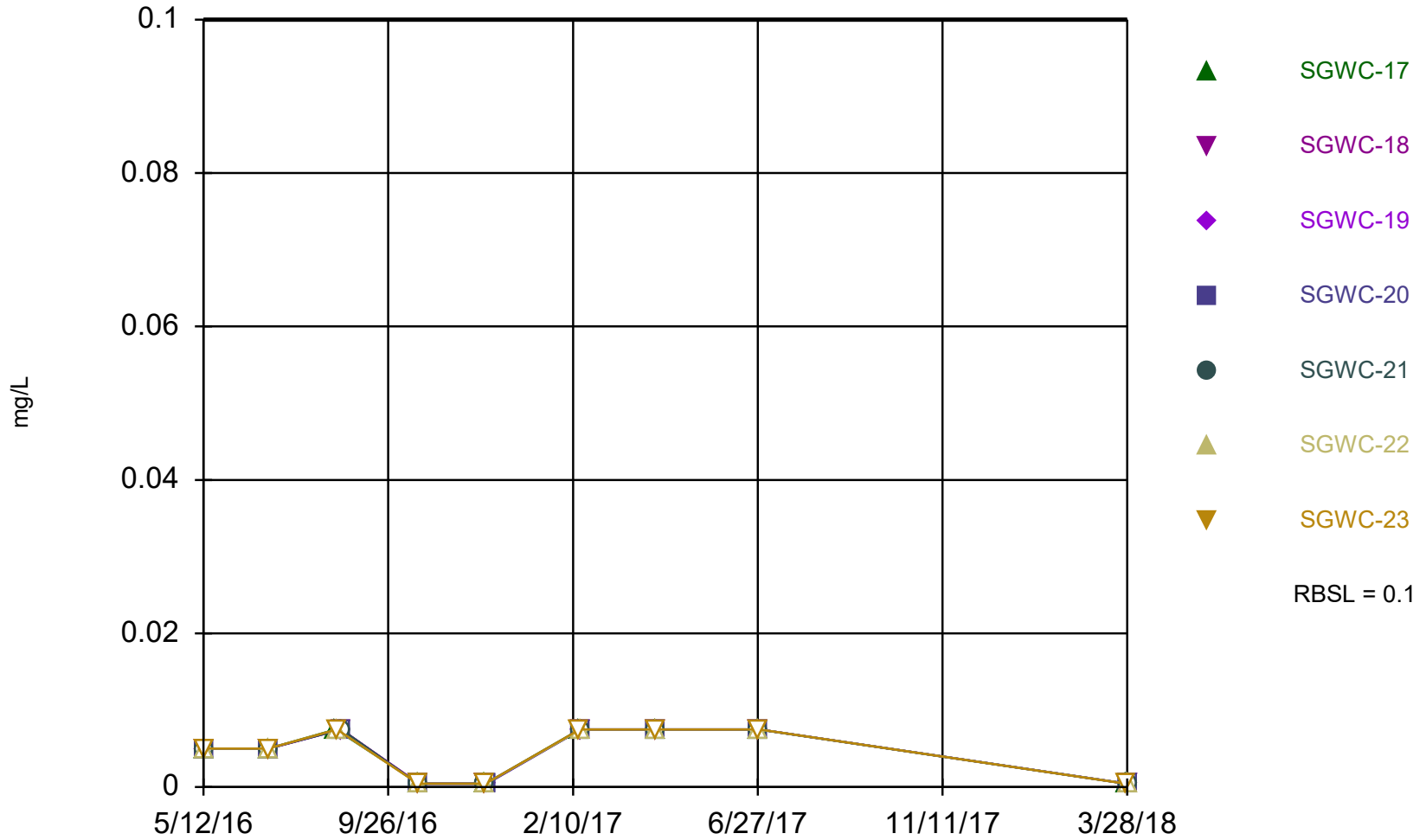
Constituent: Molybdenum Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



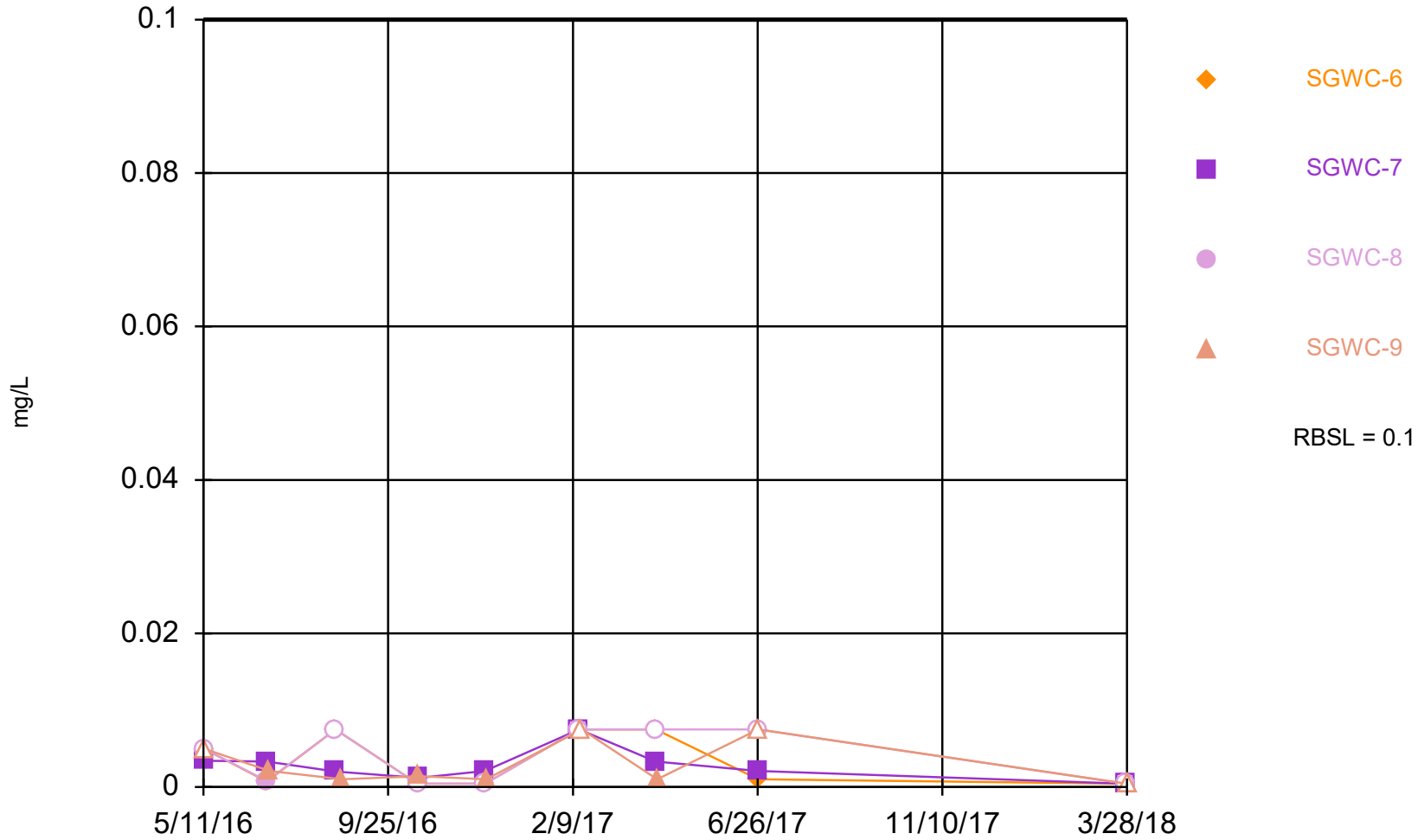
Constituent: Molybdenum Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



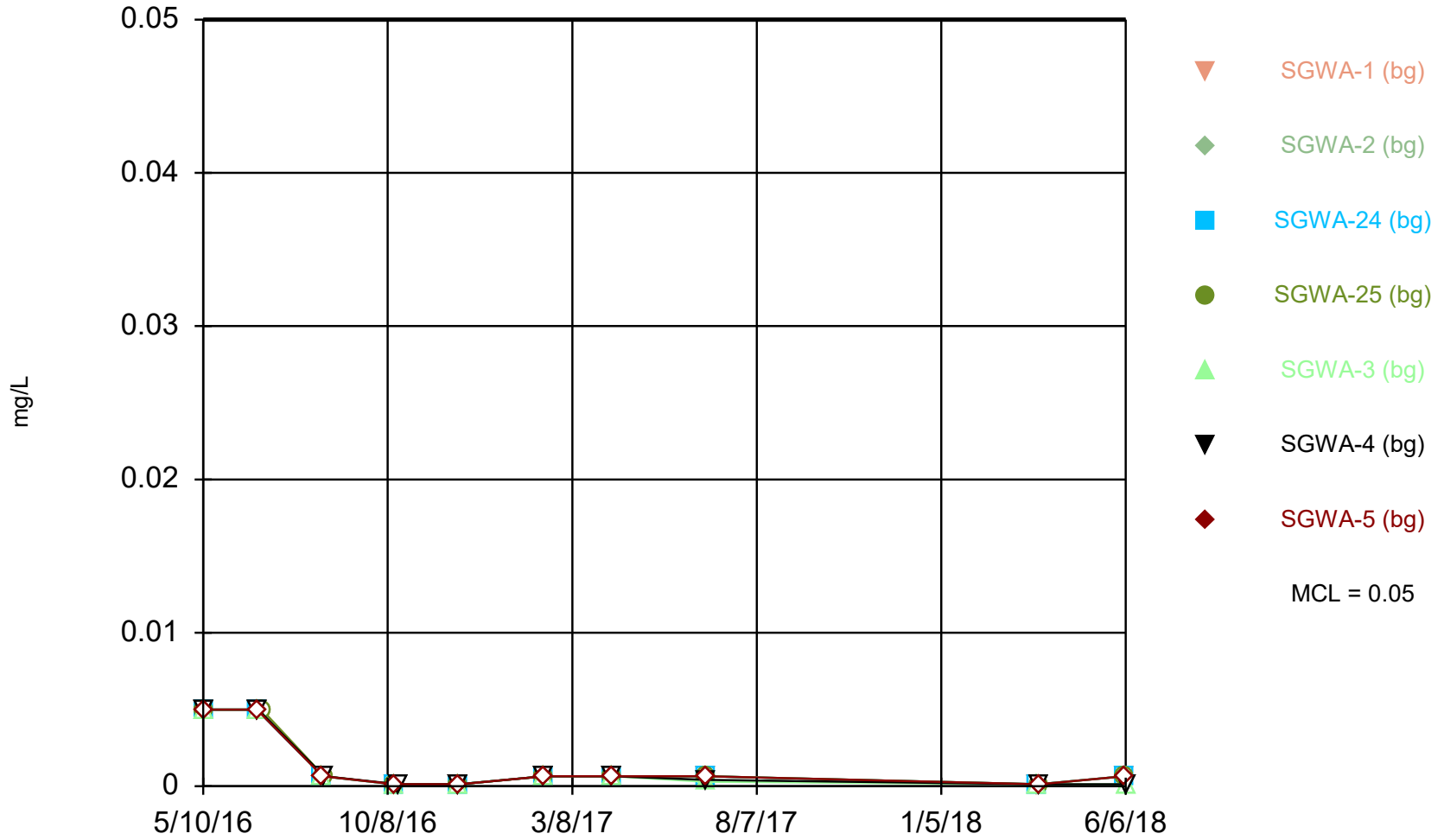
Constituent: Molybdenum Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



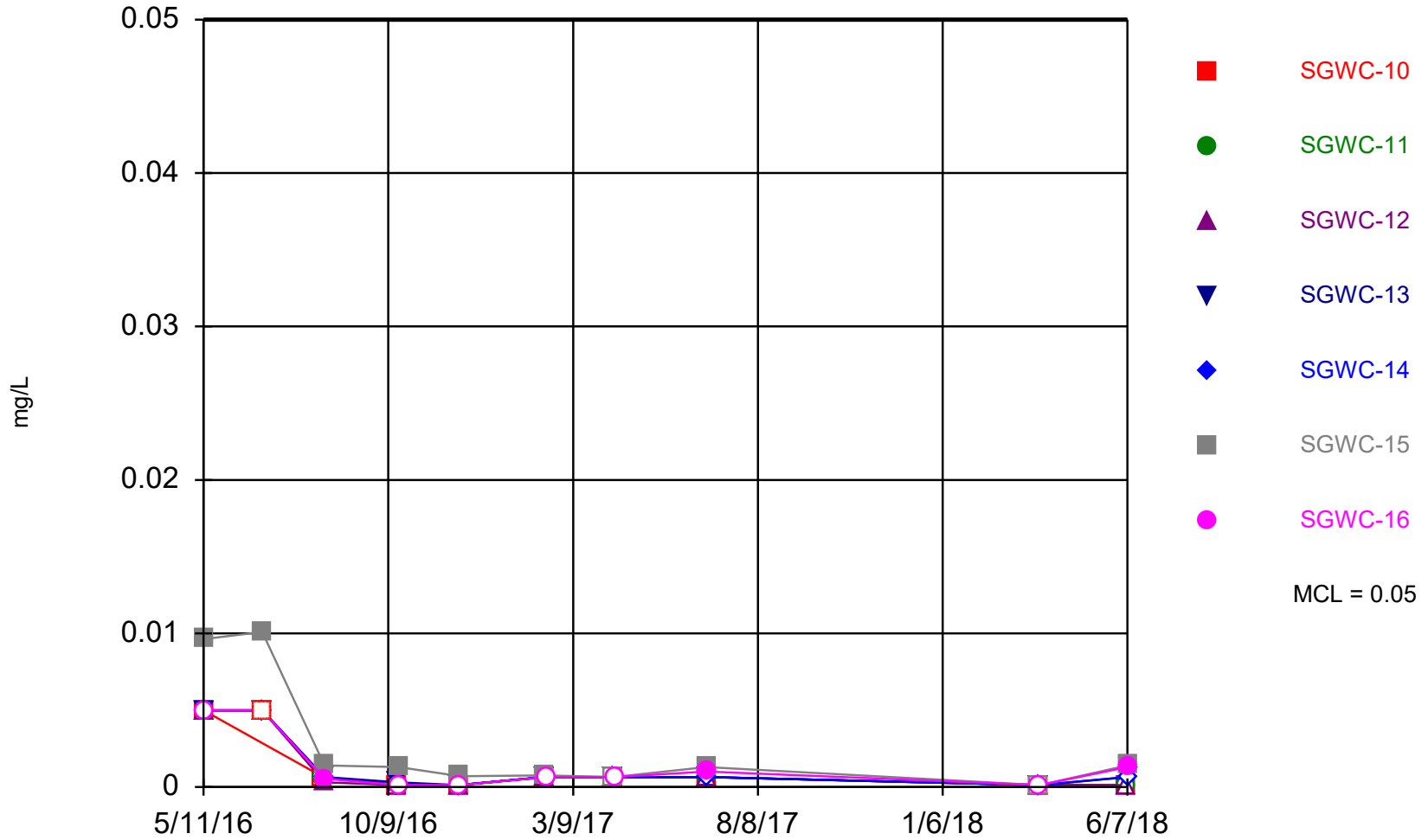
Constituent: Molybdenum Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



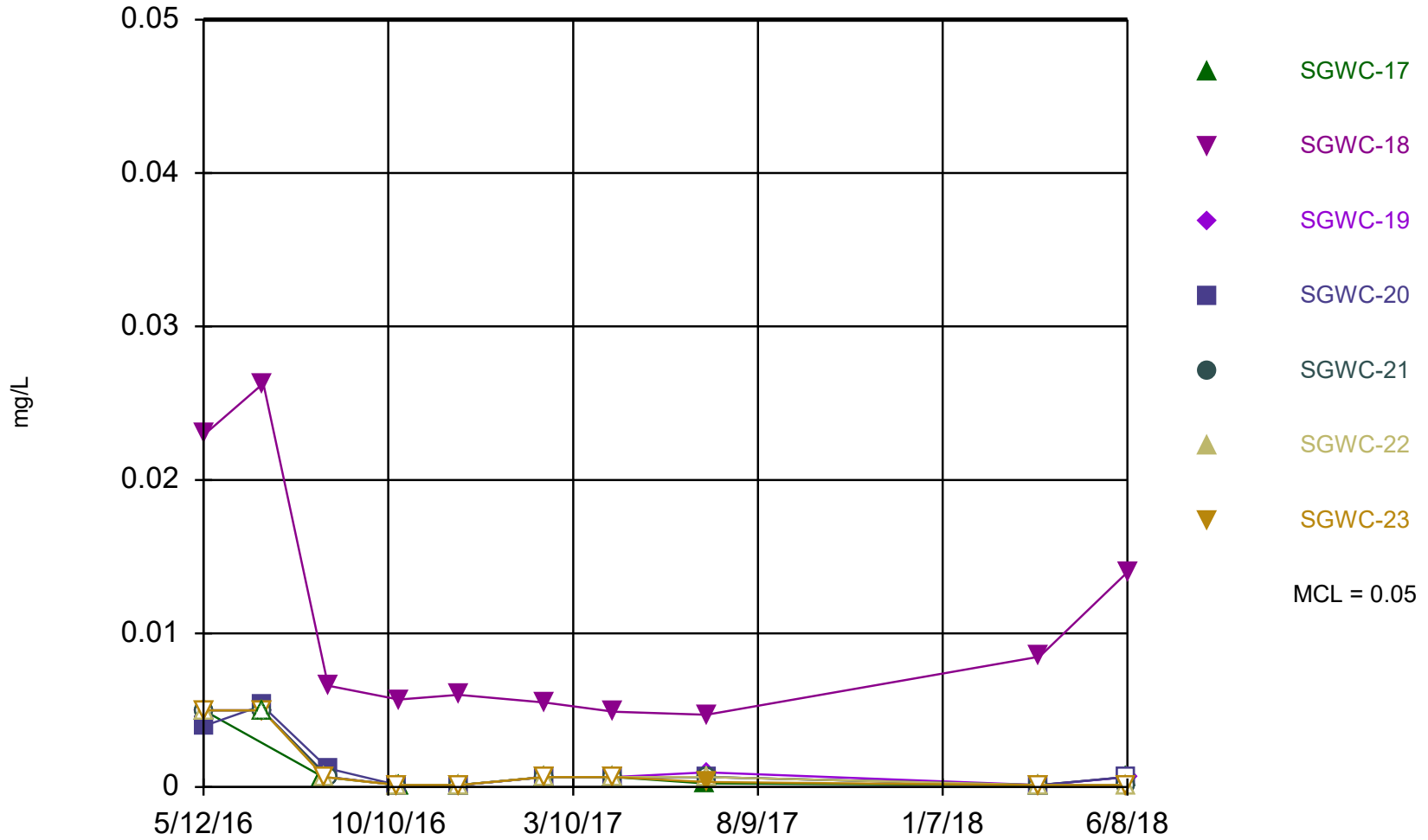
Constituent: Selenium    Analysis Run 10/15/2018 9:40 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Selenium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

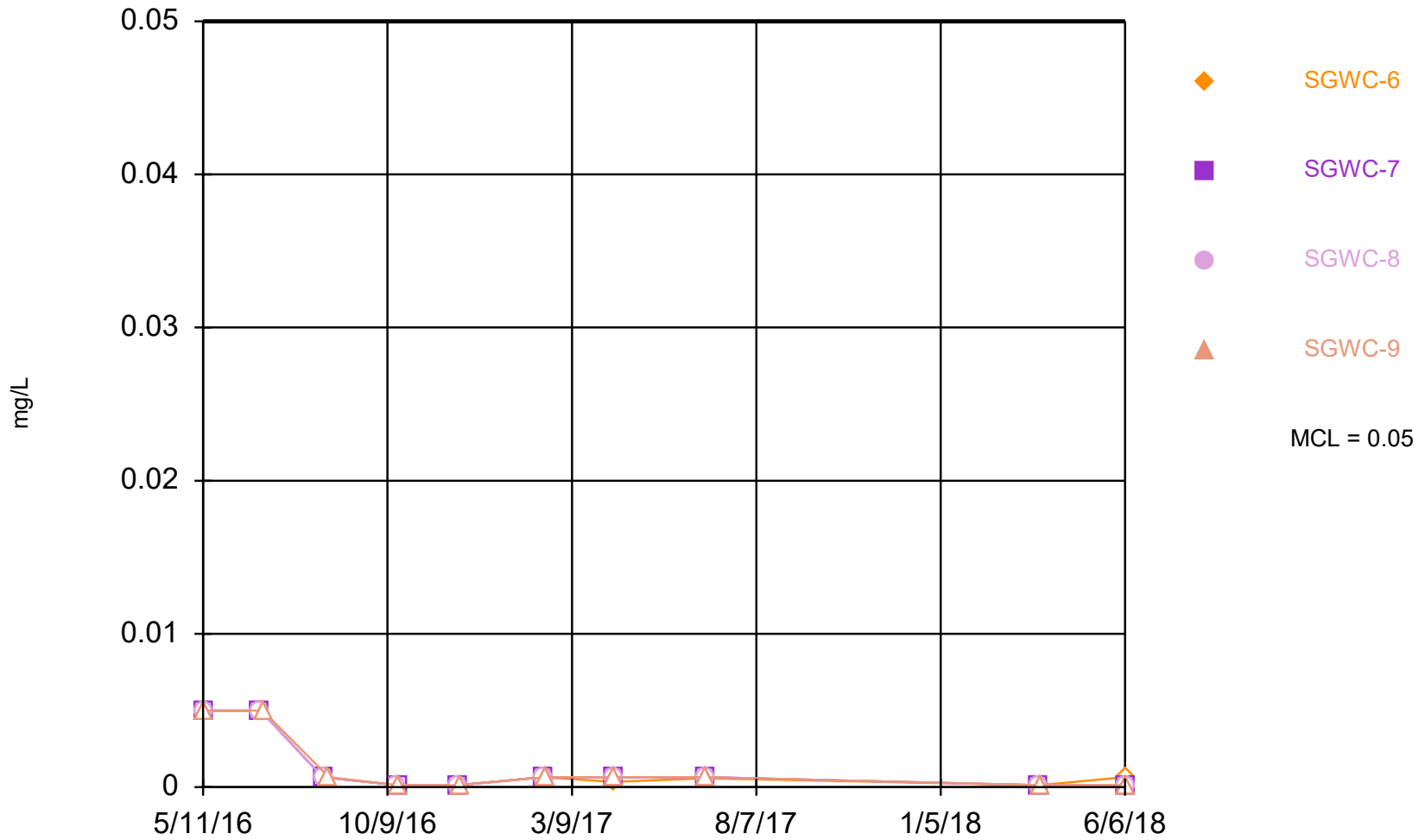
### Time Series



Constituent: Selenium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

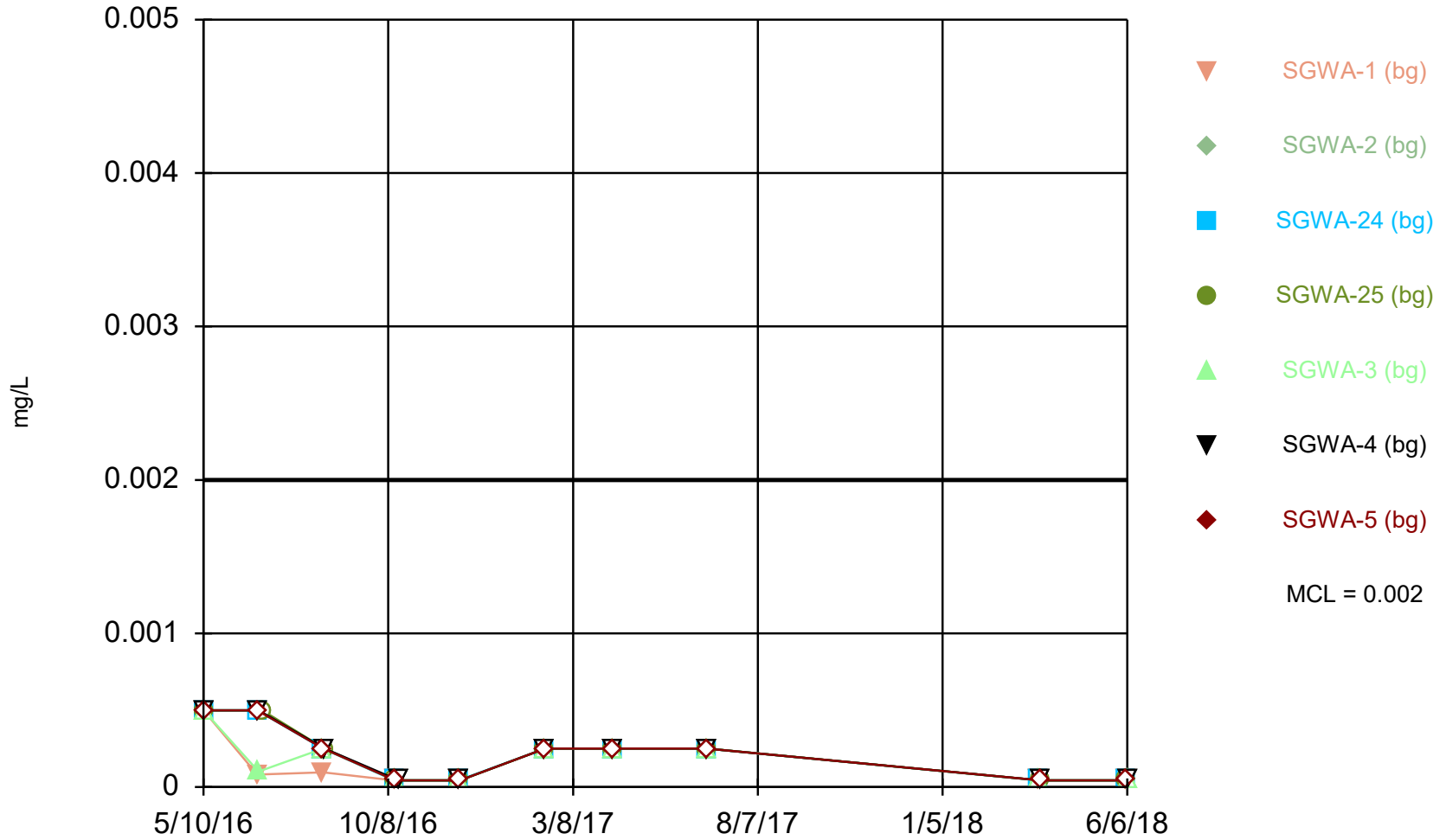


### Time Series



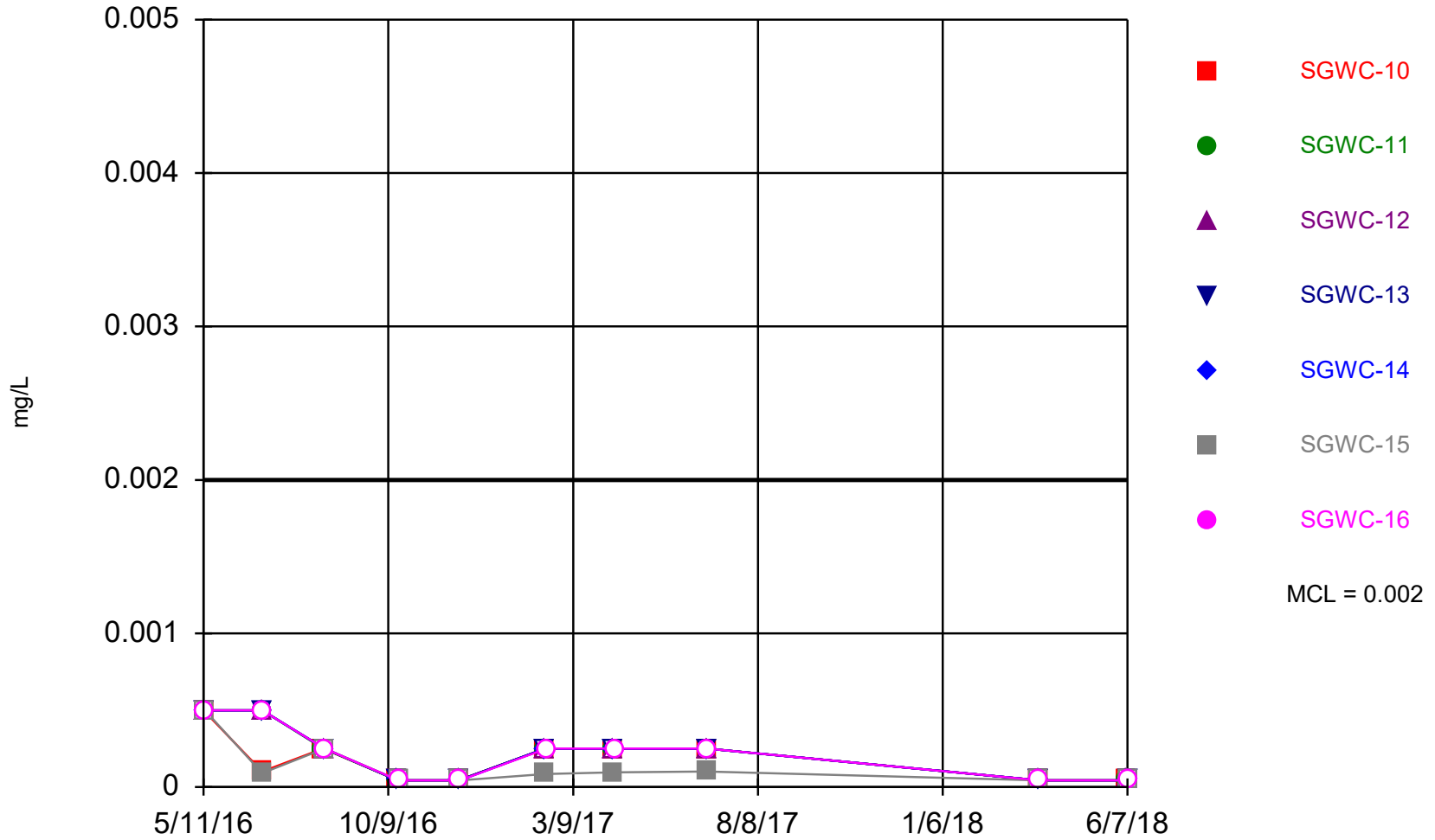
Constituent: Selenium    Analysis Run 10/15/2018 9:40 AM    View: Interwell Confidence Interval  
Scherer    Client: Golder Associates    Data: Scherer Ash Pond\_CCR

### Time Series



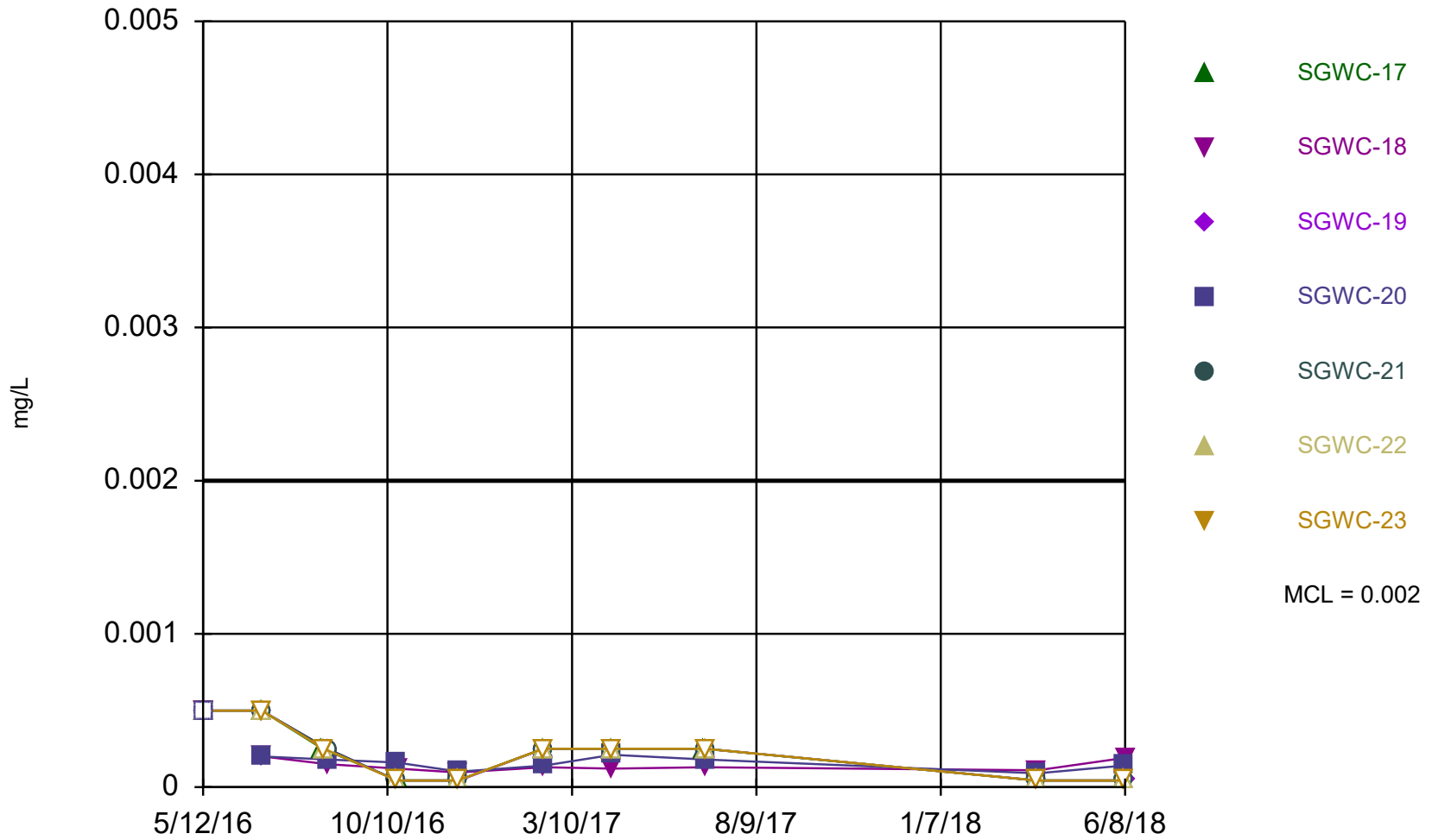
Constituent: Thallium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



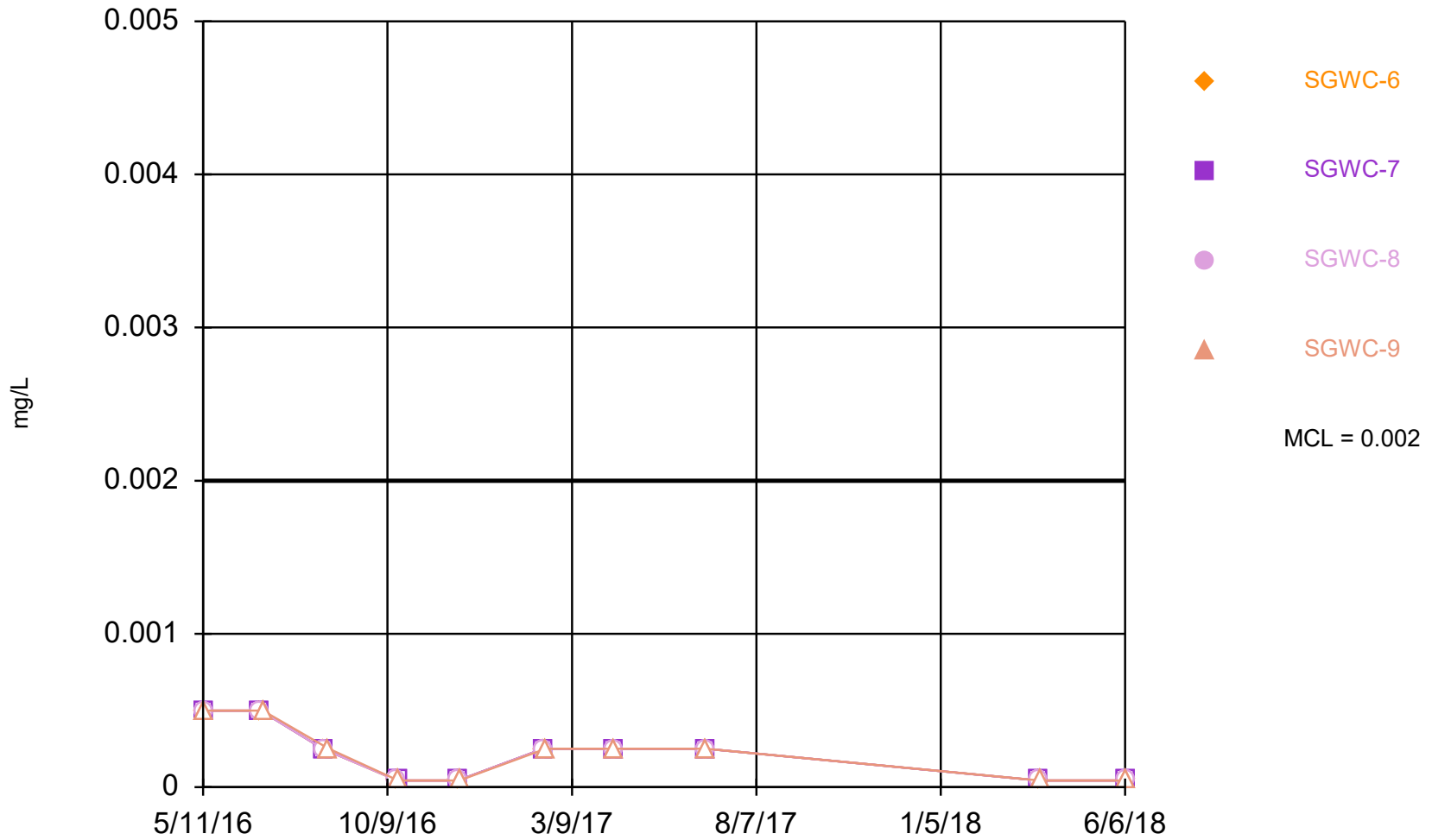
Constituent: Thallium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Thallium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

### Time Series



Constituent: Thallium Analysis Run 10/15/2018 9:40 AM View: Interwell Confidence Interval  
Scherer Client: Golder Associates Data: Scherer Ash Pond\_CCR

**APPENDIX B**

## Analytical Data

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-85554-1

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

1/10/2019 3:22:19 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

Total Access

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416

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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

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**Job ID: 180-85554-1**

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**Laboratory: TestAmerica Pittsburgh**

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**Narrative**

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**Job Narrative  
180-85554-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 1/9/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

**Receipt Exceptions**

COC for these samples indicated no J flags; however as per client the lab was to report flagged results.

**Metals**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Accreditation/Certification Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-19
Wisconsin	State Program	5	998027800	08-31-19

# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-85554-1	B-102B	Water	01/08/19 15:10	01/09/19 09:10
180-85554-2	B-103B	Water	01/08/19 13:35	01/09/19 09:10
180-85554-3	B-104A	Water	01/08/19 13:25	01/09/19 09:10
180-85554-4	B-104B	Water	01/08/19 14:10	01/09/19 09:10
180-85554-5	FB	Water	01/08/19 16:10	01/09/19 09:10
180-85554-6	FD	Water	01/08/19 00:00	01/09/19 09:10

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# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

Method	Method Description	Protocol	Laboratory
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

**Client Sample ID: B-102B**  
**Date Collected: 01/08/19 15:10**  
**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-1**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 21:48	WTR	TAL PIT
Instrument ID: X										

**Client Sample ID: B-103B**  
**Date Collected: 01/08/19 13:35**  
**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-2**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 21:53	WTR	TAL PIT
Instrument ID: X										

**Client Sample ID: B-104A**  
**Date Collected: 01/08/19 13:25**  
**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-3**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 21:58	WTR	TAL PIT
Instrument ID: X										

**Client Sample ID: B-104B**  
**Date Collected: 01/08/19 14:10**  
**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-4**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 22:13	WTR	TAL PIT
Instrument ID: X										

**Client Sample ID: FB**  
**Date Collected: 01/08/19 16:10**  
**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-5**  
**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 22:18	WTR	TAL PIT
Instrument ID: X										

# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

**Client Sample ID: FD**

**Date Collected: 01/08/19 00:00**

**Date Received: 01/09/19 09:10**

**Lab Sample ID: 180-85554-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267420	01/09/19 11:13	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267572	01/09/19 21:22	WTR	TAL PIT
Instrument ID: X										

### Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

### Analyst References:

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

Batch Type: Analysis

WTR = Bill Reinheimer

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

**Client Sample ID: B-102B**  
Date Collected: 01/08/19 15:10  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-1**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00096	J	0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 21:48	1

**Client Sample ID: B-103B**  
Date Collected: 01/08/19 13:35  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-2**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00021	J	0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 21:53	1

**Client Sample ID: B-104A**  
Date Collected: 01/08/19 13:25  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-3**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00019	J	0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 21:58	1

**Client Sample ID: B-104B**  
Date Collected: 01/08/19 14:10  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-4**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 22:13	1

**Client Sample ID: FB**  
Date Collected: 01/08/19 16:10  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-5**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 22:18	1

**Client Sample ID: FD**  
Date Collected: 01/08/19 00:00  
Date Received: 01/09/19 09:10

**Lab Sample ID: 180-85554-6**  
Matrix: Water

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 21:22	1



# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

## Method: EPA 6020 - Metals (ICP/MS)

**Lab Sample ID: MB 180-267420/1-A**  
**Matrix: Water**  
**Analysis Batch: 267572**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 267420**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		01/09/19 11:13	01/09/19 20:42	1

**Lab Sample ID: LCS 180-267420/2-A**  
**Matrix: Water**  
**Analysis Batch: 267572**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 267420**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cobalt	0.500	0.464		mg/L		93	80 - 120

**Lab Sample ID: 180-85554-6 MS**  
**Matrix: Water**  
**Analysis Batch: 267572**

**Client Sample ID: FD**  
**Prep Type: Total Recoverable**  
**Prep Batch: 267420**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cobalt	<0.000075		0.500	0.432		mg/L		86	75 - 125

**Lab Sample ID: 180-85554-6 MSD**  
**Matrix: Water**  
**Analysis Batch: 267572**

**Client Sample ID: FD**  
**Prep Type: Total Recoverable**  
**Prep Batch: 267420**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cobalt	<0.000075		0.500	0.438		mg/L		88	75 - 125	1	20

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85554-1

## Metals

### Prep Batch: 267420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-85554-1	B-102B	Total Recoverable	Water	3005A	
180-85554-2	B-103B	Total Recoverable	Water	3005A	
180-85554-3	B-104A	Total Recoverable	Water	3005A	
180-85554-4	B-104B	Total Recoverable	Water	3005A	
180-85554-5	FB	Total Recoverable	Water	3005A	
180-85554-6	FD	Total Recoverable	Water	3005A	
MB 180-267420/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-267420/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-85554-6 MS	FD	Total Recoverable	Water	3005A	
180-85554-6 MSD	FD	Total Recoverable	Water	3005A	

### Analysis Batch: 267572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-85554-1	B-102B	Total Recoverable	Water	EPA 6020	267420
180-85554-2	B-103B	Total Recoverable	Water	EPA 6020	267420
180-85554-3	B-104A	Total Recoverable	Water	EPA 6020	267420
180-85554-4	B-104B	Total Recoverable	Water	EPA 6020	267420
180-85554-5	FB	Total Recoverable	Water	EPA 6020	267420
180-85554-6	FD	Total Recoverable	Water	EPA 6020	267420
MB 180-267420/1-A	Method Blank	Total Recoverable	Water	EPA 6020	267420
LCS 180-267420/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	267420
180-85554-6 MS	FD	Total Recoverable	Water	EPA 6020	267420
180-85554-6 MSD	FD	Total Recoverable	Water	EPA 6020	267420

Regulatory Program:  DW  NPDES  RCRA  Other:

Client Contact: Southern Company  
 241 Ralph McGill Blvd SE B10185  
 Atlanta, GA, 30308  
 Phone (404) 506-7239 FAX  
 Project Name: GPC Plant Scherer  
 Site: Ash Pond  
 P O #

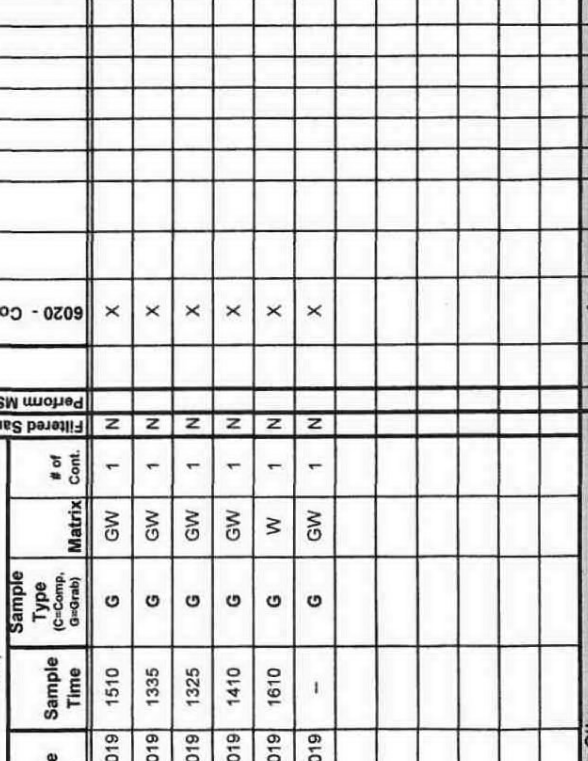
Project Manager: Dawn Prell  
 Tel/Fax: 248-636-6445

Site Contact: Karim Minkara  
 Lab Contact: Veronica Bortot

Date: 1/8/2019  
 Carrier: \_\_\_\_\_  
 COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
 TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	6020 - Co	Se	S&
B-102B	1/8/2019	1510	G	GW	1	N		X		
B-103B	1/8/2019	1335	G	GW	1	N		X		
B-104A	1/8/2019	1325	G	GW	1	N		X		
B-104B	1/8/2019	1410	G	GW	1	N		X		
FB	1/8/2019	1610	G	W	1	N		X		
FD	1/8/2019	-	G	GW	1	N		X		
								4		



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other  
 Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Unknown

Special Instructions/QC Requirements & Comments: Attorney Client Privilege. Report to RL only, do not report J-flagged data  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Custody Seal No.:  
 Relinquished by: *[Signature]* Company: *Gold* Date/Time: *1-8-19/18:20*  
 Relinquished by: *[Signature]* Company: *DeWitt* Date/Time: *1-9-18 9:10*  
 Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_



## Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-85554-1

**Login Number: 85554**

**List Source: TestAmerica Pittsburgh**

**List Number: 1**

**Creator: Watson, Debbie**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-85596-1

Client Project/Site: CCR - Plant Scherer

For:

Southern Company

241 Ralph McGill Blvd SE

B10185

Atlanta, Georgia 30308

Attn: Joju Abraham



Authorized for release by:

1/11/2019 5:02:02 PM

Veronica Bortot, Senior Project Manager

(412)963-2435

[veronica.bortot@testamericainc.com](mailto:veronica.bortot@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

PA Lab ID: 02-00416

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# Case Narrative

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

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**Job ID: 180-85596-1**

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**Laboratory: TestAmerica Pittsburgh**

## Narrative

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**Job Narrative**  
**180-85596-1**

## Comments

No additional comments.

## Receipt

The samples were received on 1/10/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3° C.

## Metals

Method(s) 6020: The serial dilution performed for the following sample associated with batch 180-267636 was outside control limits for lithium: B-102A (180-85596-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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# Definitions/Glossary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



# Accreditation/Certification Summary

Client: Southern Company  
 Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

## Laboratory: TestAmerica Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-19
California	State Program	9	2891	04-30-19
Connecticut	State Program	1	PH-0688	09-30-20
Florida	NELAP	4	E871008	06-30-19
Illinois	NELAP	5	200005	06-30-19
Kansas	NELAP	7	E-10350	01-31-19 *
Louisiana	NELAP	6	04041	06-30-19
Nevada	State Program	9	PA00164	07-31-19
New Hampshire	NELAP	1	2030	04-04-19
New Jersey	NELAP	2	PA005	06-30-19
New York	NELAP	2	11182	03-31-19
North Carolina (WW/SW)	State Program	4	434	12-31-19
Oregon	NELAP	10	PA-2151	01-28-19 *
Pennsylvania	NELAP	3	02-00416	04-30-19
South Carolina	State Program	4	89014	04-30-19
Texas	NELAP	6	T104704528-15-2	03-31-19
US Fish & Wildlife	Federal		LE94312A-1	07-31-19
USDA	Federal		P330-16-00211	06-26-19
Utah	NELAP	8	PA001462015-4	05-31-19
Virginia	NELAP	3	460189	09-14-19
West Virginia DEP	State Program	3	142	01-31-19 *
Wisconsin	State Program	5	998027800	08-31-19

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



# Sample Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-85596-1	B-102A	Water	01/09/19 18:10	01/10/19 09:15
180-85596-2	B-103A	Water	01/09/19 16:50	01/10/19 09:15

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# Method Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

Method	Method Description	Protocol	Laboratory
EPA 6020	Metals (ICP/MS)	SW846	TAL PIT
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PIT

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058



# Lab Chronicle

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

**Client Sample ID: B-102A**

**Date Collected: 01/09/19 18:10**

**Date Received: 01/10/19 09:15**

**Lab Sample ID: 180-85596-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267564	01/10/19 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267636	01/11/19 08:04	RSK	TAL PIT
Instrument ID: A										

**Client Sample ID: B-103A**

**Date Collected: 01/09/19 16:50**

**Date Received: 01/10/19 09:15**

**Lab Sample ID: 180-85596-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	267564	01/10/19 12:44	NAM	TAL PIT
Total Recoverable	Analysis	EPA 6020		1			267636	01/11/19 08:20	RSK	TAL PIT
Instrument ID: A										

## Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

## Analyst References:

Lab: TAL PIT

Batch Type: Prep

NAM = Nicole Marfisi

Batch Type: Analysis

RSK = Robert Kurtz

# Client Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

**Client Sample ID: B-102A**

**Date Collected: 01/09/19 18:10**

**Date Received: 01/10/19 09:15**

**Lab Sample ID: 180-85596-1**

**Matrix: Water**

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.0017	J	0.0025	0.000075	mg/L		01/10/19 12:44	01/11/19 08:04	1

**Client Sample ID: B-103A**

**Date Collected: 01/09/19 16:50**

**Date Received: 01/10/19 09:15**

**Lab Sample ID: 180-85596-2**

**Matrix: Water**

**Method: EPA 6020 - Metals (ICP/MS) - Total Recoverable**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00078	J	0.0025	0.000075	mg/L		01/10/19 12:44	01/11/19 08:20	1

# QC Sample Results

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

## Method: EPA 6020 - Metals (ICP/MS)

Lab Sample ID: MB 180-267564/1-A  
Matrix: Water  
Analysis Batch: 267636

Client Sample ID: Method Blank  
Prep Type: Total Recoverable  
Prep Batch: 267564

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.000075		0.0025	0.000075	mg/L		01/10/19 12:44	01/11/19 07:57	1

Lab Sample ID: LCS 180-267564/2-A  
Matrix: Water  
Analysis Batch: 267636

Client Sample ID: Lab Control Sample  
Prep Type: Total Recoverable  
Prep Batch: 267564

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cobalt	0.500	0.486		mg/L		97	80 - 120

Lab Sample ID: 180-85596-1 MS  
Matrix: Water  
Analysis Batch: 267636

Client Sample ID: B-102A  
Prep Type: Total Recoverable  
Prep Batch: 267564

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cobalt	0.0017	J	0.500	0.480		mg/L		96	75 - 125

Lab Sample ID: 180-85596-1 MSD  
Matrix: Water  
Analysis Batch: 267636

Client Sample ID: B-102A  
Prep Type: Total Recoverable  
Prep Batch: 267564

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cobalt	0.0017	J	0.500	0.461		mg/L		92	75 - 125	4	20

# QC Association Summary

Client: Southern Company  
Project/Site: CCR - Plant Scherer

TestAmerica Job ID: 180-85596-1

## Metals


### Prep Batch: 267564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-85596-1	B-102A	Total Recoverable	Water	3005A	
180-85596-2	B-103A	Total Recoverable	Water	3005A	
MB 180-267564/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 180-267564/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
180-85596-1 MS	B-102A	Total Recoverable	Water	3005A	
180-85596-1 MSD	B-102A	Total Recoverable	Water	3005A	

### Analysis Batch: 267636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-85596-1	B-102A	Total Recoverable	Water	EPA 6020	267564
180-85596-2	B-103A	Total Recoverable	Water	EPA 6020	267564
MB 180-267564/1-A	Method Blank	Total Recoverable	Water	EPA 6020	267564
LCS 180-267564/2-A	Lab Control Sample	Total Recoverable	Water	EPA 6020	267564
180-85596-1 MS	B-102A	Total Recoverable	Water	EPA 6020	267564
180-85596-1 MSD	B-102A	Total Recoverable	Water	EPA 6020	267564

Regulatory Program:  DOW  NPDES  RCRA  Other:

Project Manager: Dawn Prell Tel/Fax: 248-536-5445		Date: 1/9/2019 Carrier:		COC No: _____ of _____ COCs	
Site Contact: Karim Minkara Lab Contact: Veronica Bortot		Sampler:		For Lab Use Only: Walk-in Client: <input type="checkbox"/> Lab Sampling: <input type="checkbox"/>	
Project Manager: Dawn Prell Tel/Fax: 248-536-5445		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day		Job / SDG No.: _____	
Client Contact Southern Company 241 Ralph McGill Blvd SE B10185 Atlanta, GA, 30308 Phone (404) 506-7239 FAX _____		Project Name: GPC Plant Scherer Site: Ash Pond P.O.# _____		Sample Specific Notes:	
Sample Identification B-102A B-103A		Sample Date 1/9/2019 1/9/2019	Sample Type (C=Comp, G=Grab) G G	Matrix GW GW	# of Cont. 1 1
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other		Filtered Sample (Y/N)		Perform MS/MSD (Y/N)	
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		6020 - Co X X		Sample Specific Notes:  180-85596 Chain of Custody	
Special Instructions/QC Requirements & Comments: Attorney Client Privilege.		Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Custody Seal No.: _____ Relinquished by: <i>[Signature]</i> Relinquished by: _____ Relinquished by: _____		Cooler Temp. (°C): Obs'd: _____ Received by: <i>[Signature]</i> Received by: _____ Received in Laboratory by: _____		Therm ID No.: _____ Date/Time: 1/10/19 9:15 Date/Time: _____ Date/Time: _____	





# Login Sample Receipt Checklist

Client: Southern Company

Job Number: 180-85596-1

**Login Number: 85596**  
**List Number: 1**  
**Creator: Say, Thomas C**

**List Source: TestAmerica Pittsburgh**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## Quantitative X-Ray Diffraction by Rietveld Refinement

**Report Prepared for:** Golder Associates

**Project Number/ LIMS No.** CA201-00000-211-17024-01 / MI7002-OCT18

**Sample Receipt:** October 3, 2018

**Sample Analysis:** October 13, 2018

**Reporting Date:** November 1, 2018

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**Instrument:** Panalytical X'pert Pro Diffractometer

**Test Conditions:** Co radiation, 40 kV, 45 mA  
Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°

**Interpretations:** HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).

**Detection Limit:** 0.5-2%. Strongly dependent on crystallinity.

---

**Contents:**

- 1) Method Summary
- 2) Summary of Mineral Assemblages
- 3) Quantitative XRD Results
- 4) XRD Pattern(s)

---

Lain Glossop H.B.Sc  
Senior Mineralogist

---

Sarah Prout, Ph.D.  
Senior Mineralogist



## Method Summary

### ***Mineral Identification and Interpretation:***

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

### ***Quantitative Rietveld Analysis:***

Panalytical Highscore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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**WARNING:** The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

## Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

### Quantitative X-ray Diffraction Results

Mineral/Compound	Sample ID 01	Sample ID 02	Sample ID 03	Sample ID 04	Sample ID 05	Sample ID 06
	PZ-36S (31.5')	PZ-36S (53.5')	PZ-9I (67.3')	PZ-40I (43.5')	PZ-40I (64.5')	PZ-40I (81')
	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)
Quartz	71.3	74.1	10.9	43.8	23.9	13.6
Plagioclase	-	2.0	39.6	-	36.1	37.3
Biotite	-	-	-	-	-	1.2
Kaolinite	28.7	23.9	-	56.2	0.9	0.0
Palygorskite	0.0	0.0	-	0.0	-	0.0
Amphibole	-	-	49.4	-	39.1	47.9
Jarosite	-	-	0.1	-	0.1	0.0
Sepiolite	-	-	-	-	-	0.0
Montmorillonite	-	-	-	-	-	-
Talc	-	-	-	-	-	-
Chlorite-Smectite	-	-	-	-	-	-
Goethite	-	-	-	-	-	-
TOTAL	100	100	100	100	100	100

