Prepared for

Georgia Power Company
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2020 ANNUAL GROUNDWATER MONITORING & CORRECTIVE ACTION REPORT

GEORGIA POWER COMPANY
PLANT HAMMOND ASH POND 4 (AP-4)

Prepared by

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Project Number GW6581

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CERTIFICATION STATEMENT

This *2020 Annual Groundwater Monitoring & Corrective Action Report, Georgia Power Company - Plant Hammond – Ash Pond 4 (AP-4)* 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 Geosyntec Consultants.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

AP	ash pond
CCR	coal combustion residuals
CFR	Code of Federal Regulations
cm/sec	centimeters per second
DO	dissolved oxygen
ft MSL	feet above mean sea level
ft/day	feet per day
ft/ft	feet per foot
GA EPD	Georgia Environmental Protection Division
GCL	geosynthetic clay liner
GPC	Georgia Power Company
GWPS	Groundwater Protection Standard
HAR	Hydrogeologic Assessment Report
K_h	horizontal hydraulic conductivity
mg/L	milligram per liter
NAD	North American Datum
NAVD	North American Vertical Datum
NELAP	National Environmental Laboratory Accreditation Program
NTU	Nephelometric turbidity units
Pace Analytical	Pace Analytical Services, LLC.
PL	prediction limit
QA/QC	Quality Assurance/Quality Control
SCS	Southern Company Services
SSI	statistically significant increase
SSL	statistically significant level
s.u.	standard unit
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

In accordance with the Georgia Environmental Protection Division (GA EPD) Rules for Solid Waste Management 391-3-4-.10, Geosyntec Consultants (Geosyntec) has prepared this *2020 Annual Groundwater Monitoring & Corrective Action Report* to document groundwater monitoring activities conducted at Georgia Power Company (GPC) Plant Hammond (Site) Ash Pond 4 (AP-4) for the reporting period of August 2019 through July 2020.

Groundwater monitoring and reporting for the CCR unit is performed in accordance with the monitoring requirements of the GA EPD Rules for Solid Waste Management 391-3-4-.10(6), but also in accordance with the United States Environmental Protection Agency (USEPA) coal combustion residual (CCR) rule [40 Code of Federal Regulations (CFR) Part 257, Subpart D], specifically § 257.90 through 257.95 of the Federal CCR rule. To specify groundwater monitoring requirements, GA EPD rule 391-3-4-.10(6)(a) incorporates by reference the USEPA CCR Rule. For ease of reference, the USEPA CCR rules are cited within this report.

AP-4 was closed in 2012; therefore, AP-4 is not subject to the Federal monitoring requirements. A permit application for AP-4 was submitted to GA EPD in November 2018 and is currently under review. Groundwater monitoring has been initiated in order to meet the GA EPD CCR requirements.

Due to statistically significant increases (SSIs) of Appendix III constituents identified in the *2019 Annual Groundwater Monitoring and Corrective Action Report* (Geosyntec, 2019a), GPC initiated an assessment monitoring program for AP-4 in August 2019. Pursuant to § 257.95(b), samples were collected from the compliance monitoring well network in August 2019, within 90 days of initiating the assessment monitoring program. The samples were analyzed for the complete list of Appendix IV constituents. Pursuant to § 257.95(d)(1), the AP-4 compliance wells were resampled semiannually in October 2019 and March 2020. The groundwater samples collected during these events were analyzed for Appendix III constituents and the Appendix IV constituents detected during the August 2019 event. This report includes the results of the initial annual monitoring event conducted in August 2019 and the subsequent semiannual assessment monitoring events conducted in October 2019 and March 2020.

1.1 Site Description and Background

Plant Hammond is located in Floyd County, Georgia, approximately 10 miles west of Rome and is bordered by Georgia Highway 20 (GA-20) on the north, the Coosa River on the south, Cabin Creek and industrial land on the east, and sparsely populated, forested, rural and industrial land on the west (**Figure 1**). The physical address of the plant is 5963 Alabama Highway, Rome, Georgia, 30165.

Plant Hammond is a four-unit, coal-fired electric generating facility. All four units at Plant Hammond were retired on July 29, 2019 and no longer produce electricity.

AP-4 was commissioned in 1986 as a surface impoundment with a corresponding surface area of approximately 54 acres. Dry ash stacking operations in AP-4 began in 1994 and continued until 2010; AP-4 received both fly ash and bottom ash during this period. AP-4 was capped in place in 2011-2012 in accordance with the GA EPD regulations regarding landfill closures. AP-4 was graded, engineered with drainage, and capped with a geosynthetic clay liner (GCL) and soil cover.

1.2 Regional Geology & Hydrogeologic Setting

The following section summarizes the geologic and hydrogeologic conditions at AP-4 as described in the *Hydrogeologic Assessment Report Revision 01 – Ash Pond 4* (HAR Rev 01) submitted to GA EPD under separate cover in support of the AP-4 closure permit application (Geosyntec, 2020c).

1.2.1 Regional and Site Geology

The Site is located within the Great Valley District of the Valley and Ridge Physiographic Province (Valley and Ridge) in northwest Georgia, which is characterized by Paleozoic sedimentary rocks that have been folded and faulted into the ridges and valleys that gave this region its name. Geologic mapping performed at the Site by Petrologic Solutions, Inc. under the direction of Golder (Golder, 2018) indicates that AP-4 is underlain by the lower units of the Cambrian age Conasauga Formation, consisting of mostly calcareous shale. Based on review of subsurface investigations, the bedrock underneath AP-4 was described as predominantly shale. AP-4 is underlain primarily by five lithologic units: (i) terrace alluvium, (ii) colluvium, (iii) residuum, (iv) partially weathered shale bedrock, and (v) unweathered shale bedrock.

Based on subsurface investigations, the alluvial deposits generally grade from a silt and silty clay to a clayey sand and silty sand to a sand and gravelly sand at depth. The colluvium consists of silty sand, silty clay with the presence of angular fragments of rocks/materials not expected in the lower units of the Conasauga, such as chert, sandstone, limestone, or coal. Residual or native soils have been derived from the in-place weathering of the shale bedrock. The residuum is generally described as brown to yellow brown firm clayey silt with weathered shale fragments. The partially weathered shale zone occurs as an intermediate weathering stage between the residuum and the unweathered shale bedrock. The weathered material is described as black to dark gray to dark red hard, fissile shale and claystone. The unweathered shale bedrock was not encountered or directly observed in the historical borings advanced at AP-4. However, based on geologic conditions in the region, weathering, fracturing and jointing decreases with depth and the weathered rock material grades into competent bedrock.

1.2.2 Hydrogeologic Setting

The uppermost aquifer at AP-4 is a regional groundwater aquifer that occurs primarily in the alluvium, colluvium, and residuum, but also to some degree within the weathered and fractured bedrock. Based on observations of alluvium, colluvium, and residuum soil types and horizontal conductivity values, the movement of groundwater in the soil can be characterized as low-to moderate permeability, porous media flow. The groundwater flow in the shallow underlying bedrock is characterized as fracture flow, and due to the preponderance of shale beneath AP-4, is expected to be very low permeability. Groundwater flow direction is generally from north to south.

1.3 Groundwater Monitoring Well Network

In accordance with § 257.91, a groundwater monitoring system was installed at AP-4 that (1) consists of a sufficient number of wells, (2) is installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer, and (3) represents the groundwater quality both upgradient of the units (i.e., background conditions) and passing the waste boundary of the units. The number, spacing, and depths of the groundwater monitoring wells were selected based on the characterization of site-specific hydrogeologic conditions.

The compliance monitoring well network for AP-4 consists of eleven monitoring wells. A network of piezometers has been installed at the Site that are used to gauge water levels to define groundwater flow direction and gradients. The locations of the compliance

monitoring well network and piezometers associated with AP-4 are shown on **Figure 2**; well construction details are listed in **Table 1**.

After the initial Appendix IV assessment monitoring event, GPC reclassified groundwater level monitoring piezometer GWC-2 as compliance monitoring well HGWC-102. The reclassification was done in support of a recommendation issued by GA EPD to refine the ability to monitor groundwater quality conditions between the southern boundary of AP-4 and the Coosa River.

2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with § 257.90(e), the following describes groundwater monitoring-related activities performed for AP-4 during annual period between August 2019 and July 2020. All groundwater sampling was performed in accordance with § 257.93.

2.1 Monitoring Well Installation and Maintenance

The well and piezometer networks are inspected during each groundwater monitoring event using GA EPD-based inspection criteria. Any issues identified with the wells (e.g., clogged weep holes within the outer protective casing, faded well identification signage, rusted locks and/or latches, etc.) are addressed before the subsequent groundwater sampling event. The well inspection forms for the August and October 2019, and March 2020 events are provided in **Appendix A**.

The AP-4 monitoring well network was re-surveyed by GEL Solutions in May 4-6, 2020. The top of the PVC well casing [top of casing (TOC) elevation] and the survey pin installed at each well pad were surveyed to within 0.5-foot horizontal accuracy and to 0.01-foot vertical accuracy. The horizontal location (i.e., northings and eastings) was recorded in feet relative to the North America Datum of 1983 (NAD) with the vertical elevation recorded in feet relative to the North American Vertical Datum (NAVD) of 1988. The new survey data are incorporated into this report's applicable tables; a copy of the well survey data certified by a Georgia-licensed surveyor is provided in **Appendix B1**. Included in **Appendix B2** are revised AP-4 boring and well construction logs that incorporate the new survey data. The revised set of logs include the wells listed on Table 1 of this annual report.

In addition to completing routine maintenance of the well network during the reporting period, SCS Civil Field Services (CFS) installed dedicated QED bladder pumps in wells HGWA-111, HGWA-112, HGWA-113, HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, and HGWC-118 in September 2019.

2.2 Assessment Monitoring

In response to identified SSIs of Appendix III constituents during the first detection monitoring event conducted in April 2019, GPC initiated an assessment monitoring program for groundwater at AP-4 in August 2019. An Assessment Monitoring Program Notification was prepared for AP-4 on November 13, 2019, pursuant to § 257.94(e)(3) and placed in the Operating Record as required by § 257.105(h)(5).

Pursuant to § 257.95(b), samples were collected from the compliance monitoring well network (**Figure 2**) within 90 days of initiating the assessment monitoring program; the event was conducted in August 2019. The collected samples were analyzed for the complete list of Appendix IV constituents. The compliance well network was subsequently resampled in October 2019 and March 2020. The samples from the semiannual events were analyzed for Appendix III constituents and the following Appendix IV constituents detected during the August 2019 event: arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, and combined radium 226/228. Laboratory and field data reports for the August 2019, October 2019, and March 2020 monitoring events are included in **Appendix C**. The number of AP-4 groundwater samples collected for analysis and the sample collection dates are summarized in **Table 2**.

Pursuant to § 257.94(b), eight independent groundwater samples (i.e., background monitoring events) should be collected from new compliance well HGWC-102 to statistically establish background conditions in the wells. Five of the eight sampling events were completed since August 2019 and statistics were run using the abbreviated background dataset; the date of these events is provided in **Table 2**. For each event, the samples are analyzed for the complete list of Appendix III and Appendix IV constituents. The background sampling events are anticipated to conclude in September 2020.

3.0 SAMPLING METHODOLOGY & ANALYSES

The following section presents a summary of the field sampling procedures that were implemented in connection with the assessment monitoring program conducted at AP-4 during the reporting period.

3.1 Groundwater Level Measurement

Prior to each sampling event, a synoptic round of depth-to-groundwater level measurements were recorded from the AP-4 wells and piezometers and used to calculate the groundwater elevations. The calculated groundwater elevations for the August 2019, October 2019, and March 2020 sampling events are presented in **Table 3**. The May 2020 survey data was used to calculate the groundwater elevations for the March 2020 event, but not the two prior events. The August 2019 and October 2019 groundwater elevations were calculated using the prior survey data and previously submitted to GA EPD in March 2020 as part of the 2019 semiannual report (Geosyntec, 2020a). The March 2020 elevations reported using the new survey data are generally representative of the groundwater elevations reported for prior monitoring events.

The groundwater elevation data were used to prepare potentiometric surface contour maps for the August 2019, October 2019, and March 2020 events, which are presented on **Figures 3**, **4**, and **5** respectively. Groundwater in the AP-4 area flows under the influence of topography from slightly higher ground surface elevations on the northern side of AP-4 towards lower elevations to the south of AP-4 along the Coosa River.

3.2 Groundwater Gradient and Flow Velocity

The representative groundwater hydraulic gradients within the uppermost aquifer beneath AP-4 were calculated using the August, October 2019, and March 2020 groundwater elevation data. The hydraulic gradient is commonly calculated along the groundwater flow path perpendicular to contours of equal hydraulic head using elevations of two equipotential lines. However, at the request of GA EPD, the hydraulic gradients in this report have been calculated between upgradient and downgradient wells selected to provide the most accurate alignment possible relative to the interpreted groundwater flow path. Given the surface area covered by AP-4, hydraulic gradients were calculated along the eastern, central, and western portions of the unit. The well pairs correlating to these flow areas are, respectively: GWA-14 and HGWC-118; HGWA-113 and HGWC-103; HGWA-111 and HGWC-107. **Table 4** provides the calculated hydraulic gradients. The calculated gradients from the three portions were averaged for each sampling event and

then averaged for the reporting period to provide a representative gradient of 0.016 feet per foot (ft/ft) across AP-4.

The approximate horizontal flow velocity associated with AP-4 groundwater was calculated using the following derivative of Darcy's Law.

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

where:

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

K = Average hydraulic conductivity $\left(\frac{feet}{day}\right)$

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

n_e = Effective porosity

Aquifer testing was conducted by Southern Company Services (SCS) in 2013 to evaluate hydraulic conditions in the vicinity of AP-4. Results of these field events are discussed in detail in the HAR Rev 01. Horizontal hydraulic conductivity (K_h) was estimated for units above the top of bedrock by performing slug tests. The tests were conducted at wells screened in the terrace alluvium or colluvial material; a geometric mean for K_h of 5.86×10^{-4} centimeters per second (cm/sec) [1.67 feet per day (ft/day)] was calculated from the slug test data for the two units. Since majority of the wells are screened in either alluvial or alluvial/colluvial materials, no hydraulic conductivity testing was conducted on the residuum, weathered shale, or unweathered shale.

The groundwater flow velocity calculation is performed using the geometric mean for K_h of 1.67 ft/day. An estimated effective porosity of 0.15 is used to represent average conditions for the silty clay alluvium/colluvium, derived based on review of literature, observed site lithology, and professional judgement. With these variables determined, and accounting for the representative hydraulic gradient discussed above, the representative groundwater flow velocity underneath AP-4 was calculated to be 0.18 ft/day for the reporting period.

3.3 Groundwater Sampling Procedures

Groundwater samples were collected from the compliance monitoring network using low-flow sampling procedures in accordance with § 257.93(a). For the August 2019 event, the wells were purged and sampled using a peristaltic pump equipped with new disposable polyethylene tubing. For the October 2019 and March 2020 event, a dedicated bladder pump equipped with dedicated tubing was used to sample the compliance wells, except for newly reclassified well HGWC-102, which was sampled using a peristaltic pump. All non-disposable equipment was decontaminated before use and between well locations.

A SmarTroll (In-Situ field instrument) was used to monitor and record field water quality parameters listed below during well purging to verify stabilization prior to sampling. Turbidity was measured using a LaMotte 2020we® portable turbidimeter. Groundwater samples were collected when the following stabilization criteria were met:

- pH ± 0.1 Standard Units (s.u.).
- Conductivity ± 5%.
- ±0.2 milligrams per liter (mg/L) or ±10%, whichever is greater for dissolved oxygen (DO) > 0.5 mg/L. No criterion applies if DO < 0.5 mg/L, record only.
- Turbidity measured less than 10 nephelometric turbidity units (NTU).

Following purging, and once stabilization was achieved, samples were collected into appropriately preserved laboratory-supplied sample containers. Sample bottles were placed in ice-packed coolers and submitted to Pace Analytical Services, LLC. in Norcross, Georgia following chain-of-custody protocol. The field sampling forms generated during the monitoring events conducted in August 2019, October 2019, and March 2020, as well as forms from additional baseline sampling events for HGWC-102, are provided in **Appendix C**.

3.4 Laboratory Analyses

Laboratory analyses were performed by Pace Analytical Services, LLC. (Pace Analytical), which is accredited by the National Environmental Laboratory Accreditation Program (NELAP). Pace Analytical maintains a NELAP certification for the Appendix III and Appendix IV constituents analyzed for this project. Analytical methods used for

groundwater sample analysis are listed in the analytical laboratory reports included in **Appendix C.**

The groundwater analytical results from the August 2019, October 2019, March 2020 sampling events, and additional background sampling events for HGWC-102, are summarized in **Table 5**. The associated Pace Analytical laboratory reports are provided in **Appendix C**.

3.5 Quality Assurance & Quality Control Summary

Quality assurance/quality control (QA/QC) samples were collected during the groundwater monitoring events and included the following: field duplicates, equipment blanks, and field blank samples. QA/QC samples were collected in laboratory-provided bottles and submitted under the same chain of custody as the primary samples for analysis of the same constituents by Pace Analytical.

In addition to collecting QA/QC samples, the data were validated based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and applicable federal guidance documents (USEPA, 2001, 2011, and 2017). The associated data validation report is provided in **Appendix C** with the laboratory reports.

4.0 STATISTICAL ANALYSIS

The following section summarizes the statistical analysis of Appendix III groundwater monitoring data performed pursuant to § 257.93. In addition, pursuant to § 257.95(d)(2), GPC established groundwater protection standards (GWPS) for the Appendix IV monitoring constituents and completed statistical analyses of the Appendix IV groundwater monitoring data obtained during the assessment monitoring events. Reports generated from the analyses are provide in **Appendix D**. The October 2019 data were analyzed by Geosyntec (Geosyntec, 2020b) and the March 2020 data analyzed by Groundwater Stats Consulting (GSC) (GSC, 2020).

4.1 Statistical Methods

Analytical data from the October 2019 and March 2020 semiannual monitoring events were statistically analyzed in accordance with the PE-certified Statistical Analysis Method Certification (October 2017, revised January 2020). 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 document *Statistical Analysis of Groundwater Data at RCRA Facilities Unified Guidance* (Unified Guidance) (USEPA, 2009).

Appendix III statistical analysis was performed to determine if Appendix III constituents have returned to background levels. Appendix IV assessment monitoring constituents were evaluated to determine if concentrations statistically exceeded the established state and federal GWPS. Detailed statistical methods used for Appendix III and Appendix IV constituents are discussed in statistical analysis packages provided in **Appendix D** and summarized in Sections 4.1.1 and 4.1.2. The GWPS were finalized pursuant to § 257.95(d)(2) and presented in **Table 6**.

4.1.1 Appendix III Statistical Methods

Based on guidance from GA EPD, statistical tests used to evaluate the groundwater monitoring data consist of interwell prediction limits combined with a 1-of-2 verification resample plan for each of the Appendix III constituents. Interwell prediction limits (PLs) are constructed pooling upgradient well data from wells HGWA-111, HGWA-112, and HGWA-113 to establish a background limit for an individual constituent. The most recent sample from each downgradient well is compared to the background limit to determine whether there are SSIs. An "initial exceedance" occurs when an Appendix III

constituent reported in the groundwater of a downgradient compliance monitoring well exceeds the constituent's associated PL. The 1-of-2 resample plan allows for collection of an independent resample. A confirmed exceedance is noted only when the resample confirms the initial exceedance by also exceeding the statistical limit. If the resample falls within its respective prediction limit, no exceedance is declared.

4.1.2 Appendix IV Statistical Methods

To statistically compare groundwater data to GWPS, confidence intervals are constructed for each of the detected Appendix IV constituents in each downgradient compliance monitoring well. Those confidence intervals are compared to the state GWPS. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its GWPS. If a confidence interval exceeds a GWPS, a statistically significant level (SSL) exceedance is identified.

As described in the GA EPD CCR Rule, the GWPS is:

(1) The federally established MCL.

(2) Where an MCL has not been established, the background concentration.

(3) Background levels for constituents where the background level is higher than the MCL.

USEPA revised the Federal CCR Rule on July 30, 2018, specifying GWPS for cobalt, lead, lithium, and molybdenum as described in § 257.95(h)(2). Presently those rule-specified GWPS have not yet been incorporated into the current GA EPD Rules for Solid Waste Management 391-3-4-.10(6)(a).

Following the above state rule requirements, GWPS have been established for statistical comparison of Appendix IV constituents and are presented in **Table 6**.

4.2 Statistical Analyses Results

Based on review of the statistical analyses, Appendix III constituents continue to exceed background PLs for the indicated assessment monitoring events. Pursuant to § 257.95(f), assessment monitoring should continue based on these statistical results.

No SSL of Appendix IV constituents was identified during the reporting period using the established state GWPS. Note that the new downgradient well, HGWC-102 is still undergoing background evaluation.

5.0 MONITORING PROGRAM STATUS

Based on the statistical evaluation results presented for the reporting period, SSIs of Appendix III constituents have not returned to background levels; however, no SSLs of Appendix IV constituents were identified. Pursuant to § 257.95(f), GPC will continue to monitor groundwater at AP-4 in accordance with the assessment monitoring program regulations of § 257.95.

Pursuant to § 257.94(b), eight independent groundwater samples (i.e., background monitoring events) will be collected from new compliance well HGWC-102 to statistically establish background conditions in the wells. The background groundwater sampling events are anticipated to conclude in September 2020.

6.0 CONCLUSIONS & FUTURE ACTIONS

This *2020 Annual Groundwater Monitoring & Corrective Action Report* for GPC's Plant Hammond AP-4 was prepared to fulfill the requirements of GA EPD Rules for Solid Waste Management 391-3-4-.10, and indirectly by reference the USEPA's CCR Rule.

In August 2019, GPC initiated assessment monitoring in accordance with the requirements of § 257.95. Semiannual assessment monitoring events were conducted in October 2019 and March 2020. Statistical evaluations of the October 2019 and March 2020 groundwater monitoring data identified SSIs of Appendix III groundwater monitoring constituents in each of the eight established downgradient compliance wells. However, no SSL of an Appendix IV constituent was identified during the reporting period. GPC will continue to monitor groundwater in accordance with the assessment monitoring program as specified in § 257.95.

7.0 REFERENCES

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TABLES

Table 1
Monitoring Well Network Summary
Plant Hammond AP-4, Floyd County, Georgia

Well ID	Hydraulic Location	Installation Date	Northing [1]	Easting [1]	Top of Casing Elevation [2] (ft NAVD88)	Top of Screen Elevation (ft NAVD88)	Bottom of Screen Elevation (ft NAVD88)	Well Depth (ft BTOC) [3]	Screen Interval Length
Compliance Monitoring Well									
HGWA-111	Upgradient	8/21/2012	1548834.26	1935222.81	591.75	558.48	548.48	43.67	10
HGWA-112	Upgradient	8/21/2012	1548885.63	1935647.00	596.27	566.52	556.52	40.15	10
HGWA-113	Upgradient	10/2/2012	1548944.62	1935990.09	594.58	568.87	558.87	36.11	10
HGWC-101	Downgradient	8/7/2012	1547725.50	1936369.58	578.85	551.31	541.31	37.94	10
HGWC-102	Downgradient	8/7/2012	1547713.50	1936033.33	577.54	550.51	540.51	37.43	10
HGWC-103	Downgradient	8/8/2012	1547848.88	1935732.96	580.79	553.51	543.51	37.68	10
HGWC-105	Downgradient	8/8/2012	1547855.56	1935110.36	582.09	547.72	537.72	44.67	10
HGWC-107	Downgradient	8/8/2012	1547909.99	1934442.24	579.31	551.51	541.51	38.20	10
HGWC-109	Downgradient	8/15/2012	1548627.41	1934362.77	576.77	555.81	545.81	31.36	10
HGWC-117	Downgradient	8/14/2012	1548100.77	1937180.43	581.98	552.12	542.12	40.26	10
HGWC-118	Downgradient	10/1/2012	1547980.56	1936946.37	579.02	548.51	538.51	40.91	10
Piezometer									
MW-12	Downgradient	10/21/2014	1547853.78	1937525.46	583.27	555.84	545.84	37.83	10
GWC-4	Downgradient	8/8/2012	1547898.31	1935398.70	580.65	543.47	533.47	47.58	10
GWC-6	Downgradient	8/13/2012	1547843.93	1934800.45	581.63	553.90	543.90	38.13	10
GWC-8	Downgradient	8/9/2012	1548167.13	1934342.94	579.99	549.47	539.47	40.92	10
GWA-14	Upgradient	10/2/2012	1548982.59	1936642.58	592.14	561.40	551.40	41.14	10
GWA-15	Upgradient	8/22/2012	1548766.17	1936808.47	591.56	571.44	561.44	30.52	10
GWA-16	Upgradient	8/21/2012	1548592.74	1937210.99	582.55	569.94	559.94	23.01	10
GWC-19	Upgradient	8/14/2012	1547892.89	1936572.97	579.83	554.04	544.04	36.19	10

Notes:

ft = feet.

ft BTOC = feet below top of casing.

The northing, easting, and elevations presented in this table are based on survey data obtained on May 11, 2020.

(1) Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet.

(2) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

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

Table 2

Groundwater Sampling Event Summary

Plant Hammond AP-4, Floyd County, Georgia

Well ID	Hydraulic Location	Aug 21-23, 2019	Oct 21-23, 2019	Jan 3, 2020	Mar 4, 2020	Mar 24-25, 2020	Jun 18, 2020	Status of Monitoring Well
Purpose of Sampling Event:		**Initial App. IV Annual**	**Assessment**	**Background**	**Background**	**Assessment**	**Background**	
HGWA-111	Upgradient	S01	A01	--	--	A02	--	Assessment
HGWA-112	Upgradient	S01	A01	--	--	A02	--	Assessment
HGWA-113	Upgradient	S01	A01	--	--	A02[(1)]	--	Assessment
HGWC-101	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-102	Downgradient	--	BG01	BG02	BG03	BG04	BG05	Assessment[(2)]
HGWC-103	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-105	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-107	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-109	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-117	Downgradient	S01	A01	--	--	A02	--	Assessment
HGWC-118	Downgradient	S01	A01	--	--	A02	--	Assessment

Notes:

-- = Not applicable

A## = Semiannual assessment monitoring event number for given reporting year

BG## = Background monitoring event number

S## = Initial annual Appendix IV sampling event

(1) Due to an error in sampling, the well was resampled on April 9, 2020.

(2) Pursuant to § 257.94(b), a minimum of eight independent groundwater samples (i.e., background monitoring events) should be collected from the new compliance well to statistically establish background conditions in the wells.

Table 3

Summary of Groundwater Elevations

Plant Hammond AP-4, Floyd County, Georgia

Well ID	Top of Casing Elevation [1] (ft NAVD88)	Aug 21, 2019		Oct 21, 2019		Top of Casing Elevation [2] (ft NAVD88)	March 23, 2020	
		Depth to Water (ft BTOC)	Groundwater Elevations (ft NAVD88)	Depth to Water (ft BTOC)	Groundwater Elevations (ft NAVD88)		Depth to Water (ft BTOC)	Groundwater Elevations (ft NAVD88)
Compliance Monitoring Well								
HGWA-111	592.24	14.61	577.63	15.95	576.29	591.75	9.90	581.85
HGWA-112	596.75	15.18	581.57	16.90	579.85	596.27	7.30	588.97
HGWA-113	595.13	12.45	582.68	14.05	581.08	594.58	3.05	591.53
HGWC-101	579.26	13.70	565.56	15.23	564.03	578.85	9.82	569.03
HGWC-102	577.91	13.31	564.60	15.56	562.35	577.54	11.92	565.62
HGWC-103	581.16	14.41	566.75	15.64	565.52	580.79	9.94	570.85
HGWC-105	582.46	18.18	564.28	20.42	562.04	582.09	16.53	565.56
HGWC-107	579.76	15.49	564.27	17.60	562.16	579.31	12.93	566.38
HGWC-109	577.33	10.06	567.27	11.45	565.88	576.77	7.20	569.57[3]
HGWC-117	582.32	17.00	565.32	18.89	563.43	581.98	15.03	566.95
HGWC-118	579.48	13.85	565.63	15.54	563.94	579.02	11.24	567.78
Piezometer								
MW-12	584.33	18.97	565.36	20.72	563.61	583.27	16.79	566.48
GWC-4	581.02	14.21	566.81	16.41	564.61	580.65	9.61	571.04
GWC-6	582.01	17.62	564.39	19.68	562.33	581.63	14.92	566.71
GWC-8	580.50	15.05	565.45	16.25	564.25	579.99	8.88	571.11
GWA-14	592.58	8.64	583.94	9.28	583.30	592.14	1.23	590.91
GWA-15	592.03	11.27	580.76	11.25	580.78	591.56	7.25	584.31
GWA-16	583.04	5.32	577.72	(dry)	--	582.55	4.75	577.80
GWC-19	581.31	13.74	567.57	15.05	566.26	579.83	10.01	569.82

Notes:

-- = Not applicable

ft = feet

ft BTOC = feet below top of casing

(1) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88). Elevations based on original survey

(2) Elevations referenced to the North American Vertical Datum of 1988 (NAVD88). Elevations based on re-survey of monitoring well network certified May 11,2020.

(3) Elevation was not used in the development of groundwater contours due to error in gauging.

Table 4
Horizontal Groundwater Gradient and Flow Velocity Calculations
Plant Hammond AP-4, Floyd County, Georgia

Flow Path Direction [1]	Hydraulic Gradient - August 21, 2019 Data					Hydraulic Gradient - October 21, 2019 Data					Hydraulic Gradient - March 23, 2020 Data				
	h_1 (ft)	h_2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	Avg Δh/Δl (ft/ft)	h_1 (ft)	h_2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	Avg Δh/Δl (ft/ft)	h_1 (ft)	h_2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	Avg Δh/Δl (ft/ft)
Eastern Flow Path (GWA-14 to HGWC-118)	583.94	565.63	1,050	0.017	0.014	583.30	563.94	1,050	0.018	0.015	590.91	567.78	1,050	0.022	0.018
Central Flow Path (HGWA-113 to HGWC-103)	582.68	566.75	1,110	0.014		581.08	565.52	1,110	0.014		591.53	570.85	1,110	0.019	
Western Flow Path (HGWA-111 to HGWC-107)	577.63	564.27	1,250	0.011		576.29	562.16	1,250	0.011		581.85	566.38	1,250	0.012	

Flow Path Direction [1]	K (ft/d)	n	Average 2019/2020 Δh/Δl (ft/ft)	Average 2019/2020 V (ft/d)[2]
Eastern Flow Path (GWA-14 to HGWC-118)	1.67	0.15	0.016	0.18
Central Flow Path (HGWA-113 to HGWC-103)				
Western Flow Path (HGWA-111 to HGWC-107)				

Notes:
ft = feet.
ft/d = feet per day.
ft/ft = feet per foot.
h_1, h_2 = groundwater elevation for identified location.
Δh/Δl = hydraulic gradient.
K = hydraulic conductivity.
Δl = distance between identified location 1 and 2.
n = effective porosity.
V = groundwater flow velocity.
(1) Flow path direction relative to the orientation of AP-4 and illustrated on Figures 3, 4, and 5 of associated report.
(2) Groundwater flow velocity equation: $V = [K * (\Delta h/\Delta l)] / n$.

Table 5

Summary of Groundwater Analytical Data

Plant Hammond AP-4, Floyd County, Georgia

	Well ID:	HGWA-111	HGWA-111	HGWA-111	HGWA-112	HGWA-112	HGWA-112	HGWA-113	HGWA-113	HGWA-113	HGWC-101	HGWC-101	HGWC-101	HGWC-102[4]	HGWC-102[4]	HGWC-102[4]	HGWC-102[4]	HGWC-102[4]
	Sample Date:	8/21/2019	10/21/2019	3/24/2020	8/21/2019	10/22/2019	3/24/2020	8/21/2019	10/22/2019	4/9/2020	8/22/2019	10/23/2019	3/25/2020	10/23/2019	1/3/2020	3/4/2020	3/24/2020	6/18/2020
	Parameter [1,2]																	
APPENDIX III	Boron	--	0.0097 J	0.011 J	--	0.016 J	0.012 J	--	0.010 J	0.012 J	--	0.10	0.080 J	3.1	3.4	3.7	2.4	2.9
	Calcium	--	51.0	61.2	--	6.3	7.0	--	7.2	8.3	--	21.9	18.4	136	118	144	103	124
	Chloride	--	3.9	3.6	--	5.5	5.2	--	1.9	1.4	--	5.5	5.2	7.9	7.0	7.1	6.5	6.9
	Fluoride	0.048 J	0.12 J	0.076 J	<0.029	0.050 J	<0.050	0.11 J	0.18 J	0.14 J	<0.029	<0.029	<0.050	0.22 J	<0.050	<0.050	<0.050	<0.050
	pH [3]	6.60	7.02	7.37	5.80	5.70	5.64	6.05	5.98	6.08	5.39	5.33	5.53	5.68	5.64	5.75	5.58	5.67
	Sulfate	--	1.8	1.6	--	0.60 J	<0.50	--	6.8	6.6	--	101	85.5	<0.017	380	400	311	349
	TDS	--	187	207	--	81.0	52.0	--	95.0	48.0	--	221	187	736	714	764	521	652
APPENDIX IV	Antimony	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--	<0.00027	0.00076 J	<0.00027	<0.00027	<0.00027
	Arsenic	<0.00035	<0.00035	0.00042 J	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	0.00074 J	<0.00035	<0.00035	0.00039 J	<0.00035	0.00065 J	0.00036 J	<0.00035	0.00092 J
	Barium	0.029	0.033	0.032	0.027	0.028	0.029	0.027	0.027	0.034	0.043	0.043	0.038	0.037	0.036	0.033	0.024	0.029
	Beryllium	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	0.000075 J	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074
	Cadmium	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	0.00014 J	0.00020 J	0.00014 J	0.00026 J	0.00020 J	0.00026 J	0.00068 J	0.00047 J
	Chromium	0.00061 J	0.0012 J	0.0019 J	0.0039 J	0.0040 J	0.0044 J	0.0022 J	0.0023 J	0.0031 J	0.00064 J	<0.00039	0.00098 J	<0.00039	0.00063 J	<0.00039	0.00051 J	<0.00039
	Cobalt	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	0.00037 J	<0.00030	0.0023 J	0.0021 J	0.0018 J	0.0038 J	0.0021 J	0.0019 J	0.0012 J
	Fluoride	0.048 J	0.12 J	0.076 J	<0.029	0.050 J	<0.050	0.11 J	0.18 J	0.14 J	<0.029	<0.029	<0.050	0.22 J	<0.050	<0.050	<0.050	<0.050
	Lead	<0.000046	0.00016 J	0.00058 J	<0.000046	<0.000046	0.00016 J	0.000071 J	0.000073 J	0.00039 J	<0.000046	<0.000046	<0.000046	<0.000046	<0.000046	0.00011 J	<0.000046	<0.000046
	Lithium	0.0018 J	0.0026 J	0.0039 J	<0.00078	<0.00078	<0.00078	0.0011 J	0.0011 J	0.0017 J	<0.00078	<0.00078	<0.00078	0.0012 J	0.0011 J	0.0013 J	0.00084 J	0.0013 J
	Mercury	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014
	Molybdenum	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095
	Comb. Radium 226/228	0.553 U	0.351 U	0.260 U	0.514 U	0.828 U	0.677 U	0.492 U	0.523 U	0.617 U	0.474 U	0.776 U	0.603 U	0.858 U	1.04 U[5]	1.32	1.23 U	
	Selenium	<0.0013	--	--	<0.0013	--	--	0.0025 J	--	--	<0.0013	--	--	<0.0013	0.0015 J	<0.0013	<0.0013	<0.0013
	Thallium	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--	<0.000052	0.000080 J	<0.000052	<0.000052	<0.000052

Notes:

-- = Parameter was not analyzed.

J = Indicates the parameter was estimated and detected between the method detection limit (MDL) and the reporting limit (RL).

< = Indicates the parameter was not detected above the analytical MDL.

TDS = Total dissolved solids.

U = Indicates the parameter was not detected above the minimum detection concentration (MDC, specific to combined radium).

(1) Appendix III/IV parameter per 40 CFR 257 Subpart D. Parameters are reported in units of milligrams per liter (mg/L), except for pH reported as s.u. (standard units) and combined radium reported as picocuries per liter (pCi/L).

(2) Metals were analyzed by EPA Method 6010D/6020B, Mercury was analyzed by EPA Method 7470A, anions were analyzed by EPA Method 300.0, TDS was analyzed by SM2540C, and combined radium by EPA Methods 9315/9320.

(3) The pH value presented was recorded at the time of sample collection in the field.

(4) Monitoring well HGWC-102 was analyzed for the complete list of Appendix III and Appendix IV constituents to establish background groundwater quality in compliance with 40 CFR 257.93. The wells will be sampled in this manner for eight independent events.

(5) Due to lack of appropriate bottles, well was sampled for Radium on January 22, 2020.

Table 5
Summary of Groundwater Analytical Data
Plant Hammond AP-4, Floyd County, Georgia

	Well ID:	HGWC-103	HGWC-103	HGWC-103	HGWC-105	HGWC-105	HGWC-105	HGWC-107	HGWC-107	HGWC-107	HGWC-109	HGWC-109	HGWC-109	HGWC-117	HGWC-117	HGWC-117	HGWC-118	HGWC-118	HGWC-118
	Sample Date:	8/22/2019	10/23/2019	3/25/2020	8/22/2019	10/23/2019	3/25/2020	8/23/2019	10/22/2019	3/25/2020	8/23/2019	10/22/2019	3/25/2020	8/22/2019	10/22/2019	3/24/2020	8/22/2019	10/22/2019	3/25/2020
	Parameter [1,2]																		
APPENDIX III	Boron	--	2.3	2.3	--	1.3	1.4	--	0.91	0.87	--	0.32	0.36	--	1.0	1.0	--	0.65	0.70
	Calcium	--	86.5	86.8	--	89.4	91.4	--	58.1	59.5	--	42.6	42.6	--	70.9	68.0	--	84.2	86.8
	Chloride	--	6.1	5.1	--	3.6	3.2	--	3.6	3.0	--	4.6	3.9	--	12.1	12.5	--	4.5	3.6
	Fluoride	<0.029	<0.029	<0.050	<0.029	<0.029	<0.050	<0.029	0.047 J	<0.050	0.034 J	0.099 J	0.075 J	<0.029	0.042 J	<0.050	0.070 J	0.087 J	0.078 J
	pH [3]	5.55	5.49	5.49	6.04	6.46	6.47	6.26	6.19	6.13	6.76	6.58	6.56	5.53	6.17	5.99	6.93	7.03	6.89
	Sulfate	--	248	251	--	162	161	--	123	116	--	23.2	27.9	--	133	129	--	80.9	78.4
	TDS	--	507	507	--	419	417	--	308	297	--	212	213	--	348	331	--	354	347
APPENDIX IV	Antimony	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--	<0.00027	--	--
	Arsenic	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	0.0035 J	0.0019 J	0.0025 J	<0.00035	<0.00035	0.00037 J	<0.00035	<0.00035	<0.00035
	Barium	0.036	0.039	0.036	0.066	0.066	0.074	0.038	0.039	0.037	0.088	0.087	0.084	0.036	0.049	0.051	0.052	0.054	0.060
	Beryllium	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074	0.000079 J	<0.000074	<0.000074	<0.000074	<0.000074	<0.000074
	Cadmium	0.00080 J	0.00091 J	0.00068 J	<0.00011	<0.00011	<0.00011	0.00011 J	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	0.00064 J	0.00068 J	0.00079 J	<0.00011	<0.00011	<0.00011
	Chromium	0.00063 J	0.0015 J	0.00045 J	<0.00039	0.00040 J	0.0013 J	<0.00039	<0.00039	0.00074 J	<0.00039	0.00062 J	0.0014 J	<0.00039	<0.00039	0.0012 J	<0.00039	0.00066 J	0.00081 J
	Cobalt	0.0019 J	0.0021 J	0.0022 J	<0.00030	0.00038 J	0.00047 J	<0.00030	<0.00030	<0.00030	0.0027 J	0.0022 J	0.0022 J	0.012	0.0064	0.0087	0.00030 J	0.00061 J	<0.00030
	Fluoride	<0.029	<0.029	<0.050	<0.029	<0.029	<0.050	<0.029	0.047 J	<0.050	0.034 J	0.099 J	0.075 J	<0.029	0.042 J	<0.050	0.070 J	0.087 J	0.078 J
	Lead	<0.000046	0.00043 J	0.000076 J	<0.000046	0.000068 J	0.000085 J	<0.000046	0.000079 J	0.00021 J	0.000058 J	0.000054 J	<0.000046	<0.000046	0.00016 J	0.00025 J	<0.000046	0.00025 J	0.00010 J
	Lithium	0.0015 J	0.0020 J	0.0016 J	0.0040 J	0.0039 J	0.0041 J	0.00092 J	0.00094 J	0.00091 J	0.00090 J	0.00088 J	<0.00078	0.0012 J	0.0028 J	0.0029 J	0.0018 J	0.0027 J	0.0017 J
	Mercury	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--	<0.00014	--	--
	Molybdenum	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--	<0.00095	--	--
	Comb. Radium 226/228	0.946 U	0.571 U	0.403 U	0.694 U	0.584 U	0.663 U	1.69	0.705 U	0.673 U	0.470 U	0.545 U	0.508 U	0.333 U	0.827 U	0.815 U	0.904 U	0.424 U	0.915 U
	Selenium	<0.0013	--	--	<0.0013	--	--	<0.0013	--	--	<0.0013	--	--	<0.0013	--	--	<0.0013	--	--
	Thallium	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--	<0.000052	--	--

Table 6

Summary of Background Concentrations and Groundwater Protection Standards
October 2019 and March 2020 Events
Plant Hammond AP-4, Floyd County, Georgia

Analyte	Units	Background[1]	State GWPS[2]
Antimony	mg/L	0.003	0.006
Arsenic	mg/L	0.005	0.01
Barium	mg/L	0.033, 0.034	2
Beryllium	mg/L	0.003	0.004
Cadmium	mg/L	0.0025	0.005
Chromium	mg/L	0.0086, 0.01	0.1
Cobalt	mg/L	0.005	0.005
Fluoride	mg/L	0.25, 0.24	4
Lead	mg/L	0.005	0.005
Lithium	mg/L	0.03	0.03
Mercury	mg/L	0.0005	0.002
Molybdenum	mg/L	0.01	0.01
Selenium	mg/L	0.01	0.05
Thallium	mg/L	0.001	0.002
Combined Radium-226/228	pCi/L	1.37, 1.3	5

Notes:
"mg/L" = milligrams per liter
"pCi/L" = picocuries per liter

1. The background limits were 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). Where two numbers are present, they denote the different background levels for each of the two semiannual monitoring events in the order that they were determined.
2. Under the existing Georgia EPD rules, the GWPS is: (i) the MCL, (ii) where the MCL is not established, the background concentration, or (iii) background concentrations for constituents where the background level is higher than the MCL.

FIGURES

N

Note:
1. Aerial photograph source: Google Earth Pro, August 2019.

0 330 660 1,320

SCALE IN FEET

SITE LOCATION MAP

GEORGIA POWER COMPANY
PLANT HAMMOND AP-4
FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec consultants

KENNESAW, GA | JULY 2020

FIGURE 1

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2020\CCR Reports\AP-4\Figure 1_SiteMap.mxd 7/10/2020 7:25:39 AM

N

LEGEND

- Compliance Monitoring Well
- Piezometer

Notes:
1. Aerial photograph source: Google Earth Pro, August 2019.

0 150 300 600

SCALE IN FEET

MONITORING WELL NETWORK MAP

GEORGIA POWER COMPANY
PLANT HAMMOND AP-4
FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec consultants

KENNESAW, GA | JULY 2020

FIGURE 2

\\arc-01\pri1$\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2020\CCR Reports\AP-4\Figure 2_WellMap.mxd 6/23/2020 5:10:13 PM

N

LEGEND

- Compliance Monitoring Well
- Piezometer
- Groundwater Elevation Iso-Contour
- Approximate Groundwater Flow Direction

Notes:
1. Water level elevation recorded on August 21, 2019. Elevation provided in feet (ft) referenced to the North American Vertical Datum (NAVD) 88.
2. Aerial photograph source: Google Earth Pro, August 2019.

0 150 300 600

SCALE IN FEET

POTENTIOMETRIC SURFACE CONTOUR MAP - AUGUST 2019

GEORGIA POWER COMPANY
PLANT HAMMOND AP-4
FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec consultants

KENNESAW, GA | JULY 2020

FIGURE 3

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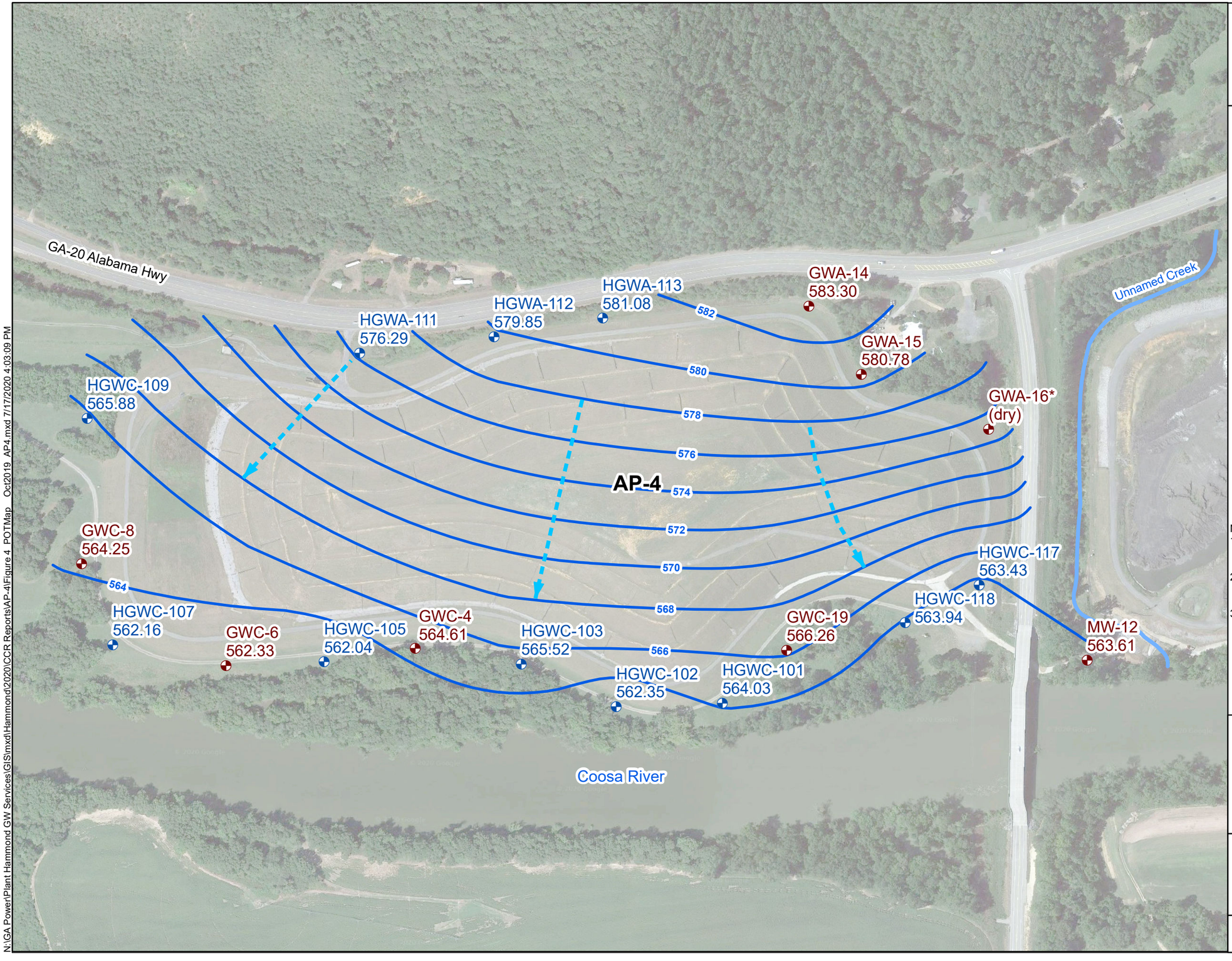


N

LEGEND

- Compliance Monitoring Well
- Piezometer
- Groundwater Elevation Iso-Contour
- Approximate Groundwater Flow Direction

Notes:
1. Water level elevation recorded on October 21, 2019. Elevation provided in feet (ft) referenced to the North American Vertical Datum (NAVD) 88.
2. * = Water level was at or below bottom of piezometer of time of measurement, therefore water elevation not used in the construction of groundwater contours.
3. Aerial photograph source: Google Earth Pro, August 2019.