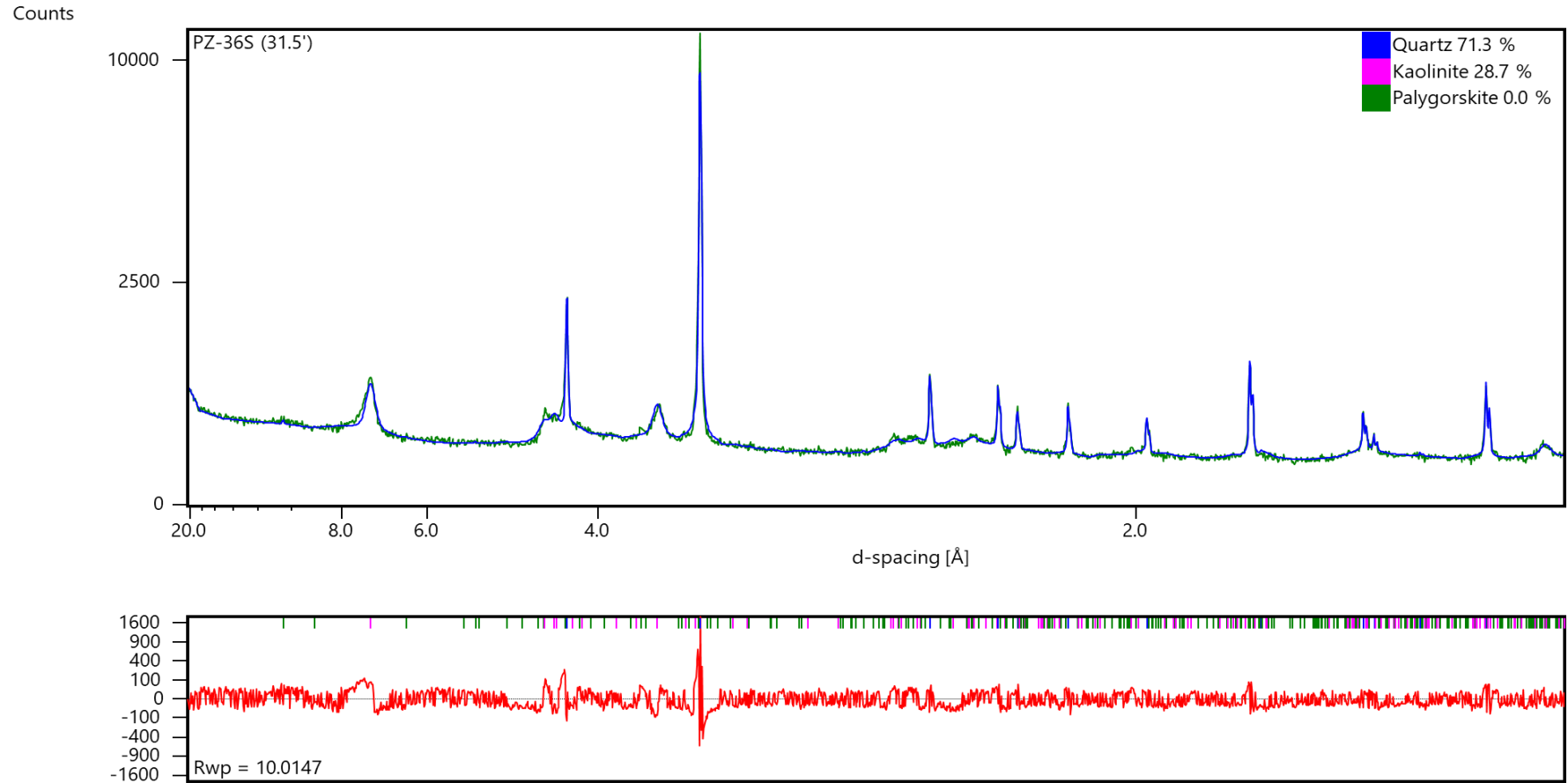
Mineral/Compound	Sample ID 07	Sample ID 08	Sample ID 09	Sample ID 10	Sample ID 11	Sample ID 12
	PZ-42I (37.5')	PZ-42I (52.5')	PZ-42I (92.0')	PZ-44I (29.5')	PZ-44I (51.5')	PZ-44I (106')
	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)
Quartz	42.2	3.5	49.2	39.1	41.5	15.0
Plagioclase	-	36.2	48.5	-	38.5	25.0
Biotite	-	-	2.4	-	-	0.0
Kaolinite	57.8	2.3	-	60.7	6.7	-
Palygorskite	-	0.0	-	-	-	-
Amphibole	-	55.3	0.0	-	13.1	60.0
Jarosite	-	-	-	-	-	0.0
Sepiolite	-	-	-	-	0.2	-
Montmorillonite	-	0.4	-	-	-	-
Talc	-	1.1	-	-	-	-
Chlorite-Smectite	-	1.2	-	-	-	-
Goethite	-	-	-	0.2	-	-
TOTAL	100	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

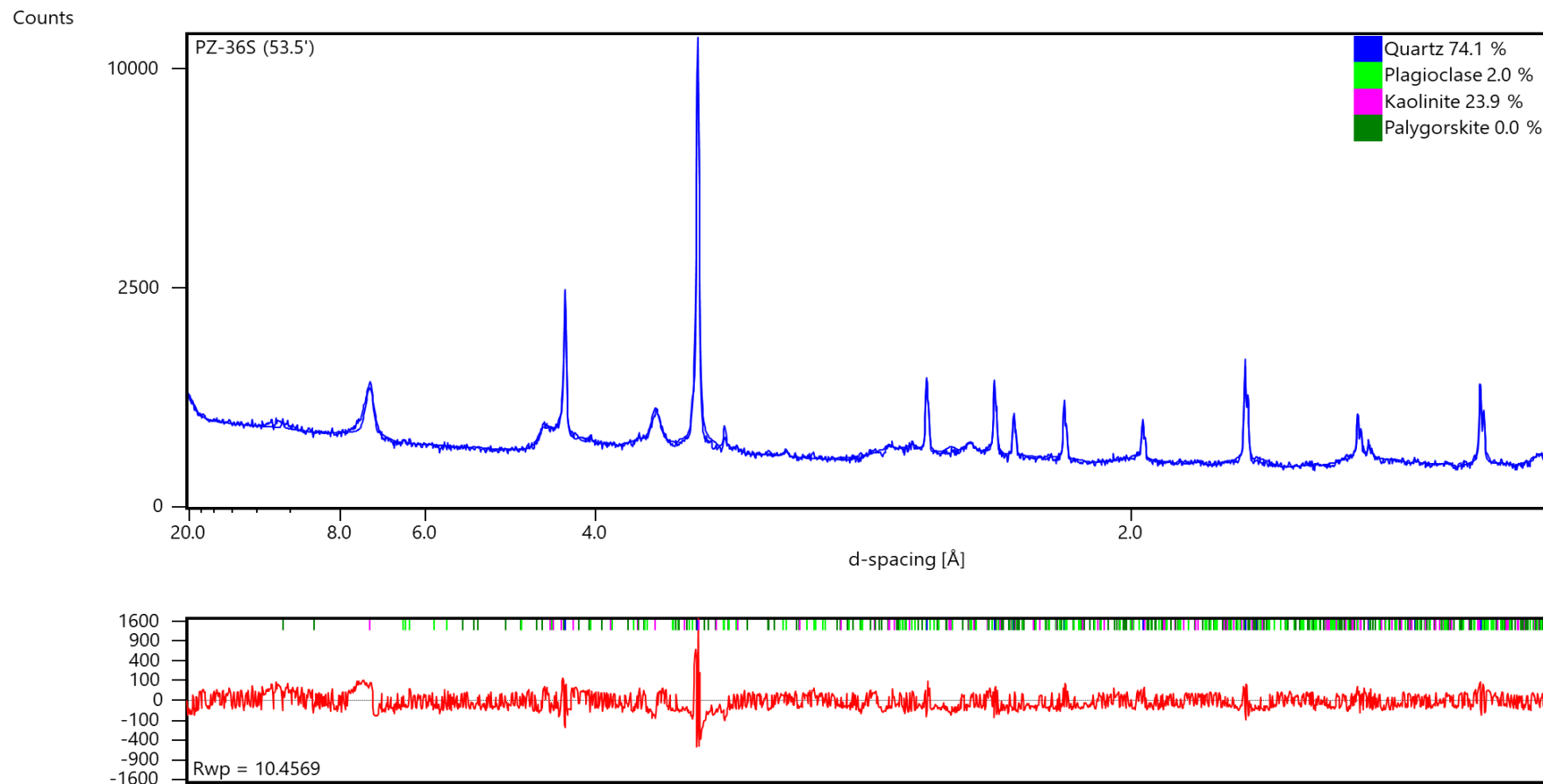
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

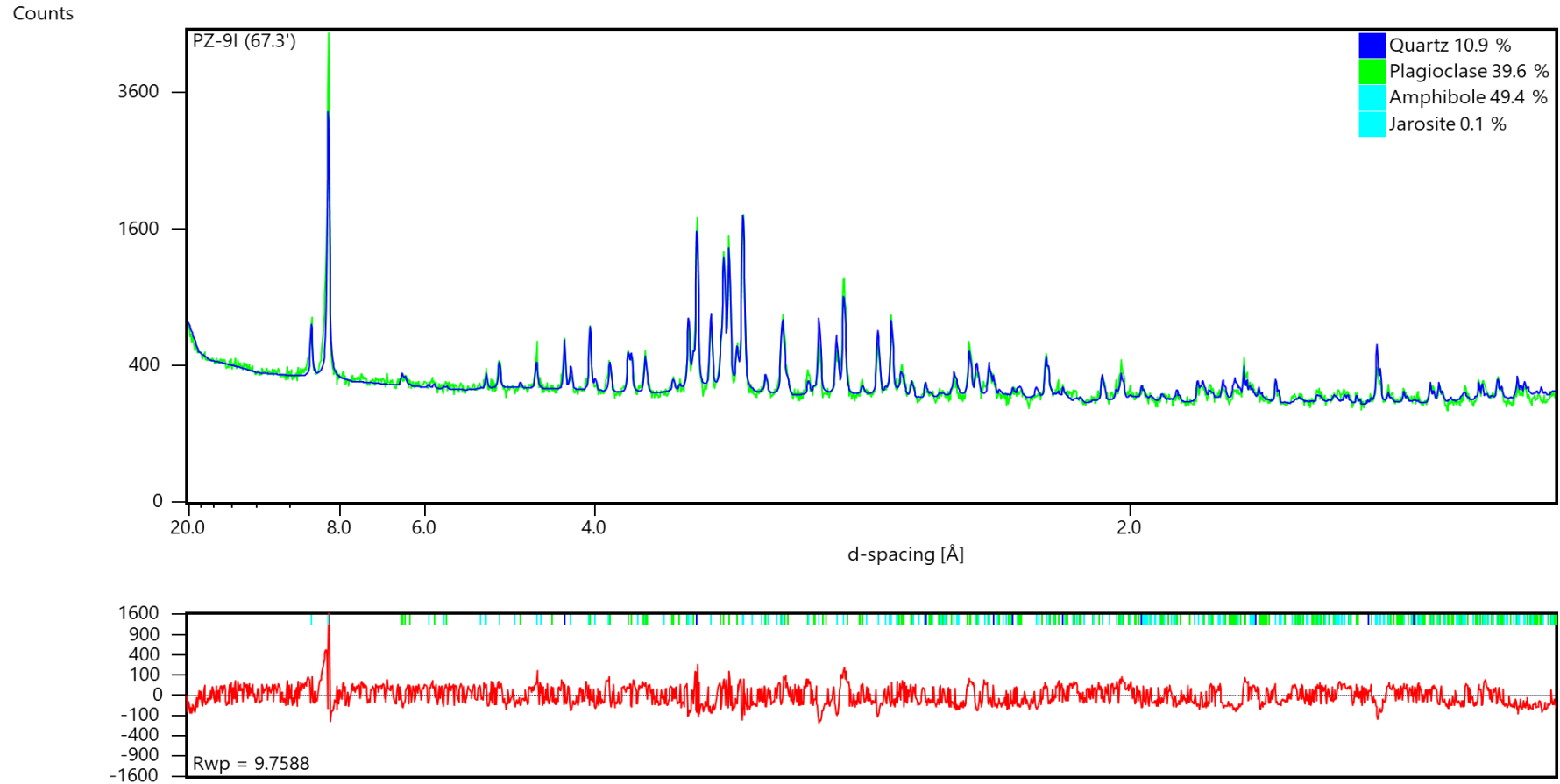
Mineral/Compound	Approximate Formula
Quartz	$\text{SiO}_2$
Plagioclase	$(\text{Ca,Na})(\text{Al,Si})_4\text{O}_8$
Biotite	$\text{K}(\text{Mg,Fe})_3[\text{AlSi}_3\text{O}_{10}(\text{OH,F})_2]$
Kaolinite	$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$
Palygorskite	$(\text{Mg,Al})_2\text{Si}_4\text{O}_{10}(\text{OH}) \cdot 4(\text{H}_2\text{O})$
Amphibole	$\text{Ca}_2(\text{Mg, Fe, Al})_5(\text{Al, Si})_8\text{O}_{22}(\text{OH})_2$
Jarosite	$\text{KFe}_3(\text{OH})_6(\text{SO}_4)_2$
Sepiolite	$\text{Mg}_4\text{Si}_6\text{O}_{15}(\text{OH})_2 \cdot 6\text{H}_2\text{O}$
Montmorillonite	$(\text{Na,Ca})_{0.33}(\text{Al,Mg})_2(\text{Si}_4\text{O}_{10})(\text{OH})_2 \cdot n\text{H}_2\text{O}$
Talc	$\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$
Chlorite-Smectite	$(\text{Mg}_5\text{Al})(\text{AlSi}_3\text{O}_{10})(\text{OH})_8 - (\text{Na,Ca})_{0.33}(\text{Al,Mg})_2(\text{Si}_4\text{O}_{10})(\text{OH})_2 \cdot n\text{H}_2\text{O}$
Goethite	$\text{FeO}(\text{OH})$



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



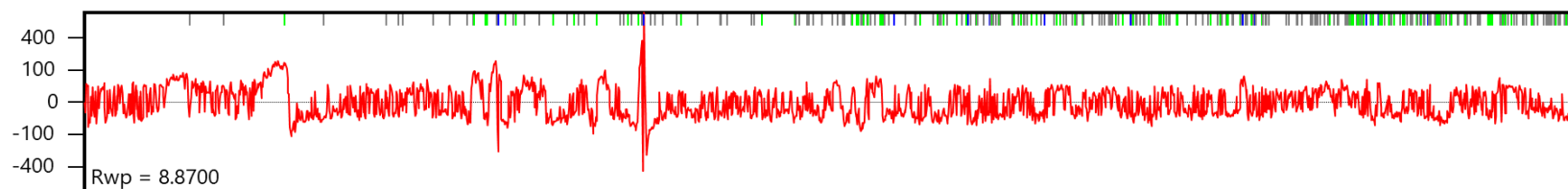
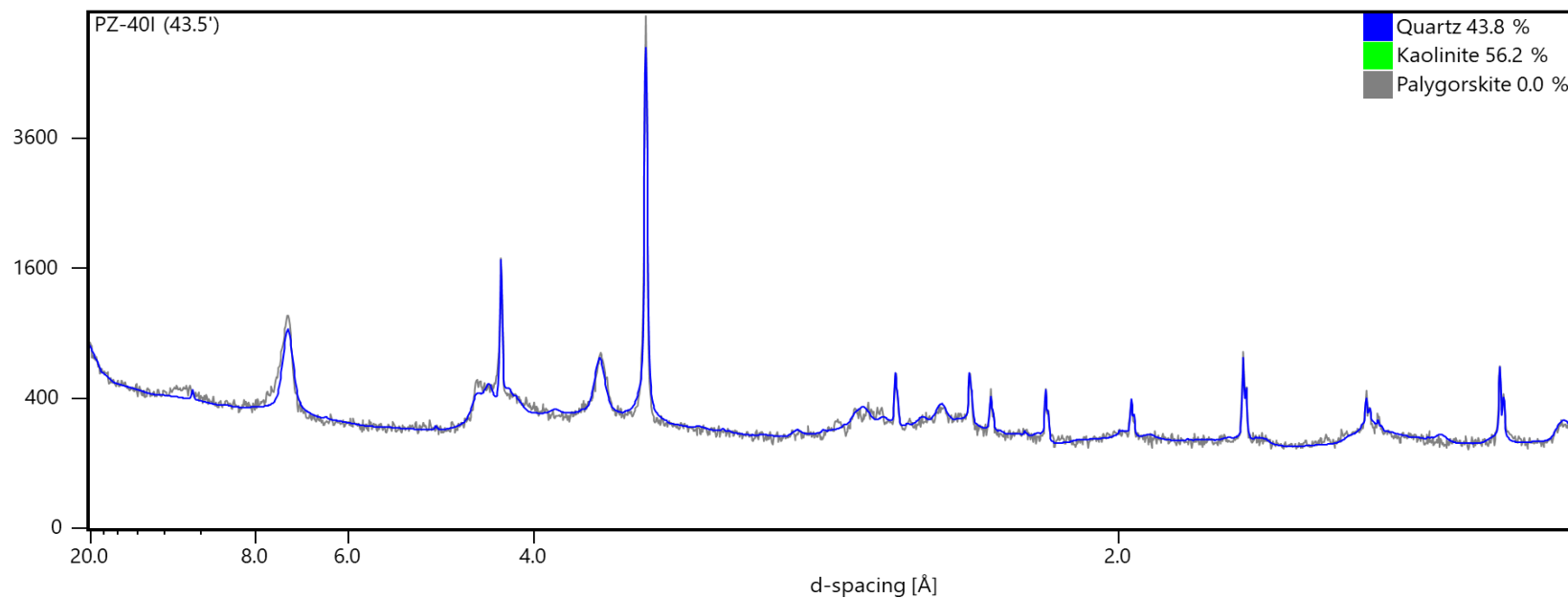
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



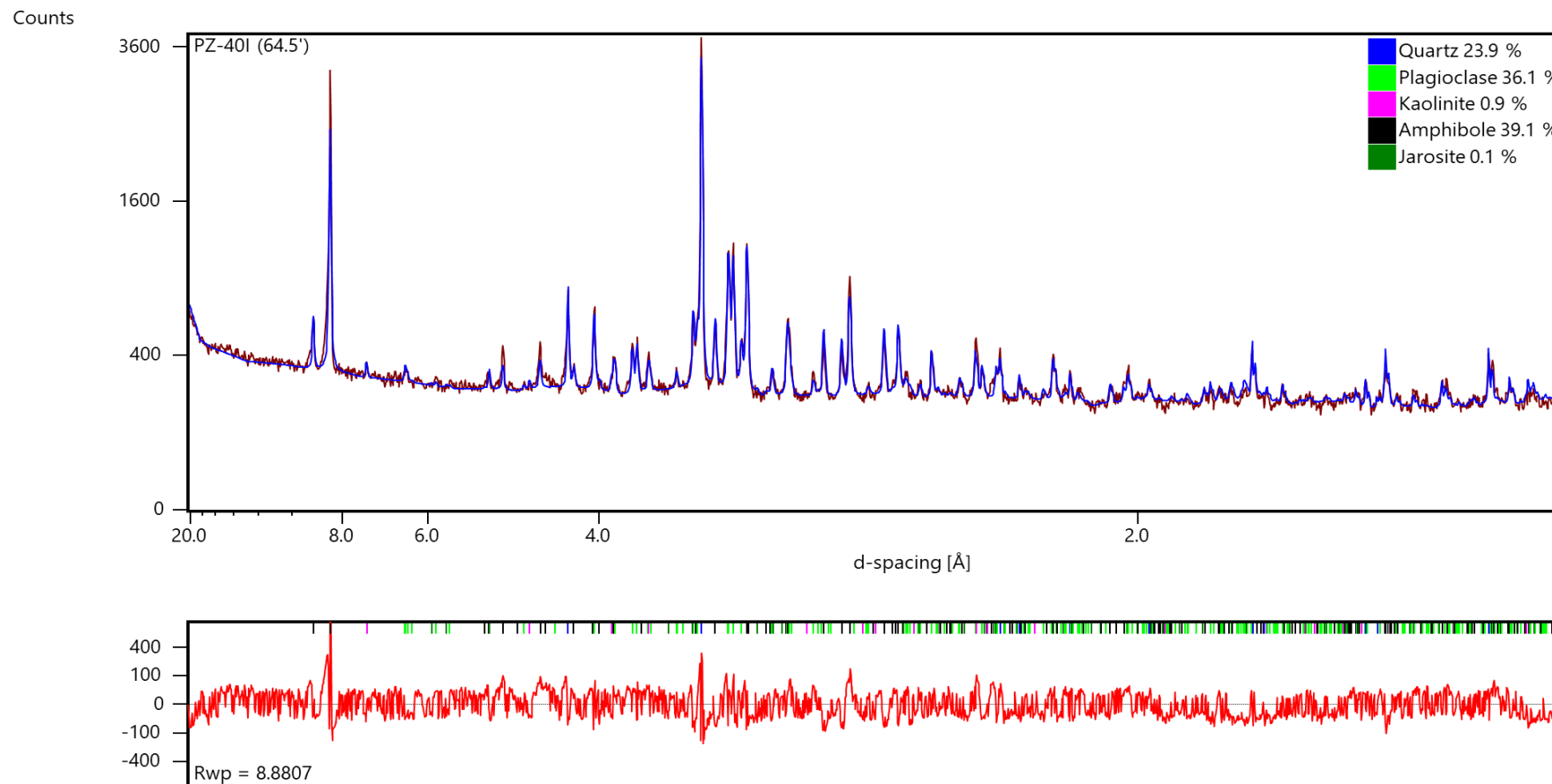
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



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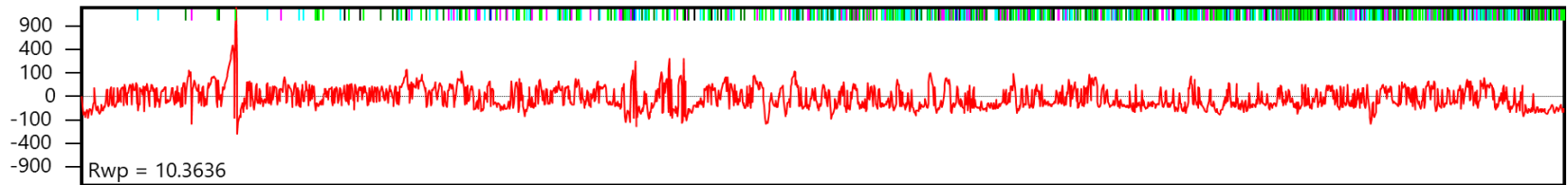
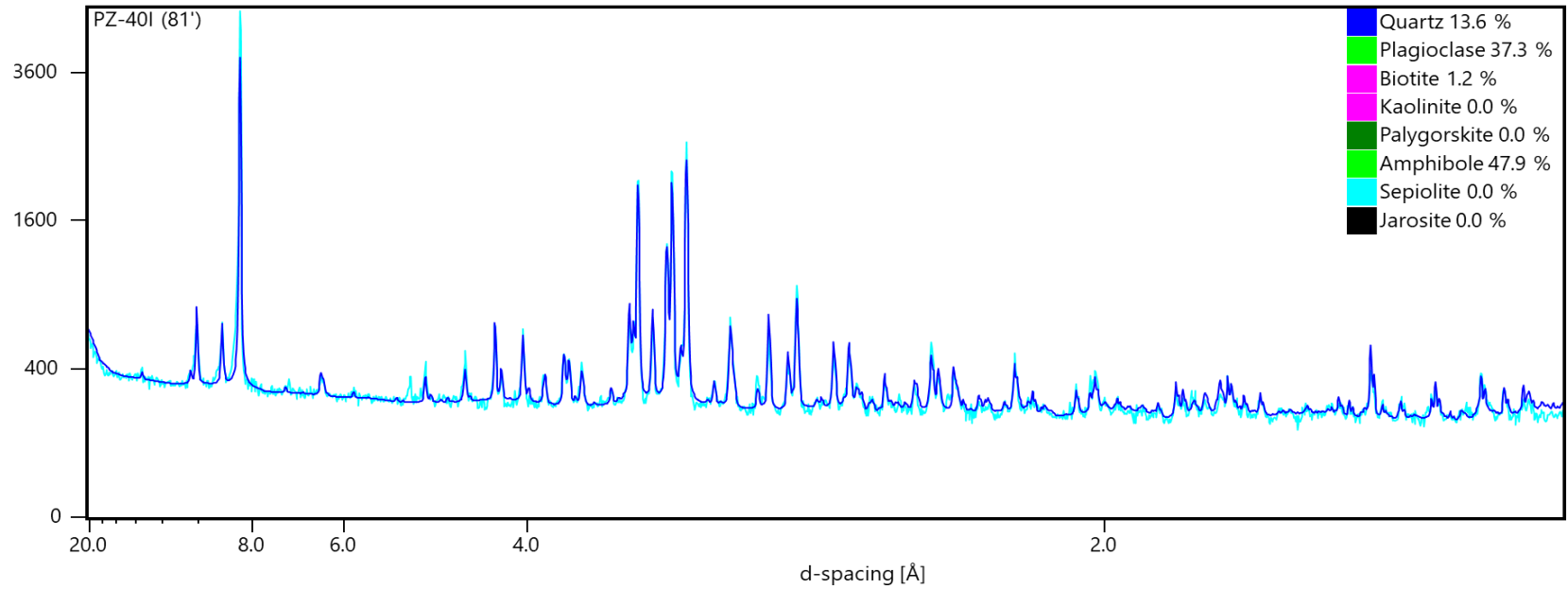


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

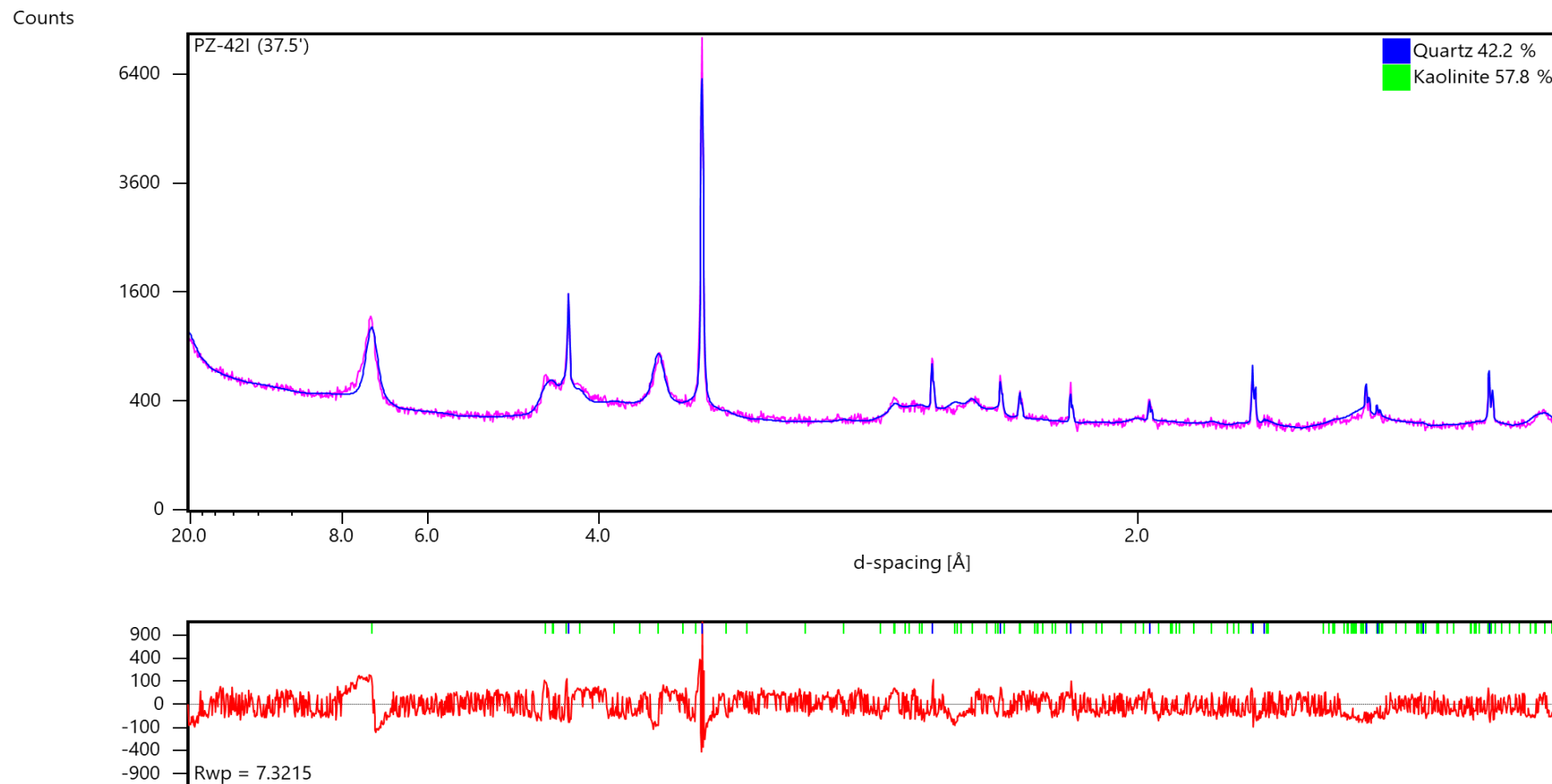


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

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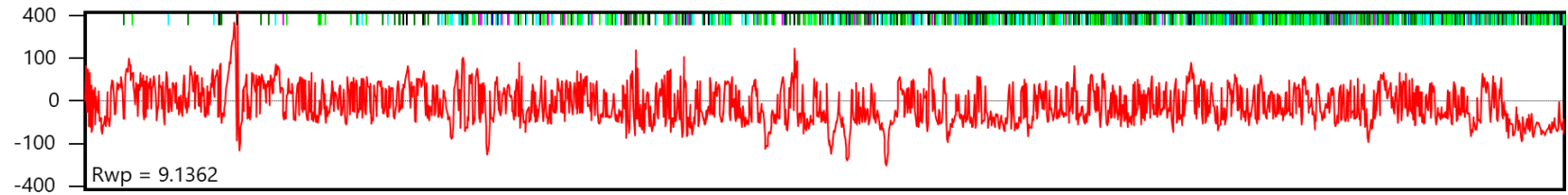
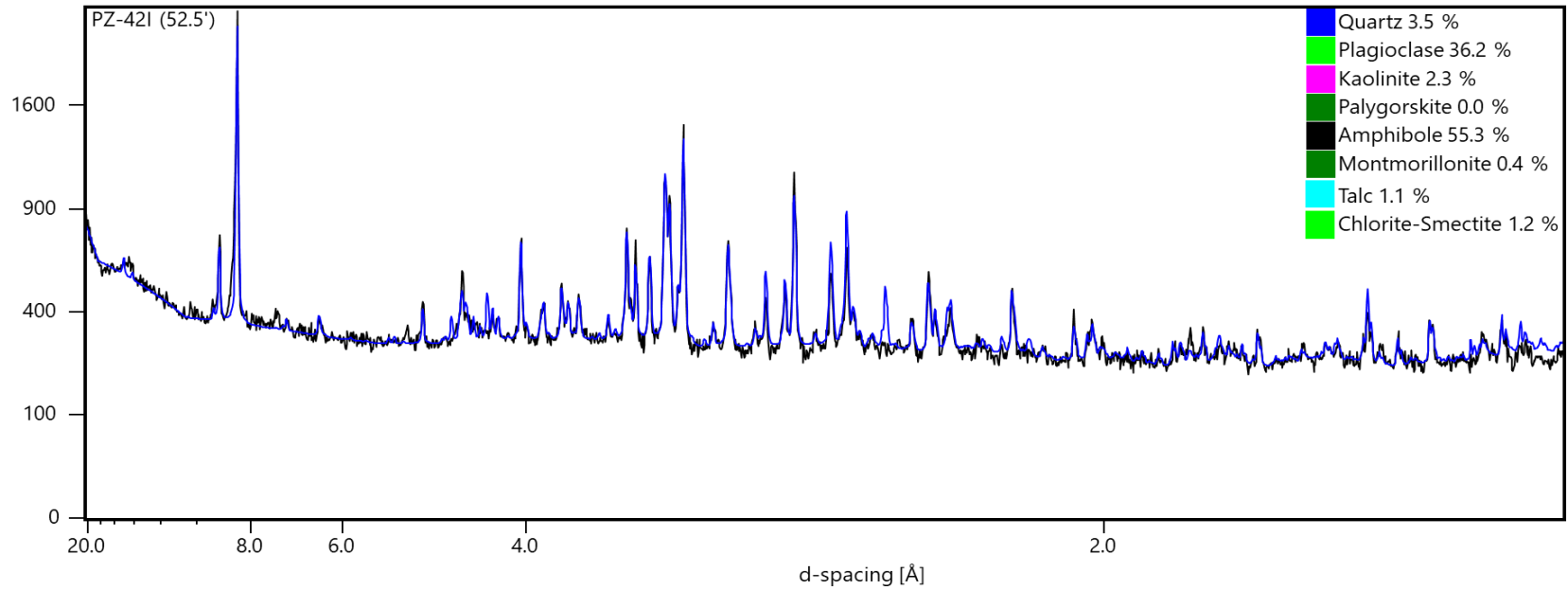


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



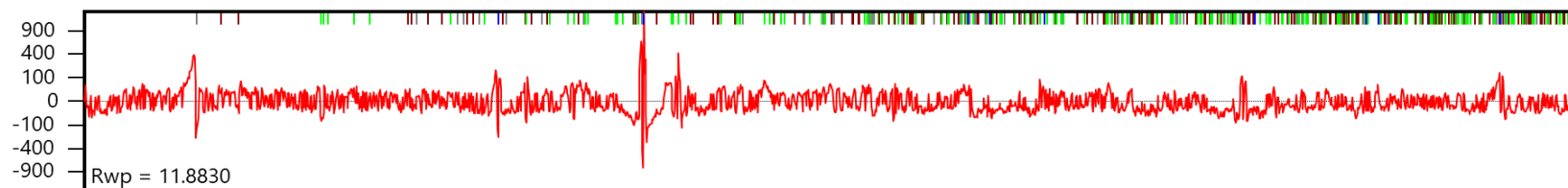
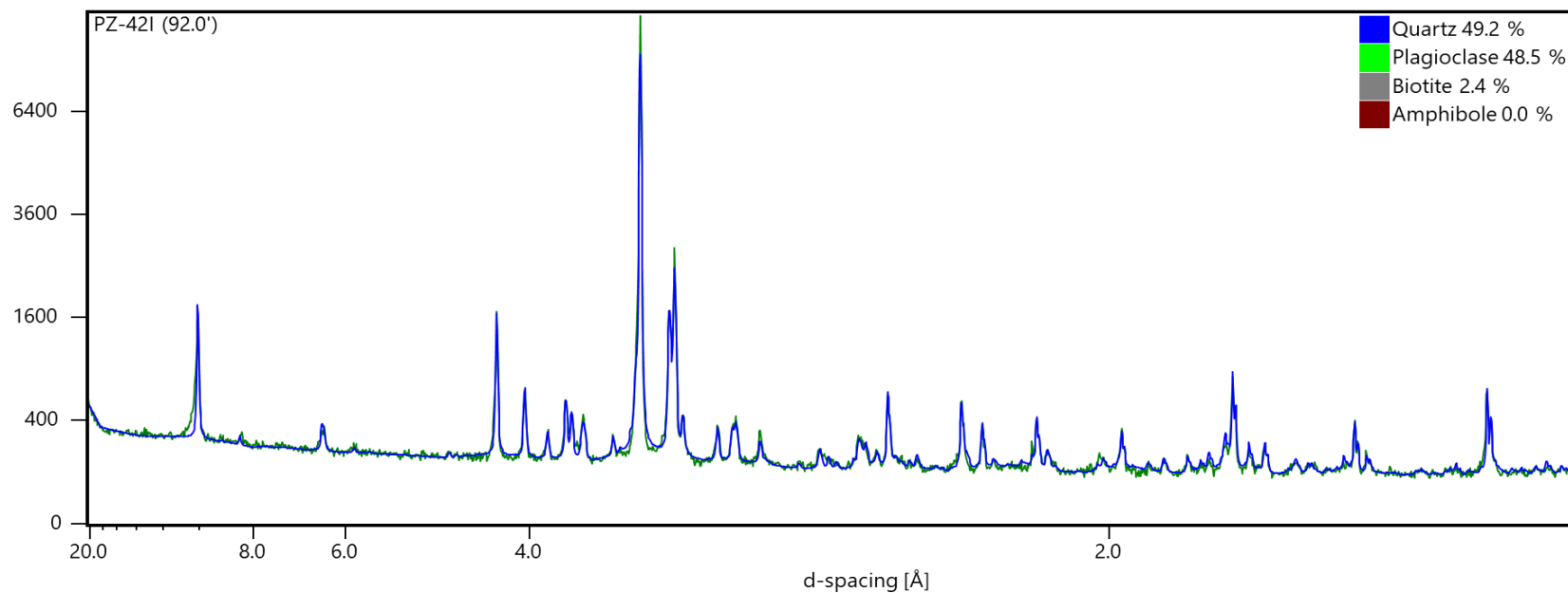
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

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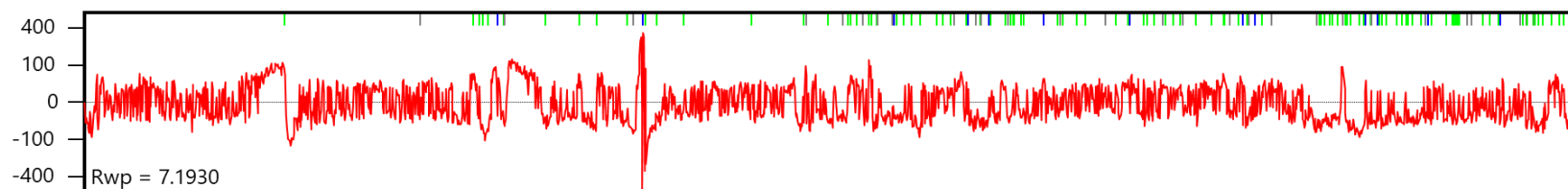
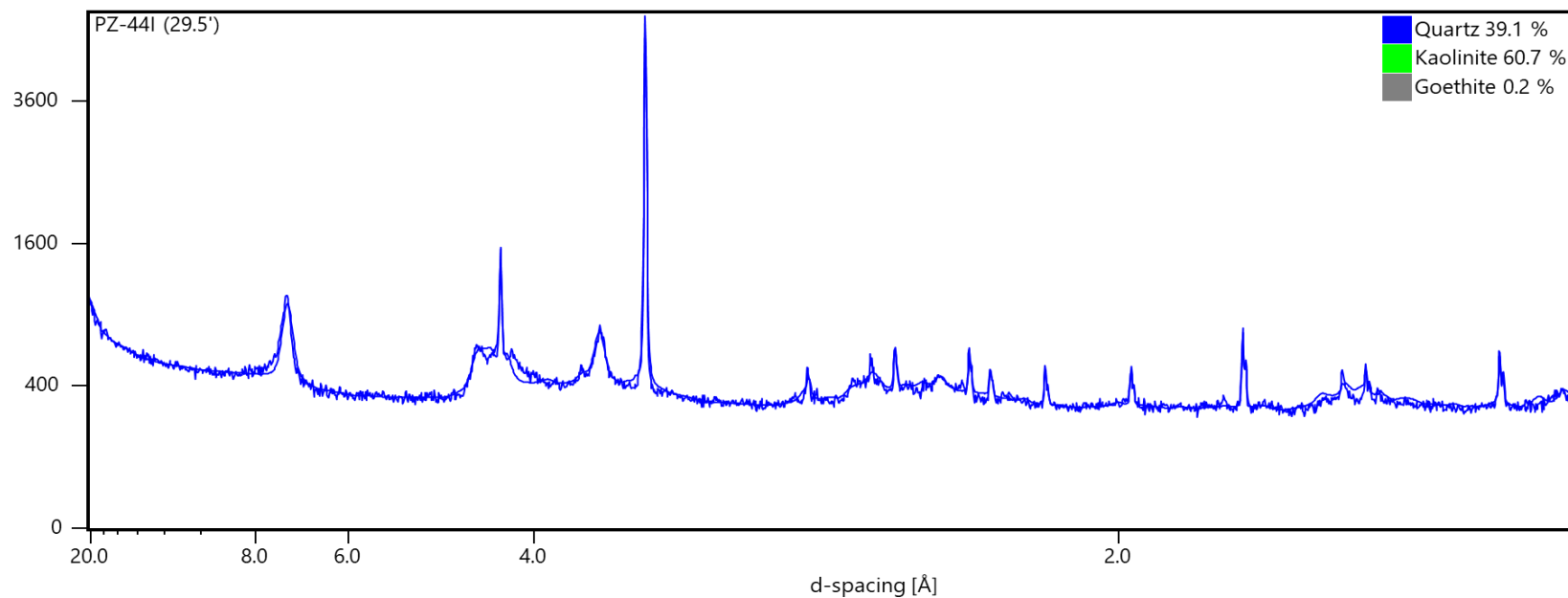
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

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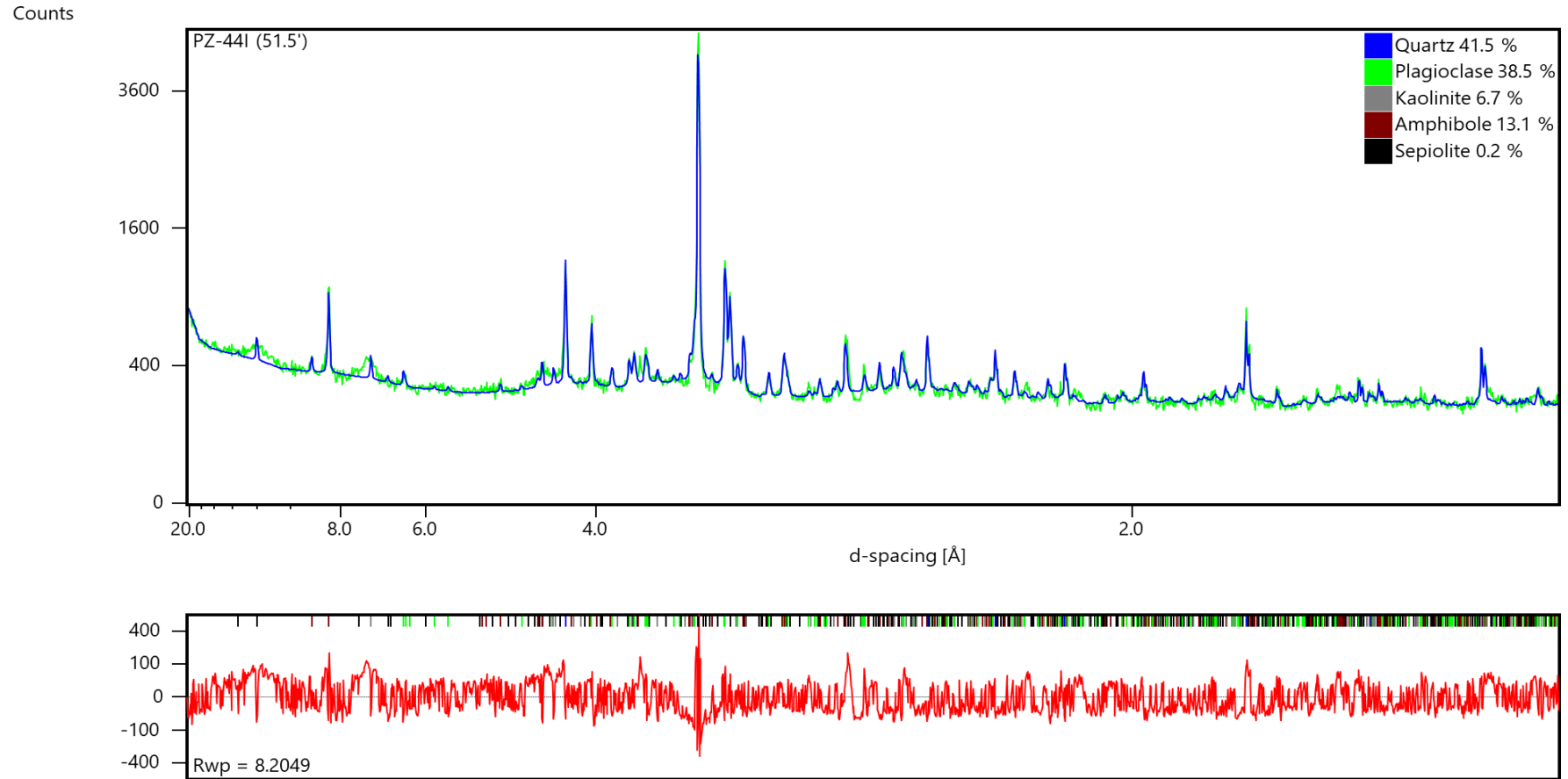


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

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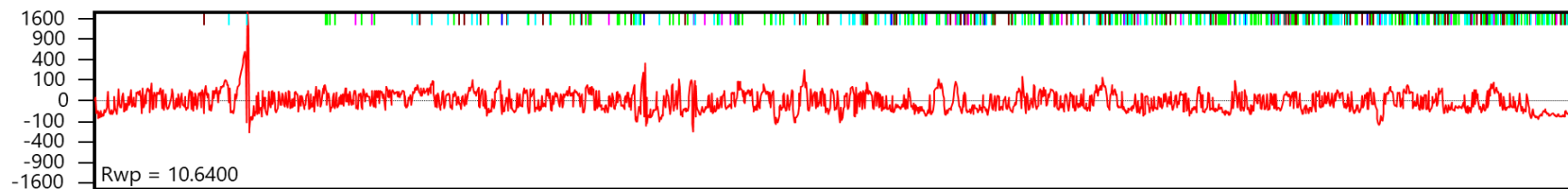
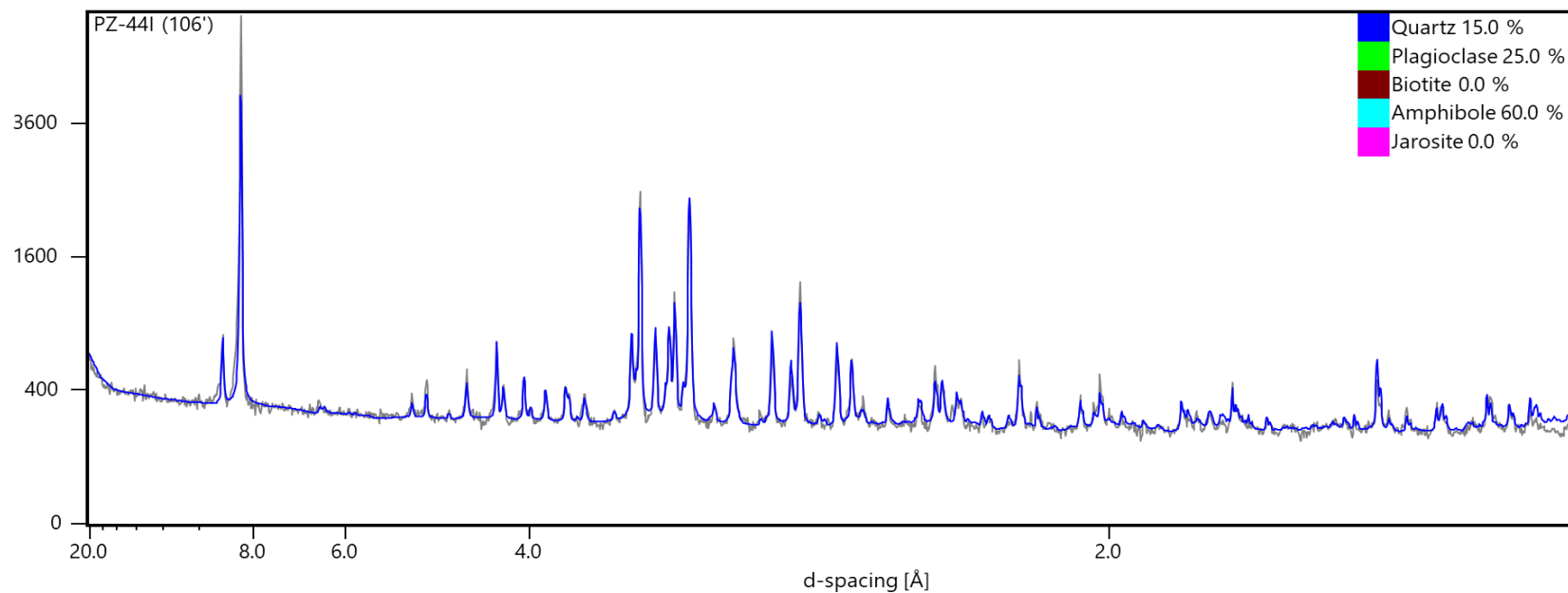
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).



Counts



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement. The lower red curve is the difference plot with the weighted R profile value (Rwp).

**APPENDIX C**

## USGS Open-File Report



# **Geochemical and Mineralogical Maps for Soils of the Conterminous United States**

By David B. Smith, William F. Cannon, Laurel G. Woodruff, Federico Solano, and Karl J. Ellefsen

Open-File Report 2014–1082

**U.S. Department of the Interior  
U.S. Geological Survey**

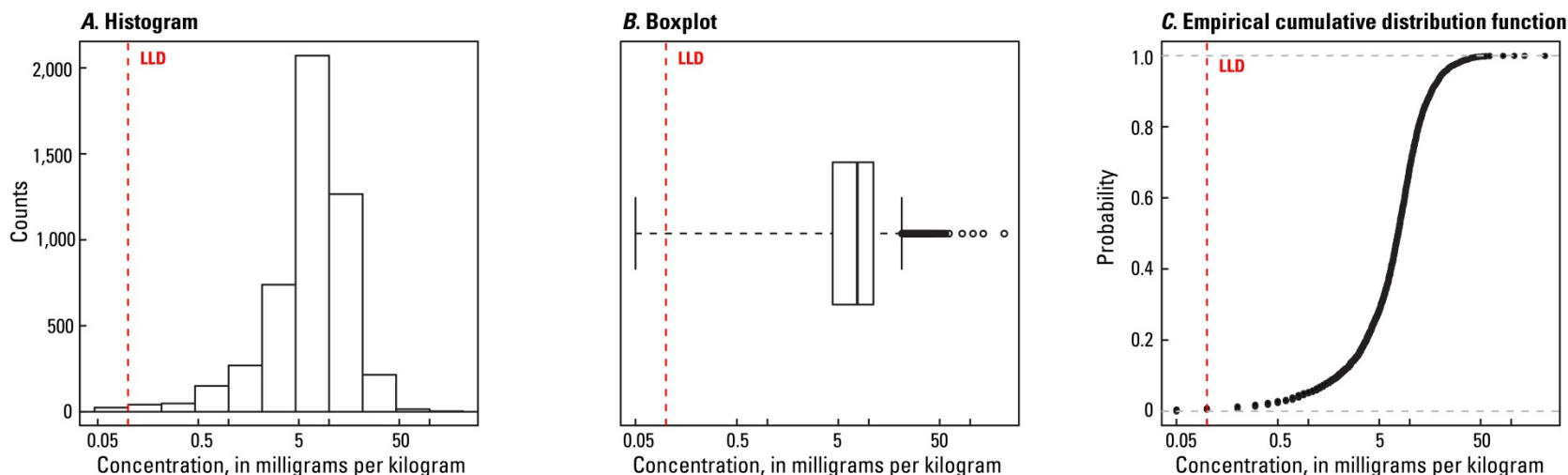
**This is an excerpt from the original document.**

It was downloaded from [mrddata.usgs.gov/soilgeochemistry](http://mrddata.usgs.gov/soilgeochemistry);

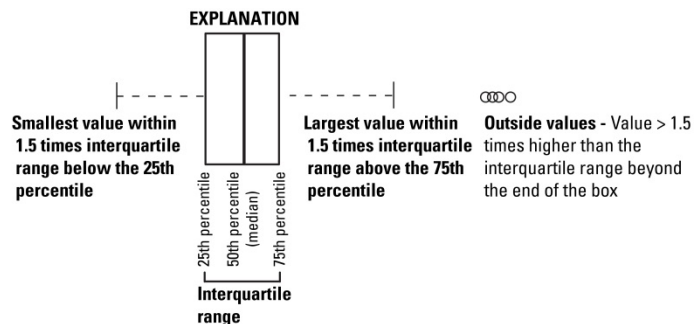
A link to download the full document (U.S. Geological Survey Open-File Report 2014-1082, 400 pages, 170 MB) can be found there or at <http://pubs.usgs.gov/of/2014/1082>.

These maps and statistical graphics were derived from data published in U.S. Geological Survey Data Series 801, downloadable from <http://pubs.usgs.gov/ds/801>.

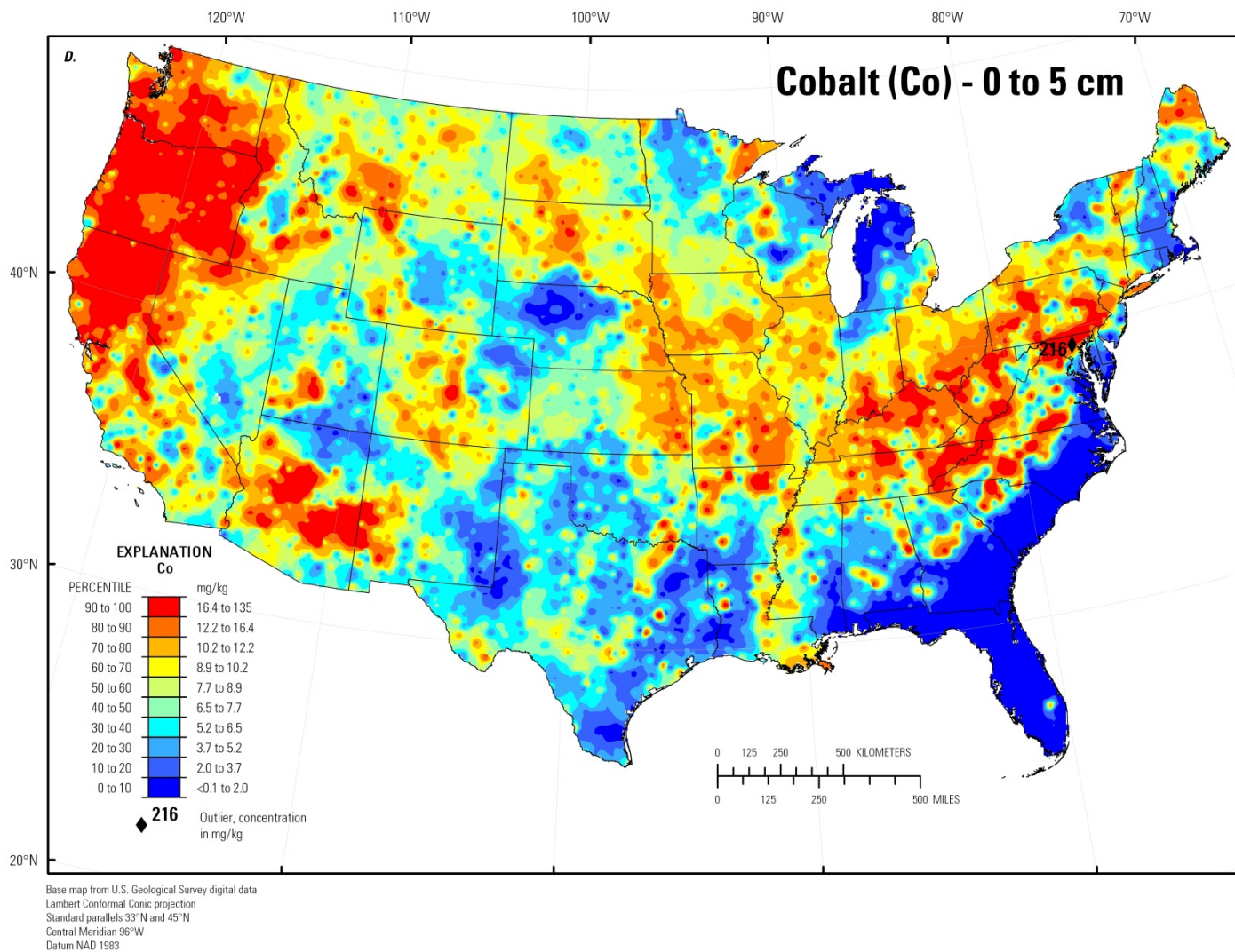
### Cobalt (Co) in soil collected from a depth of 0 to 5 centimeters



Number of samples = 4,841  
 LLD = 0.1 milligrams per kilogram  
 Number below LLD = 24  
 Minimum = <0.1 milligrams per kilogram  
 5 percentile = 0.9 milligrams per kilogram  
 25 percentile = 4.4 milligrams per kilogram  
 50 percentile = 7.7 milligrams per kilogram  
 75 percentile = 11.1 milligrams per kilogram  
 95 percentile = 21.2 milligrams per kilogram  
 Maximum = 216 milligrams per kilogram  
 MAD = 4.89 milligrams per kilogram  
 Robust CV = 63.5 %

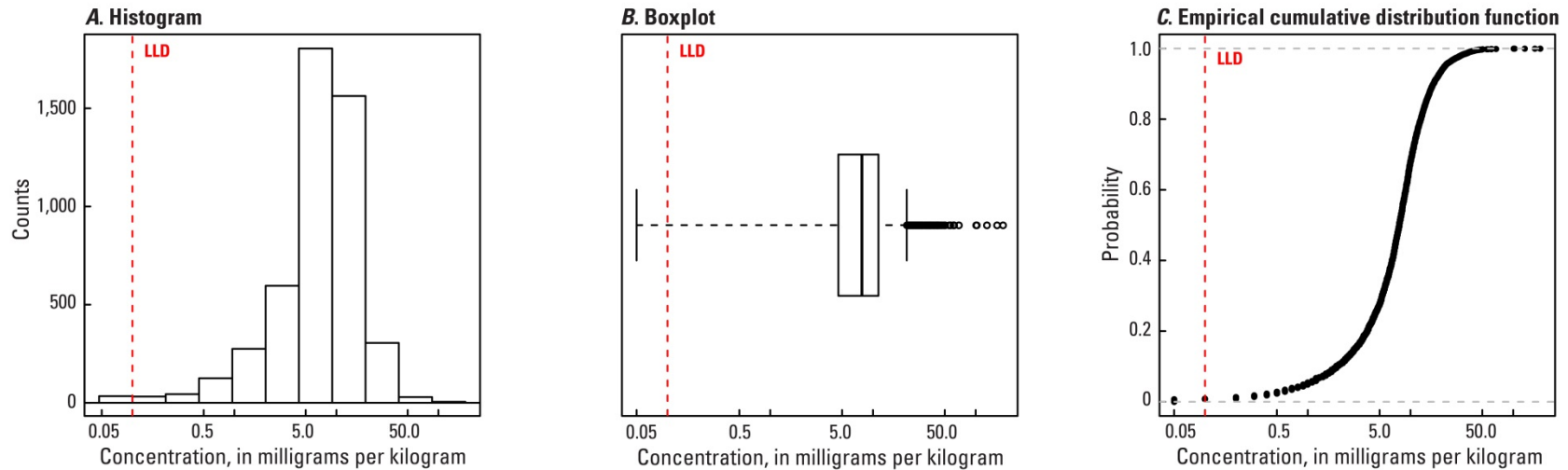


**Figure 41.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).

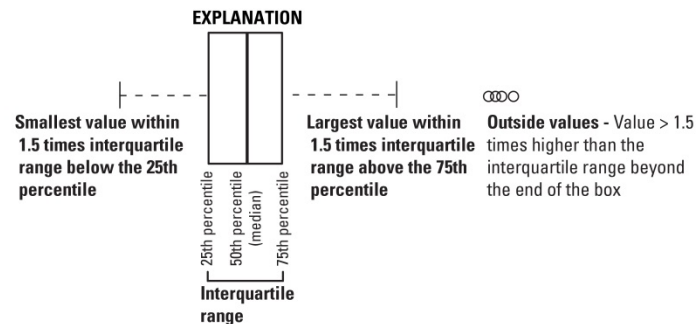


**Figure 41.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram; cm, centimeters).—Continued

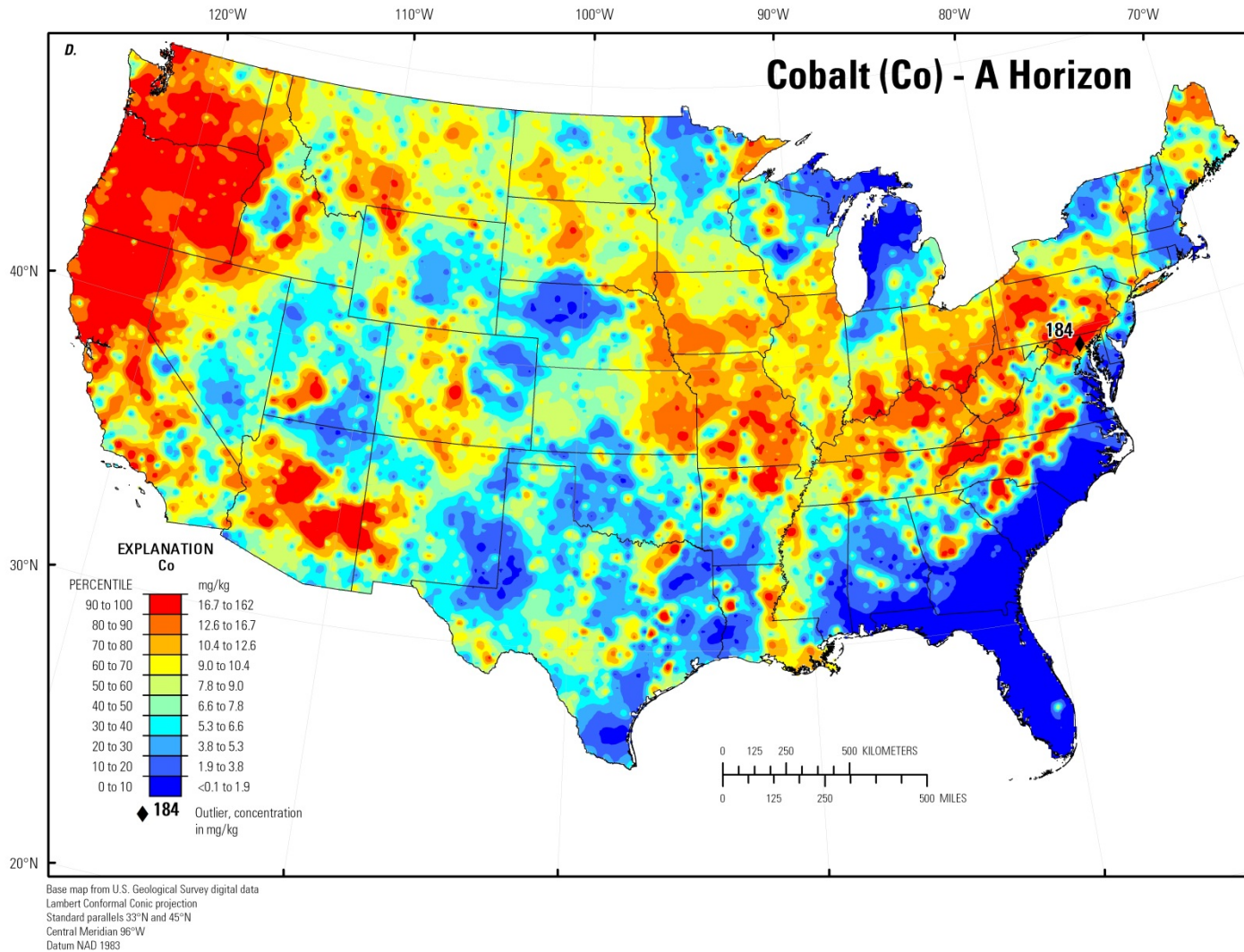
## Cobalt (Co) in soil A horizon



Number of samples = 4,813  
 LLD = 0.1 milligrams per kilogram  
 Number below LLD = 34  
 Minimum = <0.1 milligrams per kilogram  
 5 percentile = 1.0 milligram per kilogram  
 25 percentile = 4.6 milligrams per kilogram  
 50 percentile = 7.8 milligrams per kilogram  
 75 percentile = 11.3 milligrams per kilogram  
 95 percentile = 21.6 milligrams per kilogram  
 Maximum = 184 milligrams per kilogram  
 MAD = 4.89 milligrams per kilogram  
 Robust CV = 62.7 %



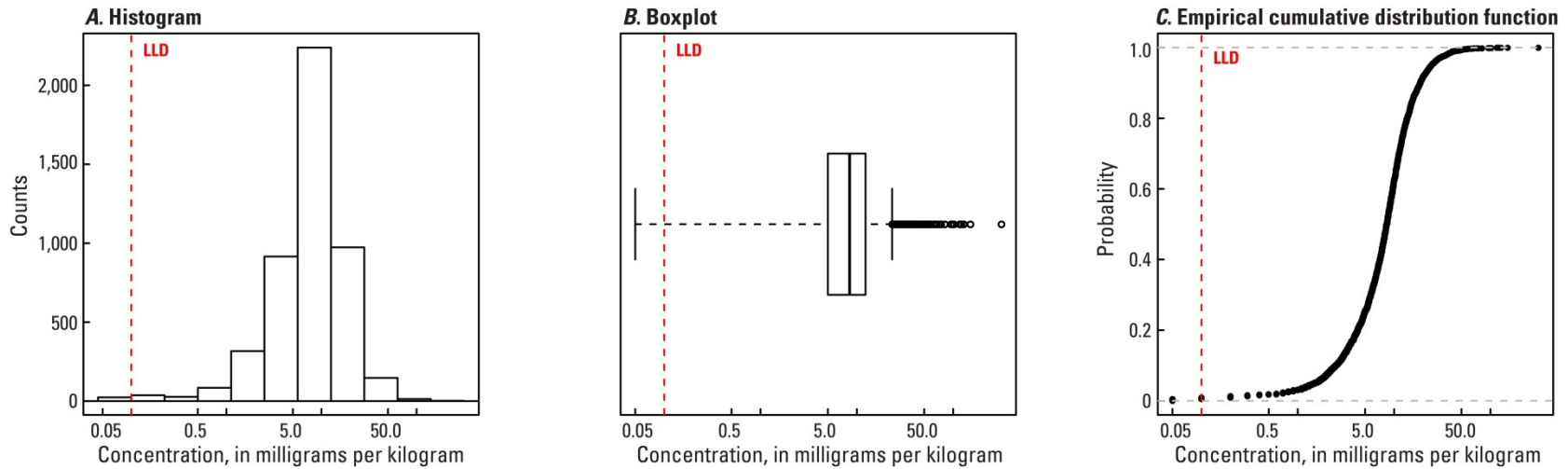
**Figure 42.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).



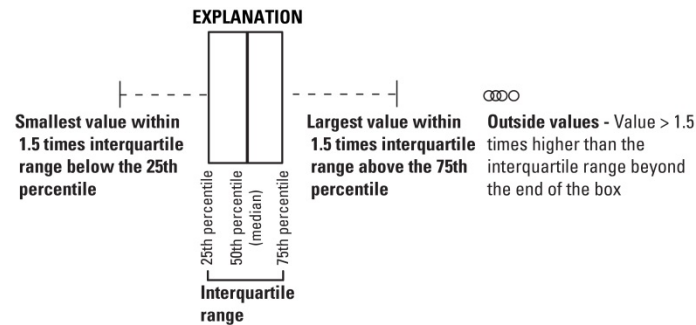
**Figure 42.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in the soil A horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued



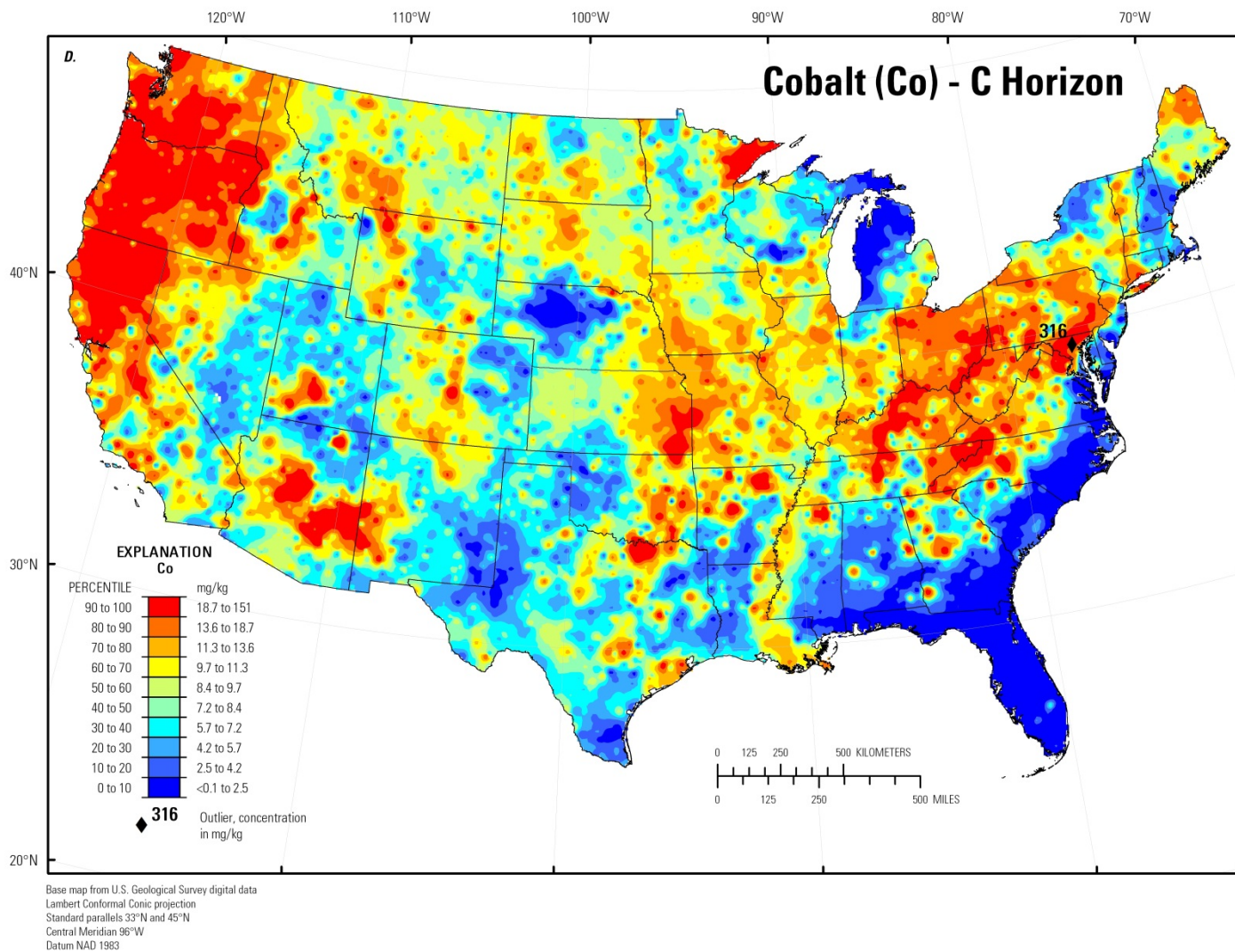
### Cobalt (Co) in soil C horizon



Number of samples = 4,780  
 LLD = 0.1 milligrams per kilogram  
 Number below LLD = 24  
 Minimum = <0.1 milligrams per kilogram  
 5 percentile = 1.5 milligrams per kilogram  
 25 percentile = 5.0 milligrams per kilogram  
 50 percentile = 8.4 milligrams per kilogram  
 75 percentile = 12.3 milligrams per kilogram  
 95 percentile = 24.4 milligrams per kilogram  
 Maximum = 316 milligrams per kilogram  
 MAD = 5.34 milligrams per kilogram  
 Robust CV = 63.5 %



**Figure 43.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).



**Figure 43.** A, Histogram and summary statistics; B, Boxplot; C, Empirical cumulative distribution function; and D, Distribution of cobalt (Co) in the soil C horizon, conterminous United States (LLD, lower limit of determination; MAD, median absolute deviation; CV, coefficient of variation; mg/kg, milligrams per kilogram).—Continued

**National Water-Quality Assessment Program**

**Naturally Occurring Contaminants in the Piedmont and  
Blue Ridge Crystalline-Rock Aquifers and Piedmont Early  
Mesozoic Basin Siliciclastic-Rock Aquifers, Eastern  
United States, 1994–2008**



Scientific Investigations Report 2013–5072

**Cover:** Photo showing Whiteside tonalite (rock types quartz diorite and granodiorite, lithologic group mafic igneous rocks and their metamorphic equivalents, lithochemical subgroup 41). Photograph by William Burton, U.S. Geological Survey

# **Naturally Occurring Contaminants in the Piedmont and Blue Ridge Crystalline-Rock Aquifers and Piedmont Early Mesozoic Basin Siliciclastic-Rock Aquifers, Eastern United States, 1994–2008**

By Melinda J. Chapman, Charles A. Cravotta III, Zoltan Szabo, and Bruce D. Lindsey

National Water-Quality Assessment Program

Scientific Investigations Report 2013–5072

**U.S. Department of the Interior**  
**U.S. Geological Survey**

**U.S. Department of the Interior**  
SALLY JEWELL, Secretary

**U.S. Geological Survey**  
Suzette M. Kimball, Acting Director

U.S. Geological Survey, Reston, Virginia: 2013

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## Foreword

The U.S. Geological Survey (USGS) is committed to providing the Nation with reliable scientific information that helps to enhance and protect the overall quality of life and that facilitates effective management of water, biological, energy, and mineral resources (<http://www.usgs.gov/>). Information on the Nation's water resources is critical to ensuring long-term availability of water that is safe for drinking and recreation and is suitable for industry, irrigation, and fish and wildlife. Population growth and increasing demands for water make the availability of that water, measured in terms of quantity and quality, even more essential to the long-term sustainability of our communities and ecosystems.

The USGS implemented the National Water-Quality Assessment (NAWQA) Program in 1991 to support national, regional, State, and local information needs and decisions related to water-quality management and policy (<http://water.usgs.gov/nawqa>). The NAWQA Program is designed to answer: What is the quality of our Nation's streams and groundwater? How are conditions changing over time? How do natural features and human activities affect the quality of streams and groundwater, and where are those effects most pronounced? By combining information on water chemistry, physical characteristics, stream habitat, and aquatic life, the NAWQA Program aims to provide science-based insights for current and emerging water issues and priorities. From 1991 to 2001, the NAWQA Program completed interdisciplinary assessments and established a baseline understanding of water-quality conditions in 51 of the Nation's river basins and aquifers, referred to as Study Units ([http://water.usgs.gov/nawqa/studies/study\\_units.html](http://water.usgs.gov/nawqa/studies/study_units.html)).

In the second decade of the Program (2001–12), a major focus is on regional assessments of water-quality conditions and trends. These regional assessments are based on major river basins and principal aquifers, which encompass larger regions of the country than the Study Units. Regional assessments extend the findings in the Study Units by filling critical gaps in characterizing the quality of surface water and groundwater, and by determining water-quality status and trends at sites that have been consistently monitored for more than a decade. In addition, the regional assessments continue to build an understanding of how natural features and human activities affect water quality. Many of the regional assessments employ modeling and other scientific tools, developed on the basis of data collected at individual sites, to help extend knowledge of water quality to unmonitored, yet comparable areas within the regions. The models thereby enhance the value of our existing data and our understanding of the hydrologic system. In addition, the models are useful in evaluating various resource-management scenarios and in predicting how our actions, such as reducing or managing nonpoint and point sources of contamination, land conversion, and altering flow and (or) pumping regimes, are likely to affect water conditions within a region.

Other activities planned during the second decade include continuing national syntheses of information on pesticides, volatile organic compounds (VOCs), nutrients, trace elements, and aquatic ecology; and continuing national topical studies on the fate of agricultural chemicals, effects of urbanization on stream ecosystems, bioaccumulation of mercury in stream ecosystems, effects of nutrient enrichment on stream ecosystems, and transport of contaminants to public-supply wells.

The USGS aims to disseminate credible, timely, and relevant science information to address practical and effective water-resource management and strategies that protect and restore water quality. We hope this NAWQA publication will provide you with insights and information to meet your needs, and will foster increased citizen awareness and involvement in the protection and restoration of our Nation's waters.

The USGS recognizes that a national assessment by a single program cannot address all water-resource issues of interest. External coordination at all levels is critical for cost-effective management, regulation, and conservation of our Nation's water resources. The NAWQA Program, therefore, depends on advice and information from other agencies—Federal, State, regional, interstate, Tribal, and local—as well as nongovernmental organizations, industry, academia, and other stakeholder groups. Your assistance and suggestions are greatly appreciated.

William H. Werkheiser  
USGS Associate Director for Water



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7. Number of samples with specified ranges of uranium and radium-226 concentrations for 99 water samples for which gross alpha-particle activity was determined .....	60

## Conversion Factors, Datums

Inch/Pound to SI

Multiply	By	To obtain
Length		
foot (ft)	0.305	meter
mile (mi)	1.609	kilometer (km)
Area		
square foot (ft <sup>2</sup> )	929	square centimeter (cm <sup>2</sup> )
square foot (ft <sup>2</sup> )	0.093	square meter (m <sup>2</sup> )
square mile (mi <sup>2</sup> )	259	hectare (ha)
square mile (mi <sup>2</sup> )	2.59	square kilometer (km <sup>2</sup> )
Volume		
cubic foot (ft <sup>3</sup> )	28.32	cubic decimeter (dm <sup>3</sup> )
cubic foot (ft <sup>3</sup> )	0.028	cubic meter (m <sup>3</sup> )
cubic mile (mi <sup>3</sup> )	4.168	cubic kilometer (km <sup>3</sup> )
acre-foot (acre-ft)	1,233	cubic meter (m <sup>3</sup> )
acre-foot (acre-ft)	0.001	cubic hectometer (hm <sup>3</sup> )
Flow rate		
acre-foot per day (acre-ft/d)	0.014	cubic meter per second (m <sup>3</sup> /s)
acre-foot per year (acre-ft/yr)	1,233	cubic meter per year (m <sup>3</sup> /yr)
acre-foot per year (acre-ft/yr)	0.001	cubic hectometer per year (hm <sup>3</sup> /yr)
Radioactivity		
picocurie per liter (pCi/L)	0.037	becquerel per liter (Bq/L)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$^{\circ}\text{F}=(1.8\times^{\circ}\text{C})+32$$

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$^{\circ}\text{C}=(^{\circ}\text{F}-32)/1.8$$

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Altitude, as used in this report, refers to distance above a vertical datum.

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius ( $\mu\text{S}/\text{cm}$  at 25 °C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter ( $\mu\text{g}/\text{L}$ ).

## Acronyms and Abbreviations

acfbclusur1	Apalachicola-Chattahoochee Flint River Basin urban land-use study
acfbclusur2	Apalachicola-Chattahoochee Flint River Basin urban land-use study
Al	aluminum
albesus8	Albemarle-Pamlico Drainages major aquifer study
AMCL	alternative maximum contaminant level
ANOVA	analysis-of-variance
Ba	barium
C	carbon
Ca	calcium
Cl	chloride
CLSD	clastic sedimentary rocks
CLSDF	feldspar-rich clastic sedimentary rocks
CLSDLAC	clastic lacustrine/evaporite sedimentary rocks
CLSDMT	metamorphosed clastic sedimentary rocks
CLSDQ	quartz-rich sedimentary rocks
CZmd	Cambrian/Late Proterozoic metamudstone and meta-argillite
CZms	Cambrian/Late Proterozoic mica schist
CZph	Cambrian/Late Proterozoic phyllite and schist
delrsus1	Delaware River Basin major aquifer study
DO	dissolved oxygen
Fe	iron
GEOLEX	USGS National Geologic Map Database Geologic Names Lexicon
GIS	geographic information system
H	hydrogen
HHB	human health benchmark
HBSL	health-based screening level
HFO	hydrous ferric oxide
HCRL	highest common reporting limit
IGMTF	felsic igneous and metamorphic rocks
IGMTI	intermediate igneous or metamorphic rocks
IGMTM	mafic igneous and metamorphic rocks
K	potassium
KANA	Kanawha/New River Basins
Lc	critical level of detection

linjsus3	Long Island/New Jersey Study Unit major aquifer study
Isussus2	Lower Susquehanna River Basin agricultural land-use study
MCL	maximum contaminant level
Mg	magnesium
µg/L	micrograms per liter
mg/L	milligrams per liter
Mn	manganese
MTQ	quartz-rich metamorphic rocks
Na	Sodium
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NAWQA	U.S. Geological Survey National Water-Quality Assessment Program
NJDEP	New Jersey Department of Environmental Protection
NLCD 1992	National Land Cover Dataset 1992
NURE	U.S. Geological Survey National Uranium Resource Evaluation Program
NWQL	U.S. Geological Survey National Water Quality Laboratory
OHSU	Oregon Health and Science University
O	oxygen
P	phosphorus
PBR	Piedmont and Blue Ridge
PC	principal components
PCA	principal components analysis
Ra	radium
S	sulfur
SC	specific conductance
Si	silica
SI	mineral saturation index
SMCL	secondary maximum contaminant level
SSMDC	sample-specific minimum-detection concentration
TDS	total dissolved solids
ULMAF	ultramafic rocks
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey





# Naturally Occurring Contaminants in the Piedmont and Blue Ridge Crystalline-Rock Aquifers and Piedmont Early Mesozoic Basin Siliciclastic-Rock Aquifers, Eastern United States, 1994–2008

By Melinda J. Chapman, Charles A. Cravotta III, Zoltan Szabo, and Bruce D. Lindsey

## Abstract

Groundwater quality and aquifer lithologies in the Piedmont and Blue Ridge Physiographic Provinces in the eastern United States vary widely as a result of complex geologic history. Bedrock composition (mineralogy) and geochemical conditions in the aquifer directly affect the occurrence (presence in rock and groundwater) and distribution (concentration and mobility) of potential naturally occurring contaminants, such as arsenic and radionuclides, in drinking water. To evaluate potential relations between aquifer lithology and the spatial distribution of naturally occurring contaminants, the crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces and the siliciclastic-rock aquifers of the Early Mesozoic basin of the Piedmont Physiographic Province were divided into 14 lithologic groups, each having from 1 to 16 lithochemical subgroups, based on primary rock type, mineralogy, and weathering potential. Groundwater-quality data collected by the U.S. Geological Survey (USGS) National Water-Quality Assessment (NAWQA) Program from 1994 through 2008 from 346 wells and springs in various hydrogeologic and land-use settings from Georgia through New Jersey were compiled and analyzed for this study. Analyses for most constituents were for filtered samples, and, thus, the compiled data consist largely of dissolved concentrations. Concentrations were compared to criteria for protection of human health, such as U.S. Environmental Protection Agency (USEPA) drinking water maximum contaminant levels and secondary maximum contaminant levels or health-based screening levels developed by the USGS NAWQA Program in cooperation with the USEPA, the New Jersey Department of Environmental Protection, and Oregon Health & Science University. Correlations among constituent concentrations, pH, and oxidation-reduction (redox) conditions were used to infer geochemical controls on constituent mobility within the aquifers.

Of the 23 trace-element constituents evaluated, arsenic, manganese, and zinc were detected in one or more water

samples at concentrations greater than established human health-based criteria. Arsenic concentrations typically were less than 1 microgram per liter ( $\mu\text{g/L}$ ) in most groundwater samples; however, concentrations of arsenic greater than 1  $\mu\text{g/L}$  frequently were detected in groundwater from clastic lacustrine sedimentary rocks of the Early Mesozoic basin aquifers and from metamorphosed clastic sedimentary rocks of the Piedmont and Blue Ridge crystalline rock aquifers. Groundwater from these rock units had elevated pH compared to other rock units evaluated in this study. Of the nine samples for which arsenic concentration was greater than 10  $\mu\text{g/L}$ , six were classified as oxic and three as anoxic, and seven had pH of 7.2 or greater. Manganese concentrations typically were less than 10  $\mu\text{g/L}$  in most samples; however, 8.3 percent of samples from the Piedmont and Blue Ridge crystalline-rock aquifers and 3.0 percent of samples from the Early Mesozoic basin siliciclastic rock aquifers had manganese concentrations greater than the 300- $\mu\text{g/L}$  health-based screening level. The positive correlation of manganese with iron and ammonia and the negative correlation of manganese with dissolved oxygen and nitrate are consistent with the reductive dissolution of manganese oxides in the aquifer. Zinc concentrations typically were less than 10  $\mu\text{g/L}$  in the groundwater samples considered in the study, but 0.4 percent and 5.5 percent of the samples had concentrations greater than the health-based screening level of 2,000  $\mu\text{g/L}$  and one-tenth of the health-based screening level, respectively. The mean rank concentration of zinc in groundwater from the quartz-rich sedimentary rock lithologic group was greater than that for other lithologic groups even after eliminating samples collected from wells constructed with galvanized casing.

Approximately 90 percent of 275 groundwater samples had radon-222 concentrations that were greater than the proposed alternative maximum contaminant level of 300 picocuries per liter. In contrast, only 2.0 percent of 98 samples had combined radium (radium-226 plus radium-228) concentrations greater than the maximum contaminant level of 5.0 picocuries per liter, and 0.6 percent

of 310 samples had uranium concentrations greater than the maximum contaminant level of 30  $\mu\text{g/L}$ . Radon concentrations were highest in the Piedmont and Blue Ridge crystalline-rock aquifers, especially in granite, and elevated median concentrations were noted in the Piedmont Early Mesozoic basin aquifers, but without the extreme maximum concentrations found in the crystalline rocks (granites). Although the siliciclastic lithologies had a greater frequency of elevated uranium concentrations, radon and radium were commonly detected in water from both siliciclastic and crystalline lithologies. Uranium concentrations in groundwater from clastic sedimentary and clastic lacustrine/evaporite sedimentary lithologic groups within the Early Mesozoic basin aquifers, which had median concentrations of 3.6 and 3.1  $\mu\text{g/L}$ , respectively, generally were higher than concentrations for other siliciclastic lithologic groups, which had median concentrations less than 1  $\mu\text{g/L}$ . Although 89 percent of the 260 samples from crystalline-rock aquifers had uranium concentrations less than 1  $\mu\text{g/L}$ , 0.8 percent had uranium concentrations greater than the 30- $\mu\text{g/L}$  maximum contaminant level, and 6.5 percent had concentrations greater than 3  $\mu\text{g/L}$ .

## Introduction

Since its inception in 1991, the U.S. Geological Survey (USGS) National Water-Quality Assessment (NAWQA) Program has collected and reported information about water-quality conditions and changes in those conditions over time. From 1991 to 2001 (Cycle I), the NAWQA Program was focused on describing water-quality conditions within 51 major river basins across the United States. Interdisciplinary assessments of water chemistry, hydrology, land use, stream habitat, and aquatic life established a baseline understanding of water-quality conditions within the 51 river basins and aquifers, referred to as study units (Gilliom and others, 1995).

A major focus of the NAWQA Program during its second decade (2002–13, Cycle II) is on regional- and national-scale assessments of groundwater-quality status and trends in about one-third of the 62 principal aquifers identified by the USGS Office of Groundwater (U.S. Geological Survey, 2003; Lapham and others, 2005). A goal of the Cycle II NAWQA Regional Assessments of Principal Aquifers is to address the effects of natural features on water quality of major aquifers, including soil, geology, mineral composition, and geochemistry, especially oxidation-reduction potential (oxygen-reducing, nitrate-reducing, manganese-reducing, and iron-reducing conditions) (Lapham and others, 2005).

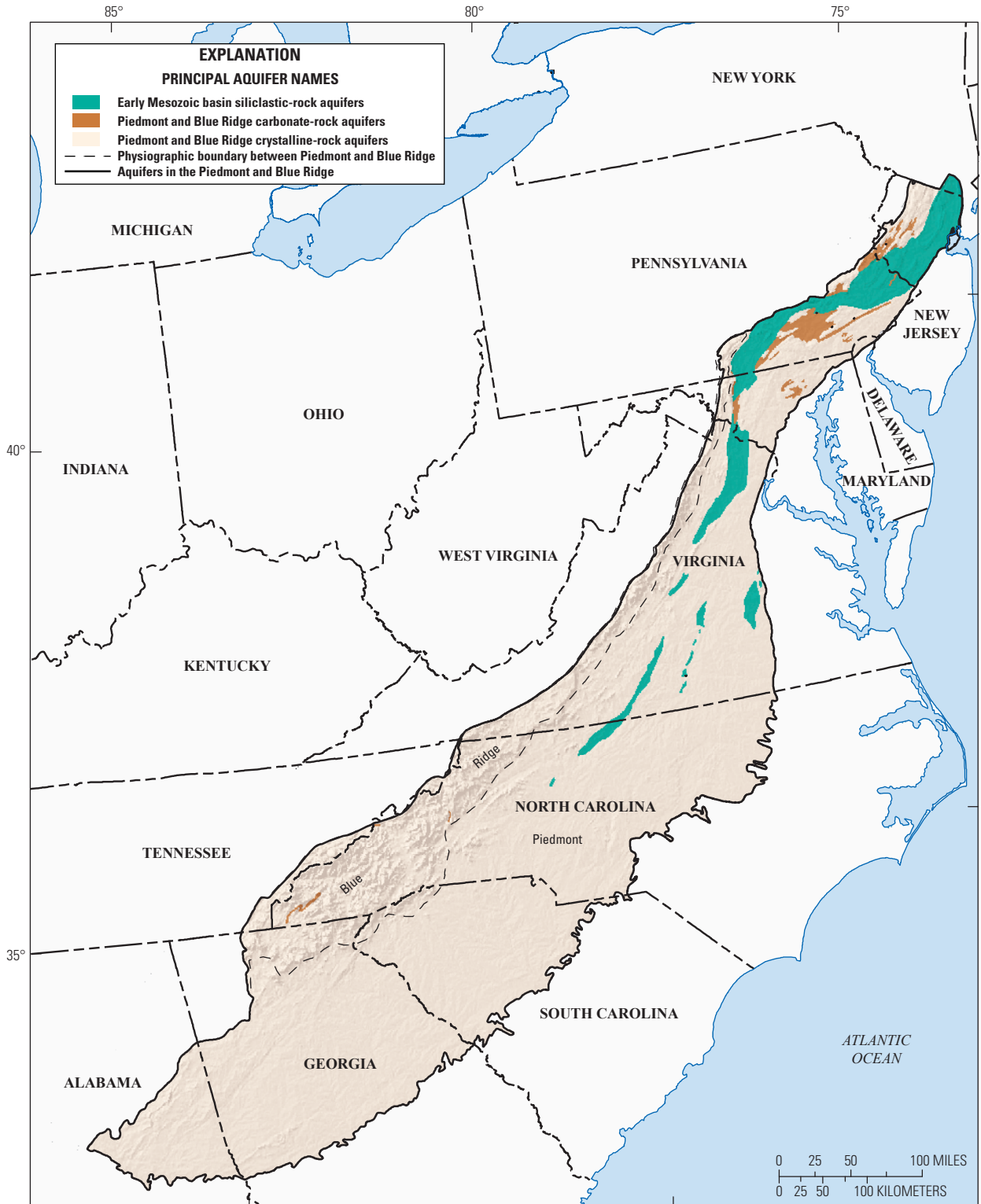
This report focuses on naturally occurring contaminants in groundwater of the Piedmont and Blue Ridge crystalline-rock aquifers and the Early Mesozoic basin siliciclastic-rock aquifers (fig. 1). The Piedmont and Blue Ridge crystalline-rock aquifers are categorized as fractured igneous and metamorphic rock aquifers, and the Early Mesozoic basin aquifers are categorized as fractured sandstone aquifers (U.S. Geological Survey, 2003).

As a precursor to this study, Lindsey and others (2006) combined groundwater-quality analyses from 11 NAWQA Program studies in the Piedmont Physiographic Province to present findings on the occurrence of anthropogenic contaminants and naturally occurring radon. Lindsey and others (2006) categorized the aquifer lithologies into three groups: carbonate rock, crystalline rock, and siliciclastic rock. Compared to the carbonate-rock aquifers, the crystalline-rock and siliciclastic-rock aquifers had higher concentrations of radon and associated characteristics that implied naturally occurring contaminants could be widespread. The current report is a continuation of the effort by Lindsey and others (2006), evaluating the effects of lithologies and geochemical environment on the occurrence and distribution of radon and other naturally occurring contaminants in groundwater from the crystalline-rock and siliciclastic-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces.

## Description of Study Area

The Piedmont and Blue Ridge Physiographic Provinces extend from Alabama to New York in the eastern United States (Fenneman, 1938; Fenneman and Johnson, 1946) and have a collective area of 154,000 square miles ( $\text{mi}^2$ ) (fig. 1). This region includes three principal aquifers: (1) the Piedmont and Blue Ridge crystalline-rock aquifers; (2) the Piedmont and Blue Ridge carbonate-rock aquifers; and (3) the Piedmont Early Mesozoic clastic sedimentary rock aquifers, also referred to as “sandstone” aquifers (U.S. Geological Survey, 2003). In the study area, groundwater generally occurs in aquifer units that are local in scale because of complex geologic and topographic controls, but that are similar on a regional scale on the basis of major bedrock type and hydrogeologic properties. The aquifers are affected locally by geologic factors such as lithology and structure, particularly features such as fractures and joints, which provide secondary permeability for water movement within these “fractured-rock” aquifers.

The study area discussed in this report includes parts of 14 NAWQA study units (see “Network Code,” table 1) where groundwater-quality data were collected for major aquifer, land-use, or drinking water studies in the Piedmont and Blue Ridge crystalline-rock and Piedmont Early Mesozoic basin siliciclastic-rock aquifers (table 1 and fig. 2). Regional and national assessments of the effects on water quality from natural environmental factors and human activities are possible because of the application of a consistent study design and uniform methods of data collection and analysis within the NAWQA Program (Gilliom and others, 1995; Lapham and others, 2005). The study area includes several large metropolitan areas (Atlanta, Ga., Charlotte, N.C., Raleigh, N.C., Richmond, Va., Washington, D.C., Baltimore, Md., Philadelphia, Pa., and Trenton, N.J.), rural or forested areas in the southern and mid-Atlantic sections, and agricultural areas in the northeast section (fig. 2). The geologic setting of the area is complex and includes a history of deposition, metamorphism, igneous intrusion, and extensive folding and faulting; a wide



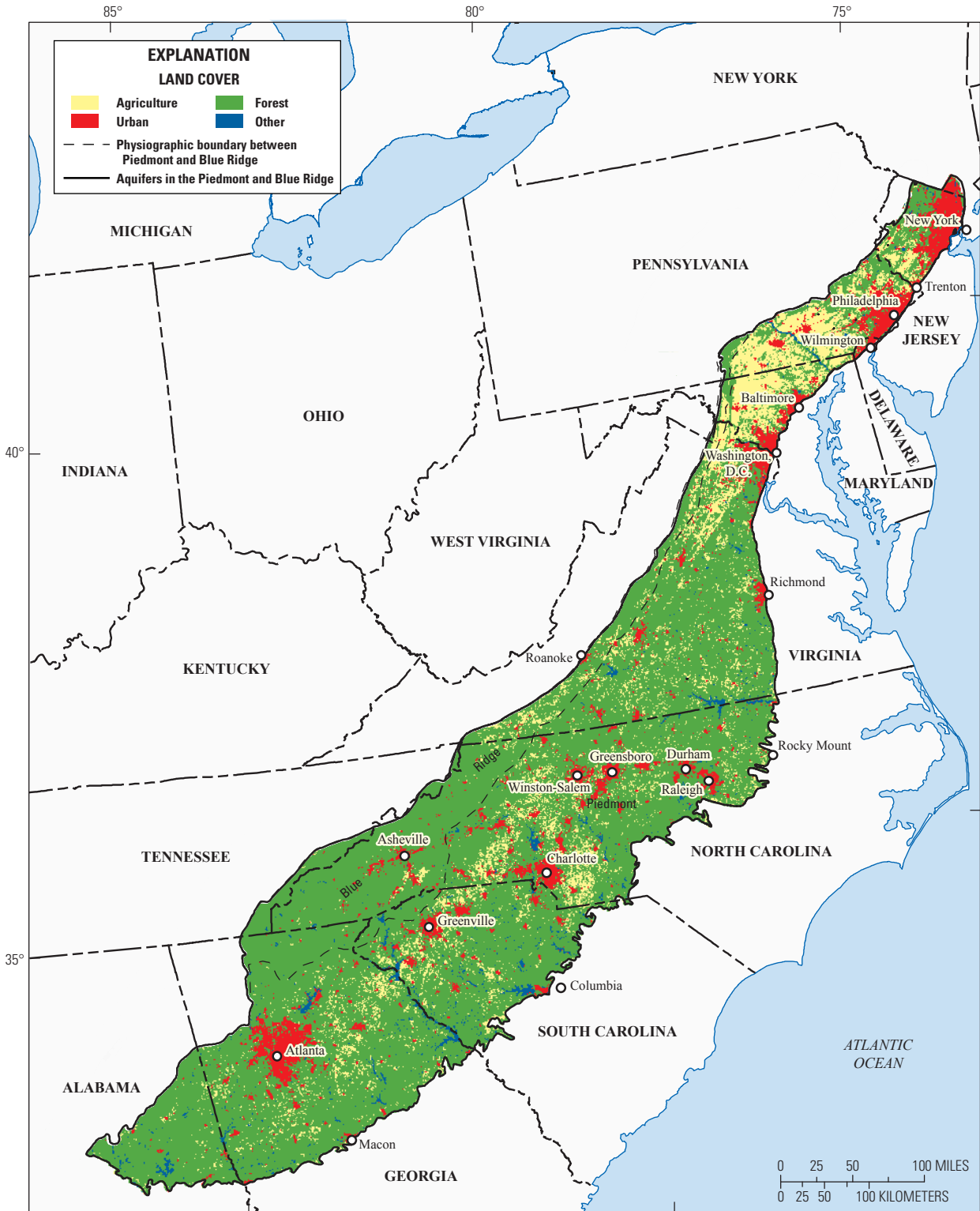
Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 National Elevation Data from U.S. Geological Survey, 1999  
 Principal Aquifers from U.S. Geological Survey, 2003

**Figure 1.** Boundaries for the three principal aquifers within the Piedmont and Blue Ridge Physiographic Provinces.

**Table 1.** NAWQA study units in the Piedmont and Blue Ridge Physiographic Provinces.

[PIED-CRY, Piedmont Physiographic Province crystalline-rock aquifer; PIED-EMZ, Piedmont Physiographic Province Early Mesozoic rock aquifer; BR-CRY, Blue Ridge Physiographic Province crystalline-rock aquifer]

Study unit name	Study unit code	Network code	Aquifer	Study type	Number of ground water samples	Year(s) sampled	State(s) sampled
Apalachicola-Chattahoochee-Flint River Basin	acfb	acfbtusur1	PIED-CRY	Urban land-use study - shallow regolith wells only	21	1994–1995	Georgia
Apalachicola-Chattahoochee-Flint River Basin	acfb	acfbtusur2	PIED-CRY	Urban land-use study - springs only	19	1994–1995	Georgia
Albemarle-Pamlico Drainages	albe	albesus8	PIED-CRY	Major aquifer study	55	2007	North Carolina; Virginia
Deleware River Basin	delr	delrsus1	PIED-EMZ	Major aquifer study	30	1999	New Jersey; Pennsylvania
Kanawha/New River Basins	kana	kanasus2	BR-CRY	Major aquifer study	30	1997	North Carolina; Virginia
Long-Island/New Jersey Coastal Drainages	linj	linjsus3	PIED-EMZ	Major aquifer study	21	1998	New Jersey
Lower Susquehanna River Basin	lsus	lsususs2	PIED-CRY	Agricultural land-use study	30	1994	Maryland; Pennsylvania
Potomac River Basin and Delmarva Peninsula	podl	podldwgs1	PIED-CRY	Drinking water study	15	2003	Maryland; Virginia
Potomac River Basin and Delmarva Peninsula	podl	podltsur1	PIED-CRY	Urban land-use study - shallow wells only	30	2003	Maryland; Virginia
Potomac River Basin and Delmarva Peninsula	podl	podlreffo2	PIED-CRY	Urban land-use study - reference network shallow wells	2	2003; 2005	Maryland; Virginia
Potomac River Basin	poto	potosus1	PIED-CRY	Major aquifer study	25	1994	Maryland; Virginia
Potomac River Basin	poto	potosus2	PIED-EMZ	Major aquifer study	23	1994	Maryland; Pennsylvania; Virginia
Santee River Basin and Coastal Drainages	sant	santdwgs1	PIED-CRY	Drinking water study	15	2008	South Carolina
Santee River Basin and Coastal Drainages	sant	santsus3	PIED-CRY	Major aquifer study	30	1998	North Carolina; South Carolina
<b>TOTAL</b>					<b>346</b>		



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Land cover digital data from Nakagaki and others, 2007

**Figure 2.** 2007 land-use data for the Piedmont and Blue Ridge Physiographic Provinces and major metropolitan areas.

variety of bedrock lithologies ranging from quartz sandstone to black shale and from felsic-rich granite to ultramafic metamorphic rocks; and many rock types of intermediate composition, such as siltstones, gneisses, and schists. The weathering of minerals within the rock and the geochemical conditions within the aquifer directly affect groundwater quality in this region. Thus, in order to assess conditions in the aquifer and predict areas where specific contaminants may affect drinking water sources, it is important to understand the factors that control the release and transport of naturally occurring contaminants in groundwater.

## Purpose and Scope

This report contains the results of an evaluation of the potential occurrence and distribution of naturally occurring contaminants in groundwater in the Piedmont and Blue Ridge crystalline-rock aquifers and the Piedmont Early Mesozoic basin siliciclastic-rock aquifers in the eastern United States (fig. 1). Descriptions of the primary rock type and associated mineral assemblages for mapped bedrock in the region were used to delineate mappable lithologic groups and lithochemical subgroups that could influence groundwater quality. The focus is on trace elements, radionuclides, nutrients, and major ions in groundwater that have potential for human health effects when present at concentrations approaching or exceeding drinking water standards or other human health benchmarks.

Water-quality data collected as part of the NAWQA Program from 1994 through 2008 from 346 wells and springs in various hydrogeologic and land-use settings from Georgia through New Jersey were compiled and analyzed for this regional assessment. The sampled sites are from the following NAWQA study units (table 1): Apalachicola-Chattahoochee Flint River Basins (acflusur1 and acflusur2), Albemarle-Pamlico Drainages (albesus8), Delaware River Basin (delrus1), Long Island/New Jersey Coastal Drainages (linjsus3), Lower Susquehanna River Basin (lsussus2), Potomac River Basin and Delmarva Peninsula (podldwgs1, podllusrc1, podlreffo2, potosus1, and potosus2), and Santee Basin and Coastal Drainages (santsus3 and sandwgs1) (fig. 3 and table 1).

Graphical and statistical techniques were used to compare constituent concentrations in groundwater to human health criteria for drinking water and to compare concentrations among different lithologies. Interactions between groundwater and lithologies in various settings were inferred through comparison of major and trace-ion chemistry. Implications of observations and conclusions for regional mapping of risk for elevated arsenic, radionuclides, and other naturally occurring contaminants on the basis of geologic mapping are discussed. Results and interpretations are compared to those from studies conducted by other Federal and State agencies throughout the Piedmont and Blue Ridge crystalline-rock and Piedmont Early Mesozoic siliciclastic-rock aquifer systems in the eastern United States.

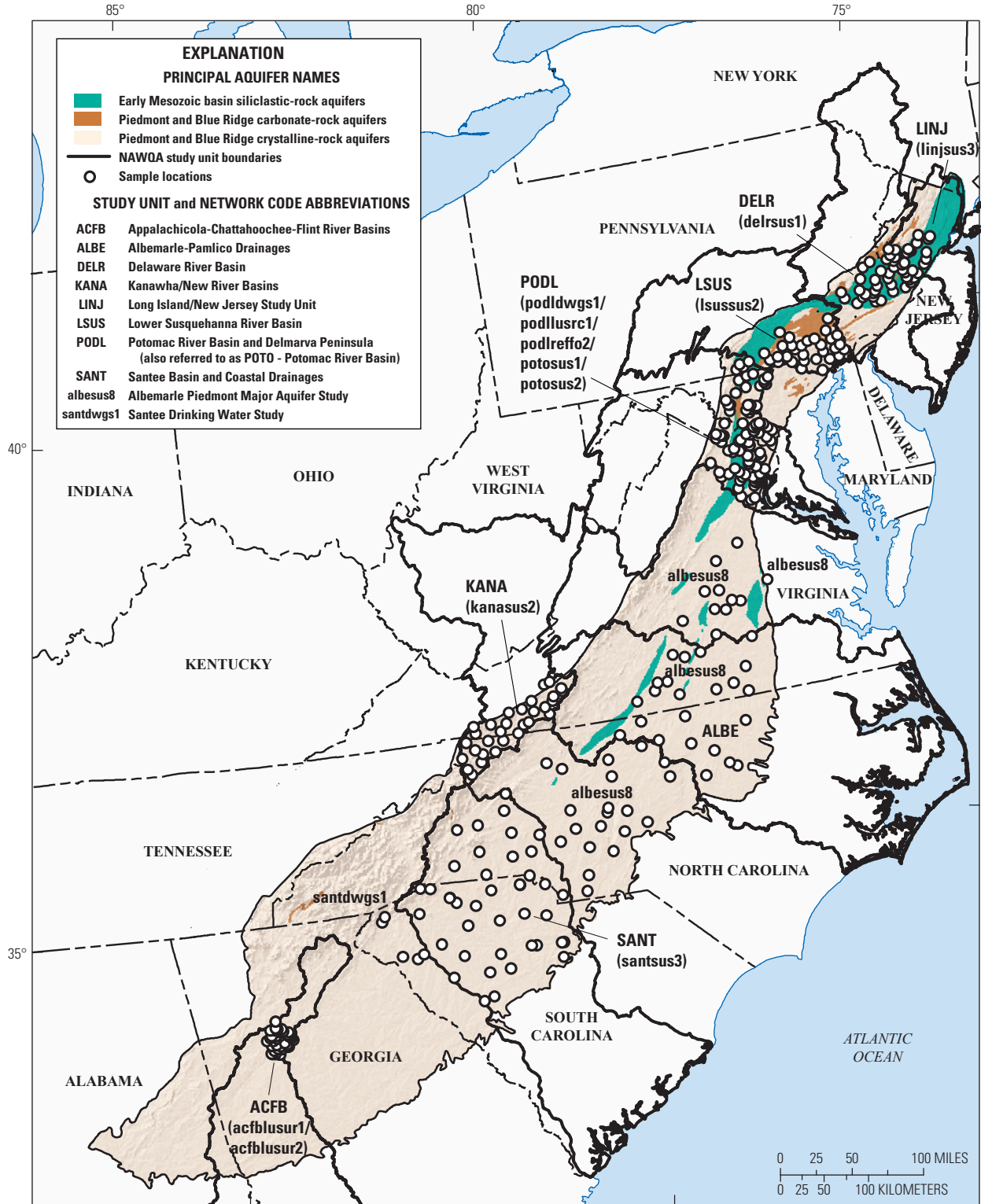
## Geologic Setting and Aquifer Descriptions

The geologic setting within the Piedmont and Blue Ridge (PBR) Physiographic Provinces of the eastern United States (fig. 1) is complex as a result of diverse geologic factors including rock type, metamorphic and structural history, and weathering. Bedrock in the study area has undergone multiple periods of metamorphism, deformation, including folding and faulting resulting in superimposed fracturing, and igneous intrusion that has altered mineralogy as well as inherent bedrock fabric (foliation). These mineralogical and structural characteristics directly affect groundwater and surface-water flow, recharge to the aquifer system, and geochemical processes within the aquifer (Cranford and others, 1982).

Regional geologic units in the PBR Physiographic Provinces historically have been grouped into northeast-trending “belts” that described common assemblages of rock types grouped by metamorphic facies and broad structural features (North Carolina Geological Survey, 1985). More recently, Hibbard and others (2006) produced a lithotectonic map of the Appalachian Orogen in the eastern United States, grouping mapped units into “terranes” that better reflect geologic structural history. The geologic setting of the southern Blue Ridge and western Piedmont Physiographic Provinces from Virginia to Alabama is described in Clark (2008). Major rock types are described in terms of their respective geologic history, including depositional setting, metamorphism, and structural characteristics. Geologic structural terranes and rock assemblages typically strike northeast-southwest.

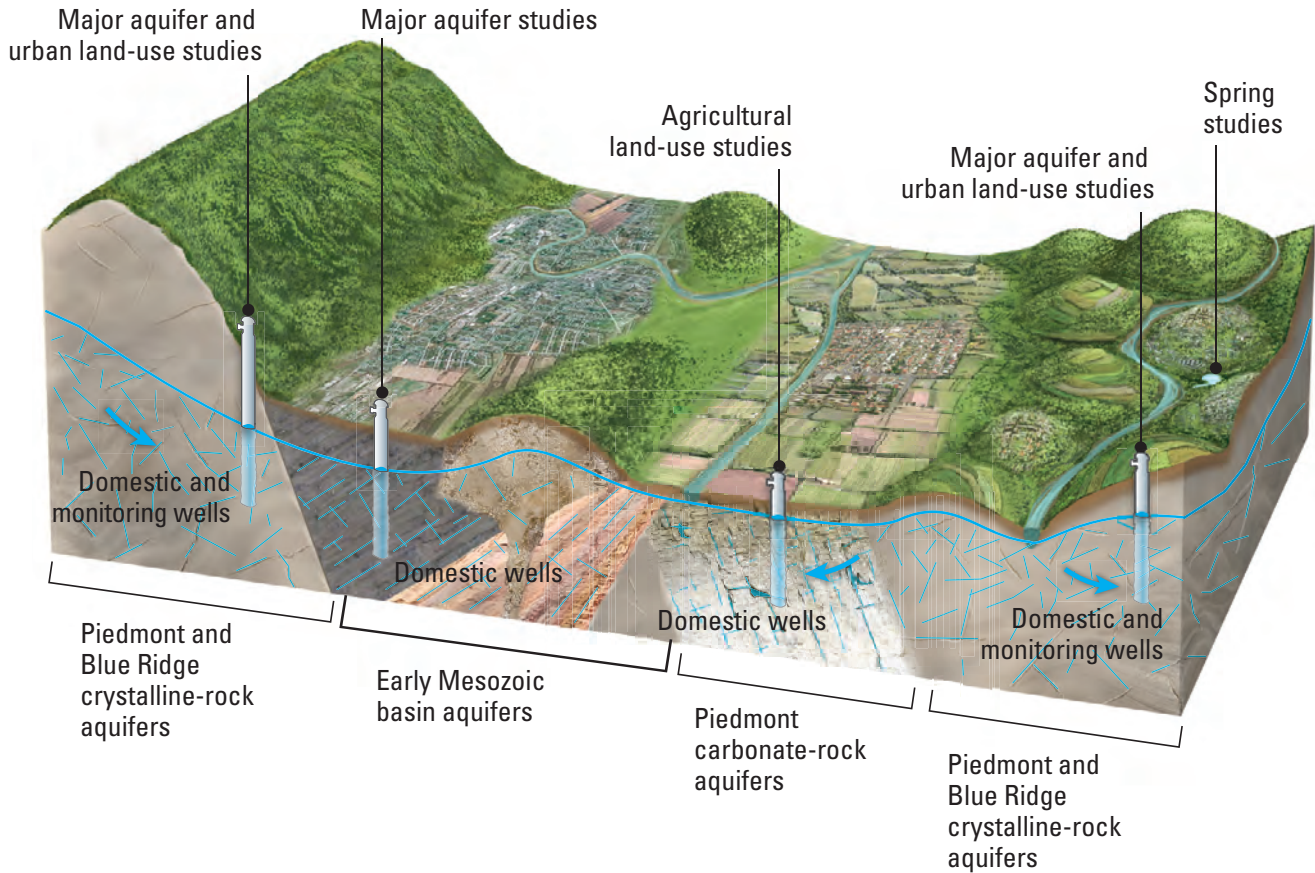
The Blue Ridge Physiographic Province, in the western part of the study area, is characterized by high relief, with mountain peaks rising more than 6,000 feet (ft) above the North American Vertical Datum of 1988 (NAVD 88) with steep slopes, and valleys generally near 2,000 ft in altitude. The Blue Ridge primarily is underlain by metamorphic and igneous crystalline rocks; however, some sedimentary rocks also are present in Maryland, Pennsylvania, Virginia, and North Carolina. The Piedmont Physiographic Province in the eastern part of the study area is characterized by a more subdued topography, with gently rolling hills and valleys and land-surface altitudes ranging from about 300 to 1,500 ft above NAVD 88. The Piedmont can be subdivided topographically into lowland and upland areas, where lowlands generally are underlain by carbonate rocks (Pennsylvania, Maryland, and New Jersey), and by clastic sedimentary rocks in the Early Mesozoic rift basins, as shown in a conceptual diagram (fig. 4).

Trapp and Horn (1997) describe bedrock aquifers in the PBR Physiographic Provinces in North Carolina, Virginia, Maryland, Delaware, Pennsylvania, and New Jersey as being dense and almost impermeable, yielding groundwater primarily from secondary porosity and permeability provided by fractures. Except for the carbonate rocks, which contain solution openings, joints and fractures are the only openings that



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 National Elevation Data from U.S. Geological Survey, 1999  
 Principal Aquifers from U.S. Geological Survey, 2003

**Figure 3.** U.S. Geological Survey National Water-Quality Assessment (NAWQA) Program study unit boundaries within the Piedmont and Blue Ridge Physiographic Provinces and sample-collection locations for groundwater-quality data collected from 1994–2008.