0 150 300 600

SCALE IN FEET

POTENTIOMETRIC SURFACE CONTOUR MAP - OCTOBER 2019

GEORGIA POWER COMPANY
PLANT HAMMOND AP-4
FLOYD COUNTY, GEORGIA

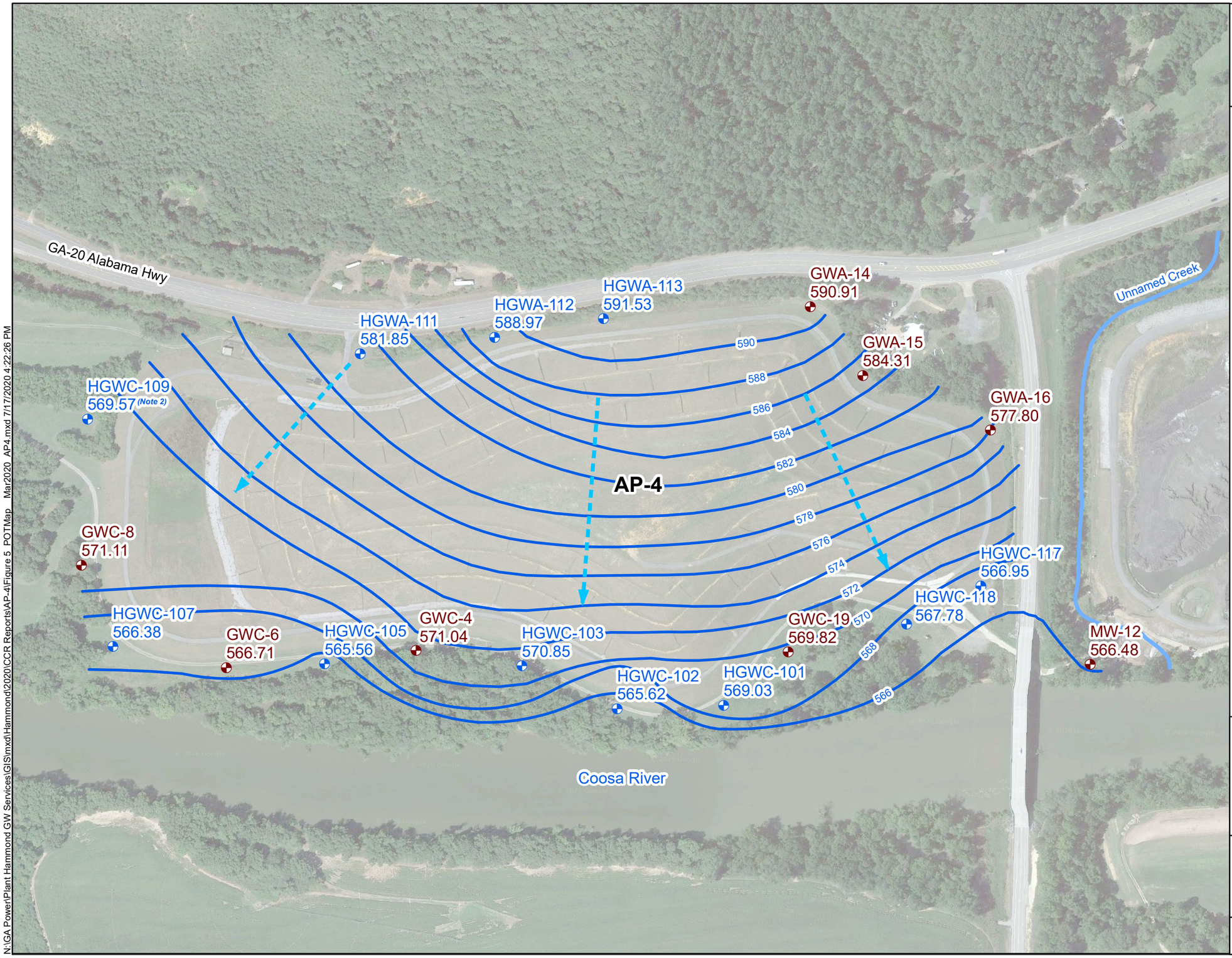
Prepared For: Georgia Power

Prepared By: Geosyntec consultants

KENNESAW, GA | JULY 2020

FIGURE 4

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2020\CCR Reports\AP-4\Figure 4_POTMap_Oct2019_AP4.mxd 7/17/2020 4:03:09 PM



N

LEGEND

- Compliance Monitoring Well
- Piezometer
- Groundwater Elevation Iso-Contour
- Approximate Groundwater Flow Direction

Notes:
1. Water level elevation recorded on March 23, 2020. Elevation provided in feet (ft) referenced to the North American Vertical Datum (NAVD) 88.
2. Water elevation of HGWC-109 was not used in the development of groundwater contours due to error in gauging.
3. Aerial photograph source: Google Earth Pro, August 2019.

0 150 300 600

SCALE IN FEET

POTENTIOMETRIC SURFACE CONTOUR MAP - MARCH 2020

GEORGIA POWER COMPANY
PLANT HAMMOND AP-4
FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec consultants

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FIGURE 5

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APPENDIX A

Well Inspection Forms

Geosyntec

WELL INSPECTION FORM

Field Technician: Chad Rosso | Site/Location: Plant Hammond AP-4 | Inspection Date: 8/21/19

Well Inspection Items

Well ID	Inspection Time	Present (Y/N)						Comments regarding well condition
		Lock	Locking Cap	Bollards	Concrete Pad	Protective Casing	Vegetation	
GWC-8	0852	Y	Y	Y	Y	Y	Y	Good condition
HGWA-111	0817	Y	Y	Y	Y	Y	Y	Good condition
HGWC-109	0827	Y	Y	Y	Y	Y	N	Tall grass; potential for snakes
HGWC-107	0901	Y	Y	Y	Y	Y	Y	Good condition
GWC-6	0914	Y	Y	Y	Y	Y	Y	Some spider webs in casing
HGWC-105	0919	Y	Y	Y	Y	Y	Y	Some abandoned wasp nests in casing.
GWC-4	0934	Y	Y	Y	Y	Y	Y	Spider web in casing.
HGWC-103	0940	Y	Y	Y	Y	Y	Y	Good condition
GWC-2	0950	Y	Y	Y	Y	Y	Y	Good condition
HGWC-101	0955	Y	Y	Y	Y	Y	N	Tall grass
GWC-19	1009	Y	Y	Y	Y	Y	Y	Spider web on well cap
HGWC-118	1015	Y	Y	Y	Y	Y	Y	Good condition
HGWC-117	1020	Y	Y	Y	Y	Y	Y	Good condition
GWA-16	1039	Y	Y	Y	Y	Y	Y	Good condition
GWA-15	1052	Y	Y	Y	Y	Y	Y	Good conditions
GWA-14	1109	Y	Y	Y	Y	Y	Y	Good condition
HGWA-113	1115	Y	Y	Y	Y	Y	Y	Good condition
HGWA-112	1120	Y	Y	Y	Y	Y	Y	Good condition

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: MGWA-111
Date, field conditions: 8/28/19 91°F partly cloudy

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓	✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWA-11Z
Date, field conditions: 8/21/19 91°F partly cloudy

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: AP-4
Permit Number:
Well ID: AGWA-113
Date, field conditions: 08/21/19 clear, sunny 90°

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	X		
b	Is the well properly identified with the correct well ID?	X		
c	Is the well in a high traffic area and does the well require protection from traffic?		X	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	X		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	X		
b	Is the casing free of degradation or deterioration?	X		
c	Does the casing have a functioning weep hole?	X		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	X		
e	Is the well locked and is the lock in good condition?	X		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	X		
b	Is the well pad sloped away from the protective casing?	X		
c	Is the well pad in complete contact with the protective casing?	X		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	X		
e	Is the pad surface clean (not covered with sediment or debris)?	X		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	X		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	X		
c	Is the well properly vented for equilibration of air pressure?	X		
d	Is the survey point clearly marked on the inner casing?	X		
e	Is the depth of the well consistent with the original well log?	X		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	X		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	X		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			X
c	Does the well require redevelopment (low flow, turbid)?		X	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	X		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-101
Date, field conditions: 8/22/19; 86°F sunny

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-10S
Date, field conditions: 8/22/19; 91°F partly cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-105
Date, field conditions: 8/22/18 91°F partly cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-107
Date, field conditions: 3/23/19; 73°F; cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGNC-109
Date, field conditions: 8/23/19 75°F cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-117
Date, field conditions: 8/22/19; 77 OF sunny

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-118
Date, field conditions: 9/22/19; 82°F sunny

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-2
Date, field conditions: 8/21/19; 75°F cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓	✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?		✓	
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-4
Date, field conditions: 8/21/19; 75°F cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	~~✓~~	✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?		✓	
e	Is the depth of the well consistent with the original well log?	~~✓~~		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-6
Date, field conditions: 8/21/14; 75°F overcast

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓	✗	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?		✓	
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-8
Date, field conditions: 08/21/19; 73°F Overcast

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓	✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✗	✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?		✓	
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWA-19
Date, field conditions: 8/21/19 ; 79F partly cloudy

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWA-15
Date, field conditions: 8/21/19 ; 70°F partly cloudy

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?		✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWA-16
Date, field conditions: 8/21/19; 29 F partly cloudy

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓	✓	
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-19
Date, field conditions: 8/25/19; 77°F SUNNY

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Geosyntec[c]

WELL INSPECTION FORM

Field Technician: Chaci Russo | Site/Location: Plant Hammond AP-4 | Inspection Date: 10/21/19

Well Inspection Items

Well ID	Inspection Time	Present (Y/N)						Comments regarding well condition
		Lock	Locking Cap	Bollards	Concrete Pad	Protective Casing	Vegetation	
HGWC-109	0905	Y	N	Y	Y	Y	Y	
GWC-8	0925	Y	Y	Y	Y	Y	Y	
HGWC-107	0935	Y	N	Y	Y	Y	Y	
GWC-6	0940	Y	Y	Y	Y	Y	Y	
HGWC-105	0950	Y	N	Y	Y	Y	Y	
GWC-4	0955	Y	Y	Y	Y	Y	Y	
HGWC-103	1000	Y	N	Y	Y	Y	Y	
HGWC-102	1005	Y	Y	Y	Y	Y	Y	
HGWC-101	1010	Y	N	Y	Y	Y	Y	
GWC-19	1012	Y	Y	Y	Y	Y	Y	
HGWC-118	1020	Y	N	Y	Y	Y	Y	
MW-12	1025	Y	Y	Y	Y	Y	Y	
HGWC-117	1040	Y	N	Y	Y	Y	Y	
GWA-16	1045	Y	Y	Y	Y	Y	Y	
HGWA-5	1050	Y	N	Y	Y	Y	Y	
NGWA-6	1055	Y	N	Y	Y	Y	Y	
GWA-15	1115	Y	Y	Y	Y	Y	Y	
GWA-14	1125	Y	Y	Y	Y	Y	Y	
HGWA-113	1140	Y	N	Y	Y	Y	Y	
HGWA-112	1145	Y	N	Y	Y	Y	Y	
HGWA-111	1150	Y	N	Y	Y	Y	Y	

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: HGWA-(1)
Date, field conditions: 10/21/19 66°F daily

		yes	no	n/a	
1	**Location/Identification**				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	**Protective Casing**				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	**Surface pad**				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)		✓		minor erosion
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	**Internal casing**				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?				
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	**Sampling: Groundwater Wells Only:**				
a	Does well recharge adequately when purged?	✓			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓			
c	Does the well require redevelopment (low flow, turbid)?		✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: HGWA-112
Date, field conditions: 10/22/14; 61°F; SUNNY

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Hammond
Permit Number: —
Well ID: HGWA-113
Date, field conditions: 10/22/2014 Damp / clear

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?	✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-101
Date, field conditions: 10/23/19 sunny 52°F

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: HGWC-102
Date, field conditions: 10/23/19 34°F Clear

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓ (CS)	✓	
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Hammond
Permit Number:
Well ID: HGWC-103
Date, field conditions: 10-23-2019 cold / clear

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Hankins
Permit Number:
Well ID: HGWC-105
Date, field conditions: 10-23-2019 cold / clear

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Hammond
Permit Number: —
Well ID: HGWC-107
Date, field conditions: 10-22-2019 Damp / warm

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?	✓			
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?		✓		minor debris from vegetation
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?	✓			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓			
c	Does the well require redevelopment (low flow, turbid)?		✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Hammond
Permit Number: —
Well ID: HGWC-109
Date, field conditions: 10-22-2019 Damp / clear

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: HGWC-117
Date, field conditions: 10/22/19 60°F Sunny

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?	✓	✓ (C.R.)	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: HGWC-118
Date, field conditions: 10/22/19 60°F sunny

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?	✓	~~✓~~ (CR)	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWC-4
Date, field conditions: 10/21/17 63°F

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

WL only

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: GWC-6
Date, field conditions: 63°F; cloudy 10/21/19

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

WL only

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: CHWA-94
Date, field conditions: 10/22/11 63°F cloudy

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

WL only

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: GWSC-8
Date, field conditions: 63°F; cloudy 10/24/19

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?		✓	
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			
c	Does the well require redevelopment (low flow, turbid)?			
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

WL only

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: GWA-15
Date, field conditions: 10/21/19 C35°F Cloudy

		yes	no	n/a	
1	**Location/Identification**				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	**Protective Casing**				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	**Surface pad**				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	**Internal casing**				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	**Sampling: Groundwater Wells Only:**				
a	Does well recharge adequately when purged?				WL only
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?				
c	Does the well require redevelopment (low flow, turbid)?				
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number:
Well ID: GWA-16
Date, field conditions: 10/21/19 63°F cloudy

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic? (CB)	✓	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?				WL only
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?				
c	Does the well require redevelopment (low flow, turbid)?				
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: GWC-19
Date, field conditions: 10/21/14 63°F cloudy

		yes	no	n/a	
1	**Location/Identification**				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	**Protective Casing**				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?		✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	**Surface pad**				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	**Internal casing**				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	**Sampling: Groundwater Wells Only:**				
a	Does well recharge adequately when purged?				WL
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?				only
c	Does the well require redevelopment (low flow, turbid)?				
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: ~~HGWA-III~~ Plant Hammond AP-4
Permit Number:
Well ID: HGWA-III
Date, field conditions: 3/24/2020 60°F raining

		yes	no	n/a	
1	Location/Identification				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?			✓	DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓			
c	Does the well require redevelopment (low flow, turbid)?		✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: HGWA-112
Date, field conditions: 3-24-2020 Rain / Wet

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

None as of now.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: HGWA - 113
Date, field conditions: 3-24-2020 Wet Conditions

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)		✓	
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?		✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Standing water around well.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: HGWC-101
Date, field conditions: 3/25/2020 64°F; partly cloudy

		yes	no	n/a	
1	Location/Identification				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?				
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?			✓	DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	✓			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓			
c	Does the well require redevelopment (low flow, turbid)?		✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond, AP-4
Permit Number: ~~HG150~~
Well ID: HGWC-102
Date, field conditions: 3/24/2020, sunny, 56°F

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	X		
b	Is the well properly identified with the correct well ID?	X		
c	Is the well in a high traffic area and does the well require protection from traffic?	X		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	X		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	X		
b	Is the casing free of degradation or deterioration?	X		
c	Does the casing have a functioning weep hole?	X		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	X		
e	Is the well locked and is the lock in good condition?	X		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	X		
b	Is the well pad sloped away from the protective casing?	X		
c	Is the well pad in complete contact with the protective casing?	X		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	X		
e	Is the pad surface clean (not covered with sediment or debris)?	X		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	X		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	X		
c	Is the well properly vented for equilibration of air pressure?	X		
d	Is the survey point clearly marked on the inner casing?	X		
e	Is the depth of the well consistent with the original well log?			X DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	X		
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	X		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	~~X~~ (50)		X
c	Does the well require redevelopment (low flow, turbid)?		X	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	X		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond, AP-4
Permit Number:
Well ID: HGWC-103
Date, field conditions: clear, 57°F

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	X			
b	Is the well properly identified with the correct well ID?	X			
c	Is the well in a high traffic area and does the well require protection from traffic?	X			
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	X			
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	X			
b	Is the casing free of degradation or deterioration?	X			
c	Does the casing have a functioning weep hole?	X			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	X			
e	Is the well locked and is the lock in good condition?	X			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	X			
b	Is the well pad sloped away from the protective casing?	X			
c	Is the well pad in complete contact with the protective casing?	X			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	X			
e	Is the pad surface clean (not covered with sediment or debris)?	X			
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	X			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	X			
c	Is the well properly vented for equilibration of air pressure?	X			
d	Is the survey point clearly marked on the inner casing?	X			
e	Is the depth of the well consistent with the original well log?			X	WL only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	X			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?	X			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	X			
c	Does the well require redevelopment (low flow, turbid)?		X		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	X			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number:
Well ID: HGWC-105
Date, field conditions: PC, 60's 3/25/20

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?			✓ ITW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?	✓ (NR)	✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond
Permit Number: —
Well ID: HFWC-107
Date, field conditions: 3 25 20 – Sunny, PC, 60's-70's

		yes	no	n/a
1	Location/Identification			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?	✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	Protective Casing			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	Surface pad			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	Internal casing	✓		
a	Does the cap prevent entry of foreign material into the well?			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?			✓
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	Sampling: Groundwater Wells Only:	✓		
a	Does well recharge adequately when purged?	✓		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓		
c	Does the well require redevelopment (low flow, turbid)?	✗	✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

NA 3/25/20

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond, AP-4
Permit Number:
Well ID: HGWC-109
Date, field conditions: Sunny, 59°F

		yes	no	n/a	
1	Location/Identification				
a	Is the well visible and accessible?	X			
b	Is the well properly identified with the correct well ID?	X			
c	Is the well in a high traffic area and does the well require protection from traffic?		X		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	X			
2	Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	X			
b	Is the casing free of degradation or deterioration?	X			
c	Does the casing have a functioning weep hole?	X			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	X			
e	Is the well locked and is the lock in good condition?	X			
3	Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	X			
b	Is the well pad sloped away from the protective casing?	X			
c	Is the well pad in complete contact with the protective casing?	X			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	X			
e	Is the pad surface clean (not covered with sediment or debris)?	X			
4	Internal casing				
a	Does the cap prevent entry of foreign material into the well?	X			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	X			
c	Is the well properly vented for equilibration of air pressure?	X			
d	Is the survey point clearly marked on the inner casing?	X			
e	Is the depth of the well consistent with the original well log?			X	WL only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	X			
5	Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?	X			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	X			
c	Does the well require redevelopment (low flow, turbid)?		X		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	X			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond Ash 1
Permit Number: -
Well ID: HGWC-117
Date, field conditions: 3/24/2020 72°F cloudy

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?			✓	DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?	✓			
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	✓			
c	Does the well require redevelopment (low flow, turbid)?		✓		
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond, AP-4
Permit Number: —
Well ID: HGWC-11P
Date, field conditions: Sunny, 57°F

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	X		
b	Is the well properly identified with the correct well ID?	X		
c	Is the well in a high traffic area and does the well require protection from traffic?	X		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	X		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	X		
b	Is the casing free of degradation or deterioration?	X		
c	Does the casing have a functioning weep hole?	X		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	X		
e	Is the well locked and is the lock in good condition?	X		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	X		
b	Is the well pad sloped away from the protective casing?	X		
c	Is the well pad in complete contact with the protective casing?	X		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	X		
e	Is the pad surface clean (not covered with sediment or debris)?	X		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	X		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	X		
c	Is the well properly vented for equilibration of air pressure?	X		
d	Is the survey point clearly marked on the inner casing?	X		
e	Is the depth of the well consistent with the original well log?			X WL only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	X		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?	X		
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	X		
c	Does the well require redevelopment (low flow, turbid)?		X	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	X		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: AP-4
Permit Number: —
Well ID: GWC-4
Date, field conditions: 3/23/20 – Rain, 53°

		yes	no	n/a
1	**Location/Identification**			
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2	**Protective Casing**			
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3	**Surface pad**			
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4	**Internal casing**			
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing? (YES) →	~~[illegible]~~		~~[illegible]~~ (NG)
e	Is the depth of the well consistent with the original well log?	~~[illegible]~~ (NG)		✓ DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		
5	**Sampling: Groundwater Wells Only:**			
a	Does well recharge adequately when purged?			✓
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?			✓
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓		

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: GWC-6
Date, field conditions: 3-23-2020

		yes	no	n/a	
1	**Location/Identification**				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?	✓			
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	**Protective Casing**				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	**Surface pad**				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	**Internal casing**				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	**Sampling: Groundwater Wells Only:**				
a	Does well recharge adequately when purged?			✓	WL only
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓	
c	Does the well require redevelopment (low flow, turbid)?			✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:
None as of now.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: AP-4
Permit Number:
Well ID: GWC-8
Date, field conditions: 3/23/20 - Rain, 53°

		yes	no	n/a	
1	Location/Identification				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?		✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2	Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓	~~✓~~		~~✓~~
c	Does the casing have a functioning weep hole?	✓	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?		✓		
e	Is the well locked and is the lock in good condition?		✓		no lock
3	Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		~~✓~~	
b	Is the well pad sloped away from the protective casing?	✓		~~✓~~	
c	Is the well pad in complete contact with the protective casing?	✓		~~✓~~	
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		~~✓~~	
e	Is the pad surface clean (not covered with sediment or debris)?	✓		~~✓~~	
4	Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?			✓	
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?			✓	
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓	WL
c	Does the well require redevelopment (low flow, turbid)?			✓	only
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: -
Well ID: GWA-14
Date, field conditions: 3-23-2020 Rain / Wet

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)		✓		
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?			✓	WL
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓	only
c	Does the well require redevelopment (low flow, turbid)?			✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:
Standing Water.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: GWA-15
Date, field conditions: 3-23-2020 Rain / Wet

		yes	no	n/a	
1	**Location/Identification**				
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?	✓			
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)		✓		
2	**Protective Casing**				
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3	**Surface pad**				
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4	**Internal casing**				
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?	✓			
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5	**Sampling: Groundwater Wells Only:**				
a	Does well recharge adequately when purged?			✓	WL
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓	only
c	Does the well require redevelopment (low flow, turbid)?			✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:
Well is in Standing Water.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: Plant Hammond AP-4
Permit Number: —
Well ID: GWA-16
Date, field conditions: 3-23-2020 Rain / Wet

		yes	no	n/a
1 Location/Identification				
a	Is the well visible and accessible?	✓		
b	Is the well properly identified with the correct well ID?	✓		
c	Is the well in a high traffic area and does the well require protection from traffic?		✓	
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓		
2 Protective Casing				
a	Is the protective casing free from apparent damage and able to be secured?	✓		
b	Is the casing free of degradation or deterioration?	✓		
c	Does the casing have a functioning weep hole?	✓		
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓		
e	Is the well locked and is the lock in good condition?	✓		
3 Surface pad				
a	Is the well pad in good condition (not cracked or broken)?	✓		
b	Is the well pad sloped away from the protective casing?	✓		
c	Is the well pad in complete contact with the protective casing?	✓		
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓		
e	Is the pad surface clean (not covered with sediment or debris)?	✓		
4 Internal casing				
a	Does the cap prevent entry of foreign material into the well?	✓		
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓		
c	Is the well properly vented for equilibration of air pressure?	✓		
d	Is the survey point clearly marked on the inner casing?	✓		
e	Is the depth of the well consistent with the original well log?	✓		
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓		✓
5 Sampling: Groundwater Wells Only:				
a	Does well recharge adequately when purged?			✓
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓
c	Does the well require redevelopment (low flow, turbid)?			✓

WL only

6 Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements? ✓

7 Corrective actions as needed, by date:
None as of now.

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name: AP-4
Permit Number: —
Well ID: ~~GCW-19~~ GWC-19
Date, field conditions: 3/23/20 - Rain, 53°

		yes	no	n/a	
1 Location/Identification					
a	Is the well visible and accessible?	✓			
b	Is the well properly identified with the correct well ID?	✓			
c	Is the well in a high traffic area and does the well require protection from traffic?		✓		
d	Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	✓			
2 Protective Casing					
a	Is the protective casing free from apparent damage and able to be secured?	✓			
b	Is the casing free of degradation or deterioration?	✓			
c	Does the casing have a functioning weep hole?	✓			
d	Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	✓			
e	Is the well locked and is the lock in good condition?	✓			
3 Surface pad					
a	Is the well pad in good condition (not cracked or broken)?	✓			
b	Is the well pad sloped away from the protective casing?	✓			
c	Is the well pad in complete contact with the protective casing?	✓			
d	Is the well pad in complete contact with the ground surface and stable? (not undermined by erosion, animal burrows, and does not move when stepped on)	✓			
e	Is the pad surface clean (not covered with sediment or debris)?	✓			
4 Internal casing					
a	Does the cap prevent entry of foreign material into the well?	✓			
b	Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	✓			
c	Is the well properly vented for equilibration of air pressure?	✓			
d	Is the survey point clearly marked on the inner casing?	✓			
e	Is the depth of the well consistent with the original well log?			✓	DTW only
f	Is the casing stable? (or does the pvc move easily when touched or can it be taken apart by hand due to lack of grout or use of slip couplings in construction)	✓			
5 Sampling: Groundwater Wells Only:					
a	Does well recharge adequately when purged?			✓	WL
b	If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?			✓	only
c	Does the well require redevelopment (low flow, turbid)?			✓	
6	Based on your professional judgement, is the well construction / location appropriate to 1) achieve the objectives of the Groundwater Monitoring Program and 2) comply with the applicable regulatory requirements?	✓			

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

APPENDIX B

Appendix B1: Certified Survey Data

Appendix B2: Updated Boring and Well Construction Logs

APPENDIX B1

Certified Survey Data

Well ID	Casing Northing	Casing Easting	Top of Casing Elevation	Nail on Pad Northing	Nail on Pad Easting	Nail on Pad Elevation
GWA-14	1548982.5890	1936642.5820	592.14	1548981.4550	1936642.2230	589.70
GWA-15	1548766.1700	1936808.4740	591.56	1548765.2100	1936807.8670	588.37
GWA-16	1548592.7400	1937210.9880	582.55	1548592.0540	1937209.9470	579.58
GWC-19	1547892.8940	1936572.9730	579.83	1547893.7790	1936572.0390	576.90
GWC-4	1547898.3050	1935398.6960	580.65	1547899.6900	1935398.5510	577.73
GWC-6	1547843.9320	1934800.4510	581.63	1547845.1020	1934800.3890	578.55
GWC-8	1548167.1270	1934342.9370	579.99	1548167.2960	1934344.1910	577.13
HGWA-111	1548834.2570	1935222.8050	591.75	1548833.1050	1935222.9840	588.79
HGWA-112	1548885.6280	1935646.9960	596.27	1548884.5350	1935647.2640	593.46
HGWA-113	1548944.6240	1935990.0870	594.58	1548943.4750	1935990.3010	592.07
HGWC-101	1547725.4970	1936369.5810	578.85	1547726.4760	1936369.0200	575.91
HGWC-102	1547713.5040	1936033.3300	577.54	1547714.8560	1936033.7180	574.54
HGWC-103	1547848.8830	1935732.9610	580.79	1547850.1990	1935733.3030	577.76
HGWC-105	1547855.5570	1935110.3560	582.09	1547856.9860	1935110.3600	579.08
HGWC-107	1547909.9900	1934442.2410	579.31	1547911.2040	1934442.9490	576.43
HGWC-109	1548627.4120	1934362.7670	576.77	1548627.0470	1934361.5230	573.66
HGWC-117	1548100.7710	1937180.4260	581.98	1548099.5300	1937180.3100	579.31
HGWC-118	1547980.5610	1936946.3660	579.02	1547981.8380	1936946.8290	576.52
MW-12	1547853.7790	1937525.4620	583.27	1547855.2080	1937525.2430	580.59

Benchmark	Northing	Easting	Elevation
BM H-1	1547964.9650	1937219.0690	579.02

SURVEY DATA CERTIFICATION FOR SOUTHERN COMPANY TO DETERMINE NORTHING, EASTING, AND VERTICAL ELEVATION OF THE NAIL IN THE CONCRETE PAD & THE PVC WELL CASING.
DATE OF FIELD SURVEY & INSPECTION: 05/04/2020-05/06/2020
FIELD SURVEY POSITIONAL TOLERANCE=0.5 FEET HORIZONTAL-NAD'83, 0.01 VERTICAL-NAVD'88
EQUIPMENT USED FOR HORIZONTAL LOCATION: TRIMBLE R10 RTK GPS & TRIMBLE S5 ROBOTIC TOTAL STATION. THE VERTICAL LOCATION OF EACH SURVEYED POINT WAS ESTABLISHED BASED UPON LEVEL RUNS WITH A DIGITAL LEVEL LOOP FROM VERTICAL CONTROL ESTABLISHED BY ON-SITE BENCHMARK BM H-1 SET BY GEL SOLUTIONS USING A TRIMBLE DINI LEVEL

5/11/2020

APPENDIX B2

Updated Boring and Well Construction Logs

Test Boring Record revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWA-14

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 589.40 feet (589.84 feet ±)	BORING STARTED: 10/2/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6¼
DRILLING METHOD: Hollow Stem Augers	BORING COMPLETED: 10/2/2012	HAMMER: Automatic	

GROUNDWATER:
- 17 feet ATD
- 8.05 feet on 10/3/12

Remarks: Monitoring well set at 38.5 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION		L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	589.4 (589.8)	0	SILTY CLAY (CH), red-brown, wet (previously vacuum excavated and backfilled for underground utility clearance)	FILL						
	579.4 (579.8)	10'	SILTY CLAY (CL-CH) with red-gray sandstone fragments and trace sand, orange and yellow-brown, damp to moist, very soft to very stiff	ALLUVIUM						0 - 0 - 1 **(1)**
										17 - 15 - 12 **(27)**
										11 - 11 - 14 **(25)**
	563.4 (563.8)	26'	SILTY CLAY-CLAYEY SILT (CL-ML) with abundant small sandstone fragments, yellow-brown and red, moist to wet, stiff							6 - 7 - 8 **(15)**
	559.4 (559.8)	30'	CLAYEY SILT (ML) with weathered shale fragments, light orange and gray, moist to damp, stiff	RESIDUUM						2 - 5 - 9 **(14)**
	553.3 (553.7)	36.1'	SANDY SILTY CLAY (CL) with shale fragments, yellow-brown and red, damp, very stiff							7 - 10 - 12 **(22)**
	550.9 (551.3)		*Boring terminated at 38.5 feet*							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 14

Project Manager: J. Heywood, PE

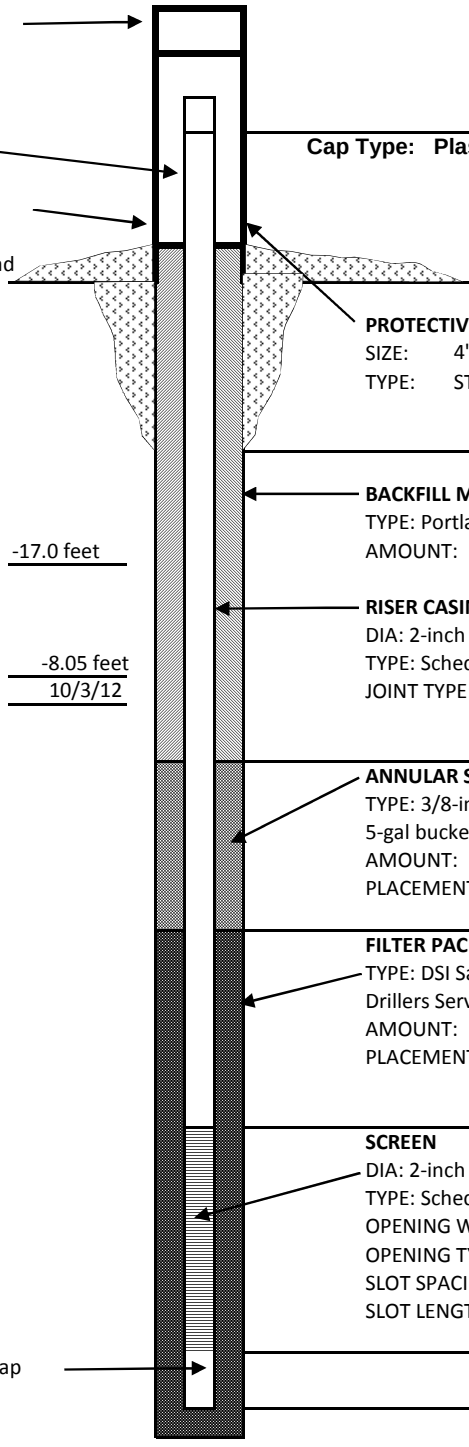
Logged by: P. Gribben, PG

Well Construction Log revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWA-14**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: October 2, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.74	592.14 (592.58)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	589.40 (589.84)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.8	587.60 (588.04)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 37.5 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-18.4	571.00 (571.44)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 5.7 feet		
TOP OF FILTER PACK	-24.1	565.30 (565.74)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 14.3 feet		
BOTTOM OF RISER/TOP OF SCREEN	-28.0	561.40 (561.84)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-38.0	551.40 (551.84)
BOTTOM OF CASING	-38.4	551.00 (551.44)

Test Boring Record revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWA-15

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 588.04 (588.51 feet ±)	BORING STARTED: 8/22/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/22/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 6 feet ATD

Remarks: Monitoring well set at 27.0 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	588.0 (588.5)	0	0.2' TOPSOIL (brown), roots, grass	FILL					
	584.5 (585.0)	5	3.5' SILTY CLAY (CL) with large limestone cobbles	ALLUVIUM					2 - 3 - 6 **(9)**
▽	582.0 (582.5)		6' SILTY CLAY (CL) with scattered rounded pebbles, brown, damp to moist, stiff						
		10	SILTY CLAY (CH) with hard weathered dark gray dolomite and yellow-brown siltstone fragments, wet, very stiff						12 - 14 - 15 **(29)**
	573.5 (574.0)		14.5'						
	572.4 (572.9)	15	15.6' SANDY CLAY (CH) with scattered sandstone fragments, brown, wet, hard						17 - 33 - 37 **(70)**
	572.0 (572.5)		16' Lenses of weathered shale and weathered chert, gray, hard						
	567.7 (568.2)	20	20.3' SANDY CLAY (CH) with scattered dolomite fragments, brown, wet, very stiff						8 - 8 - 9 **(17)**
	564.0 (564.5)	25	24' CLAYEY SILT (ML) with trace mica and scattered chert fragments, yellow-brown, wet, very stiff						3 - 4 - 5 **(9)**
	561.0 (561.5)		CLAYEY FINE SAND (SC) with trace mica, yellow-brown, wet, stiff						
		30	*Boring terminated at 27 feet*						
		35							
		40							
		45							
		50							

0 10 20 30 40 50 60 70 80 90 100

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 15

Project Manager: J. Heywood, PE

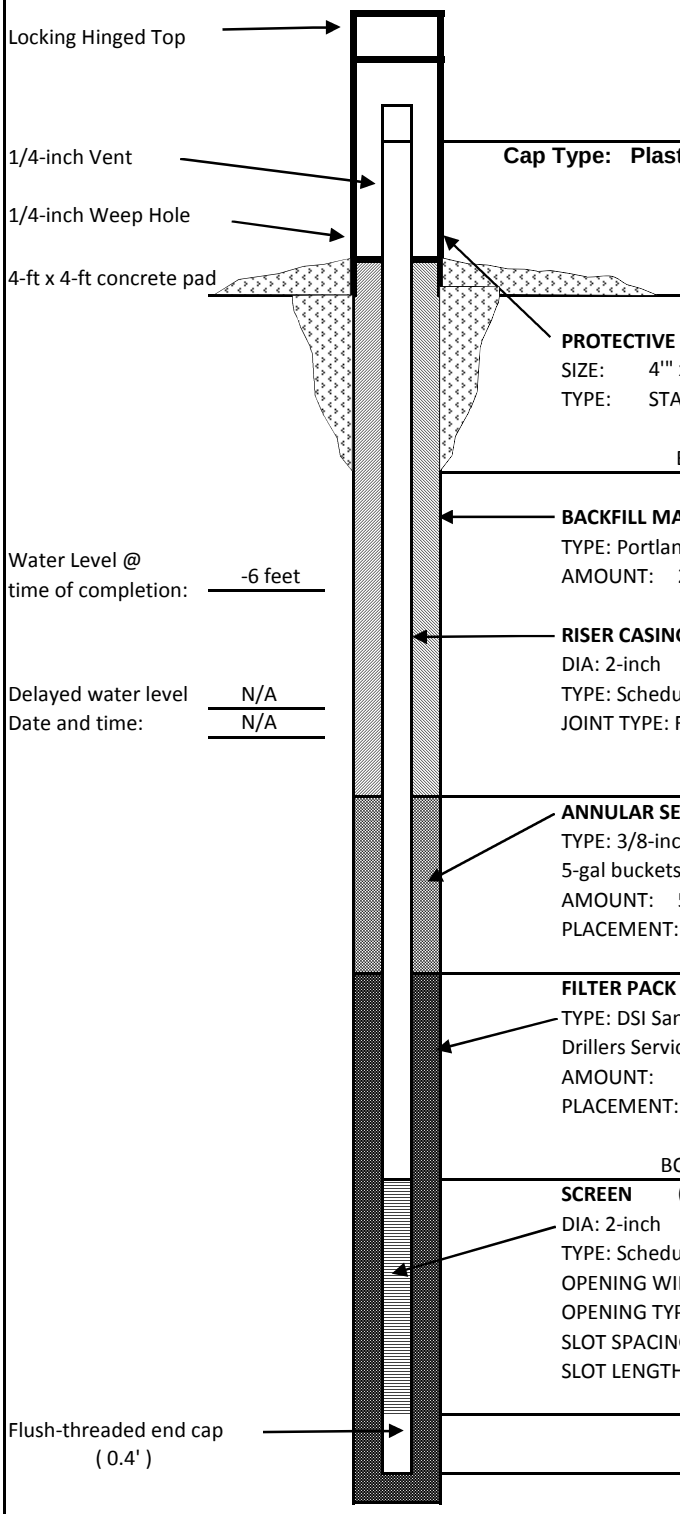
Logged by: P. Gribben, PG

Well Construction Log revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWA-15**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 22, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.52	591.56 (592.03)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	588.04 (588.51)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.15	586.89 (587.36)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 25 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-5.0	583.04 (583.51)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 11.6 feet		
TOP OF FILTER PACK	-14.6	573.44 (573.9)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5 PLACEMENT: 12.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-16.6	571.44 (571.91)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-26.6	561.44 (561.91)
BOTTOM OF CASING	-27.0	561.04 (561.51)

Test Boring Record revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWA-16

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 579.24 feet (579.73 feet ±)	BORING STARTED: 8/21/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/21/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 3.5 feet ATD

Remarks: Monitoring well set at 19.7 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	579.2 (579.7)	0	0.3' TOPSOIL (dark brown), roots, grass	FILL					
▽	575.7 (576.2)		SILTY CLAY (CH), orange-brown to brown, damp						
	574.7 (575.2)	5	3.5' SAND (SP), well graded, wet 4.5' SILTY CLAY (CH), yellow-brown, wet, very soft	ALLUVIUM					2 — 1 - 1 - 1 **(2)**
	569.0 (569.5)	10	10.2' SANDY CLAYEY SILT (ML) with trace mica, yellow-brown and light blue-gray, damp, very stiff to stiff						23 — 7 - 10 - 13 **(23)**
	563.9 (564.4)	15	15.3' CLAYEY FINE SAND (SC) with trace mica and scattered rounded pebbles, yellow-brown and brown, wet, loose						11 — 5 - 6 - 5 **(11)**
	559.2 (559.7)	20	20' SAND (SP) with rounded pebbles, well graded, coarse, gray, wet, very dense						55 — 7 - 21 - 34 **(55)**
	558.6 (559.1)		20.6' COAL, black, shiny, thinly laminated fissile, trace pyrite, hard	BED-ROCK					
	556.7 (557.2)	25	*Boring terminated at 22.5 feet*						
		30							
		35							
		40							
		45							
		50							

0 10 20 30 40 50 60 70 80 90 100

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 16

Project Manager: J. Heywood, PE

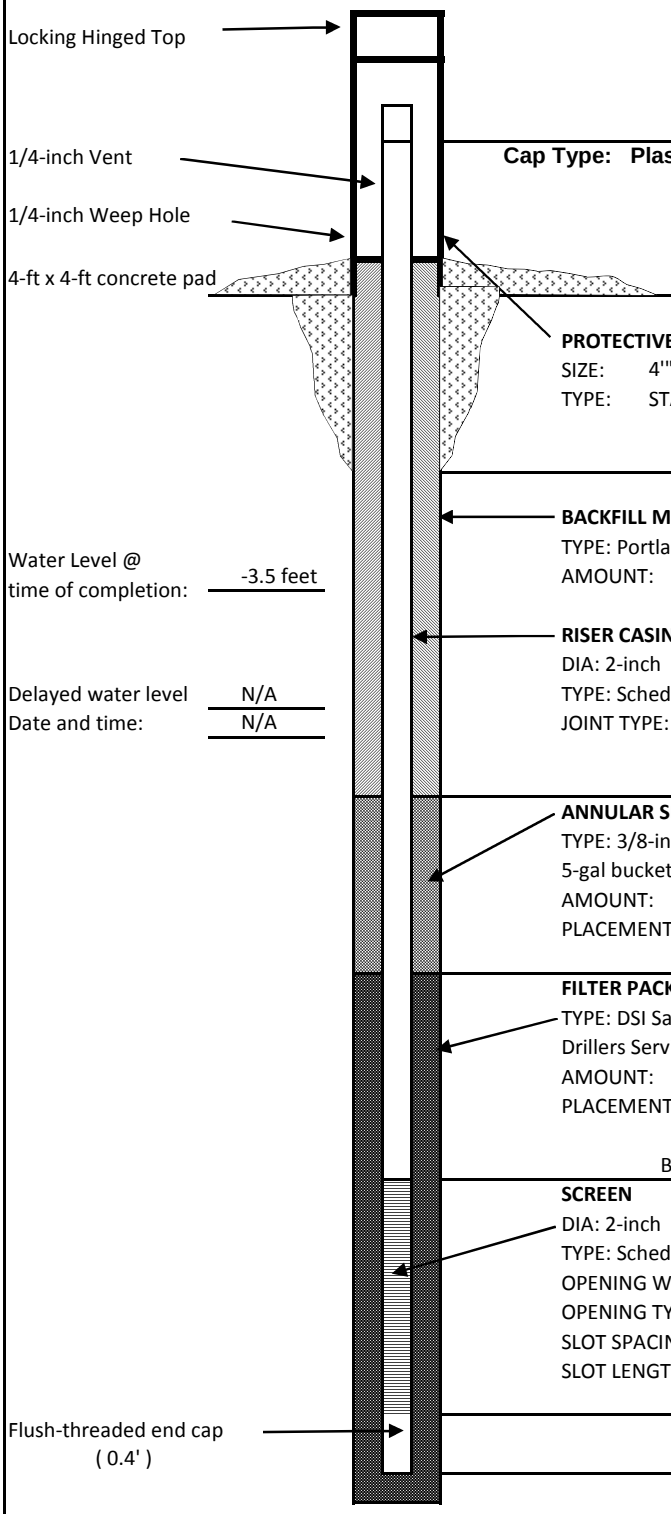
Logged by: P. Gribben, PG

Well Construction Log revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWA-16**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 21, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.31	582.55 (583.04)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	579.24 (579.73)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	NA	Not available
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 25 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-4.7	574.54 (575.03)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.5 feet		
TOP OF FILTER PACK	-7.2	572.04 (572.5)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 12.5 feet		
BOTTOM OF RISER/TOP OF SCREEN	-9.3	569.94 (570.43)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-19.3	559.94 (560.43)
BOTTOM OF CASING	-19.7	559.54 (560.03)

Test Boring Record revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWC-4

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 577.37 (577.74) feet	BORING STARTED: 8/8/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/8/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 20 feet ATD

Remarks: Monitoring well set at 44.3 feet below ground surface

ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION		STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
577.4 (577.7)	0	SILT (ML) with trace mica, brown, dry, stiff	ALLUVIUM	3 - 4 - 5 **(9)**
	5			
	10			4 - 4 - 7 **(11)**
562.9 (563.2)	14.5' 15	CLAYEY SILT (ML) with trace mica and fine sand, brown, moist, soft		2 - 2 - 2 **(4)**
▽ 557.4 (557.7)	20' 20	SILTY CLAY/CLAYEY SILT (CH-MH) with trace mica, dark gray, moist to wet, very soft		0 - 0 - 2 **(2)**
	25			0 - 0 - 0 **(0)**
	30			1 - 0 - 0 **(0)**
541.9 (542.2)	35.5' 35	SAND (SP), coarse to medium with some gravel, black and yellow-brown, wet, very firm to very dense		0 - 13 - 19 **(32)**
	40			
536.4 (536.7)	41'	WEATHERED SHALE, light gray fissile, moist, hard	BEDROCK	>> 25 - 50/2 **(50+)**
532.9 (533.2)	45	*Auger refusal at 44.5 feet, boring terminated*		>> 50/3 **(50+)**
	50			

BORING SOUTHERN 12-153.GPJ S&ME 1-18-2012.GDT 9/18/12

Borehole ID: 4

Project Manager: J. Heywood, PE

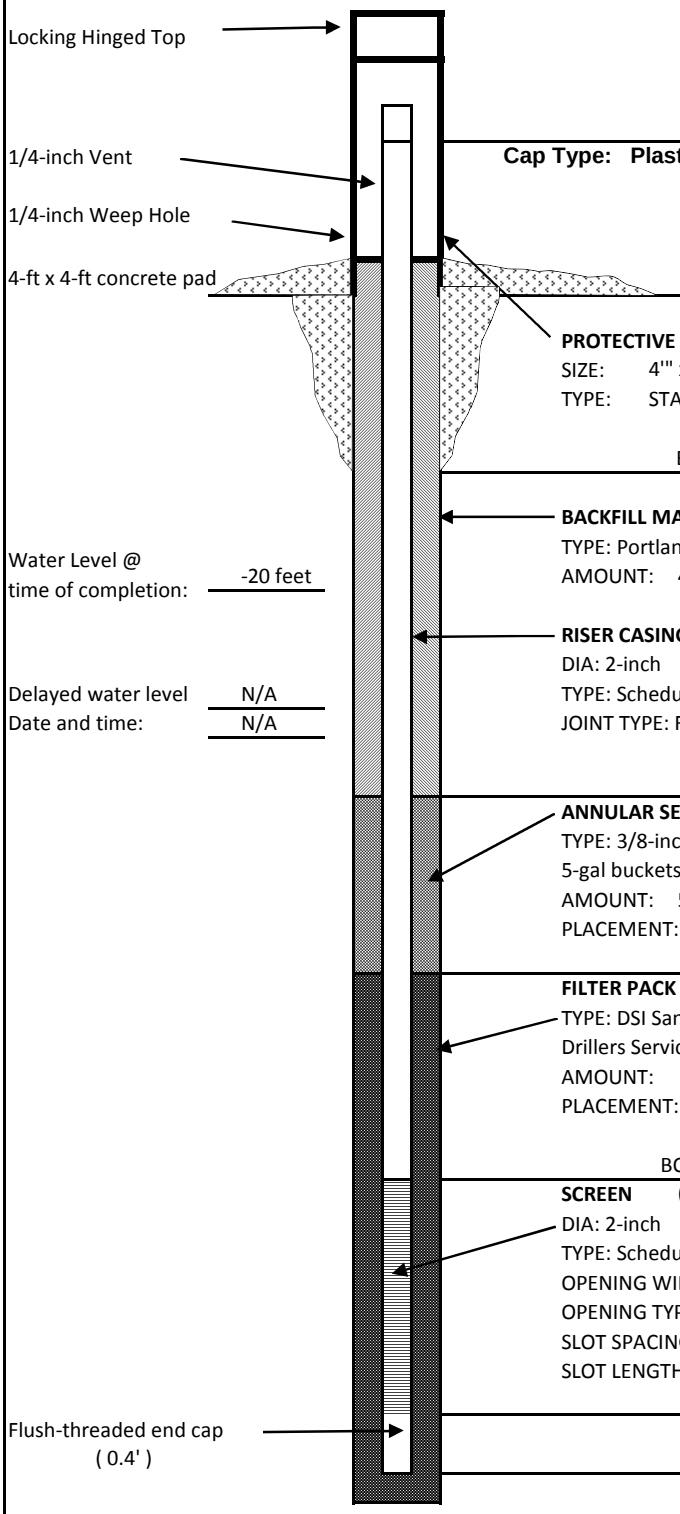
Logged by: P. Gribben, PG

Well Construction Log revised with new survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Sean Denty (Southern Co.)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWC-4**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 8, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.28	580.65 (581.02)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	577.37 (577.74)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.45	575.92 (576.29)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 47 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-27.6	549.77 (550.14)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 4.3 feet		
TOP OF FILTER PACK	-31.9	545.47 545.8
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: 12.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-33.9	543.47 (543.84)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-43.9	533.47 (533.84)
BOTTOM OF CASING	-44.3	533.07 (533.44)

Test Boring Record revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWC-6

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 578.20 (578.58) feet	BORING STARTED: 8/13/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/13/2012	HAMMER: Automatic	

GROUNDWATER:
- 15 feet ATD
- 14.2 feet on 8/20/12

Remarks: Monitoring well set at 34.7 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6"
	578.2 (578.6)	0	0.5' TOPSOIL, grass, roots							
			SILTY FINE SAND (SM) with trace mica, yellow-brown to brown, moist to damp, loose	ALLUVIUM					8	5 - 5 - 3 **(8)**
		5								
		10							6	3 - 3 - 3 **(6)**
	563.2 (563.6)	15	15' SAND (SP), fine to medium with trace mica, brown, wet, very loose						4	1 - 2 - 2 **(4)**
	558.7 (559.1)	20	19.5' CLAYEY FINE SAND (SC) with trace mica, brown, wet, very loose						4	1 - 2 - 2 **(4)**
	553.2 (553.6)	25	25' SILTY FINE SAND (SM) with trace mica, brown, wet, very loose						4	1 - 2 - 2 **(4)**
	549.2 (549.6)	30	29' SAND (SP), fine with trace mica, brown to light gray, occasional iron staining, wet, loose						5	0 - 2 - 3 **(5)**
	543.2 (543.6)	35	35' SAND AND GRAVEL (SP-GP), medium to coarse, poorly sorted, some rounded quartz pebble, yellow-brown, wet, dense						38	6 - 19 - 19 **(38)**
	540.2 (540.6)	40	*Boring terminated at 38 feet*							
		45								
		50								

BORING SOUTHERN 12-153.GPJ S&ME 1-18-2012.GDT 9/18/12

Borehole ID: 6

Project Manager: J. Heywood, PE

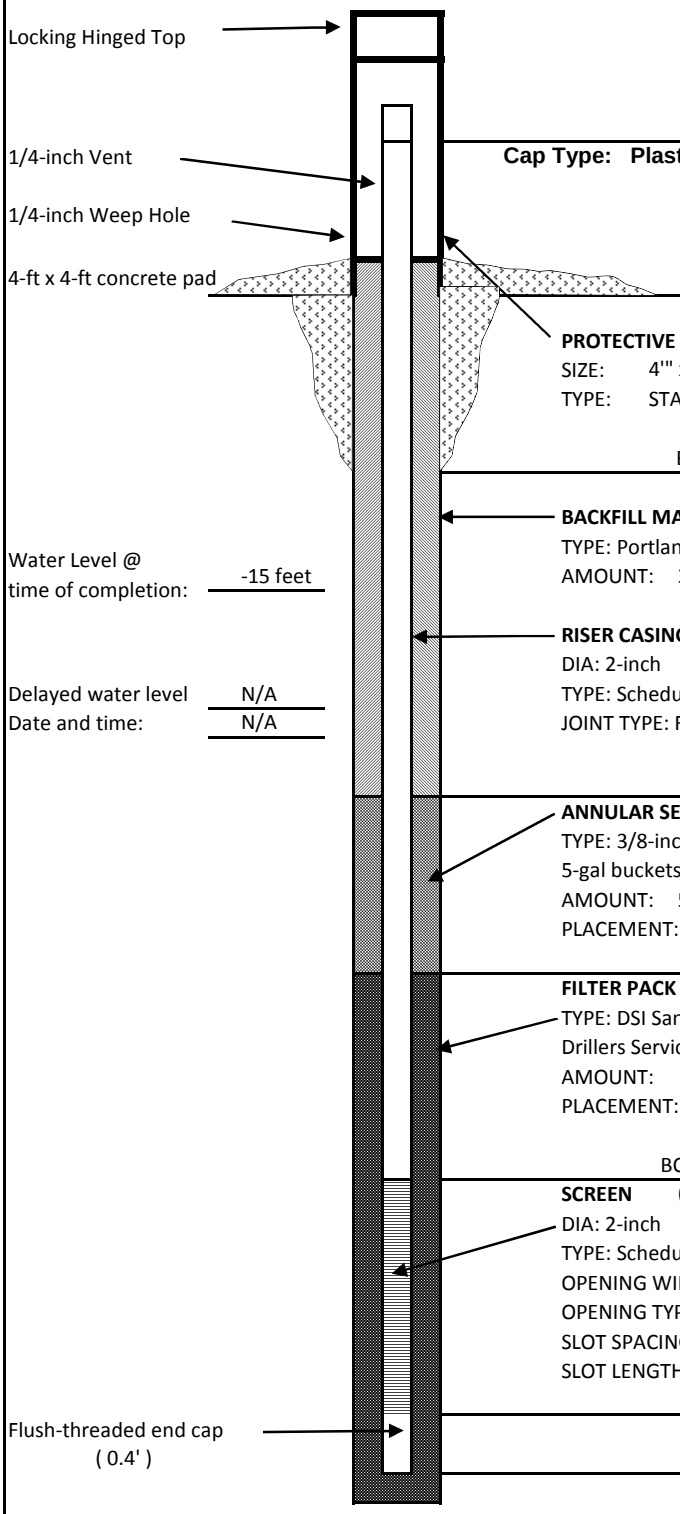
Logged by: P. Gribben, PG

Well Construction Log revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWC-6**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 13, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.43	581.63 (582.01)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	578.20 (578.58)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.3	576.90 (577.28)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 33 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-19.0	559.20 (559.58)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2 feet		
TOP OF FILTER PACK	-21.0	557.20 (557.6)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 13.7 feet		
BOTTOM OF RISER/TOP OF SCREEN	-24.3	553.90 (554.28)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-34.3	543.90 (544.28)
BOTTOM OF CASING	-34.7	543.50 (543.88)

Test Boring Record revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWC-8

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 576.77 (577.28) feet	BORING STARTED: 8/9/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/9/2012	HAMMER: Automatic	

GROUNDWATER:
- 19 feet ATD
- 11.81 feet on 8/15/12

Remarks: Monitoring well set at 37.7 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	576.8 (577.3)	0	0.3' TOPSOIL, grass, roots						
			SILT (ML) with trace mica and fine sand, red-brown, dry to damp	ALLUVIUM					
	572.3 (572.8)	5	4.5' SILTY FINE SAND (SM) with trace mica, light brown, damp, loose						5 — 3 - 2 - 3 **(5)**
	576.3 (567.8	10	9.5' CLAYEY FINE SAND (SC) with trace mica, light brown, moist, very loose						3 — 2 - 1 - 2 **(3)**
▼	564.8 (565.3)		12' SANDY CLAY (CH) with trace mica, light brown, moist to wet, soft						3 — 1 - 1 - 2 **(3)**
▽		15							
		20							3 — 1 - 1 - 2 **(3)**
	554.8 (555.3)		22' Undisturbed sample						
	552.8 (553.3)	25	24' CLAYEY SAND (SC) with trace mica, light brown,wet, very loose to loose						3 — 1 - 1 - 2 **(3)**
	546.3 (546.8)	30	30.5' SAND (SP) with some gravel and rounded quartz pebbles, red-brown to gray, weathered shale fragments						9 — 1 - 5 - 4 **(9)**
	544.8 (545.3)		32' Undisturbed sample						
	542.8 (543.3)	35	34' SAND (SP) medium grained with some gravel and rounded quartz pebbles, red-brown to gray, weathered shale fragments and gray silty clay at 37', very stiff						23 — 3 - 6 - 17 **(23)**
	539.8 (540.3)		*Boring terminated at 37 feet*						
		40							
		45							
		50							

BORING SOUTHERN 12-153.GPJ S&ME 1-18-2012.GDT 9/18/12

Borehole ID: 8

Project Manager: J. Heywood, PE

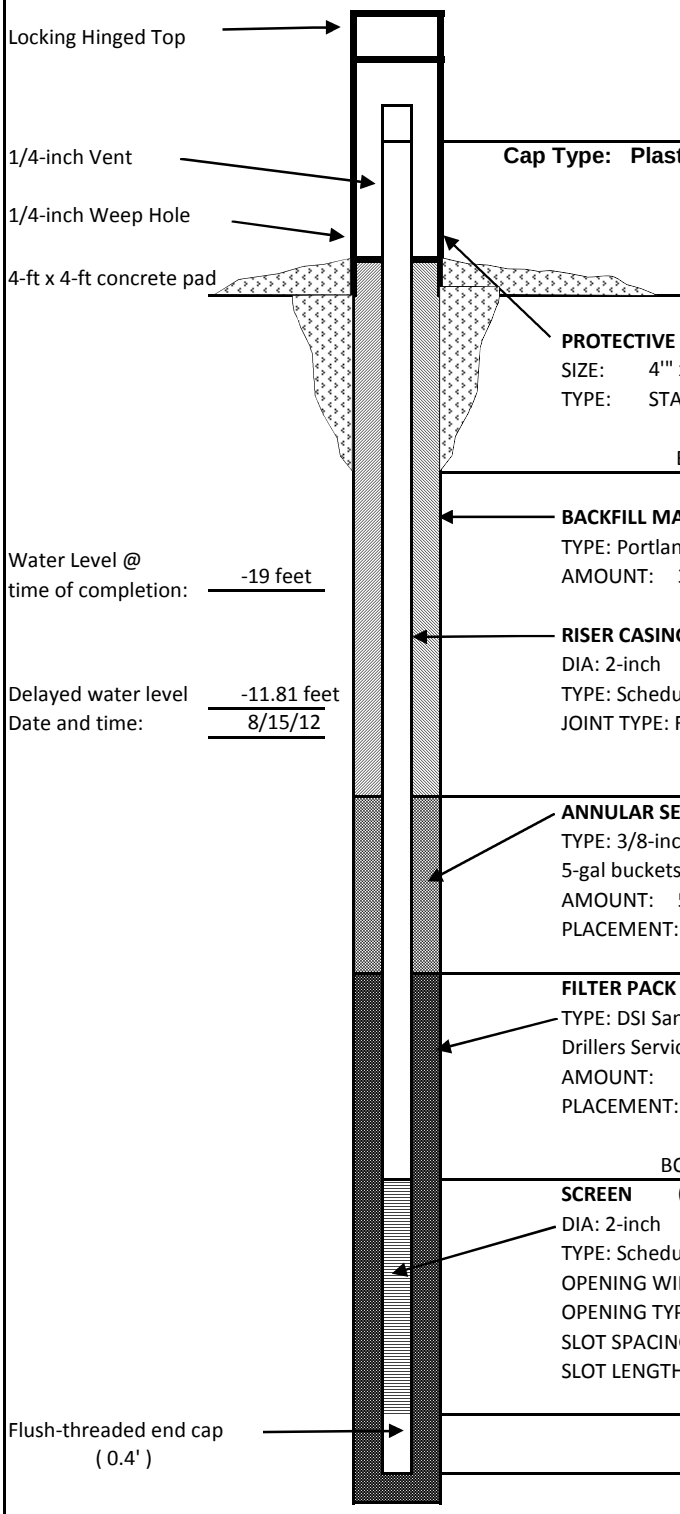
Logged by: P. Gribben, PG

Well Construction Log revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWC-8**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 9, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.22	579.99 (580.50)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	576.77 (577.28)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.5	575.28 (575.78)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 32 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-20.0	556.77 (557.28)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2 feet		
TOP OF FILTER PACK	-22.0	554.77 (555.3)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 15.7 feet		
BOTTOM OF RISER/TOP OF SCREEN	-27.3	549.47 (549.98)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-37.3	539.47 (539.98)
BOTTOM OF CASING	-37.7	539.07 (539.58)

Test Boring Record revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

BORING NO.: GWC-19

S&ME

TEST BORING RECORD

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 575.54 (577.02) feet	BORING STARTED: 8/14/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/14/2012	HAMMER: Automatic	

GROUNDWATER:
- 7 feet ATD
- 9.85 feet on 8/16/12

Remarks: Monitoring well set at 31.9 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	575.5 (577.0)	0	0.8' TOPSOIL, roots, grass						
			CLAYEY SILT (MH) with trace mica and rock fragments, brown, damp	ALLUVIUM					3 - 3 - 3 **(6)**
	571.0 (572.5)	5	4.5' SILTY FINE SAND (SM) with trace mica, yellow-brown to brown, damp, firm						2 - 1 - 1 **(2)**
	568.5 (570.0)		7' CLAYEY FINE SAND (SC) with trace mica, yellow-brown, wet, very loose						1 - 1 - 2 **(3)**
	559.5 (561.0)	15	16' SAND (SP) with silt (SM) and trace mica, yellow-brown, wet, very loose to firm						3 - 5 - 6 **(11)**
	555.0 (556.5)	20	20.5' SAND AND GRAVEL (SP-GP) with some clayey inclusions, medium to coarse, poorly sorted angular to rounded, yellow-brown, wet, firm						12 - 10 - 9 **(19)**
		25							14 - 8 - 8 **(16)**
	541.0 (542.5)	30	*Boring terminated at 34.5 feet*						
		35							
		40							
		45							
		50							

BORING SOUTHERN 12-153.GPJ S&ME 1-18-2012.GDT 9/18/12

Borehole ID: 19

Project Manager: J. Heywood, PE

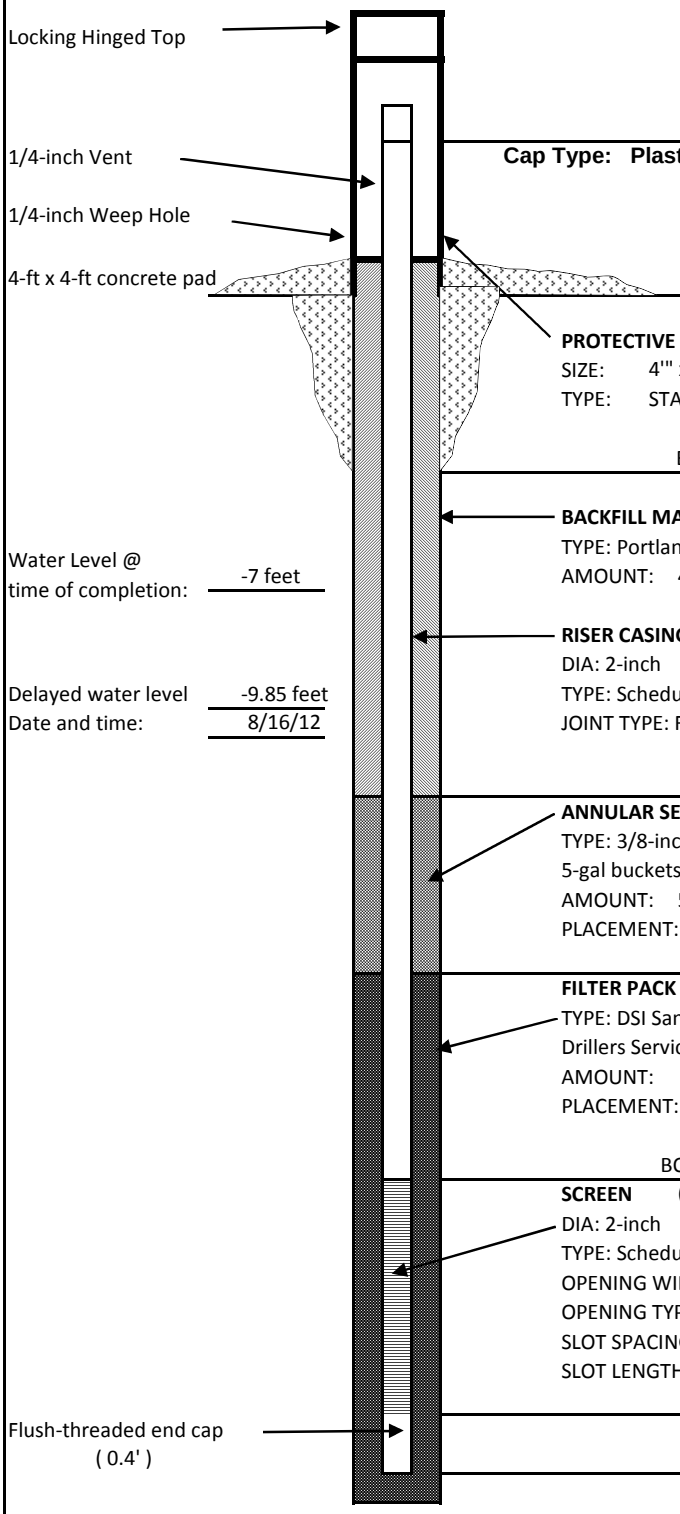
Logged by: P. Gribben, PG

Well Construction Log revised with new elevation survey data dated 5/11/2020.
Original elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**GWC-19**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 14, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	4.29	579.83 (581.31)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	575.54 (577.02)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.25	574.29 (575.77)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 45 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-15.0	560.54 (562.02)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 3.5 feet		
TOP OF FILTER PACK	-18.5	557.04 (558.5)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 3.5 bags PLACEMENT: 13.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-21.5	554.04 (555.52)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-31.5	544.04 (545.52)
BOTTOM OF CASING	-31.9	543.64 (545.12)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020. Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

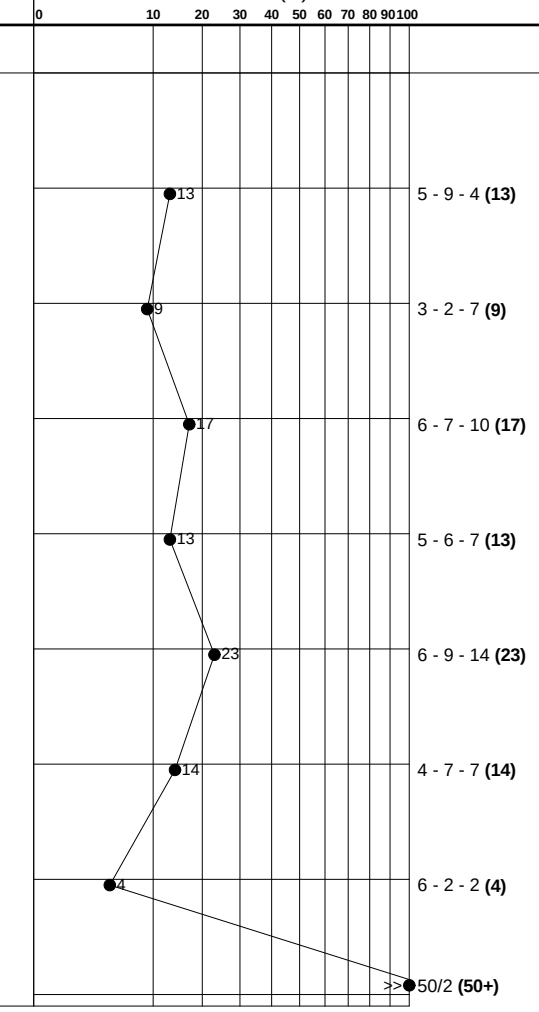
BORING NO.: HGWA-111 (GWA-11)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 588.48 feet (588.97 feet ±)	BORING STARTED: 8/20/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/20/2012	HAMMER: Automatic	

GROUNDWATER:
- 30 feet ATD
- 7.3 feet on 8/21/12

Remarks: Monitoring well set at 40.4 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	588.5 (589.0)	0	CLAYEY SILT (ML) with rounded to subrounded chert pebbles and yellow shale fragments, brown, damp, stiff	ALLUVIUM					
	578.5 (579.0)	10'	CLAYEY SILT/SILTY CLAY (CH-MH), with scattered round pebbles and trace fine sand, yellow-brown with black oxidation staining, damp, stiff						
	574.5 (575.0)	14'	CLAYEY SILT (ML) with trace fine sand, yellow-brown, orange, and gray with black oxidaiton staining, damp, very stiff						
	569.5 (570.0)	19'	SANDY CLAYEY SILT (ML) with trace mica, weathered light gray and yellow-brown dolomite fragments, yellow-brown with zones of light blue-gray clayey sand, damp to moist, stiff to very stiff						
	558.5 (559.0)	30'	SILTY CLAY (CH), with dark gray dolomite and claystone fragments, yellow-brown and orange, wet, stiff, soft and hard	RESIDUUM					
	548.0 (548.5)		*Boring terminated at 40.5 feet*						



BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 11

Project Manager: J. Heywood, PE

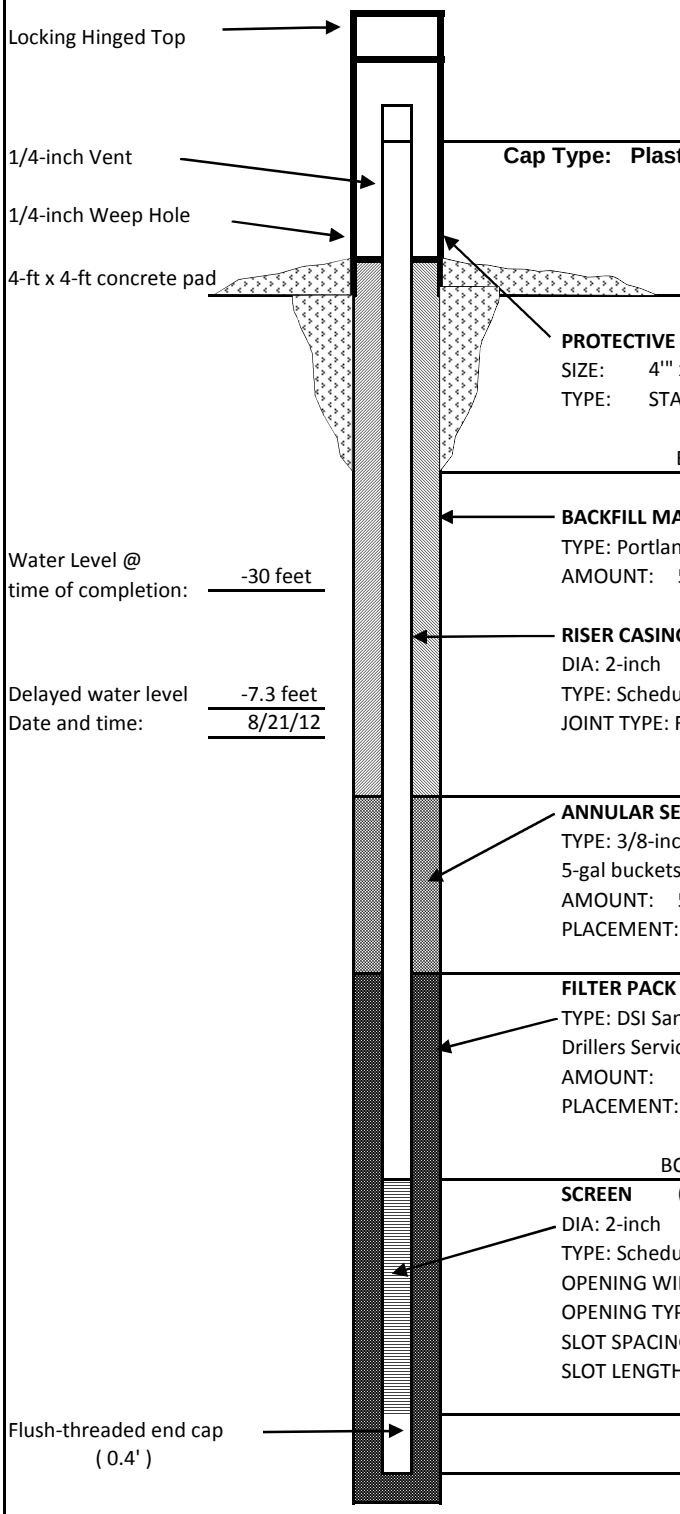
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWA-111 (GWA-11)**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 21, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.27	591.75 (592.24)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	588.48 (588.97)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.25	587.23 (587.72)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 50 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-23.5	564.98 (565.47)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 4.4 feet		
TOP OF FILTER PACK	-27.9	560.58 (561.1)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 4.5 bags PLACEMENT: 12.5 feet		
BOTTOM OF RISER/TOP OF SCREEN	-30.0	558.48 (558.97)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-40.0	548.48 (548.97)
BOTTOM OF CASING	-40.4	548.08 (548.57)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWA-112
(GWA-12)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 593.12 feet (593.6 feet ±)	BORING STARTED: 8/21/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/21/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 16 feet ATD

Remarks: Monitoring well set at 37.0 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	593.1 (593.6)	0	0.5' TOPSOIL, dark brown, grass, roots	FILL					
			CLAYEY SILT-SILTY CLAY (CL-ML) with dolomite, chert, shale, and coal fragments, yellow-brown, orange, gray, damp to moist, firm						
	587.1 (587.6)	5	6' SILTY CLAY (CH) with scattered subrounded chert fragments, orange-brown, moist, firm	ALLUVIUM					3 - 3 - 3 **(6)**
		10							4 - 4 - 4 **(8)**
▽	578.6 (579.1)	15	14.5' CLAYEY SILT/SANDY SILT (ML) with trace mica and scattered chert fragments, yellow-brown, orange, light blue-gray, dry to wet, very stiff to stiff						9 - 12 - 17 **(29)**
		20							5 - 5 - 6 **(11)**
	568.6 (569.1)	25	24.5' SANDY CLAY (CL) with trace mica, brown and light blue gray, moist to wet, firm to soft						3 - 3 - 4 **(7)**
		30							3 - 2 - 2 **(4)**
	558.4 (558.9)	35	34.7' CLAYEY FINE SAND (SC) with trace mica and scattered subround pebble, gray and orange, wet, firm						3 - 5 - 8 **(13)**
	556.1 (556.6)		*Boring terminated at 37 feet*						
		40							
		45							
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 12

Project Manager: J. Heywood, PE

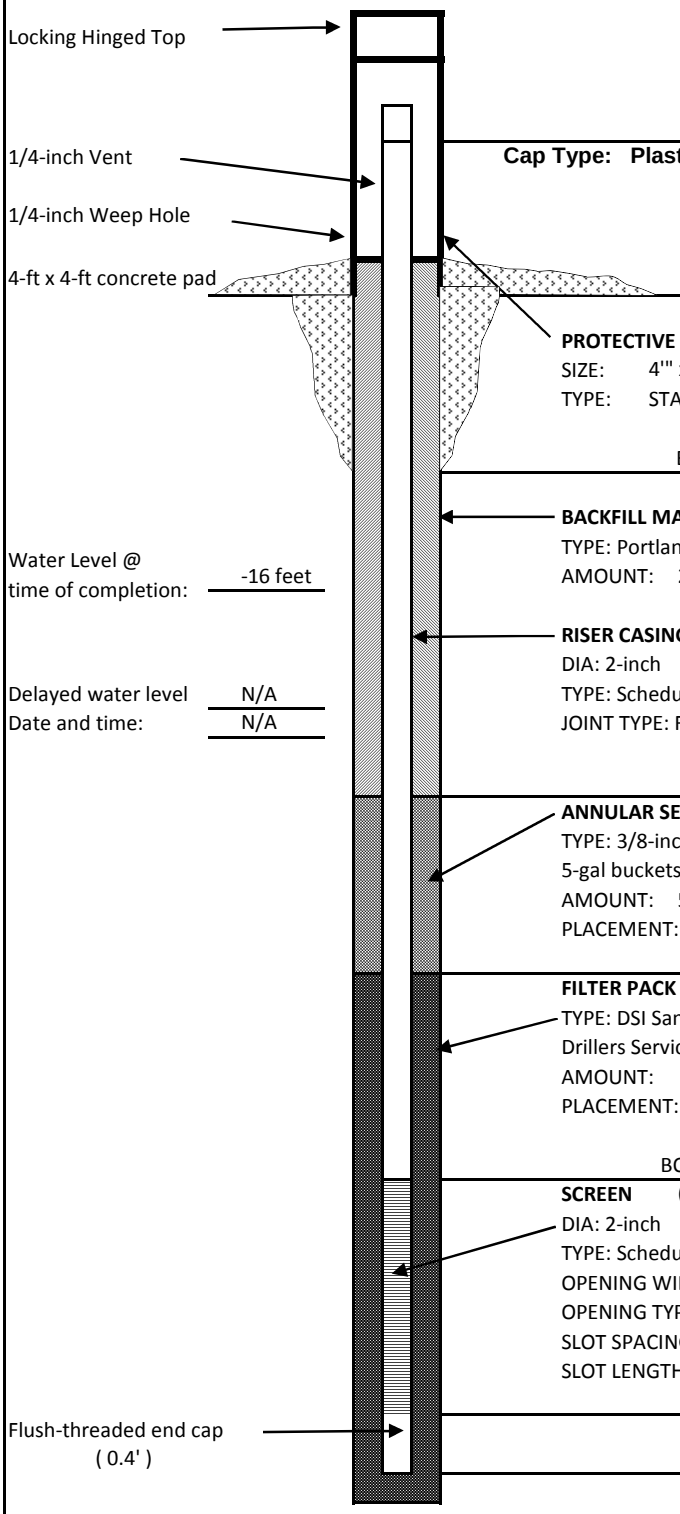
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWA-112 (GWA-12)**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 21, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.15	596.27 (596.75)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	593.12 (593.6)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.45	591.67 (592.15)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 26 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-21.5	571.62 (572.1)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.8 feet		
TOP OF FILTER PACK	-24.3	568.82 (569.3)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 12.7 feet		
BOTTOM OF RISER/TOP OF SCREEN	-26.6	566.52 (567.0)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-36.6	556.52 (557.0)
BOTTOM OF CASING	-37.0	556.12 (556.6)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWA-113
(GWA-13)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 591.75 feet (592.3 feet ±)	BORING STARTED: 10/2/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6¼
DRILLING METHOD: Hollow Stem Augers	BORING COMPLETED: 10/2/2012	HAMMER: Automatic	

GROUNDWATER:
- 10 feet ATD
- 10.75 feet on 10/3/12

Remarks: Monitoring well set at 33.7 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION		L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	591.8 (592.3)	0	SILTY CLAY (CH) with rock fragments, orange-brown, wet (vacuum excavated and backfilled for underground utility clearance)	FILL						
	581.8 (582.3)	10'	SILTY CLAY (CL) with sandstone fragments and trace sand, orange-brown, wet, firm	ALLUVIUM						7 — 2 - 3 - 4 **(7)**
	576.8 (577.3)	15'	CLAYEY SILT (ML), yellow-brown, damp to moist, very stiff							18 — 6 - 8 - 10 **(18)**
	570.5 (571.0)	21.3'	CLAYEY SANDY SILT (ML) with trace mica, yellow-brown and orange, moist, very stiff to stiff							16 — 6 - 7 - 9 **(16)**
										14 — 4 - 7 - 7 **(14)**
	560.8 (561.3)	31'	SANDY CLAY (CL) with trace mica, gray-brown, moist, firm							5 — 3 - 2 - 3 **(5)**
	558.1 (558.6)		*Boring terminated at 33.7 feet*							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 13

Project Manager: J. Heywood, PE

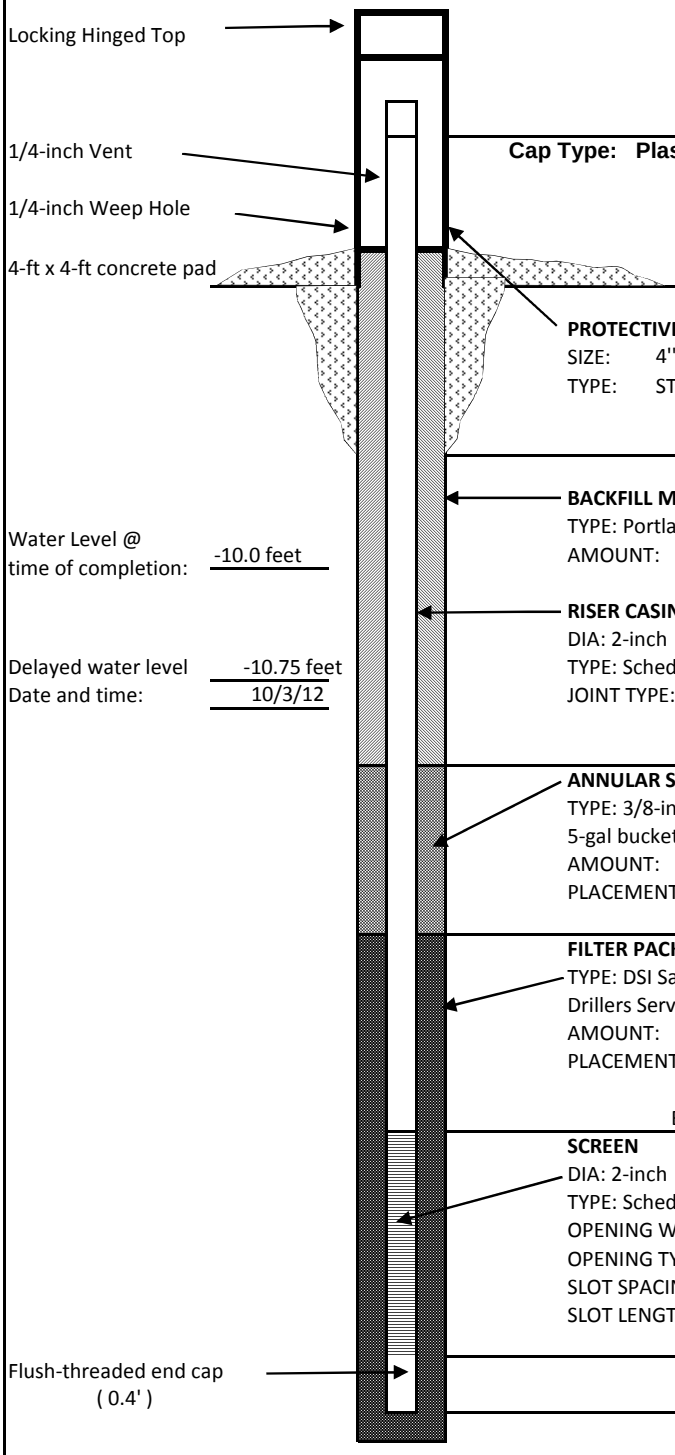
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY	WELL ID:
DRILLED BY: Chad Odom (S&ME) LOGGED BY: PAT GRIBBEN (S&ME)	**HGWA-113 (GWA-13)**
RIG TYPE: CME-550 DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: October 2, 2012	



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.83	594.58 (595.13)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	591.75 (592.30)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.7	590.05 (590.60)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 31.25 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-18.7	573.05 (573.60)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.9 feet		
TOP OF FILTER PACK	-21.6	570.15 (570.70)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: 11.68 feet		
BOTTOM OF RISER/TOP OF SCREEN	-22.88	568.87 (569.42)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-32.88	558.87 (559.42)
BOTTOM OF CASING	-33.28	558.47 (559.02)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-101 (GWC-1)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 575.91 (576.02) feet	BORING STARTED: 8/7/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/7/2012	HAMMER: Automatic	

GROUNDWATER:
- 26.9 feet ATD
- 10.2 feet on 8/7/12

Remarks: Monitoring well set at 34.7 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	575.91 (576.0)	0	TOPSOIL, grass roots						
	573.39 (574.5)	1.5'	SILT (ML) with trace mica, dark brown, dry, firm	ALLUVIUM					
	571.39 (571.5)	4.5'	CLAYEY SILT (ML) with trace mica and fine sand, brown to dark brown, damp to moist, firm to soft						3 - 4 - 4 **(8)**
▽		10							2 - 2 - 2 **(4)**
		15							1 - 2 - 1 **(3)**
	556.39 (556.5)	19.5'	SANDY CLAYEY SILT (ML) with trace mica, brown and light gray, damp, firm						2 - 3 - 3 **(6)**
▽	551.39 (551.5)	24.5'	SILTY SAND (SM) with trace mica, dark olive to brown, moist to wet, very loose						0 - 1 - 2 **(3)**
		30							0 - 0 - 0 **(0)**
	542.39 (542.5)	33.5'	CLAYEY FINE SAND (SC) with trace mica, dark gray, wet, very loose						
	540.89 (541.0)	35'							0 - 11 - 2 **(13)**
	539.89 (540.0)		SAND (SP), yellow-brown, coarse, wet, firm						
		40	*Boring terminated at 36 feet*						
		45							
		50							

STANDARD PENETRATION RESISTANCE (N) scale: 0 10 20 30 40 50 60 70 80 90 100

BORING SOUTHERN 12-153.GPJ S&ME 1-18-2012.GDT 9/18/12

Borehole ID: 1

Project Manager: J. Heywood, PE

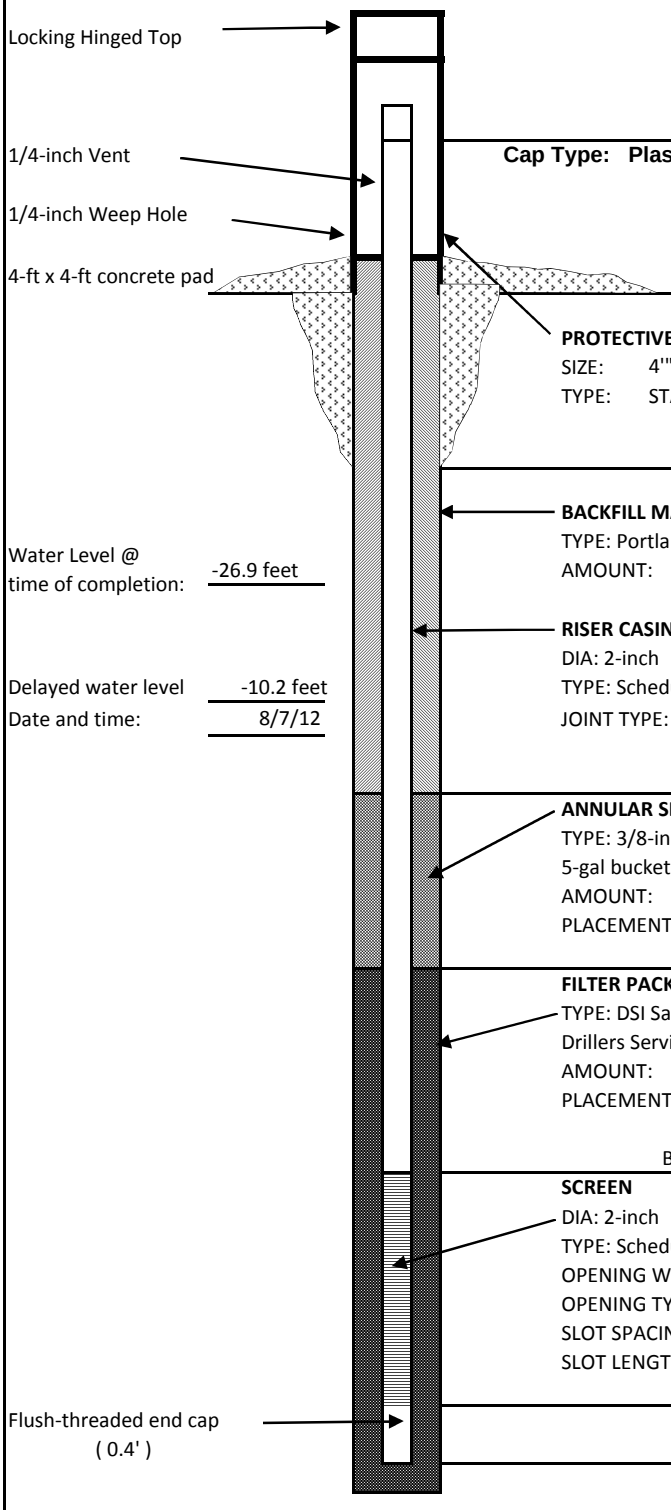
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: CHAD ODOM (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-101 (GWC-1)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 7, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.24	578.85 (579.26)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	575.61 (576.02)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.25	574.36 (574.77)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 26 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-19.2	556.41 (556.82)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.8 feet		
TOP OF FILTER PACK	-22.0	553.91 (554.0)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: 12.7 feet		
BOTTOM OF RISER/TOP OF SCREEN	-24.3	551.31 (551.72)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-34.3	541.31 (541.72)
BOTTOM OF CASING	-34.7	540.91 (541.32)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-102
(GWC-2)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 574.21 feet (574.58 feet ±)	BORING STARTED: 8/7/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/7/2012	HAMMER: Automatic	

GROUNDWATER:
- 11.9 feet ATD
- 10.15 feet on 8/15/12

Remarks: Monitoring well set at 34.1 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	574.2 (574.6)	0	SILT (ML) with trace mica, dark brown, dry, soft	ALLUVIUM					
	564.7 (565.1)	9.5'	CLAYEY SILT (ML) with trace mica and fine sand, brown, very moist, soft to very soft						
	554.7 (555.1)	19.5'	SILTY SAND (SM) with trace mica, brown, moist to damp, very loose						
	548.2 (548.6)	26'	CLAYEY FINE SAND (SC) with trace mica, dark gray, moist to wet, very loose						
	543.0 (543.4)	31.2'	Saturated wood at 31'						
			SAND (SP), coarse to medium, brown to yellow-brown, very firm						
	538.2 (538.6)		Clayey silt and weathered shale, green-gray at 36'						
			Boring terminated at 36 feet						

STANDARD PENETRATION RESISTANCE (N) scale: 0 10 20 30 40 50 60 70 80 90 100

Depth	Blows/6"
5	2 - 2 - 2 **(4)**
10	0 - 0 - 2 **(2)**
15	0 - 0 - 0 **(0)**
20	1 - 0 - 1 **(1)**
25	0 - 0 - 2 **(2)**
30	7 - 2 - 2 **(4)**
35	7 - 13 - 9 **(22)**

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 2

Project Manager: J. Heywood, PE

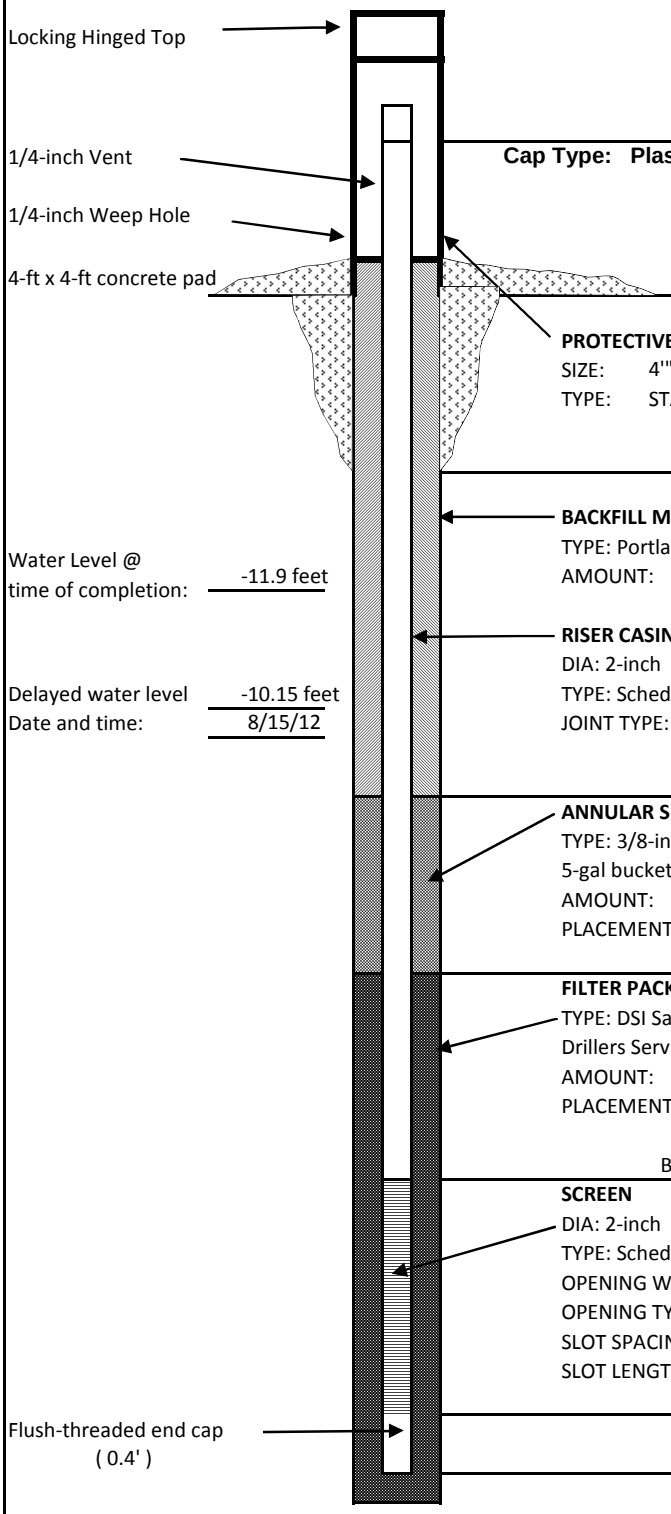
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Sean Denty (Southern Co.)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-102 (GWC-2)**
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 7, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.33	577.54 (577.91)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	574.21 (574.58)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.35	572.86 (573.23)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 51 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-18.2	556.01 (556.38)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.7 feet		
TOP OF FILTER PACK	-20.9	553.31 (553.7)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6.5 bags PLACEMENT: 13.2 feet		
BOTTOM OF RISER/TOP OF SCREEN	-23.7	550.51 (550.88)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-33.7	540.51 (540.88)
BOTTOM OF CASING	-34.1	540.11 (540.48)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020. Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-103 (GWC-3)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 577.41 feet (577.78 feet ±)	BORING STARTED: 8/7/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/7/2012	HAMMER: Automatic	

GROUNDWATER:
- 11.5 feet ATD
- 12.60 feet on 8/16/12

Remarks: Monitoring well set at 34.3 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	577.4 (577.8)	0	0.4' TOPSOIL, grass, roots						
			SILT (ML) with trace mica, dark brown to brown, dry, stiff	ALLUVIUM					2 - 4 - 5 **(9)**
	571.4 (571.8)	5	6' CLAYEY SILT (ML) with trace mica, brown and light gray, damp to moist, stiff to firm						7 - 5 - 4 **(9)**
		10							2 - 3 - 4 **(7)**
		15							
	557.4 (557.8)	20	20' CLAYEY SILT (ML) with trace mica and fine sand, brown, moist, soft						2 - 2 - 2 **(4)**
	552.4 (552.8)	25	25' CLAYEY FINE SAND (SC), micaceous, brown, moist, very loose						1 - 1 - 1 **(2)**
	547.9 (548.3)	30	29.5' SANDY CLAYEY SILT (MH), organic with trace mica and shell fragments, dark gray, moist, very soft						0 - 0 - 0 **(0)**
	542.9 (543.3)	35	34.5' SAND (SP), medium to coarse, yellow-brown, wet, firm						6 - 8 - 7 **(15)**
	541.4 (541.8)		*Boring terminated at 36 feet*						
		40							
		45							
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 3