**Figure 4.** The conceptual groundwater system, aquifers, and typical well types included as part of this study within the Piedmont and Blue Ridge Physiographic Provinces.

store and transmit water. Despite this description, many wells completed in fractured bedrock aquifers of the PBR are sufficiently productive to be the main source of local water supplies. The carbonate rock units of the Piedmont typically are the most productive of the bedrock aquifers but are not widely distributed in the region, occurring primarily in Maryland, Pennsylvania, and New Jersey. The PBR bedrock aquifers in northeastern Pennsylvania and northern New Jersey locally are covered by glacial deposits, which include productive sand and gravel of the surficial aquifer system. Three principal bedrock aquifers underlie the northern PBR Provinces, in order of decreasing area: crystalline-rock and undifferentiated sedimentary-rock aquifers, clastic sedimentary-rock aquifers in Early Mesozoic basins, and carbonate-rock aquifers.

Miller (1990) describes the geologic setting of the PBR as consisting of many different types of metamorphic and igneous rocks that are complexly related. Main rock types are varieties of gneiss and schist and extremely fine-grained rocks such as phyllite and metamorphosed volcanic tuff and ash. Most of the metamorphic rocks were originally sediments

(metasediments), but some were originally igneous or volcanic materials (metagranites, granite gneiss, metavolcanics). The degree of heat and pressure to which the original rocks were subjected during metamorphism, as well as the degree of structural deformation (principally folding, foliation, jointing, and shearing) that they have undergone, has determined the final texture and mineralogy of the rocks. Most of the rocks have undergone several periods of metamorphism. The metamorphic rocks have been intruded by large to small bodies of igneous rock that vary in composition from felsic (light-colored rocks that contain large quantities of silica as quartz and potassium as potassium-feldspar) to mafic (dark-colored rocks that contain large quantities of ferromagnesian minerals such as pyroxene, amphibole, or ferrous phyllosilicate mineral groups). Large igneous intrusions consist of granite, quartz monzonite, and gabbro that occur in plutons that cover many tens of square miles. Smaller igneous intrusions, such as dikes and sills, include felsic and mafic rocks, such as syenite, andesite, diabase, and pegmatite. Rocks in this region are displaced by several major fault zones, some of which extend



for hundreds of miles. Shearing along large fracture zones has produced siliceous, intensely fractured rocks, such as mylonite or phyllonite (Miller, 1990).

Trapp and Horn (1997) describe aquifers in Early Mesozoic basins that primarily are in three major basins—the Newark basin in New Jersey and Pennsylvania is the largest and is the basin from which the most groundwater is withdrawn; the Gettysburg basin of Pennsylvania and Maryland is second largest; and the Culpeper basin of Virginia is third largest. The Richmond basin in Virginia and the Dan River/Danville basin in Virginia and North Carolina are of intermediate size. Nine small early Mesozoic basins are located in Virginia. Sedimentary rocks in the basins consist predominately of interbedded shale, sandstone, and siltstone, all typically red, reddish brown, or maroon, but locally gray or black. Conglomerate, dolomite, lacustrine black mudstone, and coal are present locally. In many places, the sedimentary rocks are interbedded with basalt flows or have been intruded by diabase dikes and sills. Thicknesses of Triassic and Jurassic rocks in the large basins have been calculated to be more than 20,000 ft. Additional basins in North Carolina, including the Durham, Sanford, Wadesboro, and Davie County basins (Lindsey and others, 2006, fig. 10), were not considered to be important aquifers because they are more compact and more tightly cemented than those in the basins to the north and do not yield sufficient quantities of water to be considered principal aquifers.

Physically, the aquifer system in the PBR can be composed of one (bedrock only), two (regolith-bedrock), or three parts (regolith, transition zone, and bedrock), depending upon whether or not weathered material (regolith) overlies the bedrock and if a local transition zone has developed between the shallow regolith and deeper bedrock. In the Blue Ridge Physiographic Province, very little, if any, regolith may be present, and, if present, it is often debris flow, colluvium, or alluvium in stream valleys. In the Piedmont Physiographic Province, generally there is at least a two-part system with the weathered regolith overlying fractured bedrock as described by Heath (1984). The regolith consists of soil, residuum, saprolite, and possibly colluviums, alluvium, and debris flow. Residuum and saprolite are formed from in situ weathering of the bedrock and form a blanket of decomposed or partially decomposed rock that is usually thick and clayey. Saprolite retains the texture and structure of the parent bedrock from which it is derived. A third component, a transition zone between the regolith and bedrock (Harned and Daniel, 1992), has been more commonly delineated in recent years. The regolith is more porous and more permeable than the underlying bedrock everywhere. Because the crystalline bedrock formed under intense heat and pressure during metamorphism and igneous intrusion, the bedrock has few primary pore spaces, and the porosity and permeability of the unweathered and unfractured bedrock is extremely low (Miller, 1990). Groundwater in the bedrock is stored in and moves through secondary fractures and other discontinuities, which form the only effective porosity in the unweathered rock. Because of the absence of

substantial water storage (storativity) in the unweathered rock, a large amount of groundwater is found in the weathered and slightly porous overlying saprolite. Water slowly drains from the saprolite to the fractures in the underlying and hydraulically connected bedrock. Although there are considerable differences in the mineralogy, texture, and structure of the rocks composing the PBR aquifers, the overall hydraulic characteristics of the aquifers are similar in a regional context (Miller, 1990).

## Previous Studies

Data on naturally occurring and manmade contaminants in groundwater in the PBR have been collected and reported through the NAWQA Program and other USGS studies, some of which are summarized in this section. Table 2 lists pertinent reports published for these studies, constituents analyzed, and major findings relevant to this study. Results from a few selected studies that are applicable to this report are summarized in this section.

One of the larger NAWQA data compilations for the Piedmont Physiographic Province was reported by Lindsey and others (2006) in a summary of groundwater-quality data collected from 11 of the 14 NAWQA studies listed in table 1 (all except albesus8, kanasus2, and sandtwgs1). Lindsey and others (2006) grouped samples from 225 wells and 19 springs into 3 aquifer types: crystalline, siliciclastic, and carbonate. While the report focused on the detection and occurrence of anthropogenic contaminants, selected naturally occurring contaminants also were evaluated. Concentrations of radon were higher in areas underlain by felsic crystalline rocks and lower in areas underlain by mafic crystalline rocks. Groundwater from adjacent siliciclastic-rock aquifers had concentrations of radon lower than those in samples from felsic crystalline-rock aquifers. Ninety percent of the 205 samples analyzed for radon had concentrations that exceeded the proposed maximum contaminant level (MCL) of 300 picocuries per liter (pCi/L), and 13 percent of samples had concentrations that exceeded the proposed alternative maximum contaminant level (AMCL) of 4,000 pCi/L (Lindsey and others, 2006).

Fifty-five domestic wells in the Piedmont crystalline-rock aquifers were sampled for a major aquifer study in the Albemarle-Pamlico (ALBE) drainages of North Carolina and Virginia in 2007–08 (fig. 3 albesus8, table 1). The data for NAWQA samples were combined with other USGS data collected in the Piedmont and Blue Ridge of North Carolina for comparison of analytical results for 79 groundwater samples within the statewide geologic belt units, or geozones (Harden and others, 2009) (table 2). Results from this study suggest that the cationic and anionic composition of groundwater from within a particular geozone reflected differences in lithologic setting, hydrologic and geochemical conditions, and (or) land-use effects. Exceedances in Federal and State drinking water standards or proposed standards were noted for radon, pH, manganese, iron, and zinc. Radon had the most

**Table 2.** Published reports from USGS NAWQA studies and other data sources conducted in the Piedmont and Blue Ridge Physiographic Provinces categorized by aquifer and constituents investigated.

[PDX, Piedmont crystalline-rock aquifer; EMZ, Early Mesozoic basin aquifer; BRX, Blue Ridge crystalline-rock aquifer; VOCs, volatile organic compounds; PODL, Potomac River/Delmarva Peninsula; POTO, Potomac River; LSUS, Lower Susquehanna River; LINJ, Long-Island/New Jersey Coastal Drainages; SANT, Santee River Basin and Coastal Drainages; ACFB, Apalachicola-Chattahoochee-Flint River Basin; DELR, Delaware River Basin; KANA, Kanawha-New River Basin; ALBE, Albemarle-Pamlico Drainages; USGS NC WSC, USGS North Carolina Water Science Center; USGS PA WSC, USGS Pennsylvania Water Science Center]

Report	Constituents studied	Aquifers	NAWQA study area	Data sources	Major findings relevant to current study
USGS NAWQA Program					
Ator and Denis (1997)	Nitrate, phosphorus	PDX, EMZ	PODL, POTO	USGS NAWQA	
Ator and others (1998)	Radon, nitrate, pesticides, VOCs	EMZ	POTO, LSUS	USGS NAWQA	Radon from the EMZ rocks are similar in concentration to the PDX rocks
Ayers and others (2000)	Arsenic	EMZ	LINJ	USGS NAWQA	Arsenic higher in Early Mesozoic rocks
Ayotte and others (2007)	Radon, uranium	PDX, OTHERS	LINJ, DELR	USGS NAWQA	Uranium and radon higher in New England crystalline-rock aquifers
Carter and others (2010)	VOCs, pesticides	PDX, OTHERS	SANT, PODL	USGS NAWQA	
Denver and others (2011)	Phosphorus, trace metals	PDX, EMZ	POTO, LSUS, ACFB, DELR, SANT, LINJ	USGS NAWQA	Phosphorus from natural sources reported in crystalline-rock aquifers with alkaline pH or iron-reducing conditions.
Fischer and others (2004)	Nitrate, pesticides, VOCs, radon, trace elements	EMZ, OTHERS	DELR	USGS NAWQA	Arsenic and radon higher in Early Mesozoic rocks relative to other aquifer units
Frick and others (1998)	Pesticides, VOCs	PDX, OTHERS	ACFB	USGS NAWQA	
Hughes and others (2000)	Nitrate, pesticides, VOCs, radon	PDX, OTHERS	SANT (Santee Circular)	USGS NAWQA	Radon higher in crystalline-rock aquifers
Lapham and others (2005)	Radon, uranium, trace elements, VOCs, pesticides	PDX, BRX, OTHERS		USGS NAWQA	Uranium and radon higher in New England crystalline-rock aquifers

**Table 2.** Published reports from USGS NAWQA studies and other data sources conducted in the Piedmont and Blue Ridge Physiographic Provinces categorized by aquifer and constituents investigated.—Continued

[PDX, Piedmont crystalline-rock aquifer; EMZ, Early Mesozoic basin aquifer; BRX, Blue Ridge crystalline-rock aquifer; VOCs, volatile organic compounds; PODL, Potomac River/Delmarva Peninsula; POTO, Potomac River; LSUS, Lower Susquehanna River; LINJ, Long-Island/New Jersey Coastal Drainages; SANT, Santee River Basin and Coastal Drainages; ACFB, Apalachicola-Chattahoochee-Flint River Basin; DELR, Delaware River Basin; KANA, Kanawha-New River Basin; ALBE, Albemarle-Pamlico Drainages; USGS NC WSC, USGS North Carolina Water Science Center; USGS PA WSC, USGS Pennsylvania Water Science Center]

Report	Constituents studied	Aquifers	NAWQA study area	Data sources	Major findings relevant to current study
USGS NAWQA Program—Continued					
Kozar and others (2002)	Radon	PDX, BRX, OTHERS	KANA	USGS NAWQA	Noted high concentrations of radon in wells near fracture zones of crystalline rocks.
Lindsey and Ator (1996)	Radon	EMZ, PDX, OTHERS	POTO, LSUS	USGS NAWQA	Noted high concentrations of radon in crystalline rocks; differences between concentrations in mafic and felsic lithologies.
Lindsey and others (1997)	Nitrate	PDX, OTHERS	LSUS	USGS NAWQA	
Lindsey and others (2006)	Nitrate, pesticides, VOCs, radon	EMZ, PDX, OTHERS	POTO, LSUS, ACFB, DELR, SANT, LINJ	USGS NAWQA	Radon higher in crystalline-rock aquifers
Paybins and others (2000)	Radon, nitrate, pesticides, VOCs	BRX	KANA	USGS NAWQA	Radon higher in crystalline-rock aquifers
Other data sources					
Campbell (2006)	Radon, radium, uranium, trace elements	BRX, PRX		NC DENR	Radon elevated in meta-igneous rocks (granites and gneisses) compared to meta-sedimentary rocks.
Harden and others (2009)	Radon, uranium, trace elements	PDBRX	ALBE	USGS NAWQA; USGS NCWSC; NC DENR	Correlation of Geozones (geologic belts) with radon, uranium, and trace elements
Pippin (2005)	Arsenic	PDX		NC DENR	Elevated arsenic associate with geologic formations in the Carolina Slate Belt in North Carolina. Rock types including meta-mudstone, meta-argillite, phyllite, schist, and mica schist of volcanic origin were associated with elevated arsenic concentrations in groundwater.
Senior and Vogel (1992)	Radium	PDX		PAWSC	Elevated radium concentrations correlated to pH conditions lower than 4.7.

**Table 2.** Published reports from USGS NAWQA studies and other data sources conducted in the Piedmont and Blue Ridge Physiographic Provinces categorized by aquifer and constituents investigated.—Continued

[PDX, Piedmont crystalline-rock aquifer; EMZ, Early Mesozoic basin aquifer; BRX, Blue Ridge crystalline-rock aquifer; VOCs, volatile organic compounds; PODL, Potomac River/Delmarva Peninsula; POTO, Potomac River; LSUS, Lower Susquehanna River; LINJ, Long-Island/New Jersey Coastal Drainages; SANT, Santee River Basin and Coastal Drainages; ACFB, Apalachicola-Chattahoochee-Flint River Basin; DELR, Delaware River Basin; KANA, Kanawha-New River Basin; ALBE, Albemarle-Pamlico Drainages; USGS NC WSC, USGS North Carolina Water Science Center; USGS PA WSC, USGS Pennsylvania Water Science Center]

Report	Constituents studied	Aquifers	NAWQA study area	Data sources	Major findings relevant to current study
Other data sources—Continued					
Senior and Sloto (2006)	Arsenic	EMZ	PAWSC	PAWSC	Elevated arsenic correlated to pH conditions higher than 8.
Serfes (2004), Serfes and others (2010)	Arsenic	EMZ		NJGS	Elevated arsenic higher in EMZ black shale members of Lackatong and Passaic formations in New Jersey
Sloto and Senior (1998)	Radon	PDX, EMZ		USGS PAWSC	Radon highest from areas underlain by a schist, phyllite, and quartzite rock types
Sloto (2002)	Radon	PDX, EMZ		USGS PAWSC	Radon lowest in ultramafic serpentinite rocks and higher in the Wissahickon Schist.
Sloto (2000)	Uranium, radium, radon	PDX, EMZ		USGS PAWSC	Radium elevated in the Chickies Quartzite formation. Radon higher in schist and quartzite rock types.

exceedances, with 61 of 69 wells sampled exceeding the U.S. Environmental Protection Agency's (USEPA's) proposed MCL of 300 pCi/L and with 18 of 69 sampled wells exceeding the USEPA's AMCL (requires treatment) of 4,000 pCi/L of radon (U.S. Environmental Protection Agency, 2010). Fifty percent of samples collected from the felsic intrusive rock geozone had radon concentrations greater than the AMCL. Statistically different median concentrations of calcium, silica, ammonia, aluminum, antimony, cadmium, and uranium were delineated between one or more geozone pairs (Harden and others, 2009).

The New England and Appalachian Piedmont region was highlighted for radon occurrence in groundwater by the reconnaissance assessment by the USEPA (U.S. Environmental Protection Agency, 1999). Radon and uranium occurrences in crystalline-rock aquifers in New York and New England were identified as an issue of concern by Lapham and others (2005) and Ayotte and others (2007). Granitic rocks, such as two-mica granites and other high-grade metamorphic rocks, were reported to be a source of uranium that is soluble under predominantly oxic to sub-oxic geochemical conditions. The median value of radon reported was 2,122 pCi/L from the New York and New England crystalline-rock aquifer group, with about 25 percent of samples exceeding the proposed AMCL (Ayotte and others, 2007).

Sloto (2000) presented the results of sampling groundwater from domestic wells in the Piedmont Physiographic Province in southeastern Pennsylvania for naturally occurring radionuclides, including uranium, radium-226, radium-228, and radon-222 (table 2). The results were analyzed according to the underlying bedrock lithology, which included carbonate rock (limestone, dolomite, and marble), crystalline rock (gneiss, phyllite, quartzite, and schist), diabase, sedimentary rock of Paleozoic age (conglomerate, limestone, sandstone, siltstone, and shale), sedimentary rock of Triassic age (conglomerate, sandstone, siltstone, and shale), and unconsolidated sediments (clay, sand, and gravel). Of the more than 250 samples analyzed for radium isotopes, 46 percent of the wells located in the Chickies Quartzite had elevated radium activities that exceeded the USEPA MCL of 5 pCi/L for combined radium (radium-226 and radium-228 combined). Elevated radium values were correlated with water samples having a pH of less than 4.7 (Senior and Vogel, 1992) (table 2). Twenty-three percent of the 170 wells sampled in the Chickies Quartzite also had gross alpha-particle activities in water that exceeded the 15-pCi/L MCL and 46 percent of the wells sampled in the Chickies Quartzite had combined radium concentrations exceeding the 5-pCi/L MCL (Sloto, 2000). Water samples from 33 percent of the wells in the Chickies Quartzite also had gross beta particle activity exceeding the 15-pCi/L MCL. Samples from 13 wells in the Chickies Quartzite and nearby geologic units contained concentrations of radium-224 (a short-lived daughter product of radium-228) up to 265 pCi/L and gross alpha-particle activities up to 1,300 pCi/L (Senior and Sloto, 2000). Radon-222 activities differed among rock types, and of the more than 900 samples analyzed from the study area in southeastern Pennsylvania,

the greatest median values were in the schist (2,500 pCi/L) and quartzite (2,300 pCi/L) rock types (Sloto, 2000). About 89 percent of 534 wells sampled in 38 geologic formations in the Piedmont Physiographic Province in Chester County, southeastern Pennsylvania, had water with radon-222 concentrations greater than the proposed 300-pCi/L MCL that ranged up to 53,000 pCi/L (Senior, 1998).

Sloto (2002) described results from the analyses of 64 well samples collected in the Big Elk Creek Basin in Chester County, Pennsylvania, and Cecil County, Maryland, from 1925 through 1999 (table 2). Samples were categorized based on surface lithologies consisting of the Peters Creek Schist, serpentinite, Wissahickon Schist, pegmatite, and pelitic schist. The groundwater from wells located in the Wissahickon Schist had the lowest median pH of 5.9, while the samples from wells in the serpentinite rock type had the highest values ranging from 7.8 to 8.5. Groundwater from the serpentinite was categorized as magnesium-bicarbonate type, compared to samples from the other lithologies, which had no dominant cation to correspond with the dominant anion, bicarbonate. The three groundwater samples from the serpentinite unit also had the lowest concentrations of radon-222, with a maximum activity of 392 pCi/L, while wells in the other lithologic units were notably higher; samples from the Wissahickon Schist had a median value of 2,500 pCi/L. An assessment of groundwater quality and its relation to lithology and land use based on analyses of water samples from 82 wells in the Red Clay Creek Basin in the Piedmont Physiographic Province of Pennsylvania and Delaware (a hydrogeologic setting similar to that of Elk Creek) also indicated that concentrations of barium, lithium, and radon-222 differed among lithologies; radon-222 activities generally were highest (up to 10,000 pCi/L) in water from felsic gneiss and schist units and lowest in water from mafic gneiss and serpentinite units (Senior, 1996).

Radon concentrations documented by Kozar and others (2001) (table 2) for the Kanawha/New River Basins (KANA) study unit in the Blue Ridge Physiographic Province of Virginia and North Carolina were similar to those reported by Sloto (2000, 2002) for Pennsylvania, Maryland, and Delaware. Kozar and others (2001) noted that radon was detected in concentrations exceeding the proposed USEPA 300-pCi/L MCL for radon in 26 of 30 (87 percent) wells sampled. In 10 of 30 (33 percent) samples, radon exceeded the 4,000-pCi/L proposed AMCL. The median radon concentration detected was 2,080 pCi/L, and the maximum concentration detected was 30,900 pCi/L. Of 10 wells having radon concentrations greater than 4,000 pCi/L, 8 were on or adjacent to faults; this finding suggests that fault zones may be areas of uranium enrichment and that fault zones may allow radon migration upward along the fault (Kozar and others, 2001).

Pippin (2005) (table 2) presented results from a database of more than 10,000 analytical results for arsenic concentrations from groundwater samples collected primarily from domestic wells across North Carolina. A probability analysis using indicator kriging techniques was applied to the georeferenced dataset. Spatial correlation between the zone having

the highest probabilities for elevated arsenic concentrations in groundwater and rocks of the Carolina Slate Belt was evident. Common rock types associated with these areas of elevated arsenic were of volcanic origin, with the highest average arsenic concentrations estimated for the following lithologies: metamudstone and meta-argillite (CZmd; North Carolina Geological Survey, 1985), phyllite and schist (CZph, North Carolina Geological Survey, 1985), and mica schist (CZms, North Carolina Geological Survey, 1985).

Sources, mobilization, and transport of arsenic in groundwater in the Early Mesozoic basin aquifers of the Passaic and Lockatong Formations of the Newark basin, New Jersey, were documented by Serfes (2004) and Serfes and others (2010) (table 2). Elevated arsenic concentrations [greater than 10 micrograms per liter ( $\mu\text{g/L}$ )] correlated with geochemical conditions, including dissolved oxygen (DO) less than 3 milligrams per liter (mg/L) and pH from 7.5 to 8.0. For concentrations of arsenic greater than 40  $\mu\text{g/L}$ , DO was suboxic (less than 1.0 mg/L) or nearly suboxic. The major source of arsenic was determined to be the mineral pyrite ( $\text{FeS}_2$ ) within the black shale members of the Passaic Formation (Serfes, 2004).

An assessment of arsenic, boron, and fluoride in groundwater in the Newark basin in Pennsylvania included a review of available data (Senior and Sloto, 2006). About 10 percent of wells completed in the Early Mesozoic basin aquifers had water with arsenic concentrations greater than the MCL of 10  $\mu\text{g/L}$ . For data collected from 46 wells during that study, all groundwater samples with pH values greater than 8 had arsenic concentrations greater than 10  $\mu\text{g/L}$ ; no samples with pH below 7 had arsenic concentrations greater than 10  $\mu\text{g/L}$ .

## Geological and Geochemical Framework for Interpretations of Water Quality

Building on previous work linking aquifer lithology to the occurrence of radionuclides, arsenic, and other naturally occurring contaminants in groundwater, the primary purpose of this study was to determine if primary rock type and associated mineral assemblages described for published State geologic maps could be organized into mappable lithologic groups and lithochemical subgroups and related to the occurrence of natural contaminants in the crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces and the siliciclastic-rock aquifers in the Piedmont Physiographic Province. For this study, bedrock aquifers were divided into lithologic groups and lithochemical subgroups based on overall bedrock composition with regard to specific mineralogy and the potential for similar weathering characteristics. This classification of bedrock aquifer types follows the organization of lithochemical groups by McCartan and others (1998) and Peper and others (2001) in the Chesapeake Bay region of Maryland, Virginia, and the District of Columbia.

## Previous Lithochemical Classifications

McCartan and others (1998) related regional geologic data (rock type and mineralogical characteristics) from geologic maps of Maryland and northern Virginia in the southern Chesapeake Bay watershed to water-quality data from shallow wells and streams collected from the region. The rock types within the region were first grouped with the three primary classes of rock—sedimentary, igneous, and metamorphic—then by acid-neutralizing capacity and weathering characteristics. Interest stemmed from the apparent mitigation of high-acidity surface- and groundwater-quality problems from contact with carbonate rock types and elevated nitrate problems in groundwater and surface water by rocks and sediments high in carbon and sulfur (peat and black shale). McCartan and others (1998) organized regional geologic map data within the southern Chesapeake Bay watershed into four groups: (1) “Sedimentary rocks and their metamorphic equivalents,” which included carbonate-rich rocks, clastic sedimentary rocks, and metamorphosed clastic sedimentary rocks; (2) “Igneous rocks and their metamorphic equivalents,” which included mafic igneous rocks and their metamorphic equivalents, ultramafic rocks, and felsic igneous rocks and their metamorphic equivalents; (3) “Unconsolidated sediments,” such as sands, silts, clays, and organic-rich deposits; and (4) “Iron-rich sediment,” such as greensand, magnetite and ferro-ilmenite beach sand, and bog iron ore. Lithologies in the study area were categorized into 30 lithologic-mineralogic equivalent, or “lithochemical,” units (McCartan and others, 1998).

Peper and others (2001) modified the organization of McCartan and others (1998) to form three main geologic groups by including iron-rich sediments under the “Unconsolidated sediments” group, and then by classifying lithologies on the basis of potential rock-water interaction. Classes of rock types based on water-reactive minerals and their weathering reactions were regrouped by Peper and others (2001) into the following five classes of lithochemical units: (1) carbonate rocks and calcareous rocks and sediments, the most acid-neutralizing; (2) carbonaceous-sulfidic rocks and sediments, likely to be oxygen-depleting and reducing; (3) quartzofeldspathic rocks and siliciclastic sediments, mostly relatively weakly reactive with water; (4) mafic silicate rocks and sediments, likely to be oxygen consuming and high solute-load delivering; and (5) rare calcareous-sulfidic (carbonaceous) rocks that may be neutralizing and reducing.

## Lithologic Groups

Fourteen lithologic groups (table 3) were delineated within the study area as an expansion of previous work by McCartan and others (1998) and Peper and others (2001) to southeastern and northeastern areas of the PBR Physiographic Provinces [(appendix 1, table 1-1 (appendix 1 available online at <http://pubs.usgs.gov/sir/2013/5072/>)]. The same principal

**Table 3.** Lithologic group, major rock types, and lithochemical subgroups for groundwater sites within the siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008.

[Lithologic groups and lithochemical subgroups are described in detail in appendix table 1-1. **Red** font indicates units that lack groundwater-quality data. Na, not applicable]

Rock type	Lithologic group	Site count	Abbreviation	Principal lithologies	Lithochemical subgroup number(s)
<b>Carbonate</b>	<b>Carbonate-rich rocks</b>	<b>0</b>	<b>na</b>	<b>Limestone, dolostone, marble</b>	<b>11, 12, 13</b>
Siliciclastic	Clastic sedimentary rocks	9	CLSD	Mudstone, shale	21, <b>21c</b>
Siliciclastic	Quartz-rich sedimentary rocks	11	CLSDQ	Conglomerate, sandstone	22, <b>22c</b>
Siliciclastic	Clastic lacustrine/evaporite sedimentary rocks	51	CLSDLAC	Argillite, fine-grained mixed clastic, mudstone, sandstone, shale, siltstone, arkose	22e
<b>Siliciclastic</b>	<b>Feldspar-rich clastic sedimentary rocks</b>	<b>0</b>	<b>na</b>	<b>Arkose, graywacke</b>	<b>22f</b>
<b>Siliciclastic</b>	<b>Sulfidic clastic sedimentary rocks</b>	<b>0</b>	<b>na</b>	<b>Black shale, coal</b>	<b>23s, 24s</b>
Crystalline	Metamorphosed clastic sedimentary rocks	96	CLSDMT	Slate, mica schist, pelitic schist, phyllite, quartz-feldspar schist, schist, metasedimentary rock, meta-argillite, paragneiss, gneiss, melange	31, <b>31s, 32a, 32c, 32g, 32m, 32s, 32u, 35, 35a, 35c, 35gn, 35gns, 35ml, 41bs</b>
Crystalline	Quartz-rich metamorphic rocks	17	MTQ	Meta-conglomerate, metasedimentary rock, quartzite	33, <b>33c, 33my</b>
Crystalline	Felsic igneous rocks and their metamorphic equivalents	71	IGMTF	Granite, quartz monzonite, tonalite, metamorphic rock, felsicmetavolcanic rock, metavolcanic rock, felsic volcanic rock, rhyolite, alkali syenite	61, <b>61c, 61m, 61mf, 61ml, 61mv, 61v, 62</b>
Crystalline	Intermediate igneous rocks and their metamorphic equivalents	55	IGMTI	Biotite gneiss, gneiss, felsic gneiss	<b>34agn, 34bg, 34f, 34fi, 34i, 34s</b>

**Table 3.** Lithologic group, major rock types, and lithochemical subgroups for groundwater sites within the siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008.—Continued

[Lithologic groups and lithochemical subgroups are described in detail in appendix table 1-1. Red font indicates units that lack groundwater-quality data. Na, not applicable]

Rock type	Lithologic group	Site count	Abbreviation	Principal lithologies	Lithochemical subgroup number(s)
Crystalline	Mafic Igneous rocks and their Metamorphic equivalents	34	IGMTM	Amphibolite, meta-basalt, intermediate metavolcanic rock, diabase, gabbro, mafic rock, metamorphic rock, norite, quartz diorite, basalt, diabase, mafic gneiss	41, 41c, 41mv, 41v, 42, 43, 43em, 44
Crystalline	Ultramafic rocks	2	ULMAF	Metamorphic rock, serpentinite	50c
Sediment	Unconsolidated sediments	0	na	Sand, silt, clay, gravel, terrace (undifferentiated), alluvium, gravel, sand	71c, 72, 73, 74, 75, 76, 78, 79, 80
Sediment	Iron-Rich sediments	0	na	Greensand, silty in places; magnetite and ferro-ilmenite beach sand; bog iron ore	77
Total number of samples					346



aquifers are covered—the crystalline-rock aquifers of the Piedmont and Blue Ridge and the siliciclastic rocks in the Early Mesozoic aquifers of the Piedmont. As with McCartan and others (1998), the first step for this study was to translate information from each mapped geologic unit within the study area to lithologic-mineralogic equivalents based on descriptions for each State geologic map (see References Cited section and appendix 1, table 1-2). As a new approach for this study, further division of the geologic units under “Sedimentary rocks and their metamorphic equivalents” heading was made within the siliciclastic sedimentary rocks sequence by introducing clastic sedimentary (fine-grained), clastic lacustrine/evaporite sedimentary, feldspar-rich clastic sedimentary, quartz-rich sedimentary, and sulfidic clastic sedimentary as major lithologic groups in the study area (table 3 and appendix 1, table 1-1). The metamorphosed clastic sedimentary sequence was further divided in the study area by introduction of quartz-rich metamorphic and feldspar-rich metamorphic lithologic groups. All other major lithologic groups used for this study followed McCartan and others (1998) (appendix 1, table 1-1). The 14 major lithologic groups delineated for this study and a listing of associated major rock types compiled from State geologic maps (Dicken and others, 2005a, 2005b; Nicholson and others, 2005, 2006) are described in table 3, based on classification schemes presented in appendix table 1-1. Representative geologic formations are listed in appendix table 1-1 and a detailed descriptions of geologic formations (including State abbreviations) are grouped by lithologic group and lithochemical subgroup number in appendix table 1-2. Abbreviations for the lithologic groups used in this report are listed in table 3 to simplify technical discussions and figure/table presentations. For example, the felsic igneous rocks and their metamorphic equivalents group is abbreviated as “IGMTF” (table 3). For more detailed descriptions and formation references, please see appendix 1, tables 1-1 and 1-2.

As a result of the classification of the lithologic groups for the purposes of this report, the metamorphic and igneous lithologic groups are associated primarily with the crystalline-rock aquifers in the PBR Physiographic Provinces, and the sedimentary or siliciclastic-rock groups are associated with the Early Mesozoic basin within the Piedmont Physiographic Province (fig. 1). Additionally, crystalline diabase rocks locally intrude the primary sedimentary rocks in the Early Mesozoic basins. The diabase dikes are mafic rocks with geochemical properties likely similar to rock types such as amphibolite. The carbonate-rich lithologic group is limited to the northeastern area of the Piedmont (fig. 1).

The distributions of lithologic groups, as delineated for this study, are shown in figure 5 along with available USGS NAWQA groundwater-quality sample locations. (Note: sulfidic clastic sedimentary and iron-rich sediments were not delineated in the study area.) For this report, NAWQA groundwater sample data were available for 9 of the 14 lithologic groups; samples were not available for the carbonate-rich group, the feldspar-rich clastic sedimentary group, the

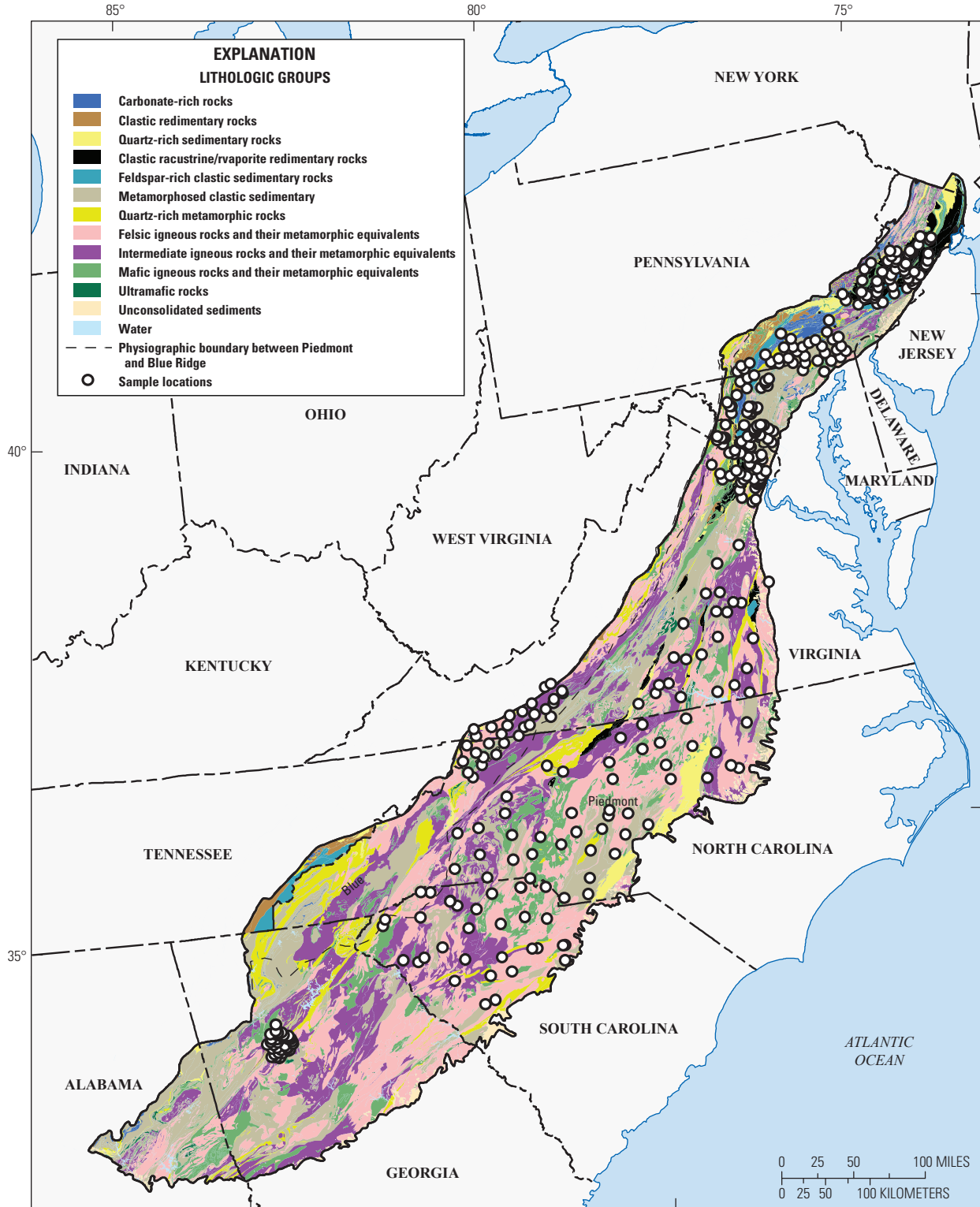
sulfide-rich sedimentary group, unconsolidated sediments, and iron-rich sediments (table 3). To illustrate the physical relations among different lithologic groups, representative lithologic groups within mapped geologic terranes in North Carolina are shown in figure 6.

## Lithochemical Subgroups

As a starting point, rock type designations from the geographic information system (GIS) attributes for the State maps (appendix 1, table 1-1 “ROCK\_TYPE1”) (Dicken and others, 2005a, 2005b; Nicholson and others, 2005, 2006) were directly assigned to a particular subgroup number as listed in McCartan and others (1998). For example, the use of subgroup 32 (appendix 1, table 1-1) for schist rock types is continued in this study. Because some of the lithologic groups delineated as part of this study are large and contain several variable rock types, such as the metamorphosed clastic sedimentary, the mafic igneous and metamorphic equivalents, and the felsic igneous and metamorphic equivalent groups, the generalized rock types such as gneiss or schist, for example, were further divided to evaluate potential effects of mineralogical distinctions on geochemistry and thereby groundwater quality in the aquifers. Detailed descriptions of geologic units are available in the geographic information system (GIS) attributes for the State maps as compiled by Dicken and others (2005a, 2005b) and Nicholson and others (2005, 2006) (appendix 1, table 1-1). Where formation descriptions did not include mineralogy in the GIS attribute file, the USGS National Geologic Map Database Geologic Names Lexicon “GEOLEX” was used to obtain mineralogical descriptions of the formations ([http://ngmdb.usgs.gov/Geolex/geolex\\_home.html](http://ngmdb.usgs.gov/Geolex/geolex_home.html); accessed February 2011). Each lithologic group (with the exception of the unconsolidated sediments group) is categorized with regard to chemical composition as felsic, intermediate, mafic, carbonaceous, or sulfidic (appendix 1, table 1-1).

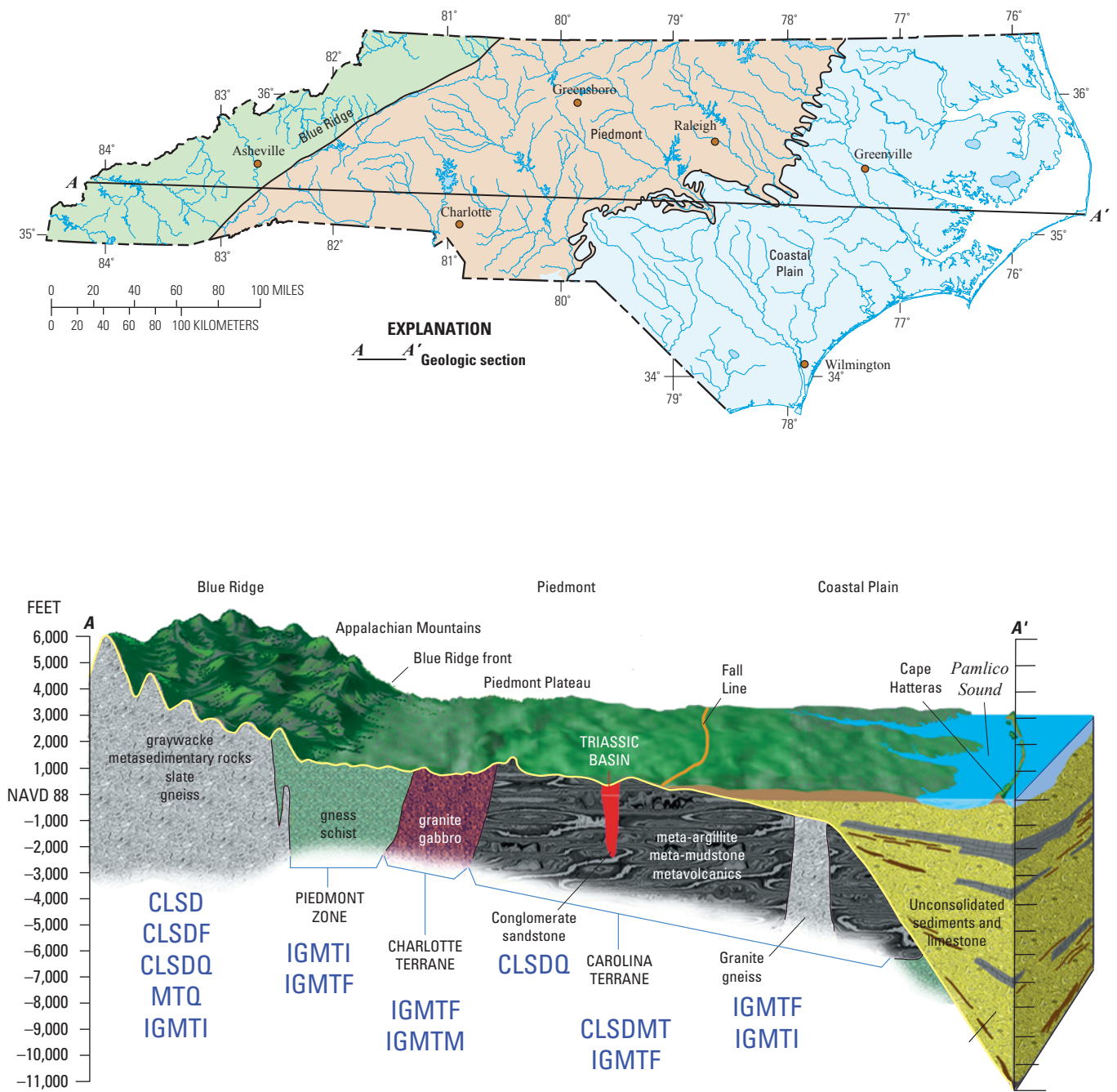
The metamorphosed clastic sedimentary lithologic group is subdivided into 16 lithochemical subgroups based on the presence of minerals that may affect aquifer geochemistry. For example, sulfidic characteristics [31s and 32s, following McCartan and others (1998)], graphitic content (32g and 35gns), the presence of calcareous minerals or rocks (35c), the presence of aluminous minerals (32al), the presence of mafic minerals (chlorite and hornblende, 32m; biotite, 41bs). The subgroup “u” designation is simply “undifferentiated” because the description of the geologic unit or formation indicated mixed rock types. Other distinctions were made with regard to rock types that have similar geologic origin, structure, or textural characteristics (35gn and 35ml) (appendix 1, table 1-1). Figure 7 shows an example of the further division of lithologic groups into lithochemical subgroups and corresponding geologic formations.

A few lithologic groups have only minor modifications from McCartan and others (1998). The quartz-rich metamorphic group has an additional 33my lithochemical subgroup for mylonitic rocks associated with major fault zones (Brevard

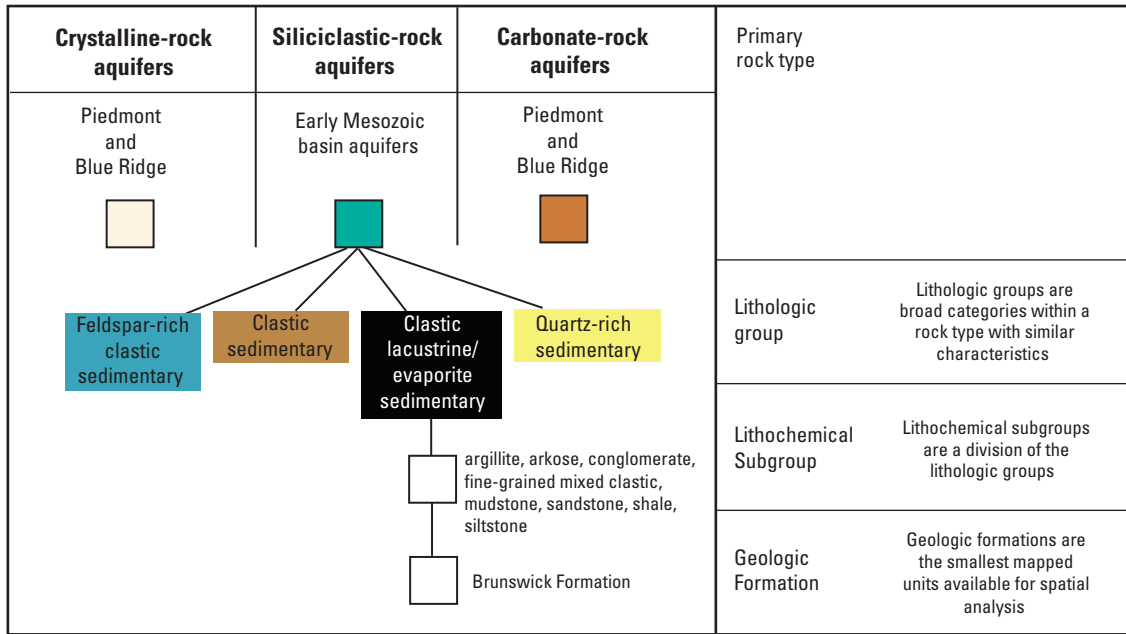


Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and  
 2005b and Nicholson and others, 2005 and 2006

**Figure 5.** Distribution of delineated lithologic groups and 1994–2008 sample locations within the study area, Piedmont and Blue Ridge Physiographic Provinces.



**Figure 6.** Generalized schematic cross-section diagram across North Carolina physiographic provinces showing generalized geologic terranes and common lithologic groups delineated as part of this study.



**Figure 7.** An example division of the aquifers into lithologic groups, lithochemical subgroups, and corresponding geologic formations.

fault zone, appendix 1, table 1-1). The intermediate igneous rocks and their metamorphic equivalents group includes distinctions for the more feldspathic subgroups (34f and 34fl) compared to the more intermediate composition groups (34i). This group also includes some rock type designations, including biotite gneiss (34bg) and augen gneiss (34agn), as well as mineralogical distinctions for sulfidic and graphitic rocks (34s). The mafic igneous and metamorphic equivalent rocks group has seven lithochemical subgroups, most of which follow McCartan and others (1998), with the addition of 41mv and 41v for metavolcanic and volcanic origin, respectively. A subgroup 44 was added for an undifferentiated mafic gneiss rock type. For the ultramafic rocks group, the subgroup 50gs was added to distinguish greenstones that did not contain carbonates. For the felsic igneous and metamorphic equivalent rocks group, the subgroup 61m is used to distinguish metamorphosed intrusive, while 61mf and 61mi distinguish compositional differences of felsic and intermediate, respectively. The subgroup 61v follows McCartan and others (1998) with the addition of 61mv for metavolcanic rocks. Where lithochemical subgroups were important to the interpretation and extrapolation of groundwater-quality data from this study for human health issues, the correlation of formations across State boundaries was reviewed. Geologic formations may be categorized differently based on the available geologic formation data and rock and mineral assemblage descriptions on the State maps (appendix 1, table 1-1, “ROCK\_TYPE1”; Dicken and others, 2005a, 2005b; Nicholson and others, 2005, 2006). Also, the USGS National Geologic Map Database, Geologic Names Lexicon “GEOLEX” searchable database was used to

obtain mineralogical descriptions of the formations ([http://ngmdb.usgs.gov/Geolex/geolex\\_home.html](http://ngmdb.usgs.gov/Geolex/geolex_home.html); accessed October 2012).

### Geochemical Controls on Naturally Occurring Trace Elements and Radionuclides in Groundwater

Dissolved chemicals in groundwater may be derived from rock weathering, biological processes, and anthropogenic sources. Dissolution of minerals in bedrock and overlying geologic materials commonly release naturally occurring constituents to the groundwater. Major cations (positively charged ions such as calcium, magnesium, sodium, and potassium), major anions (negatively charged ions such as sulfate, chloride, fluoride, and bicarbonate), and nonionic solutes (uncharged solutes such as silica and DO typically are present at concentrations greater than 1 mg/L, whereas trace constituents typically are present at concentrations less than 1 mg/L (Hem, 1985). However, dissolved concentrations of trace constituents can range widely depending on their occurrence in the rock or other source, the solubility of the constituent elements and interacting substances, and geochemical conditions such as pH and oxidation-reduction (redox) state that affect element form, mobility, and transport in the aqueous environment.

Groundwater from diverse environments may contain naturally occurring trace elements such as iron, manganese, zinc, lead, copper, nickel, vanadium, molybdenum, arsenic, radium, and uranium (Rose and others, 1979). Descriptions of

the mineral assemblages in mapped geologic units may be useful when identifying potential geologic sources of dissolved constituents, although the mere presence of minerals containing such constituents may not lead to elevated concentrations in the associated groundwater. Elevated concentrations of trace constituents tend to be found locally or are associated with specific aquifer settings, particularly (1) under acidic conditions where the solubilities and mobilities of many element species are increased (Kirby and Cravotta, 2005; Cravotta, 2008a,b) or (2) under reducing conditions where the dissolution of ferric iron [Fe(III)] and manganese [Mn(III,IV)] to more soluble ferrous Fe(II) and dissolved manganese [Mn(II)] can release adsorbed and coprecipitated metals (Langmuir, 1997, p. 294–296; McMahan and Chapelle, 2008).

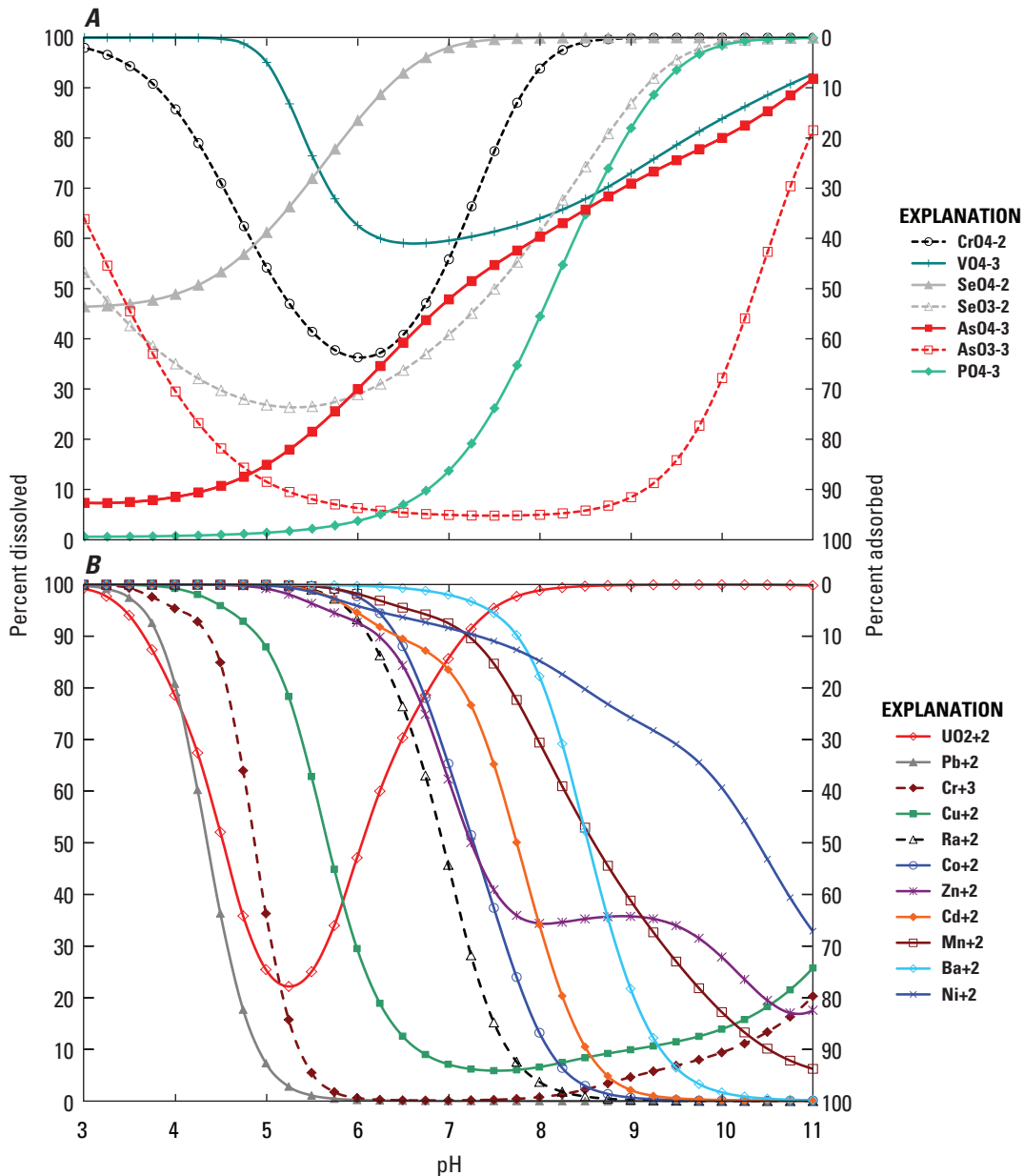
Although the release of trace elements through mineral weathering is a natural process, accelerated mineral decomposition that accompanies the development of strongly acidic or reducing conditions could be a consequence of human activities. For example, acidification can result from the excavation of sulfide minerals or the release of gaseous emissions containing sulfur or nitrogen oxides, and reduction can result from the disposal of organic wastes or over-fertilization. Furthermore, some constituents may originate from industrial sources, manmade materials, or land applications. Thus, in order to determine constituent concentrations that may have been added to groundwater as a consequence of land-use or waste-disposal practices, natural background concentrations for specific geologic settings need to be established. Additionally, in order to identify geochemical environments where elevated concentrations of constituents may be present, water-quality conditions such as pH and redox state and major ion composition need to be characterized.

Whether a dissolved constituent has originated from the weathering of rocks or from anthropogenic sources, its transport may be affected by its ionic charge, redox state, and tendency to interact with other dissolved elements (ion complexation) and solid surfaces (surface complexation or ion exchange). Redox-sensitive elements that commonly occur in more than one valence state under atmospheric conditions near the surface of the Earth include carbon (–4, +4), sulfur (–2, +6), nitrogen (–3, +3, +5), iron (+2, +3), manganese (+2, +3, +4), arsenic (–3, +3, +5), selenium (–2, +4, +6), chromium (+3, +6), molybdenum (+4, +6), vanadium (+3, +4, +5), and uranium (+3, +4, +5, +6). Although these and many other elements can have a positive valence state or core charge, the predominant aqueous species may be positively or negatively charged ions, depending on the tendency of the charged element to hydrolyze and to form aqueous complexes. Generally, the highly positively charged valences are present as cations form oxyanions and, less commonly, oxycations (Turner and others, 1981; Stumm and Morgan, 1996; Langmuir, 1997; Hodge and others, 1998). For example, in a reducing groundwater environment, chromium in the +3 valence state may be present as a cation ( $\text{Cr}^{+3}$ ), whereas in a strongly oxidizing environment, chromium in the +6 valence state may be present

as the oxyanion chromate ( $\text{CrO}_4^{-2}$ ). Likewise, under oxidizing conditions, arsenic in the +3 or +5 valence states tends to form the oxyanions arsenite ( $\text{AsO}_3^{-3}$ ) or arsenate ( $\text{AsO}_4^{-3}$ ), respectively, and uranium in the +6 valence state tends to form the uranyl ( $\text{UO}_2^{+2}$ ) oxycation. Furthermore, at the typical pH range of natural water, the uranyl ion may interact with carbonate and bicarbonate ions to form negatively charged carbonate complexes (Langmuir, 1997). The formation of such soluble ion complexes can increase the concentrations and transport of dissolved trace elements (Cravotta, 2008a, 2008b).

Concentrations of major cations and anions in natural waters generally are controlled by acid-base and precipitation-dissolution reactions; however, the concentration and mobility of most trace ions generally are controlled by surface-complexation (adsorption) reactions on hydrous Fe(III) oxides, Mn(III,IV) oxides, and aluminum oxides and silicates (Dzombak and Morel, 1990; Bowell, 1994; Stumm and Morgan, 1996; Drever, 1997; Langmuir, 1997). Consequently, the concentrations of trace elements in natural waters typically are far below the values that would be predicted for saturation with respect to a pure mineral phase (Drever, 1997; Cravotta, 2008b). For example, at the acidic pH range (5 to 6.5) of natural groundwater, dissolved oxyanions, such as chromate ( $\text{CrO}_4^{-2}$ ), phosphate ( $\text{PO}_4^{-3}$ ), selenite ( $\text{SeO}_3^{-2}$ ), selenate ( $\text{SeO}_4^{-2}$ ), arsenite ( $\text{AsO}_3^{-3}$ ), and arsenate ( $\text{AsO}_4^{-3}$ ), tend to be weakly sorbed and partly immobilized by hydrous ferric oxide (HFO) minerals (fig. 8, such as goethite ( $\text{FeOOH}$ ) and ferrihydrite [ $\text{Fe}(\text{OH})_3$ ]). However, at the alkaline pH range (7.5 to 9) of natural water, sorption of these anions generally decreases with increasing pH and is accompanied by corresponding increases in their dissolved concentrations (fig. 7). In contrast, dissolved cations, such as chromium ( $\text{Cr}^{+3}$ ), copper ( $\text{Cu}^{+2}$ ), cadmium ( $\text{Cd}^{+2}$ ), nickel ( $\text{Ni}^{+2}$ ), and zinc ( $\text{Zn}^{+2}$ ), tend to be poorly adsorbed and are relatively mobile at acidic pH, whereas at alkaline pH, the cation concentrations tend to be attenuated by adsorption on HFO and other oxide surfaces (fig. 8).