Project Manager: J. Heywood, PE

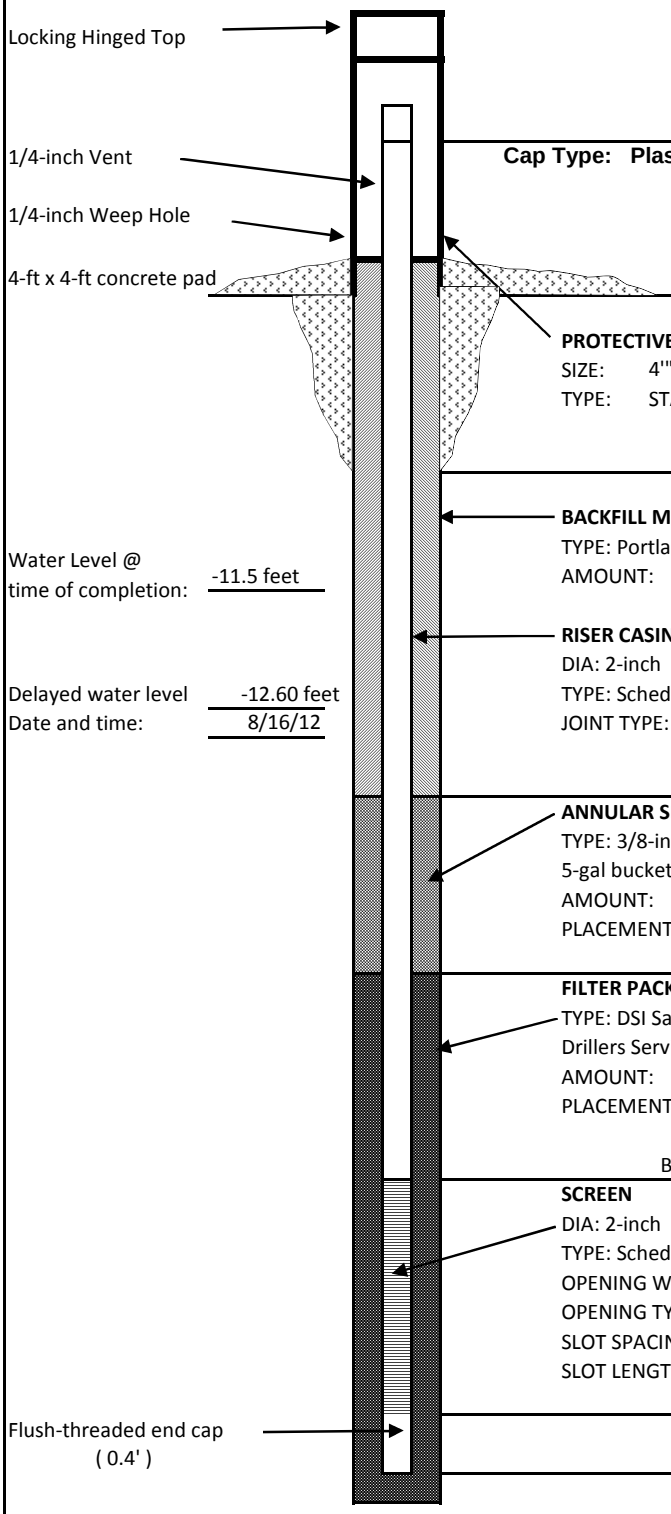
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-103 (GWC-3)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 8, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.38	580.79 (581.16)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	577.41 (577.78)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.3	576.11 (576.48)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 43 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-19.7	557.71 (558.08)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.2 feet		
TOP OF FILTER PACK	-21.9	555.88 (555.9)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 12.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-23.9	553.51 (553.88)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-33.9	543.51 (543.88)
BOTTOM OF CASING	-34.3	543.11 (543.48)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-105 (GWC-5)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 578.72 feet (578.58 feet ±)	BORING STARTED: 8/8/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/8/2012	HAMMER: Automatic	

GROUNDWATER:
- 18 feet ATD
- 15.12 feet on 8/16/12

Remarks: Monitoring well set at 41.4 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	578.7 (578.6)	0	0.1' TOPSOIL, grass, roots SILT (ML) with trace mica and fine sand, brown to light brown, damp, firm	ALLUVIUM					2 - 3 - 4 **(7)**
		5							
		10							2 - 2 - 3 **(5)**
	566.7 (566.6)		12' Undisturbed sample						
	564.7 (564.6)	15	14' CLAYEY SILT (ML) with trace mica and fine sand, light brown, moist, soft						0 - 1 - 2 **(3)**
	560.7 (560.6)	20	18' SILTY CLAY (CH) with trace mica, brown, wet, very soft						0 - 0 - 0 **(0)**
	554.7 (554.6)	25	24' CLAYEY SILT (MH) with trace mica and fine sand, light brown, wet, very soft						0 - 0 - 0 **(0)**
	550.7 (550.6)	30	28' CLAYEY FINE SAND (SC) with trace mica, dark gray, wet, very loose						0 - 1 - 2 **(3)**
	543.2 (543.1)	35	35.5' SAND (SP) intermittent layers of yellow-brown coarse sand and light brown medium sand, wet, firm						0 - 2 - 6 **(8)**
	538.4 (538.3)	40	40.3' WEATHERED SHALE with clayey silt, yellow-brown, moist, stiff - RESIDUUM	RES.					5 - 6 - 8 **(14)**
	537.7 (537.6)		*Boring terminated at 41 feet*						
		45							
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 5

Project Manager: J. Heywood, PE

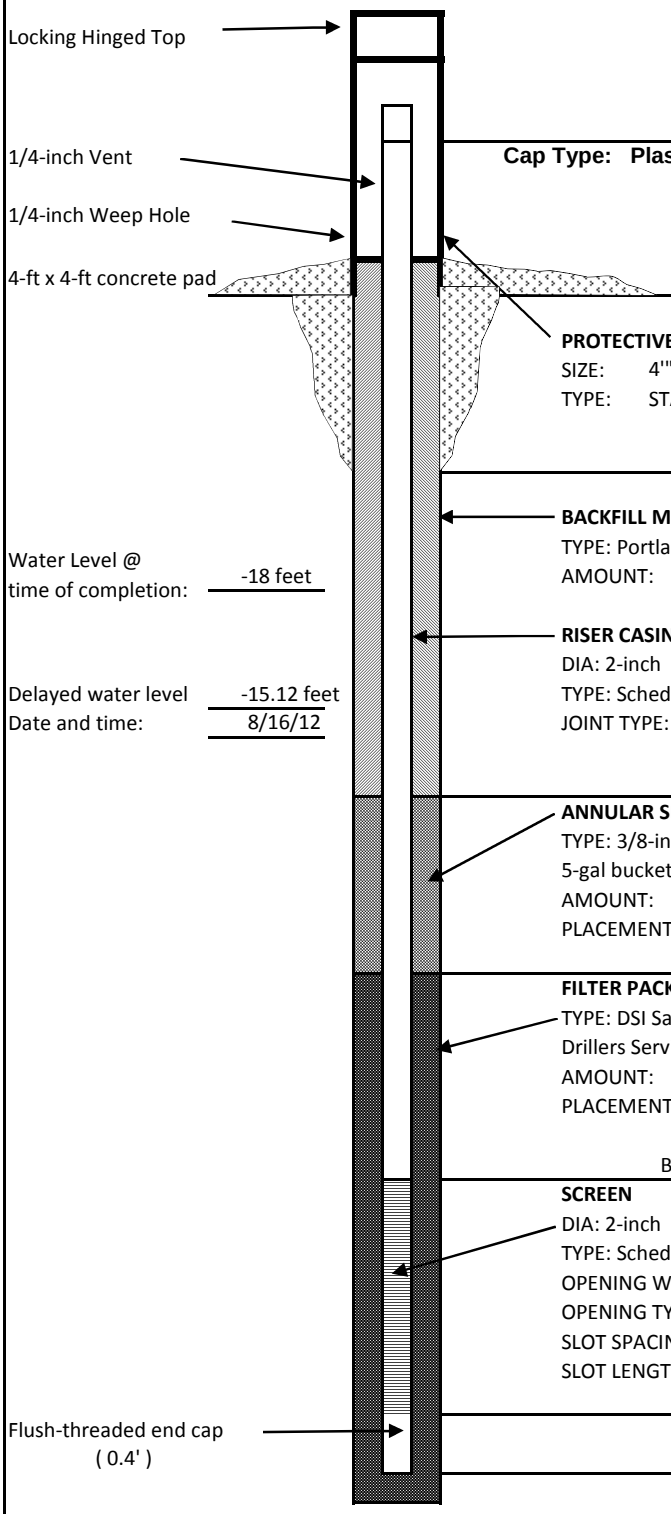
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-105 (GWC-5)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 8, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.37	582.09 (582.46)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	578.72 (579.09)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.45	577.27 (577.64)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 55 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-25.0	553.72 (554.09)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2 feet		
TOP OF FILTER PACK	-27.0	552.09 (552.1)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 5.5 bags PLACEMENT: 14.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-31.0	547.72 (548.09)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-41.0	537.72 (538.09)
BOTTOM OF CASING	-41.3	537.42 (537.79)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-107
(GWC-7)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 576.11 feet (576.56 feet ±)	BORING STARTED: 8/8/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/8/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 14.5 feet ATD
▼ 12.35 feet on 8/14/12

Remarks: Monitoring well set at 35.0 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	576.1 (576.6)	0	0.3' TOPSOIL, roots, grass SILT (ML) with trace mica and fine sand, brown, damp, firm	ALLUVIUM					3 - 4 - 3 **(7)**
▼	566.6 (567.1)	10	9.5' SILTY FINE SAND (SM), with trace mica, light brown to brown, damp, loose						3 - 3 - 2 **(5)**
▽	561.6 (562.1)	15	14.5' CLAYEY FINE SAND (SC) with trace mica, brown, wet, very loose						2 - 2 - 2 **(4)**
	557.6 (557.1)	20	19.5' SAND (SP), medium to fine with trace mica, brown, wet, very loose						1 - 2 - 2 **(4)**
	551.6 (552.1)	25	24.5' CLAYEY FINE SAND (SC), brown to light brown, wet, very loose						2 - 2 - 2 **(4)**
	546.1 (546.6)	30	30' SAND (SP) with some gravel increasing with depth, medium to coarse, yellow-brown, wet, very firm to dense						6 - 12 - 11 **(23)**
	540.1 (540.6)	35	*Boring terminated at 36 feet*						12 - 19 - 24 **(43)**
		40							
		45							
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 7

Project Manager: J. Heywood, PE

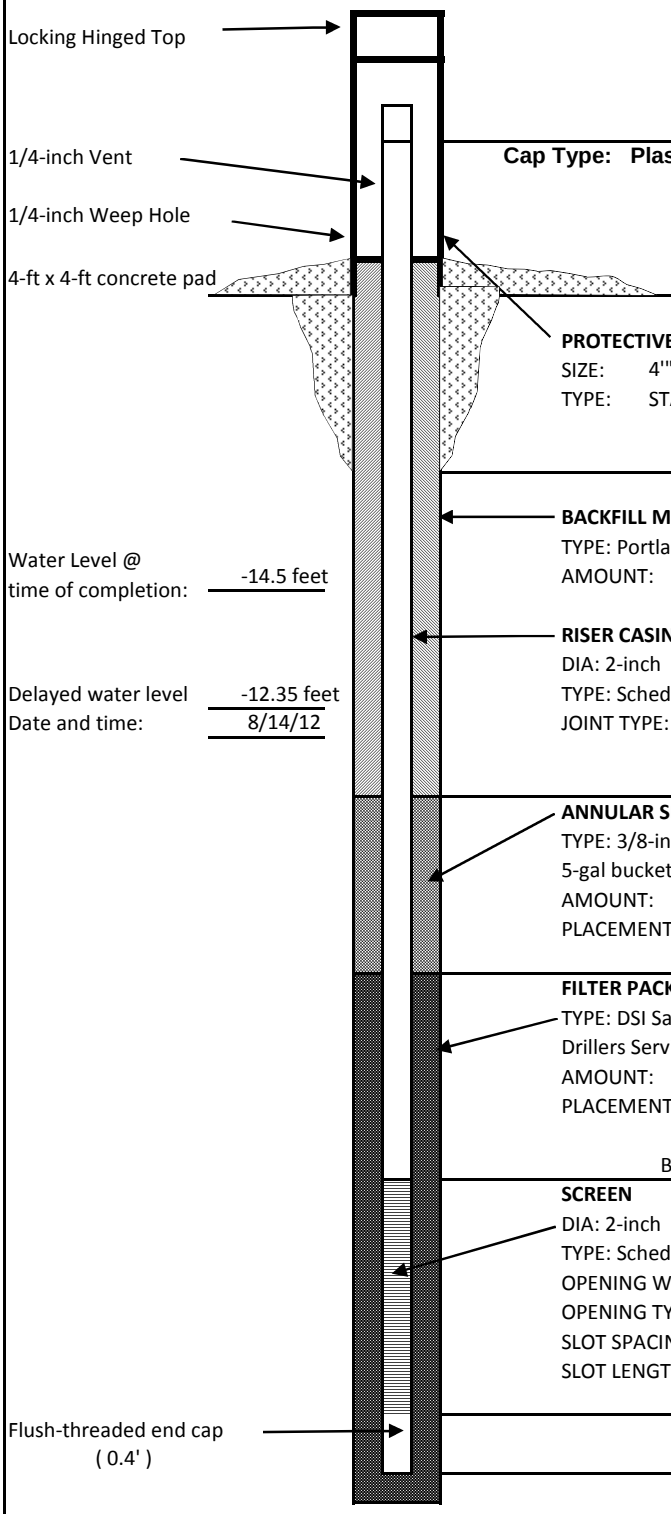
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-107 (GWC-7)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 8, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.2	579.31 (579.76)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	576.11 576.56
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.5	574.61 (575.06)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 22 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-20.0	556.11 (556.56)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2 feet		
TOP OF FILTER PACK	-22.0	554.11 (554.6)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6.25 bags PLACEMENT: 13 feet		
BOTTOM OF RISER/TOP OF SCREEN	-24.6	551.51 (551.96)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-34.6	541.51 (541.96)
BOTTOM OF CASING	-35	541.11 (541.56)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-109
(GWC-9)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 573.31 feet (573.87 feet ±)	BORING STARTED: 8/14/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/14/2012	HAMMER: Automatic	

GROUNDWATER:
- 24.5 feet ATD
- 6.0 feet on 8/16/12

Remarks: Monitoring well set at 27.9 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6"
	573.3 (573.9)	0	0.4' TOPSOIL, grass, roots							
			SILTY CLAY (CH) with scattered angular pebbles, orange-brown, damp	FILL						
▼	568.8 (569.4)	5	4.5' SILTY CLAY (OH), organic, with trace mica, dark gray-brown, damp to moist, soft	ALLUVIUM					3	2 - 1 - 2 **(3)**
	563.6 (564.2)	10	9.7' CLAYEY SILT (MH) with trace mica, yellow-brown and gray with black oxidation staining, damp to moist (thin vertical zones of free water), firm						7	2 - 3 - 4 **(7)**
		15							7	2 - 3 - 4 **(7)**
		20							5	2 - 2 - 3 **(5)**
▽	548.8 (549.4)	25	24.5'							
	547.8 (548.4)		25.5' SANDY SILT (MH) with trace mica, dark gray, wet, firm						7	0 - 0 - 7 **(7)**
			SAND AND GRAVEL (SP-GP) with silt, poorly sorted, angular to rounded, coarse, brown to gray, wet, loose to very firm							
	542.3 (542.9)	30	*Boring terminated at 31 feet*						25	11 - 12 - 13 **(25)**
		35								
		40								
		45								
		50								

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 9

Project Manager: J. Heywood, PE

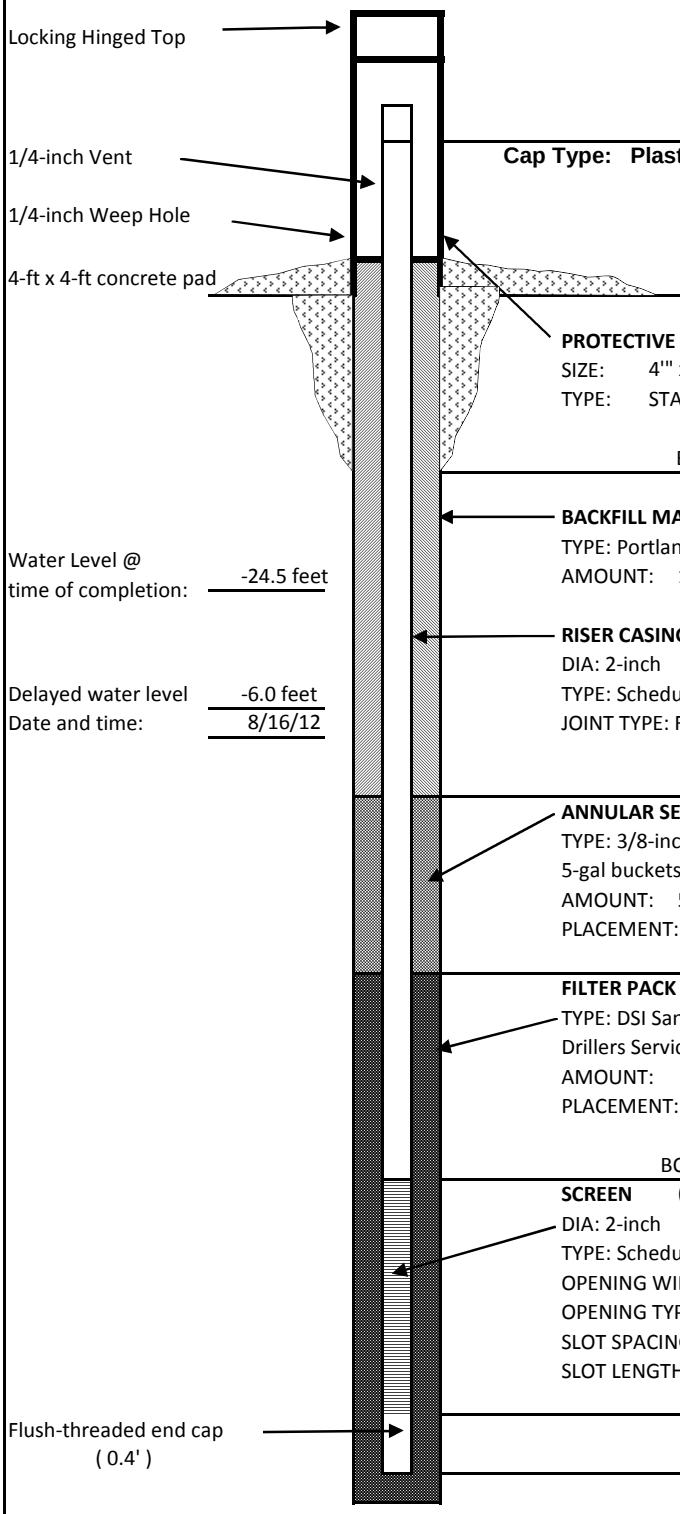
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-109 (GWC-9)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 15, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	3.46	576.77 (577.33)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	573.31 (573.87)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.3	572.01 (572.57)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 13.5 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-13.4	559.91 (560.47)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 2.1 feet		
TOP OF FILTER PACK	-15.5	557.81 (558.4)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 7 bags PLACEMENT: 12.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-17.5	555.81 (556.37)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-27.5	545.81 (546.37)
BOTTOM OF CASING	-27.9	545.41 (545.97)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-117
(GWC-17)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 579.02 feet (579.36 feet ±)	BORING STARTED: 8/14/2012	RIG TYPE: CME-55	AUGER DIA. (IN): 6.75
DRILLING METHOD: Hollow-Stem Augers	BORING COMPLETED: 8/14/2012	HAMMER: Automatic	

GROUNDWATER:
- 18.5 feet ATD
- 13.70 feet on 8/20/12

Remarks: Monitoring well set at 37.3 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	579.0 (579.4)	0	0.3' TOPSOIL, grass, roots CLAYEY SILT (ML) yellow-brown, gray, and brown, damp, stiff	ALLUVIUM					
	572.0 (572.4)	5	7' SANDY SILT (ML) with trace mica, yellow-brown, damp to moist, firm						5 - 7 - 8 **(15)**
		10							2 - 3 - 3 **(6)**
▼	564.0 (564.4)	15	15' CLAYEY FINE SAND (SC) with trace mica, yellow-brown to light brown, moist to wet, loose to very loose, visible layering from 29.5-35.5						2 - 2 - 2 **(4)**
▽		20							2 - 3 - 4 **(7)**
		25							0 - 0 - 2 **(2)**
		30							1 - 2 - 1 **(3)**
	543.5 (543.9)	35	35.5' SAND AND GRAVEL (SP-GP) medium to coarse angular to rounded, brown to yellow-brown, wet, very firm						13 - 13 - 17 **(30)**
	538.3 (538.7)	40	40.7' CLAYEY SILT (ML)/WEATHERED SHALE, dark brown, wet, very stiff *Boring terminated at 41 feet*	RESIDUUM					4 - 17 - 4 **(21)**
		45							
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 17

Project Manager: J. Heywood, PE

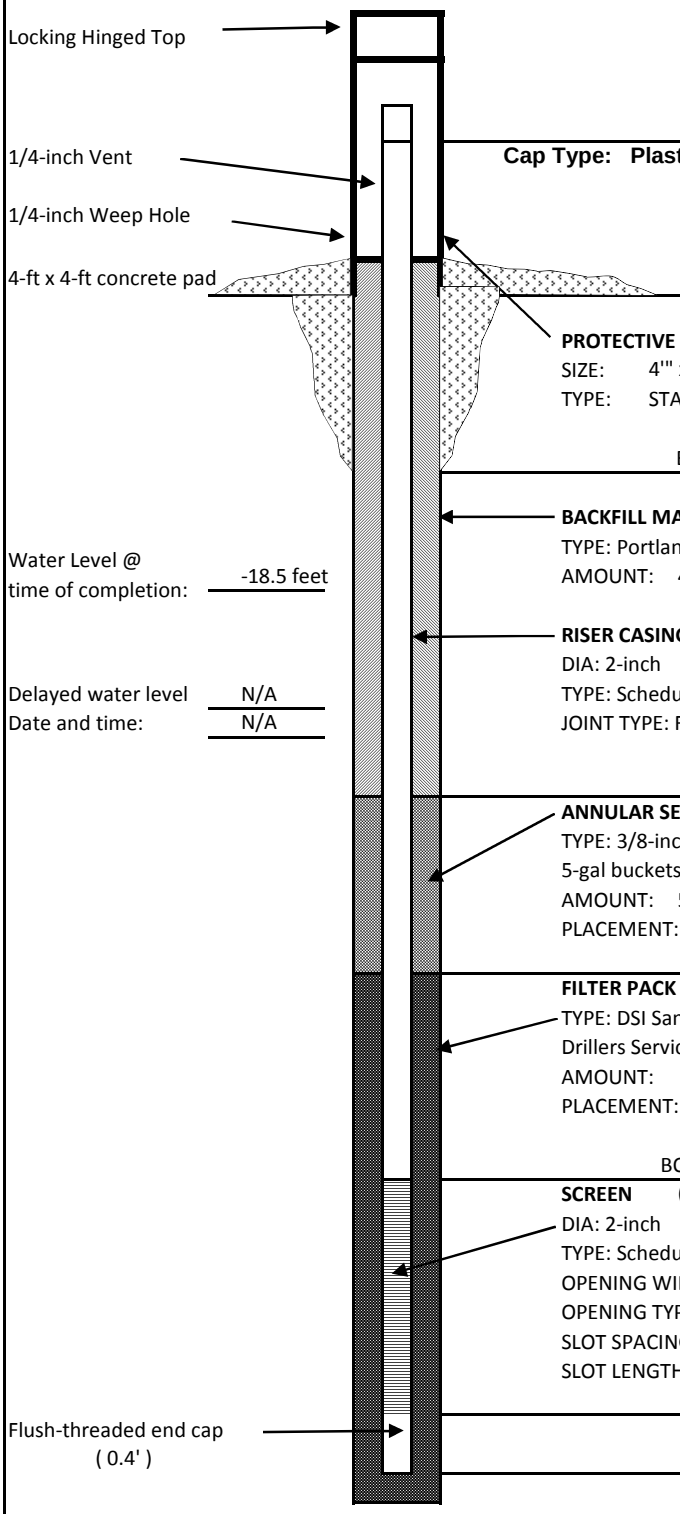
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	**HGWC-117 (GWC-17)**
RIG TYPE: CME-55	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: August 14, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.96	581.98 (582.32)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	579.02 (579.36)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.5	577.52 (577.86)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 41 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-21.7	557.32 (557.66)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 3.2 feet		
TOP OF FILTER PACK	-24.9	554.12 (554.5)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6 bags PLACEMENT: 12.4 feet		
BOTTOM OF RISER/TOP OF SCREEN	-26.9	552.12 (552.46)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-36.9	542.12 (542.46)
BOTTOM OF CASING	-37.3	541.72 (542.06)

Test Boring Record revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

S&ME

TEST BORING RECORD

BORING NO.: HGWC-118
(GWC-18)

PROJECT: Plant Hammond Ash Pond #4 Well Installation		JOB NO: 1811-12-153	SHEET 1 OF 1
PROJECT LOCATION: Rome, Georgia			
ELEVATION: 576.17 feet (576.63 feet ±)	BORING STARTED: 10/1/2012	RIG TYPE: CME-550	AUGER DIA. (IN): 6¼
DRILLING METHOD: Hollow Stem Augers	BORING COMPLETED: 10/1/2012	HAMMER: Automatic	

GROUNDWATER:
▽ 20 feet ATD
▼ 13.85 feet on 10/3/12

Remarks: Monitoring well set at 38.2 feet below ground surface

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	M	PI	STANDARD PENETRATION RESISTANCE (N) BLOWS/6"
	576.2 (576.6)	0	0.5' CRUSHED LIMESTONE						
			SILTY CLAY-CLAYEY SILT (CL-ML) with trace mica, red-brown to orange-brown, damp to moist, stiff	ALLUVIUM					3 - 4 - 5 **(9)**
		5							4 - 5 - 6 **(11)**
		10							3 - 3 - 5 **(8)**
▼	561.2 (561.6)	15	15' CLAYEY SILT (ML) with trace mica, orange-brown, moist, firm						1 - 1 - 1 **(2)**
▽	557.1	20	19.5' SANDY CLAYEY SILT (ML) with trace mica, orange-brown, wet, soft						2 - 1 - 2 **(3)**
	551.7 (552.1)	25	24.5' SILTY FINE SAND (SM) with trace mica, orange-brown, wet, very loose						6 - 20 - 22 **(42)**
	546.9 (547.3)	30	29.3' SAND (SW) well sorted, medium and coarse grained with trace mica, dark brown to orange, dense						9 - 9 - 6 **(15)**
	541.1 (541.5)	35	35.1' SAND AND GRAVEL (SP-GP), brown, wet, firm						29 - 7 - 50/1 **(50+)**
	535.4 (535.8)	40	40.8' Weathered gray dolomite with yellow-brown silty clay	RESIDUUM					
	533.2 (533.6)	45	*Boring terminated at 43 feet*						
		50							

BORING RECORD S&ME 12-153.GPJ S&ME 1-18-2012.GDT 10/22/12

Borehole ID: 18

Project Manager: J. Heywood, PE

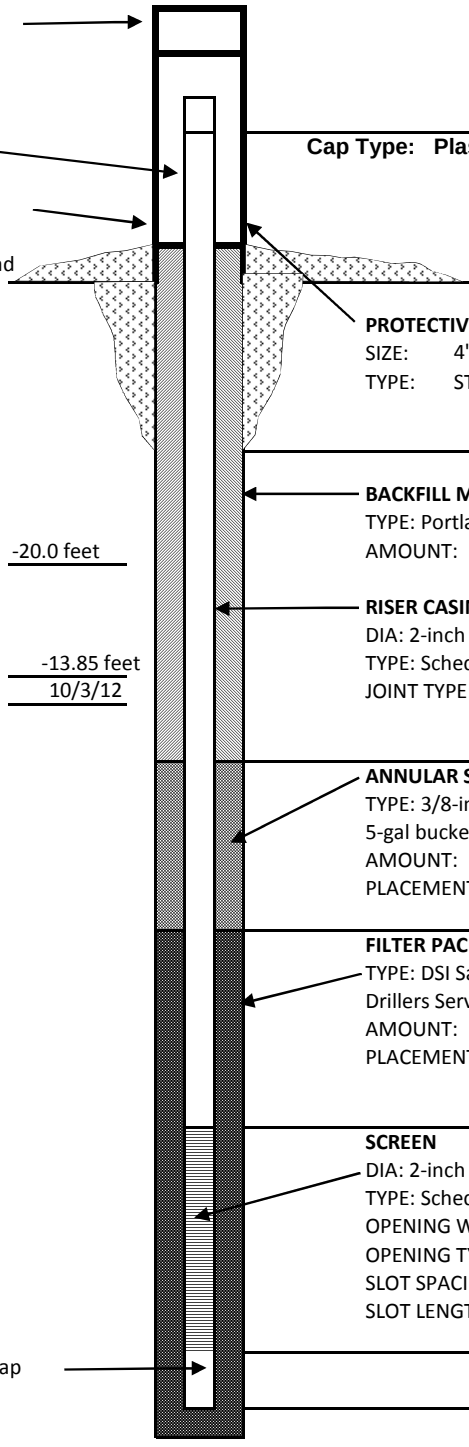
Logged by: P. Gribben, PG

Well Construction Log revised with new well ID and elevation survey data dated 5/11/2020.
Original well ID and elevation data in parenthesis.

GEORGIA POWER PLANT HAMMOND ASH POND #4
ROME, GEORGIA

WELL CONSTRUCTION LOG

CLIENT: SOUTHERN COMPANY		WELL ID:
DRILLED BY: Chad Odom (S&ME)	LOGGED BY: PAT GRIBBEN (S&ME)	HGWC-118 (GWC-18)
RIG TYPE: CME-550	DRILLING METHOD: 4.25" HOLLOW STEM AUGERS	
DATE CONSTRUCTED: October 1, 2012		



	DEPTH FEET	ELEVATION FT, MSL
TOP OF RISER	2.85	579.02 (579.48)
Cap Type: Plastic Locking		
GROUND SURFACE	0.0	576.17 (576.63)
PROTECTIVE CASING SIZE: 4'" x 4" x 5' TYPE: STAINLESS STEEL LOCKING		
BOTTOM OF PROTECTIVE CASING	-1.8	574.37 (574.83)
BACKFILL MATERIAL TYPE: Portland Cement Grout AMOUNT: 37.5 gallons		
RISER CASING DIA: 2-inch TYPE: Schedule 40 PVC JOINT TYPE: Flush Threaded		
TOP OF SEAL	-21.9	554.27 (554.73)
ANNULAR SEAL TYPE: 3/8-inch coated bentonite pellets 5-gal buckets AMOUNT: 50 lbs PLACEMENT: 4.1 feet		
TOP OF FILTER PACK	-26.0	550.17 (550.63)
FILTER PACK TYPE: DSI Sand - 1A (20/30) Drillers Services, Inc. AMOUNT: 6.5 bags PLACEMENT: 12.06 feet		
BOTTOM OF RISER/TOP OF SCREEN	-27.66	548.51 (548.97)
SCREEN (10.0') DIA: 2-inch TYPE: Schedule 40 PVC Prepack OPENING WIDTH: 0.01-inch OPENING TYPE: Slotted SLOT SPACING: 0.25-inch SLOT LENGTH: 1.5-inch		
BOTTOM OF SCREEN	-37.66	538.51 (538.97)
BOTTOM OF CASING	-38.06	538.11 (538.57)

Log of Test Boring revised with new survey data dated 5/11/2020.
Original survey data in parenthesis.

SOUTHERN COMPANY

LOG OF TEST BORING

BORING AP02-MW12
PAGE 1 OF 1
ECS37736

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Hammond
N:1547853.78 E:1937525.45

DATE STARTED 10/21/2014 **COMPLETED** 10/21/2014 **SURF. ELEV.** 580.59 (581.7) **COORDINATES:** (N:34.249267) (E:-85.354870)
CONTRACTOR SCS Field Services **EQUIPMENT** CME 550 **METHOD** Hollow Stem Auger; Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 35.2 ft. **GROUND WATER DEPTH: DURING** 20 ft. **COMP.** **DELAYED** 16.4 ft. after 24 hrs.
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	STRATA DESCRIPTION	ELEV.	SAMPLE TYPE NUMBER	SAMPLE DEPTH (ft.)	BLOW COUNTS (N-VALUE) / PERCENT RECOVERY (RQD)	COMMENTS
		Silt (ML)					
		- brown and dark brown, dry, very stiff, clayey		SS -1	3.5-5.0	5-7-8 (**15**)	
5							
		- brown and dark brown, dry, medium stiff, clayey		SS -2	8.5-10.0	3-4-4 (**8**)	
10							
		- brown and brown-yellow, damp, medium stiff, mica		SS -3	13.5-15.0	3-2-3 (**5**)	
15		▼					
		- brown and brown-yellow, very moist to wet, medium stiff, some very fine grained sand ▽		SS -4	18.5-20.0	2-4-4 (**8**)	
20			558.59 (559.7)				
		Sandy Silt (ML)					
		- brown, wet, soft, mica		SS -5	23.5-25.0	2-2-2 (**4**)	
25			554.59 (555.7)				
		Silty Sand (SM)					
		- brown, wet, loose, fine grain, trace coarse grained sand		SS -6	28.5-30.0	2-4-3 (**7**)	
30							
		- brown, wet, medium dense, fine grain, trace coarse grained sand	546.59 (547.7)	SS -7	33.5-35.0	7-9-9 (**18**)	
35		**Well-graded Sand (SW)** - fine to coarse grain, some fine gravel	545.39 (546.5)				
		Bottom of borehole at 35.2 feet.					

Easting and Northing in NAVD 88.
Elevation in NAD 83.

Record of Well Construction revised with new survey data dated 5/11/2020.
Original survey data in parenthesis.

SOUTHERN COMPANY

RECORD OF WELL CONSTRUCTION

WELL: AP02-MW12
PAGE 1 OF 1
ECS37736

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Ash Pond Piezometers
LOCATION Plant Hammond

N:1547853.78 E:1937525.45

DATE STARTED 10/21/2014 **COMPLETED** 10/21/2014 **SURF. ELEV.** 580.59 (581.7) **COORDINATES:** (N:34.249267) (E:-85.354870)
CONTRACTOR SCS Field Services **EQUIPMENT** CME 550 **METHOD** Hollow Stem Auger; Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** W. Shaughnessy **CHECKED BY** L. Millet **ANGLE** **BEARING**
BORING DEPTH 35.2 ft. **GROUND WATER DEPTH: DURING** 20 ft. **COMP.** **DELAYED** 16.4 ft. after 24 hrs.
NOTES Well installed. Refer to well data sheet.

BOREHOLE DATA — ELEV. Strata | DEPTH (ft) | **WELL DATA** | **COMMENTS**

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

ELEV. [DEPTH]

Surface Seal: concrete
578.59 (579.7)
[2.0]

Well: 2" OD PVC (SCH 40)

Annular Fill: Cement-Bentonite Grout (3 - 94lbs. bags, 33 gal.)

561.59 (562.7)
[19.0]

Annular Seal: 3/8 bentonite pellets (1 - 50lbs. bucket)

558.59
(559.7)

557.59 (558.7)
[23.0]

Filter: #1A silica filter sand (6 - 50lbs. bags)

555.84 (556.9)
[24.8]

554.59
(555.7)

Screen: 10 ft. 0.010" slot pre-pack

546.59
(547.7)

545.84 (546.9)

545.39
(546.5)

Sump:0.40 ft.

Easting and Northing in NAD 83.
Elevation in NAVD 88.

2012 WELL CONSTRUCTION RCRD (NO COM) - ESEE DATABASE.GDT - 7/8/15 13:11 - S:\WORKGROUPS\APC GENERAL SERVICE COMPLEX\CIVIL TECH SUPPORT\DRILLING\PROJECTS\GA-HAMMOND\HAMMOND ASH POND PIEZ\UPDATED HAMMOND PZ BORIN

APPENDIX C

Laboratory Analytical and Field Sampling Reports

Laboratory Reports

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 12, 2020

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

RE: Project: Plant Hammond AP
Pace Project No.: 2622317

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP
Pace Project No.: 2622317

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP
Pace Project No.: 2622317

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622317001	**HGWA-111**	Water	08/21/19 16:15	08/22/19 15:38
2622317002	**HGWA-112**	Water	08/21/19 17:20	08/22/19 15:38
2622317003	**HGWA-113**	Water	08/21/19 17:20	08/22/19 15:38

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP
Pace Project No.: 2622317

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622317001	**HGWA-111**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622317002	**HGWA-112**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622317003	**HGWA-113**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP
Pace Project No.: 2622317

Sample: HGWA-111 **Lab ID: 2622317001** Collected: 08/21/19 16:15 Received: 08/22/19 15:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/23/19 14:12	08/26/19 20:31	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/23/19 14:12	08/26/19 20:31	7440-38-2	
Barium	**0.029**	mg/L	0.010	0.00049	1	08/23/19 14:12	08/26/19 20:31	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/23/19 14:12	08/26/19 20:31	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/23/19 14:12	08/26/19 20:31	7440-43-9	
Chromium	**0.00061J**	mg/L	0.010	0.00039	1	08/23/19 14:12	08/26/19 20:31	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/23/19 14:12	08/26/19 20:31	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/23/19 14:12	08/26/19 20:31	7439-92-1	
Lithium	**0.0018J**	mg/L	0.030	0.00078	1	08/23/19 14:12	08/26/19 20:31	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/23/19 14:12	08/26/19 20:31	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/23/19 14:12	08/26/19 20:31	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/23/19 14:12	08/26/19 20:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 11:51	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**0.048J**	mg/L	0.30	0.029	1		08/30/19 04:12	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP
Pace Project No.: 2622317

Sample: HGWA-112 **Lab ID: 2622317002** Collected: 08/21/19 17:20 Received: 08/22/19 15:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/23/19 14:12	08/26/19 20:36	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/23/19 14:12	08/26/19 20:36	7440-38-2	
Barium	**0.027**	mg/L	0.010	0.00049	1	08/23/19 14:12	08/26/19 20:36	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/23/19 14:12	08/26/19 20:36	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/23/19 14:12	08/26/19 20:36	7440-43-9	
Chromium	**0.0039J**	mg/L	0.010	0.00039	1	08/23/19 14:12	08/26/19 20:36	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/23/19 14:12	08/26/19 20:36	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/23/19 14:12	08/26/19 20:36	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/23/19 14:12	08/26/19 20:36	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/23/19 14:12	08/26/19 20:36	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/23/19 14:12	08/26/19 20:36	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/23/19 14:12	08/26/19 20:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 11:53	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/30/19 04:57	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP
Pace Project No.: 2622317

Sample: HGWA-113 **Lab ID: 2622317003** Collected: 08/21/19 17:20 Received: 08/22/19 15:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/23/19 14:12	08/26/19 20:42	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/23/19 14:12	08/26/19 20:42	7440-38-2	
Barium	**0.027**	mg/L	0.010	0.00049	1	08/23/19 14:12	08/26/19 20:42	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/23/19 14:12	08/26/19 20:42	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/23/19 14:12	08/26/19 20:42	7440-43-9	
Chromium	**0.0022J**	mg/L	0.010	0.00039	1	08/23/19 14:12	08/26/19 20:42	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/23/19 14:12	08/26/19 20:42	7440-48-4	
Lead	**0.000071J**	mg/L	0.0050	0.000046	1	08/23/19 14:12	08/26/19 20:42	7439-92-1	
Lithium	**0.0011J**	mg/L	0.030	0.00078	1	08/23/19 14:12	08/26/19 20:42	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/23/19 14:12	08/26/19 20:42	7439-98-7	
Selenium	**0.0025J**	mg/L	0.010	0.0013	1	08/23/19 14:12	08/26/19 20:42	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/23/19 14:12	08/26/19 20:42	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 11:56	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**0.11J**	mg/L	0.30	0.029	1		08/30/19 05:20	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622317

QC Batch: 34231 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622317001, 2622317002, 2622317003

METHOD BLANK: 154028 Matrix: Water
Associated Lab Samples: 2622317001, 2622317002, 2622317003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/27/19 10:49	

LABORATORY CONTROL SAMPLE: 154029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154030 154031

Parameter	Units	2622246001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0026	0.0025	103	99	75-125	3	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622317

QC Batch: 34179 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622317001, 2622317002, 2622317003

METHOD BLANK: 153793 Matrix: Water
Associated Lab Samples: 2622317001, 2622317002, 2622317003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	0.00075J	0.0030	0.00027	08/26/19 19:11	
Arsenic	mg/L	ND	0.0050	0.00035	08/26/19 19:11	
Barium	mg/L	ND	0.010	0.00049	08/26/19 19:11	
Beryllium	mg/L	ND	0.0030	0.000074	08/26/19 19:11	
Cadmium	mg/L	ND	0.0025	0.00011	08/26/19 19:11	
Chromium	mg/L	ND	0.010	0.00039	08/26/19 19:11	
Cobalt	mg/L	ND	0.0050	0.00030	08/26/19 19:11	
Lead	mg/L	ND	0.0050	0.000046	08/26/19 19:11	
Lithium	mg/L	ND	0.030	0.00078	08/26/19 19:11	
Molybdenum	mg/L	ND	0.010	0.00095	08/26/19 19:11	
Selenium	mg/L	ND	0.010	0.0013	08/26/19 19:11	
Thallium	mg/L	ND	0.0010	0.000052	08/26/19 19:11	

LABORATORY CONTROL SAMPLE: 153794

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.092	92	80-120	
Arsenic	mg/L	0.1	0.10	103	80-120	
Barium	mg/L	0.1	0.099	99	80-120	
Beryllium	mg/L	0.1	0.10	105	80-120	
Cadmium	mg/L	0.1	0.10	103	80-120	
Chromium	mg/L	0.1	0.081	81	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Lead	mg/L	0.1	0.086	86	80-120	
Lithium	mg/L	0.1	0.10	105	80-120	
Molybdenum	mg/L	0.1	0.091	91	80-120	
Selenium	mg/L	0.1	0.10	103	80-120	
Thallium	mg/L	0.1	0.093	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 153795 153796

Parameter	Units	2622267002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.00039J	0.1	0.1	0.11	0.10	108	103	75-125	5	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	101	99	75-125	2	20	
Barium	mg/L	0.017	0.1	0.1	0.13	0.12	108	101	75-125	5	20	
Beryllium	mg/L	ND	0.1	0.1	0.10	0.10	101	101	75-125	0	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622317

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 153795 153796

Parameter	Units	2622267002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/L	0.00073J	0.1	0.1	0.10	0.10	99	100	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.097	0.098	97	98	75-125	0	20	
Lead	mg/L	0.000064J	0.1	0.1	0.095	0.097	94	97	75-125	3	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	101	101	75-125	0	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.097	101	97	75-125	5	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	100	102	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.095	0.099	95	98	75-125	3	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622317

QC Batch: 34532 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622317001, 2622317002, 2622317003

METHOD BLANK: 155480 Matrix: Water
Associated Lab Samples: 2622317001, 2622317002, 2622317003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	08/29/19 22:10	

LABORATORY CONTROL SAMPLE: 155481

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155482 155483

Parameter	Units	2622265001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	9.3	9.2	93	92	90-110	0	15	

MATRIX SPIKE SAMPLE: 155490

Parameter	Units	2622267002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	10	8.5	85	90-110	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP
Pace Project No.: 2622317

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP
Pace Project No.: 2622317

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622317001	**HGWA-111**	EPA 3005A	34179	EPA 6020B	34192
2622317002	**HGWA-112**	EPA 3005A	34179	EPA 6020B	34192
2622317003	**HGWA-113**	EPA 3005A	34179	EPA 6020B	34192
2622317001	**HGWA-111**	EPA 7470A	34231	EPA 7470A	34309
2622317002	**HGWA-112**	EPA 7470A	34231	EPA 7470A	34309
2622317003	**HGWA-113**	EPA 7470A	34231	EPA 7470A	34309
2622317001	**HGWA-111**	EPA 300.0	34532		
2622317002	**HGWA-112**	EPA 300.0	34532		
2622317003	**HGWA-113**	EPA 300.0	34532		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com
Requested Due Date:	Standard TAT	Project #:	GW6581	Pace Profile #:	327.4.2

Regulatory Agency: —

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	Requested Analysis Filtered (Y/N)	N	N	N	
1	~~HGWA-110~~ HGWA-111	WT	G	8/21/19	1555	8/21/19	1615	23	4	1		3							Y	Y	Y	N
2	~~HGWA-110 CR~~ HGWA-112	WT	G	8/21/19	1700	8/21/19	1720	25	4	1		3							Y	Y	Y	N
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CR 8/21/19

WO# : 2622317

2622317

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Georgia	8/21/19	1900	Maria Munbus / Geo	8/21/19	1900				
	Maria Munbus	8/21/19	20:45	Leslie Lowe / Geosyntec	8/21/19	20:45				
	Leslie Blaine Geosyntec	8/21/19	10:49	[illegible]	8.21.19	10:49				
				MAlman	8/21/19	1538	3.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 8/21/19

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:	Standard TAT	Project #:	GW6581	Pace Profile #:	327.4.2

Requlatory Agency: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: Y/N	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	Requested Analysis Filtered (Y/N)	N	N	N	
1	HGWA-113	WT	G	8/21/19	1658	8/21/19	1720	↓	4	1		3							Y	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

NM 08/21/19

WO#: 2622317

PM: BM Due Date: 08/29/19

CLIENT: GAPower-CCR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Noelia Muskus/Geo	8/21/19	20:45	Lauren Lee/Geosyntec	8/21/19	20:45				
	Lee/Geosyntec	8/22/19	10:49	[illegible]	8.22.19	1049				
				MZalman	8/22/19	1538	3.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelia Muskus

SIGNATURE of SAMPLER: Noelia Muskus DATE Signed: 08/21/19

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power Project #

WO#: 2622317

PM: BM Due Date: 08/29/19

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other

Tracking #:

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used 83 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.2 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: 8/22/19 MK

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

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: **Date:**

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

September 23, 2019

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

RE: Project: Plant Hammond AP
Pace Project No.: 2622318

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP
Pace Project No.: 2622318

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP
Pace Project No.: 2622318

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622318001	**HGWA-111**	Water	08/21/19 16:15	08/22/19 15:38
2622318002	**HGWA-112**	Water	08/21/19 17:20	08/22/19 15:38
2622318003	**HGWA-113**	Water	08/21/19 17:20	08/22/19 15:38

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP
Pace Project No.: 2622318

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622318001	**HGWA-111**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622318002	**HGWA-112**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622318003	**HGWA-113**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622318

Sample: HGWA-111 **Lab ID: 2622318001** Collected: 08/21/19 16:15 Received: 08/22/19 15:38 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.492 ± 0.222 (0.223) C:92% T:NA**	pCi/L	09/09/19 08:48	13982-63-3	
Radium-228	EPA 9320	**0.0607 ± 0.403 (0.923) C:67% T:74%**	pCi/L	09/19/19 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.553 ± 0.625 (1.15)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622318

Sample: HGWA-112 **Lab ID: 2622318002** Collected: 08/21/19 17:20 Received: 08/22/19 15:38 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.417 ± 0.244 (0.395) C:91% T:NA**	pCi/L	09/09/19 08:48	13982-63-3	
Radium-228	EPA 9320	**0.0971 ± 0.572 (1.30) C:54% T:78%**	pCi/L	09/19/19 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.514 ± 0.816 (1.70)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622318

Sample: HGWA-113 **Lab ID: 2622318003** Collected: 08/21/19 17:20 Received: 08/22/19 15:38 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.241 ± 0.188 (0.324) C:86% T:NA**	pCi/L	09/09/19 08:48	13982-63-3	
Radium-228	EPA 9320	**0.251 ± 0.437 (0.955) C:71% T:71%**	pCi/L	09/19/19 12:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.492 ± 0.625 (1.28)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622318

QC Batch: 358895 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2622318001, 2622318002, 2622318003

METHOD BLANK: 1742554 Matrix: Water
Associated Lab Samples: 2622318001, 2622318002, 2622318003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.167 ± 0.291 (0.635) C:73% T:86%	pCi/L	09/19/19 12:11	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622318

QC Batch: 359801 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2622318001, 2622318002, 2622318003

METHOD BLANK: 1746802 Matrix: Water
Associated Lab Samples: 2622318001, 2622318002, 2622318003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.563 ± 0.229 (0.205) C:97% T:NA	pCi/L	09/09/19 09:06	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP
Pace Project No.: 2622318

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP
Pace Project No.: 2622318

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622318001	**HGWA-111**	EPA 9315	359801		
2622318002	**HGWA-112**	EPA 9315	359801		
2622318003	**HGWA-113**	EPA 9315	359801		
2622318001	**HGWA-111**	EPA 9320	358895		
2622318002	**HGWA-112**	EPA 9320	358895		
2622318003	**HGWA-113**	EPA 9320	358895		
2622318001	**HGWA-111**	Total Radium Calculation	362430		
2622318002	**HGWA-112**	Total Radium Calculation	362430		
2622318003	**HGWA-113**	Total Radium Calculation	362430		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 2

Section A — Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road
	Atlanta, GA 30339
Email:	jabraham@southernco.com
Phone:	(404)506-7239 Fax:
Requested Due Date:	Standard TAT

Section B — Required Project Information:

Report To:	Joju Abraham / Lauren Petty
Copy To:	Geosyntec
Purchase Order #:	SCS10382775
Project Name:	Plant Hammond AP
Project #:	GW6581

Section C — Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	betsy.mcdaniel@pacelabs.com
Pace Profile #:	327.4.2

Regulatory Agency: —

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																	N	N	N	N	
1	~~HGWA-110~~ HGWA-111	WT	G	8/21/19	1555	8/21/19	1615	23	4	1		3						Y	Y	Y	Y	N
2	~~HGWA-110~~ HGWA-112	WT	G	8/21/19	1700	8/21/19	1720	25	4	1		3						Y	Y	Y	Y	N
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CR 8/21/19

WO# : 2622318

2622318

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Geosyntec	8/21/19	1900	Marlia Mushon / Geo	8/21/19	1900	
	Marlia Mushon	8/21/19	20:45	[illegible] / Geosyntec	8/21/19	20:45	
	[illegible] Blake Geosyntec	8/22/19	10:49	[illegible]	8.22.19	10:49	
				MDaliman	8/22/19	1538	3.2

TEMP in C: 3.2

Received on Ice (Y/N): Y

Custody Sealed Cooler (Y/N): Y

Samples Intact (Y/N): Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed: 8/21/19

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:	Standard TAT	Project #:	GW6581	Pace Profile #:	327.4.2

Regulatory Agency: —

State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: PIN	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
																		N	N	N	N	
1	HGWA-113	WT	G	8/21/19	1658	8/21/19	1720	25	4	1		3						Y	Y	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

NM 08/21/19

WO# : 2622318

PM: BM Due Date: 09/20/19

CLIENT: GAPower-CCR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Nalia Muskus/Geo	8/21/19	20:45	Jeffrey Law/Geosyntec	8/21/19	20:45	
	Jeffrey Law/Geosyntec	8/21/19	10:49	[illegible]	8.22.19	1049	
				MRahman	8/22/19	1538	3.2 Y Y Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nalia Muskus

SIGNATURE of SAMPLER: Nalia Muskus DATE Signed: 08/21/19

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Powere Project #

WO#: 2622318

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other

Tracking #:

PM: BM Due Date: 09/20/19

CLIENT: GAPower-CCR

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used 83 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.2 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/22/19 MK

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☑Yes	☐No	☐N/A
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A
Sufficient Volume:	☑Yes	☐No	☐N/A
Correct Containers Used:	☑Yes	☐No	☐N/A
-Pace Containers Used:	☑Yes	☐No	☐N/A
Containers Intact:	☑Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A
Sample Labels match COC:	☑Yes	☐No	☐N/A
-Includes date/time/ID/Analysis Matrix: W			
All containers needing preservation have been checked.	☑Yes	☐No	☐N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes	☐No	☐N/A
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☑No	
Samples checked for dechlorination:	☐Yes	☐No	☑N/A
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A
Trip Blank Present:	☐Yes	☐No	☑N/A
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A
Pace Trip Blank Lot # (if purchased):			

Comments	Initial when completed	Lot # of added preservative
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: **Date:**

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 12, 2020

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

RE: Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 23, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622354001	**HGWC-117**	Water	08/22/19 10:00	08/23/19 12:00
2622354002	**HGWC-101**	Water	08/22/19 13:20	08/23/19 12:00
2622354003	**HGWC-118**	Water	08/22/19 11:23	08/23/19 12:00
2622354004	**HGWC-103**	Water	08/22/19 14:50	08/23/19 12:00
2622354005	**HGWC-105**	Water	08/22/19 17:15	08/23/19 12:00

Pace Analytical Services, LLC
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(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622354001	**HGWC-117**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622354002	**HGWC-101**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622354003	**HGWC-118**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622354004	**HGWC-103**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622354005	**HGWC-105**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Sample: HGWC-117 **Lab ID: 2622354001** Collected: 08/22/19 10:00 Received: 08/23/19 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 18:29	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:29	7440-38-2	
Barium	**0.036**	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:29	7440-39-3	
Beryllium	**0.000079J**	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:29	7440-41-7	
Cadmium	**0.00064J**	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:29	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:29	7440-47-3	
Cobalt	**0.012**	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:29	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:29	7439-92-1	
Lithium	**0.0012J**	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:29	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:29	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:29	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:24	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/30/19 21:52	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Sample: HGWC-101 **Lab ID: 2622354002** Collected: 08/22/19 13:20 Received: 08/23/19 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 18:34	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:34	7440-38-2	
Barium	**0.043**	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:34	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:34	7440-41-7	
Cadmium	**0.00014J**	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:34	7440-43-9	
Chromium	**0.00064J**	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:34	7440-47-3	B
Cobalt	ND	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:34	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:34	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:34	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:34	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:34	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:34	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:26	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/30/19 22:15	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Sample: HGWC-118 **Lab ID: 2622354003** Collected: 08/22/19 11:23 Received: 08/23/19 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 18:40	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:40	7440-38-2	
Barium	**0.052**	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:40	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:40	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:40	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:40	7440-47-3	
Cobalt	**0.00030J**	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:40	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:40	7439-92-1	
Lithium	**0.0018J**	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:40	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:40	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:40	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:40	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:28	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**0.070J**	mg/L	0.30	0.029	1		08/30/19 22:38	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Sample: HGWC-103 **Lab ID: 2622354004** Collected: 08/22/19 14:50 Received: 08/23/19 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 18:46	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:46	7440-38-2	
Barium	**0.036**	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:46	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:46	7440-41-7	
Cadmium	**0.00080J**	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:46	7440-43-9	
Chromium	**0.00063J**	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:46	7440-47-3	B
Cobalt	**0.0019J**	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:46	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:46	7439-92-1	
Lithium	**0.0015J**	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:46	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:46	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:31	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/30/19 23:00	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Sample: HGWC-105 **Lab ID: 2622354005** Collected: 08/22/19 17:15 Received: 08/23/19 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 19:03	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 19:03	7440-38-2	
Barium	**0.066**	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 19:03	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 19:03	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 19:03	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 19:03	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 19:03	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 19:03	7439-92-1	
Lithium	**0.0040J**	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 19:03	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 19:03	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 19:03	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 19:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:38	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/31/19 00:31	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

QC Batch: 34265 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

METHOD BLANK: 154112 Matrix: Water
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/27/19 13:41	

LABORATORY CONTROL SAMPLE: 154113

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154114 154115

Parameter	Units	2622337002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	101	100	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

QC Batch: 34320 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

METHOD BLANK: 154347 Matrix: Water
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	08/27/19 16:36	
Arsenic	mg/L	ND	0.0050	0.00035	08/27/19 16:36	
Barium	mg/L	ND	0.010	0.00049	08/27/19 16:36	
Beryllium	mg/L	ND	0.0030	0.000074	08/27/19 16:36	
Cadmium	mg/L	ND	0.0025	0.00011	08/27/19 16:36	
Chromium	mg/L	0.0012J	0.010	0.00039	08/27/19 16:36	
Cobalt	mg/L	ND	0.0050	0.00030	08/27/19 16:36	
Lead	mg/L	ND	0.0050	0.000046	08/27/19 16:36	
Lithium	mg/L	ND	0.030	0.00078	08/27/19 16:36	
Molybdenum	mg/L	ND	0.010	0.00095	08/27/19 16:36	
Selenium	mg/L	ND	0.010	0.0013	08/27/19 16:36	
Thallium	mg/L	ND	0.0010	0.000052	08/27/19 16:36	

LABORATORY CONTROL SAMPLE: 154348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.090	90	80-120	
Arsenic	mg/L	0.1	0.085	85	80-120	
Barium	mg/L	0.1	0.088	88	80-120	
Beryllium	mg/L	0.1	0.086	86	80-120	
Cadmium	mg/L	0.1	0.088	88	80-120	
Chromium	mg/L	0.1	0.088	88	80-120	
Cobalt	mg/L	0.1	0.086	86	80-120	
Lead	mg/L	0.1	0.086	86	80-120	
Lithium	mg/L	0.1	0.087	87	80-120	
Molybdenum	mg/L	0.1	0.089	89	80-120	
Selenium	mg/L	0.1	0.085	85	80-120	
Thallium	mg/L	0.1	0.087	87	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154349 154350

Parameter	Units	2622337002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	1	20	
Barium	mg/L	0.078	0.1	0.1	0.18	0.18	104	104	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.092	0.093	92	93	75-125	1	20	
Cadmium	mg/L	ND	0.1	0.1	0.099	0.10	99	101	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154349 154350

Parameter	Units	2622337002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.096	0.098	96	98	75-125	2	20	
Lithium	mg/L	0.0025J	0.1	0.1	0.095	0.096	92	93	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	106	105	75-125	0	20	
Selenium	mg/L	ND	0.1	0.1	0.099	0.096	99	96	75-125	3	20	
Thallium	mg/L	0.00018J	0.1	0.1	0.098	0.099	97	99	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

QC Batch: 34533 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

METHOD BLANK: 155485 Matrix: Water
Associated Lab Samples: 2622354001, 2622354002, 2622354003, 2622354004, 2622354005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	08/30/19 13:57	

LABORATORY CONTROL SAMPLE: 155486

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.3	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155487 155488

Parameter	Units	2622319009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	10.8	10.7	108	107	90-110	1	15	

MATRIX SPIKE SAMPLE: 155523

Parameter	Units	2622337002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.11J	10	9.5	94	90-110	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6581
Pace Project No.: 2622354

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622354001	**HGWC-117**	EPA 3005A	34320	EPA 6020B	34344
2622354002	**HGWC-101**	EPA 3005A	34320	EPA 6020B	34344
2622354003	**HGWC-118**	EPA 3005A	34320	EPA 6020B	34344
2622354004	**HGWC-103**	EPA 3005A	34320	EPA 6020B	34344
2622354005	**HGWC-105**	EPA 3005A	34320	EPA 6020B	34344
2622354001	**HGWC-117**	EPA 7470A	34265	EPA 7470A	34311
2622354002	**HGWC-101**	EPA 7470A	34265	EPA 7470A	34311
2622354003	**HGWC-118**	EPA 7470A	34265	EPA 7470A	34311
2622354004	**HGWC-103**	EPA 7470A	34265	EPA 7470A	34311
2622354005	**HGWC-105**	EPA 7470A	34265	EPA 7470A	34311
2622354001	**HGWC-117**	EPA 300.0	34533		
2622354002	**HGWC-101**	EPA 300.0	34533		
2622354003	**HGWC-118**	EPA 300.0	34533		
2622354004	**HGWC-103**	EPA 300.0	34533		
2622354005	**HGWC-105**	EPA 300.0	34533		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:	Standard TAT	Project #:	GWC581	Pace Profile #:	327.4.2

Regulatory Agency: GA

State / Location

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																		N	N	N	
1	HGWC-117	GW	G	8/12/19	0930	8/22	1000	22	4	1		3							Y	Y	Y	N
2	HGWC-101	GW	G	8/22	~~1155~~ 1250	8/22	1320	25	4	1		3							Y	Y	Y	N
3	HGWC-118	GW	G	8/22	1105	8/22	1123	22	4	1		3							Y	Y	Y	N
4	HGWC-103	GW	G	8/22	1430	8/22	1450	22	4	1		3							Y	Y	Y	N
6	HGWC-105	GW	G	8/22	1640	8/22	1715	26	4	1		3							Y	Y	Y	N
5																						
7																						
8												08/21/19										
9																						
10																						
11																						
12																						

CR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Geo	8/22/19	1810	Natalia Murphy / Geosyntec	8/22/19	1810	
	Natalia Murphy / Geosyntec	8/22/19	1935	1 Pace	8.23.19	1048	
				Charles Hunter	8/23/19	2000	3.1 Y Y Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed: 8/12/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
3.1	Y	Y	Y

WO#: 2622354

2622354

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA-Power CCR

WO#: 2622354

PM: BM Due Date: 08/30/19

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other ____

Tracking #: ____

Proj. Name:

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other ____

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

Cooler Temperature 3.1°C **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/23/19 CH

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A (CH 8/23/19)	12. HGWC-103 collection time is 1450 per COC
-Includes date/time/ID/Analysis Matrix: W		" " " " 1430 per labels
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): ____		

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

Person Contacted: ____ Date/Time: ____

Comments/ Resolution: The COC was used for login purposes. CH 8/23/19

Project Manager Review: ____ **Date:** ____

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

F-ALLC003rev.3, 11September2006

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

September 23, 2019

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

RE: Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 23, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622355001	**HGWC-117**	Water	08/22/19 10:00	08/23/19 12:00
2622355002	**HGWC-101**	Water	08/22/19 13:20	08/23/19 12:00
2622355003	**HGWC-118**	Water	08/22/19 11:23	08/23/19 12:00
2622355004	**HGWC-103**	Water	08/22/19 14:50	08/23/19 12:00
2622355005	**HGWC-105**	Water	08/22/19 17:15	08/23/19 12:00

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(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622355001	**HGWC-117**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622355002	**HGWC-101**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622355003	**HGWC-118**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622355004	**HGWC-103**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622355005	**HGWC-105**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Sample: HGWC-117 **Lab ID: 2622355001** Collected: 08/22/19 10:00 Received: 08/23/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.333 ± 0.283 (0.509) C:84% T:NA**	pCi/L	09/05/19 09:49	13982-63-3	
Radium-228	EPA 9320	**-0.0831 ± 0.297 (0.726) C:67% T:79%**	pCi/L	09/19/19 12:11	15262-20-1	
Total Radium	Total Radium Calculation	**0.333 ± 0.580 (1.24)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Sample: HGWC-101 **Lab ID: 2622355002** Collected: 08/22/19 13:20 Received: 08/23/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.474 ± 0.245 (0.335) C:81% T:NA**	pCi/L	09/09/19 09:06	13982-63-3	
Radium-228	EPA 9320	**-0.0890 ± 0.343 (0.828) C:69% T:75%**	pCi/L	09/19/19 12:12	15262-20-1	
Total Radium	Total Radium Calculation	**0.474 ± 0.588 (1.16)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Sample: HGWC-118 **Lab ID: 2622355003** Collected: 08/22/19 11:23 Received: 08/23/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.492 ± 0.255 (0.370) C:81% T:NA**	pCi/L	09/09/19 09:06	13982-63-3	
Radium-228	EPA 9320	**0.412 ± 0.411 (0.846) C:67% T:78%**	pCi/L	09/19/19 12:11	15262-20-1	
Total Radium	Total Radium Calculation	**0.904 ± 0.666 (1.22)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Sample: HGWC-103 **Lab ID: 2622355004** Collected: 08/22/19 14:50 Received: 08/23/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.434 ± 0.204 (0.222) C:95% T:NA**	pCi/L	09/09/19 09:06	13982-63-3	
Radium-228	EPA 9320	**0.512 ± 0.402 (0.787) C:72% T:78%**	pCi/L	09/19/19 13:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.946 ± 0.606 (1.01)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Sample: HGWC-105 **Lab ID: 2622355005** Collected: 08/22/19 17:15 Received: 08/23/19 12:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.241 ± 0.175 (0.286) C:83% T:NA**	pCi/L	09/09/19 09:06	13982-63-3	
Radium-228	EPA 9320	**0.453 ± 0.393 (0.786) C:71% T:72%**	pCi/L	09/19/19 12:12	15262-20-1	
Total Radium	Total Radium Calculation	**0.694 ± 0.568 (1.07)**	pCi/L	09/20/19 12:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

QC Batch: 359490 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2622355001

METHOD BLANK: 1745579 Matrix: Water
Associated Lab Samples: 2622355001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.243 ± 0.244 (0.474) C:94% T:NA	pCi/L	09/05/19 08:07	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

QC Batch: 358895 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2622355001, 2622355002, 2622355003, 2622355004, 2622355005

METHOD BLANK: 1742554 Matrix: Water
Associated Lab Samples: 2622355001, 2622355002, 2622355003, 2622355004, 2622355005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.167 ± 0.291 (0.635) C:73% T:86%	pCi/L	09/19/19 12:11	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

QC Batch: 359801 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2622355002, 2622355003, 2622355004, 2622355005

METHOD BLANK: 1746802 Matrix: Water
Associated Lab Samples: 2622355002, 2622355003, 2622355004, 2622355005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.563 ± 0.229 (0.205) C:97% T:NA	pCi/L	09/09/19 09:06	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6581
Pace Project No.: 2622355

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622355001	**HGWC-117**	EPA 9315	359490		
2622355002	**HGWC-101**	EPA 9315	359801		
2622355003	**HGWC-118**	EPA 9315	359801		
2622355004	**HGWC-103**	EPA 9315	359801		
2622355005	**HGWC-105**	EPA 9315	359801		
2622355001	**HGWC-117**	EPA 9320	358895		
2622355002	**HGWC-101**	EPA 9320	358895		
2622355003	**HGWC-118**	EPA 9320	358895		
2622355004	**HGWC-103**	EPA 9320	358895		
2622355005	**HGWC-105**	EPA 9320	358895		
2622355001	**HGWC-117**	Total Radium Calculation	362430		
2622355002	**HGWC-101**	Total Radium Calculation	362430		
2622355003	**HGWC-118**	Total Radium Calculation	362430		
2622355004	**HGWC-103**	Total Radium Calculation	362430		
2622355005	**HGWC-105**	Total Radium Calculation	362430		

PaceAnalytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road, Atlanta, GA 30339
Email:	jabraham@southernco.com
Phone:	(404)506-7239 Fax:
Requested Due Date:	Standard TAT

Section B Required Project Information:

Report To:	Joju Abraham / Lauren Petty
Copy To:	Geosyntec
Purchase Order #:	SCS10382775
Project Name:	Plant Hammond AP
Project #:	GWC5?1

Section C Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Pace Profile #:	327.4.2

Regulatory Agency:

State / Location: GA

MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

Requested Analysis Filtered (Y/N): App. IV Metals * N; Fluoride by 300.0 N; Radium 226/228 N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
1	HGWC-117	WT	G	8/22/19	0930	8/22	1000	22	4	1		3							Y	Y	Y	N
2	HGWC-101	WT	G	8/22	~~1155~~ 1250	8/22	1320	25	4	1		3							Y	Y	Y	N
3	HGWC-118	WT	G	8/22	1105	8/22	1123	22	4	1		3							Y	Y	Y	N
4	HGWC-103	WT	G	8/22	1430	8/22	1450	22	4	1		3							Y	Y	Y	N
5	HGWC-105	WT	G	8/22	1640	8/22	1715	26	4	1		3							Y	Y	Y	N
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CR 08/21/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Geo	8/22/19	1810	Natalia Munoz / Geosyntec	8/22/19	1910				
	Natalia Munoz / Geosyntec	8/22/19	1935	[illegible] / Pace	8.23.19	1048				
				Charles Hurley	8/23/19	1200	3.1	Y	Y	Y

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
3.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 8/22/19

WO# : 2622355

2622355

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power CCR

WO#: 2622355

PM: BM Due Date: 09/23/19

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other

Tracking #: _____

Proj. Name:

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature 3.1 °C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/23/19 CAH

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	8/23/19 CAH ☑Yes ☐No ☐N/A	12. H-GWC-103 collection time is 1450 per COC " " " " " 1430 per labels.
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: The COC was used for login purposes. CAH 8/23/19

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 12, 2020

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

RE: Project: Plant Hammond AP
Pace Project No.: 2622400

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP
Pace Project No.: 2622400

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: Plant Hammond AP
Pace Project No.: 2622400

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622400001	**EB-01**	Water	08/23/19 11:45	08/26/19 18:30
2622400002	**EB-02**	Water	08/23/19 11:55	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP
Pace Project No.: 2622400

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622400001	**EB-01**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622400002	**EB-02**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Plant Hammond AP
Pace Project No.: 2622400

Sample: EB-01 **Lab ID: 2622400001** Collected: 08/23/19 11:45 Received: 08/26/19 18:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 17:59	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 17:59	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 17:59	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 17:59	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 17:59	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 17:59	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 17:59	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 17:59	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 17:59	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 17:59	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 17:59	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 17:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/28/19 13:26	08/28/19 16:35	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/31/19 00:53	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP
Pace Project No.: 2622400

Sample: EB-02 **Lab ID: 2622400002** Collected: 08/23/19 11:55 Received: 08/26/19 18:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 18:05	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 18:05	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 18:05	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 18:05	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 18:05	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 18:05	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 18:05	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 18:05	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 18:05	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 18:05	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 18:05	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 18:05	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/28/19 13:26	08/28/19 16:38	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		08/31/19 01:16	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622400

QC Batch: 34391 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622400001, 2622400002

METHOD BLANK: 154672 Matrix: Water
Associated Lab Samples: 2622400001, 2622400002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/28/19 16:21	

LABORATORY CONTROL SAMPLE: 154673

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154674 154675

Parameter	Units	2622398001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0025	98	100	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
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QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622400

QC Batch: 34496
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Associated Lab Samples: 2622400001, 2622400002

METHOD BLANK: 155177 Matrix: Water
Associated Lab Samples: 2622400001, 2622400002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	08/30/19 17:42	
Arsenic	mg/L	ND	0.0050	0.00035	08/30/19 17:42	
Barium	mg/L	ND	0.010	0.00049	08/30/19 17:42	
Beryllium	mg/L	ND	0.0030	0.000074	08/30/19 17:42	
Cadmium	mg/L	ND	0.0025	0.00011	08/30/19 17:42	
Chromium	mg/L	ND	0.010	0.00039	08/30/19 17:42	
Cobalt	mg/L	ND	0.0050	0.00030	08/30/19 17:42	
Lead	mg/L	ND	0.0050	0.000046	08/30/19 17:42	
Lithium	mg/L	ND	0.030	0.00078	08/30/19 17:42	
Molybdenum	mg/L	ND	0.010	0.00095	08/30/19 17:42	
Selenium	mg/L	ND	0.010	0.0013	08/30/19 17:42	
Thallium	mg/L	ND	0.0010	0.000052	08/30/19 17:42	

LABORATORY CONTROL SAMPLE: 155178

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179 155180

Parameter	Units	2622479002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	104	102	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.11	0.11	106	107	75-125	1	20	
Barium	mg/L	0.036	0.1	0.1	0.14	0.13	103	97	75-125	4	20	
Beryllium	mg/L	0.00024J	0.1	0.1	0.098	0.095	97	95	75-125	3	20	
Cadmium	mg/L	0.00072	0.1	0.1	0.10	0.099	100	98	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622400

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179 155180

Parameter	Units	2622479002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Cobalt	mg/L	0.0018J	0.1	0.1	0.098	0.098	97	96	75-125	1	20	
Lead	mg/L	0.000049J	0.1	0.1	0.094	0.093	94	93	75-125	1	20	
Lithium	mg/L	0.0033J	0.1	0.1	0.10	0.10	100	97	75-125	2	20	
Molybdenum	mg/L	0.0065J	0.1	0.1	0.11	0.11	106	105	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.11	0.11	106	109	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.096	0.095	96	95	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622400

QC Batch: 34533 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622400001, 2622400002

METHOD BLANK: 155485 Matrix: Water
Associated Lab Samples: 2622400001, 2622400002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	08/30/19 13:57	

LABORATORY CONTROL SAMPLE: 155486

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.3	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155487 155488

Parameter	Units	2622319009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	10.8	10.7	108	107	90-110	1	15	

MATRIX SPIKE SAMPLE: 155523

Parameter	Units	2622337002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.11J	10	9.5	94	90-110	

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REPORT OF LABORATORY ANALYSIS

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(770)734-4200

QUALIFIERS

Project: Plant Hammond AP
Pace Project No.: 2622400

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP
Pace Project No.: 2622400

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622400001	**EB-01**	EPA 3005A	34496	EPA 6020B	34557
2622400002	**EB-02**	EPA 3005A	34496	EPA 6020B	34557
2622400001	**EB-01**	EPA 7470A	34391	EPA 7470A	34429
2622400002	**EB-02**	EPA 7470A	34391	EPA 7470A	34429
2622400001	**EB-01**	EPA 300.0	34533		
2622400002	**EB-02**	EPA 300.0	34533		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:		Project #:		Pace Profile #:	327.4.2

Regulatory Agency: —

State / Location: GA

Requested Analysis Filtered (Y/N): Y/N = N N N

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
1	EB-01	WT	G	8/23/19	1140	8/23/19	1145	26	4	1		3						Y	Y	Y	
2	EB-02	WT	G	8/23/19	1150	8/23/19	1155	26	4	1		3						Y	Y	Y	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

N N 08/23/19

2

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Noelia Muskus/Geo	08/23/19	1530	Caroline Hong	8/23/19	1540	
	Christine Hong	08/26/19	0815	Charles Hurle	8/26/19	1830	2.8 Y 7 Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelia Muskus

SIGNATURE of SAMPLER: Noelia Muskus DATE Signed: 08/23/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.8	Y	7	Y

Page 1 of 1

WO# : 2622400

2622400

Sample Condition Upon Receipt

WO# : 2622400

Pace Analytical

Client Name: GA Power CCR

PM: BM Due Date: 09/04/1

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other _____

Optional
Proj. Due Date:
Proj. Name:

Tracking #: _____

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used 214

Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.8°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/26/19 [illegible]

Comments:

Temp should be above freezing to 6°C

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

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Field Data Required? Y / N

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

September 25, 2019

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

RE: Project: Plant Hammond AP
Pace Project No.: 2622401

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
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CERTIFICATIONS

Project: Plant Hammond AP
Pace Project No.: 2622401

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP
Pace Project No.: 2622401

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622401001	**EB-01**	Water	08/23/19 11:45	08/26/19 18:30
2622401002	**EB-02**	Water	08/23/19 11:55	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP
Pace Project No.: 2622401

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622401001	**EB-01**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622401002	**EB-02**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622401

Sample: EB-01 **Lab ID: 2622401001** Collected: 08/23/19 11:45 Received: 08/26/19 18:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.251 ± 0.254 (0.495) C:91% T:NA**	pCi/L	09/18/19 08:37	13982-63-3	
Radium-228	EPA 9320	**-0.369 ± 0.255 (0.680) C:77% T:83%**	pCi/L	09/20/19 11:53	15262-20-1	
Total Radium	Total Radium Calculation	**0.251 ± 0.509 (1.18)**	pCi/L	09/23/19 12:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622401

Sample: EB-02 **Lab ID: 2622401002** Collected: 08/23/19 11:55 Received: 08/26/19 18:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.539 ± 0.297 (0.374) C:91% T:NA**	pCi/L	09/18/19 08:37	13982-63-3	
Radium-228	EPA 9320	**0.478 ± 0.382 (0.753) C:75% T:75%**	pCi/L	09/20/19 11:54	15262-20-1	
Total Radium	Total Radium Calculation	**1.02 ± 0.679 (1.13)**	pCi/L	09/23/19 12:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622401

QC Batch: 359964 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2622401001, 2622401002

METHOD BLANK: 1747386 Matrix: Water
Associated Lab Samples: 2622401001, 2622401002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.204 ± 0.233 (0.472) C:94% T:NA	pCi/L	09/18/19 08:31	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP
Pace Project No.: 2622401

QC Batch: 359966 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2622401001, 2622401002

METHOD BLANK: 1747390 Matrix: Water
Associated Lab Samples: 2622401001, 2622401002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.232 ± 0.311 (0.664) C:77% T:89%	pCi/L	09/20/19 11:52	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP
Pace Project No.: 2622401

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP
Pace Project No.: 2622401

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622401001	**EB-01**	EPA 9315	359964		
2622401002	**EB-02**	EPA 9315	359964		
2622401001	**EB-01**	EPA 9320	359966		
2622401002	**EB-02**	EPA 9320	359966		
2622401001	**EB-01**	Total Radium Calculation	362632		
2622401002	**EB-02**	Total Radium Calculation	362632		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

Section A
Required Client Information:

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

Section B
Required Project Information:

Report To:	Joju Abraham / Lauren Petty
Copy To:	Geosyntec
Purchase Order #:	SCS10382775
Project Name:	Plant Hammond AP
Project #:	

Section C
Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote	
Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Pace Profile #:	327 4.2

Regulatory Agency:
State / Location: GA

MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

Requested Analysis Filtered (Y/N): N N N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)	
1	EB-01	WT	G	8/23/19	1140	8/23/19	1145	26	4	1		3							Y	Y	Y		1
2	EB-02	WT	G	8/23/19	1150	8/23/19	1155	26	4	1		3							Y	Y	Y		2
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

NM 08/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Noelia Muskus / Geo	08/23/19	1530	[signature]	8/23/19	1540				
	[signature]	08/26/19	0815	[signature]	8/26/19	1830	2.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelia Muskus

SIGNATURE of SAMPLER: [signature] DATE Signed: 08/23/19

WO# : 2622401

2622401

Pace Analytical

Sample Condition Upon Receipt

WO#: 2622401

Client Name: GA Power CCR

PM: BM Due Date: 09/25/19

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other _____

Tracking #: _____

Optional: Proj. Due Date: Proj. Name:

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

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

Cooler Temperature 2.8°C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/26/19 BM

Temp should be above freezing to 6°C Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 12, 2020

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

RE: Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622402001	**HGWC-107**	Water	08/23/19 09:35	08/26/19 18:30
2622402002	**HGWC-109**	Water	08/23/19 10:40	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622402001	**HGWC-107**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622402002	**HGWC-109**	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

Pace Analytical Services, LLC
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Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Sample: HGWC-107 **Lab ID: 2622402001** Collected: 08/23/19 09:35 Received: 08/26/19 18:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 18:11	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 18:11	7440-38-2	
Barium	**0.038**	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 18:11	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 18:11	7440-41-7	
Cadmium	**0.00011J**	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 18:11	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 18:11	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 18:11	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 18:11	7439-92-1	
Lithium	**0.00092J**	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 18:11	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 18:11	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 18:11	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 18:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/28/19 13:26	08/28/19 16:40	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		09/03/19 22:51	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Sample: HGWC-109 **Lab ID: 2622402002** Collected: 08/23/19 10:40 Received: 08/26/19 18:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 18:16	7440-36-0	
Arsenic	**0.0035J**	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 18:16	7440-38-2	
Barium	**0.088**	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 18:16	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 18:16	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 18:16	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 18:16	7440-47-3	
Cobalt	**0.0027J**	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 18:16	7440-48-4	
Lead	**0.000058J**	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 18:16	7439-92-1	B
Lithium	**0.00090J**	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 18:16	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 18:16	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 18:16	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 18:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	08/28/19 13:26	08/28/19 16:42	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**0.034J**	mg/L	0.30	0.029	1		09/03/19 23:14	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

QC Batch: 34391 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622402001, 2622402002

METHOD BLANK: 154672 Matrix: Water
Associated Lab Samples: 2622402001, 2622402002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	08/28/19 16:21	

LABORATORY CONTROL SAMPLE: 154673

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0025	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154674 154675

Parameter	Units	2622398001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0025	98	100	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

QC Batch: 34496 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622402001, 2622402002

METHOD BLANK: 155177 Matrix: Water
Associated Lab Samples: 2622402001, 2622402002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	08/30/19 17:42	
Arsenic	mg/L	ND	0.0050	0.00035	08/30/19 17:42	
Barium	mg/L	ND	0.010	0.00049	08/30/19 17:42	
Beryllium	mg/L	ND	0.0030	0.000074	08/30/19 17:42	
Cadmium	mg/L	ND	0.0025	0.00011	08/30/19 17:42	
Chromium	mg/L	ND	0.010	0.00039	08/30/19 17:42	
Cobalt	mg/L	ND	0.0050	0.00030	08/30/19 17:42	
Lead	mg/L	ND	0.0050	0.000046	08/30/19 17:42	
Lithium	mg/L	ND	0.030	0.00078	08/30/19 17:42	
Molybdenum	mg/L	ND	0.010	0.00095	08/30/19 17:42	
Selenium	mg/L	ND	0.010	0.0013	08/30/19 17:42	
Thallium	mg/L	ND	0.0010	0.000052	08/30/19 17:42	

LABORATORY CONTROL SAMPLE: 155178

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179 155180

Parameter	Units	2622479002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.10	104	102	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.11	0.11	106	107	75-125	1	20	
Barium	mg/L	0.036	0.1	0.1	0.14	0.13	103	97	75-125	4	20	
Beryllium	mg/L	0.00024J	0.1	0.1	0.098	0.095	97	95	75-125	3	20	
Cadmium	mg/L	0.00072	0.1	0.1	0.10	0.099	100	98	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179 155180

Parameter	Units	2622479002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Cobalt	mg/L	0.0018J	0.1	0.1	0.098	0.098	97	96	75-125	1	20	
Lead	mg/L	0.000049J	0.1	0.1	0.094	0.093	94	93	75-125	1	20	
Lithium	mg/L	0.0033J	0.1	0.1	0.10	0.10	100	97	75-125	2	20	
Molybdenum	mg/L	0.0065J	0.1	0.1	0.11	0.11	106	105	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.11	0.11	106	109	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.096	0.095	96	95	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

QC Batch: 34680 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622402001, 2622402002

METHOD BLANK: 156099 Matrix: Water
Associated Lab Samples: 2622402001, 2622402002

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

LABORATORY CONTROL SAMPLE: 156100

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156101 156102

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

MATRIX SPIKE SAMPLE: 156103

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

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622402

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622402001	**HGWC-107**	EPA 3005A	34496	EPA 6020B	34557
2622402002	**HGWC-109**	EPA 3005A	34496	EPA 6020B	34557
2622402001	**HGWC-107**	EPA 7470A	34391	EPA 7470A	34429
2622402002	**HGWC-109**	EPA 7470A	34391	EPA 7470A	34429
2622402001	**HGWC-107**	EPA 300.0	34680		
2622402002	**HGWC-109**	EPA 300.0	34680		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham / Lauren Petty	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Geosyntec	Company Name:	
	Atlanta, GA 30339			Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond AP	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:	Standard TAT	Project #:	GW6581	Pace Profile #:	327.4.2

Regulatory Agency: GA

State / Location:

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analysis Test (Y/N)	Requested Analysis Filtered (Y/N): App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)	
																		Y/N	N	N	N			
1	HGWC-107	GW	G	8/23	0905	8/23	0935	21	4	1		3							Y	Y	Y	N		1
2	HGWC-109	GW	G	8/23	1020	8/23	1040	20	4	1		3							Y	Y	Y	N		2
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

CR2 8/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Geo	8/23/19	1136	Nadia Mushtaq / Geo	8/23/19	1136				
	Nadia Mushtaq / Geo	8/23/19	1530	Christin Hagg	08/23/19	1540				
	Christin Hagg	08/26/19	0815	Chad Russo	8/26/19	1830	3.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 8/23/19

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

WO# : 2622402

2622402

Sample Condition Upon Receipt

WO#: 2622402

Pace Analytical

Client Name: GA Power CCR

PM: BM Due Date: 09/04/19

CLIENT: GAPower-CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other _____

Optional
Proj. Due Date:
Proj. Name:

Tracking #: _____

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used 214

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Date and Initials of person examining contents: 9/26/2019

Cooler Temperature 3.3°C

Biological Tissue is Frozen: Yes No

Comments:

Temp should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

September 25, 2019

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

RE: Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622403001	**HGWC-107**	Water	08/23/19 09:35	08/26/19 18:30
2622403002	**HGWC-109**	Water	08/23/19 10:40	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622403001	**HGWC-107**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622403002	**HGWC-109**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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110 Technology Parkway
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(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Sample: HGWC-107 **Lab ID: 2622403001** Collected: 08/23/19 09:35 Received: 08/26/19 18:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.502 ± 0.296 (0.407) C:90% T:NA**	pCi/L	09/18/19 08:37	13982-63-3	
Radium-228	EPA 9320	**1.19 ± 0.482 (0.736) C:74% T:73%**	pCi/L	09/20/19 11:54	15262-20-1	
Total Radium	Total Radium Calculation	**1.69 ± 0.778 (1.14)**	pCi/L	09/23/19 12:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Sample: HGWC-109 **Lab ID: 2622403002** Collected: 08/23/19 10:40 Received: 08/26/19 18:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.201 ± 0.209 (0.390) C:91% T:NA**	pCi/L	09/18/19 09:57	13982-63-3	
Radium-228	EPA 9320	**0.269 ± 0.262 (0.531) C:80% T:84%**	pCi/L	09/20/19 11:54	15262-20-1	
Total Radium	Total Radium Calculation	**0.470 ± 0.471 (0.921)**	pCi/L	09/24/19 10:31	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

QC Batch: 359964 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2622403001, 2622403002

METHOD BLANK: 1747386 Matrix: Water
Associated Lab Samples: 2622403001, 2622403002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.204 ± 0.233 (0.472) C:94% T:NA	pCi/L	09/18/19 08:31	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

QC Batch: 359966 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2622403001, 2622403002

METHOD BLANK: 1747390 Matrix: Water
Associated Lab Samples: 2622403001, 2622403002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.232 ± 0.311 (0.664) C:77% T:89%	pCi/L	09/20/19 11:52	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6581
Pace Project No.: 2622403

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622403001	**HGWC-107**	EPA 9315	359964		
2622403002	**HGWC-109**	EPA 9315	359964		
2622403001	**HGWC-107**	EPA 9320	359966		
2622403002	**HGWC-109**	EPA 9320	359966		
2622403001	**HGWC-107**	Total Radium Calculation	362632		
2622403002	**HGWC-109**	Total Radium Calculation	362817		

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical

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

Page : 1 Of 1

Section A — Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road, Atlanta, GA 30339
Email	jabraham@southernco.com
Phone:	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B — Required Project Information:

Report To:	Joju Abraham / Lauren Petty
Copy To:	Geosyntec
Purchase Order #	SCS10382775
Project Name:	Plant Hammond AP
Project #:	GW4-ER1

Section C — Invoice Information:

Attention	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Pace Profile #:	327.4.2

Regulatory Agency	
State / Location	GA

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

Requested Analysis Filtered (Y/N): N N N

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)
1	HGWC-107	WT	G	8/23	0905	8/23	0935	21	4	1		3							Y	Y	Y	N
2	HGWC-109	WT	G	8/23	1020	8/23	1040	20	4	1		3							Y	Y	Y	N
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CR 8/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
* Metals list: Hg, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo, Se, Tl	Chad Russo / Geo	8/23/19	1136	Nolia Musters / Geo	8/23/19	1136				
	Nolia Musters / Geo	8/23/19	1530	[illegible]	08/23/19	1540				
	[illegible]	08/26/19	0815	[illegible]	8/26/19	1830	3.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed: 8/23/19

WO#: 2622403

2622403

Sample Condition Upon Receipt

WO#: 2622403

PM: BM Due Date: 09/25/19

CLIENT: GAPower-CCR

Pace Analytical

Client Name: GA Power CCR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other _____

Tracking #: _____

Optional
Proj. Due Date:
Proj. Name:

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used 214

Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.3°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 9/26/19 CDH

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

December 16, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624787

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624787

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624787

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624787001	**HGWA-111**	Water	10/21/19 15:45	10/22/19 09:57

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624787

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624787001	**HGWA-111**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624787

Sample: HGWA-111 **Lab ID: 2624787001** Collected: 10/21/19 15:45 Received: 10/22/19 09:57 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	10/28/19 20:04	10/29/19 20:48	7440-38-2	
Barium	**0.033**	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 20:48	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	10/28/19 20:04	10/29/19 20:48	7440-41-7	
Boron	**0.0097J**	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 20:48	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	10/28/19 20:04	10/29/19 20:48	7440-43-9	
Calcium	**51.0**	mg/L	5.0	0.55	50	10/28/19 20:04	10/29/19 20:54	7440-70-2	
Chromium	**0.0012J**	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 20:48	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 20:48	7440-48-4	
Lead	**0.00016J**	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 20:48	7439-92-1	
Lithium	**0.0026J**	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 20:48	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**187**	mg/L	10.0	10.0	1		10/28/19 13:57		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.9**	mg/L	1.0	0.024	1		10/29/19 19:03	16887-00-6	
Fluoride	**0.12J**	mg/L	0.30	0.029	1		10/29/19 19:03	16984-48-8	
Sulfate	**1.8**	mg/L	1.0	0.017	1		10/29/19 19:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624787

QC Batch: 37696
QC Batch Method: EPA 3005A
Associated Lab Samples: 2624787001

Analysis Method: EPA 6020B
Analysis Description: 6020B MET

METHOD BLANK: 171182 Matrix: Water
Associated Lab Samples: 2624787001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	10/29/19 19:20	
Barium	mg/L	ND	0.010	0.00049	10/29/19 19:20	
Beryllium	mg/L	ND	0.0030	0.000074	10/29/19 19:20	
Boron	mg/L	ND	0.040	0.0049	10/29/19 19:20	
Cadmium	mg/L	ND	0.0025	0.00011	10/29/19 19:20	
Calcium	mg/L	ND	0.10	0.011	10/29/19 19:20	
Chromium	mg/L	ND	0.010	0.00039	10/29/19 19:20	
Cobalt	mg/L	ND	0.0050	0.00030	10/29/19 19:20	
Lead	mg/L	ND	0.0050	0.000046	10/29/19 19:20	
Lithium	mg/L	ND	0.030	0.00078	10/29/19 19:20	

LABORATORY CONTROL SAMPLE: 171183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	0.99	99	80-120	
Cadmium	mg/L	0.1	0.10	102	80-120	
Calcium	mg/L	1	1.0	101	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.11	106	80-120	
Lead	mg/L	0.1	0.11	106	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171184 171185

Parameter	Units	2624794002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	0.0046J	0.1	0.1	0.097	0.098	93	93	75-125	0	20	
Barium	mg/L	0.35	0.1	0.1	0.46	0.46	108	109	75-125	0	20	
Beryllium	mg/L	0.000078J	0.1	0.1	0.090	0.091	90	91	75-125	1	20	
Boron	mg/L	1.1	1	1	1.9	1.9	78	81	75-125	1	20	
Cadmium	mg/L		0.1	0.1	0.086	0.085	86	85	75-125	1	20	
Calcium	mg/L	260	1	1	269	272	841	1200	75-125	1	20	
Chromium	mg/L	0.0019J	0.1	0.1	0.11	0.11	104	103	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.095	0.094	95	94	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.095	0.096	95	96	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624787

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171184 171185

Parameter	Units	2624794002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium	mg/L	0.096	0.1	0.1	0.20	0.20	101	102	75-125	0	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624787

QC Batch: 37642
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624787001

LABORATORY CONTROL SAMPLE: 170927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	377	94	84-108	

SAMPLE DUPLICATE: 170928

Parameter	Units	2624784001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	296	297	0	10	

SAMPLE DUPLICATE: 170929

Parameter	Units	2624685010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	817	813	0	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624787

QC Batch: 37730
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624787001

METHOD BLANK: 171248 Matrix: Water
Associated Lab Samples: 2624787001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.034J	1.0	0.024	10/29/19 13:23	
Fluoride	mg/L	ND	0.30	0.029	10/29/19 13:23	
Sulfate	mg/L	ND	1.0	0.017	10/29/19 13:23	

LABORATORY CONTROL SAMPLE: 171249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.5	105	90-110	
Fluoride	mg/L	10	10.8	108	90-110	
Sulfate	mg/L	10	10.5	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171250 171251

Parameter	Units	2624505001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	57.2	20	20	75.8	74.8	93	88	90-110	1	15	M1
Fluoride	mg/L	1.7	20	20	20.7	21.6	95	100	90-110	4	15	
Sulfate	mg/L	ND	20	20	ND	ND	0	0	90-110		15	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624787

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

Pace Analytical Services, LLC
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(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624787

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624787001	**HGWA-111**	EPA 3005A	37696	EPA 6020B	37751
2624787001	**HGWA-111**	SM 2540C	37642		
2624787001	**HGWA-111**	EPA 300.0	37730		

WO# : 2624788

2624788

WO# : 2624787

2624787

Page : 1 Of 1

Section B

Required Project Information:

Report To: Joju Abraham

Copy To: Lauren Petty, Geosyntec

Purchase Order #: SCS10382775

Project Name: Plant Hammond

Project #: GW658

Requested Due Date: Standard TAT

Section C

Invoice Information:

Attention: scsinvoices@southernco.com

Company Name:

Address:

Pace Quote:

Pace Project Manager: betsy.mcdaniel@pacelabs.com,

Pace Profile #: 327 (AP)

Regulatory Agency

State / Location: GA

Section A

...rmation:

...eorgia Power - Coal Combustion Residuals

...2480 Maner Road

..., 30339

E...jabraham@southernco.com

Phone: (404)506-7239 Fax:

Requested Due Date: Standard TAT

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: App. III Metals (1)	App. IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
1	HGWA-111	GW	G	10/21	1535	10/21	1545	20	4	1		3						Y	X	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CR 10/21/19

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) App. III Metals = B, Ca	Chad Russo / GCO	10/21	1830	Pace	10.22.19	0957	8.8
(2, AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed: 10/21/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
8.8	Y	Y	Y

Pace Analytical

WO#: 2624787
PM: BM Due Date: 10/29/19
CLIENT: GAPower-CCR

0#: 2624788
: BM Due Date: 11/19/19
IENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace _____

Tracking #: _____

Proj. Due Date:
Proj. Name:

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature _____ Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: _____

Temp should be above freezing to 6°C Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

November 19, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624788

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624788

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
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(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624788

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624788001	**HGWA-111**	Water	10/21/19 15:45	10/22/19 09:57

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624788

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624788001	**HGWA-111**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624788

Sample: HGWA-111 **Lab ID: 2624788001** Collected: 10/21/19 15:45 Received: 10/22/19 09:57 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.351 ± 0.311 (0.591) C:74% T:NA**	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	**-0.102 ± 0.278 (0.674) C:77% T:90%**	pCi/L	11/12/19 12:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.351 ± 0.589 (1.27)**	pCi/L	11/18/19 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624788

QC Batch: 369306
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Associated Lab Samples: 2624788001

METHOD BLANK: 1791694
Matrix: Water
Associated Lab Samples: 2624788001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.317 ± 0.325 (0.673) C:79% T:91%	pCi/L	11/12/19 12:14	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624788

QC Batch: 369307
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Associated Lab Samples: 2624788001

METHOD BLANK: 1791695
Matrix: Water
Associated Lab Samples: 2624788001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.330 ± 0.234 (0.359) C:92% T:NA	pCi/L	11/15/19 08:32	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624788

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624788

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624788001	**HGWA-111**	EPA 9315	369307		
2624788001	**HGWA-111**	EPA 9320	369306		
2624788001	**HGWA-111**	Total Radium Calculation	371524		

WO# : 2624788

2624788

WO# : 2624787

2624787

Pace Analytical

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Lauren Petty, Geosyntec	Company Name:	
Atlanta, GA 30339				Address:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10382775	Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond	Pace Project Manager:	betsy.mcdaniel@pacelabs.com,
Requested Due Date:	Standard TAT	Project #:	GW658	Pace Profile #:	327 (AP)

Regulatory Agency: —

State / Location: GA

Requested Analysis Filtered (Y/N): Y N N N

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: App. III Metals (1)	App. IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
1	HGWA-111	GW	G	10/21	1535	10/21	1545	20	4	1		3						Y	Y	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CB 10/21/19