The apparent opposite sorption behavior of the anions and cations (fig. 8) results from a progressive decrease in the effective charge on oxide surfaces from positive (attractive to anions) to negative (attractive to cations) as the pH increases from acidic to alkaline values (Dzombak and Morel, 1990; Stumm and Morgan, 1996; Langmuir, 1997). At alkaline pH values, negatively charged oxide atoms at mineral surfaces attract cations; however, at acidic pH, protons attached to the oxide atoms yield an effective positive charge at the mineral surface and thus attract anions. In addition, the sorbed cations or anions may be displaced by other charged ions such as magnesium ( $\text{Mg}^{+2}$ ), chloride ( $\text{Cl}^-$ ), and sulfate ( $\text{SO}_4^{-2}$ ) through ion exchange or competition for sorption sites. Thus, concentrations of trace elements in solution may increase with concentrations of total dissolved solids, not only because of the release of trace constituents with the major ions dissolved from minerals, but because of the displacement of trace ions from surface sorption sites by the major ions. For the trace



**Figure 8.** Equilibrium fractions of initial concentrations of ions that may be dissolved or adsorbed on a finite amount of hydrous ferric oxide at 25 degrees Celsius as a function of pH. *A*, anions; *B*, cations.

elements that form aqueous complexes, the increase in soluble major ion concentrations also increases the likelihood of the formation of soluble ion complexes.

Cations and anions that had been adsorbed or coprecipitated with Fe(III) or Mn(III,IV) compounds may be remobilized under anoxic, reducing conditions. The reducing conditions must be sufficient to reduce and dissolve iron and manganese but not to produce sulfide, which tends to form insoluble compounds with many trace cations (Korte, 1991; Welch and others, 2000; Kirk and others, 2004). The reductive dissolution of Fe(III) and Mn(III,IV) oxides typically is coupled with the oxidation of organic compounds after supplies of dissolved oxygen, nitrate (NO<sub>3</sub><sup>-</sup>), and nitrite (NO<sub>2</sub><sup>-</sup>)

have been depleted, but before the development of sulfate-reducing conditions (Ehrlich, 1990; Stumm and Morgan, 1996; Drever, 1997; McMahon and Chapelle, 2008). Under such reducing geochemical conditions, the concentrations of dissolved iron and manganese and associated sorbed trace anions and cations may become elevated. Thus, the presence of dissolved iron, manganese, and sulfate in anoxic groundwater that lacks nitrate and nitrite can be interpreted to indicate reducing geochemical conditions capable of mobilizing trace elements associated with Fe(III) or Mn(III,IV) oxides in the aquifer (McMahon and Chapelle, 2008).

Naturally occurring radionuclides in groundwater include isotopes of uranium (U-238), thorium (Th-232), radium

(Ra-224, Ra-226, Ra-228), and radon (Rn-222). Uranium-238 is the parent of radium-226 and radon-222; thorium-232 is the parent of radium-228 and radium-224 (fig. 9). Uranium, thorium, radium, and other radioisotopes in the decay chains tend to be present as dissolved ions that are affected by different geochemical speciation, solubility, and sorption processes (Ames and others, 1983a, 1983b). Consequently, the presence of uranium, thorium, or radium in groundwater requires a mineral source and geochemical conditions in the aquifer that are conducive to transport of those elements. The presence of radon (of which radon-222 is the most abundant isotope) in groundwater is directly related to the presence of a decay-chain parent, such as uranium, in the aquifer because radon is a highly soluble noble gas that generally is not affected by chemical reactions. In addition, all radon isotopes have short half-lives and generally occur relatively near the parent source in the aquifer.

## Water-Quality Data and Methods

Groundwater-quality data collected by the USGS NAWQA Program (Gilliom and others, 1995) from wells in various hydrogeologic and land-use settings from Georgia through New Jersey were compiled to establish a regional database on water quality in the study area. The NAWQA design is discussed in Gilliom and others (1995) and Lapham and others (2005); protocols for collection of water-quality data are presented in Koterba and others (1995). The NAWQA groundwater sampling protocols specified prolonged flushing of the well to remove water stored in the well bore prior to sample collection (Koterba and others, 1995). Furthermore, field measurements of dissolved oxygen, pH, alkalinity, and other unstable constituents were routinely conducted without exposing samples to the atmosphere at the time of sample collection. Thus, the data used for this study are presumed to represent the in situ water-quality characteristics of the aquifer.

This report includes groundwater-quality data collected as part of 14 NAWQA studies across the eastern United States covering the Early Mesozoic basin principal aquifer and a variety of fractured felsic and mafic crystalline-rock aquifers of the Piedmont and Blue Ridge aquifer as described by Lapham and others (2005) (figs. 1 and 3). The compiled data are not distributed evenly throughout the study area and therefore are not spatially representative of all the aquifers. The dataset analyzed consists of 346 samples (appendix 1, tables 1-3 and 1-4) collected as part of land use, major aquifer, and drinking water studies (table 1). Each study involved a network of 20 to 30 wells to document and explain the occurrence and distribution of selected chemical compounds in groundwater in particular settings (Gilliom and others, 2006) (table 1; fig. 3; appendix 1, tables 1-3 and 14). Groundwater data from carbonate rock and glacial aquifers are not included in this study.

Data for physical characteristics and concentrations of dissolved chemical constituents in groundwater were compiled for the 346 sampled wells (appendix 1, tables 1-3 and 1-4). A variety of crystalline and siliciclastic bedrock types with associated lithologies were sampled at these well locations. Most of these data were collected during the late spring through the late summer. Although collected only once per site (from 1994 through 2008; appendix 1, table 1-4), the groundwater-quality data are assumed comparable for the purpose of evaluating spatial patterns in water quality for this study. Selected data from these compilations are presented in this report; all data compiled for this report are accessible on the World Wide Web at <http://infotrek.er.usgs.gov/apex/f?p=NAWQA:HOME:0;> accessed October 2012.

Analytical results for most samples were obtained for major ions, various trace elements (including iron, manganese, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, lithium, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, vanadium, and zinc), selected nutrients (including phosphorus and nitrogen compounds), dissolved organic carbon, and radionuclides [including radon-222 (hereafter referred to as radon), radium isotopes, uranium, and tritium] as well as temperature, specific conductance (SC), pH, and concentrations of dissolved oxygen (DO). All analyses are for dissolved constituents in water samples that were filtered in the field, unless otherwise specified. The water temperature, SC, pH, and dissolved-oxygen concentrations were measured in the field immediately prior to sample collection. Other chemical analyses were conducted at the USGS National Water Quality Laboratory (NWQL) in Denver, Colorado (Patton and Truitt, 1992; Brenton and Arnett, 1993; Fishman, 1993; Werner and others, 1996).

To assess the potential for naturally occurring solutes to contaminate drinking water, the concentrations of chemical constituents are compared to criteria for protection of human health such as USEPA (2009) drinking water maximum contaminant levels (MCLs) and secondary maximum contaminant levels (SMCLs) or health-based screening levels (HBSLs). Because water quality at a given location will vary temporally owing to natural hydrologic processes and seasonality, and because samples were collected only once from each well, constituent concentrations also were compared to a value of one-tenth of the relevant human health criteria. Consideration of this lower threshold level increases the certainty that constituents will be acknowledged that could have human health implications under variable circumstances.

The reported water-quality data were used to compute mineral saturation indices (explained below), hardness, and groundwater redox classes. Hardness was calculated as the sum of calcium and magnesium concentrations and is expressed as calcium carbonate (Fishman, 1993). The redox class was determined on the basis of concentrations of dissolved oxygen, nitrate, manganese, iron, and sulfate using thresholds of McMahon and Chapelle (2008). The redox classifications used in this report were simplified to consider only

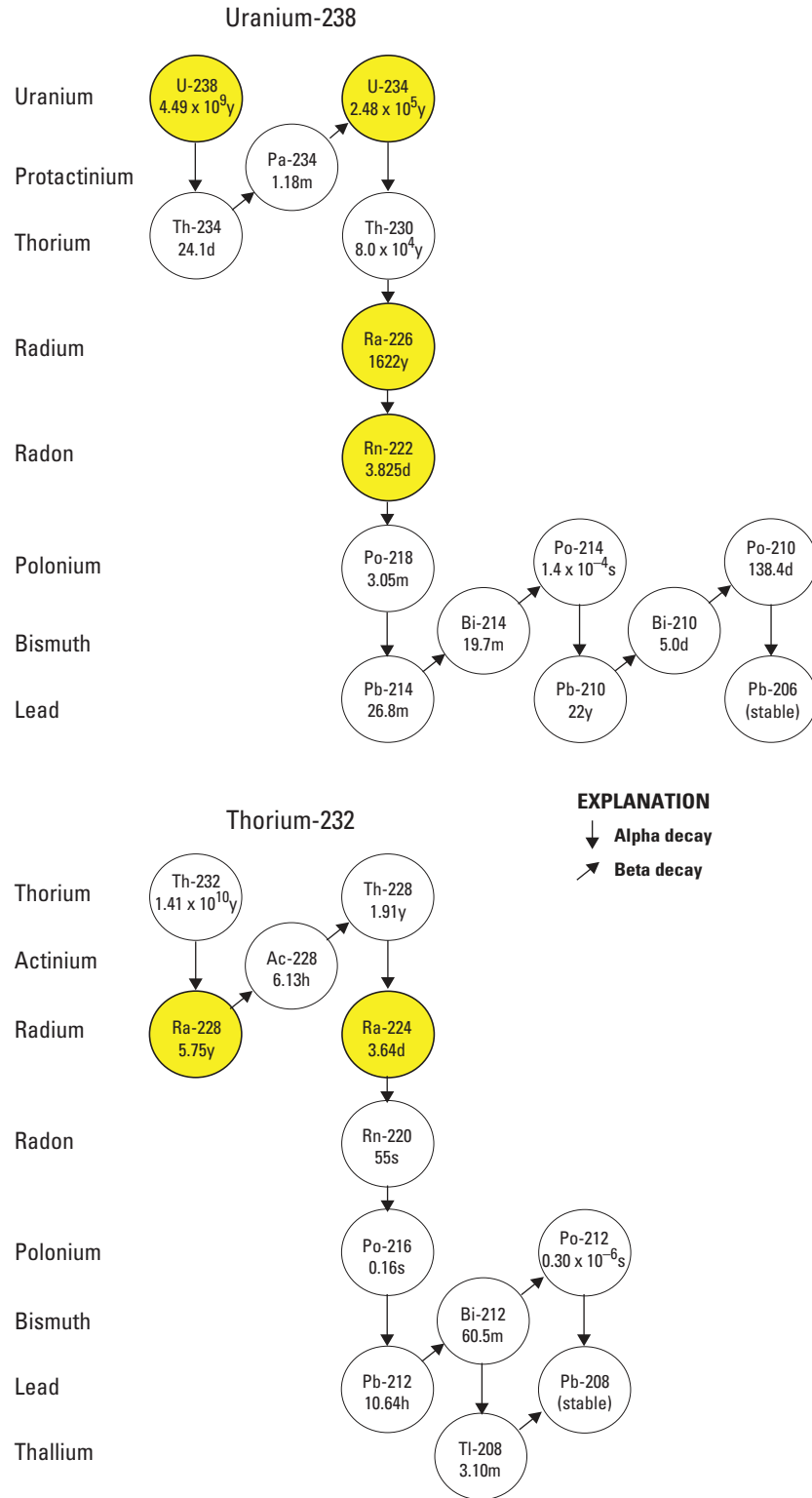


Figure 9. Uranium-238 and thorium-232 decay series.



three major classes: “anoxic” ( $\text{DO} < 0.5 \text{ mg/L}$ , manganese  $\geq 50 \text{ }\mu\text{g/L}$ , and iron  $\geq 100 \text{ }\mu\text{g/L}$ ); “mixed” ( $\text{DO} \geq 0.5 \text{ mg/L}$  and either manganese  $\geq 50 \text{ }\mu\text{g/L}$  or iron  $\geq 100 \text{ }\mu\text{g/L}$ ); and “oxic” ( $\text{DO} \geq 0.5 \text{ mg/L}$ , manganese  $< 50 \text{ }\mu\text{g/L}$ , and iron  $< 100 \text{ }\mu\text{g/L}$ ).

Ancillary geospatial data were compiled to describe the physical characteristics of the watersheds within the potential contributing areas of 1,640 ft (NAWQA buffer for ancillary data including land use, census data, nutrient sources, and point sources) of sampled wells. Each groundwater sample site was classified on the basis of the physiographic setting, bedrock type (crystalline or siliciclastic), lithologic group, and lithochemical subgroup (table 3). Land-cover data were compiled and used to compute the percentage of four major land uses (wetland, forested, agricultural, and urban) within 1,640 ft of sampled wells (appendix 1, table 1-3). Generalized land cover was modified from the National Land Cover Database 1992 (NLCD 1992) using historical land-use and land-cover data (Price and others, 2007) (fig. 2).

## Graphical and Statistical Analyses

Various graphical and statistical techniques were used in this report to compare water-quality data for different aquifers or geologic settings, to estimate natural and anthropogenic sources of dissolved constituents, and to identify possible factors affecting the occurrence or transport of solutes in the aquifers in the study area. In general, nonparametric, rank-based statistical approaches were used to accommodate non-normally distributed and censored data typical of most environmental samples (Helsel and Hirsch, 2002). Data for individual continuous variables, such as chemical concentrations, were censored to a common level, and censored values were set to a common reporting limit before ranks were computed for use in statistical tests. Relations between continuous variables were evaluated with scatter plots and correlation coefficients (Spearman’s rho); distributions of continuous variables were compared among different groups (such as lithology) using probability plots, boxplots, and rank-sum or rank-transform analysis-of-variance (ANOVA) (Helsel and Hirsch, 2002).

The data reported for trace element concentrations typically included “censored” values that were less than ( $<$ ) the reporting limit. The reporting limit for a given constituent generally was not uniform for all samples. For example, 157 of 253 samples had censored values for arsenic concentration at five different reporting limits, in micrograms per liter, with count (n) indicated in parentheses:  $<0.06$  (n = 11),  $<0.12$  (n = 15),  $<0.26$  (n = 23),  $<1.0$  (n = 106), or  $<2.0$  (n = 2). However, the other 96 samples had reported trace element concentrations ranging from 0.036 to 57  $\mu\text{g/L}$  (appendix 1, tables 1-4 and 1-5). Only 42 of these reported concentration values were greater than 2.0  $\mu\text{g/L}$ , which was the highest common reporting limit (HCRL) for arsenic (appendix 1, tables 1-4 and 1-5). For statistical tests and other computations, the censored data and reported values less than the HCRL were considered equivalent to the HCRL at 0.99 times the HCRL for most

constituents; however, for several constituents (arsenic, zinc, iron, manganese, aluminum), where the HCRL applied to few samples and resulted in excessive censoring, the next highest common reporting limit was considered. In the case of arsenic, the next highest reporting limit is 1.0  $\mu\text{g/L}$ , which is one-tenth of the MCL and one-half of USEPA’s health advisory level of 2.0  $\mu\text{g/L}$  (U.S. Environmental Protection Agency, 2001) (appendix 1, tables 1-4 and 1-5).

Probability plots and boxplots are used to illustrate univariate distributions for the different aquifers and associated lithologic groups or redox classes. Horizontal reference lines on the plots indicate the applicable values of drinking water or other human health benchmarks. Probability plots indicate the frequency (x-axis), or the proportion, of samples within the crystalline- and siliciclastic-rock aquifers that exceeded the constituent concentration (y-axis) or other plotted parameter values. For parameters without censored data (where all reported values exceeded the detection limits), the maximum and minimum reported values correspond to the 0.0 and 1.0 probability values, respectively, and the median value corresponds to the 0.5 probability value. Censored values are not displayed, but are counted to estimate the frequency of samples that exceeded the reported values. For parameters with censored data, the minimum plotted value corresponds to the lowest reported value greater than the detection limit. For some constituents, such as fluoride, cobalt, lead, and selenium, the minimum reported value has a frequency of exceedance less than 0.5, which indicates the median is a censored value.

Boxplots were used to show the water-quality concentration distributions for the three lithologic groups of the siliciclastic-rock aquifers and the six lithologic groups of the crystalline-rock aquifers that have water-quality data (table 3). The boxplots show the percentile distributions of samples with concentrations equal to or less than the associated value. All censored values were set to a common reporting limit. Where the median for a group is greater than the common reporting limit, it is displayed as a horizontal line within the box that is defined by the 25th and 75th percentiles for that group; otherwise, the median is displayed at the reporting limit. Along the top of each boxplot, the number of samples in each group is shown above a letter symbol. Groups with a different letter symbol have mean ranks that are significantly different on the basis of the nonparametric Tukey test (Helsel and Hirsch, 2002) (appendix 1, table 1-6). Results were ranked and coded sequentially, with the group with the highest mean rank coded “A,” the group with the next highest mean rank coded “B,” then “C,” and so on; overlapping groups were coded with letters for overlapping groups, “BC,” for example, or “BD,” representing overlap with groups B and C, and B, C, and D, respectively. Only the first and last letters of the range of overlapping groups are listed. The mean ranks of groups with one or more of the same letters are not significantly different. Although the mean ranks of groups may not differ, data

values greater than the 75th percentile are of particular interest because these values may exceed relevant benchmarks.

The frequency and number of samples within specified pH and redox classes are illustrated using a bivariate matrix. These pH-redox matrices are used in this report to indicate relations among aquifer lithology, geochemical environment, and probability of contaminant occurrence. Each matrix considers four general pH classes (x-axis—pH 4.5 to <5.5; 5.5 to <6.5; 6.5 to <7.5; 7.5 to <8.5) and the three simplified redox classes (y-axis—anoxic; mixed; oxic). The pH-redox matrices indicate the frequency of occurrence of the pH-redox classes by lithologic group and the frequency of occurrence of contaminant concentrations in relation to a specified reporting limit or human health benchmark for all the groups combined. The corresponding reporting limit or benchmark value and the total number of samples considered are indicated at the top of the matrix. The number of samples counted within each pH-redox class is color-coded to highlight those pH-redox classes with the greatest frequency of samples exceeding relevant limits.

Principal components analysis (PCA), computed with SAS 9.2 (SAS Institute, Inc., 2008), was used to evaluate multivariate correlations among the elements in the regional groundwater dataset without prior classification. The goal was to identify important hydrochemical processes or master variables that could explain element associations and distributions (Joreskog and others, 1976; Drever, 1997; Thyne and others, 2004). The Spearman-rank correlation coefficient matrix for the groundwater dataset (appendix 1, table 1-7) provided the standardized input for the PCA. Because the PCA model would exclude the entire record for any sample with a missing value, those constituents that were missing or those that were censored in more than 40 percent of the samples, such as dissolved aluminum, fluoride, bromide, organic carbon, and many trace elements, were excluded. The PCA model was optimized with varimax rotation, and only principal components with eigenvalues greater than unity, equivalent to correlations with a probability greater than or equal to 0.999, were retained (Joreskog and others, 1976; Thyne and others, 2004). Loadings for each constituent included in the PCA model are equivalent to the Spearman-rank correlation coefficient between that constituent and the principal component. To aid in interpretations, the scores for each principal component in the PCA model were compiled and then evaluated by correlation or graphical analysis with additional variables that had been excluded from the PCA, such as lithology, land use, well depth, and chemical constituents. For simplification of displayed results, the loading values and Spearman-rank correlation coefficient values are multiplied by 100 and rounded. Significant correlation coefficients for the additional variables are displayed beneath the main PCA model results; only correlation coefficients with probability greater than or equal to 0.999 are considered significant.

## Geochemical Modeling

Geochemical equilibrium models were developed to explain the occurrence of solutes in different geochemical environments and the relations among concentrations of dissolved constituents in the groundwater samples. Aqueous speciation computations with WATEQ4F (Ball and Nordstrom, 1991) and PHREEQC (Parkhurst and Appelo, 1999) using the WATEQ4F database were used to evaluate the potential for the concentrations of dissolved constituents to be limited by precipitation-dissolution and (or) adsorption-desorption processes. The computed mineral saturation index (SI) values for various major and trace minerals were used to indicate the potential for mineral dissolution and precipitation. If a mineral phase is undersaturated in groundwater (SI less than 0), that mineral phase (if present) has the potential to be dissolved by the groundwater. Likewise, if a mineral is supersaturated in groundwater (SI greater than 0), that mineral phase feasibly could precipitate, thus limiting the dissolved constituent concentrations. To illustrate potential differences in geochemical properties, the SI values for selected minerals were illustrated as boxplots by lithologic groups.

Adsorption and desorption of anions and cations on hydrous ferric-oxide-coated surfaces were evaluated using a diffuse double-layer modeling approach with PHREEQC (Parkhurst and Appelo, 1999), aqueous speciation data from WATEQ4F (Ball and Nordstrom, 1991), and surface complexation data from Dzombak and Morel (1990). Supplemental thermodynamic data for radium, chromium, cobalt, and vanadium were obtained from the ThermoChimie data base offered with PHREEQC (sit.dat), and surface-complexation constants for radium were estimated using empirical adsorption data presented by Benes and others (1984). For all of the sorption models, to be consistent with Dzombak and Morel (1990), the hydrous ferric oxide was specified as 90 mg/L, with a specific surface area of 600 square meters per gram consisting of  $5 \times 10^{-6}$  moles of strong binding sites and  $2 \times 10^{-4}$  moles of weak binding sites. Aqueous speciation and adsorption distribution for a range of pH values were computed, and the percentage of the total concentration distributed between the solution and sorbent was plotted as a function of pH. The sorption modeling results were illustrated as fractions of initial concentrations of ions that may be dissolved or adsorbed on a finite amount of hydrous ferric oxide at 25 degrees Celsius ( $^{\circ}\text{C}$ ) as a function of pH.

## Water-Quality Characteristics of Aquifers, Lithologic Groups, and Lithochemical Subgroups

Descriptions of groundwater quality generally include concentrations of major ions, pH, dissolved oxygen, and other variables. In this report, these characteristics are described in order to explain naturally occurring contaminants in groundwater from different geologic settings and geochemical environments.

The groundwater quality for the PBR crystalline-rock aquifers generally differed from that for the Early Mesozoic siliciclastic-rock aquifers, considering the major ion and other constituent concentrations for the two bedrock types (figs. 10–14). Compared to the crystalline-rock aquifers, the groundwater from siliciclastic-rock aquifers had higher maximum and median concentrations of total dissolved solids, hardness, calcium, alkalinity (calcium carbonate), and sulfate (figs. 10–11). Although the median concentrations of magnesium, sodium, chloride, and nitrate in groundwater from siliciclastic aquifers also were higher than those medians for the crystalline-rock aquifers, the maximum concentrations of these constituents were present in groundwater from the crystalline-rock aquifers (figs. 10–11). Although median concentrations of silica were comparable for the two aquifer rock types, the crystalline-rock aquifers had a larger range for silica concentrations and larger ranges and higher medians for potassium and aluminum concentrations than the siliciclastic-rock aquifers (figs. 10–11).

The PBR crystalline-rock aquifers and the Early Mesozoic siliciclastic-rock aquifers also exhibited differences in the frequency distributions of minor and trace constituents in the groundwater (figs. 12–14). However, as explained previously and in more detail below, spatial and temporal variations in concentrations of these constituents may be attributed to variations in lithology within a particular rock type (lithologic group, lithochemical subgroup) and (or) geochemical environment (pH and redox conditions) within the aquifer (figs. 15–21). For example, the pH of the groundwater samples evaluated for this study ranged from 4.7 to 8.2 (fig. 12A, appendix 1, table 1-4). Although the highest and lowest pH values were recorded for groundwater from the PBR crystalline-rock aquifers, the groundwater from the Early Mesozoic siliciclastic-rock aquifers, particularly the clastic sedimentary (CLSD) and clastic lacustrine/evaporite sediments (CLSD-LAC), generally had higher mean rank pH values than the PBR crystalline-rock aquifers, particularly the felsic or intermediate igneous and metamorphic lithologic units (IGMTI) (fig. 16C). About 70 percent of groundwater samples from the siliciclastic-rock aquifers had pH greater than 7 compared to only about 10 percent from the crystalline-rock aquifers.

Although DO concentrations in the groundwater varied widely, a majority of samples for all the aquifer lithologies could be characterized as oxic, with DO greater than or equal

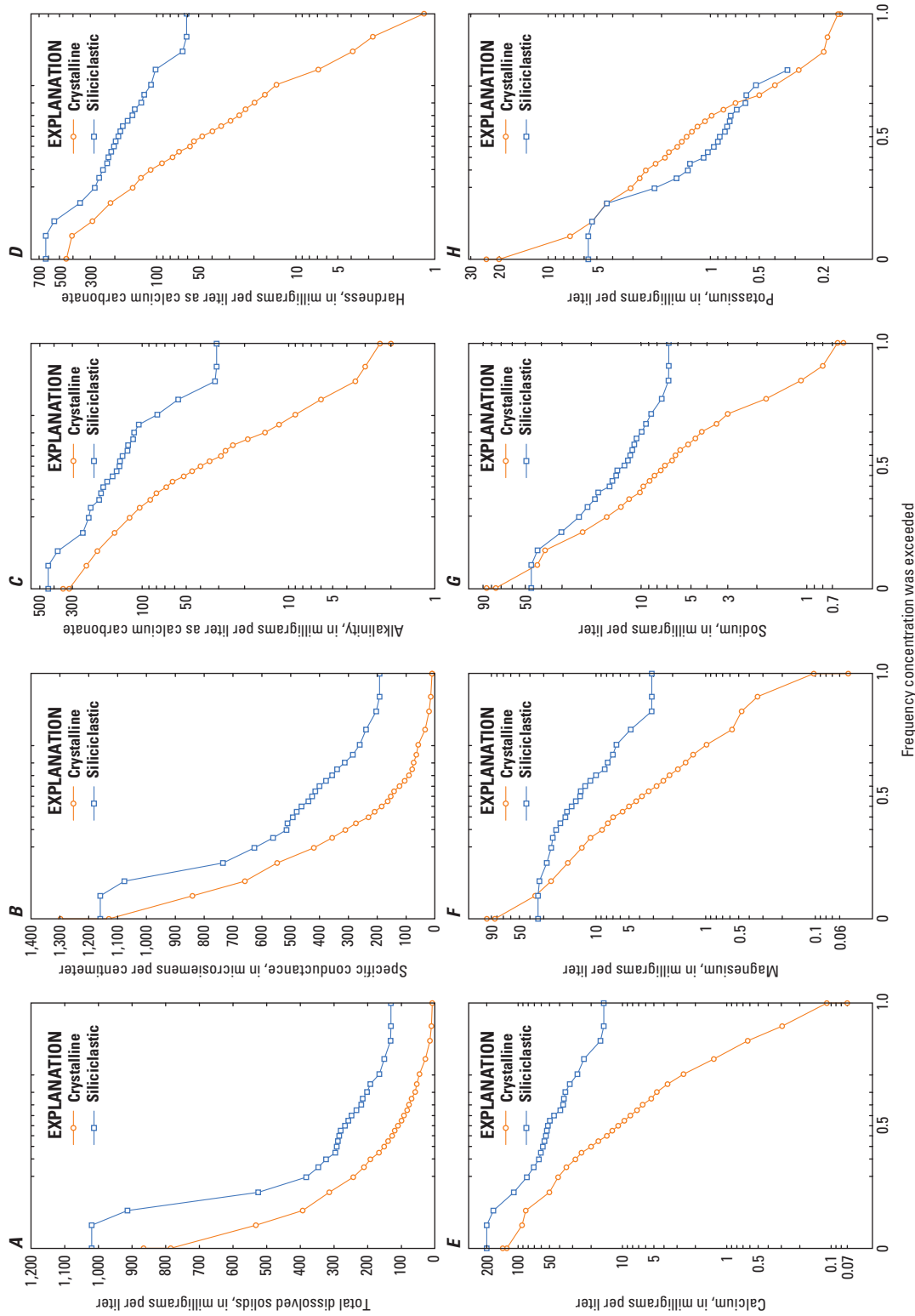
to 0.5 mg/L (fig. 12B). Seven redox classes were determined on the basis of concentrations of DO, nitrate, manganese, iron, and sulfate by using thresholds of McMahon and Chapelle (2008). Of the 346 groundwater samples evaluated for this study, 65.0 percent were classified as “oxic” (with DO greater than or equal to 0.5 mg/L); 18.2 percent were classified as “mixed” (with DO greater than or equal to 0.5 mg/L and manganese greater than or equal to 50 mg/L or iron greater than or equal to 100 mg/L); 14.2 percent were classified “anoxic” (with DO less than 0.5 mg/L); and the remaining 2.6 percent, which lacked data for DO, were classified as “unknown.” Based on the Tukey analysis, DO concentrations in groundwater did not differ among lithologies (fig. 15). Of the anoxic samples, 3.2 percent were suboxic, 1.7 percent were nitrate-reducing, 1.7 percent were manganese-reducing, 5.8 percent were iron-reducing, and 0.3 percent were methanogenic. Because few samples could be characterized as strongly reducing, the anoxic samples were considered as a single class for evaluation of geochemical environment.

To evaluate the potential for aquifer lithology to affect contaminant concentrations, the water-quality data and saturation indices for selected minerals were considered in relation to the major bedrock type, lithologic groups, and lithochemical subgroups [tables 3 and 4 (table 4 available online at <http://pubs.usgs.gov/sir/2013/5072/>), figs. 10–17]. To evaluate potential for geochemical factors to affect the mobility of contaminants in the aquifer, the saturation indices for minerals that may be present in the aquifers and soil were summarized by lithologic group (figs. 18 and 19), and the frequency of contaminant detections and exceedances of human health benchmarks were evaluated with respect to the groundwater pH and redox characteristics (figs. 20 and 21) that may affect the adsorption and release of trace constituents by iron and manganese oxides.

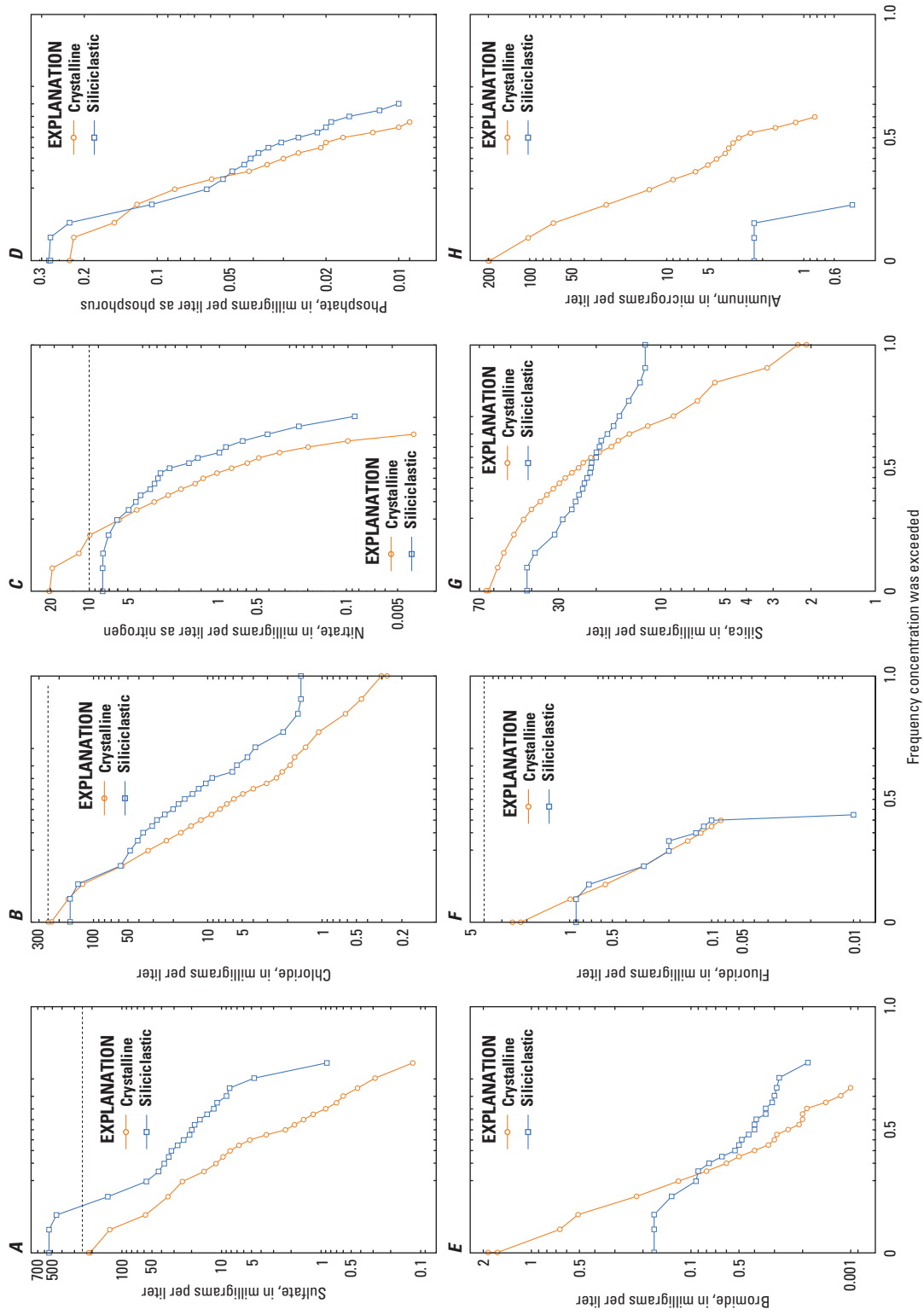
### Exceedances of Drinking Water Criteria

Constituents of potential concern were identified on the basis of drinking water exposure guidelines proposed by the USEPA for sources of public drinking water (U.S. Environmental Protection Agency, 2009, 2010), including MCLs, HBSLs, or other criteria such as SMCLs. HBSLs were developed by the USGS, USEPA, New Jersey Department of Environmental Protection (NJDEP), and Oregon Health and Science University (OHSU) as an interagency pilot effort beginning in 1998 to communicate the potential relevance of the water-quality findings of the USGS NAWQA Program in a human-health context (Toccalino and others, 2012).

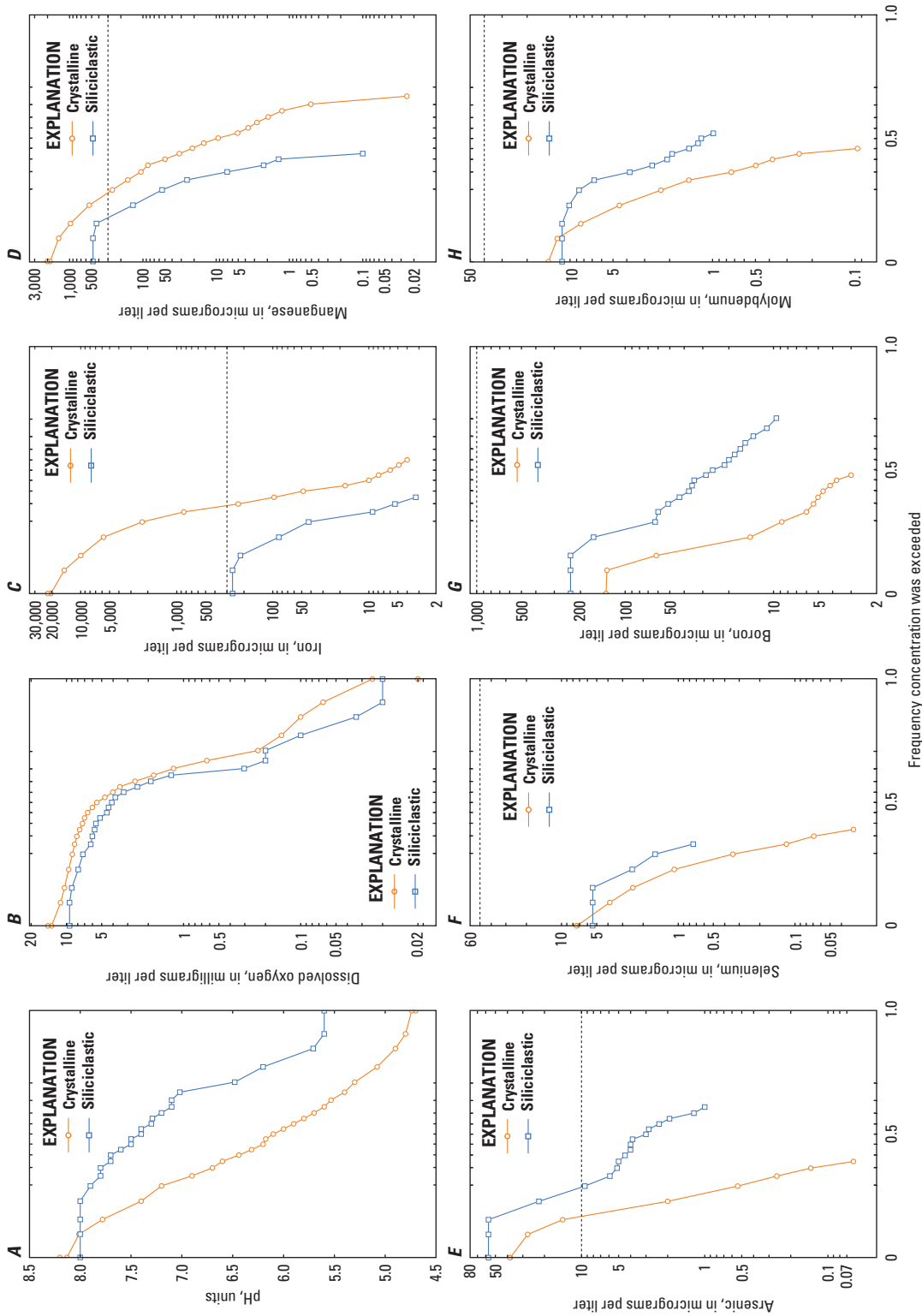
Provisionally promulgated drinking water standards for radium (U.S. Environmental Protection Agency, 1976) became final with the Radionuclide Rule of 2000 (U.S. Environmental Protection Agency, 2000) when the other proposed standards for radionuclides were also finalized, or in the case of uranium, newly promulgated. Uranium, radium, and radon are radioactive elements that can increase human cancer risk



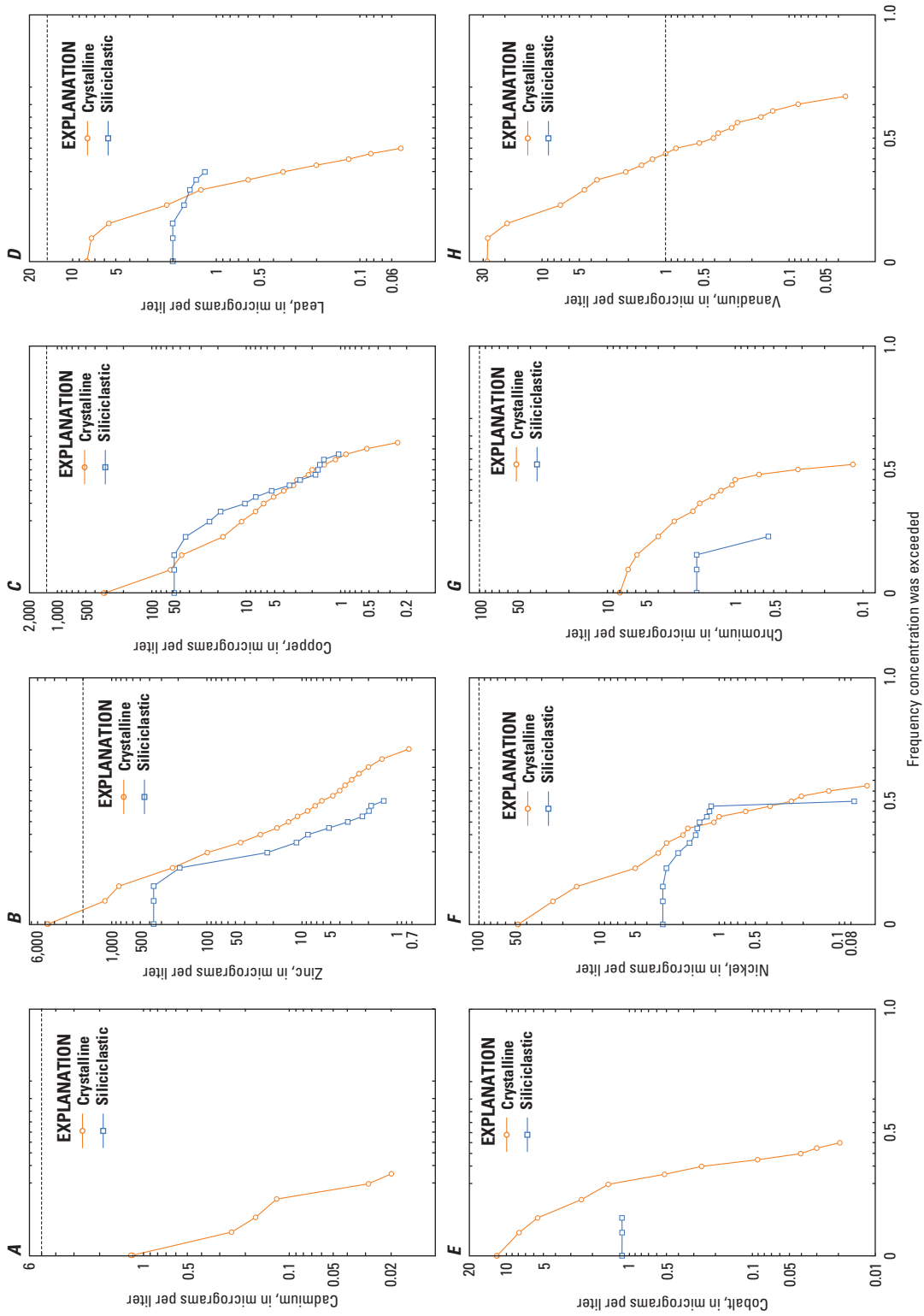
**Figure 10.** Probability plots of groundwater-quality data for siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, total dissolved solids; B, specific conductance; C, alkalinity; D, hardness; E, calcium; F, magnesium; G, sodium; and H, potassium.



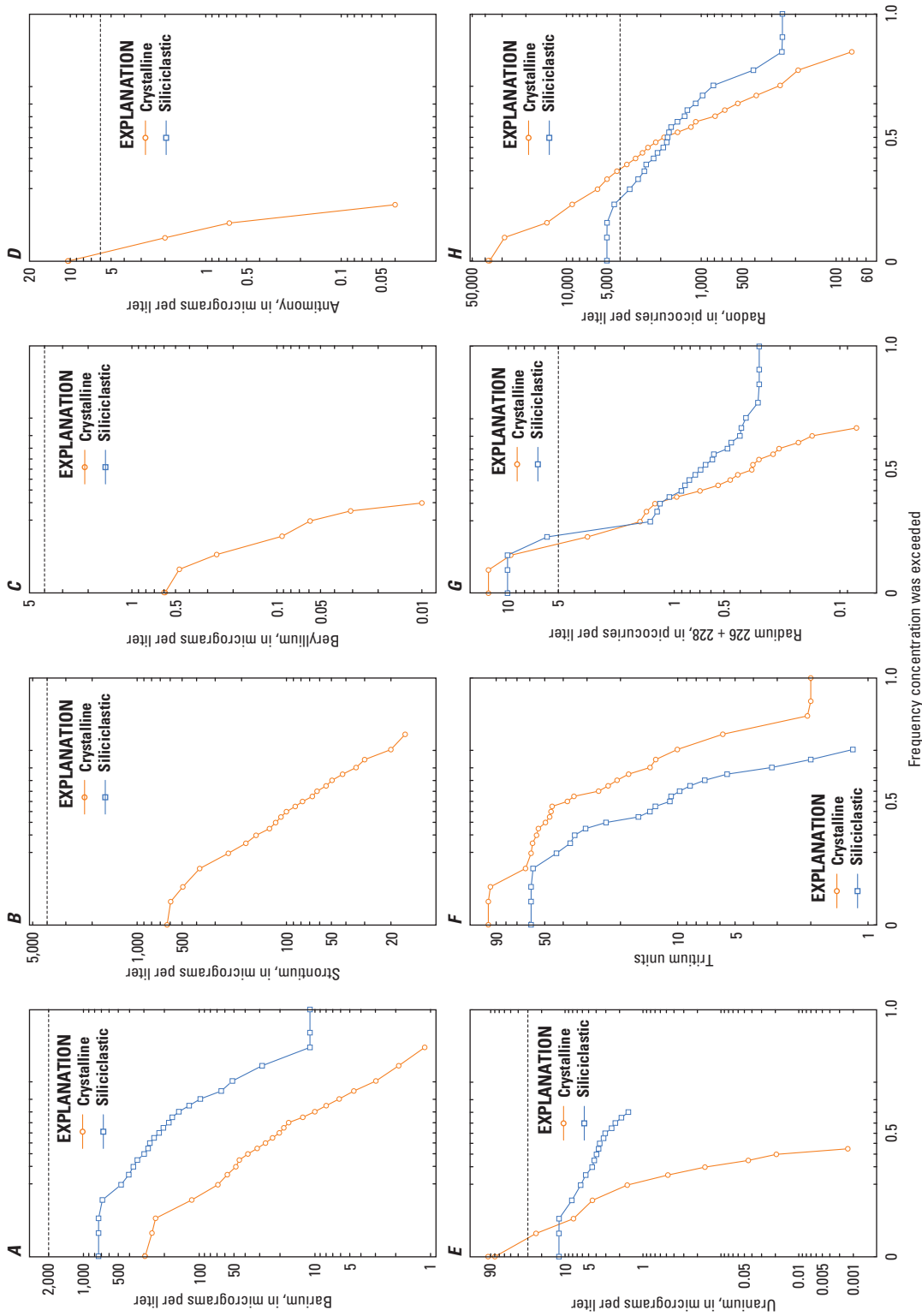
**Figure 11.** Probability plots of groundwater-quality data for siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, sulfate; B, chloride; C, nitrate; D, phosphate; E, bromide; F, fluoride; G, silica; and H, aluminum.



**Figure 12.** Probability plots of groundwater-quality data for siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, pH; B, dissolved oxygen; C, iron; D, manganese; E, arsenic; F, selenium; G, boron; and H, molybdenum.

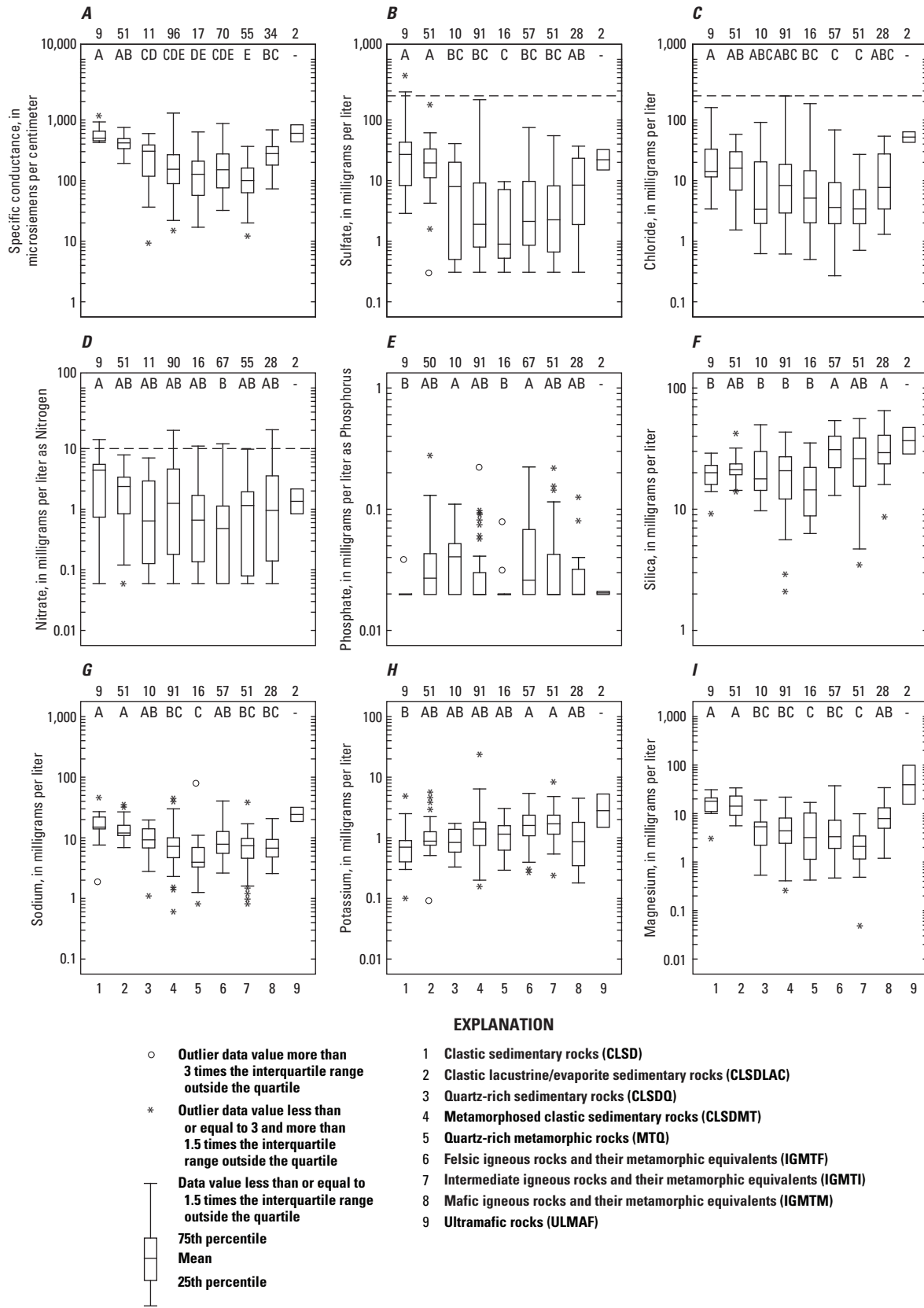


**Figure 13.** Probability plots of groundwater-quality data for siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, cadmium; B, zinc; C, copper; D, lead; E, cobalt; F, nickel; G, chromium; and H, vanadium.

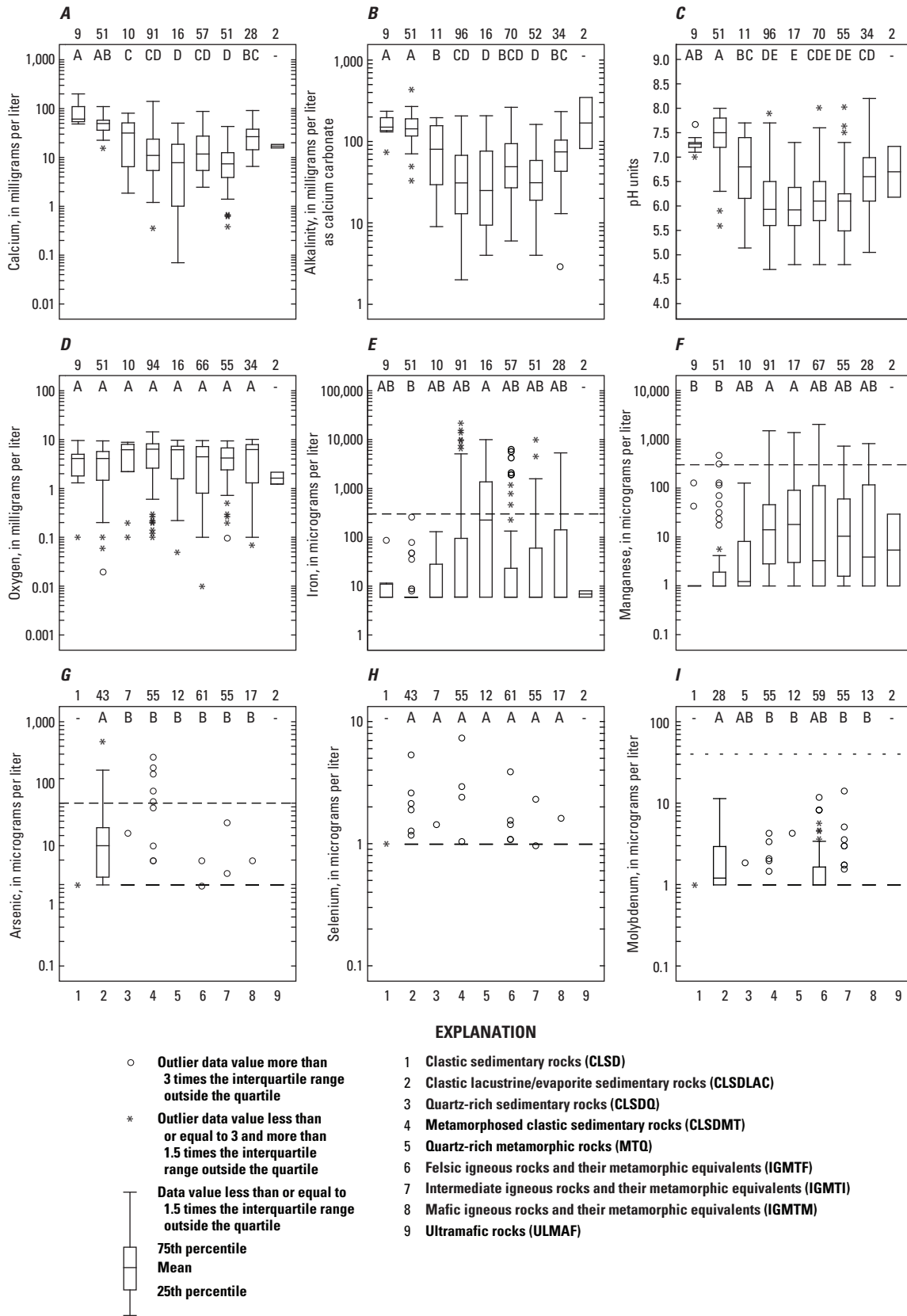


**Figure 14.** Probability plots of groundwater-quality data for siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, barium; B, strontium; C, beryllium; D, antimony; E, uranium; F, tritium; G, radium; and H, radon.