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App. III Metals = B, Ca	Chad Russo GCO	10/21	1830	Pace	10.22.19	0957	8.8	Y	Y	Y
(2, AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed: 10/21/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical

WO#: 2624787
PM: BM Due Date: 10/29/19
CLIENT: GAPower-CCR

0#: 2624788
: BM Due Date: 11/19/19
IENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace

Tracking #: _____

Proj. Due Date:
Proj. Name:

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature _____ Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: _____

Temp should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

November 21, 2019

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

RE: Project: Plant Hammond
Pace Project No.: 2624791

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond
Pace Project No.: 2624791

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond
Pace Project No.: 2624791

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624791001	**HGWC-101**	Water	10/23/19 11:30	10/24/19 10:07
2624791002	**HGWC-102**	Water	10/23/19 09:40	10/24/19 10:07
2624791003	**HGWC-105**	Water	10/23/19 09:17	10/24/19 10:07
2624791004	**HGWC-103**	Water	10/23/19 11:36	10/24/19 10:07

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond
Pace Project No.: 2624791

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624791001	**HGWC-101**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624791002	**HGWC-102**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624791003	**HGWC-105**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624791004	**HGWC-103**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

Sample: HGWC-101 **Lab ID: 2624791001** Collected: 10/23/19 11:30 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.182 ± 0.199 (0.390) C:90% T:NA**	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	**0.594 ± 0.484 (0.965) C:78% T:87%**	pCi/L	11/12/19 17:49	15262-20-1	
Total Radium	Total Radium Calculation	**0.776 ± 0.683 (1.36)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

Sample: HGWC-102 **Lab ID: 2624791002** Collected: 10/23/19 09:40 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.252 ± 0.219 (0.392) C:93% T:NA**	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	**0.606 ± 0.539 (1.09) C:84% T:71%**	pCi/L	11/12/19 17:49	15262-20-1	
Total Radium	Total Radium Calculation	**0.858 ± 0.758 (1.48)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

Sample: HGWC-105 **Lab ID: 2624791003** Collected: 10/23/19 09:17 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.387 ± 0.259 (0.398) C:91% T:NA**	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	**0.197 ± 0.465 (1.03) C:82% T:78%**	pCi/L	11/12/19 17:49	15262-20-1	
Total Radium	Total Radium Calculation	**0.584 ± 0.724 (1.43)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

Sample: HGWC-103 **Lab ID: 2624791004** Collected: 10/23/19 11:36 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.571 ± 0.291 (0.358) C:92% T:NA**	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	**-0.102 ± 0.382 (0.914) C:85% T:85%**	pCi/L	11/12/19 17:50	15262-20-1	
Total Radium	Total Radium Calculation	**0.571 ± 0.673 (1.27)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

QC Batch: 369310 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2624791001, 2624791002, 2624791003, 2624791004

METHOD BLANK: 1791698 Matrix: Water
Associated Lab Samples: 2624791001, 2624791002, 2624791003, 2624791004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.590 ± 0.307 (0.405) C:93% T:NA	pCi/L	11/15/19 07:34	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2624791

QC Batch: 369311 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2624791001, 2624791002, 2624791003, 2624791004

METHOD BLANK: 1791699 Matrix: Water
Associated Lab Samples: 2624791001, 2624791002, 2624791003, 2624791004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.174 ± 0.362 (0.799) C:80% T:87%	pCi/L	11/12/19 15:54	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond
Pace Project No.: 2624791

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond
Pace Project No.: 2624791

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624791001	**HGWC-101**	EPA 9315	369310		
2624791002	**HGWC-102**	EPA 9315	369310		
2624791003	**HGWC-105**	EPA 9315	369310		
2624791004	**HGWC-103**	EPA 9315	369310		
2624791001	**HGWC-101**	EPA 9320	369311		
2624791002	**HGWC-102**	EPA 9320	369311		
2624791003	**HGWC-105**	EPA 9320	369311		
2624791004	**HGWC-103**	EPA 9320	369311		
2624791001	**HGWC-101**	Total Radium Calculation	371617		
2624791002	**HGWC-102**	Total Radium Calculation	371617		
2624791003	**HGWC-105**	Total Radium Calculation	371617		
2624791004	**HGWC-103**	Total Radium Calculation	371617		

Pace Analytical

WO# : 2624792

2624792

WO# : 2624791

2624791

Page: 1 of 3

Section A
Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B
Required Project Inform

Report To	Joju Abraha...
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10362775
Project Name	Plant Hammond
Project #	CW6581

Invoice Information:

Attention	scsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy.mcdaniel@pacelabs.com,
Pace Profile #	327 (AP)

Regulatory Agency

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App III Metals (1)	App IV Metals (2. AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																	Y/N	N	N	N	N	
1	MGWC-101	GW	G	10/23	1046	10/23	1130	19	4	1		3							Y	Y	Y	Y	N
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

CR 10/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App. III Metals = B, Ca	[signature]	1423	1300	[signature] Pace	10.24	1007	2.8	X	Y	Y
(2. AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: [signature] DATE Signed: 10/23/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Ana... Sample C... on Receipt

WO#: 2624791

PM: BM **Due Date: 11/21/19**

CLIENT: GRPower-CCR

Courier: ☑ Fed E... ace Other

Tracking #: _____

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

Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used THR214 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.8 **Biological Tissue is Frozen:** Yes No

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

Date and Initials of person examining contents: _____

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

Section A — Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B — Required Project Information:

Report To	Joju Abraham
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10382775
Project Name	Plant Hammond
Project #	GW6581

Section C — Invoice Information:

Attention	scsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy mcdaniel@pacelabs.com,
Pace Profile #	327 (AP)

Regulatory Agency	
State / Location	GA

SAMPLE ID: One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Collected Start DATE	Collected Start TIME	Collected End DATE	Collected End TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	App. III Metals (1)	App. IV Metals (2, HGWC-102)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
Requested Analysis Filtered (Y/N)																		N	N	N	N	
1	HGWC-102	GW	G	10/23	0917	10/23	0940	17	4	1		3						Y	Y	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CK 10/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) App. III Metals = B, Ca	Chad Russo / GCO	10/23	1300	[signature] / Pace	10/24	1007	4.2	Y	Y	Y
(2, HGWC-102) App. IV Metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 10/23/19

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 Of 3

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	Georgia Power - Coal Combustion Residuals	Report To	Jeju Abraham	Attention	scsinvoices@southernco.com
Address	2480 Maner Road	Copy To	Lauren Petty, Geosyntec	Company Name	
Atlanta, GA 30339				Address	
Email	jabrahams@southernco.com	Purchase Order #	SCS10382775	Pace Quote	
Phone	(404)506-7239 Fax	Project Name	Plant Hammond	Pace Project Manager	betsy.modaresi@pacelabs.com,
Requested Due Date	Standard TAT	Project #	GWGS81	Pace Profile #	327 (AP)

Regulatory Agency: —

State / Location: GA

Requested Analyses Filtered (Y/N): Y/N — N N N N

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	App III Metals (1)	App IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
1	HGWC-105	GW	G	10/23/19	08:53	10/23/19	9:17	16.2	4	1		3							Y	Y	Y	Y	N
2	HGWC-103	GW	G	10/23/19	11:09	10/23/19	11:36	16.2	4	1		3							Y	Y	Y	Y	N
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

(1) DG 10-23-2019

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) App. III Metals = B, Ca	Dan Gibbs / Geosyntec	10/23	1150	Chad Russell / GCO	10/23	1150	
(2, AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li	Chad Russell / GCO	10/23	1300	2 — 1 Pace	10.24	1007	4.6

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan Gibbs

SIGNATURE of SAMPLER: Dan

DATE Signed: 10-23-2019

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 12, 2020

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

RE: Project: Plant Hammond
Pace Project No.: 2624792

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond
Pace Project No.: 2624792

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond
Pace Project No.: 2624792

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624792001	**HGWC-101**	Water	10/23/19 11:30	10/24/19 10:07
2624792002	**HGWC-102**	Water	10/23/19 09:40	10/24/19 10:07
2624792003	**HGWC-105**	Water	10/23/19 09:17	10/24/19 10:07
2624792004	**HGWC-103**	Water	10/23/19 11:36	10/24/19 10:07

Pace Analytical Services, LLC
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Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond
Pace Project No.: 2624792

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624792001	**HGWC-101**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624792002	**HGWC-102**	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624792003	**HGWC-105**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624792004	**HGWC-103**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

Pace Analytical Services, LLC
110 Technology Parkway
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(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond
Pace Project No.: 2624792

Sample: HGWC-101 **Lab ID: 2624792001** Collected: 10/23/19 11:30 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 02:50	7440-38-2	
Barium	**0.043**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 02:50	7440-39-3	
Beryllium	**0.000075J**	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 13:31	7440-41-7	
Boron	**0.10**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 02:50	7440-42-8	
Cadmium	**0.00020J**	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 02:50	7440-43-9	
Calcium	**21.9**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 02:55	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 02:50	7440-47-3	
Cobalt	**0.0023J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 02:50	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 02:50	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:31	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**221**	mg/L	10.0	10.0	1		10/29/19 13:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**5.5**	mg/L	1.0	0.024	1		10/31/19 06:50	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/31/19 06:50	16984-48-8	
Sulfate	**101**	mg/L	10.0	0.17	10		10/31/19 17:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond
Pace Project No.: 2624792

Sample: HGWC-102 **Lab ID: 2624792002** Collected: 10/23/19 09:40 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/01/19 16:00	11/04/19 03:01	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 03:01	7440-38-2	
Barium	**0.037**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 03:01	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 13:37	7440-41-7	
Boron	**3.1**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 03:01	7440-42-8	
Cadmium	**0.00026J**	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 03:01	7440-43-9	
Calcium	**136**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 03:07	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 03:01	7440-47-3	
Cobalt	**0.0018J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 03:01	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 03:01	7439-92-1	
Lithium	**0.0012J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:37	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/01/19 16:00	11/04/19 03:01	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	11/01/19 16:00	11/04/19 03:01	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	11/01/19 16:00	11/04/19 03:01	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/29/19 09:50	10/29/19 16:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**736**	mg/L	10.0	10.0	1		10/29/19 13:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**7.9**	mg/L	1.0	0.024	1		10/31/19 07:13	16887-00-6	
Fluoride	**0.22J**	mg/L	0.30	0.029	1		10/31/19 07:13	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		10/31/19 07:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond
Pace Project No.: 2624792

Sample: HGWC-105 **Lab ID: 2624792003** Collected: 10/23/19 09:17 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 03:24	7440-38-2	
Barium	**0.066**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 03:24	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 13:42	7440-41-7	
Boron	**1.3**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 13:42	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 03:24	7440-43-9	
Calcium	**89.4**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 03:30	7440-70-2	
Chromium	**0.00040J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 03:24	7440-47-3	
Cobalt	**0.00038J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 03:24	7440-48-4	
Lead	**0.000068J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 03:24	7439-92-1	
Lithium	**0.0039J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:42	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**419**	mg/L	10.0	10.0	1		10/29/19 13:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.6**	mg/L	1.0	0.024	1		10/31/19 07:35	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/31/19 07:35	16984-48-8	
Sulfate	**162**	mg/L	10.0	0.17	10		10/31/19 17:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: Plant Hammond
Pace Project No.: 2624792

Sample: HGWC-103 **Lab ID: 2624792004** Collected: 10/23/19 11:36 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 03:35	7440-38-2	
Barium	**0.039**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 03:35	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 13:48	7440-41-7	
Boron	**2.3**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 13:48	7440-42-8	
Cadmium	**0.00091J**	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 03:35	7440-43-9	
Calcium	**86.5**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 03:41	7440-70-2	
Chromium	**0.0015J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 03:35	7440-47-3	
Cobalt	**0.0021J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 03:35	7440-48-4	
Lead	**0.00043J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 03:35	7439-92-1	
Lithium	**0.0020J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:48	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**507**	mg/L	10.0	10.0	1		10/29/19 13:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**6.1**	mg/L	1.0	0.024	1		10/31/19 07:57	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/31/19 07:57	16984-48-8	
Sulfate	**248**	mg/L	10.0	0.17	10		10/31/19 18:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond
Pace Project No.: 2624792

QC Batch: 37720
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Associated Lab Samples: 2624792002

METHOD BLANK: 171214 Matrix: Water
Associated Lab Samples: 2624792002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/29/19 15:19	

LABORATORY CONTROL SAMPLE: 171215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171216 171217

Parameter	Units	2624786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L				0.0027	0.0025				6	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond
Pace Project No.: 2624792

QC Batch: 38024 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624792001, 2624792002, 2624792003, 2624792004

METHOD BLANK: 172889 Matrix: Water
Associated Lab Samples: 2624792001, 2624792002, 2624792003, 2624792004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	11/04/19 01:12	
Arsenic	mg/L	ND	0.0050	0.00035	11/04/19 01:12	
Barium	mg/L	ND	0.010	0.00049	11/04/19 01:12	
Beryllium	mg/L	ND	0.0030	0.000074	11/04/19 01:12	
Boron	mg/L	0.0059J	0.040	0.0049	11/04/19 01:12	
Cadmium	mg/L	ND	0.0025	0.00011	11/04/19 01:12	
Calcium	mg/L	ND	0.10	0.011	11/04/19 01:12	
Chromium	mg/L	ND	0.010	0.00039	11/04/19 01:12	
Cobalt	mg/L	ND	0.0050	0.00030	11/04/19 01:12	
Lead	mg/L	ND	0.0050	0.000046	11/04/19 01:12	
Lithium	mg/L	ND	0.030	0.00078	11/04/19 01:12	
Molybdenum	mg/L	ND	0.010	0.00095	11/04/19 01:12	
Selenium	mg/L	ND	0.010	0.0013	11/04/19 01:12	
Thallium	mg/L	ND	0.0010	0.000052	11/04/19 01:12	

LABORATORY CONTROL SAMPLE: 172890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	107	80-120	
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.11	114	80-120	
Boron	mg/L	1	1.2	116	80-120	
Cadmium	mg/L	0.1	0.11	106	80-120	
Calcium	mg/L	1	1.1	106	80-120	
Chromium	mg/L	0.1	0.10	105	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.11	112	80-120	
Molybdenum	mg/L	0.1	0.10	103	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.10	106	104	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond
Pace Project No.: 2624792

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	2.5	0.1	0.1	2.6	2.6	43	106	75-125	2	20	M6
Barium	mg/L	0.22	0.1	0.1	0.32	0.31	99	98	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.090	0.086	90	86	75-125	5	20	
Boron	mg/L	4.3	1	1	5.1	5.2	85	95	75-125	2	20	
Cadmium	mg/L	0.00012J	0.1	0.1	0.11	0.10	107	103	75-125	4	20	
Calcium	mg/L	177	1	1	170	179	-693	243	75-125	5	20	M6
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Cobalt	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	0	20	
Lead	mg/L	ND	0.1	0.1	0.092	0.090	92	90	75-125	2	20	
Lithium	mg/L	0.29	0.1	0.1	0.36	0.36	73	75	75-125	1	20	M1
Molybdenum	mg/L	0.49	0.1	0.1	0.58	0.60	89	105	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.093	0.092	93	92	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond
Pace Project No.: 2624792

QC Batch: 37735 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624792001, 2624792002, 2624792003, 2624792004

LABORATORY CONTROL SAMPLE: 171263

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	402	100	84-108	

SAMPLE DUPLICATE: 171264

Parameter	Units	2624800005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	212	212	0	10	

SAMPLE DUPLICATE: 171265

Parameter	Units	2624792004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	507	512	1	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: Plant Hammond
Pace Project No.: 2624792

QC Batch: 37870 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624792001, 2624792002, 2624792003, 2624792004

METHOD BLANK: 171906 Matrix: Water
Associated Lab Samples: 2624792001, 2624792002, 2624792003, 2624792004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/31/19 04:37	
Fluoride	mg/L	ND	0.30	0.029	10/31/19 04:37	
Sulfate	mg/L	ND	1.0	0.017	10/31/19 04:37	

LABORATORY CONTROL SAMPLE: 171907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	5	5.0	101	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171908 171909

Parameter	Units	2624786002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.2	10	10	13.0	13.2	97	100	90-110	2	15	
Fluoride	mg/L	0.56	10	10	10.6	10.9	100	103	90-110	3	15	

MATRIX SPIKE SAMPLE: 171910

Parameter	Units	2624800005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.6	10	14.7	101	90-110	
Fluoride	mg/L	0.099J	10	10.6	105	90-110	
Sulfate	mg/L	23.2	10	28.2	50	90-110	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: Plant Hammond
Pace Project No.: 2624792

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond
Pace Project No.: 2624792

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624792001	**HGWC-101**	EPA 3005A	38024	EPA 6020B	38049
2624792002	**HGWC-102**	EPA 3005A	38024	EPA 6020B	38049
2624792003	**HGWC-105**	EPA 3005A	38024	EPA 6020B	38049
2624792004	**HGWC-103**	EPA 3005A	38024	EPA 6020B	38049
2624792002	**HGWC-102**	EPA 7470A	37720	EPA 7470A	37761
2624792001	**HGWC-101**	SM 2540C	37735		
2624792002	**HGWC-102**	SM 2540C	37735		
2624792003	**HGWC-105**	SM 2540C	37735		
2624792004	**HGWC-103**	SM 2540C	37735		
2624792001	**HGWC-101**	EPA 300.0	37870		
2624792002	**HGWC-102**	EPA 300.0	37870		
2624792003	**HGWC-105**	EPA 300.0	37870		
2624792004	**HGWC-103**	EPA 300.0	37870		

Pace Analytical

WO# : 2624792

2624792

WO# : 2624791

2624791

Page: 1 of 3

Section A
Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B
Required Project Inform

Report To	Joju Abraha...
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10362775
Project Name	Plant Hammond
Project #	CW6581

Invoice Information:

Attention	scsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy.mcdaniel@pacelabs.com,
Pace Profile #	327 (AP)

Regulatory Agency

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App III Metals (1)	App IV Metals (2. AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	N	N	N	N	N	
1	HGWC-101	GW	G	10/23	1046	10/23	1130	19	4	1		3						Y	Y	Y	Y	Y	N
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

CR 10/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App. III Metals = B, Ca	[signature]	1423	1300	[signature] Pace	10.24	1007	2.8	X	Y	Y
(2. AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Rusco

SIGNATURE of SAMPLER: [signature] DATE Signed: 10/23/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Ana

S... on Receipt

WO# : 2624791

PM: BM Due Date: 11/21/19

CLIENT: GAPower-CCR

Proj. Name:

Courier: ☑ Fed E ... ace Other

Tracking #: ______

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other ______

Thermometer Used THR214 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.8 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ______

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

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

Person Contacted: ______ Date/Time: ______

Comments/ Resolution: ______

3000 W28

Project Manager Review: ______ **Date:** ______

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

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

Section A — Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B — Required Project Information:

Report To	Joju Abraham
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10382775
Project Name	Plant Hammond
Project #	GW6581

Section C — Invoice Information:

Attention	scsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy mcdaniel@pacelabs.com,
Pace Profile #	327 (AP)

Regulatory Agency	
State / Location	GA

SAMPLE ID: One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	App III Metals (1)	App IV Metals (2, HGWC-102)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
Requested Analysis Filtered (Y/N)																		N	N	N	N	
1	HGWC-102	GW	G	10/23	0917	10/23	0940	17	4	1		3						Y	Y	Y	Y	N
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

CK 10/23/19

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App. III Metals = B, Ca	Chad Russo / gco	10/23	1300	[signature] / Pace	10/24	1007	4.2	Y	Y	Y
(2, HGWC-102) App. IV Metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ta										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 10/23/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 Of 3

Section A – Required Client Information:		Section B – Required Project Information:		Section C – Invoice Information:	
Company	Georgia Power - Coal Combustion Residuals	Report To	Jeju Abraham	Attention	acsinvoices@southernco.com
Address	2480 Maner Road	Copy To	Lauren Petty, Geosyntec	Company Name	
Atlanta, GA 30339				Address	
Email	jabrahem@southernco.com	Purchase Order #	SCS10382775	Pace Quote	
Phone	(404)506-7239 Fax	Project Name	Plant Hammond	Pace Project Manager	betsy.modaresi@pacelabs.com,
Requested Due Date	Standard TAT	Project #	GWGS81	Pace Profile #	327 (AP)

Regulatory Agency: —

State / Location: GA

Requested Analyses Filtered (Y/N): N N N N

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	App III Metals (1)	App IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
1	HGWC-105	GW	G	10/23/19	08:53	10/23/19	9:17	16.2	4	1		3							Y	Y	Y	Y	N
2	HGWC-103	GW	G	10/23/19	11:09	10/23/19	11:36	16.2	4	1		3							Y	Y	Y	Y	N
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

(1) DG 10-23-2019

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) App. III Metals = B, Ca	Dan Gibbs / Geosyntec	10/23	1150	Chad Russell / GCO	10/23	1150	
(2, AP-4) App. IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li	Chad Russell / GCO	10/23	1300	2 — 1 Peace	10.24	1007	4.6

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan Gibbs

SIGNATURE of SAMPLER: Dan

DATE Signed: 10-23-2019

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

November 21, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624799

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624799

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624799001	**HGWA-112**	Water	10/22/19 10:40	10/24/19 10:07
2624799002	**HGWC-117**	Water	10/22/19 15:00	10/24/19 10:07
2624799003	**HGWC-118**	Water	10/22/19 19:08	10/24/19 10:07
2624799004	**HGWA-113**	Water	10/22/19 11:20	10/24/19 10:07
2624799005	**HGWC-109**	Water	10/22/19 14:35	10/24/19 10:07
2624799006	**HGWC-107**	Water	10/22/19 13:55	10/24/19 10:07

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624799

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624799001	**HGWA-112**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624799002	**HGWC-117**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624799003	**HGWC-118**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624799004	**HGWA-113**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624799005	**HGWC-109**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624799006	**HGWC-107**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWA-112 **Lab ID: 2624799001** Collected: 10/22/19 10:40 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.491 ± 0.311 (0.509) C:94% T:NA**	pCi/L	11/15/19 07:34	13982-63-3	
Radium-228	EPA 9320	**0.337 ± 0.310 (0.623) C:77% T:90%**	pCi/L	11/12/19 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.828 ± 0.621 (1.13)**	pCi/L	11/18/19 15:16	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWC-117 **Lab ID: 2624799002** Collected: 10/22/19 15:00 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.383 ± 0.293 (0.519) C:87% T:NA**	pCi/L	11/15/19 07:34	13982-63-3	
Radium-228	EPA 9320	**0.444 ± 0.685 (1.48) C:64% T:77%**	pCi/L	11/12/19 16:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.827 ± 0.978 (2.00)**	pCi/L	11/18/19 15:16	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWC-118 **Lab ID: 2624799003** Collected: 10/22/19 19:08 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.424 ± 0.266 (0.398) C:90% T:NA**	pCi/L	11/15/19 07:34	13982-63-3	
Radium-228	EPA 9320	**-0.247 ± 0.425 (1.01) C:82% T:89%**	pCi/L	11/12/19 16:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.424 ± 0.691 (1.41)**	pCi/L	11/18/19 15:16	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWA-113 **Lab ID: 2624799004** Collected: 10/22/19 11:20 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.401 ± 0.255 (0.368) C:93% T:NA**	pCi/L	11/15/19 07:35	13982-63-3	
Radium-228	EPA 9320	**0.122 ± 0.462 (1.04) C:76% T:83%**	pCi/L	11/12/19 16:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.523 ± 0.717 (1.41)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWC-109 **Lab ID: 2624799005** Collected: 10/22/19 14:35 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.545 ± 0.309 (0.464) C:94% T:NA**	pCi/L	11/15/19 07:35	13982-63-3	
Radium-228	EPA 9320	**-0.545 ± 0.446 (1.09) C:77% T:90%**	pCi/L	11/12/19 16:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.545 ± 0.755 (1.55)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

Sample: HGWC-107 **Lab ID: 2624799006** Collected: 10/22/19 13:55 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.357 ± 0.270 (0.465) C:90% T:NA**	pCi/L	11/15/19 07:35	13982-63-3	
Radium-228	EPA 9320	**0.348 ± 0.486 (1.04) C:83% T:80%**	pCi/L	11/12/19 17:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.705 ± 0.756 (1.51)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

QC Batch: 369310 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2624799001, 2624799002, 2624799003, 2624799004, 2624799005, 2624799006

METHOD BLANK: 1791698 Matrix: Water
Associated Lab Samples: 2624799001, 2624799002, 2624799003, 2624799004, 2624799005, 2624799006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.590 ± 0.307 (0.405) C:93% T:NA	pCi/L	11/15/19 07:34	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624799

QC Batch: 369311 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2624799001, 2624799002, 2624799003, 2624799004, 2624799005, 2624799006

METHOD BLANK: 1791699 Matrix: Water
Associated Lab Samples: 2624799001, 2624799002, 2624799003, 2624799004, 2624799005, 2624799006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.174 ± 0.362 (0.799) C:80% T:87%	pCi/L	11/12/19 15:54	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624799

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624799

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624799001	**HGWA-112**	EPA 9315	369310		
2624799002	**HGWC-117**	EPA 9315	369310		
2624799003	**HGWC-118**	EPA 9315	369310		
2624799004	**HGWA-113**	EPA 9315	369310		
2624799005	**HGWC-109**	EPA 9315	369310		
2624799006	**HGWC-107**	EPA 9315	369310		
2624799001	**HGWA-112**	EPA 9320	369311		
2624799002	**HGWC-117**	EPA 9320	369311		
2624799003	**HGWC-118**	EPA 9320	369311		
2624799004	**HGWA-113**	EPA 9320	369311		
2624799005	**HGWC-109**	EPA 9320	369311		
2624799006	**HGWC-107**	EPA 9320	369311		
2624799001	**HGWA-112**	Total Radium Calculation	371530		
2624799002	**HGWC-117**	Total Radium Calculation	371530		
2624799003	**HGWC-118**	Total Radium Calculation	371530		
2624799004	**HGWA-113**	Total Radium Calculation	371617		
2624799005	**HGWC-109**	Total Radium Calculation	371617		
2624799006	**HGWC-107**	Total Radium Calculation	371617		

Sample Condition Upon Receipt

Pace Analytical

WO#: 2624800
PM: BM Due Date: 10/31/19
CLIENT: GAPower-CCR

Project #
WO#: 2624799
PM: BM Due Date: 11/21/19
CLIENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UP
Tracking #: _____
Custody Seal on Cooler/Box Present: ☐ yes
Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____
Thermometer Used THR 214
Cooler Temperature 0.8
Type of Ice: Wet Blue None
Biological Tissue is Frozen: Yes No
☐ Samples on ice, cooling process has begun
Date and Initials of person examining contents: _____
Temp should be above freezing to 6°C
Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

December 16, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624800

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

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SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624800

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624800001	**HGWA-112**	Water	10/22/19 10:40	10/24/19 10:07
2624800002	**HGWC-117**	Water	10/22/19 15:00	10/24/19 10:07
2624800003	**HGWC-118**	Water	10/22/19 19:08	10/24/19 10:07
2624800004	**HGWA-113**	Water	10/22/19 11:20	10/24/19 10:07
2624800005	**HGWC-109**	Water	10/22/19 14:35	10/24/19 10:07
2624800006	**HGWC-107**	Water	10/22/19 13:55	10/24/19 10:07

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624800

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624800001	**HGWA-112**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624800002	**HGWC-117**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624800003	**HGWC-118**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624800004	**HGWA-113**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624800005	**HGWC-109**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624800006	**HGWC-107**	EPA 6020B	CSW	10
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWA-112 **Lab ID: 2624800001** Collected: 10/22/19 10:40 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 03:47	7440-38-2	
Barium	**0.028**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 03:47	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 13:54	7440-41-7	
Boron	**0.016J**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 13:54	7440-42-8	B
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 03:47	7440-43-9	
Calcium	**6.3**	mg/L	0.10	0.011	1	11/01/19 16:00	11/04/19 03:47	7440-70-2	
Chromium	**0.0040J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 03:47	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 03:47	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 03:47	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:54	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**81.0**	mg/L	10.0	10.0	1		10/29/19 13:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**5.5**	mg/L	1.0	0.024	1		10/31/19 08:19	16887-00-6	
Fluoride	**0.050J**	mg/L	0.30	0.029	1		10/31/19 08:19	16984-48-8	
Sulfate	**0.60J**	mg/L	1.0	0.017	1		10/31/19 08:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWC-117 **Lab ID: 2624800002** Collected: 10/22/19 15:00 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 03:58	7440-38-2	
Barium	**0.049**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 03:58	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:00	7440-41-7	
Boron	**1.0**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:00	7440-42-8	
Cadmium	**0.00068J**	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 03:58	7440-43-9	
Calcium	**70.9**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 04:04	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 03:58	7440-47-3	
Cobalt	**0.0064**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 03:58	7440-48-4	
Lead	**0.00016J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 03:58	7439-92-1	
Lithium	**0.0028J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:00	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**348**	mg/L	10.0	10.0	1		10/29/19 13:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.1**	mg/L	1.0	0.024	1		10/31/19 08:41	16887-00-6	
Fluoride	**0.042J**	mg/L	0.30	0.029	1		10/31/19 08:41	16984-48-8	
Sulfate	**133**	mg/L	10.0	0.17	10		10/31/19 18:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWC-118 **Lab ID: 2624800003** Collected: 10/22/19 19:08 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 04:10	7440-38-2	
Barium	**0.054**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 04:10	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:05	7440-41-7	
Boron	**0.65**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:05	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 04:10	7440-43-9	
Calcium	**84.2**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 04:15	7440-70-2	
Chromium	**0.00066J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 04:10	7440-47-3	
Cobalt	**0.00061J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 04:10	7440-48-4	
Lead	**0.00025J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 04:10	7439-92-1	
Lithium	**0.0027J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:05	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**354**	mg/L	10.0	10.0	1		10/29/19 13:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.5**	mg/L	1.0	0.024	1		10/31/19 09:04	16887-00-6	
Fluoride	**0.087J**	mg/L	0.30	0.029	1		10/31/19 09:04	16984-48-8	
Sulfate	**80.9**	mg/L	10.0	0.17	10		10/31/19 19:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWA-113 **Lab ID: 2624800004** Collected: 10/22/19 11:20 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 04:33	7440-38-2	
Barium	**0.027**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 04:33	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:32	7440-41-7	
Boron	**0.010J**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:32	7440-42-8	B
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 04:33	7440-43-9	
Calcium	**7.2**	mg/L	0.10	0.011	1	11/01/19 16:00	11/04/19 04:33	7440-70-2	
Chromium	**0.0023J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 04:33	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 04:33	7440-48-4	
Lead	**0.000073J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 04:33	7439-92-1	
Lithium	**0.0011J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:32	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**95.0**	mg/L	10.0	10.0	1		10/29/19 13:04		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**1.9**	mg/L	1.0	0.024	1		10/31/19 10:55	16887-00-6	
Fluoride	**0.18J**	mg/L	0.30	0.029	1		10/31/19 10:55	16984-48-8	
Sulfate	**6.8**	mg/L	1.0	0.017	1		10/31/19 10:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWC-109 **Lab ID: 2624800005** Collected: 10/22/19 14:35 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	**0.0019J**	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 04:44	7440-38-2	
Barium	**0.087**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 04:44	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:37	7440-41-7	
Boron	**0.32**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:37	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 04:44	7440-43-9	
Calcium	**42.6**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 04:50	7440-70-2	
Chromium	**0.00062J**	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 04:44	7440-47-3	
Cobalt	**0.0022J**	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 04:44	7440-48-4	
Lead	**0.000054J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 04:44	7439-92-1	
Lithium	**0.00088J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:37	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**212**	mg/L	10.0	10.0	1		10/29/19 13:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.6**	mg/L	1.0	0.024	1		10/31/19 11:17	16887-00-6	
Fluoride	**0.099J**	mg/L	0.30	0.029	1		10/31/19 11:17	16984-48-8	
Sulfate	**23.2**	mg/L	1.0	0.017	1		10/31/19 11:17	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624800

Sample: HGWC-107 **Lab ID: 2624800006** Collected: 10/22/19 13:55 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 04:55	7440-38-2	
Barium	**0.039**	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 04:55	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:43	7440-41-7	
Boron	**0.91**	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:43	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 04:55	7440-43-9	
Calcium	**58.1**	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 05:01	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 04:55	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 04:55	7440-48-4	
Lead	**0.000079J**	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 04:55	7439-92-1	
Lithium	**0.00094J**	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:43	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**308**	mg/L	10.0	10.0	1		10/29/19 13:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.6**	mg/L	1.0	0.024	1		10/31/19 12:02	16887-00-6	
Fluoride	**0.047J**	mg/L	0.30	0.029	1		10/31/19 12:02	16984-48-8	
Sulfate	**123**	mg/L	10.0	0.17	10		10/31/19 19:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624800

QC Batch: 38024 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624800001, 2624800002, 2624800003, 2624800004, 2624800005, 2624800006

METHOD BLANK: 172889 Matrix: Water
Associated Lab Samples: 2624800001, 2624800002, 2624800003, 2624800004, 2624800005, 2624800006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	11/04/19 01:12	
Barium	mg/L	ND	0.010	0.00049	11/04/19 01:12	
Beryllium	mg/L	ND	0.0030	0.000074	11/04/19 01:12	
Boron	mg/L	0.0059J	0.040	0.0049	11/04/19 01:12	
Cadmium	mg/L	ND	0.0025	0.00011	11/04/19 01:12	
Calcium	mg/L	ND	0.10	0.011	11/04/19 01:12	
Chromium	mg/L	ND	0.010	0.00039	11/04/19 01:12	
Cobalt	mg/L	ND	0.0050	0.00030	11/04/19 01:12	
Lead	mg/L	ND	0.0050	0.000046	11/04/19 01:12	
Lithium	mg/L	ND	0.030	0.00078	11/04/19 01:12	

LABORATORY CONTROL SAMPLE: 172890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.11	114	80-120	
Boron	mg/L	1	1.2	116	80-120	
Cadmium	mg/L	0.1	0.11	106	80-120	
Calcium	mg/L	1	1.1	106	80-120	
Chromium	mg/L	0.1	0.10	105	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.11	112	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	2.5	0.1	0.1	2.6	2.6	43	106	75-125	2	20	M6
Barium	mg/L	0.22	0.1	0.1	0.32	0.31	99	98	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.090	0.086	90	86	75-125	5	20	
Boron	mg/L	3.8	1	1	5.1	5.2	85	95	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20	
Calcium	mg/L	177	1	1	170	179	-693	243	75-125	5	20	M6
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Cobalt	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	0	20	
Lead	mg/L	ND	0.1	0.1	0.092	0.090	92	90	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624800

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lithium	mg/L	0.29	0.1	0.1	0.36	0.36	73	75	75-125	1	20	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624800

QC Batch: 37734 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624800001, 2624800002, 2624800003, 2624800004

LABORATORY CONTROL SAMPLE: 171260

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	395	99	84-108	

SAMPLE DUPLICATE: 171261

Parameter	Units	2624674001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	269	270	0	10	

SAMPLE DUPLICATE: 171262

Parameter	Units	2624786001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	693	709	2	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624800

QC Batch: 37735
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624800005, 2624800006

LABORATORY CONTROL SAMPLE: 171263

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	402	100	84-108	

SAMPLE DUPLICATE: 171264

Parameter	Units	2624800005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	212	212	0	10	

SAMPLE DUPLICATE: 171265

Parameter	Units	2624792004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	507	512	1	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624800

QC Batch: 37870 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624800001, 2624800002, 2624800003, 2624800004, 2624800005, 2624800006

METHOD BLANK: 171906 Matrix: Water
Associated Lab Samples: 2624800001, 2624800002, 2624800003, 2624800004, 2624800005, 2624800006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/31/19 04:37	
Fluoride	mg/L	ND	0.30	0.029	10/31/19 04:37	
Sulfate	mg/L	ND	1.0	0.017	10/31/19 04:37	

LABORATORY CONTROL SAMPLE: 171907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	5	5.0	101	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171908 171909

Parameter	Units	2624786002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.2	10	10	13.0	13.2	97	100	90-110	2	15	
Fluoride	mg/L	0.56	10	10	10.6	10.9	100	103	90-110	3	15	

MATRIX SPIKE SAMPLE: 171910

Parameter	Units	2624800005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.6	10	14.7	101	90-110	
Fluoride	mg/L	0.099J	10	10.6	105	90-110	
Sulfate	mg/L	23.2	10	28.2	50	90-110	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624800

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624800

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624800001	**HGWA-112**	EPA 3005A	38024	EPA 6020B	38049
2624800002	**HGWC-117**	EPA 3005A	38024	EPA 6020B	38049
2624800003	**HGWC-118**	EPA 3005A	38024	EPA 6020B	38049
2624800004	**HGWA-113**	EPA 3005A	38024	EPA 6020B	38049
2624800005	**HGWC-109**	EPA 3005A	38024	EPA 6020B	38049
2624800006	**HGWC-107**	EPA 3005A	38024	EPA 6020B	38049
2624800001	**HGWA-112**	SM 2540C	37734		
2624800002	**HGWC-117**	SM 2540C	37734		
2624800003	**HGWC-118**	SM 2540C	37734		
2624800004	**HGWA-113**	SM 2540C	37734		
2624800005	**HGWC-109**	SM 2540C	37735		
2624800006	**HGWC-107**	SM 2540C	37735		
2624800001	**HGWA-112**	EPA 300.0	37870		
2624800002	**HGWC-117**	EPA 300.0	37870		
2624800003	**HGWC-118**	EPA 300.0	37870		
2624800004	**HGWA-113**	EPA 300.0	37870		
2624800005	**HGWC-109**	EPA 300.0	37870		
2624800006	**HGWC-107**	EPA 300.0	37870		

Sample Condition Upon Receipt

Pace Analytical

WO#: 2624800
PM: BM Due Date: 10/31/19
CLIENT: GAPower-CCR

Project #
WO#: 2624799
PM: BM Due Date: 11/21/19
CLIENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UP
Tracking #: _____
Custody Seal on Cooler/Box Present: ☐ yes
Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____
Thermometer Used THR 214
Cooler Temperature 0.8
Type of Ice: Wet Blue None
Biological Tissue is Frozen: Yes No
☐ Samples on ice, cooling process has begun
Date and Initials of person examining contents: _____
Temp should be above freezing to 6°C
Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

November 21, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624802

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624802

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624802

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624802001	**FB-01**	Water	10/22/19 17:10	10/24/19 10:07

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624802

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624802001	**FB-01**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624802

Sample: FB-01 **Lab ID: 2624802001** Collected: 10/22/19 17:10 Received: 10/24/19 10:07 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.270 ± 0.222 (0.392) C:97% T:NA**	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	**-0.147 ± 0.412 (0.993) C:83% T:84%**	pCi/L	11/12/19 17:50	15262-20-1	
Total Radium	Total Radium Calculation	**0.270 ± 0.634 (1.39)**	pCi/L	11/19/19 09:18	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624802

QC Batch: 369310
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Associated Lab Samples: 2624802001

METHOD BLANK: 1791698
Matrix: Water
Associated Lab Samples: 2624802001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.590 ± 0.307 (0.405) C:93% T:NA	pCi/L	11/15/19 07:34	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND
Pace Project No.: 2624802

QC Batch: 369311 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2624802001

METHOD BLANK: 1791699 Matrix: Water
Associated Lab Samples: 2624802001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.174 ± 0.362 (0.799) C:80% T:87%	pCi/L	11/12/19 15:54	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624802

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
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(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624802

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624802001	**FB-01**	EPA 9315	369310		
2624802001	**FB-01**	EPA 9320	369311		
2624802001	**FB-01**	Total Radium Calculation	371617		

WO# : 2624803

2624803

WO# : 2624802

2624802

Pace Analytical

Section A
Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B
Required Project Information:

Report To	Joju Abraham
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10382775
Project Name	Plant Hammond
Project #	GW6581

Attention	acsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy.mcdaniel@pacelabs.com
Pace Profile #	327 (AP)

Regulatory Agency: —
State / Location: GA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y/N	Analyses Test: App III Metals (1)	App IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																	N	N	N	N		
1	FB-01	SS	G	10/22/19	17:00	10/22/19	17:10	25	4	1		3							Y	Y	Y	Y	N
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

10-22-2019

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App III Metals = B, Ca	Dan Gibbs / Geosyntec	10/22/19	1800	Rad Kubes / gco	10/22	1800	1.3	Y		
(2, AP-4) App IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo	Rad Kubes / gco	10/22	2000	3= 1 Pace	10.24	1007	1.8	Y	Y	Y

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Dan Gibbs

SIGNATURE of SAMPLER: Dan Gibbs

DATE Signed: 10/22/2019

Sample Condition Upon Receipt

Pace Analytical

Cli

WO#: 2624803

PM: BM Due Date: 10/31/19

CLIENT: GAPower-CCR

WO#: 2624802

PM: BM Due Date: 11/21/19

CLIENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UPS ☐

Tracking #: _____

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature 1.3 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: _____

Temp should be above freezing to 6°C

Comments:

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

December 17, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624803

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on October 24, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

cc: Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.
Rebecca Thornton, Pace Analytical Atlanta

Pace Analytical Services, LLC
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(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624803

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
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Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2624803

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624803001	**FB-01**	Water	10/22/19 17:10	10/24/19 10:07

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624803

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624803001	**FB-01**	EPA 6020B	CSW	14
		EPA 7470A	DRB	1
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624803

Sample: FB-01 **Lab ID: 2624803001** Collected: 10/22/19 17:10 Received: 10/24/19 10:07 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	11/01/19 16:00	11/04/19 05:07	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	11/01/19 16:00	11/04/19 05:07	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 05:07	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	11/01/19 16:00	11/04/19 14:49	7440-41-7	
Boron	ND	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 14:49	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	11/01/19 16:00	11/04/19 05:07	7440-43-9	
Calcium	**0.011J**	mg/L	0.10	0.011	1	11/01/19 16:00	11/04/19 05:07	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 05:07	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 05:07	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 05:07	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 14:49	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	11/01/19 16:00	11/04/19 05:07	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	11/01/19 16:00	11/04/19 05:07	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	11/01/19 16:00	11/04/19 05:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	10/29/19 09:50	10/29/19 16:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		10/29/19 13:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	ND	mg/L	1.0	0.024	1		10/31/19 12:24	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		10/31/19 12:24	16984-48-8	
Sulfate	ND	mg/L	1.0	0.017	1		10/31/19 12:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 37720 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2624803001

METHOD BLANK: 171214 Matrix: Water
Associated Lab Samples: 2624803001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	10/29/19 15:19	

LABORATORY CONTROL SAMPLE: 171215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171216 171217

Parameter	Units	2624786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L				0.0027	0.0025				6	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 38024
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Associated Lab Samples: 2624803001

METHOD BLANK: 172889
Matrix: Water
Associated Lab Samples: 2624803001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	11/04/19 01:12	
Arsenic	mg/L	ND	0.0050	0.00035	11/04/19 01:12	
Barium	mg/L	ND	0.010	0.00049	11/04/19 01:12	
Beryllium	mg/L	ND	0.0030	0.000074	11/04/19 01:12	
Boron	mg/L	0.0059J	0.040	0.0049	11/04/19 01:12	
Cadmium	mg/L	ND	0.0025	0.00011	11/04/19 01:12	
Calcium	mg/L	ND	0.10	0.011	11/04/19 01:12	
Chromium	mg/L	ND	0.010	0.00039	11/04/19 01:12	
Cobalt	mg/L	ND	0.0050	0.00030	11/04/19 01:12	
Lead	mg/L	ND	0.0050	0.000046	11/04/19 01:12	
Lithium	mg/L	ND	0.030	0.00078	11/04/19 01:12	
Molybdenum	mg/L	ND	0.010	0.00095	11/04/19 01:12	
Selenium	mg/L	ND	0.010	0.0013	11/04/19 01:12	
Thallium	mg/L	ND	0.0010	0.000052	11/04/19 01:12	

LABORATORY CONTROL SAMPLE: 172890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	107	80-120	
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.11	114	80-120	
Boron	mg/L	1	1.2	116	80-120	
Cadmium	mg/L	0.1	0.11	106	80-120	
Calcium	mg/L	1	1.1	106	80-120	
Chromium	mg/L	0.1	0.10	105	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.11	112	80-120	
Molybdenum	mg/L	0.1	0.10	103	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.10	106	104	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	2624772007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	2.5	0.1	0.1	2.6	2.6	43	106	75-125	2	20	M6
Barium	mg/L	0.22	0.1	0.1	0.32	0.31	99	98	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.1	0.090	0.086	90	86	75-125	5	20	
Boron	mg/L	3.8	1	1	5.1	5.2	85	95	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20	
Calcium	mg/L	177	1	1	170	179	-693	243	75-125	5	20	M6
Chromium	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Cobalt	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	0	20	
Lead	mg/L	ND	0.1	0.1	0.092	0.090	92	90	75-125	2	20	
Lithium	mg/L	0.29	0.1	0.1	0.36	0.36	73	75	75-125	1	20	M1
Molybdenum	mg/L	0.49	0.1	0.1	0.58	0.60	89	105	75-125	3	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	100	100	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.093	0.092	93	92	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 37735
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624803001

LABORATORY CONTROL SAMPLE: 171263

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	402	100	84-108	

SAMPLE DUPLICATE: 171264

Parameter	Units	2624800005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	212	212	0	10	

SAMPLE DUPLICATE: 171265

Parameter	Units	2624792004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	507	512	1	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 37870
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624803001

METHOD BLANK: 171906 Matrix: Water
Associated Lab Samples: 2624803001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.024	10/31/19 04:37	
Fluoride	mg/L	ND	0.30	0.029	10/31/19 04:37	
Sulfate	mg/L	ND	1.0	0.017	10/31/19 04:37	

LABORATORY CONTROL SAMPLE: 171907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	5	5.0	101	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171908 171909

Parameter	Units	2624786002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.2	10	10	13.0	13.2	97	100	90-110	2	15	
Fluoride	mg/L	0.56	10	10	10.6	10.9	100	103	90-110	3	15	

MATRIX SPIKE SAMPLE: 171910

Parameter	Units	2624800005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	4.6	10	14.7	101	90-110	
Fluoride	mg/L	0.099J	10	10.6	105	90-110	
Sulfate	mg/L	23.2	10	28.2	50	90-110	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2624803

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624803

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624803001	**FB-01**	EPA 3005A	38024	EPA 6020B	38049
2624803001	**FB-01**	EPA 7470A	37720	EPA 7470A	37761
2624803001	**FB-01**	SM 2540C	37735		
2624803001	**FB-01**	EPA 300.0	37870		

WO# : 2624803

2624803

WO# : 2624802

2624802

Pace Analytical

Section A
Required Client Information:

Company	Georgia Power - Coal Combustion Residuals
Address	2480 Maner Road
	Atlanta, GA 30339
Email	jabraham@southernco.com
Phone	(404)506-7239 Fax
Requested Due Date	Standard TAT

Section B
Required Project Information:

Report To	Joju Abraham
Copy To	Lauren Petty, Geosyntec
Purchase Order #	SCS10382775
Project Name	Plant Hammond
Project #	GW6581

Attention	acsinvoices@southernco.com
Company Name	
Address	
Pace Quote	
Pace Project Manager	betsy.mcdaniel@pacelabs.com
Pace Profile #	327 (AP)

Regulatory Agency:

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App III Metals (1)	App IV Metals (2, AP-4)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																	Y/N	N	N	N	N	
1	FB-01	SS	G	10/22/19	17:00	10/22/19	17:10	25	4	1		3							Y	Y	Y	Y	N
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

10-22-2019

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) App III Metals = B, Ca	Dan Gibbs / Geosyntec	10/22/19	1800	Rad Kubes / gco	10/22	1800	1.3	Y		
(2, AP-4) App IV Metals = As, Ba, Be, Cd, Cr, Co, Pb, Li, Mo	Rad Kubes / gco	10/22	2000	3 = 1 Pace	10.24	1007	1.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Dan Gibbs		
SIGNATURE of SAMPLER:		DATE Signed:	10/22/2019

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Sample Condition Upon Receipt

Pace Analytical

Cli

WO#: 2624803

PM: BM Due Date: 10/31/19

CLIENT: GAPower-CCR

WO#: 2624802

PM: BM Due Date: 11/21/19

CLIENT: GAPower-CCR

Courier: ☑ Fed Ex ☐ UPS ☐

Tracking #: _____

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

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature 1.3 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: _____

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

January 20, 2020

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2627481

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2627481

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
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(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND
Pace Project No.: 2627481

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2627481001	**HGWC-102**	Water	01/03/20 12:35	01/06/20 11:22
2627481002	**FB-01**	Water	01/03/20 16:05	01/06/20 11:22
2627481003	**EB-01**	Water	01/03/20 16:10	01/06/20 11:22

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2627481

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2627481001	**HGWC-102**	EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	JRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2627481002	**FB-01**	EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	JRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2627481003	**EB-01**	EPA 6010D	KLH	2	PASI-GA
		EPA 6020B	CSW	12	PASI-GA
		EPA 7470A	JRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

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SUMMARY OF DETECTION

Project: PLANT HAMMOND
Pace Project No.: 2627481

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2627481001	**HGWC-102**					
EPA 6010D	Barium	0.036	mg/L	0.010	01/07/20 20:00	
EPA 6010D	Calcium	118	mg/L	1.0	01/07/20 20:00	
EPA 6020B	Antimony	0.00076J	mg/L	0.0030	01/07/20 18:58	
EPA 6020B	Arsenic	0.00065J	mg/L	0.0050	01/07/20 18:58	
EPA 6020B	Boron	3.4	mg/L	0.10	01/07/20 18:58	
EPA 6020B	Cadmium	0.00020J	mg/L	0.0025	01/07/20 18:58	
EPA 6020B	Chromium	0.00063J	mg/L	0.010	01/07/20 18:58	
EPA 6020B	Cobalt	0.0038J	mg/L	0.0050	01/07/20 18:58	
EPA 6020B	Lithium	0.0011J	mg/L	0.030	01/07/20 18:58	
EPA 6020B	Selenium	0.0015J	mg/L	0.010	01/07/20 18:58	
EPA 6020B	Thallium	0.000080J	mg/L	0.0010	01/07/20 18:58	
SM 2540C	Total Dissolved Solids	714	mg/L	10.0	01/07/20 11:38	
EPA 300.0 Rev 2.1 1993	Chloride	7.0	mg/L	1.0	01/15/20 19:17	
EPA 300.0 Rev 2.1 1993	Sulfate	380	mg/L	8.0	01/16/20 04:45	
2627481002	**FB-01**					
EPA 6020B	Boron	0.0089J	mg/L	0.10	01/07/20 19:03	
EPA 6020B	Chromium	0.00040J	mg/L	0.010	01/07/20 19:03	
2627481003	**EB-01**					
SM 2540C	Total Dissolved Solids	20.0	mg/L	10.0	01/07/20 11:38	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2627481

Sample: HGWC-102 **Lab ID: 2627481001** Collected: 01/03/20 12:35 Received: 01/06/20 11:22 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	**0.036**	mg/L	0.010	0.0062	1	01/07/20 13:28	01/07/20 20:00	7440-39-3	
Calcium	**118**	mg/L	1.0	0.14	1	01/07/20 13:28	01/07/20 20:00	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	**0.00076J**	mg/L	0.0030	0.00027	1	01/07/20 13:32	01/07/20 18:58	7440-36-0	
Arsenic	**0.00065J**	mg/L	0.0050	0.00035	1	01/07/20 13:32	01/07/20 18:58	7440-38-2	
Beryllium	ND	mg/L	0.0030	0.000074	1	01/07/20 13:32	01/07/20 18:58	7440-41-7	
Boron	**3.4**	mg/L	0.10	0.0049	1	01/07/20 13:32	01/07/20 18:58	7440-42-8	
Cadmium	**0.00020J**	mg/L	0.0025	0.00011	1	01/07/20 13:32	01/07/20 18:58	7440-43-9	
Chromium	**0.00063J**	mg/L	0.010	0.00039	1	01/07/20 13:32	01/07/20 18:58	7440-47-3	
Cobalt	**0.0038J**	mg/L	0.0050	0.00030	1	01/07/20 13:32	01/07/20 18:58	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	01/07/20 13:32	01/07/20 18:58	7439-92-1	
Lithium	**0.0011J**	mg/L	0.030	0.00078	1	01/07/20 13:32	01/07/20 18:58	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	01/07/20 13:32	01/07/20 18:58	7439-98-7	
Selenium	**0.0015J**	mg/L	0.010	0.0013	1	01/07/20 13:32	01/07/20 18:58	7782-49-2	
Thallium	**0.000080J**	mg/L	0.0010	0.000052	1	01/07/20 13:32	01/07/20 18:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	01/07/20 16:01	01/08/20 17:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**714**	mg/L	10.0	10.0	1		01/07/20 11:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993								
Chloride	**7.0**	mg/L	1.0	0.60	1		01/15/20 19:17	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		01/15/20 19:17	16984-48-8	
Sulfate	**380**	mg/L	8.0	4.0	8		01/16/20 04:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2627481

Sample: FB-01 **Lab ID: 2627481002** Collected: 01/03/20 16:05 Received: 01/06/20 11:22 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	ND	mg/L	0.010	0.0062	1	01/07/20 13:28	01/07/20 20:10	7440-39-3	
Calcium	ND	mg/L	1.0	0.14	1	01/07/20 13:28	01/07/20 20:10	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	01/07/20 13:32	01/07/20 19:03	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	01/07/20 13:32	01/07/20 19:03	7440-38-2	
Beryllium	ND	mg/L	0.0030	0.000074	1	01/07/20 13:32	01/07/20 19:03	7440-41-7	
Boron	**0.0089J**	mg/L	0.10	0.0049	1	01/07/20 13:32	01/07/20 19:03	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	01/07/20 13:32	01/07/20 19:03	7440-43-9	
Chromium	**0.00040J**	mg/L	0.010	0.00039	1	01/07/20 13:32	01/07/20 19:03	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	01/07/20 13:32	01/07/20 19:03	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	01/07/20 13:32	01/07/20 19:03	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	01/07/20 13:32	01/07/20 19:03	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	01/07/20 13:32	01/07/20 19:03	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	01/07/20 13:32	01/07/20 19:03	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	01/07/20 13:32	01/07/20 19:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	01/07/20 16:01	01/08/20 17:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	10.0	10.0	1		01/07/20 11:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993								
Chloride	ND	mg/L	1.0	0.60	1		01/15/20 19:32	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		01/15/20 19:32	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		01/15/20 19:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2627481

Sample: EB-01 **Lab ID: 2627481003** Collected: 01/03/20 16:10 Received: 01/06/20 11:22 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Barium	ND	mg/L	0.010	0.0062	1	01/07/20 13:28	01/07/20 20:15	7440-39-3	
Calcium	ND	mg/L	1.0	0.14	1	01/07/20 13:28	01/07/20 20:15	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	01/07/20 13:32	01/07/20 19:09	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	01/07/20 13:32	01/07/20 19:09	7440-38-2	
Beryllium	ND	mg/L	0.0030	0.000074	1	01/07/20 13:32	01/07/20 19:09	7440-41-7	
Boron	ND	mg/L	0.10	0.0049	1	01/07/20 13:32	01/07/20 19:09	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	01/07/20 13:32	01/07/20 19:09	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	01/07/20 13:32	01/07/20 19:09	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	01/07/20 13:32	01/07/20 19:09	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	01/07/20 13:32	01/07/20 19:09	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	01/07/20 13:32	01/07/20 19:09	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	01/07/20 13:32	01/07/20 19:09	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	01/07/20 13:32	01/07/20 19:09	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	01/07/20 13:32	01/07/20 19:09	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	01/07/20 16:01	01/08/20 17:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**20.0**	mg/L	10.0	10.0	1		01/07/20 11:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993								
Chloride	ND	mg/L	1.0	0.60	1		01/15/20 19:47	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		01/15/20 19:47	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		01/15/20 19:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

QC Batch: 41632 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2627481001, 2627481002, 2627481003

METHOD BLANK: 189272 Matrix: Water
Associated Lab Samples: 2627481001, 2627481002, 2627481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	01/08/20 17:20	

LABORATORY CONTROL SAMPLE: 189273

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 189274 189275

Parameter	Units	2627481002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0026	0.0025	101	100	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

QC Batch: 41627 Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A Analysis Description: 6010D MET
Associated Lab Samples: 2627481001, 2627481002, 2627481003

METHOD BLANK: 189251 Matrix: Water
Associated Lab Samples: 2627481001, 2627481002, 2627481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/L	ND	0.010	0.0062	01/07/20 19:51	
Calcium	mg/L	ND	1.0	0.14	01/07/20 19:51	

LABORATORY CONTROL SAMPLE: 189252

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	101	80-120	
Calcium	mg/L	1	1.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 189253 189254

Parameter	Units	2627501001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.051	1	1	1.1	1.1	101	104	75-125	3	20	
Calcium	mg/L	8.5	1	1	9.6	9.7	105	124	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

QC Batch: 41623 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2627481001, 2627481002, 2627481003

METHOD BLANK: 189239 Matrix: Water
Associated Lab Samples: 2627481001, 2627481002, 2627481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	01/07/20 18:23	
Arsenic	mg/L	ND	0.0050	0.00035	01/07/20 18:23	
Beryllium	mg/L	ND	0.0030	0.000074	01/07/20 18:23	
Boron	mg/L	ND	0.10	0.0049	01/07/20 18:23	
Cadmium	mg/L	ND	0.0025	0.00011	01/07/20 18:23	
Chromium	mg/L	ND	0.010	0.00039	01/07/20 18:23	
Cobalt	mg/L	ND	0.0050	0.00030	01/07/20 18:23	
Lead	mg/L	ND	0.0050	0.000046	01/07/20 18:23	
Lithium	mg/L	ND	0.030	0.00078	01/07/20 18:23	
Molybdenum	mg/L	ND	0.010	0.00095	01/07/20 18:23	
Selenium	mg/L	ND	0.010	0.0013	01/07/20 18:23	
Thallium	mg/L	ND	0.0010	0.000052	01/07/20 18:23	

LABORATORY CONTROL SAMPLE: 189240

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	105	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.11	109	80-120	
Boron	mg/L	1	1.1	110	80-120	
Cadmium	mg/L	0.1	0.10	101	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Lead	mg/L	0.1	0.10	105	80-120	
Lithium	mg/L	0.1	0.11	113	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.098	98	80-120	
Thallium	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 189241 189242

Parameter	Units	2627458001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.11	103	105	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	101	99	75-125	1	20	
Beryllium	mg/L	ND	0.1	0.1	0.10	0.11	105	106	75-125	2	20	
Boron	mg/L	ND	1	1	1.1	1.2	104	109	75-125	4	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.098	100	98	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 189241 189242

Parameter	Units	2627458001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	mg/L	ND	0.1	0.1	0.11	0.11	105	105	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.10	0.099	100	98	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.10	0.10	100	101	75-125	1	20	
Lithium	mg/L	ND	0.1	0.1	0.12	0.12	110	109	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.11	103	104	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.096	0.096	94	95	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	100	103	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

QC Batch: 41612 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2627481001, 2627481002, 2627481003

LABORATORY CONTROL SAMPLE: 189168

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	386	96	84-108	

SAMPLE DUPLICATE: 189169

Parameter	Units	2627461001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	457	443	3	10	

SAMPLE DUPLICATE: 189170

Parameter	Units	2627495002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	16200	15600	4	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2627481

QC Batch: 519389 Analysis Method: EPA 300.0 Rev 2.1 1993
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2627481001, 2627481002, 2627481003

METHOD BLANK: 2779830 Matrix: Water
Associated Lab Samples: 2627481001, 2627481002, 2627481003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	01/15/20 15:48	
Fluoride	mg/L	ND	0.10	0.050	01/15/20 15:48	
Sulfate	mg/L	ND	1.0	0.50	01/15/20 15:48	

LABORATORY CONTROL SAMPLE: 2779831

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.5	101	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	50	48.3	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2779832 2779833

Parameter	Units	2627420001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.3	50	50	61.0	60.9	105	105	90-110	0	10	
Fluoride	mg/L	ND	2.5	2.5	2.4	2.5	93	98	90-110	4	10	
Sulfate	mg/L	589	50	50	620	623	62	67	90-110	0	10	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2779834 2779835

Parameter	Units	2627481003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	50	50	52.5	52.2	105	104	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.5	104	101	90-110	2	10	
Sulfate	mg/L	ND	50	50	52.6	52.2	105	104	90-110	1	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND
Pace Project No.: 2627481

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-GA	Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2627481

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2627481001	**HGWC-102**	EPA 3010A	41627	EPA 6010D	41637
2627481002	**FB-01**	EPA 3010A	41627	EPA 6010D	41637
2627481003	**EB-01**	EPA 3010A	41627	EPA 6010D	41637
2627481001	**HGWC-102**	EPA 3005A	41623	EPA 6020B	41638
2627481002	**FB-01**	EPA 3005A	41623	EPA 6020B	41638
2627481003	**EB-01**	EPA 3005A	41623	EPA 6020B	41638
2627481001	**HGWC-102**	EPA 7470A	41632	EPA 7470A	41658
2627481002	**FB-01**	EPA 7470A	41632	EPA 7470A	41658
2627481003	**EB-01**	EPA 7470A	41632	EPA 7470A	41658
2627481001	**HGWC-102**	SM 2540C	41612		
2627481002	**FB-01**	SM 2540C	41612		
2627481003	**EB-01**	SM 2540C	41612		
2627481001	**HGWC-102**	EPA 300.0 Rev 2.1 1993	519389		
2627481002	**FB-01**	EPA 300.0 Rev 2.1 1993	519389		
2627481003	**EB-01**	EPA 300.0 Rev 2.1 1993	519389		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A – Required Client Information:		Section B – Required Project Information:		Section C – Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joju Abraham	Attention:	scsinvoices@southernco.com
Address:	2480 Maner Road	Copy To:	Lauren Petty, Geosyntec	Company Name:	
Atlanta, GA 30339				Address:	
Email:	jabraham@southernco.com	Purchase Order #:		Pace Quote:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond	Pace Project Manager:	kevin.herring@pacelabs.com,
Requested Due Date:	standard TAT	Project #:	GW6581	Pace Profile #:	2912 (AP)

Regulatory Agency:

State / Location: GA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	App. III Metals (1)	App. IV Metals (2, HGWC-102)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
	Requested Analysis Filtered (Y/N)																		N	N	N	N	
1	HGWC-102	GW	G	1/3	1210	1/3	1235	17	5	2		3							Y	Y	Y	Y	N
2	FB-01	WT			1600		1605		5	2		3							Y	Y	Y	Y	
3	EB-01	WT			1605		1610		5	2		3							Y	Y	Y	Y	
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

(LE) 1/6/2020

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) App. III Metals = B, Ca	Chad Russo/GCO	1/6/2020	1120	Tamara Peters/Pace	1.6.20	11:20	
(2, HGWC-102) App. IV Metals = Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ta				/PACE		13:05	
(3) EB-01 and FB-01 will be reported in both SDGs with their respective analyte list							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo DATE Signed: 1/2/2020 1/6/2020

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

WO#: 2627481

2627481

Sample Condition Upon Re

WO#: 2627481

PM: KH Due Date: 01/20/20

CLIENT: 26-GA Power

Pace Analytical

Client Name: Georgia Power

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace O

Tracking #: _____ [redacted]

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

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

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

Cooler Temperature 6.0°C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: _____

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☐Yes ☐No ☒N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☐No ☒N/A	6.
Rush Turn Around Time Requested:	☐Yes ☐No ☒N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: GW, WT		
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed AW 1/16/20 Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	15.
Trip Blank Present:	☐Yes ☒No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

February 13, 2020

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

RE: Project: Plant Hammond
Pace Project No.: 2628188

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on January 23, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: Plant Hammond
Pace Project No.: 2628188

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: Plant Hammond
Pace Project No.: 2628188

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2628188001	**HGWC-102**	Water	01/22/20 10:33	01/23/20 13:58
2628188002	**EB-01**	Water	01/22/20 14:32	01/23/20 13:58
2628188003	**FB-01**	Water	01/22/20 14:48	01/23/20 13:58

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(770)734-4200

SAMPLE ANALYTE COUNT

Project: Plant Hammond
Pace Project No.: 2628188

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2628188001	**HGWC-102**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2628188002	**EB-01**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2628188003	**FB-01**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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SUMMARY OF DETECTION

Project: Plant Hammond
Pace Project No.: 2628188

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2628188001	**HGWC-102**					
EPA 9315	Radium-226	0.285 ± 0.188 (0.302) C:95% T:NA	pCi/L		02/10/20 08:33	
EPA 9320	Radium-228	0.755 ± 0.418 (0.752) C:75% T:85%	pCi/L		02/06/20 15:35	
Total Radium Calculation	Total Radium	1.04 ± 0.606 (1.05)	pCi/L		02/11/20 10:37	
2628188002	**EB-01**					
EPA 9315	Radium-226	0.565 ± 0.236 (0.235) C:93% T:NA	pCi/L		02/10/20 08:33	
EPA 9320	Radium-228	0.747 ± 0.387 (0.661) C:80% T:80%	pCi/L		02/06/20 15:35	
Total Radium Calculation	Total Radium	1.31 ± 0.623 (0.896)	pCi/L		02/11/20 10:37	
2628188003	**FB-01**					
EPA 9315	Radium-226	1.00 ± 0.348 (0.368) C:92% T:NA	pCi/L		02/10/20 08:33	
EPA 9320	Radium-228	0.230 ± 0.319 (0.682) C:81% T:81%	pCi/L		02/06/20 15:35	
Total Radium Calculation	Total Radium	1.23 ± 0.667 (1.05)	pCi/L		02/11/20 10:37	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2628188

Sample: HGWC-102 **Lab ID: 2628188001** Collected: 01/22/20 10:33 Received: 01/23/20 13:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.285 ± 0.188 (0.302) C:95% T:NA**	pCi/L	02/10/20 08:33	13982-63-3	
Radium-228	EPA 9320	**0.755 ± 0.418 (0.752) C:75% T:85%**	pCi/L	02/06/20 15:35	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 0.606 (1.05)**	pCi/L	02/11/20 10:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2628188

Sample: EB-01 **Lab ID: 2628188002** Collected: 01/22/20 14:32 Received: 01/23/20 13:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.565 ± 0.236 (0.235) C:93% T:NA**	pCi/L	02/10/20 08:33	13982-63-3	
Radium-228	EPA 9320	**0.747 ± 0.387 (0.661) C:80% T:80%**	pCi/L	02/06/20 15:35	15262-20-1	
Total Radium	Total Radium Calculation	**1.31 ± 0.623 (0.896)**	pCi/L	02/11/20 10:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2628188

Sample: FB-01 **Lab ID: 2628188003** Collected: 01/22/20 14:48 Received: 01/23/20 13:58 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**1.00 ± 0.348 (0.368) C:92% T:NA**	pCi/L	02/10/20 08:33	13982-63-3	
Radium-228	EPA 9320	**0.230 ± 0.319 (0.682) C:81% T:81%**	pCi/L	02/06/20 15:35	15262-20-1	
Total Radium	Total Radium Calculation	**1.23 ± 0.667 (1.05)**	pCi/L	02/11/20 10:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2628188

QC Batch: 381384 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2628188001, 2628188002, 2628188003

METHOD BLANK: 1848332 Matrix: Water
Associated Lab Samples: 2628188001, 2628188002, 2628188003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.615 ± 0.417 (0.806) C:82% T:79%	pCi/L	02/06/20 15:30	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond
Pace Project No.: 2628188

QC Batch: 382555 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2628188001, 2628188002, 2628188003

METHOD BLANK: 1853918 Matrix: Water
Associated Lab Samples: 2628188001, 2628188002, 2628188003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.333 ± 0.191 (0.268) C:98% T:NA	pCi/L	02/10/20 08:28	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALIFIERS

Project: Plant Hammond
Pace Project No.: 2628188

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond
Pace Project No.: 2628188

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2628188001	**HGWC-102**	EPA 9315	382555		
2628188002	**EB-01**	EPA 9315	382555		
2628188003	**FB-01**	EPA 9315	382555		
2628188001	**HGWC-102**	EPA 9320	381384		
2628188002	**EB-01**	EPA 9320	381384		
2628188003	**FB-01**	EPA 9320	381384		
2628188001	**HGWC-102**	Total Radium Calculation	383310		
2628188002	**EB-01**	Total Radium Calculation	383310		
2628188003	**FB-01**	Total Radium Calculation	383310		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A — Required Client Information:

Company:	Georgia Power - Coal Combustion Residuals
Address:	2480 Maner Road
	Atlanta, GA 30339
Email:	jabraham@southernco.com
Phone:	(404)506-7239 Fax:
Requested Due Date:	Standard TAT

Section B — Required Project Information:

Report To:	Joju Abraham
Copy To:	Lauren Petty, Geosyntec
Purchase Order #:	
Project Name:	Plant Hammond
Project #:	GW6581

Section C — Invoice Information:

Attention:	scsinvoices@southernco.com
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	kevin.herring@pacelabs.com,
Pace Profile #:	2912 (AP)

Regulatory Agency:

State / Location: GA

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

Requested Analysis Filtered (Y/N): N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Radium 226/228	Residual Chlorine (Y/N)
1	HGWC-102	WT	G	01/22	10:32	01/22	10:33	1:18	2			2							Y	N
2	EB-01	WT	G	01/22	14:32	01/22	14:32		2			2							Y	N
3	FB-01	WT	G	01/22	14:48	01/22	14:48		2			2							Y	N
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

GW 01/22/20

WO# : 2628188

2628188

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) EB-01 and FB-01 will be reported in all SDGs with	Grant Walter / Geosyntec	01/22/20	1710	[illegible] / Geosyntec	01/22/20	1710				
their respective analyte list.	[illegible] / Geosyntec	01/23/20	1212	[illegible]	01/23/20	12:15				
	[illegible]	1/23/20	1:57	[illegible] / PACE	01/23/20	1357	4.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Walter

SIGNATURE of SAMPLER: [signature] DATE Signed: 01/22/20

Pace Analytical

Sample Condition Upon Receipt

WO#: 2628188

PM: KH Due Date: 02/06/20

CLIENT: 26-GA Power

Client Name: Georgia Power

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other _____

Proj. Due Date:
Proj. Name:

Tracking #: _____

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used THM230 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 4.0 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: AW 1/29/20

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

March 23, 2020

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

RE: Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Dear Joju Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on March 05, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
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(770)734-4200

SAMPLE SUMMARY

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2629801001	**HGWC-102**	Water	03/04/20 10:07	03/05/20 12:00

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2629801001	**HGWC-102**	EPA 6010D	DRB	1	PASI-GA
		EPA 6020B	CSW	13	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	NJ1	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

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SUMMARY OF DETECTION

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2629801001	**HGWC-102**					
	Field pH	5.75	Std. Units		03/20/20 07:54	
EPA 6010D	Calcium	144	mg/L	1.0	03/11/20 21:49	
EPA 6020B	Arsenic	0.00036J	mg/L	0.0050	03/11/20 21:17	
EPA 6020B	Barium	0.033	mg/L	0.010	03/11/20 21:17	
EPA 6020B	Boron	3.7	mg/L	0.10	03/11/20 21:17	
EPA 6020B	Cadmium	0.00026J	mg/L	0.0025	03/11/20 21:17	
EPA 6020B	Cobalt	0.0021J	mg/L	0.0050	03/11/20 21:17	
EPA 6020B	Lead	0.00011J	mg/L	0.0050	03/11/20 21:17	
EPA 6020B	Lithium	0.0013J	mg/L	0.030	03/11/20 21:17	
SM 2540C	Total Dissolved Solids	764	mg/L	10.0	03/11/20 11:14	
EPA 300.0 Rev 2.1 1993	Chloride	7.1	mg/L	1.0	03/10/20 21:20	
EPA 300.0 Rev 2.1 1993	Sulfate	400	mg/L	8.0	03/11/20 08:33	

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ANALYTICAL RESULTS

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Sample: HGWC-102 **Lab ID: 2629801001** Collected: 03/04/20 10:07 Received: 03/05/20 12:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**5.75**	Std. Units			1		03/20/20 07:54		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Calcium	**144**	mg/L	1.0	0.14	1	03/10/20 18:30	03/11/20 21:49	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	03/10/20 20:52	03/11/20 21:17	7440-36-0	
Arsenic	**0.00036J**	mg/L	0.0050	0.00035	1	03/10/20 20:52	03/11/20 21:17	7440-38-2	
Barium	**0.033**	mg/L	0.010	0.00049	1	03/10/20 20:52	03/11/20 21:17	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/10/20 20:52	03/11/20 21:17	7440-41-7	
Boron	**3.7**	mg/L	0.10	0.0049	1	03/10/20 20:52	03/11/20 21:17	7440-42-8	
Cadmium	**0.00026J**	mg/L	0.0025	0.00011	1	03/10/20 20:52	03/11/20 21:17	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	03/10/20 20:52	03/11/20 21:17	7440-47-3	
Cobalt	**0.0021J**	mg/L	0.0050	0.00030	1	03/10/20 20:52	03/11/20 21:17	7440-48-4	
Lead	**0.00011J**	mg/L	0.0050	0.000046	1	03/10/20 20:52	03/11/20 21:17	7439-92-1	
Lithium	**0.0013J**	mg/L	0.030	0.00078	1	03/10/20 20:52	03/11/20 21:17	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	03/10/20 20:52	03/11/20 21:17	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	03/10/20 20:52	03/11/20 21:17	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	03/10/20 20:52	03/11/20 21:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.00014	1	03/10/20 08:40	03/10/20 19:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**764**	mg/L	10.0	10.0	1		03/11/20 11:14		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993								
Chloride	**7.1**	mg/L	1.0	0.60	1		03/10/20 21:20	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		03/10/20 21:20	16984-48-8	
Sulfate	**400**	mg/L	8.0	4.0	8		03/11/20 08:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

QC Batch: 44367
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Associated Lab Samples: 2629801001

METHOD BLANK: 203479
Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	03/10/20 18:17	

LABORATORY CONTROL SAMPLE: 203480

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 203481 203482

Parameter	Units	2629786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0024	0.0025	98	101	75-125	4	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

QC Batch: 44427 Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A Analysis Description: 6010D MET
Associated Lab Samples: 2629801001

METHOD BLANK: 203834 Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	03/11/20 21:07	

LABORATORY CONTROL SAMPLE: 203835

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 203836 203837

Parameter	Units	2629765017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	69.8	1	1	70.2	71.5	34	170	75-125	2	20	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

QC Batch: 44440 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2629801001

METHOD BLANK: 203914 Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	03/11/20 18:48	
Arsenic	mg/L	ND	0.0050	0.00035	03/11/20 18:48	
Barium	mg/L	ND	0.010	0.00049	03/11/20 18:48	
Beryllium	mg/L	ND	0.0030	0.000074	03/11/20 18:48	
Boron	mg/L	0.0084J	0.10	0.0049	03/11/20 18:48	
Cadmium	mg/L	ND	0.0025	0.00011	03/11/20 18:48	
Chromium	mg/L	0.00054J	0.010	0.00039	03/11/20 18:48	
Cobalt	mg/L	ND	0.0050	0.00030	03/11/20 18:48	
Lead	mg/L	ND	0.0050	0.000046	03/11/20 18:48	
Lithium	mg/L	ND	0.030	0.00078	03/11/20 18:48	
Molybdenum	mg/L	ND	0.010	0.00095	03/11/20 18:48	
Selenium	mg/L	ND	0.010	0.0013	03/11/20 18:48	
Thallium	mg/L	ND	0.0010	0.000052	03/11/20 18:48	

LABORATORY CONTROL SAMPLE: 203915

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	112	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	1.1	106	80-120	
Cadmium	mg/L	0.1	0.10	101	80-120	
Chromium	mg/L	0.1	0.11	105	80-120	
Cobalt	mg/L	0.1	0.10	103	80-120	
Lead	mg/L	0.1	0.10	104	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	
Molybdenum	mg/L	0.1	0.098	98	80-120	
Selenium	mg/L	0.1	0.10	100	80-120	
Thallium	mg/L	0.1	0.11	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 203916 203917

Parameter	Units	2629786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	107	107	75-125	0	20	
Arsenic	mg/L	0.00073J	0.1	0.1	0.099	0.099	99	98	75-125	1	20	
Barium	mg/L	0.017	0.1	0.1	0.12	0.12	100	100	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 203916 203917

Parameter	Units	2629786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium	mg/L	ND	0.1	0.1	0.10	0.10	101	104	75-125	2	20	
Boron	mg/L	0.0096J	1	1	1.0	1.1	103	105	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.098	0.099	98	99	75-125	2	20	
Lead	mg/L	0.000051J	0.1	0.1	0.096	0.096	96	96	75-125	0	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	104	105	75-125	0	20	
Molybdenum	mg/L	0.0064J	0.1	0.1	0.10	0.10	95	96	75-125	2	20	
Selenium	mg/L	0.0053J	0.1	0.1	0.10	0.11	98	104	75-125	6	20	
Thallium	mg/L	0.00012J	0.1	0.1	0.10	0.10	103	104	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

QC Batch: 44453
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2629801001

LABORATORY CONTROL SAMPLE: 203948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	394	98	84-108	

SAMPLE DUPLICATE: 203949

Parameter	Units	2629751001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	337	344	2	10	

SAMPLE DUPLICATE: 203950

Parameter	Units	2629733003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	118	119	1	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

QC Batch: 529390
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2629801001

METHOD BLANK: 2827590 Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	03/10/20 16:12	
Fluoride	mg/L	ND	0.10	0.050	03/10/20 16:12	
Sulfate	mg/L	ND	1.0	0.50	03/10/20 16:12	

LABORATORY CONTROL SAMPLE: 2827591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	49.1	98	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	50	48.3	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2827592 2827593

Parameter	Units	2629703013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	42.0	50	50	92.3	92.6	101	101	90-110	0	10	
Fluoride	mg/L	1.4	2.5	2.5	4.0	4.0	101	102	90-110	1	10	
Sulfate	mg/L	48.4	50	50	98.1	98.3	99	100	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2827594 2827595

Parameter	Units	2629703023 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	79.1	50	50	118	119	77	79	90-110	1	10	M1
Fluoride	mg/L	0.052J	2.5	2.5	2.6	2.6	103	103	90-110	0	10	
Sulfate	mg/L	97.4	50	50	141	143	88	90	90-110	1	10	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-GA	Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

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

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND AP-4 BACKRGROUND
Pace Project No.: 2629801

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2629801001	**HGWC-102**		44306		
2629801001	**HGWC-102**	EPA 3010A	44427	EPA 6010D	44443
2629801001	**HGWC-102**	EPA 3005A	44440	EPA 6020B	44463
2629801001	**HGWC-102**	EPA 7470A	44367	EPA 7470A	44420
2629801001	**HGWC-102**	SM 2540C	44453		
2629801001	**HGWC-102**	EPA 300.0 Rev 2.1 1993	529390		

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	GA Power
Address:	Atlanta, GA
Email To:	SCS Contacts
Phone:	Fax:
Requested Due Date/TAT:	10 Day

Section B Required Project Information:

Report To:	SCS Contacts
Copy To:	Geosyntec Contacts
Purchase Order No.:	
Project Name:	Plant Hammond AP-4 Background Event
Project Number:	GW6581

Section C Invoice Information

Attention:	Southern Co.
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER OGR

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	Metals 6010/6020*	TDS	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	HGWC-102	GW	G	3/4/20	1005	3/4/20	1007	15	5	2		3							X	X	X	X		pH: 5.75
2									5	2		3							X	X	X	X		
3									5	2		3							X	X	X	X		
4									5	2		3							X	X	X	X		
5									5	2		3							X	X	X	X		
6									5	2		3							X	X	X	X		
7									5	2		3							X	X	X	X		
8									5	2		3							X	X	X	X		
9									5	2		3							X	X	X	X		
10									5	2		3							X	X	X	X		
11									5	2		3							X	X	X	X		
12									5	2		3							X	X	X	X		

2629801

(CR)

3/4/2020

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Please note dry wells, strike thorugh any wells not sampled, and note when the last sample for the event has been taken.	Chad Russo/GEO	3/4/2020	1745	Shawn Lin/Geosyntec	3/4/20	1945
	Shawn Lin/Geosyntec	3/5/2020	1045	TETRA TECH	3-5-20	1045
*Metals=As,B,Ba,Be,Ca,Cd,Co,Cr,Hg,Li,Mo,Pb,Sb,Se,Tl				Ann Warren/PACE	3/5/20	1200

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
2.1	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed (MM/DD/YY): 03/04/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Bottle Identification Form (BIF)	Document Issued: March 14, 2019 Page 1 of 1
	Document No.: F-CAR-CS-043-Rev.00	Issuing Authority: Pace Carolinas Quality Office

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # 1/1

Matrix	Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	1 BP1N - 1L Plastic HNO3	BP3A-250 mL Plastic (NH4)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)
	1		1				1																					
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
	12																											

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA
Cert. Needed: ☐ Yes ☐ No

Workorder: 2629801 **Workorder Name:** PLANT HAMMOND AP-4 BACKRGROUND **Owner Received Date:** 3/5/2020 **Results Requested By:** 3/19/2020

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Ashville 2225 Riverside Dr. Asheville, NC 28804 Phone (828)254-7176

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: 300.0 - Cl, F, SO4												LAB USE ONLY
1	HGWC-102	PS	3/4/2020 10:07	2629801001	Water	1						X												
2																								
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1				
2				
3				

Comments

Cooler Temperature on Receipt ____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical®
www.pacelabs.com

Ship To:
Pace Analytical Ashville
2225 Riverside Dr.
Asheville, NC 28804
Phone (828)254-7176

INTER_LABORATORY WORK ORDER # 2629801
(To be completed by sending lab)

Sending Project No:	2629801
Receiving Project No:	
Check Box for Consolidated Invoice:	☐
Date Prepared:	03/05/20
REQUESTED COMPLETION DATE:	**3/19/2020**

Sending Region	IR26-Atlanta	Sending Project Mgr.	Kevin Herring
Receiving Region	IR93-Asheville	External Client	Georgia Power
State of Sample Origin	GA	QC Deliverable	STD REPORT

All questions should be addressed to sending project manager.

Requested Reportable Units _____ Report Wet or Dry Weight? Dry Weight Cert. Needed _____

WORK REQUESTED

Method Description	Container Type	Quantity of containers	Preservative	Quantity of Samples	Unit Price	Amount
300.0 - Cl, F, SO4	BP3U	1	Unpreserved	1	$34.00	$34.00
					TOTAL	$34.00

Special Requirements: _____

Receiving Region Department	Acctg. Code	Totals from above	Revenue Allocation	
			Receiving Region (80%)	Client Services Dept. Sending Region (20%)
Wet Chemistry	21	$34.00	$27.20	$6.80
* Custom Revenue Allocation	**TOTAL**	$34.00	$27.20	$6.80

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Chain of Custody Included: ☐ Yes ☒ No Return Samples to Sending Region: ☐ Yes ☒ No

Matrix: ☐ Drinking Water ☐ Soil ☒ Water ☐ Air ☐ Other (identify) _____

CONFIRMATION OF WORK COMPLETED

Date Completed: _____ Receiving Project Manager: _____

DISPOSITION of FORM

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed: ☐ Yes ☐ No

21 days

Workorder: 2629801 **Workorder Name:** PLANT HAMMOND AP-4 BACKRGROUND **Owner Received Date:** 3/5/2020 **Results Requested By:** ~~3/19/2020~~

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: RAD 9315	RAD 9320										LAB USE ONLY
1	HGWC-102	PS	3/4/2020 10:07	2629801001	Water	1	2					X	X										
2																							
3																							
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1				
2				
3				

Comments

Cooler Temperature on Receipt ____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical®
www.pacelabs.com

Ship To:
Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

INTER_LABORATORY WORK ORDER # 2629801
(To be completed by sending lab)

Sending Project No:	2629801
Receiving Project No:	
Check Box for Consolidated Invoice:	☐
Date Prepared:	03/05/20
REQUESTED COMPLETION DATE:	**3/19/2020**

Sending Region	IR26-Atlanta	Sending Project Mgr.	Kevin Herring
Receiving Region	IR30-Pittsburgh	External Client	Georgia Power
State of Sample Origin	GA	QC Deliverable	STD REPORT

All questions should be addressed to sending project manager.

Requested Reportable Units _____ Report Wet or Dry Weight? Dry Weight Cert. Needed _____

WORK REQUESTED

Method Description	Container Type	Quantity of containers	Preservative	Quantity of Samples	Unit Price	Amount
RAD 9315	BP1N	2	HNO3	1	$65.00	$65.00
RAD 9320	BP1N	2	HNO3	1	$65.00	$65.00
					TOTAL	$130.00

Special Requirements: _____

Receiving Region Department	Acctg. Code	Totals from above	Revenue Allocation	
			Receiving Region (80%)	Client Services Dept, Sending Region (20%)
~~Waltz Mill Radiochemistry~~	38	$130.00	$104.00	$26.00
* Custom Revenue Allocation	TOTAL	$130.00	$104.00	$26.00

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Chain of Custody Included: ☐ Yes ☒ No Return Samples to Sending Region: ☐ Yes ☒ No

Matrix: ☐ Drinking Water ☐ Soil ☒ Water ☐ Air ☐ Other (identify) _____

CONFIRMATION OF WORK COMPLETED

Date Completed: _____ Receiving Project Manager: _____

DISPOSITION of FORM

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

May 27, 2020

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

RE: Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between March 25, 2020 and April 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Atlanta, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
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(770)734-4200

SAMPLE SUMMARY

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2630414001	**HGWA-111**	Water	03/24/20 10:25	03/25/20 09:41
2630414002	**HGWC-117**	Water	03/24/20 16:39	03/25/20 09:41
2630414003	**HGWA-112**	Water	03/24/20 11:00	03/25/20 09:41
2630414005	**FB-04**	Water	03/25/20 10:50	03/26/20 11:10
2630414006	**HGWC-101**	Water	03/25/20 14:37	03/26/20 11:10
2630414007	**HGWC-105**	Water	03/25/20 12:10	03/26/20 11:10
2630414008	**HGWC-107**	Water	03/25/20 14:40	03/26/20 11:10
2630414009	**HGWC-118**	Water	03/25/20 09:35	03/26/20 11:10
2630414010	**HGWC-103**	Water	03/25/20 12:30	03/26/20 11:10
2630414011	**HGWC-109**	Water	03/25/20 16:55	03/26/20 11:10
2630414012	**FD-04**	Water	03/25/20 00:00	03/26/20 11:10
2630414013	**HGWA-113**	Water	04/09/20 16:17	04/10/20 11:35

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SAMPLE ANALYTE COUNT

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2630414001	**HGWA-111**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414002	**HGWC-117**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414003	**HGWA-112**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414005	**FB-04**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414006	**HGWC-101**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414007	**HGWC-105**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414008	**HGWC-107**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414009	**HGWC-118**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414010	**HGWC-103**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414011	**HGWC-109**	EPA 6010D	KLH	1	PASI-GA

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414012	**FD-04**	EPA 6010D	DRB	1	PASI-GA
		EPA 6020B	CSW	9	PASI-GA
		SM 2540C	VHB	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A
2630414013	**HGWA-113**	EPA 6010D	DRB	1	PASI-GA
		EPA 6020B	KLH	9	PASI-GA
		SM 2540C	KN	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-GA = Pace Analytical Services - Atlanta, GA

Pace Analytical Services, LLC
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SUMMARY OF DETECTION