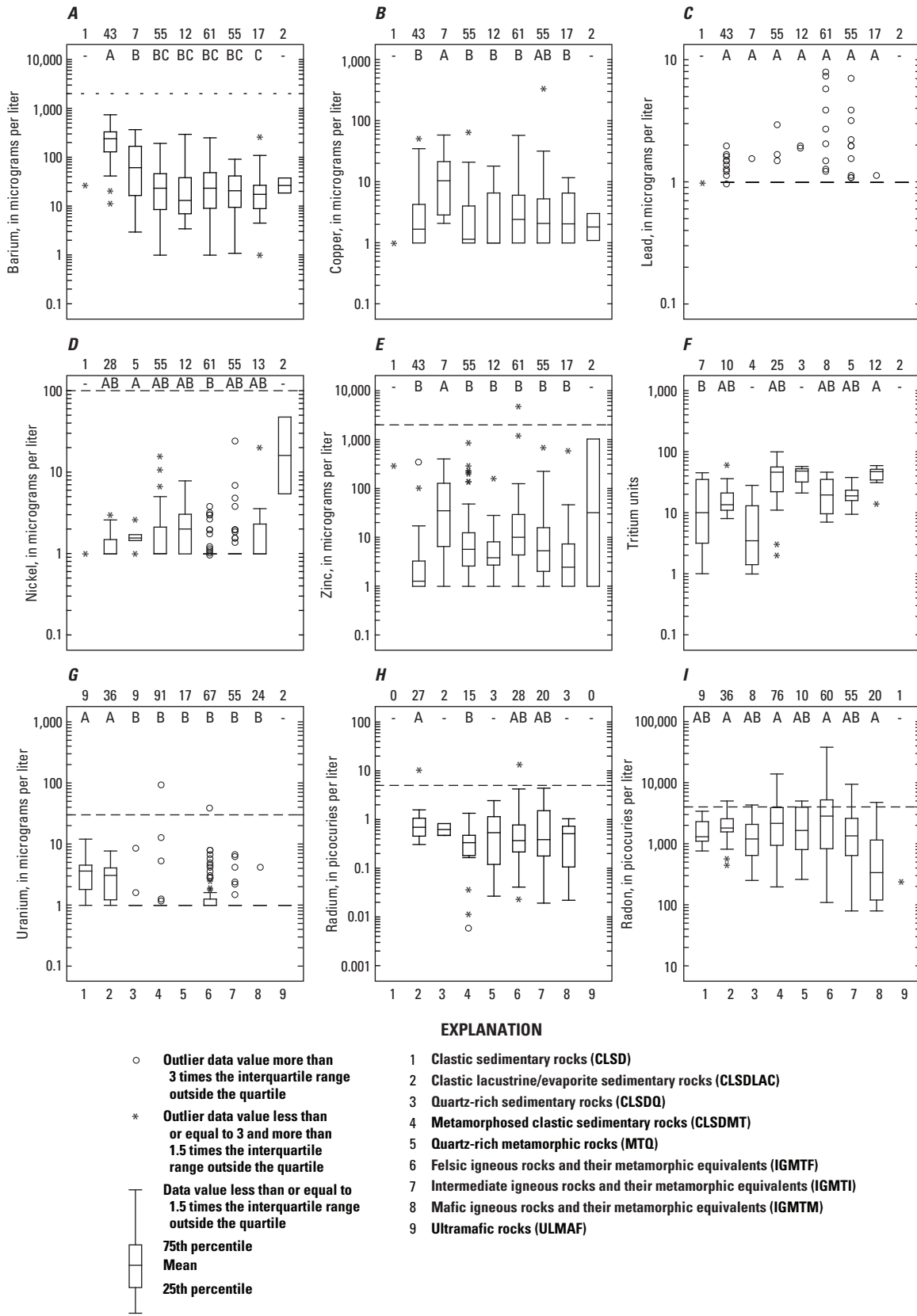




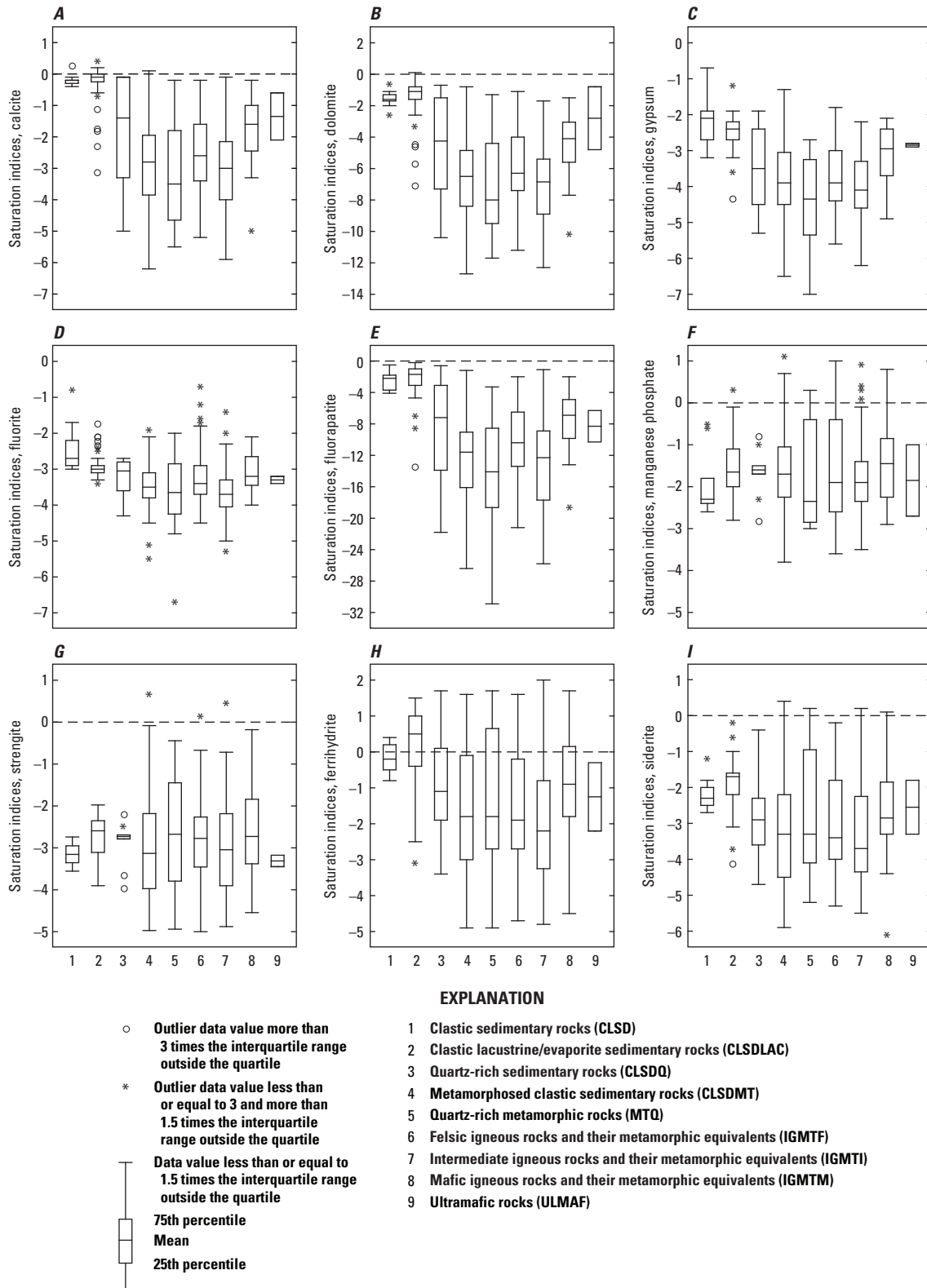
**Figure 15.** Groundwater-quality data by lithologic groups of siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. *A*, specific conductance; *B*, sulfate; *C*, chloride; *D*, nitrate; *E*, phosphate; *F*, silica; *G*, sodium; *H*, potassium; and *I*, magnesium.



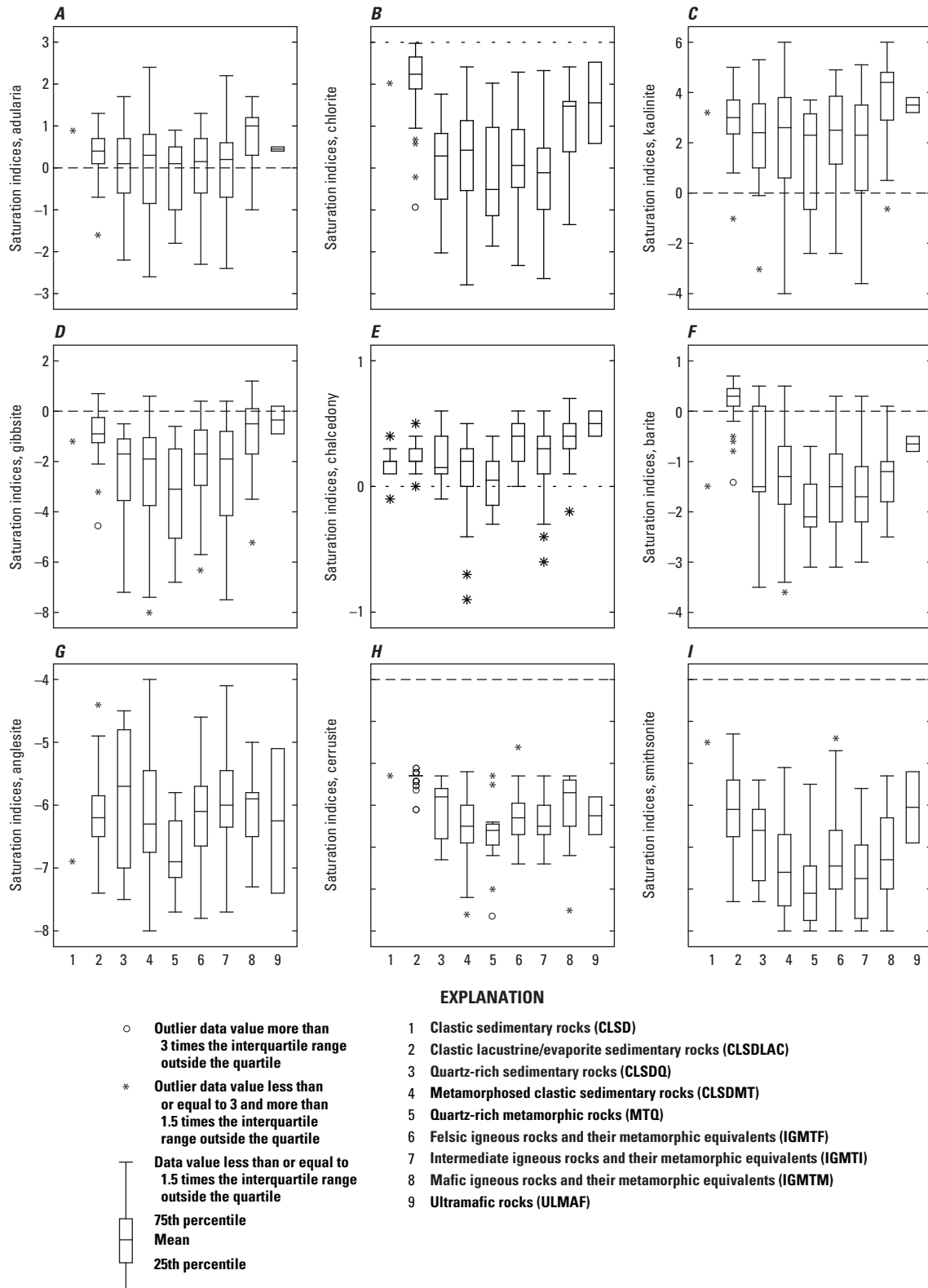
**Figure 16.** Groundwater-quality data by lithologic group of siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. *A*, calcium; *B*, alkalinity; *C*, pH; *D*, dissolved oxygen; *E*, iron; *F*, manganese; *G*, arsenic; *H*, selenium; and *I*, molybdenum.



**Figure 17.** Groundwater-quality data by lithologic group of siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. A, barium; B, copper; C, lead; D, nickel; E, zinc; F, tritium; G, uranium; H, radium 226+228; and I, radon-222.



**Figure 18.** Saturation indices (SI) for selected minerals in groundwater by lithologic group of siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces. *A*, calcite; *B*, dolomite; *C*, gypsum; *D*, fluorite; *E*, fluorapatite; *F*, manganese phosphate; *G*, strengite; *H*, ferrihydrite; and *I*, siderite.



**Figure 19.** Saturation indices (SI) for selected minerals in groundwater by lithologic group of siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces. *A*, andularia; *B*, chlorite; *C*, kaolinite; *D*, gibbsite; *E*, chalcedony; *F*, barite; *G*, anglesite; *H*, cerrusite; and *I*, smithsonite.

**A. All samples: 9 lithologic subgroups (n=337)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	2.7 (9)	8.6 (29)	3.3 (11)
Mixed	3.9 (13)	9.8 (33)	4.7 (16)	0.3 (1)
Oxic	9.2 (31)	33.2 (112)	15.1 (51)	9.2 (31)

**B. CLSD: Clastic sedimentary (n=9)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	11.1 (1)	x
Mixed	x	x	x	x
Oxic	x	x	77.8 (7)	11.1 (1)

**C. CLSDQ: Quartz-rich sedimentary (n=10)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	x	10.0 (1)
Mixed	10.0 (1)	10.0 (1)	10.0 (1)	x
Oxic	x	20.0 (2)	20.0 (2)	20.0 (2)

**D. CLSDLAC: Clastic lacustrine (n=51)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	7.8 (4)	13.7 (7)
Mixed	x	x	2.01 (1)	x
Oxic	x	7.8 (4)	27.5 (14)	41.2 (21)

**E. CLSDMT: Metamorphosed clastic sedimentary (n=94)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	5.3 (5)	4.3 (4)	x
Mixed	2.1 (2)	16.0 (15)	4.3 (4)	x
Oxic	14.9 (14)	35.1 (33)	13.8 (13)	4.3 (4)

**F. MTO: Quartz-rich metamorphic (n=16)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	12.5 (2)	x
Mixed	18.8 (3)	18.8 (3)	x	x
Oxic	6.3 (1)	37.5 (6)	6.3 (1)	x

**G. IGMTF: Felsic igneous or metamorphic (n=66)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	4.5 (3)	10.6 (7)	4.5 (3)
Mixed	3.0 (2)	13.6 (9)	6.1 (4)	x
Oxic	9.1 (6)	43.9 (29)	4.5 (3)	x

**H. IGMTI: Intermediate igneous or metamorphic (n=55)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	1.8 (1)	7.3 (4)	x
Mixed	7.3 (4)	7.3 (4)	9.1 (5)	1.8 (1)
Oxic	18.2 (10)	43.6 (24)	x	3.6 (2)

**I. IGMTM: Mafic igneous or metamorphic (n=34)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	17.6 (6)	x
Mixed	2.9 (1)	2.9 (1)	2.9 (1)	x
Oxic	x	38.2 (13)	29.4 (10)	2.9 (1)

**J. ULMAF: Ultramafic (n=2)**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	x	x	x
Mixed	x	x	x	x
Oxic	x	50.0 (1)	50.0 (1)	x

**EXPLANATION**

- No data
- Less than 10 percent of samples in dataset or subset
- 10 to 20 percent of samples in dataset or subset
- 20 to 50 percent of samples in dataset or subset
- Greater than 50 percent of samples in dataset or subset

**Figure 20.** Redox/pH matrix summarizing groundwater-quality samples by lithologic group of siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008. *A*, all nine lithologic groups; *B*, clastic sedimentary; *C*, clastic lacustrine/evaporite; *D*, quartz-rich sedimentary; *E*, metamorphosed clastic sedimentary; *F*, quartz-rich metamorphic; *G*, felsic igneous or metamorphic; *H*, intermediate igneous or metamorphic; *I*, mafic igneous or metamorphic; and *J*, ultramafic.

when ingested (Mays and others, 1985; U.S. Environmental Protection Agency, 1999). The risk is presumed to be linearly proportional to exposure (amount and duration; U.S. Environmental Protection Agency, 1999) and was used to determine conservative standards (MCLs) designed to limit exposure. Because the standards for radionuclides are slightly different and somewhat more complex than those for other trace elements, they are listed here in detail. The MCLs promulgated for radionuclides in 2000 are as follows: gross alpha-particle activity (including radium-226 but excluding uranium and

radon), 15 pCi/L; gross beta-particle activity, 4 millirems per year (isotope-specific dose to be evaluated when a sample exceeds 50 pCi/L); uranium, 30 µg/L; and for radium [the sum of radium-226 and radium-228 (generally termed combined radium, and conveniently abbreviated as “Ra TOT”) in selected tables and figures in this report, including table 4], 5 pCi/L (table 4). Gross alpha-particle activity had also been suggested for use as a compliance-monitoring “screen” for combined radium (Hess and others, 1985). In addition, radon has had a proposed (health-based) MCL of 300 pCi/L and a

**A. Nitrate: HHB = 10 49.7% (159/320) > 0.1 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	22.2 (9)	10.3 (29)	0 (11)
Mixed	58.3 (12)	42.4 (33)	18.8 (16)	0 (1)
Oxic	66.7 (30)	60.0 (100)	61.2 (49)	66.7 (30)

**B. Manganese: HHB = 300 32.1% (106/330) > 0.1 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	77.8 (9)	71.4 (28)	36.4 (11)
Mixed	100 (13)	93.9 (33)	100 (16)	100 (1)
Oxic	6.7 (30)	7.0 (100)	4.0 (50)	3.3 (30)

**C. Sulfate: HHB = 250 14.9% (46/309) > 0.1 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	22.9	24.0 (25)	72.7 (11)
Mixed	15.4 (13)	6.3 (32)	13.3 (15)	0 (1)
Oxic	0 (28)	8.3 (96)	20.4 (49)	20.0 (30)

**D. Iron: HHB = 300 26.5% (82/309) > 0.1 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	66.7 (9)	68.0 (25)	36.4 (11)
Mixed	53.8 (13)	78.1 (32)	80.0 (15)	100 (1)
Oxic	0 (28)	7.3 (96)	4.1 (49)	3.3 (30)

**E. Phosphate: HCRL = 0.02 49.8% (159/319) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	44.9 (9)	42.9 (28)	27.3 (11)
Mixed	33.3 (12)	15.2 (33)	37.5 (16)	100 (1)
Oxic	30.0 (30)	63.0 (100)	67.3 (49)	63.3 (30)

**F. Lead: HCRL = 1 14.2% (36/253) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	0 (9)	15.0 (20)	20.0 (10)
Mixed	10.0 (10)	0 (28)	7.1 (14)	0 (1)
Oxic	50.0 (22)	14.7 (75)	10.0 (30)	11.1 (27)

**G. Arsenic: HCRL = 2 17.1% (42/246) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	11.1 (9)	25.0 (20)	80.0 (10)
Mixed	0 (10)	0 (28)	7.1 (14)	0 (1)
Oxic	0 (22)	1.3 (75)	20.0 (30)	74.1 (27)

**H. Zinc: HCRL = 20 5.5% (14/253) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	44.4 (9)	35.0 (20)	0 (10)
Mixed	40.0 (10)	7.1 (28)	21.4 (14)	0 (1)
Oxic	27.3 (22)	24.0 (75)	23.3 (30)	3.7 (27)

**I. Selenium: HCRL = 1 7.7% (19/246) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	11.1 (9)	10.0 (20)	10.0 (10)
Mixed	20.0 (10)	0 (28)	0 (14)	0 (1)
Oxic	0 (22)	5.3 (75)	16.7 (30)	14.8 (27)

**J. Chromium: HCRL = 1 34.6% (84/243) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	33.9 (9)	15.0 (20)	20.0 (10)
Mixed	70.0 (10)	25.0 (28)	7.1 (14)	0 (1)
Oxic	54.5 (22)	55.4 (74)	17.2 (29)	11.5 (26)

**K. Molybdenum: HCRL = 1 21.4% (48/224) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	11.1 (9)	26.3 (19)	100 (6)
Mixed	0 (10)	3.6 (28)	50.0 (14)	0 (1)
Oxic	0 (21)	10.8 (74)	36.0 (25)	64.7 (17)

**L. Nickel: HCRL = 1 37.3% (84/225) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	66.7 (9)	26.3 (19)	50.0 (6)
Mixed	70.0 (10)	78.6 (28)	28.6 (14)	0 (1)
Oxic	40.9 (22)	29.7 (74)	24.0 (25)	0 (17)

**M. Barium: HHB = 2,000 12.6% (31/246) > 0.1 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	0 (9)	15.0 (20)	10.0 (10)
Mixed	20.0 (10)	0 (28)	7.1 (14)	0 (1)
Oxic	0 (22)	5.3 (75)	26.7 (30)	44.4 (27)

**N. Cobalt: HCRL = 1 11.1% (25/225) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	33.3 (9)	5.3 (19)	0 (6)
Mixed	30.0 (10)	46.4 (28)	14.3 (14)	0 (1)
Oxic	9.1 (22)	1.4 (74)	0 (25)	0 (17)

**O. Uranium: HCRL = 1 21.3% (64/301) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	22.2 (9)	42.9 (28)	71.4 (7)
Mixed	7.7 (13)	3.3 (33)	25.0 (16)	0 (1)
Oxic	3.3 (30)	5.1 (99)	40.0 (45)	75.0 (20)

**P. Copper: HCRL = 1 64.2% (158/246) > HCRL**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	55.6 (9)	25.0 (20)	10.0 (10)
Mixed	70.0 (10)	46.4 (28)	21.4 (14)	0 (1)
Oxic	95.5 (22)	85.3 (75)	70.0 (30)	66.7 (27)

**Q. Radon 222: HHB = 4,000 18.4% (49/267) > HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	14.3 (7)	7.4 (27)	0 (7)
Mixed	30.0 (10)	21.1 (19)	16.7 (12)	0 (1)
Oxic	25.0 (28)	28.0 (93)	4.5 (44)	10.5 (19)

**R. Radium TOT: HHB = 5 23.4% (22/94) > 0.2 HHB**

Redox / pH	4.5 to <5.5	5.5 to <6.5	6.5 to <7.5	7.5 to <8.5
Anoxic	x	66.7 (3)	42.9 (14)	66.7 (3)
Mixed	x	40.0 (5)	37.5 (8)	0 (1)
Oxic	0 (3)	15.4 (26)	12.5 (16)	6.7 (15)

**EXPLANATION**

- x No data
- All results below highest common reporting limit (HCRL) or human health benchmark (HHB)
- 10 percent of samples exceed HCRL or HHB
- 10 to 20 percent of samples exceed HCRL or HHB
- Greater than 20 to 50 percent of samples exceed HCRL or HHB
- Greater than 50 percent of samples exceed HCRL or HHB

**Figure 21.** Redox-pH matrix summarizing groundwater-quality samples greater than or equal to the highest common reporting level (HCRL) or human health benchmark (HHB). A, nNitrate; B, manganese; C, sulfate; D, iron; E, phosphate; F, lead; G, arsenic; H, zinc; I, selenium; J, chromium; K, molybdenum; L, nickel; M, barium; N, cobalt; O, uranium; P, copper; Q, radon-222; and R, radium-226+228 (TOT).

proposed AMCL of 4,000 pCi/L that may be used if airborne remediation or risk reduction approaches are implemented (U.S. Environmental Protection Agency, 1991); while proposed, the radon standards have yet to be adopted and fully implemented.

Five trace-element constituents (arsenic, antimony, iron, manganese, zinc) were detected in one or more water samples at concentrations greater than established human health-based benchmarks, and 10 additional constituents (barium, beryllium, cadmium, copper, lead, selenium, boron, molybdenum, nickel, and strontium) were detected at concentrations greater than a threshold of one-tenth the established health-based levels (table 4; figs. 12–17). Arsenic was detected at concentrations greater than the MCL of 10 µg/L in 9 of 253 samples, and antimony was detected at concentrations greater than the MCL of 6 µg/L in 1 of 232 samples. Manganese was detected at concentrations greater than the HBSL of 300 µg/L in 24 of 330 samples, and zinc was detected at concentrations greater than the HBSL of 2,000 µg/L in 1 of 253 samples. Iron was detected at concentrations greater than the SMCL of 300 µg/L in 46 of 315 samples.

The trace elements most frequently detected at concentrations greater than one-tenth of the MCL or HBSL were arsenic (47 of 253 samples > 1 µg/L), manganese (106 of 330 samples > 30 µg/L), zinc (14 of 253 samples > 200 µg/L), barium (31 of 253 samples > 200 µg/L), molybdenum (16 of 230 samples > 4 µg/L), and lead (23 of 253 samples > 1.5 µg/L). Additionally, iron (84 of 315 samples > 30 µg/L) commonly was present at concentrations greater than one-tenth of the SMCL. Considering concentrations greater than one-tenth of the relevant threshold, the crystalline lithologies of the PBR had a larger percentage of samples (by a factor of two) containing iron, manganese, or fluoride, whereas the siliciclastic lithologies of the Early Mesozoic basins had a larger percentage of water samples containing arsenic, barium, selenium, boron, molybdenum, uranium, chloride, or sulfate (table 4).

Of the radionuclides analyzed, radon-222 frequently was detected at concentrations greater than the proposed MCL of 300 pCi/L (248 of 275 samples) or the proposed AMCL of 4,000 pCi/L (51 of 275 samples) (table 4). Although rarely present at concentrations exceeding their respective MCLs, uranium (43 of 310 samples > 3 µg/L) and radium [Ra-226 plus Ra-228, abbreviated as (RaTOT)] (47 of 98 samples > 1.0 pCi/L) frequently were detected at concentrations greater than one-tenth and one-fifth of their MCLs. Although the siliciclastic lithologies had a greater frequency of elevated uranium concentrations, radon and radium were commonly detected in groundwater from siliciclastic and crystalline lithologies. Only 2.0 percent of 98 samples had combined radium [Ra-226 plus Ra-228, abbreviated as (RaTOT)] concentrations greater than the MCL of 5.0 pCi/L, and these detections were evenly split among siliciclastic and crystalline lithologies; 0.6 percent of 310 samples had uranium concentrations greater than the MCL of 30 µg/L, all from crystalline lithologies. Only 6 percent of 50 samples had

radon-222 concentrations greater than the proposed AMCL of 4,000 pCi/L among the siliciclastic lithologies, but 21 percent of 225 samples had concentrations greater than the proposed AMCL from crystalline lithologies, most commonly from granites.

Considering nutrients and major ions that may be derived from natural and human-related sources, few samples had concentrations of nitrate (12 of 329 samples) greater than the MCL of 10 mg/L as nitrogen (N) or sulfate (2 of 315 samples) greater than the SMCL of 250 mg/L, and none had concentrations of chloride greater than the SMCL of 250 mg/L (table 4). Nevertheless, many samples had concentrations of nitrate (161 of 329 samples), sulfate (47 of 315 samples), or chloride (56 of 315 samples) greater than one-tenth of the respective MCL or SMCL thresholds. Few samples exceeded this lower threshold for fluoride (10 of 315 samples) or nitrite (2 of 331 samples) (table 4). Generally, mineral weathering can be an important source of sulfate; however, elevated concentrations of nitrate and nitrite may be attributed to anthropogenic contamination. Likewise, although mineral weathering can be a source of background concentrations of chloride and fluoride, anthropogenic sources also can produce anomalous concentrations of these constituents.

The concentration of dissolved nitrate in groundwater for the study ranged from less than 0.1 to 20.5 mg/L as N, with a median of 0.96 mg/L as N (fig. 11C). The siliciclastic and crystalline lithologies had median concentrations of nitrate of 2.37 and 0.78 mg/L as N, respectively. Natural levels of nitrate in groundwater from rainfall and plant and animal sources generally are less than 1 mg/L as N in the eastern United States (Peters and Bonelli, 1982; Puckett, 1994; Holloway and others, 1998). Concentrations of nitrate that are greater than background concentrations are most commonly associated with agricultural and turf (lawns, golf courses) fertilizers and also with discharges from septic systems or sewage treatment plants (Denver and others, 2010).

The concentration of chloride in groundwater for the study ranged from 0.27 to about 250 mg/L with a median of 7.0 mg/L (fig. 11B). Groundwater from the siliciclastic-rock aquifers and crystalline-rock aquifers had median concentrations of chloride of 15.9 and 5.9 mg/L, respectively, which are significantly greater than background levels in atmospheric precipitation (Peters and Bonelli, 1982). Concentrations of chloride that are greater than background concentrations may be associated with agricultural applications of “potash” or potassium chloride (KCl) and manure and discharges of sewage effluent, although highest concentrations are associated with the application of road deicing salts such as sodium chloride (NaCl) and calcium chloride (CaCl<sub>2</sub>) in urban areas of the northern part of the region (Denver and others, 2010). Although chloride transport is conservative, nitrate and other forms of nitrogen may be attenuated by denitrification (dissimilatory reduction) or biological uptake (assimilation). Hence, the relative abundances of nitrate and chloride may be useful with other chemical indicators to identify geochemical



conditions within the aquifer where naturally occurring contaminants may or may not be attenuated or mobilized.

The saturation index for selected minerals was evaluated to indicate the general corrosivity of the groundwater and the potential for specific major and trace minerals to dissolve or precipitate, thus increasing or decreasing concentrations of solutes in the groundwater. Most groundwaters from all lithologies were undersaturated (SI less than 0) with respect to common sulfides (pyrite,  $\text{FeS}_2$ ), sulfates (gypsum,  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ), carbonates [calcite,  $\text{CaCO}_3$ ; dolomite  $\text{CaMg}(\text{CO}_3)_2$ ], and aluminosilicates [andalusia,  $\text{KAlSiO}_3$ ; albite,  $\text{NaAlSiO}_3$ ; anorthite,  $\text{CaAl}_2\text{Si}_2\text{O}_8$ ; chlorite,  $\text{Mg}_5\text{Al}_2\text{Si}_3\text{O}_{10}(\text{OH})_8$ ] (figs. 18 and 19), indicating that weathering of major rock-forming minerals and trace minerals is a likely source of major and trace constituents in the groundwater. However, some groundwater samples, particularly those from the clastic sedimentary and clastic lacustrine/evaporite sedimentary lithologies of the Early Mesozoic basin aquifers, approached saturation or were saturated (SI approximately equal to 0) with respect to calcite and dolomite (figs. 18 and 19), indicating that their dissolution and precipitation could maintain or limit constituent concentrations. Likewise, most groundwater samples were supersaturated or saturated (SI greater than or equal to 0) with respect to kaolinite [ $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$ ], gibbsite [ $\text{Al}(\text{OH})_3$ ], and ferrihydrite [amorphous  $\text{Fe}(\text{OH})_3$ ], indicating that the precipitation of these secondary phases feasibly could limit concentrations of silica, aluminum, and iron. Although concentrations of manganese and barium frequently were at saturation levels with respect to certain solid phases (manganese phosphate,  $\text{MnHPO}_4$ ; barite,  $\text{BaSO}_4$ ), most other trace elements, including arsenic, selenium, uranium, lead, zinc, copper, cadmium, and strontium, were undersaturated with respect to pure mineral phases, suggesting that mineral precipitation would not be likely to limit concentrations of these contaminants. However, some trace elements, particularly divalent cations, may substitute for major ions such as calcium and magnesium in minerals that are supersaturated, and thus be reduced in concentration in the aqueous phase compared to the solubility of the pure trace mineral phase.

The overall relations among bedrock lithology and water quality in the study area are consistent with different water-quality characteristics for major rock types described by Drever (1997). Specifically, in crystalline-rock aquifers, slow weathering of silicate minerals tends to produce natural groundwater with low concentrations of dissolved solids, alkalinity, and hardness (figs. 10–17). Consequently, most major carbonate, sulfate, and hydroxide minerals are undersaturated in these settings (figs. 18 and 19). In contrast, groundwater in the siliciclastic-rock aquifers commonly has greater concentrations of dissolved solids, alkalinity, and hardness than groundwater in adjacent crystalline-rock aquifers. The siliciclastic lithologies of the Early Mesozoic basins typically are cemented by carbonate minerals and in some places are cemented by sulfate minerals (Van Houten, 1965), and these minerals tend to dissolve rapidly (Van Houten, 1965; Langmuir, 1971). Concentrations of trace elements may increase

with concentrations of dissolved solids because of the release of trace constituents dissolved from major minerals and because of the displacement of trace ions from surface sorption sites by major ions. In some instances, natural constituent concentrations may exceed thresholds established to protect human health.

## Correlations Among Major and Trace Constituents and Environmental Factors

Principal component analysis (PCA) provides insight on hydrochemical processes affecting groundwater chemistry in the study area by indicating intercorrelations among chemical constituents and environmental variables, such as land use and well depth. Five principal components (PCs) explain nearly 76 percent of the variance in the regional groundwater dataset and consist of 18 routinely detected constituent loadings (table 5). Associations of additional chemical and physical variables excluded from the model are indicated by the Spearman-rank coefficient of correlation of these variables with the principal component scores (table 5; appendix 1, table 1-7).

PC1 has positive loadings by alkalinity, pH, calcium, magnesium, sodium, sulfate, and specific conductance and negative loading by dissolved oxygen (table 5). These loadings are related to increasing dissolved solids associated with the weathering of carbonate-bearing and sulfur-bearing minerals. Scores on PC1 generally were greater for siliciclastic lithologies than for crystalline lithologies and were positively correlated with agriculture, latitude, well depth, and water-quality constituents excluded from the PCA model, including hardness, total dissolved solids, strontium, uranium, boron, arsenic, molybdenum, fluoride, and barium; scores were negatively correlated with aluminum, chromium, tritium, and copper (table 5). Positive correlations with hardness and trace constituents, such as strontium and barium, are consistent with the weathering of alkaline-earth carbonate and sulfate minerals that are present as cements, fracture filling, and clasts in siliciclastic rocks. As explained previously (fig. 7) and in more detail below, several of the positively correlated trace constituents, specifically arsenic, molybdenum, and uranium, tend to be mobile as anions under high-pH conditions (Hodge and others, 1998), whereas negatively correlated trace constituents, specifically aluminum, chromium, and copper, tend to be mobile as cations under low-pH conditions. The positive associations of PC1 with well depth and negative associations with tritium and dissolved oxygen are consistent with increased mineralization and age of groundwater along flow paths. Likewise, positive correlations with latitude could relate to less extensively weathered bedrock in northern areas compared to more deeply weathered (leached) saprolitic and lateritic horizons in the southern parts of the study area.

PC2 has positive loadings by chloride, bromide, sodium, magnesium, nitrate, dissolved organic carbon, and specific conductance (table 5). Although the constituents could

**Table 5.** Principal components analysis model of major factors controlling the chemistry of groundwater from siliciclastic-rock and crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008.

[Varimax rotation factor pattern for rank-transformed data (SAS, 1988); minimum eigenvalue >1; >, greater than; loading and correlation coefficient values multiplied by 100 and rounded; \*, indicates significant loadings ( $p < 0.001$ ). PC, principal component]

	PC1	PC2	PC3	PC4	PC5	
	Alkalinity- pH	Chloride- nitrate	Redox	Temp- erature- silica	Radon- potassium	Communi- calities
<b>Constituent loadings</b>						
Alkalinity	91 *	18	-3	19	-18	0.93
pH	89 *	-12	-4	6	-16	0.85
Calcium	88 *	37	-5	1	-6	0.92
Specific conductance	81 *	55 *	1	-3	-5	0.96
Magnesium	69 *	53 *	-5	-11	-6	0.78
Sulfate	67 *	35	22	-17	3	0.66
Dissolved oxygen	-64 *	-2	-46 *	-32	2	0.74
Chloride	30	86 *	-2	-15	13	0.86
Bromide	26	71 *	6	29	-7	0.67
Nitrate	-21	63 *	-43 *	-34	19	0.78
Sodium	55 *	59 *	-4	32	9	0.76
Dissolved organic carbon	20	58 *	10	0	-36	0.51
Manganese (>1)	-1	11	90 *	-1	-2	0.79
Iron (>6)	1	-11	82 *	-1	-12	0.67
Temperature	-18	15	8	86 *	-11	0.81
Silica	26	-13		77 *	11	0.69
Radon-222	-18	0	-19	-9	81 *	0.72
Potassium	-1	1	46 *	25	48 *	0.54
Eigenvalue:	6.61	2.76	1.66	1.57	1.05	13.64
Cumulative percent variance explained:	36.67	51.68	61.28	70.04	75.85	
<b>Spearman Correlations (only values significant at <math>p &lt; 0.05</math> are reported):</b>						
Latitude	37	--	--	-63	--	
Agricultural land-use percentage	27	--	--	-43	--	
Urban land-use percentage	--	22	--	--	--	
Forested land-use percentage	--	-43	--	35	--	
Wetland land-use percentage	--	--	--	--	--	
Well depth	25	-23	--	--	--	
Hardness	85	46	--	--	--	
Total dissolved solids	81	53	--	--	--	
Strontium	58	46	--	--	--	
Uranium	57	--	--	--	--	
Boron (>8)	56	43	--	-72	--	

**Table 5.** Principal components analysis model of major factors controlling the chemistry of groundwater from siliciclastic-rock and crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008.—Continued

[Varimax rotation factor pattern for rank-transformed data (SAS, 1988); minimum eigenvalue >1; >, greater than; loading and correlation coefficient values multiplied by 100 and rounded; \*, indicates significant loadings (p <0.001). PC, principal component]

	PC1	PC2	PC3	PC4	PC5	Communalities
	Alkalinity-pH	Chloride-nitrate	Redox	Temperature-silica	Radon-potassium	
<b>Spearman Correlations (only values significant at p &lt;0.05 are reported):—Continued</b>						
Arsenic (>1)	50	26	--	--	--	
Molybdenum	47	--	--	--	--	
Fluoride	38	--	--	--	--	
Barium	28	53	--	-27	--	
Chromium	-35	--	--	--	--	
Copper	-47	--	-28	--	--	
Tritium	-58	--	--	-45	--	
Aluminum (>1.6)	-62	--	--	--	--	
Nickel	--	45	33	--	--	
Radium-226	--	--	54	--	--	
Radium-226 plus radium-228	--	--	41	--	--	
Cobalt	--	--	26	--	--	
Ammonia	--	--	26	--	--	
Phosphate	--	--	-37	39	--	
Vanadium	--	--	-76	--	--	
Lithium	--	--	--	--	47	
Silver	--	--	--	--	--	
Beryllium	--	--	--	--	--	
Cadmium	--	--	--	--	--	
Lead	--	--	--	--	--	
Radium-228	--	--	--	--	--	
Antimony	--	--	--	--	--	
Selenium	--	--	--	--	--	
Thalium	--	--	--	--	--	
Zinc (>1)	--	--	--	--	--	

originate from natural sources, their corresponding positive associations are interpreted to indicate anthropogenic sources of contamination, such as road-deicing salt, fertilizer, and sewage. Scores on PC2 were negatively correlated with well depth and forest area and positively correlated with urban area, hardness, total dissolved solids (TDS), barium, strontium, nickel, boron, and arsenic. Although PC2 scores ranged more widely for crystalline lithologies compared to siliciclastic lithologies, the median score for siliciclastic lithologies was larger

than that for crystalline lithologies. The land use overlying the siliciclastic lithologies tends more frequently to be urban and less frequently to be forested than that for the more steep terrains associated with the crystalline-rock lithologies (figs. 2 and 4).

PC3 has positive loadings by manganese, iron, and potassium and negative loadings by dissolved oxygen and nitrate (table 5). High scores on PC3 are interpreted to indicate isolation from the atmosphere and the development of reducing

conditions. Scores on PC3 generally were larger for crystalline lithologies than siliciclastic lithologies and were not correlated with land use. Scores on PC3 were positively correlated with radium-226, combined radium (Ra-226+Ra-228), cobalt, nickel, and ammonia and negatively correlated with vanadium, phosphate, and copper. Nitrate is stable under oxidizing conditions where iron and manganese concentrations may be limited by precipitation of iron and manganese oxides; ammonia is stable under reducing conditions. The positive associations of potassium and radium on PC3 and potassium and radon on PC5 (described below) are consistent with felsic, granitic, or arkosic rocks as a source of radioactive elements in groundwater. As explained previously (figs. 8 and 9) and in more detail below, radon is a highly mobile noble gas, whereas radium, cobalt, and other cations can be adsorbed by iron and manganese oxides. Subsequent dissolution of the iron and manganese oxides under reducing conditions will mobilize the sorbed constituents, such as radium and cobalt. The negative correlations of vanadium, phosphate, and copper with PC3 could indicate greater mobility of these constituents under oxidizing conditions, where the concentrations of iron and manganese are low.

PC4 has positive loadings by temperature and silica (table 5). Scores on PC4 were positively correlated with forest and phosphate and negatively correlated with latitude, agriculture, boron, tritium, and barium. Denver and others (2010) explained that co-occurrence of phosphate and silica in groundwater from forested areas could result from the weathering of common silicate minerals containing phosphorus as a trace constituent. Generally, the mean annual temperature of groundwater decreases with latitude, and tritium concentration decreases with groundwater age. Thus, these associations on PC4 may indicate that increased temperature or longer residence time in the aquifer promotes greater rates and extent of weathering of silicate minerals. The range of and median PC4 scores for crystalline lithologies, which predominate in southern latitudes, were larger than those for siliciclastic lithologies (appendix 2).

PC5 has positive loadings by radon and potassium and positive correlations with lithium (table 5). Although the range of PC5 scores for crystalline lithologies is greater than that for siliciclastic lithologies, the median scores for the two lithologies are comparable. As explained in more detail below, these associations and distributions are consistent with the emanation of radon from felsic, granitic, or arkosic rocks that tend to be rich in uranium, potassium, and lithium (Speer and others, 1981; Michel, 1984). Radon, potassium, and lithium tend to be mobile in a wide range of groundwater environments compared to other constituents that tend to be affected by variations in pH and (or) redox conditions.

## Geochemical Conditions Associated with Elevated Concentrations of Naturally Occurring Constituents

The associations of certain trace elements and radionuclides in groundwater may be explained by similar rock sources and (or) geochemical processes. These constituents are discussed separately below, however, because of differences in monitoring frequency, reporting protocols, and human-health thresholds.

### Trace Elements

Arsenic, manganese, and zinc were identified as trace elements of concern in groundwater of the study area on the basis of their relatively high frequencies of exceedance of human health benchmarks for drinking water (table 4). Additionally, lead, barium, antimony, and molybdenum were noteworthy because of relatively high frequencies of detection of these constituents at concentrations greater than one-tenth of their respective health-based thresholds. Specific settings and geochemical conditions associated with anomalous concentrations of these constituents are described in more detail below.

#### Arsenic

Although arsenic concentrations were less than 1  $\mu\text{g/L}$  in nearly 80 percent of the 253 groundwater samples analyzed in the study, 8.5 percent of sampled wells in the Early Mesozoic basin aquifers and 2.4 percent of the sampled wells in the Piedmont and Blue Ridge aquifers had arsenic concentrations greater than the USEPA MCL of 10  $\mu\text{g/L}$  (table 4). Arsenic concentrations greater than 1  $\mu\text{g/L}$  were detected in samples from wells from all lithologies in these aquifers, but all concentrations greater than the MCL were present in groundwater from clastic lacustrine sedimentary rocks of the Early Mesozoic basin aquifers and from metamorphosed clastic sedimentary rocks of the PBR aquifers (fig. 16G). Maximum arsenic concentrations in water samples from these aquifers were 57 and 38  $\mu\text{g/L}$ , respectively (tables 1-3 and 1-4). Both lithologic groups are composed of fine-grained sedimentary rocks, such as mudstone, shale, siltstone, and their metamorphic equivalents.

Although redox conditions typically control the mobility of arsenic in groundwater (Smedley and Kinniburgh, 2002; Welch and Stollenwerk, 2003; Serfes and others, 2010), the dominant factor controlling arsenic mobility in the study area appears to be pH, with elevated arsenic concentrations associated with alkaline pH conditions (fig. 21G). Arsenate and arsenite, which are the predominant forms of arsenic in groundwater, tend to adsorb to iron-oxide surfaces at acidic to neutral pH, but not at alkaline pH conditions (fig. 8). Thus, arsenic concentrations greater than 1  $\mu\text{g/L}$  were associated with a range of oxic to anoxic redox conditions, primarily where pH values were greater than 7.5 (fig. 21G). Of the nine samples for which arsenic concentrations were greater than

10 µg/L, six were classified as oxic and three as anoxic, and seven had a pH of 7.2 or greater (maximum pH, 8.0). The clastic lacustrine/evaporite sedimentary and metamorphosed clastic sedimentary lithologic groups and associated lithochemical subgroups that had the highest mean ranks of arsenic on the basis of Tukey tests also had the highest mean ranks of pH [fig. 16C and G; table 6 (table 6 available online at <http://pubs.usgs.gov/sir/2013/5072/>)]. One other factor that supports the concept that the arsenic mobility is controlled by sorption processes is the consistent correlation of arsenic concentrations with other oxyanions, including boron, uranium, antimony, and molybdenum (appendix 1, table 1-7). The mobility of these oxyanions also is primarily controlled by adsorption at acidic to neutral pH and desorption at alkaline pH conditions (figs. 8 and 21).

The spatial distribution pattern for elevated arsenic concentrations indicates locations with elevated levels of arsenic in the rock and geochemical conditions favoring transport of arsenic. Although 72 percent of the 47 samples from the Early Mesozoic basin aquifers had arsenic concentrations greater than 1 µg/L, only 6.3 percent of the 206 samples from the PBR crystalline-rock aquifers had arsenic concentrations greater than 1 µg/L (table 4). However, 46 percent of the samples from two crystalline-rock lithologies, metasedimentary rocks and meta-argillite, had concentrations greater than 10 µg/L. The results for the samples from the Early Mesozoic basin aquifers with respect to arsenic obtained in this study are consistent with results of previous studies for these aquifers (Serfes, 1994, 2004; Lindsey and others, 2006; Senior and Sloto, 2006; Harden and others, 2009; Serfes and others, 2010). Although the overall exposure of the population in the study area to arsenic is low, arsenic concentrations are likely to be elevated in some areas that are densely populated in Pennsylvania and New Jersey (figs. 2 and 22). Even in these areas of possible elevated arsenic concentrations in groundwater, the frequency for exceeding the MCL was less than 15 percent.

## Manganese

Manganese concentrations were greater than or equal to 4 µg/L in 75 percent of the 330 groundwater samples analyzed in the study; 7.3 percent and 32.1 percent of the samples had concentrations greater than the HBSL of 300 µg/L and one-tenth of the HBSL, respectively (table 4). Manganese concentrations generally were elevated in groundwater from the PBR crystalline-rock aquifers (figs. 12D and 16F) where the bedrock and overlying geologic materials contain manganese-bearing minerals and geochemical conditions in the aquifer facilitate manganese transport. Only the clastic sedimentary rocks and quartz-rich sedimentary rocks of the Early Mesozoic basin aquifers had concentrations of manganese less than 300 µg/L in all samples (fig. 16F). On the basis of Tukey tests, the mean rank manganese concentrations for the metamorphosed clastic sedimentary and quartz-rich metamorphic lithologic groups of the PBR crystalline-rock aquifers were greater than those for the clastic sedimentary and clastic lacustrine/evaporite sedimentary lithologic groups of the

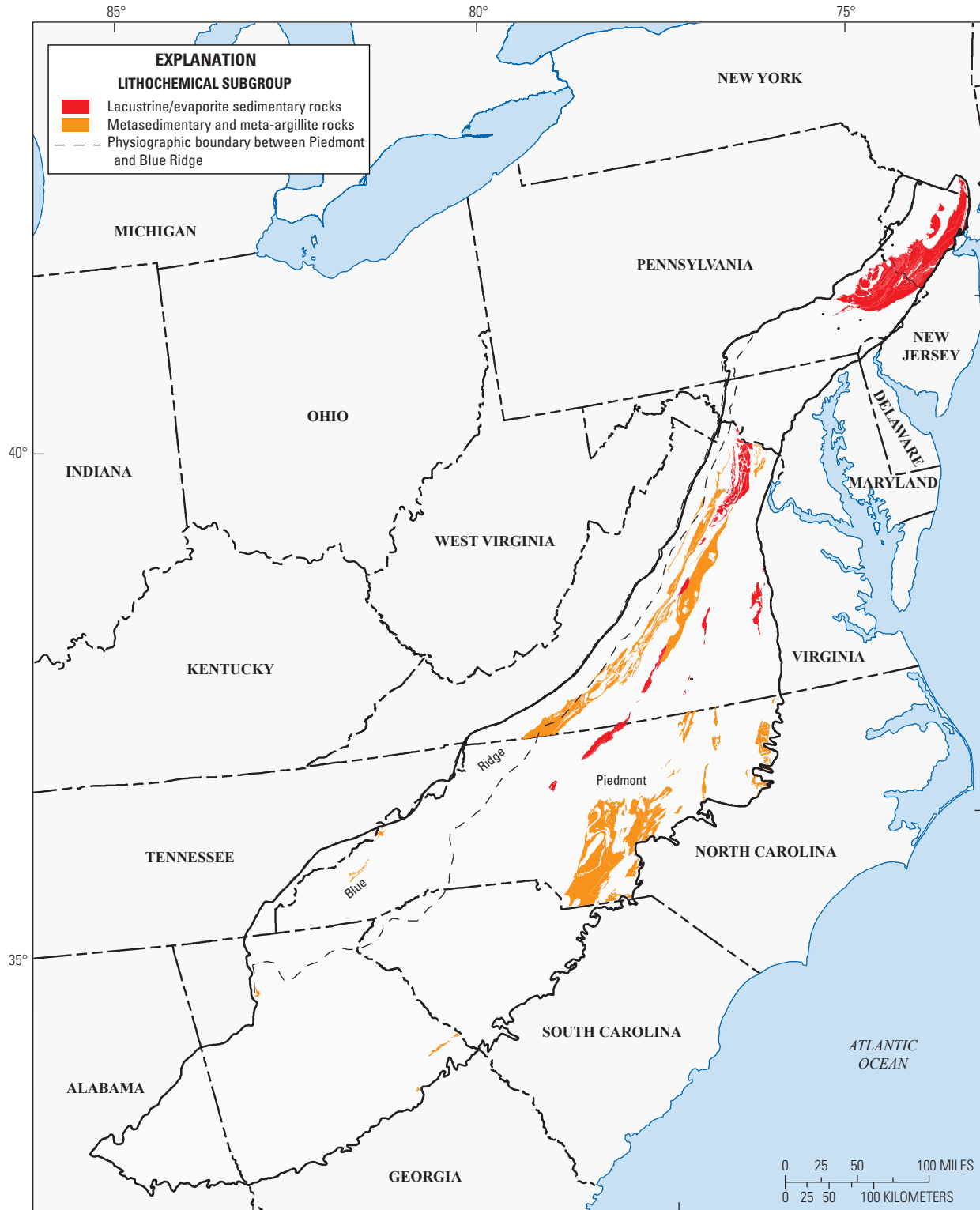
Early Mesozoic basin aquifers (fig. 16F). The lithochemical subgroup 43 of the mafic igneous and metamorphic lithologic group had the greatest median concentration of manganese (54 µg/L) of all lithochemical subgroups (table 6). Lithochemical subgroup 43 consists of massive mafic rocks including diorite, gabbro, monzodiorite, diabase, and basalt (table 3 and appendix 1, table 1-1).

The concentration of manganese in groundwater was positively correlated with iron, cobalt, nickel, aluminum (censored at 10 µg/L), and ammonia and negatively correlated with dissolved oxygen, nitrate, phosphate, and vanadium (appendix 1, table 1-7). The relations between dissolved oxygen, manganese, iron, nitrate, and ammonia are consistent with elevated mobility of the reduced forms of manganese ( $Mn^{+2}$ ) and iron ( $Fe^{+2}$ ) under reducing conditions (fig. 21B). The positive correlations between manganese, iron, nickel, and cobalt could be attributed to the reductive dissolution of Mn(III-IV) and Fe(III) oxides and the consequent release of sorbed cations (Loganathan and Burau, 1973; Kooner, 1993), whereas the negative correlations between manganese, phosphate, and vanadium could be attributed to the precipitation of Mn(II)-phosphate and associated vanadate compounds under reducing conditions as indicated by the saturation indices for  $MnHPO_4$  and  $Mn_3(PO_4)_2$  (appendix 1, table 1-7). Hence, the frequencies of elevated concentrations of manganese, iron, cobalt, and nickel generally are the opposite of those of nitrate, phosphate, and vanadium as functions of pH and redox conditions (fig. 21B).

Although reductive dissolution of Mn(III-IV) oxides could be a primary source of dissolved manganese and associated trace elements in many groundwater samples, it is noteworthy that the highest concentrations of dissolved manganese are associated with low to intermediate values of pH and high concentrations of aluminum (fig. 21 and appendix 1, table 1-7). Low pH can promote the dissolution of various potential sources of manganese, including manganese oxides, common aluminosilicate minerals, such as chlorite, and carbonate minerals, such as calcite and siderite. The carbonate and aluminosilicate minerals, in which  $Mn^{+2}$  and  $Fe^{+2}$  commonly substitute for magnesium ( $Mg^{+2}$ ), would tend to be stable under reducing conditions, but not under acidic conditions. Because of incongruent dissolution, the weathering of chlorite and other aluminosilicates may preferentially leach magnesium, iron, manganese, and, to a lesser extent, aluminum, relative to silica (Drever, 1997).

## Zinc

Zinc concentrations were greater than or equal to 20 µg/L in 21 percent of the 253 groundwater samples analyzed in the study; 0.4 percent and 5.5 percent of the samples had concentrations greater than the HBSL of 2,000 µg/L and one-tenth of the HBSL, respectively (table 4). Although the highest zinc concentrations were recorded for groundwater samples from the PBR crystalline-rock aquifers (figs. 13B and 17E), the quartz-rich sedimentary lithologic group of the Early Mesozoic basin siliciclastic-rock aquifers had a higher mean rank



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and  
 2005b and Nicholson and others, 2005 and 2006

**Figure 22.** Areal occurrence of lithochemical subgroups having elevated arsenic concentrations (based on the Tukey mean rank test, table 6) in groundwater within the Piedmont and Blue Ridge Physiographic Provinces.

zinc concentration than all other lithologic groups (fig. 17E). In some parts of the study area, this lithologic unit is a local host of zinc ore minerals (Smith, 1977) and, regionally, may have elevated background concentrations of zinc.

Various natural and anthropogenic materials can be important sources of dissolved zinc in groundwater. Zinc may be present as a trace mineral, such as sphalerite (ZnS) or smithsonite (ZnCO<sub>3</sub>), or as a trace substitution for calcium, magnesium, or other divalent cations in common carbonate and silicate minerals in aquifers of the study area (Smith, 1977; Hanshaw and Back, 1979). Furthermore, dissolved zinc concentrations and transport can be affected by sorption reactions with carbonate minerals and iron and aluminum oxides (Zachara and others, 1991; Kooner, 1993; Coston and others, 1995). As described previously, dissolved cations, such as Zn<sup>2+</sup>, tend to be poorly adsorbed and are relatively mobile at acidic pH, whereas at alkaline pH, the cation concentrations tend to be attenuated by adsorption on HFO and other oxide surfaces (fig. 8). Additionally, zinc can be derived from the corrosion of galvanized casing and pipes used for well construction and water distribution.

The concentration of zinc in groundwater was positively correlated with concentrations of copper, lead, and aluminum and with percentage of forested land use and negatively correlated with pH, concentrations of calcium, magnesium, alkalinity (as calcium carbonate), sulfate, arsenic, and total dissolved solids, percentage of urban land use, and saturation index of calcite and many other minerals (appendix 1, table 1-7). These correlations are consistent with elevated mobility of zinc under acidic, corrosive conditions associated with low pH and low ionic strength. Samples with oxic to anoxic redox conditions and pH less than 7.5 had a higher frequency of elevated zinc concentrations (greater than 10 mg/L) than samples with alkaline pH (fig. 21H). Likewise, concentrations of chromium, copper, lead, cobalt, and nickel were more frequently detected in groundwater samples with low to moderate pH than in groundwater samples with alkaline pH conditions (fig. 21). Low-pH conditions may mobilize zinc and other metals from natural mineral sources or plumbing and inhibit its adsorption by Fe(III), Mn(III-IV), and aluminum-oxides in the aquifer.

Zinc, iron, copper, lead, chromium, nickel, and other metals are commonly used materials for the construction of wells and associated plumbing systems. Different casing types may be used for different hydrogeological conditions. For example, steel and galvanized casing typically are used for small bore, deep wells in fractured bedrock, whereas concrete and plastic casing typically are used for larger bore, shallow wells in regolith or unconsolidated materials or where the water may be corrosive.

To evaluate the ability of plumbing materials to contribute dissolved metals to groundwater samples, boxplots were generated on the basis of the well-casing type (steel, galvanized, concrete, plastic, other) identified with each groundwater sample, and Tukey tests were conducted to evaluate differences among the mean rank concentration values for these sample groups (fig. 23). Although concentrations of

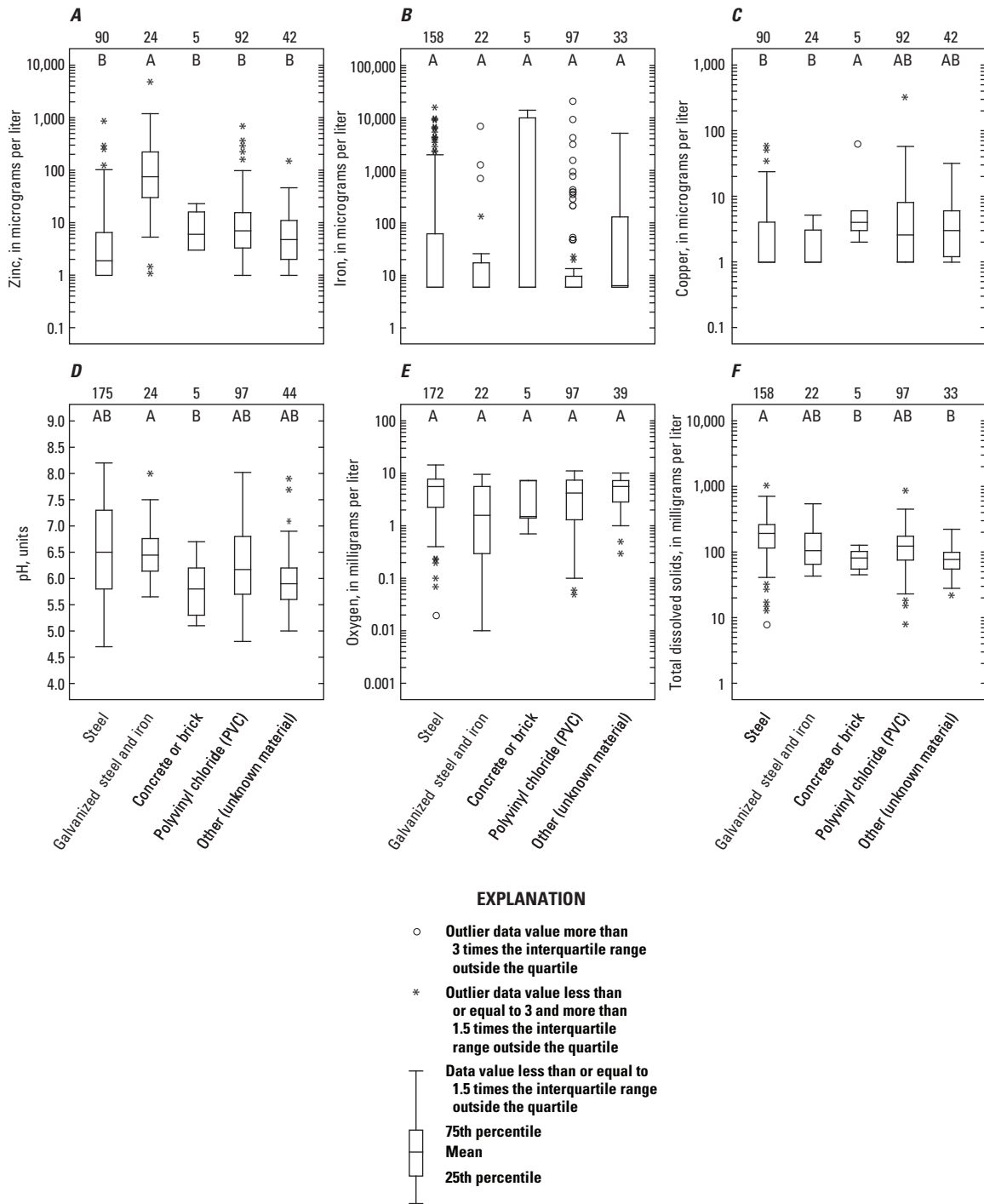
iron and dissolved oxygen were similar for the five different casing types, indicating comparable redox conditions among the groups, the maximum and mean rank zinc concentrations were greatest for samples from wells constructed using galvanized casing, and the mean rank copper concentration was greater for samples from wells constructed using concrete casing (fig. 23). Increased concentrations of zinc may be related to higher pH in deeper bedrock wells with steel or galvanized steel casing, whereas the more acidic pH in shallow wells (generally regolith material) may increase copper concentrations (table 5). Furthermore, the pH was higher for the samples associated with galvanized casing than for the samples associated with concrete casing. These water-quality differences suggest that the aquifer characteristics affect the type of well construction and (or) that the casing type affects the water chemistry.

To evaluate the apparent effect of galvanized casing on zinc concentrations, the 24 samples identified with galvanized casing were eliminated from the dataset before recreating the boxplots and the Tukey tests for the nine major lithologic groups. Although fewer samples were associated with each of the lithologic groups, the boxplots and Tukey test results did not differ from the original results. Despite eliminating samples associated with galvanized well casing, the quartz-rich sedimentary lithologic group of the Early Mesozoic basin siliciclastic-rock aquifers had a higher mean rank zinc concentration than all other lithologic groups (fig. 17E). The concentration of zinc in groundwater from the ultramafic lithologic group also was elevated, but this group only had a sample size of two, so the data could not be rigorously evaluated.

### Alkalinity, Hardness, and Dissolved Solids

Calcite clasts, fracture filling, and cements in some sedimentary-rock aquifers can dissolve easily and lead to high levels of alkalinity, hardness, and TDS. High alkalinity in such aquifers helps to maintain stable, near neutral pH (6 to 8). Thus, corrosivity, pH, hardness, and TDS generally are related by the calcite saturation index, which is equal to the Langelier index of corrosivity (Drever, 1997). In general, the samples from the clastic sedimentary and clastic lacustrine/evaporite sedimentary lithologic units had the highest overall saturation indices for calcite, dolomite, and other carbonate minerals (fig. 18).

Only a few wells sampled from the Early Mesozoic basin siliciclastic-rock aquifers had groundwater that was classified as hard (calcium carbonate equivalent 150 to 300 mg/L) or very hard (calcium carbonate equivalent greater than 300 mg/L) (fig. 10D). Samples of water from the PBR crystalline-rock aquifers frequently were characterized as soft and had pH values less than the recommended pH of 6.5 (fig. 12A). Moderate hardness with neutral pH is considered desirable because soft water with low pH can corrode plumbing and facilitate the dissolution of various aquifer minerals, whereas hard water with high pH can lead to scaling and clogged plumbing (encrustation) (Hem, 1985).



**Figure 23.** Concentrations of selected metals and associated constituents in groundwater by casing type for wells in siliciclastic- and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces.



### Antimony, Lead, Barium, and Molybdenum

Antimony was detected in only 11 of 202 samples from crystalline-rock aquifers; none of the 30 samples from siliciclastic-rock aquifers had detectable concentrations of antimony (table 4, fig. 14D). One sample from the metamorphosed clastic sedimentary lithologic group of the crystalline-rock aquifers had a concentration of antimony of 10.4  $\mu\text{g/L}$ , which exceeded the MCL of 6  $\mu\text{g/L}$ ; four samples had concentrations greater than one-tenth of the MCL (table 4).

None of the samples evaluated for this study had concentrations of lead, barium, or molybdenum greater than their respective MCLs (table 4). However, 23 of 253 samples analyzed for lead had concentrations greater than one-tenth of the 15- $\mu\text{g/L}$  MCL (9.0 percent of samples had concentrations greater than 1.5  $\mu\text{g/L}$ ); 31 of 253 samples analyzed for barium had concentrations greater than one-tenth of the 2,000- $\mu\text{g/L}$  MCL (12.3 percent of samples had concentrations greater than 200  $\mu\text{g/L}$ ); and 16 of 230 samples analyzed for molybdenum had concentrations greater than one-tenth of the 40- $\mu\text{g/L}$  HBSL (7.0 percent of samples had concentrations greater than 4  $\mu\text{g/L}$ ). A greater frequency of elevated barium concentrations was observed for groundwater samples from siliciclastic-rock aquifers compared to those from crystalline-rock aquifers (table 4, figs. 14A and 17A), whereas lead concentrations were more frequently elevated in samples from the crystalline-rock aquifers (table 4, figs. 13D and 17C).

Lead and barium generally occur as divalent cations in carbonate, sulfate, and sulfide minerals and associated groundwater. These trace cations commonly substitute for calcium or magnesium in major carbonate and sulfate minerals in aquifers (Back and others, 1979). The sulfate minerals anglesite ( $\text{PbSO}_4$ ) and barite ( $\text{BaSO}_4$ ) and the carbonate minerals cerrusite ( $\text{PbCO}_3$ ) and witherite ( $\text{BaCO}_3$ ) can be stable in surficial environments where concentrations of sulfate or alkalinity (dissolved carbonate) are elevated (Cravotta, 2008b). For example, barite saturation index values greater than 0 for many samples from the clastic lacustrine/evaporite sedimentary lithologic group and for one or more samples from several other lithologic groups indicate potential for barite precipitation to limit the concentration of barium. Generally, samples that were saturated with barite had elevated concentrations of sulfate and barium (figs. 15 and 17), which were positively correlated for the dataset as a whole (appendix 1, table 1-7). However, negative values of saturation indices for witherite for all samples and for barite for a majority of samples indicate that these minerals feasibly could dissolve, under most of the geochemical conditions under which these samples were collected, if present in the aquifer (fig. 19). Likewise, all the groundwater samples analyzed in this study were undersaturated with respect to anglesite, cerrusite, and other lead minerals, indicating that such minerals could feasibly dissolve (fig. 19).

Iron oxides can adsorb lead at relatively low pH values, with increasing potential for adsorption as pH increases; however, iron oxides are not strong adsorbents of barium at pH values less than 8 (fig. 8). Consequently, groundwater

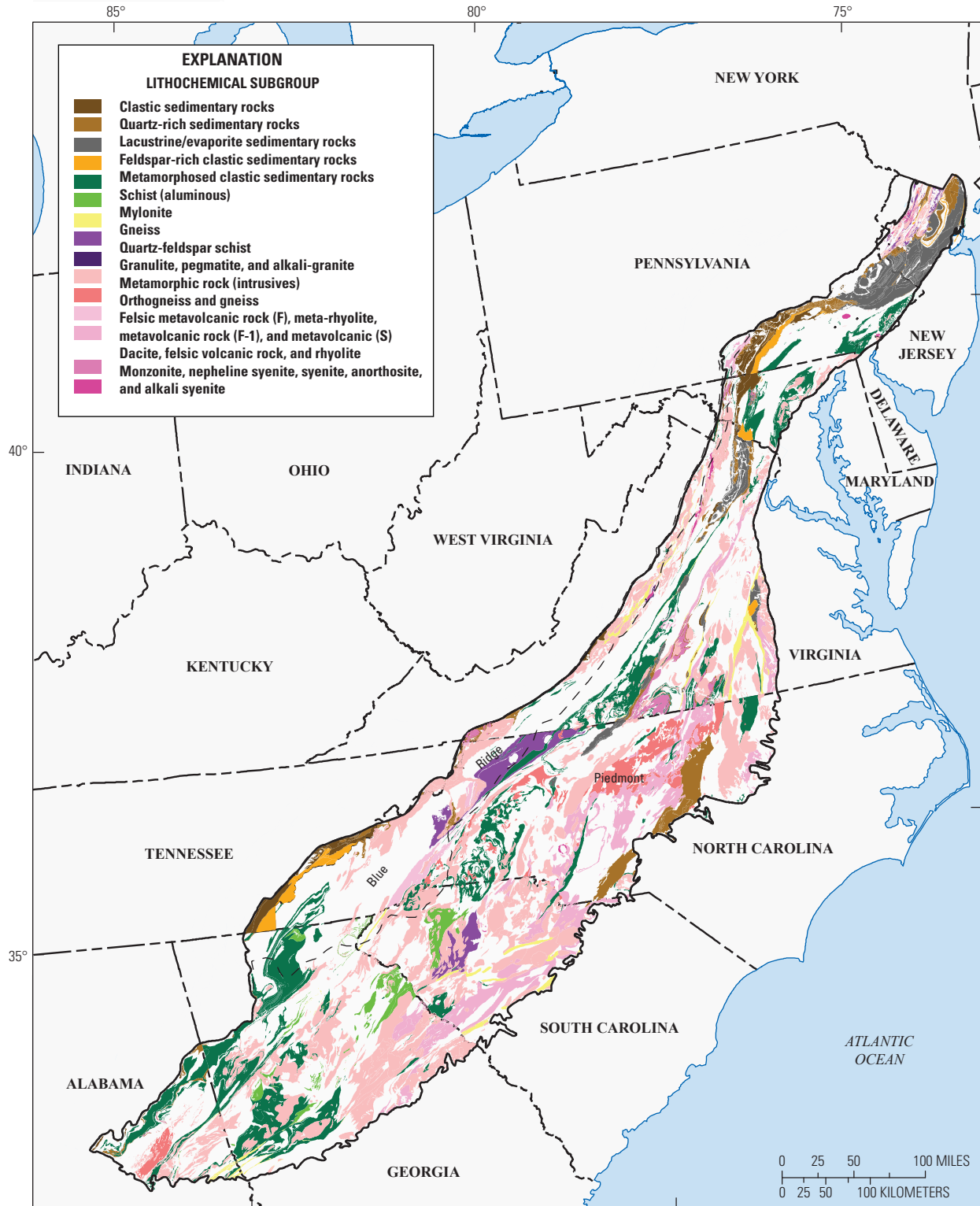
samples with low pH (4.5 to 5.5) had the greatest frequency of lead concentrations greater than the 1- $\mu\text{g/L}$  HCRL (fig. 21F), whereas groundwater with neutral to alkaline pH had the highest frequency of barium concentrations greater than one-tenth of the 2,000- $\mu\text{g/L}$  MCL (fig. 21M). In contrast with lead and barium, molybdenum tends to occur in groundwater as the oxyanion molybdate, with characteristics similar to chromate and tungstate ions (Cotton and others, 1999). As for other oxyanions with decreased adsorption at neutral to alkaline pH (fig. 8), groundwater with pH greater than or equal to 6.5 had the greatest frequency of molybdenum concentrations greater than the 1- $\mu\text{g/L}$  HCRL (fig. 21K).

### Radionuclides

The presence of uranium and radium in water requires a uranium source (parent of radium) in the host rock (fig. 9) and geochemical conditions in the aquifer that are conducive to transport of these elements. Radon, however, is highly soluble and is related primarily to the abundance of uranium in the rock. The variation in uranium content in rocks is generally understood, and this provides key background information on the potential sources of uranium, and thus radium and radon, its progeny. Overall, a comparison of the aquifers in the study area suggests that the elevated concentrations of the various radionuclides are distributed in ways that are consistent with their lithological sources and their chemical and radiological properties. Thorium is the source of two isotopes of radium, but it is insoluble in common water geochemical types found in the natural environment, except in those representing the most extreme geochemical environments (strongly acidic or strongly alkaline; Langmuir and Herman, 1980) that are not found in the aquifers in the study area.

For some radionuclide contaminants, knowledge of specific lithology (for example, felsic compared to mafic rocks or lacustrine compared to quartzose siliciclastic rocks) is needed to explain differences in occurrence that gross lithology (siliciclastic compared to crystalline) cannot. The lithochemical framework developed for the PBR crystalline-rock aquifers and the Early Mesozoic basin aquifers discussed in earlier sections of this report was used to identify specific lithologic groups with greater potential for radiochemical contaminants. Uranium is present in trace amounts in all rock types but can become enriched relative to background concentrations in certain rock types because of its high solubility in certain water types and because of the wide variety of chemical reactions in which it can participate (Langmuir, 1978; Turner-Peterson, 1980; Hodge and others, 1998).

Water from areas underlain by more felsic crystalline bedrock (fig. 24) is assumed to be more likely to contain elevated concentrations of these naturally occurring radionuclides; however, differential weathering of specific minerals and rock types (Speer and others, 1981; Michel, 1984) may control the geochemical environment and thereby the concentrations of radionuclides and associated constituents in



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and  
 2005b and Nicholson and others, 2005 and 2006

**Figure 24.** Areal occurrence of felsic lithologic groups within the Piedmont and Blue Ridge Physiographic Provinces.

groundwater. Transport characteristics of uranium, radium, and radon differ; thus, areas underlain by rocks with the highest uranium content, which are the felsic rocks in the PBR crystalline-rock aquifers, do not always have the highest concentrations of all three of these radionuclides.

## Uranium

Less than 1 percent of the samples from the aquifers exceeded the 30- $\mu\text{g/L}$  MCL for uranium (table 4). Although the highest single measurement of uranium of 97  $\mu\text{g/L}$  was in a sample taken from paragneiss from the metamorphosed clastic sedimentary lithologic group in the PBR crystalline-rock aquifers, samples from the Early Mesozoic basin aquifers had statistically higher concentrations of uranium than the samples from the PBR crystalline-rock aquifers (table 6; fig. 17). Previous studies indicate that these two areas have a combination of sources of uranium in or near the aquifer, with conditions conducive to mobilization and transport of uranium (Turner-Petersen, 1980; Szabo and Zapecza, 1991).

Clastic sedimentary and lacustrine clastic sedimentary lithologic groups within the Early Mesozoic basin aquifers had elevated median concentrations of uranium (greater than 1  $\mu\text{g/L}$ ) (fig. 17). The highest median uranium concentration values of 3.6 and 3.1  $\mu\text{g/L}$  were for the clastic sedimentary (CLSD group, subgroup 21) and clastic lacustrine (CLSDLAC group, subgroup 22e) lithologic groups, respectively, of the Early Mesozoic basin (tables 3, 6, and 1-1). Of 50 water samples from Early Mesozoic basin sedimentary-rock aquifers analyzed for uranium, the concentrations were greater than 4  $\mu\text{g/L}$  in about 26 percent (13 samples) and were greater than 3  $\mu\text{g/L}$  in 46 percent of the samples (appendix 1, tables 1-3 and 1-4). For these rock types, only 22 percent of the samples contained uranium concentrations that were less than 1  $\mu\text{g/L}$ ; however, only 2 percent of the samples had uranium concentrations that exceeded 10  $\mu\text{g/L}$ , and the maximum uranium concentration was 12  $\mu\text{g/L}$ .

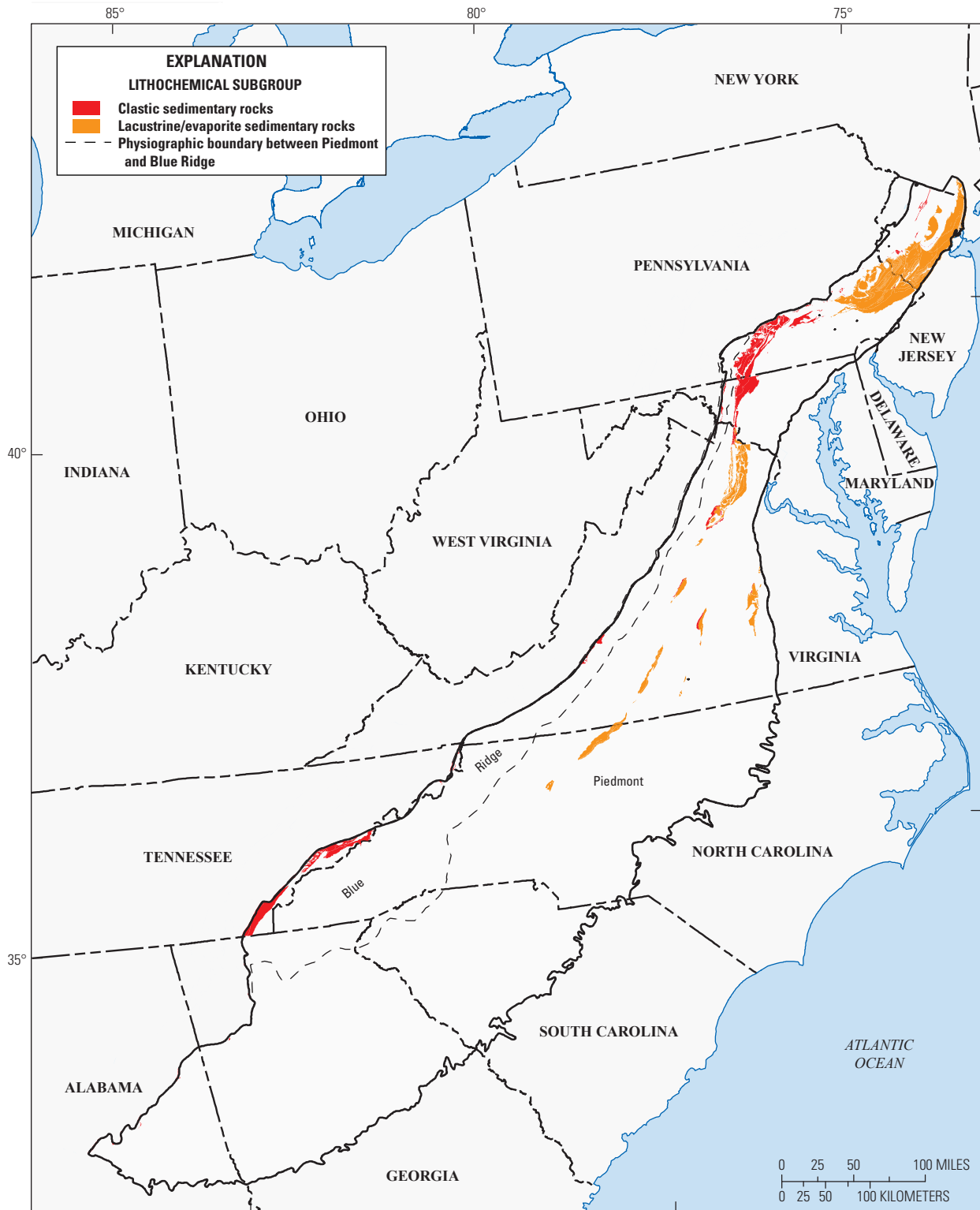
The uranium concentration distribution was more bimodal for the water samples from most crystalline-rock aquifers, especially the granites, metasediments, biotite gneisses, and paragneisses, which have sedimentary origin and had the highest individual uranium concentrations (tables 3 and 1-1). A few water samples (1.1 percent) from these crystalline-rock aquifers contained uranium concentrations in excess of 10  $\mu\text{g/L}$ , and a few samples (0.8 percent) contained uranium concentrations in excess of the 30- $\mu\text{g/L}$  MCL; however, the majority of samples (89 percent) contained concentrations less than 1  $\mu\text{g/L}$  (appendix 1, table 1-4). Of water samples from the crystalline-rock aquifers, only about 6 percent contained uranium concentrations greater than 4  $\mu\text{g/L}$ , and about half of those samples (7), were from granite and granite gneiss. The two highest uranium concentrations, 97 and 39  $\mu\text{g/L}$ , were detected from paragneiss (sedimentary origin, now metamorphosed) and granite, respectively.

The geographic distribution of these clastic sedimentary (CLSD group, subgroup 21, appendix 1, tables 1-3 and 1-1)

and clastic lacustrine sedimentary (CLSDLAC group, subgroup 22e) lithochemical subgroups is shown in figure 25. Common lithologies for these siliciclastic groups are argillite, arkose, conglomerate, fine-grained mixed clastic, mudstone, sandstone, shale, siltstone, and greywacke. Common lithologies for the crystalline groups are granite, biotite gneiss, gneiss, and other metasediments. (Note that some clastic sedimentary rocks are mapped in the Blue Ridge Physiographic Province; fig. 25). The clastic sedimentary and lacustrine clastic sedimentary lithologic subgroups of the Early Mesozoic basin aquifers and the PBR crystalline-rock aquifers have a source of uranium and geochemical characteristics conducive to transport of uranium.

Uranium in the PBR crystalline-rock aquifers and Early Mesozoic basin aquifers occurs most commonly in groundwater that has higher values of pH under oxic geochemical conditions. Of the 29 water samples with the highest uranium concentrations (>4  $\mu\text{g/L}$ ), 16 (55 percent) had pH values greater than or equal to 7.3. In the grouping of samples in which the concentrations of uranium exceeded 1  $\mu\text{g/L}$ , 73.4 percent (47 of 64 samples) had pH values that were neutral to alkaline (greater than or equal to 7.0), and 32.8 percent (21 of 64 samples) had a pH greater than or equal to 7.5. Conversely, in samples where uranium concentrations were low (less than 1  $\mu\text{g/L}$ ), the samples were overwhelmingly acidic, with pH less than 7.0 in 211 (86.8 percent) of 243 samples with pH measurement. For samples with pH less than 7.0, the samples with near-neutral pH (6.5–7.0) had the greatest frequencies for exceeding 1  $\mu\text{g/L}$  highest common reporting level (fig 21.O). The strong correlation between uranium concentrations and pH in groundwater is not surprising because of the important role pH and alkalinity (carbonate complexation) play in the geochemical mobilization of uranium. Uranium concentrations were positively correlated with pH, specific conductance, and concentrations of alkalinity, calcium, sodium, sulfate and several trace elements. The trace elements having the strongest positive correlations with pH and alkalinity were arsenic, boron, and molybdenum, all of which form oxyanions (Hodge and others, 1998) that tend to be mobile in alkaline environments (tables 5 and 1-7).

Higher concentrations of arsenic and uranium tend to occur in water with elevated pH conditions; this association is indicative of increased weathering processes (PC1, table 5). The high concentrations are consistent with the hypothesized increase in the mobility of the oxyanions under high-pH conditions, as the calculated adsorption/desorption model profiles for uranium and arsenic indicate (fig. 8). Laboratory experiments have repeatedly shown that while uranium sorbs strongly to iron-hydroxides and clays, uranium is readily desorbed from iron hydroxides and clays with increasing pH, especially in the presence of carbonate alkalinity (Hsi and Langmuir, 1985; Echevarria and others, 2001; Logue and others, 2004). Uranium concentrations are negatively correlated with concentrations of DO and iron (appendix 1, table 1-7), which is a constituent whose occurrence is strongly affected by redox conditions. These correlations are consistent with



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and  
 2005b and Nicholson and others, 2005 and 2006

**Figure 25.** Areal occurrence of lithochemical subgroups having elevated uranium concentrations in groundwater (based on Tukey mean rank tests, table 6) within the Piedmont and Blue Ridge Physiographic Provinces.

the thermodynamic property of uranium—the more oxidized species form oxyanions that are much more soluble than the reduced species (Langmuir, 1978), especially with more alkaline pH. Uranium concentrations also are negatively correlated with concentrations of aluminum. Aluminum is not a redox-sensitive constituent, but its solubility increases with decreasing pH (more acidic conditions); uranium solubility is optimal in the opposite conditions (with increasing pH or more alkaline conditions).

The general lack of correlation between radon and uranium concentrations among the water samples, previously noted for sediments of the Early Mesozoic basins by Szabo and Zapezca (1991), indicates that geochemical environment more strongly controls the dissolution of uranium than that of radon. A favorable geochemical environment (high pH and alkalinity) is critical for mobilizing uranium, whereas radon is readily soluble in any type of water (either acidic or alkaline). Previous sampling and analysis of the Early Mesozoic basin sediments have similarly shown that uranium concentrations tend to be highest (uranium is most mobile) in oxidizing alkaline water (Szabo and Zapezca, 1991). Previous sampling efforts for granites and gneisses of the Blue Ridge also indicate the lack of correlation between radon and uranium concentrations but indicate that high pH and alkalinity tend to be the favorable geochemical conditions for uranium occurrence (Vinson and others, 2009).

## Radon

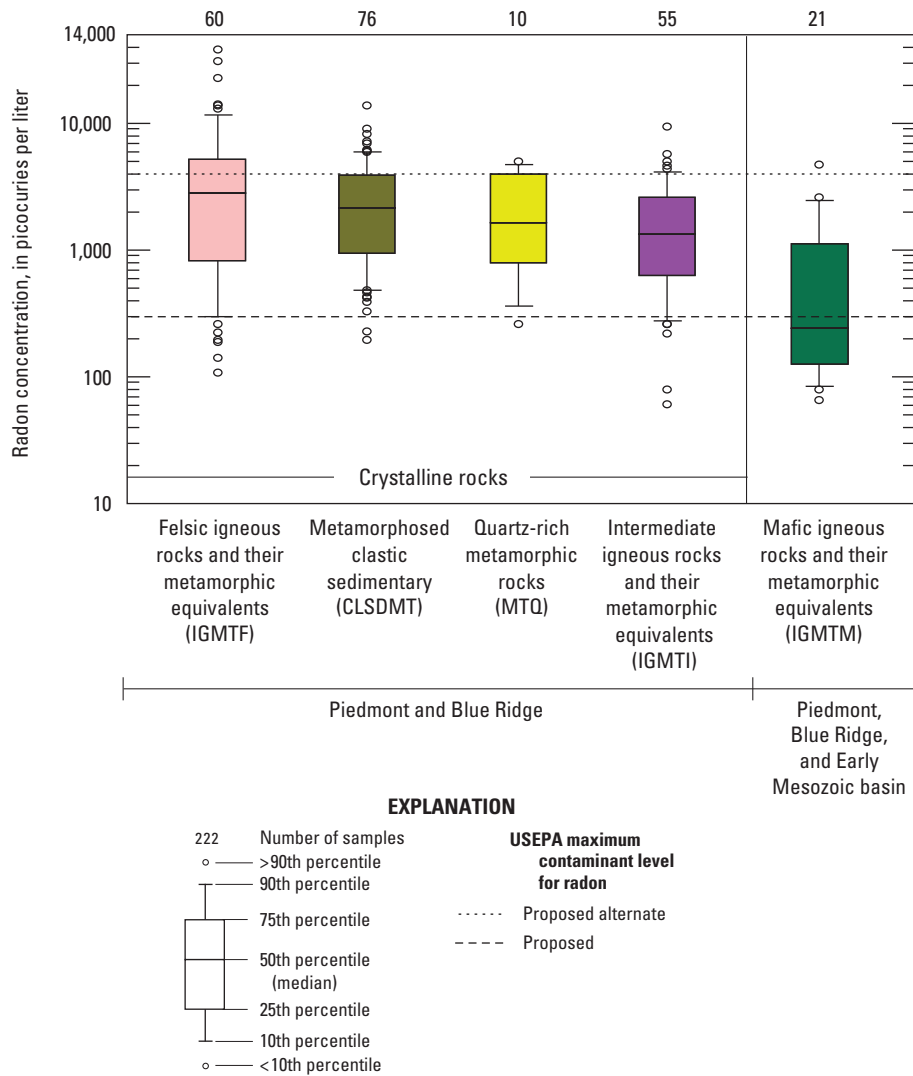
Concentrations of radon-222 exceeded the proposed AMCL of 4,000 pCi/L in 19 percent of the samples from the PBR crystalline-rock aquifers and from the Early Mesozoic basin siliciclastic-rock aquifers (table 4). Concentrations exceeded 3,250 pCi/L in 25 percent of samples, and 30 percent of the samples had a concentration greater than 3,000 pCi/L. Overall, 90 percent of the samples had radon concentrations greater than the proposed MCL of 300 pCi/L. The overall median for the entire sample set is 1,800 pCi/L, thereby exceeding the proposed MCL by a factor of 6. Median concentrations are substantially greater than the proposed MCL of 300 pCi/L, except for the those samples from the combined set of mafic igneous and metamorphic rocks and ultramafic-rock lithologic groups (IGMTM median 355 pCi/L and ULMAF median, 240 pCi/L; tables 3 and 1-1; fig. 17). Median radon concentrations for all of the lithologic groups of aquifers start at about 1,200 pCi/L for the quartz-rich sedimentary and metamorphosed clastic sedimentary lithologic groups and increase substantially for other lithologic groups. The maximum radon concentration was 38,000 pCi/L in a sample from felsic biotite gneiss. Six of the seven wells with the next highest radon concentrations, all greater than 10,000 pCi/L, were from granite.

Within the PBR crystalline-rock aquifers, the highest median concentrations of radon were detected in samples from wells completed in the felsic igneous and the metamorphosed clastic sedimentary lithologic groups (fig. 26). Although radon

had similar mean rank and median concentrations for many lithologic groups in the PBR crystalline-rock aquifer (table 6), each of the lithologic groups had large ranges in concentrations. The mafic/ultramafic lithologies had notably lower concentrations of radon, had the lowest mean rank, and had the lowest median concentration of 240 pCi/L (fig. 17). Half of all samples with radon concentrations less than 200 pCi/L were from the mafic igneous and metamorphic and ultramafic lithologic groups, which is consistent with findings from previous studies in areas of the PBR (Senior, 1998; Sloto, 2000). The median concentrations of 3,530 pCi/L for granite (felsic igneous and metamorphic lithology) and 3,600 pCi/L for schist (metamorphosed clastic sedimentary lithology) were the highest among all of the rock-aquifer types, and these two groups had the statistically highest radon concentrations (table 6; fig. 27). Within the felsic igneous and metamorphic crystalline-rock lithologic group (IGMTF group, tables 3 and A1), samples from areas underlain by a specific rock type (granite, subgroup 61, appendix 1, table 1-1) had concentrations of radon exceeding 4,000 pCi/L in 47 percent of the samples, a frequency that was twice as great as that from any of the other rock types. About 24 percent of samples from the gneiss and schist metasediments had concentrations of radon exceeding 4,000 pCi/L.

The Early Mesozoic basin siliciclastic lithologic groups had radon concentrations that generally are comparable to those of the PBR crystalline-rock aquifer lithologic groups (table 6; fig. 17). The Early Mesozoic basin lacustrine siliciclastic lithologic group within the Piedmont also had a median value that was about 1,800 pCi/L, and a small percentage of samples (about 8 percent) had a concentration greater than 4,000 pCi/L (table 6; fig. 17), with a maximum of 5,000 pCi/L. Concentrations of radon exceeded 8,000 pCi/L in 21 percent of samples from granitic aquifers (IGMTF lithologic group, lithochemical subgroup 61) and in 6 percent of samples from schistose aquifers (CLSDMT group, lithochemical subgroup 32u). The remaining Early Mesozoic basin siliciclastic lithologic groups within the Piedmont also had median concentrations of radon greater than 1,000 pCi/L, but less than 3,000 pCi/L (table 6).

Radon is highly soluble and generally is not affected by chemical reactions because it is a noble gas. Radon gas was ubiquitous, and concentrations exceeded the proposed MCL of 300 pCi/L in samples collected under all geochemical conditions encountered during this study, including pH ranging from 4.5 to 8.5 and oxic and anoxic conditions. The higher proposed AMCL of 4,000 pCi/L was also exceeded in samples collected from all types of geochemical conditions (fig. 21Q). Radon concentrations generally were higher in water that was classified as oxic as opposed to waters that were classified as anoxic. Acidic to neutral groundwater with oxic or mixed redox characteristics had the greatest frequency of samples with concentrations exceeding the 4,000-pCi/L AMCL for radon (fig. 21Q). Radon concentrations were highest where water was most corrosive and substantial rock (mineral) weathering was likely occurring. These geochemical



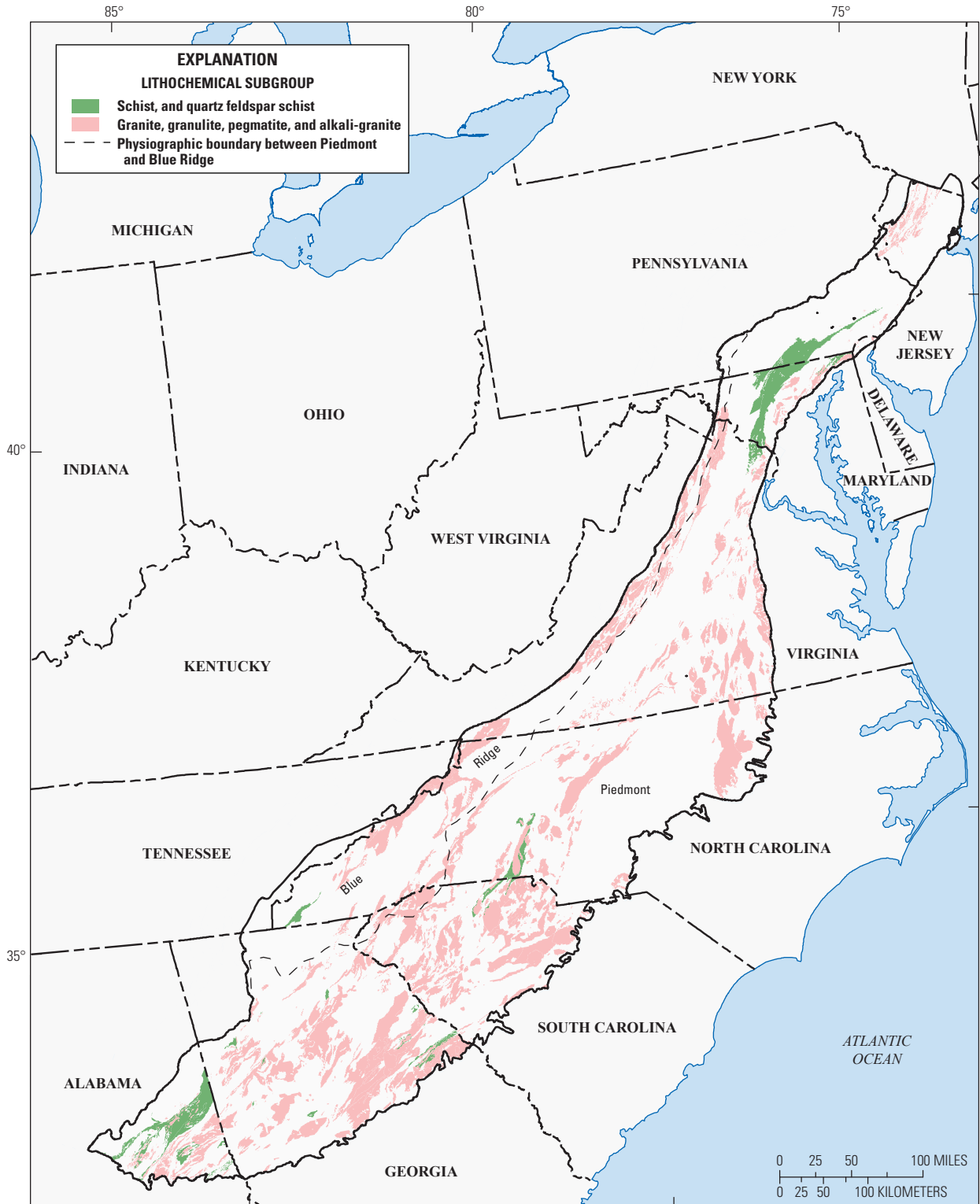
**Figure 26.** Radon concentrations in groundwater samples related to composition of lithologic group.

conditions are consistent with those noted for granites, which tend to yield the highest radon concentrations. The positive corresponding loading of radon and potassium together in PCA (PC5 in table 5 and 1-7) is also consistent with the highest occurrence of radon in felsic rocks, especially granites, which generally contain potassium feldspar and potassium-bearing mica minerals, such as muscovite, biotite, or phlogopite.

Because radon is highly soluble in waters of all geochemical types encountered in the region, the occurrence of radon is related primarily to the abundance of uranium in the rock. Gamma-ray spectral emission maps constructed from measurements during aerial overflights of the United States in the late 1970s as part of the USGS National Uranium Resource Evaluation (NURE) Program (Duval and Riggle, 1999) reveal a broad range of radionuclide contents. These data include the equivalent uranium-238 content interpolated on the basis of

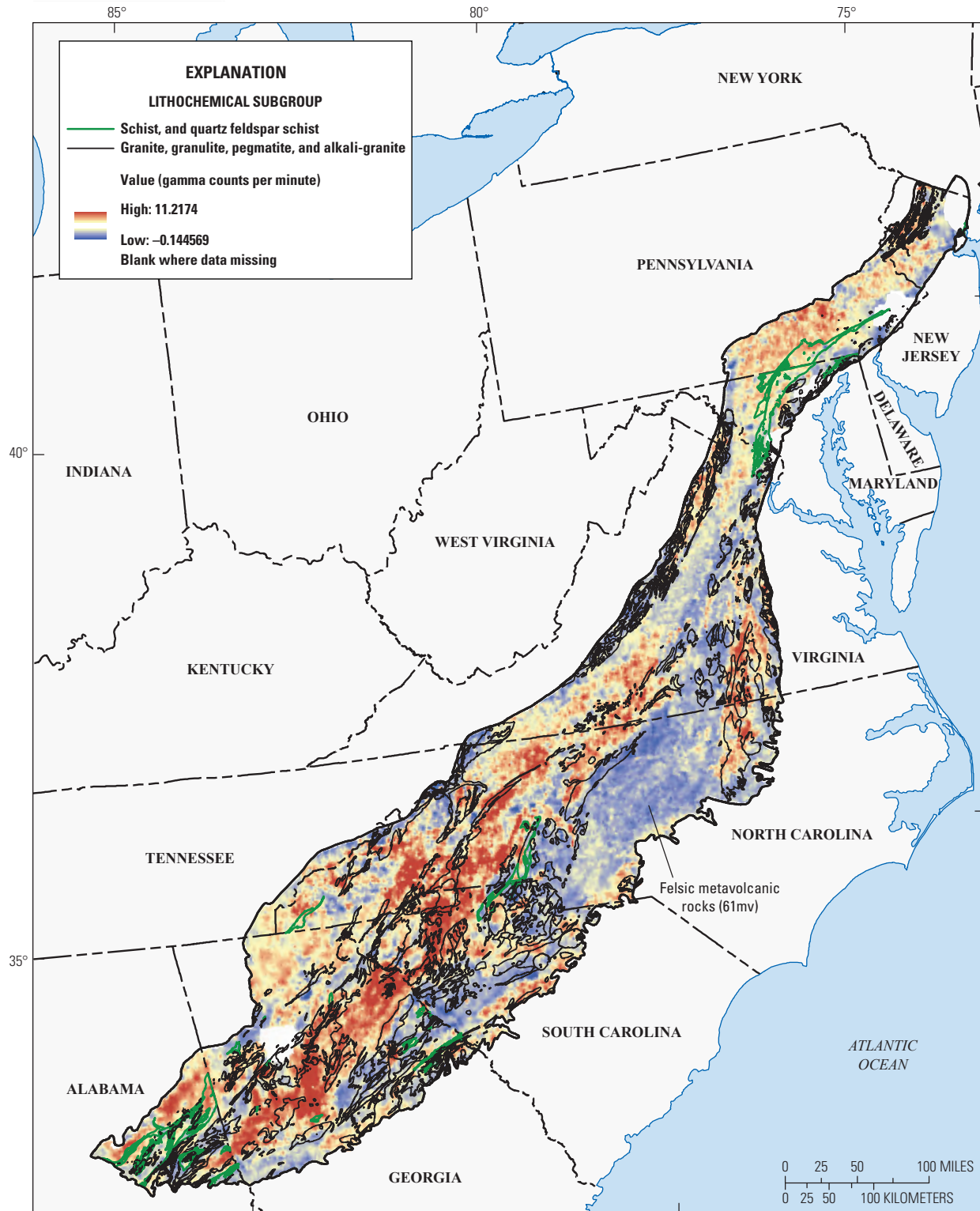
gamma emissions in the upper 25 centimeters of soil, surface sediments, or rock, which can indicate the general presence of radionuclide-enriched rock as shown in figure 28. Results from the Tukey mean rank test suggest that only the granitic rocks (61) and undifferentiated schist (32u) lithochemical subgroups had statistically higher concentrations of radon in groundwater compared to other lithochemical subgroups; however, other areas shown in warm colors in figure 28, such as the eastern Piedmont of North Carolina, suggest that other felsic rocks, including metavolcanics (lithochemical subgroup 61mv), may also be important sources of radon.

Uranium is present in trace amounts in all the rock types from the region but is strongly enriched relative to background concentrations in some of the bedrock types. Overall, a comparison of the aquifers in the study area suggests that elevated concentrations of uranium in bedrock most commonly were noted in the PBR crystalline-rock aquifers, especially granite



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and  
 2005b and Nicholson and others, 2005 and 2006

**Figure 27.** Areal occurrence of lithochemical subgroups having elevated radon-222 concentrations in groundwater (based on the Tukey mean rank test, table 6) within the Piedmont and Blue Ridge Physiographic Provinces.



Base from U.S. Bureau of the Census, 1990, 1:500,000 to 1:5,000,000 and Statistics Canada digital data, 2006  
 Albers Equal-Area Conic projection: Standard Parallels 29°30' N and 45°30' N,  
 Central Meridian 96°00' W, Latitude of Origin 23°00' N  
 Lithologic group data from Dicken and others, 2005a and 2005b and Nicholson and others, 2005 and 2006;  
 Uranium gamma counts from National Uranium Resource Evaluation (NURE) database

**Figure 28.** An overlay of areal occurrence of lithochemical subgroups having elevated radon-222 concentrations and U.S. Geological Survey National Uranium Resource Evaluation Program uranium measurements in groundwater within the Piedmont and Blue Ridge Physiographic Provinces.



and gneiss (metasediment), but high values are also present in most of the region underlain by the Early Mesozoic basin sediments, especially the lacustrine siliciclastic sediments. The variation in uranium content in the rock types of the region provides the key background upon which the concentrations of radon can be overlain and interpreted. The intersecting distribution of elevated uranium concentrations in bedrock and elevated radon concentrations in groundwater demonstrates that bedrock uranium distribution is the source, and thus is the most useful potential explanatory factor for radon concentrations (fig. 28). There is a large difference in the concentration of uranium in the granites relative to concentrations in the mafic rock or in some of the quartz-rich sediment. Thus, the large differences in concentrations of radon-222 that are observed regionally among these rock types is to be expected, based on the variable bedrock uranium contents.

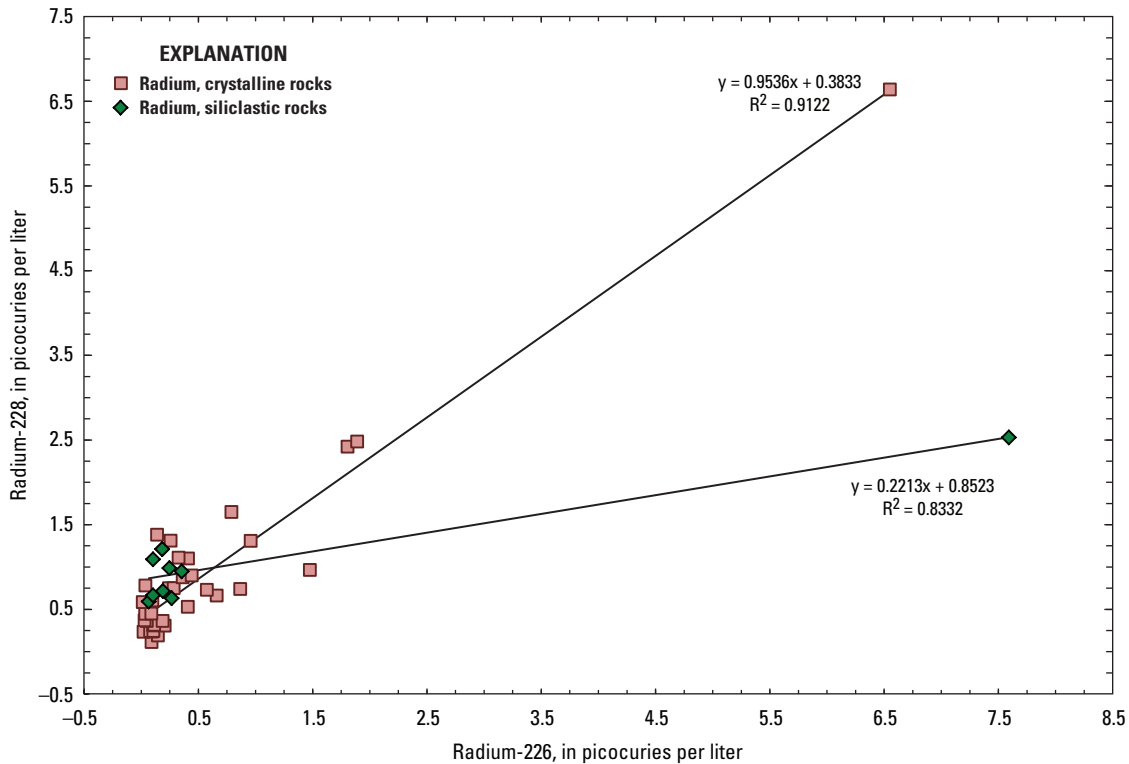
Theoretically, the concentration of radon-222 in groundwater is directly proportional to the concentration of uranium in the rock-aquifer matrix (Wanty and others, 1992). The distribution of radon in water on the basis of the collected concentration data from the sampled well sites from the Piedmont Early Mesozoic basin and PBR crystalline-rock aquifers is consistent with the distribution of uranium in the bedrock, with the most extreme radon values corresponding to the most uraniumiferous lithologic types. The differences in possible concentrations of uranium among the various rock types may be relatively large, as much as a full order of magnitude or more for granites relative to mafic rocks; hence, the lithologic control on radon-222 concentrations is predominant in the PBR crystalline-rock aquifer. Concentrations of radon-222 in groundwater and concentrations of uranium in the rock-aquifer matrix were crudely correlated also for felsic crystalline rock and for the thin glacial sand and gravel aquifer systems in the northeastern United States (Ayotte and others, 2007). Many other factors can affect the radon-222 concentrations to some degree, however, including porosity and the efficiency of radon-222 emanation (Wanty and others, 1992). In the crystalline-rock aquifer types, the common occurrence of the uranium-bearing minerals along grain margins is well documented (Speer and others, 1981; Michel, 1984; Davis and others, 1987), again emphasizing the importance of granites and similar crystalline-rock types for yielding the highest radon concentrations. The variability in emanation can be affected by geochemistry and other associated factors because the geochemistry may directly affect the fate of the radium-226 parent of the radon; for example, sorption of radium to grain surfaces may be enhanced or minimized. Thus, variability in emanation may have a small effect on the overall radon-222 concentrations in the PBR crystalline-rock aquifer. The emanation effect is likely too small to be notable on the regional scale in comparison to the large variability of bedrock uranium concentrations, but may be one minor factor that further explains some of the local-area variation noted within a single rock type. Further evaluation of such local-area variation is outside of the scope of this study.

## Radium

Only 2 percent of the samples analyzed for radium had concentrations that exceeded the 5-pCi/L MCL for combined radium-226 and radium-228. Three percent of samples from the Early Mesozoic basin aquifers had concentrations that exceeded the MCL (table 4). [Radium data were not analyzed from some of the lithologic groups, and the number of samples per group was often small (fig. 17H).] Of the aquifers that had radium data, the siliciclastic-rock lacustrine aquifers had the highest median concentrations of radium. The only lithologic groups within the Piedmont that contained samples with concentrations greater than the 5-pCi/L MCL for combined radium-226 and -228 were the felsic igneous and metamorphic lithologic group (IGMTF, tables 3, 4, and 1-1) in the PBR crystalline-rock aquifers (sample from granite with a concentration of 13.19 pCi/L) and the clastic lacustrine/evaporate sedimentary groups of the Early Mesozoic basin aquifers (sample from lacustrine siltstone with a concentration of 10.12 pCi/L; tables 1-3 and 1-4). In two additional samples, the combined radium concentration exceeded 4 pCi/L; one of those samples was from biotite gneiss (IGMTI group, subgroup 34bg), and the other was from granite gneiss, which is derived from granite (IGMTF group, subgroup 61). The mean rank of concentrations was not significantly different among many of the lithologic groups because of the small range in concentrations for each lithochemical subgroup, the large number of samples for which the concentrations of the radium isotopes were low or not detected, and the limited number of samples available for each group (appendix 1, table 1-6 and fig. 17H). Additional issues with regard to the detection of the radium isotopes are briefly discussed in appendix 3.

A few samples collected in areas underlain by uranium-rich sandstone or siltstone in the Early Mesozoic basin aquifers had concentrations of radium-226 that were substantially higher than the associated concentrations of radium-228. In general, the concentration ratios of radium-226 to radium-228 were highly variable among the siliclastic lithologic groups; however, the concentrations of these two radionuclides were nearly equal (about 1:1 ratio) in most samples from the felsic igneous and metamorphic crystalline-rock lithologic group (fig. 29).

Concentrations of radium isotopes exceeded the 5-pCi/L MCL and the 1-pCi/L common detection threshold more frequently in samples with anoxic or mixed geochemical conditions than did concentrations in samples with oxic geochemical conditions, usually with neutral to alkaline pH (fig. 21R). The effect of enhanced solubility of radium in the anoxic-type waters is the most important factor explaining the occurrence of the occasionally elevated concentrations of radium in the PBR bedrock aquifers, in terms of statistical significance (as illustrated by the correlation with dissolved oxygen; PC3; appendix 1, table 1-7 and table 5) and in terms of occurrence of the highest concentration values. For the two samples that had a combined radium concentration that exceeded the MCL of 5 pCi/L, the DO concentration was less than 0.5 mg/L and

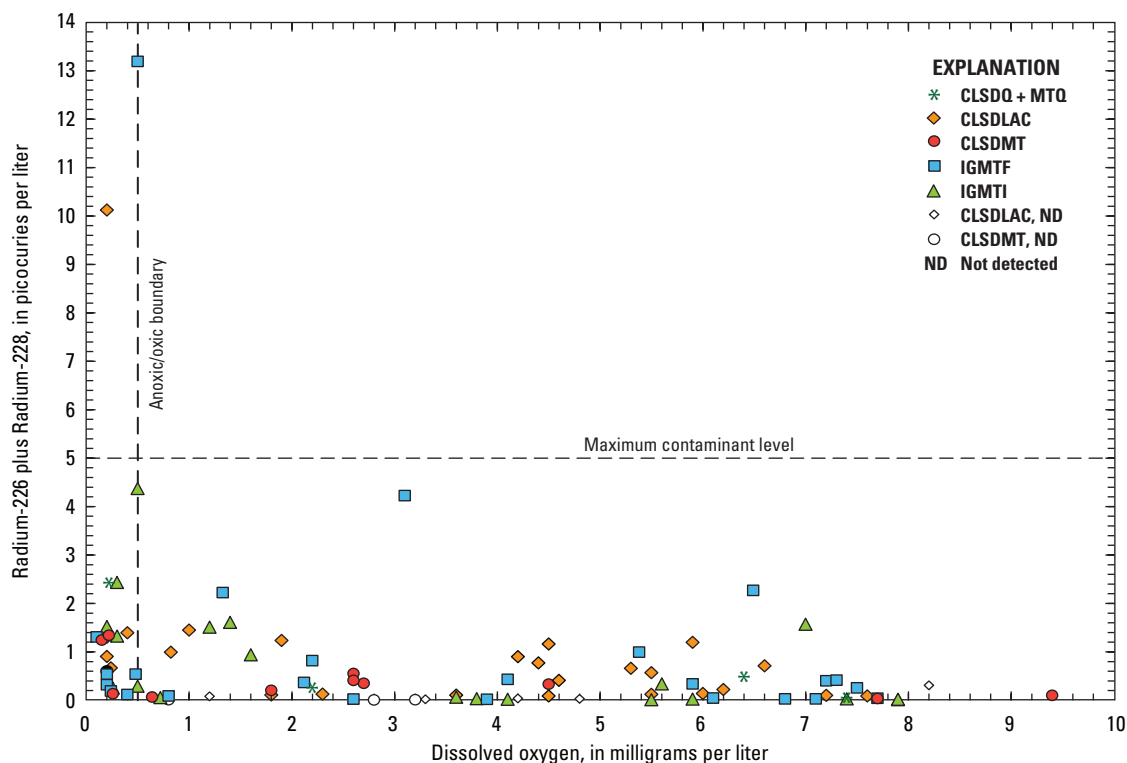


**Figure 29.** Relations between concentrations of radium-228 and radium-226 in samples from bedrock aquifers of the Piedmont and Blue Ridge Physiographic Provinces.

the concentration of manganese (an element far more soluble in anoxic than in oxic waters) was greater than 0.05 mg/L in both. Of the seven samples in which the combined radium concentration exceeded the level of 2 pCi/L, five samples had DO concentrations less than 0.5 mg/L, and six samples had concentrations of manganese greater than 0.05 mg/L. The frequency of occurrence for concentrations of combined radium to be greater than or equal to 1 pCi/L was evaluated among samples of water from three Ra-bearing rock aquifer groups [felsic igneous and metamorphic lithologic group in the PBR crystalline-rock aquifers, including granite; the lacustrine clastic sedimentary groups of the Early Mesozoic basins aquifers; and biotite gneiss (IGMTI group, subgroup 34bg, tables 3 and 1-1)]. Combined radium was greatest when DO was less than or equal to 1 mg/L (anoxic). Four of the five highest concentrations of radium-226 occurred when DO concentrations were less than 0.5 mg/L.

Concentrations of combined radium are negatively correlated with DO concentration (appendix 1, table 1-7). Concentrations of combined radium with respect to DO are shown in figure 30; the relation is nearly hyperbolic, indicating that radium concentrations are high when DO is absent and lower or absent when DO is abundant. Combined radium-228 and radium-226 (total radium) concentrations also have positive

correlations with iron and manganese concentrations (appendix 1, table 1-7, abbreviated as RaTOT). The indirect correlations of concentrations of radium with concentrations of DO coupled with the direct correlations with the concentrations of iron and manganese are indicative of the ongoing geochemical processes that allow for the most common mobility of radium: lack of adsorption to iron- and manganese-hydroxides and oxyhydroxides in anoxic environments. Laboratory studies have shown that radium is readily adsorbed by clay minerals (Ames and others, 1983a), but has an even stronger pattern of preferential adsorption to amorphous iron- and manganese-oxyhydroxides (Moore and Reid, 1973; Ames and others, 1983b; Benes and others, 1984). A consequence of this strong adsorption pattern for radium is that natural iron-oxyhydroxide samples have shown that they contain much more radium than the surrounding rock matrix (Korner and Rose, 1977). Reductive dissolution of the iron oxyhydroxides in anoxic conditions releases radium to the water as demonstrated by dissolving such oxyhydroxides from sediments and observing the sharp increase in the amount of radium in solution (Landa and others, 1991). The adsorption properties of radium with respect to iron oxyhydroxides (hydrated ferric oxide) under variable pH conditions are illustrated in figure 8. In neutral and alkaline waters, nearly complete adsorption of radium to



**Figure 30.** Relations of concentrations of radium-226 plus radium-228 and dissolved oxygen for samples from siliclastic-rock and crystalline-rock aquifers of the Piedmont and Blue Ridge Physiographic Provinces, 1994–2008.

iron oxyhydroxides is indicated. In anoxic conditions with reductive dissolution of iron oxyhydroxides, the aquifer loses a considerable sink for radium from the solid phase, thus allowing for a greater amount of radium to be in solution.

The nearly hyperbolic trend among the concentrations of radium and dissolved oxygen observed in the Appalachian PBR crystalline-rock aquifers is consistent with similar trends observed in other principal aquifers of the United States (Szabo and others, 2012a, fig. 3). The somewhat greater frequency of occurrence of radium in anoxic conditions is the most important factor controlling radium in aquifers used for drinking water supply in the United States (Szabo and others, 2012b). The occurrence pattern, whether in the Appalachian PBR crystalline-rock aquifers or in the larger setting of the continental United States, reflects the critical role that sorption processes, specifically to iron (and manganese) oxyhydroxides, play in controlling the concentration of radium in dilute groundwaters.

Data from this study show that among the Appalachian PBR siliclastic-rock and crystalline-rock aquifers, oxic groundwater is more common than anoxic groundwater, causing a greater frequency of elevated uranium concentrations relative to radium-226. These findings are consistent with results from previous studies (Szabo and Zapecza, 1991; Vinson and others, 2009). Dissolved oxygen was usually present

in detectable amounts for most, though not all, samples that contained uranium; however, dissolved oxygen was usually not present, or was present in very low amounts, for most samples that contained radium. Concentrations of uranium correlated directly and strongly with pH, indicating a lithochemical relation in occurrence patterns to rock types with the presence of bicarbonate-rich, near-neutral to alkaline waters (table 5, PC1).

For samples with oxic characteristics, radium concentrations tended to be low, but exceeded the 1-pCi/L threshold most frequently for low-pH conditions. Low concentrations of radium generally are consistent with the high potential for adsorption of the divalent radium cation by iron oxides under neutral to alkaline conditions, but not under acidic conditions in which radium tends to desorb (fig. 21R). Groundwater in the study area is not usually acidic, but in the adjoining Coastal Plain (fig. 6), pH is commonly less than 5.0, and combined radium concentrations exceed the MCL in about 20 to 30 percent of sampled wells (Szabo and others, 2005, 2012b). Data from other studies indicate that elevated radium-226 and radium-228 concentrations more frequently occur in groundwater in acidic formations in the PBR crystalline-rock aquifers (such as the Chickies Quartzite, Senior and Vogel, 1992). Because of the limited radium data collected for the current study, results of the assessment should not be considered

strictly representative of the probability of elevated radium in the PBR crystalline-rock aquifers in all lithochemical subgroups, which have great diversity in lithochemical composition and geochemical environments.

### Gross Alpha-Particle Activity

Approximately 8 percent of the samples analyzed for gross alpha-particle activity from the entire dataset exceeded the MCL of 15 pCi/L. For the measured gross alpha-particle activity to exceed the USEPA drinking water MCL, the activity, excluding that from uranium (all isotopes of uranium emit alpha particles), must exceed 15 pCi/L. Only 2 percent of the samples exceed the gross alpha-particle activity MCL if presumed uranium activity is excluded from the measured gross alpha-particle activity. Perhaps equally important is the concept that gross alpha-particle activity might be of use as a compliance-monitoring “screen” for combined radium (Hess and others, 1985) or as an indicator for the presence of high concentrations of uranium, radium, or both. The measured gross alpha-particle activity is further examined in light of this concept.

Most samples with the highest values of gross alpha-particle activity greater than 15 pCi/L (table 7), contained elevated concentrations of alpha-particle-emitting radium-226 or uranium, and on some occasions, both. The MCL for combined radium or uranium was exceeded in some, but not all, samples with gross alpha-particle activity greater than 15 pCi/L. The maximum uranium concentration among the samples was 97.4 µg/L, and this sample (from paragneiss rock type, appendix 1, tables 1-1 and 1-3; CLSDMT group, subgroup 35gn) had the highest gross alpha-particle activity of 78.3 pCi/L. Similarly, the sample with the second highest uranium concentration (39.3 µg/L) from granite (IGMTF subgroup 61; appendix 1, tables 1-1 and 1-3) had the second highest gross alpha-particle activity (33.1 pCi/L). The two samples with the highest radium-226 concentrations [7.6 and 6.6 pCi/L, respectively, from the siliciclastic lacustrine/evaporite sedimentary rock group (CLSDLAC tables 3 and appendix 1, table 1-1) and the felsic igneous lithologic group (granite rock type; appendix tables 1-1 and 1-3, IGMTF group, subgroup 61)] had gross alpha-particle activity of about 30 pCi/L. Samples with moderate gross alpha-particle activities (5 to 14.99 pCi/L) occasionally contained moderate concentrations of radium-226 (0.95–1.9 pCi/L) or uranium (4–13 µg/L), but the MCL itself was not exceeded for either of these radioactive constituents. Of five samples with radium-226 concentrations greater than 1 pCi/L, all had measured gross alpha-particle activity greater than 5 pCi/L (tables 7 and 1-4). Most of these samples with moderate gross alpha-particle activities were from the siliciclastic-rock clastic lacustrine/evaporite sedimentary lithologic group (CLSDLAC tables 3 and 1-1) within the Early Mesozoic basin aquifers and from the granite (IGMTF group, subgroup 61) and biotite gneiss (intermediate igneous and metamorphic rocks, tables 3 and 1-1 IGMTI group, subgroup 34bg) PBR crystalline-rock

aquifers. The samples from these lithologic groups also had the highest frequency of occurrence of gross alpha-particle activity, radium-226, and uranium, with concentrations above their respective MCLs, and had among the highest median concentrations for uranium or radium or both. Low gross alpha-particle activities (less than 5 pCi/L) corresponded with low concentrations of radium-226 (all samples less than 1 pCi/L) and mostly low concentrations of uranium; less than 10 percent of the samples had concentrations of uranium that were greater than 4 µg/L. However, one sample with 13 µg/L of uranium had less than 5 pCi/L of measured gross alpha-particle activity; such a low gross alpha-particle activity in a sample with that amount of uranium is unusual and implies an atypical uranium isotopic ratio (Osmond and Cowart, 1976) or low analyte recovery.

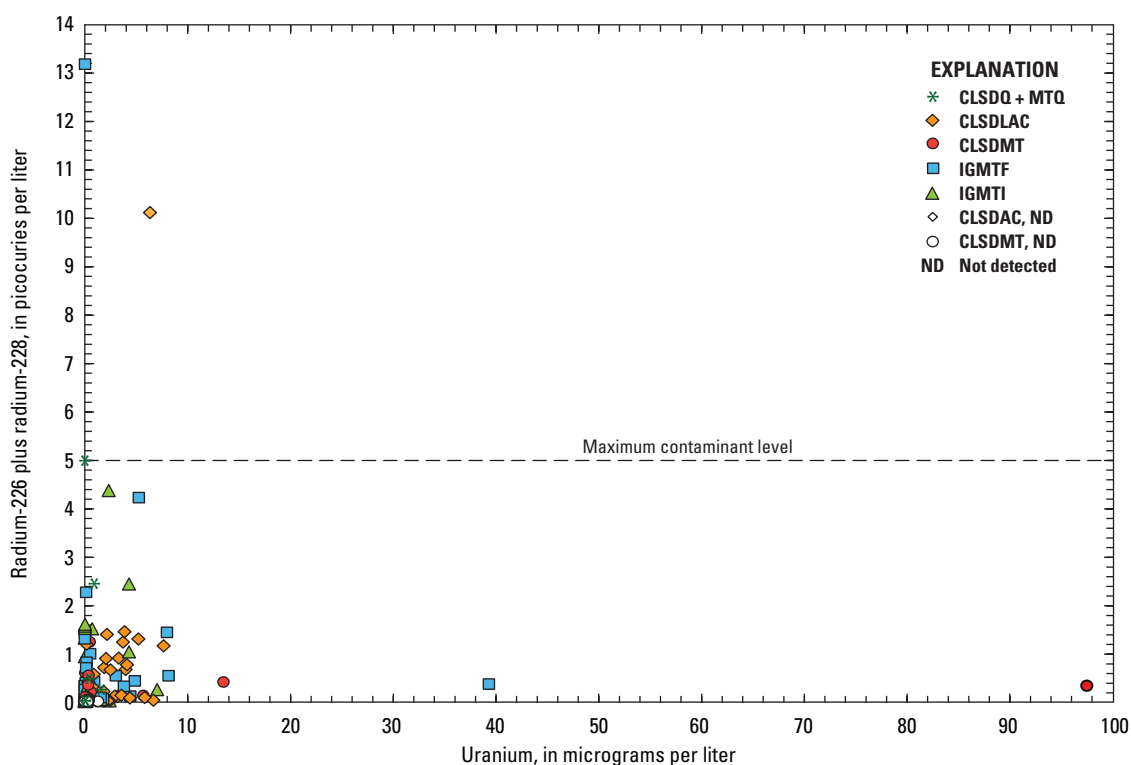
**Table 7.** Number of samples with specified ranges of uranium and radium-226 concentrations for 99 water samples for which gross alpha-particle activity was determined.

[pCi/L, picocuries per liter; µg/L, micrograms per liter; MCL, maximum contaminant level; <, less than; >, greater than; --, not detected]

Uranium concentration (µg/L)	Gross alpha activities, in pCi/L		
	<5	5–14.99	>15 (MCL)
>30 (MCL)	--	--	2
10–29.99	1	--	--
4.0–9.99	6	7	3
1.0–3.99	18	6	--
<1	52	2	2
Totals	77	15	7

Radium-226 concentration (pCi/L)	Gross alpha activities, in pCi/L		
	<5	5–14.99	>15 (MCL)
>5 (MCL)	--	--	2
1.0–4.99	--	3	--
0.5–0.99	4	3	--
0.3–0.49	6	2	--
<0.3	67	7	5
Totals	77	15	7



**Figure 31.** Relations of concentrations of radium-226 plus radium-228 and uranium for samples from bedrock aquifers of the Piedmont and Blue Ridge Physiographic Provinces.

Conventional measurements of the general amount of radioactivity in the water, such as measurements of gross alpha-particle activity, did not prove to be reliable for identifying specifically where concentrations might exceed the combined radium MCL or the uranium MCL. Elevated gross alpha-particle activity indicates the presence of at least one or the other of these alpha-particle-emitting radioactive constituents in relatively high concentrations, but the identity of which of these nuclides is predominant and contributes the most to the radioactivity of the water sample cannot be established on the basis of the gross alpha-particle activity measurement alone. Sample geochemistry (oxic or anoxic) could be helpful in estimating the likelihood of which radionuclide is predominant (fig. 21). The geochemistry of radium and uranium differ, and either one or the other tends to predominate in most, but not all, cases. The adsorption properties of the two elements tend to differ, with uranium most likely to desorb at high pH and radium most likely to desorb at low pH (fig. 8) or in the presence of anoxic water (fig. 21R). The samples with the highest concentrations of radium typically had among the lowest concentrations of uranium, and the converse was also true, regardless of the lithologic group (fig. 31).

### Potential for Detrimental Effects from Trace Elements, Radionuclides, and Associated Contaminants

The trace elements arsenic, manganese, and zinc and the radionuclides uranium, radon, and radium are among the most frequently occurring elements that exceed drinking water standards in the United States. The frequencies of occurrence of uranium and arsenic are 1.7 and 6.8 percent, respectively, in samples from domestic wells nationally (DeSimone, 2009). For uranium, combined radium, and arsenic, the frequencies of occurrence in excess of the respective MCLs are 0.65, 2.0, and 3.56 percent, respectively, in the samples from the wells throughout the PBR crystalline-rock aquifers and Early Mesozoic basin aquifers. All of the samples collected from the PBR crystalline-rock and Piedmont Early Mesozoic basin siliciclastic-rock aquifers that were analyzed in this study are generally consistent with the broader national occurrence frequency as reported by DeSimone (2009). Although the frequencies of occurrence for uranium, radium, and arsenic for this region were similar to the national frequencies in general,

the frequency of occurrence for radon concentrations greater than the AMCL was substantially higher for the PBR crystalline-rock aquifers and Early Mesozoic basin aquifers than that for the Nation as a whole. The proposed AMCL was exceeded more often in the PBR crystalline-rock aquifers than in the Early Mesozoic basin aquifers, and granite is the specific rock type in the felsic igneous and metamorphic lithologic groups in which the highest percentage (47 percent) of the samples exceed 4,000 pCi/L. This relation of radon occurrence with lithology represents a readily mapable lithologic target that could be useful in prioritizing monitoring activity for radon.

## Summary and Conclusions

The following key findings are from the analyses of 346 groundwater samples collected from wells examined as part of 14 U.S. Geological Survey National Water Quality Assessment (NAWQA) Program studies conducted from 1994 to 2008. These key findings are related to lithologic groups and lithochemical subgroups delineated as part of this study:

- Certain naturally occurring trace elements (arsenic, manganese, zinc) and radionuclides (uranium, radon, radium) in groundwater from wells used as domestic water supplies exceeded public drinking water standards, and 10 additional constituents (barium, beryllium, cadmium, copper, lead, selenium, boron, molybdenum, nickel, and strontium) were detected at concentrations greater than a threshold of one-tenth of the established health-based levels.
- Naturally occurring contaminants, such as arsenic, radon, uranium, and radium, had geographic occurrence patterns that generally were associated with certain mappable lithologic groups (categorized based on primary rock type and mineral assemblages). Although there was some spatial overlap, some lithologic groups associated with the presence of radionuclides were different from others affected by arsenic or other trace elements.
- Arsenic concentrations typically were less than 1 µg/L in groundwater of the study area. Concentrations of arsenic exceeding the 10-µg/L drinking water maximum contaminant level were detected in 8.5 percent of the sampled wells in the Piedmont Early Mesozoic basin siliclastic-rock aquifers and in 2.4 percent of sampled wells in the Piedmont and Blue Ridge crystalline-rock aquifers. The elevated arsenic concentrations were predominantly in groundwater samples from clastic lacustrine sedimentary rocks and metamorphosed clastic sedimentary rocks (meta-mudstone and meta-argillite) and frequently were associated with alkaline pH (measured values of 7.2 to 8.0), under oxic to anoxic geochemical conditions. Although arsenic can be attenuated by adsorption on iron oxides at acidic pH (less than 6.5), alkaline pH can facilitate the desorption and mobilization of arsenic from iron-oxide surfaces.
- Manganese concentrations typically were less than 10 µg/L in groundwater of the study area. Concentrations of manganese exceeding the Health-Based Screening Level of 300 µg/L were detected in 7.3 percent of the wells sampled. Elevated concentrations of manganese were associated with groundwaters from crystalline-rock aquifers that contained less than 0.5 mg/L of dissolved oxygen and more than 100 µg/L of dissolved iron. Many anoxic samples with elevated concentrations of manganese also had acidic pH. Anoxic conditions and (or) low pH can promote the dissolution of manganese oxides and common aluminosilicate minerals, such as chlorite, that contain manganese.
- A small number of the samples from crystalline-rock aquifers contained high uranium concentrations; only 2 of 256 samples (0.8 percent) had concentrations exceeding the 30-µg/L Maximum Contaminant Level (MCL), but the majority (89 percent) contained concentrations less than 1 µg/L. The highest concentration of uranium was 97 µg/L and was detected in a groundwater sample from the Piedmont and Blue Ridge crystalline-rock aquifers (paragneiss from the metamorphosed clastic sedimentary lithologic group). Clastic sedimentary and lacustrine clastic sedimentary lithologic groups within the Piedmont Early Mesozoic basin siliclastic-rock aquifers had elevated median concentrations of uranium (greater than the detection limit of 1 µg/L). The median uranium concentration was 3.6 µg/L for the siliclastic lacustrine siltstones of the Early Mesozoic basin.
- Radon exceeded proposed drinking water standards with a greater frequency than all other naturally occurring constituents, particularly in groundwater from the crystalline-rock aquifers. Concentrations in 19 percent of the samples from these aquifers exceeded the Alternative Maximum Contaminant Level (AMCL) of 4,000 pCi/L for radon, and 90 percent of the samples had radon concentrations greater than the proposed MCL of 300 pCi/L. At least one sample in all of the aquifer lithologic groups except for the mafic and ultramafic rocks (which are known to have low uranium concentrations in the rock matrix) had elevated concentrations of radon. Granites from the felsic igneous lithologic group in the Piedmont and Blue Ridge crystalline-rock aquifers had the greatest frequency of radon occurrence greater than the AMCL at about 46.5 percent.
- Uranium and radium rarely exceeded their respective MCLs (about 1 and 2 percent, respectively). Nevertheless, elevated concentrations of uranium, radium, and radon followed predictable geologic distribution pat-

terns. The geologic patterns of occurrence were somewhat different for each of these radionuclides despite the fact that radium-226 is a progeny of uranium, which emphasizes the importance of aquifer geochemistry for occurrence patterns.

- Radium was typically highest in anoxic waters that contained less than 0.5 mg/L of dissolved oxygen and more than 50 µg/L of manganese and on occasion more than 100 µg/L of iron, but the number of samples that exceeded the MCL of 5 pCi/L was small, only 2 of 98 samples. Both exceedences, along with most of the highest concentrations, were from anoxic waters. The occurrence of radium was most notable among the clastic sedimentary and clastic lacustrine (lakebed silt and feldspathic sand) sediments of the Piedmont Early Mesozoic basin siliclastic-rock aquifers and in the granites of the crystalline-rock aquifers in the Piedmont and Blue Ridge, especially in anoxic conditions in each of these aquifers. The number of elevated occurrences of radium in the granite and gneiss crystalline-rock aquifers (felsic igneous and metamorphic equivalents lithologic group) was small because these rocks commonly tended to have oxic waters.
- Uranium and arsenic generally were elevated in specific aquifers with alkaline pH conditions, especially those with clastic sedimentary and clastic lacustrine (lakebed silt and feldspathic sand) sediments. Concentrations of uranium were elevated in a few samples from the granite and gneiss crystalline-rock aquifers, but in about 89 percent of the samples from the crystalline rocks, the concentration of uranium was less than or equal to 1 µg/L.
- The geographic distributions of samples with elevated concentrations of uranium and of samples with elevated concentrations of radium differed except for a small number of samples. The radium-226 radionuclide was more frequently detected at elevated concentrations in waters from the siliclastic rocks of the Early Mesozoic basin than was the radium-228 radionuclide; however, in waters from the granites and gneisses, the concentrations of the two radium isotopes were nearly equal in almost all cases.
- In addition to their presence in aquifer bedrock and associated geologic materials, the occurrence of most trace elements and radiochemicals was related to the pH and redox characteristics of the groundwater. Anoxic conditions and elevated concentrations of iron and manganese were correlated with concentrations of radium isotopes in nearly all of the lithochemical subgroups of the study. Alkaline pH was correlated with concentrations of uranium and arsenic, and acidic pH was correlated with elevated concentrations of zinc.

The identification of geologic and geochemical factors affecting trace-element and radionuclide occurrence can be

useful to owners of domestic wells because these water systems generally are not monitored regularly for trace elements or radionuclides. Millions of people in the Piedmont and Blue Ridge region consume water from private domestic wells that are not regulated or monitored and could pose a source of exposure to contaminants such as arsenic or radon. Domestic well owners rarely test for these constituents, but should be aware of their potential occurrence in groundwater and the health risks of exposure to concentrations that exceed drinking water standards. A better understanding of these issues and the geochemical environments that are associated with high levels of contaminants allows water managers to focus on the most important problems in specific geographic areas. The trace-element and radionuclide data compiled in this and other large-scale regional studies or measured locally for public-supply wells could be informative to private-well owners and municipal authorities in identifying where potential risks of naturally contaminated groundwater may be highest and provide information for prioritization of testing private wells in these areas. For example, the general knowledge that water from crystalline-rock aquifers tends to have higher levels of radon than water from other aquifer types can be further focused to a specific geographic area because water from rocks in felsic (specifically those of igneous origin and granitic rock types) or metamorphic sedimentary lithologic groups (specifically schist rock types) has the highest radon levels within the crystalline-rock aquifers. Results of this study also may provide information that would be useful in designing future studies, such as prioritizing the radium-226 isotope for analysis where water is withdrawn from uranium-rich sandstone or siltstone in the Early Mesozoic basins, in order to increase the timeliness of results and perhaps minimize analytical costs for local monitoring programs.

Additional testing of domestic wells and continued public education are important, particularly considering the large areas of potential occurrence of naturally occurring inorganic chemicals and radionuclides. Some of the lithologic groups and subgroups identified for comparison with the water-quality data compiled for this study lacked the corresponding water-quality data. Sampling of these aquifer units, particularly for those lithologies with source minerals associated with radionuclide occurrence could fill these data gaps. Of the potential greatest concern are the granite and biotite gneiss and other intermediate igneous and metamorphic rocks of the Piedmont and Blue Ridge crystalline-rock aquifers and the lacustrine sedimentary and feldspar-rich (arkosic) sedimentary lithologic groups within the Piedmont Early Mesozoic basin siliclastic aquifers, as well as similar metasediments found among the Piedmont and Blue Ridge crystalline-rock aquifers. In addition to the direct measure of contaminants, additional measurements to indicate redox characteristics and pH would be useful to document the geochemical environments of contaminant occurrence.

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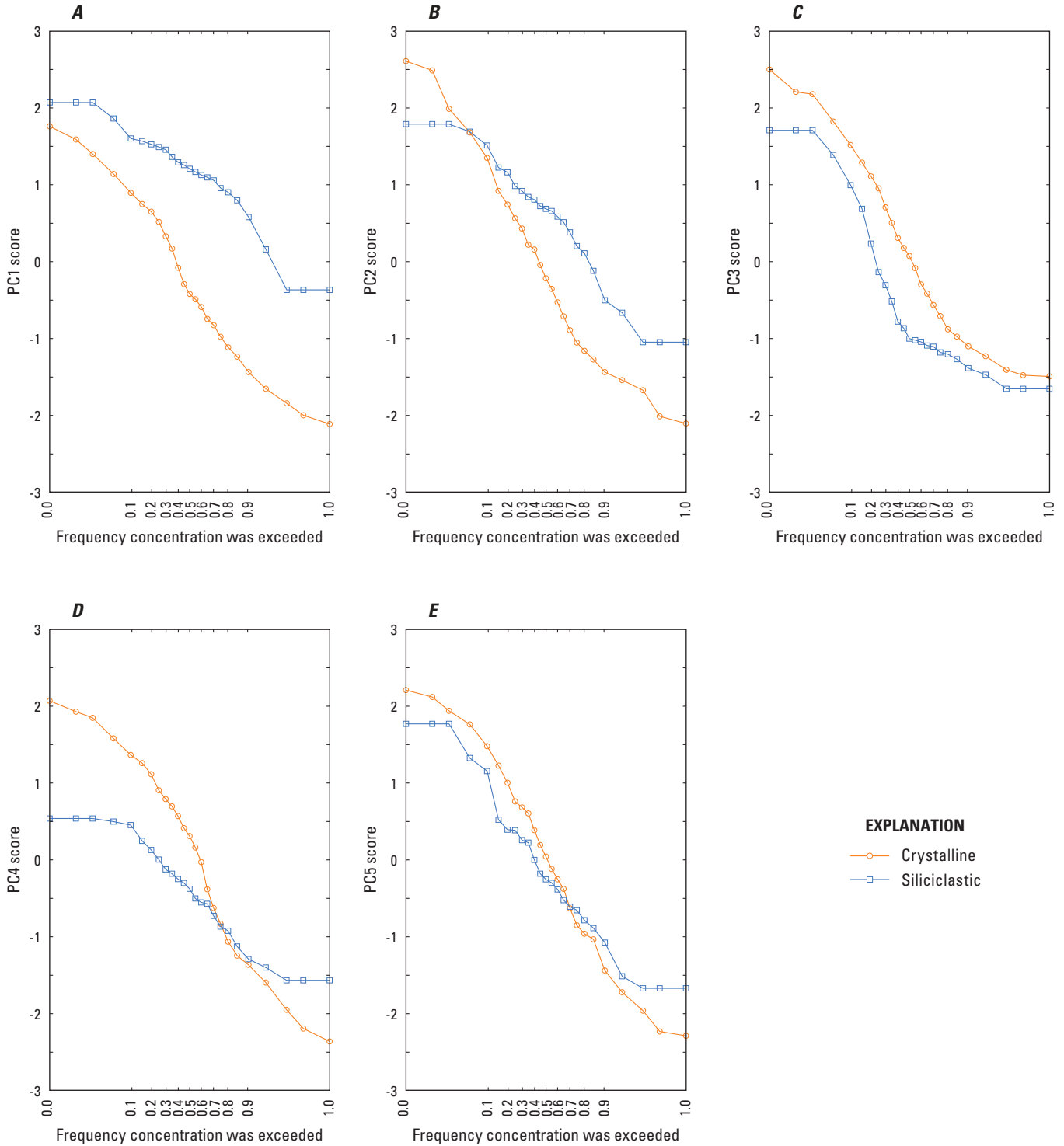
## Appendixes 1, 2, and 3

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**Appendix 1.** Tables. (Excel spreadsheets available online at <http://pubs.usgs.gov/sir/2013/5072/>)

**Appendix 2.** Probability plots of principal components analysis (PCA) scores for groundwater of siliclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces: *A*, PC1 “Alkalinity-pH”; *B*, PC2 “Chloride-Nitrate”; *C*, PC3 “Redox”; *D*, PC4 “Temperature-Silica”; and *E*, “Radon-Potassium”.

**Appendix 3.** Analytical Issues Relating to Defining Radium Occurrence.



**Appendix 2.** Probability plots of principal component analysis (PCA) scores for groundwater of siliciclastic-rock and crystalline-rock aquifers in the Piedmont and Blue Ridge Physiographic Provinces: *A*, PC1 “Alkalinity-pH”; *B*, PC2 “Chloride-Nitrate”; *C*, PC3 “Redox”; *D*, PC4 “Temperature-Silica”; and *E*, PC5 “Radon-Potassium”. The PCA model is described in table 5 and appendix table 1-7.



## Appendix 3. Analytical Issues Relating to Defining Radium Occurrence

Interpreting radiological results requires understanding the concepts of detectability and quantification unique to radiochemistry measurements. For measurements of radionuclides in this study, these concepts primarily are important for measurements of radium concentrations. Uranium concentrations were determined by measuring the mass of the uranium-238 isotope present; therefore, issues unique to radiochemistry measurements were not considered. Concentrations of radon-222 were so high that issues regarding detectability and quantification were again not of consideration. Concentrations of radium (Ra) isotopes, however, while showing considerable ranges, were for many samples at or below detection, or if detected, were low enough that guidelines for quantification could not be met. Furthermore, analytical techniques for radium isotopes underwent considerable changes during the period of study as did reporting requirements. A measured (uncensored) concentration value was reported for nearly all the samples (tables 4 and 1-4), although issues relating to analysis, detection, quantification, and reporting of the measured radium isotope concentrations affect understanding of the radium occurrence. Additional information provided with many of the analyses can be useful in determining the statistical likelihood of detection and quantification.

Random radioactive decay, variable radioactive background noise, and other measurement uncertainties cause measurement signal to vary. For a background blank or an environmental sample, a nonzero signal may be produced even when no radionuclide is present. For this reason, the laboratory analyzes an instrument background or blank sample and subtracts the response signal from the gross signal of the measured environmental sample to obtain the net signal. The critical level ( $L_c$ ) is the smallest measured concentration that is statistically different from the instrument background (blank). It is the threshold of detection for whether the radionuclide is actually present. The statistical computation is set to minimize the statistical likelihood of a false detection. Because of the random variability in the background signal, the issue of detection of radioactivity in an individual sample result is not in all cases best represented by the general reporting level, therefore, but rather by comparison with the  $L_c$ . The sample-specific minimum detectable concentration (ssMDC) is a slightly higher (concentration) value than the  $L_c$  that is adequate to distinguish the sample result from that of the blank with statistical confidence. For each sample, the sample-specific parameters such as yield, detector efficiency, and sample aliquot size are used in the formula to determine the SSMDC. In the truly simplest case, the SSMDC is about twice the  $L_c$  (Currie, 1968). Reported negative values are possible when the result of a sample is less than that of the blank representing background; these values represent non-detection in the case of a single measurement. The precision estimate of the radiological result is the square root of the sum of

variances of the factors that affect measurement precision. For radionuclides, a large component of the measurement precision is defined by the random decay rate of the radionuclide at any instant in time. Though the average rate of decay conforms to that associated with the half life (the time in which half of the radionuclides would decay), at any instant in time, the rate may randomly be greater or lesser than this average rate, resulting in imprecision in the measurement. A sample result implies true detection if the result is greater than the  $L_c$ , but confidence that the value of the result is statistically significantly different from the background is achieved if the value is also greater than the SSMDC, and the sample may still have poor precision. For radionuclide samples analyzed for this study before mid-2003, sample-specific critical levels ( $ssL_c$ ) were not reported (McCurdy and others, 2008). Comparisons of detectability are reliant on the assumption that the reported SSMDCs were indeed twice the values of the  $ssL_c$ s (Currie, 1968). Importantly, the sensitivities of the analyses were such that concentrations great enough to be considered of concern to human health could readily be detected and quantified.

The concentrations of Ra-226 were greater than the individual SSMDCs (when reported, see table 1-4) or  $L_c$ s (stored in USGS databases but not reported in table 1-4) in 85 samples, and the reported raw values were greater than zero in all but one sample. The concentrations of Ra-226 were less than the individual SSMDCs in eight samples from the siliclastic lacustrine siltstones of the Early Mesozoic basin sediments, a frequency greater than in the other rock types, even though the highest Ra-226 concentration was also detected in this rock type. The concentrations of Ra-226 in samples collected from the Early Mesozoic basin aquifer were determined by using alpha spectrometry, whereas the radon-emanation method was used for analysis of Ra-226 from samples collected from the remaining aquifers. Alpha spectrometry had a higher detector background than did the radon-emanation method, resulting in the higher SSMDCs (or  $L_c$ s). This difference in methodology likely explains why so many sample results were reported as less than the SSMDC for samples collected from the Early Mesozoic basin aquifer, but not from samples collected from the remaining aquifers. Of the remaining rock types, the concentrations of Ra-226 were less than the individual SSMDCs or  $ssL_c$ s in only one or two samples, except for the metasediments (CLSDMT, table 3) for which three samples had concentrations less than the  $L_c$ . Concentrations of Ra-226 in 53 samples were greater than 0.1 picocurie per liter (pCi/L), but of those, only 1 had a concentration (0.126 pCi/L) that was less than the corresponding SSMDC (0.145 pCi/L) (table 1-4). The high frequency of detection in samples relative to that of Ra-228 is partly attributable to the great sensitivity of the radon emanation technique used for detecting Ra-226.

The concentrations of Ra-228 were greater than the individual SSMDCs (when reported, see table 1-4) or  $L_c$ s (stored in USGS databases but not reported in table 1-4) in 48 samples, and reported raw values were greater than zero in all but 9 samples (table 4). The SSMDCs for the beta-particle

emitting Ra-228 (maximum and 75th-percentile values, 0.906 and 0.569 pCi/L, respectively) were higher than those for either of the other Ra isotopes, which are alpha-particle emitters (table 1-4) and have lower background values. A maximum measured Ra-228 concentration of 0.71 pCi/L in one sample, however, was still less than the respective SSMDC, illustrating the difficulty in interpreting the distribution of Ra-228 concentrations that are less than about 0.7 to 0.9 pCi/L (representing the maximum SSMDC). The concentrations of Ra-228 were greater than 0.9 and 1 pCi/L in 17 and 14 samples, respectively, and were generally found at these concentrations in both siliciclastic and crystalline rock aquifers. An additional 22 samples with concentrations ranging from 0.19 to 0.71 pCi/L were considered as detectable in quantifiable amounts because the concentration was greater than the associated SSMDC or  $L_c$ . The minimum Ra-228 concentration that was greater than the associated SSMDC was 0.593 pCi/L (table 1-4) and that was greater than the associated  $L_c$  that was 0.19 pCi/L.

Ra-224 concentrations were measured in samples only from the sedimentary rock aquifers of the Early Mesozoic basin and were not present at concentrations greater than 1 pCi/L in any of the samples analyzed for this isotope. The median concentration value of 0.10 pCi/L is uncertain (an estimate at best) because it is less than the value of the median of the associated SSMDCs (0.24 pCi/L). The concentrations of Ra-224 for the samples collected from this aquifer were determined by alpha spectrometry, and this technique has high enough SSMDCs to make detection in many samples questionable. The concentrations of Ra-224 were greater than or equal to the individual SSMDCs in 5 samples, and the reported raw values were greater than zero in all but 3 samples (table 4). A maximum measured Ra-224 concentration of 0.47 pCi/L in one sample, however, was still less than the respective SSMDC, illustrating that alpha spectrometry may have performance issues up to a value of about 0.5 pCi/L.

Concentrations of Ra-226 plus Ra-228 (termed combined Ra, the quantity that is specifically considered in drinking water regulations) were quantifiable at about the 1 pCi/L level and could be compared to the 5 pCi/L standard. The concentrations of both these Ra radionuclides were greater than the respective SSMDC or  $ssL_c$  for 44 percent of the samples, with

concentrations of combined radium (Ra-226 plus Ra-228) for these samples about equal to or greater than 1.0 pCi/L (fig. 14). At least one of these two Ra radionuclides was detected with respect to the SSMDC or the  $ssL_c$  for 88 percent of the samples; the SSMDC in all cases when it was reported was less than 1 pCi/L (table 1-4). All samples had at least one of these two Ra radionuclides reported with a value greater than zero (table 4).

For purposes of statistical calculation, and for plots illustrating population distribution characterization, such as probability plots or boxplots (figs. 14, 17, and 21; tables 1-4 and 1-5), the distribution of the raw reported laboratory results were displayed to provide the sense of the distribution of the raw (uncensored) measured values. Values less than zero were censored for descriptive purposes in table 4. This approach eliminated the need for statistical approaches to estimate low concentration values (such as those described by Helsel and Hirsch, 2002). For scatter diagrams (figs. 29, 30, and 31), when only one Ra radionuclide concentration, Ra-226 or Ra-228, was detectable or quantifiable with the prescribed level of statistical certainty, the concentration of that one isotope was used as the concentration to represent the value of combined Ra. When neither Ra radionuclide concentration, Ra-226 or Ra-228, was detectable or quantifiable with the prescribed level of statistical certainty, the lower of the two reported concentrations was used to represent the value of the combined Ra concentration. As detailed above, all samples had at least one of these two Ra radionuclides reported with a value greater than zero (table 4). For purposes of graphical representation in the latter case, when neither Ra radionuclide concentration, Ra-226 or Ra-228, was detectable, the value of either the combined Ra concentration or the individual Ra radionuclide was represented as an open rather than as a closed symbol. For purposes of the simplest description of the distribution, the use of 1 pCi/L as an approximate cutpoint separating concentrations detected with greatest statistical certainty from those concentrations detected with slightly lesser statistical certainty or those not detected at all is reasonably justified by the distribution of the  $ssMDCs$  or  $L_{c,s}$ . In terms of the human health benchmark (HHB) of 5 pCi/L, this value represents the 20th percentile, and can be described as 0.2 HHB (fig. 21R; table 4).

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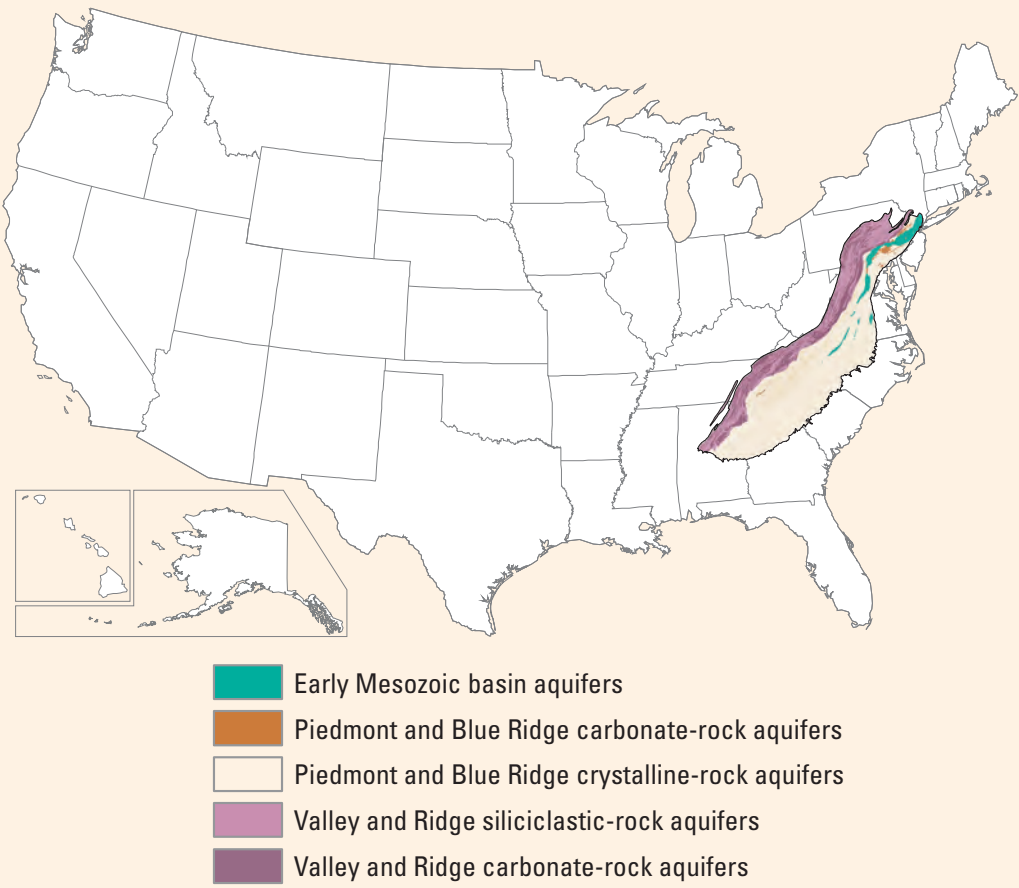
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September 5, 2019

Mr. John Sayer, P.G.  
Solid Waste Management Program  
Environmental Protection Division  
4244 International Parkway, Suite 104  
Atlanta, Georgia 30354

Subject: Georgia Power Company  
Response to EPD Comments on Plant Scherer AP-1 Alternate Source Demonstration

Dear Mr. Sayer:

Georgia Power Company has prepared this response to *Alternate Source Demonstration - Review Comments* provided by the Solid Waste Management Program of Georgia Environmental Protection Division (EPD), in a letter dated May 9, 2019. Review of EPD correspondence identifies four comments to be addressed. For ease of review, we have restated each of EPD's comments regarding the ASD for Plant Scherer AP-1, prepared by Golder, completed January 2019, along with our response.

**EPD Comment #1:** *The ASD indicates that cobalt may adsorb onto ferrihydrate minerals and desorb / dissolve at low pH values (less than 5 S.U.) concurrently with dissolution of the ferrihydrate minerals. Please provide graphs depicting cobalt concentrations plotted against iron concentrations for the various wells and evaluate the correlation between these two metals. Notably, ferrihydrate was not reported in any of the twelve samples submitted for X-ray diffraction analysis. Goethite was the iron mineral found in only one of the twelve samples analyzed.*

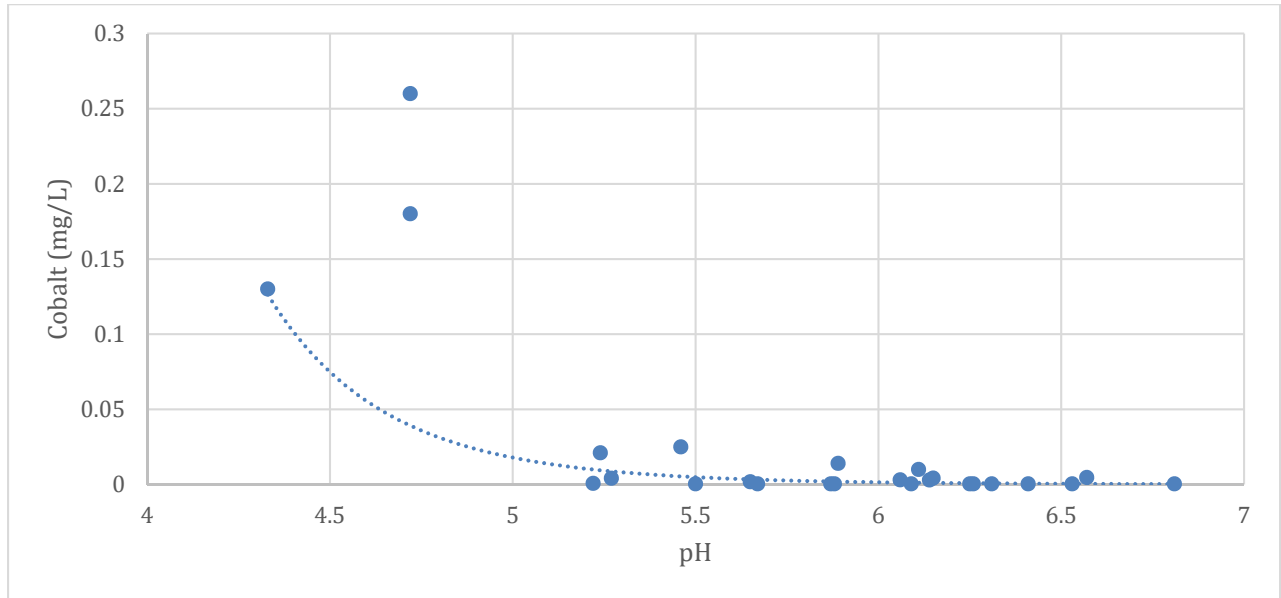
**Response to Comment # 1:** The adsorption of cobalt to ferrihydrite (a mineral often used as a general proxy for a range of amorphous hydrous ferric oxides) and the direct incorporation of cobalt into precipitated iron oxy-hydroxides have been well studied in literature (Dzombak and Morel 1990; Smith 1999; Smith and Huyck 1999). The thermodynamic principles describing the sorption of metals onto iron oxides and dissolution of iron oxides at low pH have been documented and are well understood (e.g., Dzombak and Morel 1990; Nordstrom and Alpers 1999). Because iron concentrations in groundwater are not analyzed as part of a CCR monitoring program, iron concentration data is not available at the site. Therefore, the following lines of evidence are presented to demonstrate the dissolution of cobalt from the iron oxides in the aquifer solids.

The distribution coefficient for cobalt at a pH > 5 ranges from 1.94 to 200.0 ml/g, whereas for a pH <5, the accepted values are 0.2 to 0.9 ml/g (Streng and Peterson 1989), based on a review of

numerous studies. The low values for the distribution coefficients indicate that cobalt will be released to groundwater at increasing acidic conditions. The dissolution of cobalt with increasing acidity was statistically analyzed by evaluating the correlation between cobalt and pH. The relationship between pH and cobalt in groundwater is confirmed using a Spearman's Rank Correlation test, which yielded a p-value of 0.0037 and rho of -0.56. This indicates there is a statistically significant non-linear relationship between these two parameters in the monitoring well network at the site; dissolved cobalt concentrations increase with decreasing pH, consistent with geochemical principles (Figure 1). A direct relationship between iron and cobalt cannot be evaluated because, historically, iron has not been included in the analytical suite as it is not required by the CCR rule. However, the correlation between pH and cobalt provides strong evidence for the release of naturally occurring cobalt into groundwater at low pH. In conclusion, the occurrence of cobalt in groundwater at the site is due to either the dissolution of and/or desorption from hydrous iron oxides, likely present in the form of ferrihydrite.

The absence of ferrihydrite in X-Ray Diffraction (XRD) results is commonly noted in the literature (e.g., Schwertmann 1988). Ferrihydrite is a poorly crystalline, mostly amorphous hydrous ferric oxide that is ubiquitous in soils in the near-surface environment (Cornell and Schwertmann 2003; Weatherill et al. 2016). Even under laboratory conditions, it is very difficult to obtain accurate structural information on ferrihydrite (Zhao et al. 1994). Ferrihydrite is also a well-known precursor for formation of numerous crystalline iron oxy-hydroxide minerals, including goethite [FeOOH] (Das et al. 2011; Yee et al. 2006), which was identified in the samples (Golder, January 2019 ASD, Appendix B). The aging of ferrihydrite leads to goethite formation and further sequestration of any adsorbed metals, such as cobalt. Given the identification of crystalline goethite in XRD results, the presence of ferrihydrite is expected, and it has an active role in attenuation of cobalt in groundwater, as outlined in the widely recognized Dzombak and Morel (1990).

Therefore, the increasing cobalt concentrations in groundwater are considered due to the naturally low-pH conditions, as supported by the groundwater quality results, mineralogical results, and the general principles governing ferrihydrite dissolution and cobalt sorption.



**Figure 1: Cobalt (mg/L) vs. pH at SGWA wells 1-5, 24, 25, and SGWC wells 6-23 from March and April 2019 field sampling data**

**EPD Comment #2:** *Figure 4.2.1 in the ASD presents the Pourbaix Diagram depicting the cobalt and iron speciation and stability fields. Reportedly, this diagram was prepared based on generalized parameters such as the activity values for cobalt, iron, sulfate, chloride, sodium, magnesium, and calcium. Please discuss how these values were obtained and demonstrate that they reflect field conditions in Ash Pond 1.*

Multiple groundwater samples are typically displayed on a Pourbaix diagram using a groundwater composition using default concentrations (i.e. 1 mmol/L major cations and anions). This is a widely accepted approach to developing a Pourbaix Diagram and this practice is used in several published examples (e.g., Bethke 2007; Maher et al. 2013). In this ASD, concentrations of 1 mmol/L (where activity is equal to molarity) were used for sulfate, chloride, sodium, magnesium, and calcium. These concentrations allow for complexation, if thermodynamically favorable, but do not result in reactions not commonly encountered. For cobalt and iron, the two species of interest in this ASD, mean values from groundwater sampling data from monitoring wells SGWC-10,11,15,18, and 20 from the October 2018 sampling event were used.

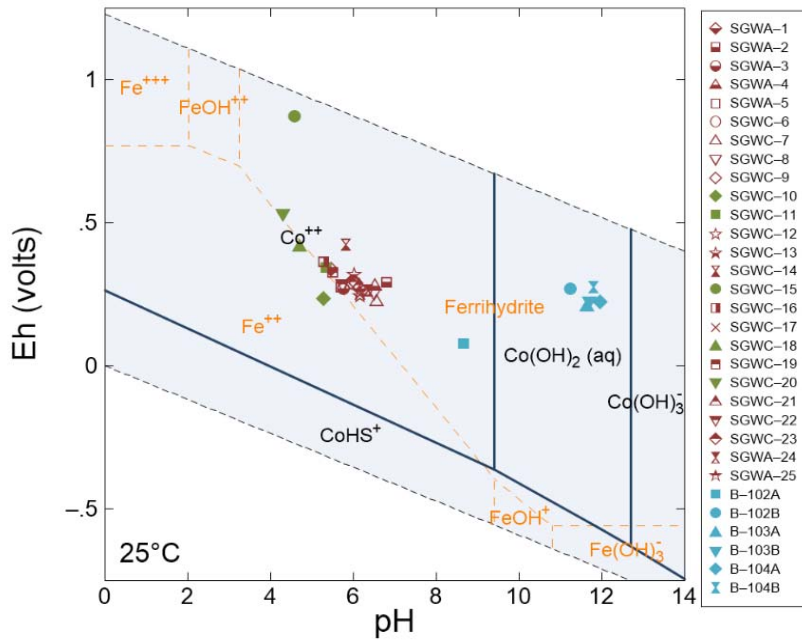
The approach used for Pourbaix Diagram creation for this ASD can be validated by demonstrating that using a range of input values, as presented in Table 1, does not result in materially-different relationships, as illustrated in Figure 2 (generalized), Figure 3 (mean), and Figure 4 (maximum). Major differences in cobalt speciation only occur in the maximum-concentration diagram (Figure



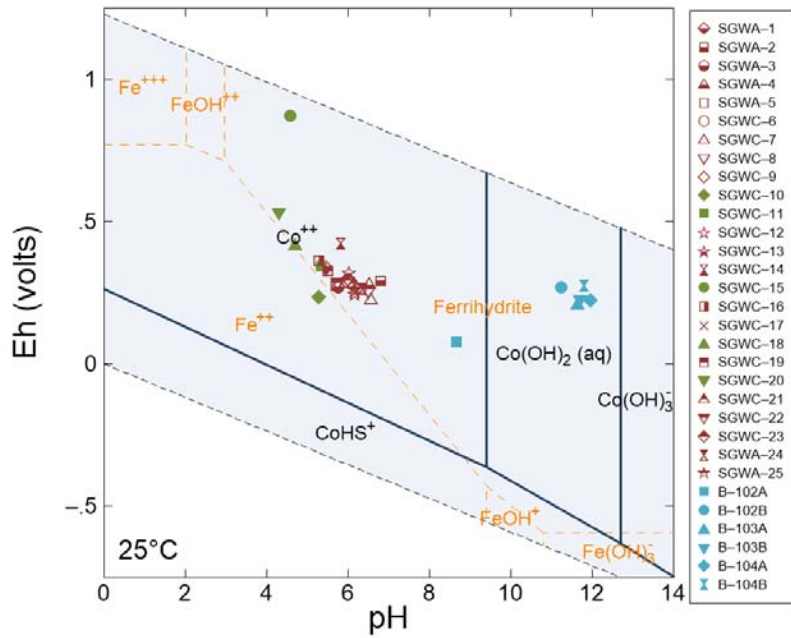
4), where a cobalt-carbonate and a cobalt-sulfate species appear. The sulfate concentration represented in the maximum-concentration diagram (1,200 mg/L) only occurred in one well (SGWC-18); therefore, the cobalt-sulfate complex is not present in the other diagrams. Bicarbonate alkalinity was also not included in the generalized diagram (Figure 2) as it was not reported at concentrations above the reporting limit. Thus, in comparing the original Pourbaix Diagram from the ASD (Figure 2) to Figures 3 and 4 below, it becomes apparent that the use of a generalized approach does not materially affect the locations of the results presented on Figure 2 of the January 2019 ASD. Based on the pH and redox potential of the wells of interest, the groundwater compositions are situated directly along the  $\text{Fe}^{2+}$ /ferrihydrite boundary, supporting the presence of ferrihydrite and its control on cobalt concentrations in groundwater.

**Table 1: Concentrations of Species Used for Pourbaix Diagram Creation**

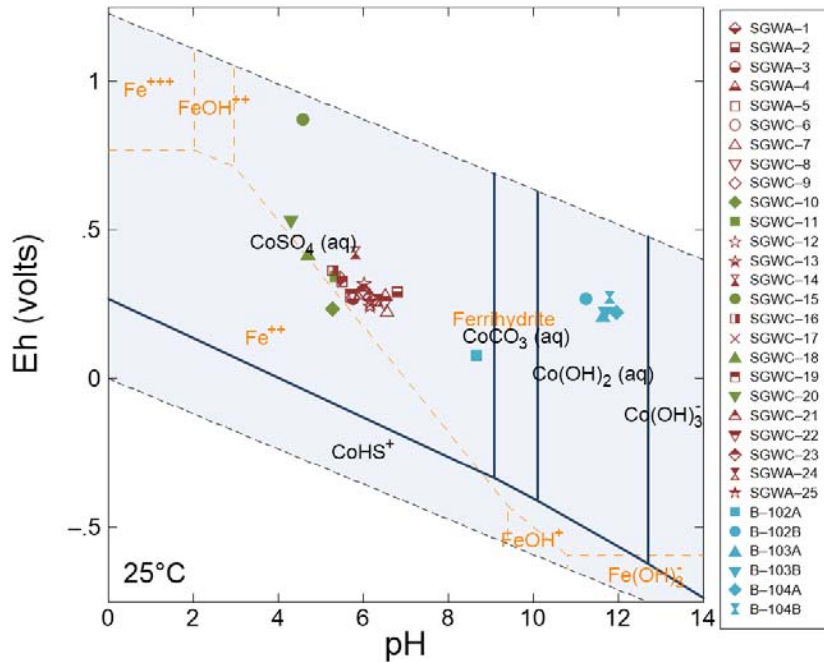
Species	Generalized Diagram (i.e. molar mass ions)		Mean Concentrations (SGWC-10,11,15,18,20)		Maximum Concentrations (SGWC-10,11,15,18,20)	
	mg/L	Log Activity	mg/L	Log Activity	mg/L	Log Activity
Cobalt	0.06	$10^{-6}$	0.06	$10^{-6.0}$	0.30	$10^{-5.3}$
Iron	0.28	$10^{-5.3}$	0.28	$10^{-5.3}$	0.99	$10^{-4.8}$
Calcium	40	$10^{-3}$	10	$10^{-3.6}$	100	$10^{-2.6}$
Magnesium	24	$10^{-3}$	11	$10^{-3.3}$	62	$10^{-2.6}$
Sodium	23	$10^{-3}$	30	$10^{-2.9}$	290	$10^{-1.9}$
Bicarbonate Alkalinity	<i>n/a</i>	<i>n/a</i>	5	$10^{-4.1}$	140	$10^{-2.6}$
Chloride	35	$10^{-3}$	10	$10^{-3.5}$	16	$10^{-3.3}$
Sulfate	96	$10^{-3}$	56	$10^{-3.2}$	1200	$10^{-1.9}$



**Figure 2: Pourbaix diagram for cobalt and iron speciation using mean concentrations of cobalt and iron, and generalized concentrations of other major ions from groundwater samples (SGWC-10, 11, 15, 18, 20)**



**Figure 3: Pourbaix diagram for cobalt and iron speciation using mean concentrations for all parameters from groundwater samples (SGWC-10, 11, 15, 18, 20)**



**Figure 4: Pourbaix diagram for cobalt and iron speciation using the maximum measured concentration from groundwater samples (SGWC-10, 11, 15, 18, 20)**

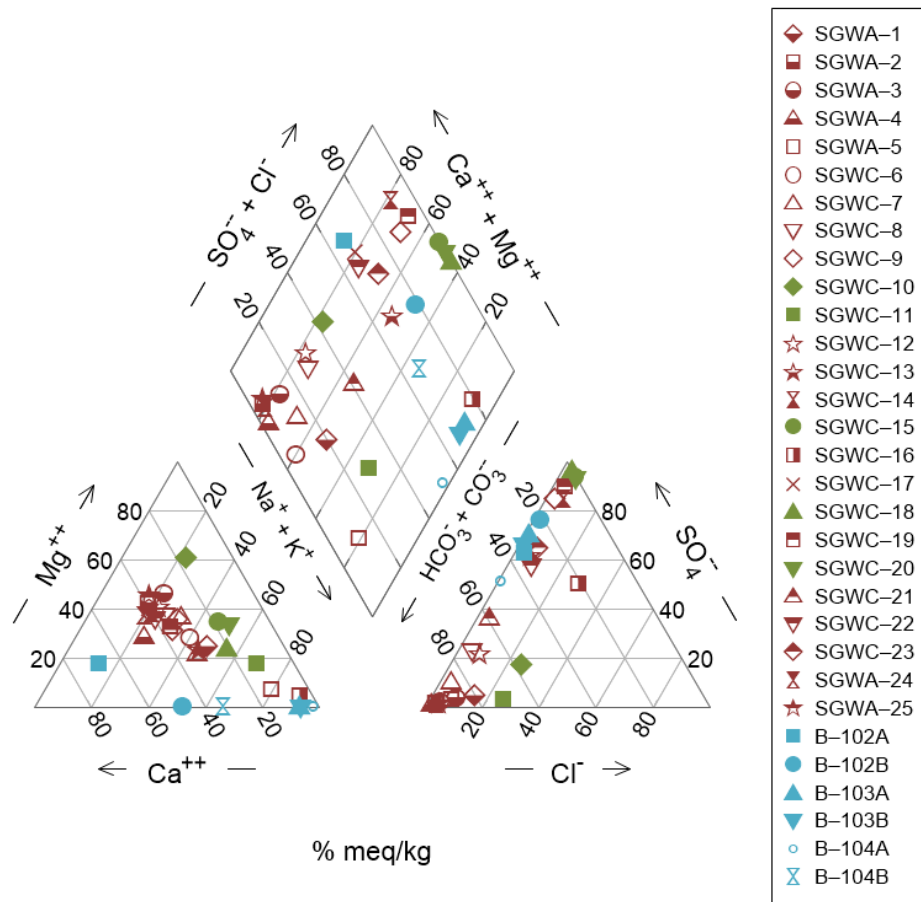
**EPD Comment #3:** *Considering that the pH in the Ash Pond 1 is expected to be significantly lower (possibly near the cobalt maximum solubility range) than the levels measured in the pore water samples, the pore water data provided may not be representative of the cobalt levels in the ash pond. To address this data gap, EPD recommends Georgia Power provide pond water analytical data for the Appendix III indicator parameters (including pH) and cobalt. The pond water data should include sampling results from various depths down to the interface water / ash, and, if possible, from the bottom of the pond.*

To develop an additional line of evidence to support this ASD, Georgia Power will prepare a generalized geologic cross section depicting subsurface conditions across the ash pond including both the interstitial monitoring probes where pore water samples were collected and detection monitoring wells for which this ASD represents.

In addition, Georgia Power will evaluate existing data and provide additional information related to this request. This data will be incorporated into the forthcoming November transmittal to EPD, along with the cross-section, as outlined at the end of this response letter.

**EPD Comment #4:** *Please provide a Piper Diagram presenting 1) the monitoring well data, 2) the pore water data, and 3) the pond water / leachate data.*

The Piper diagram for monitoring locations where the seven major ions (calcium, magnesium, potassium, sulfate, alkalinity, and chloride) in samples were analyzed (i.e. SGWA and SGWC wells and pore water samples (B-102, B-103, B-104) is provided in Figure 5.



**Figure 5: Piper diagram for locations that were sampled for the seven major ions**

Review of Figure 5 indicates significant variability in groundwater chemistry is present across the site. The spatial variability in groundwater quality and the lack of identifiable trends toward the compositions observed for the pore water samples support the conclusion that SGWC-10, 11, 15, 18, and 20 (where the cobalt SSL's occurred) show no association with pore water samples. Because pore water is more representative of the source water at AP-1, surface water/pond samples were not included on this diagram. However, Georgia Power will evaluate and incorporate existing data representative of pond water into the Piper Diagram and submit under separate cover in the forthcoming transmittal outlined below.

As discussed above, our analysis of this information as a whole supports the conclusions presented in the January 2019 ASD that cobalt in monitoring wells SGWC-10, 11, 15, 18, and 20 is naturally occurring and not the result of a release from the ash pond.

We trust that the information provided herein is sufficient to address EPD's comments and that the alternate source demonstration presented for the statistical exceedances of cobalt at AP-1 at Plant Scherer is acceptable. As a follow-up to this *Response to Alternate Source Demonstration - Review Comments*, Georgia Power will prepare a generalized geologic cross-section depicting subsurface conditions, data representative of pond water, and an updated Piper Diagram, as appropriate on or before November 21, 2019.

If you have any questions about this submittal, please contact Ben Hodges at 404-506-4830.

Sincerely,

Aaron D. Mitchell  
General Manager, Georgia Power Environmental Affairs



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