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2630414001	**HGWA-111**					
	Field pH	7.37	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	61.2	mg/L	1.0	03/31/20 16:34	
EPA 6020B	Arsenic	0.00042J	mg/L	0.0050	04/02/20 17:28	
EPA 6020B	Barium	0.032	mg/L	0.010	04/02/20 17:28	
EPA 6020B	Boron	0.011J	mg/L	0.10	04/02/20 17:28	
EPA 6020B	Chromium	0.0019J	mg/L	0.010	04/02/20 17:28	
EPA 6020B	Lead	0.00058J	mg/L	0.0050	04/02/20 17:28	
EPA 6020B	Lithium	0.0039J	mg/L	0.030	04/02/20 17:28	
SM 2540C	Total Dissolved Solids	207	mg/L	10.0	03/26/20 13:02	
EPA 300.0 Rev 2.1 1993	Chloride	3.6	mg/L	1.0	04/02/20 21:30	
EPA 300.0 Rev 2.1 1993	Fluoride	0.076J	mg/L	0.30	04/02/20 21:30	
EPA 300.0 Rev 2.1 1993	Sulfate	1.6	mg/L	1.0	04/02/20 21:30	
2630414002	**HGWC-117**					
	Field pH	5.99	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	68.0	mg/L	1.0	03/31/20 16:37	M1
EPA 6020B	Arsenic	0.00037J	mg/L	0.0050	04/02/20 17:51	
EPA 6020B	Barium	0.051	mg/L	0.010	04/02/20 17:51	
EPA 6020B	Boron	1.0	mg/L	0.10	04/02/20 17:51	
EPA 6020B	Cadmium	0.00079J	mg/L	0.0025	04/02/20 17:51	
EPA 6020B	Chromium	0.0012J	mg/L	0.010	04/02/20 17:51	
EPA 6020B	Cobalt	0.0087	mg/L	0.0050	04/02/20 17:51	
EPA 6020B	Lead	0.00025J	mg/L	0.0050	04/02/20 17:51	
EPA 6020B	Lithium	0.0029J	mg/L	0.030	04/02/20 17:51	
SM 2540C	Total Dissolved Solids	331	mg/L	10.0	03/26/20 13:02	
EPA 300.0 Rev 2.1 1993	Chloride	12.5	mg/L	1.0	04/02/20 22:12	
EPA 300.0 Rev 2.1 1993	Sulfate	129	mg/L	3.0	04/03/20 08:30	
2630414003	**HGWA-112**					
	Field pH	5.64	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	7.0	mg/L	1.0	03/31/20 16:51	
EPA 6020B	Barium	0.029	mg/L	0.010	04/02/20 17:56	
EPA 6020B	Boron	0.012J	mg/L	0.10	04/02/20 17:56	
EPA 6020B	Chromium	0.0044J	mg/L	0.010	04/02/20 17:56	
EPA 6020B	Lead	0.00016J	mg/L	0.0050	04/02/20 17:56	
SM 2540C	Total Dissolved Solids	52.0	mg/L	10.0	03/26/20 13:02	
EPA 300.0 Rev 2.1 1993	Chloride	5.2	mg/L	1.0	04/02/20 22:26	
2630414005	**FB-04**					
EPA 6020B	Boron	0.0056J	mg/L	0.10	04/03/20 13:39	
EPA 6020B	Chromium	0.00080J	mg/L	0.010	04/03/20 13:39	
SM 2540C	Total Dissolved Solids	21.0	mg/L	10.0	04/01/20 14:40	
EPA 300.0 Rev 2.1 1993	Sulfate	0.62J	mg/L	1.0	04/02/20 18:58	
2630414006	**HGWC-101**					
	Field pH	5.53	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	18.4	mg/L	1.0	03/31/20 17:28	
EPA 6020B	Arsenic	0.00039J	mg/L	0.0050	04/03/20 13:45	
EPA 6020B	Barium	0.038	mg/L	0.010	04/03/20 13:45	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2630414006	**HGWC-101**					
EPA 6020B	Boron	0.080J	mg/L	0.10	04/03/20 13:45	
EPA 6020B	Cadmium	0.00014J	mg/L	0.0025	04/03/20 13:45	
EPA 6020B	Chromium	0.00098J	mg/L	0.010	04/03/20 13:45	
EPA 6020B	Cobalt	0.0021J	mg/L	0.0050	04/03/20 13:45	
SM 2540C	Total Dissolved Solids	187	mg/L	10.0	04/01/20 14:41	
EPA 300.0 Rev 2.1 1993	Chloride	5.2	mg/L	1.0	04/02/20 19:12	
EPA 300.0 Rev 2.1 1993	Sulfate	85.5	mg/L	1.0	04/02/20 19:12	
2630414007	**HGWC-105**					
	Field pH	6.47	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	91.4	mg/L	1.0	03/31/20 17:31	
EPA 6020B	Barium	0.074	mg/L	0.010	04/03/20 13:50	
EPA 6020B	Boron	1.4	mg/L	0.10	04/03/20 13:50	
EPA 6020B	Chromium	0.0013J	mg/L	0.010	04/03/20 13:50	
EPA 6020B	Cobalt	0.00047J	mg/L	0.0050	04/03/20 13:50	
EPA 6020B	Lead	0.000085J	mg/L	0.0050	04/03/20 13:50	
EPA 6020B	Lithium	0.0041J	mg/L	0.030	04/03/20 13:50	
SM 2540C	Total Dissolved Solids	417	mg/L	10.0	04/01/20 14:42	
EPA 300.0 Rev 2.1 1993	Chloride	3.2	mg/L	1.0	04/02/20 19:26	
EPA 300.0 Rev 2.1 1993	Sulfate	161	mg/L	3.0	04/03/20 08:16	
2630414008	**HGWC-107**					
	Field pH	6.13	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	59.5	mg/L	1.0	03/31/20 17:35	
EPA 6020B	Barium	0.037	mg/L	0.010	04/03/20 13:56	
EPA 6020B	Boron	0.87	mg/L	0.10	04/03/20 13:56	
EPA 6020B	Chromium	0.00074J	mg/L	0.010	04/03/20 13:56	
EPA 6020B	Lead	0.00021J	mg/L	0.0050	04/03/20 13:56	
EPA 6020B	Lithium	0.00091J	mg/L	0.030	04/03/20 13:56	
SM 2540C	Total Dissolved Solids	297	mg/L	10.0	04/01/20 14:42	
EPA 300.0 Rev 2.1 1993	Chloride	3.0	mg/L	1.0	04/02/20 19:41	
EPA 300.0 Rev 2.1 1993	Sulfate	116	mg/L	2.0	04/03/20 08:33	M1
2630414009	**HGWC-118**					
	Field pH	6.89	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	86.8	mg/L	1.0	03/31/20 17:38	
EPA 6020B	Barium	0.060	mg/L	0.010	04/03/20 14:17	
EPA 6020B	Boron	0.70	mg/L	0.10	04/03/20 14:17	
EPA 6020B	Chromium	0.00081J	mg/L	0.010	04/03/20 14:17	
EPA 6020B	Lead	0.00010J	mg/L	0.0050	04/03/20 14:17	
EPA 6020B	Lithium	0.0017J	mg/L	0.030	04/03/20 14:17	
SM 2540C	Total Dissolved Solids	347	mg/L	10.0	04/01/20 14:43	
EPA 300.0 Rev 2.1 1993	Chloride	3.6	mg/L	1.0	04/02/20 20:24	
EPA 300.0 Rev 2.1 1993	Fluoride	0.078J	mg/L	0.30	04/02/20 20:24	
EPA 300.0 Rev 2.1 1993	Sulfate	78.4	mg/L	1.0	04/02/20 20:24	
2630414010	**HGWC-103**					
	Field pH	5.49	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	86.8	mg/L	1.0	03/31/20 17:42	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2630414010	**HGWC-103**					
EPA 6020B	Barium	0.036	mg/L	0.010	04/03/20 14:23	
EPA 6020B	Boron	2.3	mg/L	0.10	04/03/20 14:23	
EPA 6020B	Cadmium	0.00068J	mg/L	0.0025	04/03/20 14:23	
EPA 6020B	Chromium	0.00045J	mg/L	0.010	04/03/20 14:23	
EPA 6020B	Cobalt	0.0022J	mg/L	0.0050	04/03/20 14:23	
EPA 6020B	Lead	0.000076J	mg/L	0.0050	04/03/20 14:23	
EPA 6020B	Lithium	0.0016J	mg/L	0.030	04/03/20 14:23	
SM 2540C	Total Dissolved Solids	507	mg/L	10.0	04/01/20 14:43	
EPA 300.0 Rev 2.1 1993	Chloride	5.1	mg/L	1.0	04/02/20 20:39	
EPA 300.0 Rev 2.1 1993	Sulfate	251	mg/L	5.0	04/03/20 10:33	
2630414011	**HGWC-109**					
	Field pH	6.56	Std. Units		03/30/20 10:07	
EPA 6010D	Calcium	42.6	mg/L	1.0	03/31/20 17:45	
EPA 6020B	Arsenic	0.0025J	mg/L	0.0050	04/03/20 14:29	
EPA 6020B	Barium	0.084	mg/L	0.010	04/03/20 14:29	
EPA 6020B	Boron	0.36	mg/L	0.10	04/03/20 14:29	
EPA 6020B	Chromium	0.0014J	mg/L	0.010	04/03/20 14:29	
EPA 6020B	Cobalt	0.0022J	mg/L	0.0050	04/03/20 14:29	
SM 2540C	Total Dissolved Solids	213	mg/L	10.0	04/01/20 14:44	
EPA 300.0 Rev 2.1 1993	Chloride	3.9	mg/L	1.0	04/02/20 20:53	
EPA 300.0 Rev 2.1 1993	Fluoride	0.075J	mg/L	0.30	04/02/20 20:53	
EPA 300.0 Rev 2.1 1993	Sulfate	27.9	mg/L	1.0	04/02/20 20:53	
2630414012	**FD-04**					
EPA 6010D	Calcium	84.5	mg/L	1.0	04/02/20 14:11	
EPA 6020B	Barium	0.035	mg/L	0.010	04/03/20 14:35	
EPA 6020B	Boron	2.3	mg/L	0.10	04/03/20 14:35	
EPA 6020B	Cadmium	0.00071J	mg/L	0.0025	04/03/20 14:35	
EPA 6020B	Chromium	0.0011J	mg/L	0.010	04/03/20 14:35	
EPA 6020B	Cobalt	0.0021J	mg/L	0.0050	04/03/20 14:35	
EPA 6020B	Lead	0.000074J	mg/L	0.0050	04/03/20 14:35	
EPA 6020B	Lithium	0.0016J	mg/L	0.030	04/03/20 14:35	
SM 2540C	Total Dissolved Solids	499	mg/L	10.0	04/01/20 14:44	
EPA 300.0 Rev 2.1 1993	Chloride	5.1	mg/L	1.0	04/02/20 21:51	
EPA 300.0 Rev 2.1 1993	Sulfate	254	mg/L	5.0	04/03/20 10:48	
2630414013	**HGWA-113**					
	Field pH	6.08	Std. Units		04/10/20 17:07	
EPA 6010D	Calcium	8.3	mg/L	1.0	04/15/20 18:31	
EPA 6020B	Arsenic	0.00074J	mg/L	0.0050	04/15/20 17:51	
EPA 6020B	Barium	0.034	mg/L	0.010	04/15/20 17:51	
EPA 6020B	Boron	0.012J	mg/L	0.10	04/15/20 17:51	
EPA 6020B	Chromium	0.0031J	mg/L	0.010	04/15/20 17:51	
EPA 6020B	Cobalt	0.00037J	mg/L	0.0050	04/15/20 17:51	
EPA 6020B	Lead	0.00039J	mg/L	0.0050	04/15/20 17:51	
EPA 6020B	Lithium	0.0017J	mg/L	0.030	04/15/20 17:51	
SM 2540C	Total Dissolved Solids	48.0	mg/L	10.0	04/14/20 17:56	
EPA 300.0 Rev 2.1 1993	Chloride	1.4	mg/L	1.0	04/23/20 18:40	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2630414013	**HGWA-113**					
EPA 300.0 Rev 2.1 1993	Fluoride	0.14J	mg/L	0.30	04/23/20 18:40	
EPA 300.0 Rev 2.1 1993	Sulfate	6.6	mg/L	1.0	04/23/20 18:40	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWA-111 **Lab ID: 2630414001** Collected: 03/24/20 10:25 Received: 03/25/20 09:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**7.37**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**61.2**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 16:34	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	**0.00042J**	mg/L	0.0050	0.00035	1	03/30/20 21:06	04/02/20 17:28	7440-38-2	
Barium	**0.032**	mg/L	0.010	0.00049	1	03/30/20 21:06	04/02/20 17:28	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/30/20 21:06	04/02/20 17:28	7440-41-7	
Boron	**0.011J**	mg/L	0.10	0.0049	1	03/30/20 21:06	04/02/20 17:28	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/30/20 21:06	04/02/20 17:28	7440-43-9	
Chromium	**0.0019J**	mg/L	0.010	0.00039	1	03/30/20 21:06	04/02/20 17:28	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	03/30/20 21:06	04/02/20 17:28	7440-48-4	
Lead	**0.00058J**	mg/L	0.0050	0.000046	1	03/30/20 21:06	04/02/20 17:28	7439-92-1	
Lithium	**0.0039J**	mg/L	0.030	0.00078	1	03/30/20 21:06	04/02/20 17:28	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**207**	mg/L	10.0	10.0	1		03/26/20 13:02		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.6**	mg/L	1.0	0.60	1		04/02/20 21:30	16887-00-6	
Fluoride	**0.076J**	mg/L	0.30	0.050	1		04/02/20 21:30	16984-48-8	
Sulfate	**1.6**	mg/L	1.0	0.50	1		04/02/20 21:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-117 **Lab ID: 2630414002** Collected: 03/24/20 16:39 Received: 03/25/20 09:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**5.99**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**68.0**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 16:37	7440-70-2	M1
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	**0.00037J**	mg/L	0.0050	0.00035	1	03/30/20 21:06	04/02/20 17:51	7440-38-2	
Barium	**0.051**	mg/L	0.010	0.00049	1	03/30/20 21:06	04/02/20 17:51	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/30/20 21:06	04/02/20 17:51	7440-41-7	
Boron	**1.0**	mg/L	0.10	0.0049	1	03/30/20 21:06	04/02/20 17:51	7440-42-8	
Cadmium	**0.00079J**	mg/L	0.0025	0.00011	1	03/30/20 21:06	04/02/20 17:51	7440-43-9	
Chromium	**0.0012J**	mg/L	0.010	0.00039	1	03/30/20 21:06	04/02/20 17:51	7440-47-3	
Cobalt	**0.0087**	mg/L	0.0050	0.00030	1	03/30/20 21:06	04/02/20 17:51	7440-48-4	
Lead	**0.00025J**	mg/L	0.0050	0.000046	1	03/30/20 21:06	04/02/20 17:51	7439-92-1	
Lithium	**0.0029J**	mg/L	0.030	0.00078	1	03/30/20 21:06	04/02/20 17:51	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**331**	mg/L	10.0	10.0	1		03/26/20 13:02		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**12.5**	mg/L	1.0	0.60	1		04/02/20 22:12	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 22:12	16984-48-8	
Sulfate	**129**	mg/L	3.0	1.5	3		04/03/20 08:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWA-112 **Lab ID: 2630414003** Collected: 03/24/20 11:00 Received: 03/25/20 09:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**5.64**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**7.0**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 16:51	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/30/20 21:06	04/02/20 17:56	7440-38-2	
Barium	**0.029**	mg/L	0.010	0.00049	1	03/30/20 21:06	04/02/20 17:56	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/30/20 21:06	04/02/20 17:56	7440-41-7	
Boron	**0.012J**	mg/L	0.10	0.0049	1	03/30/20 21:06	04/02/20 17:56	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/30/20 21:06	04/02/20 17:56	7440-43-9	
Chromium	**0.0044J**	mg/L	0.010	0.00039	1	03/30/20 21:06	04/02/20 17:56	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	03/30/20 21:06	04/02/20 17:56	7440-48-4	
Lead	**0.00016J**	mg/L	0.0050	0.000046	1	03/30/20 21:06	04/02/20 17:56	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	03/30/20 21:06	04/02/20 17:56	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**52.0**	mg/L	10.0	10.0	1		03/26/20 13:02		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.2**	mg/L	1.0	0.60	1		04/02/20 22:26	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 22:26	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		04/02/20 22:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: FB-04 **Lab ID: 2630414005** Collected: 03/25/20 10:50 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	ND	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:24	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 13:39	7440-38-2	
Barium	ND	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 13:39	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 13:39	7440-41-7	
Boron	**0.0056J**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 13:39	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 13:39	7440-43-9	
Chromium	**0.00080J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 13:39	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 13:39	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 13:39	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 13:39	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**21.0**	mg/L	10.0	10.0	1		04/01/20 14:40		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	ND	mg/L	1.0	0.60	1		04/02/20 18:58	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 18:58	16984-48-8	
Sulfate	**0.62J**	mg/L	1.0	0.50	1		04/02/20 18:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-101 **Lab ID: 2630414006** Collected: 03/25/20 14:37 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**5.53**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**18.4**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:28	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	**0.00039J**	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 13:45	7440-38-2	
Barium	**0.038**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 13:45	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 13:45	7440-41-7	
Boron	**0.080J**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 13:45	7440-42-8	
Cadmium	**0.00014J**	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 13:45	7440-43-9	
Chromium	**0.00098J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 13:45	7440-47-3	
Cobalt	**0.0021J**	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 13:45	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 13:45	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 13:45	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**187**	mg/L	10.0	10.0	1		04/01/20 14:41		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.2**	mg/L	1.0	0.60	1		04/02/20 19:12	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 19:12	16984-48-8	
Sulfate	**85.5**	mg/L	1.0	0.50	1		04/02/20 19:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-105 **Lab ID: 2630414007** Collected: 03/25/20 12:10 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**6.47**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**91.4**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:31	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 13:50	7440-38-2	
Barium	**0.074**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 13:50	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 13:50	7440-41-7	
Boron	**1.4**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 13:50	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 13:50	7440-43-9	
Chromium	**0.0013J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 13:50	7440-47-3	
Cobalt	**0.00047J**	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 13:50	7440-48-4	
Lead	**0.000085J**	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 13:50	7439-92-1	
Lithium	**0.0041J**	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 13:50	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**417**	mg/L	10.0	10.0	1		04/01/20 14:42		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.2**	mg/L	1.0	0.60	1		04/02/20 19:26	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 19:26	16984-48-8	
Sulfate	**161**	mg/L	3.0	1.5	3		04/03/20 08:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-107 **Lab ID: 2630414008** Collected: 03/25/20 14:40 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**6.13**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**59.5**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:35	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 13:56	7440-38-2	
Barium	**0.037**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 13:56	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 13:56	7440-41-7	
Boron	**0.87**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 13:56	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 13:56	7440-43-9	
Chromium	**0.00074J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 13:56	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 13:56	7440-48-4	
Lead	**0.00021J**	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 13:56	7439-92-1	
Lithium	**0.00091J**	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 13:56	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**297**	mg/L	10.0	10.0	1		04/01/20 14:42		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.0**	mg/L	1.0	0.60	1		04/02/20 19:41	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 19:41	16984-48-8	
Sulfate	**116**	mg/L	2.0	1.0	2		04/03/20 08:33	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-118 **Lab ID: 2630414009** Collected: 03/25/20 09:35 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**6.89**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**86.8**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:38	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 14:17	7440-38-2	
Barium	**0.060**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 14:17	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 14:17	7440-41-7	
Boron	**0.70**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 14:17	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 14:17	7440-43-9	
Chromium	**0.00081J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 14:17	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 14:17	7440-48-4	
Lead	**0.00010J**	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 14:17	7439-92-1	
Lithium	**0.0017J**	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 14:17	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**347**	mg/L	10.0	10.0	1		04/01/20 14:43		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.6**	mg/L	1.0	0.60	1		04/02/20 20:24	16887-00-6	
Fluoride	**0.078J**	mg/L	0.30	0.050	1		04/02/20 20:24	16984-48-8	
Sulfate	**78.4**	mg/L	1.0	0.50	1		04/02/20 20:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-103 **Lab ID: 2630414010** Collected: 03/25/20 12:30 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**5.49**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**86.8**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:42	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 14:23	7440-38-2	
Barium	**0.036**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 14:23	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 14:23	7440-41-7	
Boron	**2.3**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 14:23	7440-42-8	
Cadmium	**0.00068J**	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 14:23	7440-43-9	
Chromium	**0.00045J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 14:23	7440-47-3	
Cobalt	**0.0022J**	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 14:23	7440-48-4	
Lead	**0.000076J**	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 14:23	7439-92-1	
Lithium	**0.0016J**	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 14:23	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**507**	mg/L	10.0	10.0	1		04/01/20 14:43		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.1**	mg/L	1.0	0.60	1		04/02/20 20:39	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 20:39	16984-48-8	
Sulfate	**251**	mg/L	5.0	2.5	5		04/03/20 10:33	14808-79-8	

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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWC-109 **Lab ID: 2630414011** Collected: 03/25/20 16:55 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**6.56**	Std. Units			1		03/30/20 10:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**42.6**	mg/L	1.0	0.14	1	03/30/20 21:31	03/31/20 17:45	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	**0.0025J**	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 14:29	7440-38-2	
Barium	**0.084**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 14:29	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 14:29	7440-41-7	
Boron	**0.36**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 14:29	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 14:29	7440-43-9	
Chromium	**0.0014J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 14:29	7440-47-3	
Cobalt	**0.0022J**	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 14:29	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 14:29	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 14:29	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**213**	mg/L	10.0	10.0	1		04/01/20 14:44		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**3.9**	mg/L	1.0	0.60	1		04/02/20 20:53	16887-00-6	
Fluoride	**0.075J**	mg/L	0.30	0.050	1		04/02/20 20:53	16984-48-8	
Sulfate	**27.9**	mg/L	1.0	0.50	1		04/02/20 20:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: FD-04 **Lab ID: 2630414012** Collected: 03/25/20 00:00 Received: 03/26/20 11:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**84.5**	mg/L	1.0	0.14	1	03/31/20 20:57	04/02/20 14:11	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	ND	mg/L	0.0050	0.00035	1	03/31/20 21:07	04/03/20 14:35	7440-38-2	
Barium	**0.035**	mg/L	0.010	0.00049	1	03/31/20 21:07	04/03/20 14:35	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/31/20 21:07	04/03/20 14:35	7440-41-7	
Boron	**2.3**	mg/L	0.10	0.0049	1	03/31/20 21:07	04/03/20 14:35	7440-42-8	
Cadmium	**0.00071J**	mg/L	0.0025	0.00011	1	03/31/20 21:07	04/03/20 14:35	7440-43-9	
Chromium	**0.0011J**	mg/L	0.010	0.00039	1	03/31/20 21:07	04/03/20 14:35	7440-47-3	
Cobalt	**0.0021J**	mg/L	0.0050	0.00030	1	03/31/20 21:07	04/03/20 14:35	7440-48-4	
Lead	**0.000074J**	mg/L	0.0050	0.000046	1	03/31/20 21:07	04/03/20 14:35	7439-92-1	
Lithium	**0.0016J**	mg/L	0.030	0.00078	1	03/31/20 21:07	04/03/20 14:35	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**499**	mg/L	10.0	10.0	1		04/01/20 14:44		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**5.1**	mg/L	1.0	0.60	1		04/02/20 21:51	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 21:51	16984-48-8	
Sulfate	**254**	mg/L	5.0	2.5	5		04/03/20 10:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Sample: HGWA-113 **Lab ID: 2630414013** Collected: 04/09/20 16:17 Received: 04/10/20 11:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**6.08**	Std. Units			1		04/10/20 17:07		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**8.3**	mg/L	1.0	0.14	1	04/14/20 18:37	04/15/20 18:31	7440-70-2	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Arsenic	**0.00074J**	mg/L	0.0050	0.00035	1	04/14/20 18:32	04/15/20 17:51	7440-38-2	
Barium	**0.034**	mg/L	0.010	0.00049	1	04/14/20 18:32	04/15/20 17:51	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	04/14/20 18:32	04/15/20 17:51	7440-41-7	
Boron	**0.012J**	mg/L	0.10	0.0049	1	04/14/20 18:32	04/15/20 17:51	7440-42-8	
Cadmium	ND	mg/L	0.0025	0.00011	1	04/14/20 18:32	04/15/20 17:51	7440-43-9	
Chromium	**0.0031J**	mg/L	0.010	0.00039	1	04/14/20 18:32	04/15/20 17:51	7440-47-3	
Cobalt	**0.00037J**	mg/L	0.0050	0.00030	1	04/14/20 18:32	04/15/20 17:51	7440-48-4	
Lead	**0.00039J**	mg/L	0.0050	0.000046	1	04/14/20 18:32	04/15/20 17:51	7439-92-1	
Lithium	**0.0017J**	mg/L	0.030	0.00078	1	04/14/20 18:32	04/15/20 17:51	7439-93-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**48.0**	mg/L	10.0	10.0	1		04/14/20 17:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**1.4**	mg/L	1.0	0.60	1		04/23/20 18:40	16887-00-6	
Fluoride	**0.14J**	mg/L	0.30	0.050	1		04/23/20 18:40	16984-48-8	
Sulfate	**6.6**	mg/L	1.0	0.50	1		04/23/20 18:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45066
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414001, 2630414002, 2630414003, 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011

METHOD BLANK: 207564 Matrix: Water
Associated Lab Samples: 2630414001, 2630414002, 2630414003, 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	03/31/20 16:27	

LABORATORY CONTROL SAMPLE: 207565

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.1	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207566 207567

Parameter	Units	2630414002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	68.0	1	1	69.5	67.6	149	-41	75-125	3	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45121
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414012

METHOD BLANK: 207982 Matrix: Water
Associated Lab Samples: 2630414012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	04/02/20 13:05	

LABORATORY CONTROL SAMPLE: 207983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.1	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207984 207985

Parameter	Units	2630449007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	157	1	1	158	157	93	15	75-125	0	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45533
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414013

METHOD BLANK: 210181 Matrix: Water
Associated Lab Samples: 2630414013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	04/15/20 16:53	

LABORATORY CONTROL SAMPLE: 210182

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 210190 210191

Parameter	Units	2630862003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	362	1	1	368	365	604	379	75-125	1	20	M6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45065
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414001, 2630414002, 2630414003

METHOD BLANK: 207560 Matrix: Water
Associated Lab Samples: 2630414001, 2630414002, 2630414003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	04/02/20 17:16	
Barium	mg/L	ND	0.010	0.00049	04/02/20 17:16	
Beryllium	mg/L	ND	0.0030	0.000074	04/02/20 17:16	
Boron	mg/L	ND	0.10	0.0049	04/02/20 17:16	
Cadmium	mg/L	ND	0.0025	0.00011	04/02/20 17:16	
Chromium	mg/L	ND	0.010	0.00039	04/02/20 17:16	
Cobalt	mg/L	ND	0.0050	0.00030	04/02/20 17:16	
Lead	mg/L	ND	0.0050	0.000046	04/02/20 17:16	
Lithium	mg/L	ND	0.030	0.00078	04/02/20 17:16	

LABORATORY CONTROL SAMPLE: 207561

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.10	104	80-120	
Boron	mg/L	1	1.0	104	80-120	
Cadmium	mg/L	0.1	0.10	104	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	104	80-120	
Lead	mg/L	0.1	0.10	103	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207562 207563

Parameter	Units	2630414001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	0.00042J	0.1	0.1	0.10	0.10	101	102	75-125	1	20	
Barium	mg/L	0.032	0.1	0.1	0.13	0.13	102	101	75-125	1	20	
Beryllium	mg/L	ND	0.1	0.1	0.10	0.10	101	102	75-125	1	20	
Boron	mg/L	0.011J	1	1	1.0	1.0	101	103	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	1	20	
Chromium	mg/L	0.0019J	0.1	0.1	0.11	0.10	104	102	75-125	3	20	
Cobalt	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20	
Lead	mg/L	0.00058J	0.1	0.1	0.10	0.097	99	97	75-125	2	20	
Lithium	mg/L	0.0039J	0.1	0.1	0.10	0.11	101	102	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45113
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

METHOD BLANK: 207961 Matrix: Water
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	04/03/20 13:05	
Barium	mg/L	ND	0.010	0.00049	04/03/20 13:05	
Beryllium	mg/L	ND	0.0030	0.000074	04/03/20 13:05	
Boron	mg/L	ND	0.10	0.0049	04/03/20 13:05	
Cadmium	mg/L	ND	0.0025	0.00011	04/03/20 13:05	
Chromium	mg/L	ND	0.010	0.00039	04/03/20 13:05	
Cobalt	mg/L	ND	0.0050	0.00030	04/03/20 13:05	
Lead	mg/L	ND	0.0050	0.000046	04/03/20 13:05	
Lithium	mg/L	ND	0.030	0.00078	04/03/20 13:05	

LABORATORY CONTROL SAMPLE: 207962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	100	80-120	
Beryllium	mg/L	0.1	0.10	102	80-120	
Boron	mg/L	1	1.1	105	80-120	
Cadmium	mg/L	0.1	0.10	101	80-120	
Chromium	mg/L	0.1	0.10	105	80-120	
Cobalt	mg/L	0.1	0.10	103	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207963 207964

Parameter	Units	2630472004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	2	20	
Barium	mg/L	0.19	0.1	0.1	0.28	0.29	92	97	75-125	2	20	
Beryllium	mg/L	ND	0.1	0.1	0.097	0.094	97	94	75-125	4	20	
Boron	mg/L	0.021J	1	1	1.0	0.99	102	97	75-125	5	20	
Cadmium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	2	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.099	100	99	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.099	0.097	99	97	75-125	2	20	
Lead	mg/L	ND	0.1	0.1	0.097	0.096	97	96	75-125	1	20	
Lithium	mg/L	0.011J	0.1	0.1	0.11	0.10	97	94	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45531
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414013

METHOD BLANK: 210136 Matrix: Water
Associated Lab Samples: 2630414013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00035	04/15/20 16:04	
Barium	mg/L	ND	0.010	0.00049	04/15/20 16:04	
Beryllium	mg/L	ND	0.0030	0.000074	04/15/20 16:04	
Boron	mg/L	ND	0.10	0.0049	04/15/20 16:04	
Cadmium	mg/L	ND	0.0025	0.00011	04/15/20 16:04	
Chromium	mg/L	ND	0.010	0.00039	04/15/20 16:04	
Cobalt	mg/L	ND	0.0050	0.00030	04/15/20 16:04	
Lead	mg/L	ND	0.0050	0.000046	04/15/20 16:04	
Lithium	mg/L	ND	0.030	0.00078	04/15/20 16:04	

LABORATORY CONTROL SAMPLE: 210137

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	1.1	105	80-120	
Cadmium	mg/L	0.1	0.10	102	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.10	101	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 210192 210193

Parameter	Units	2630818017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	0.1	0.1	0.10	0.099	99	99	75-125	1	20	
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	100	99	75-125	1	20	
Beryllium	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	1	20	
Boron	mg/L	0.28	1	1	1.2	1.2	92	91	75-125	1	20	
Cadmium	mg/L	ND	0.1	0.1	0.098	0.096	98	96	75-125	3	20	
Chromium	mg/L	0.00058J	0.1	0.1	0.10	0.10	102	101	75-125	2	20	
Cobalt	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20	
Lead	mg/L	0.00017J	0.1	0.1	0.10	0.099	101	99	75-125	2	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.098	99	98	75-125	1	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 44950
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414001, 2630414002, 2630414003

LABORATORY CONTROL SAMPLE: 206865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	401	100	84-108	

SAMPLE DUPLICATE: 206866

Parameter	Units	2630389001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	859	854	1	10	

SAMPLE DUPLICATE: 206867

Parameter	Units	2630325025 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	714	672	6	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45158
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

LABORATORY CONTROL SAMPLE: 208023

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	370	92	84-108	

SAMPLE DUPLICATE: 208024

Parameter	Units	2630414005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	21.0	ND		10	

SAMPLE DUPLICATE: 208025

Parameter	Units	2630417005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	521	525	1	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 45512
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Atlanta, GA

Associated Lab Samples: 2630414013

LABORATORY CONTROL SAMPLE: 209985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	379	95	84-108	

SAMPLE DUPLICATE: 209986

Parameter	Units	2630821024 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	223	244	9	10	

SAMPLE DUPLICATE: 209987

Parameter	Units	92473254002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	17.0	18.0	6	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 533750
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 2630414001, 2630414002, 2630414003

METHOD BLANK: 2848969 Matrix: Water
Associated Lab Samples: 2630414001, 2630414002, 2630414003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/02/20 17:18	
Fluoride	mg/L	ND	0.10	0.050	04/02/20 17:18	
Sulfate	mg/L	ND	1.0	0.50	04/02/20 17:18	

LABORATORY CONTROL SAMPLE: 2848970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.9	102	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	50	50.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2848971 2848972

Parameter	Units	2630325037 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1670	50	50	1670	1680	-1	8	90-110	0	10	M6
Fluoride	mg/L	0.056J	2.5	2.5	2.3	2.3	90	90	90-110	0	10	
Sulfate	mg/L	603	50	50	602	604	-2	2	90-110	0	10	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2848973 2848974

Parameter	Units	2630414001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.6	50	50	56.2	56.2	105	105	90-110	0	10	
Fluoride	mg/L	0.076J	2.5	2.5	2.5	2.5	95	96	90-110	1	10	
Sulfate	mg/L	1.6	50	50	53.5	53.4	104	104	90-110	0	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 533970
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

METHOD BLANK: 2849811 Matrix: Water
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/02/20 15:35	
Fluoride	mg/L	ND	0.10	0.050	04/02/20 15:35	
Sulfate	mg/L	ND	1.0	0.50	04/02/20 15:35	

LABORATORY CONTROL SAMPLE: 2849812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	47.6	95	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	50	47.5	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2849813 2849814

Parameter	Units	2630435009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.8	50	50	54.6	55.8	102	104	90-110	2	10	
Fluoride	mg/L	0.25J	2.5	2.5	3.4	3.6	125	133	90-110	6	10	M1
Sulfate	mg/L	448	50	50	496	497	97	97	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2849815 2849816

Parameter	Units	2630414008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.0	50	50	54.6	54.0	103	102	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.7	2.7	107	107	90-110	0	10	
Sulfate	mg/L	116	50	50	160	146	88	60	90-110	9	10	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

QC Batch: 537769
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 2630414013

METHOD BLANK: 2867519 Matrix: Water
Associated Lab Samples: 2630414013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/23/20 18:11	
Fluoride	mg/L	ND	0.10	0.050	04/23/20 18:11	
Sulfate	mg/L	ND	1.0	0.50	04/23/20 18:11	

LABORATORY CONTROL SAMPLE: 2867520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.8	106	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	50	53.7	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867521 2867522

Parameter	Units	2630414013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.4	50	50	53.9	54.6	105	106	90-110	1	10	
Fluoride	mg/L	0.14J	2.5	2.5	2.8	2.9	107	109	90-110	1	10	
Sulfate	mg/L	6.6	50	50	60.2	60.7	107	108	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2867523 2867524

Parameter	Units	92474395033 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	6.7	50	50	60.1	60.8	107	108	90-110	1	10	
Fluoride	mg/L	ND	2.5	2.5	2.6	2.7	105	106	90-110	1	10	
Sulfate	mg/L	ND	50	50	54.3	54.8	108	109	90-110	1	10	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2630414001	HGWA-111				
2630414002	HGWC-117				
2630414003	HGWA-112				
2630414006	HGWC-101				
2630414007	HGWC-105				
2630414008	HGWC-107				
2630414009	HGWC-118				
2630414010	HGWC-103				
2630414011	HGWC-109				
2630414013	HGWA-113				
2630414001	HGWA-111	EPA 3010A	45066	EPA 6010D	45071
2630414002	HGWC-117	EPA 3010A	45066	EPA 6010D	45071
2630414003	HGWA-112	EPA 3010A	45066	EPA 6010D	45071
2630414005	FB-04	EPA 3010A	45066	EPA 6010D	45071
2630414006	HGWC-101	EPA 3010A	45066	EPA 6010D	45071
2630414007	HGWC-105	EPA 3010A	45066	EPA 6010D	45071
2630414008	HGWC-107	EPA 3010A	45066	EPA 6010D	45071
2630414009	HGWC-118	EPA 3010A	45066	EPA 6010D	45071
2630414010	HGWC-103	EPA 3010A	45066	EPA 6010D	45071
2630414011	HGWC-109	EPA 3010A	45066	EPA 6010D	45071
2630414012	FD-04	EPA 3010A	45121	EPA 6010D	45135
2630414013	HGWA-113	EPA 3010A	45533	EPA 6010D	45546
2630414001	HGWA-111	EPA 3005A	45065	EPA 6020B	45069
2630414002	HGWC-117	EPA 3005A	45065	EPA 6020B	45069
2630414003	HGWA-112	EPA 3005A	45065	EPA 6020B	45069
2630414005	FB-04	EPA 3005A	45113	EPA 6020B	45136
2630414006	HGWC-101	EPA 3005A	45113	EPA 6020B	45136
2630414007	HGWC-105	EPA 3005A	45113	EPA 6020B	45136
2630414008	HGWC-107	EPA 3005A	45113	EPA 6020B	45136
2630414009	HGWC-118	EPA 3005A	45113	EPA 6020B	45136
2630414010	HGWC-103	EPA 3005A	45113	EPA 6020B	45136
2630414011	HGWC-109	EPA 3005A	45113	EPA 6020B	45136
2630414012	FD-04	EPA 3005A	45113	EPA 6020B	45136
2630414013	HGWA-113	EPA 3005A	45531	EPA 6020B	45544
2630414001	HGWA-111	SM 2540C	44950		
2630414002	HGWC-117	SM 2540C	44950		
2630414003	HGWA-112	SM 2540C	44950		
2630414005	FB-04	SM 2540C	45158		
2630414006	HGWC-101	SM 2540C	45158		
2630414007	HGWC-105	SM 2540C	45158		
2630414008	HGWC-107	SM 2540C	45158		
2630414009	HGWC-118	SM 2540C	45158		
2630414010	HGWC-103	SM 2540C	45158		
2630414011	HGWC-109	SM 2540C	45158		
2630414012	FD-04	SM 2540C	45158		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HAMMOND AP-4 2ND SEMIANNUAL
Pace Project No.: 2630414

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2630414013	**HGWA-113**	SM 2540C	45512		
2630414001	**HGWA-111**	EPA 300.0 Rev 2.1 1993	533750		
2630414002	**HGWC-117**	EPA 300.0 Rev 2.1 1993	533750		
2630414003	**HGWA-112**	EPA 300.0 Rev 2.1 1993	533750		
2630414005	**FB-04**	EPA 300.0 Rev 2.1 1993	533970		
2630414006	**HGWC-101**	EPA 300.0 Rev 2.1 1993	533970		
2630414007	**HGWC-105**	EPA 300.0 Rev 2.1 1993	533970		
2630414008	**HGWC-107**	EPA 300.0 Rev 2.1 1993	533970		
2630414009	**HGWC-118**	EPA 300.0 Rev 2.1 1993	533970		
2630414010	**HGWC-103**	EPA 300.0 Rev 2.1 1993	533970		
2630414011	**HGWC-109**	EPA 300.0 Rev 2.1 1993	533970		
2630414012	**FD-04**	EPA 300.0 Rev 2.1 1993	533970		
2630414013	**HGWA-113**	EPA 300.0 Rev 2.1 1993	537769		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	GA Power
Address:	Atlanta, GA
Email To:	SCS Contacts
Phone:	Fax:
Requested Due Date/TAT:	10 Day

Section B Required Project Information:

Report To:	SCS Contacts
Copy To:	Geosyntec Contacts
Purchase Order No.:	
Project Name:	Plant Hammond AP-4 Semiannual compliance sampling (second)
Project Number:	GW6581

Section C Invoice Information:

Attention:	Southern Co.
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	2912-7

REGULATORY AGENCY

NPDES / GROUND WATER / DRINKING WATER / UST / RCRA / ☑ OTHER CCR

Site Location STATE: GA

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): N N N N

Pace Project No./ Lab I.D.: 2630414

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Chloride, Fluoride, Sulfate	TDS	Metals 6010/6020*	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	HGWA-111	WT	G	3/24	1025				5	2		3							X	X	X	X	N	pH = 7.37
2	HGWC-117	WT	G	3/24	1639				5	2		3							X	X	X	X	N	pH = 5.99
3		WT	G						5	2		3							X	X	X	X	N	pH =
4		WT	G						5	2		3							X	X	X	X	N	pH =
5		WT	G						5	2		3							X	X	X	X	N	pH =
6		WT	G		CK				5	2		3							X	X	X	X	N	pH =
7		WT	G						5	2		3							X	X	X	X	N	pH =
8		WT	G	3/24/2020					5	2		3							X	X	X	X	N	pH =
9		WT	G						5	2		3							X	X	X	X	N	pH =
10		WT	G						5	2		3							X	X	X	X	N	pH =
11		WT	G						5	2		3							X	X	X	X	N	pH =
12		WT	G						5	2		3							X	X	X	X	N	pH =

ADDITIONAL COMMENTS

Please note dry wells, strike thorugh any wells not sampled, and note when the last sample for the event has been taken.

*Metals=As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Chad Russo / GCD	3/24/2020	1730	[signature]	3-24-20	1730
[signature]	3-24-20	1855	Malia Mimbs / Geosyntec	3/24/20	1855
Malia Mimbs / Geosyntec	3/25/20	0940	Tomaro Nickel / Pace	3/25/20	941
Tomaro Nickel / Pace	3/25	1310	[signature] / Pace	3/25/20	1310

SAMPLE CONDITIONS: Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo — DATE Signed (MM/DD/YY): 3/24/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3

Section A Required Client Information:

Company:	GA Power
Address:	Atlanta, GA
Email To:	SCS Contacts
Phone:	Fax:
Requested Due Date/TAT:	10 Day

Section B Required Project Information:

Report To:	SCS Contacts
Copy To:	Geosyntec Contacts
Purchase Order No.:	
Project Name:	Plant Hammond AP1 Semiannual compliance sampling (second)
Project Number:	GW6581B

Section C Invoice Information:

Attention:	Southern Co.
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	~~2912~~ 2912-7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER CCR

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate	TDS	Metals 6010/6020*	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N	N	N	N		
1	H6WA-112	WT	G	3/24/20	1100	—	—		5	2		3							X	X	X	X	N	pH = 5.64
2	H6WA-113	WT	G	3/24/20	1516	—	—		5	2		3							X	X	X	X	N	pH = 6.03
3		WT	G						5	2		3							X	X	X	X	N	pH =
4		WT	G						5	2		3							X	X	X	X	N	pH =
5		WT	G						5	2		3							X	X	X	X	N	pH =
6		WT	G						5	2		3							X	X	X	X	N	pH =
7		WT	G						5	2		3							X	X	X	X	N	pH =
8		WT	G						5	2		3							X	X	X	X	N	pH =
9		WT	G						5	2		3							X	X	X	X	N	pH =
10		WT	G						5	2		3							X	X	X	X	N	pH =
11		WT	G						5	2		3							X	X	X	X	N	pH =
12		WT	G						5	2		3							X	X	X	X	N	pH =

3-24-2020 1600

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Please note dry wells, strike thorugh any wells not sampled, and note when the last sample for the event has been taken.		3-24-20	1855	Mallia Mumtaz/Geosyntec	3/24/20	1855
*Metals: As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li,	Mallia Mumtaz/Geosyntec	3/25/20	0940	Ramona Hicks/Pace	3/25/20	941
	Ramona Hicks/Pace	3/25	1310	Pace	3/25/20	1310

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Aaron Reeder

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 03/24/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

Section A Required Client Information:

- Company: GA Power
- Address: Atlanta, GA
- Email To: SCS Contacts
- Phone:
- Fax:
- Requested Due Date/TAT: 10 Day

Section B Required Project Information:

- Report To: SCS Contacts
- Copy To: Geosyntec Contacts
- Purchase Order No.:
- Project Name: Plant Hammond AP-4 Semiannual ~~Compliance~~ second sampling
- Project Number: GW6581

Section C Invoice Information:

- Attention: Southern Co.
- Company Name:
- Address:
- Pace Quote Reference:
- Pace Project Manager: Kevin Herring
- Pace Profile #: 2912-7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER CCR

Site Location STATE: GA

Section D Required Client Information

Valid Matrix Codes (MATRIX / CODE): DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

Pace Project No./ Lab I.D.: 2630419

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate (N)	TDS (N)	Metals 6010/6020* (N)	RAD 226/228 (N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FB-04	WT	G	3/25	1050	—	—		5	2		3							X	X	X	X	N	pH =
2	HGWC-101	WT	G	3/25	1437	—	—		5	2		3							X	X	X	X	N	pH = 5.53
3		WT	G						5	2		3							X	X	X	X	N	pH =
4		WT	G						5	2		3							X	X	X	X	N	pH =
5		WT	G						5	2		3							X	X	X	X	N	pH =
6		WT	G						5	2		3							X	X	X	X	N	pH =
7		WT	G						5	2		3							X	X	X	X	N	pH =
8		WT	G						5	2		3							X	X	X	X	N	pH =
9		WT	G						5	2		3							X	X	X	X	N	pH =
10		WT	G						5	2		3							X	X	X	X	N	pH =
11		WT	G						5	2		3							X	X	X	X	N	pH =
12		WT	G						5	2		3							X	X	X	X	N	pH =

(CR) 3/25/2020

ADDITIONAL COMMENTS

Please note dry wells, strike through any wells not sampled, and note when the last sample for the event has been taken

*Metals=As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Chad Russo / GP	3/25	1825	[signature]	3/25/20	1825				
[signature]	3/25/20	2002	Marlia Murphy / Geosyntec	3/25/20	2002				
Marlia Murphy / Geosyntec	3/26/20	1110	[signature] / Pace	3/26/20	1110	5.0	Y	N	Y
[signature] / Pace	3/26/20	1450	[signature]	3/26/20	1450	↓	↓	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed (MM/DD/YY): 3/25/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3

Section A Required Client Information:

Company:	GA Power
Address:	Atlanta, GA
Email To:	SCS Contacts
Phone:	Fax:
Requested Due Date/TAT:	10 Day

Section B Required Project Information:

Report To:	SCS Contacts
Copy To:	Geosyntec Contacts
Purchase Order No.:	second
Project Name:	Plant Hammond AP-4 Semiannual Compliance Sampling
Project Number:	GW6581)

Section C Invoice Information:

Attention:	Southern Co.
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	2912-7

REGULATORY AGENCY

NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☑ OTHER ~~CCR~~

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N)	Analysis Test: Y/N	Chloride, Fluoride, Sulfate	TDS	Metals 6010/6020*	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N			
1	HGWC-105	WT	G	3/25/20	1210	→	→		5	2		3							X	X	X	X		N	pH = 6.47
2	HGWC-107	WT	G	3/25/20	1440	←	←		5	2		3							X	X	X	X		N	pH = 6.13
3		WT	G						5	2		3							X	X	X	X		N	pH =
4		WT	G						5	2		3							X	X	X	X		N	pH =
5		WT	G						5	2		3							X	X	X	X		N	pH =
6		WT	G						5	2		3							X	X	X	X		N	pH =
7		WT	G						5	2		3							X	X	X	X		N	pH =
8		WT	G						5	2		3							X	X	X	X		N	pH =
9		WT	G						5	2		3							X	X	X	X		N	pH =
10		WT	G						5	2		3							X	X	X	X		N	pH =
11		WT	G						5	2		3							X	X	X	X		N	pH =
12		WT	G						5	2		3							X	X	X	X		N	pH =

NV 3/26/20

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Please note dry wells, strike through any wells not sampled, and note when the last sample for the event has been taken.		3/25/20	1512		3/25/20	1812
		3-25-20	2002	Malia Munson / Geosyntec	3/25/20	2002
*Metals=As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li	Malia Munson / Geosyntec	3/26/20	1110	Pace	3/26/20	1110
	Pace	3/26/20	1450		3/26/20	1450

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
5.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nelson Gurley

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 03/25/20

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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Page: 3 of 3

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Requested Due Date/TAT:	10 Day

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Copy To:	Geosyntec Contacts
Purchase Order No.:	
Project Name:	Plant Hammond AP-4 Semiannual Compliance Sampling (second)
Project Number:	GW6581

Section C Invoice Information:

Attention:	Southern Co.
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	2912-7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER CCR

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate	TDS	Metals 6010/6020*	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N	N	N	N		2830414
1	HGWC-118	WT	G	3/25/2020	9:35				5	2		3							X	X	X	X	N	pH = 6.89
2	HGWC-103	WT	G	3/25/2020	12:30				5	2		3							X	X	X	X	N	pH = 5.49
3	HGWC-109	WT	G	3/25/2020	16:55				5	2		3							X	X	X	X	N	pH = 6.56
4	FD-04	WT	G	3/25/2020	none				5	2		3							X	X	X	X	N	pH =
5		WT	G						5	2		3							X	X	X	X	N	pH =
6		WT	G						5	2		3							X	X	X	X	N	pH =
7		WT	G	3/25/2020					5	2		3							X	X	X	X	N	pH =
8		WT	G	(60)					5	2		3							X	X	X	X	N	pH =
9		WT	G						5	2		3							X	X	X	X	N	pH =
10		WT	G						5	2		3							X	X	X	X	N	pH =
11		WT	G						5	2		3							X	X	X	X	N	pH =
12		WT	G						5	2		3							X	X	X	X	N	pH =

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Please note dry wells, strike through any wells not sampled, and note when the last sample for the event has been taken.	Shawn Lin, GPC	3/25/20	1740		3/25/20	1740	
		3/25/20	2002	Maria Munton/Geosyntec	3/25/20	2002	
*Metals=As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li	Maria Munton/Geosyntec	3/26/20	1110		3/26/20	1110	
		3/26/20	1450		3/26/20	1450	5.0 / Y / N / Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Shawn Lin

SIGNATURE of SAMPLER: Shawn Lin DATE Signed (MM/DD/YY): 3/25/2020

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

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Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

April 29, 2020

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

RE: Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 25, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Atlanta, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Lauren Petty, Southern Company Services, Inc.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Pace Analytical Services Atlanta
110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2630416001	**HGWC-102**	Water	03/24/20 16:00	03/25/20 09:41

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2630416001	**HGWC-102**	EPA 6010D	KLH	1	PASI-GA
		EPA 6020B	CSW	13	PASI-GA
		EPA 7470A	DRB	1	PASI-GA
		SM 2540C	ALW	1	PASI-GA
		EPA 300.0 Rev 2.1 1993	CDC	3	PASI-A

PASI-A = Pace Analytical Services - Asheville
PASI-GA = Pace Analytical Services - Atlanta, GA

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
2630416001	**HGWC-102**					
	Field pH	5.58	Std. Units		03/25/20 14:16	
EPA 6010D	Calcium	103	mg/L	1.0	03/27/20 17:12	M1
EPA 6020B	Barium	0.024	mg/L	0.010	04/01/20 17:00	
EPA 6020B	Boron	2.4	mg/L	0.10	04/01/20 17:00	
EPA 6020B	Cadmium	0.00068J	mg/L	0.0025	04/01/20 17:00	
EPA 6020B	Chromium	0.00051J	mg/L	0.010	04/01/20 17:00	
EPA 6020B	Cobalt	0.0019J	mg/L	0.0050	04/01/20 17:00	
EPA 6020B	Lithium	0.00084J	mg/L	0.030	04/01/20 17:00	
SM 2540C	Total Dissolved Solids	521	mg/L	10.0	03/26/20 13:02	
EPA 300.0 Rev 2.1 1993	Chloride	6.5	mg/L	1.0	04/02/20 20:34	
EPA 300.0 Rev 2.1 1993	Sulfate	311	mg/L	6.0	04/03/20 08:00	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Sample: HGWC-102 **Lab ID: 2630416001** Collected: 03/24/20 16:00 Received: 03/25/20 09:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Atlanta, GA								
Field pH	**5.58**	Std. Units			1		03/25/20 14:16		
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Atlanta, GA								
Calcium	**103**	mg/L	1.0	0.14	1	03/27/20 09:44	03/27/20 17:12	7440-70-2	M1
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Atlanta, GA								
Antimony	ND	mg/L	0.0030	0.00027	1	03/27/20 09:33	04/01/20 17:00	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	03/27/20 09:33	04/01/20 17:00	7440-38-2	
Barium	**0.024**	mg/L	0.010	0.00049	1	03/27/20 09:33	04/01/20 17:00	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	03/27/20 09:33	04/01/20 17:00	7440-41-7	
Boron	**2.4**	mg/L	0.10	0.0049	1	03/27/20 09:33	04/01/20 17:00	7440-42-8	
Cadmium	**0.00068J**	mg/L	0.0025	0.00011	1	03/27/20 09:33	04/01/20 17:00	7440-43-9	
Chromium	**0.00051J**	mg/L	0.010	0.00039	1	03/27/20 09:33	04/01/20 17:00	7440-47-3	
Cobalt	**0.0019J**	mg/L	0.0050	0.00030	1	03/27/20 09:33	04/01/20 17:00	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	03/27/20 09:33	04/01/20 17:00	7439-92-1	
Lithium	**0.00084J**	mg/L	0.030	0.00078	1	03/27/20 09:33	04/01/20 17:00	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	03/27/20 09:33	04/01/20 17:00	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	03/27/20 09:33	04/01/20 17:00	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	03/27/20 09:33	04/01/20 17:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Atlanta, GA								
Mercury	ND	mg/L	0.00050	0.00014	1	03/31/20 10:29	04/01/20 14:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Atlanta, GA								
Total Dissolved Solids	**521**	mg/L	10.0	10.0	1		03/26/20 13:02		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**6.5**	mg/L	1.0	0.60	1		04/02/20 20:34	16887-00-6	
Fluoride	ND	mg/L	0.30	0.050	1		04/02/20 20:34	16984-48-8	
Sulfate	**311**	mg/L	6.0	3.0	6		04/03/20 08:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

QC Batch: 45075
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630416001

METHOD BLANK: 207590 Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	04/01/20 13:44	

LABORATORY CONTROL SAMPLE: 207591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207592 207593

Parameter	Units	2630416001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0030	0.0028	119	113	75-125	5	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

QC Batch: 44977
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630416001

METHOD BLANK: 207109 Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	03/27/20 17:05	

LABORATORY CONTROL SAMPLE: 207110

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	1.0	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207111 207112

Parameter	Units	2630416001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	103	1	1	99.1	105	-346	212	75-125	5	20	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

QC Batch: 44978
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Atlanta, GA
Associated Lab Samples: 2630416001

METHOD BLANK: 207113 Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00027	04/01/20 16:48	
Arsenic	mg/L	0.0013J	0.0050	0.00035	04/01/20 16:48	
Barium	mg/L	ND	0.010	0.00049	04/01/20 16:48	
Beryllium	mg/L	ND	0.0030	0.000074	04/01/20 16:48	
Boron	mg/L	ND	0.10	0.0049	04/01/20 16:48	
Cadmium	mg/L	ND	0.0025	0.00011	04/01/20 16:48	
Chromium	mg/L	ND	0.010	0.00039	04/01/20 16:48	
Cobalt	mg/L	ND	0.0050	0.00030	04/01/20 16:48	
Lead	mg/L	ND	0.0050	0.000046	04/01/20 16:48	
Lithium	mg/L	ND	0.030	0.00078	04/01/20 16:48	
Molybdenum	mg/L	ND	0.010	0.00095	04/01/20 16:48	
Selenium	mg/L	ND	0.010	0.0013	04/01/20 16:48	
Thallium	mg/L	ND	0.0010	0.000052	04/01/20 16:48	

LABORATORY CONTROL SAMPLE: 207114

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	106	80-120	
Arsenic	mg/L	0.1	0.10	101	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	104	80-120	
Boron	mg/L	1	1.1	105	80-120	
Cadmium	mg/L	0.1	0.10	103	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	103	80-120	
Lead	mg/L	0.1	0.10	100	80-120	
Lithium	mg/L	0.1	0.10	104	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.10	100	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207115 207116

Parameter	Units	2630325020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.10	0.11	104	108	75-125	4	20	
Arsenic	mg/L	0.0049J	0.1	0.1	0.10	0.11	98	102	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 207115 207116

Parameter	Units	2630325020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.043	0.1	0.1	0.14	0.15	95	103	75-125	6	20	
Beryllium	mg/L	ND	0.1	0.1	0.094	0.099	94	99	75-125	5	20	
Boron	mg/L	0.50	1	1	1.5	1.5	95	101	75-125	5	20	
Cadmium	mg/L	ND	0.1	0.1	0.096	0.10	96	101	75-125	6	20	
Chromium	mg/L	0.0011J	0.1	0.1	0.097	0.10	96	103	75-125	6	20	
Cobalt	mg/L	0.00031J	0.1	0.1	0.096	0.10	96	103	75-125	7	20	
Lead	mg/L	ND	0.1	0.1	0.095	0.098	95	98	75-125	3	20	
Lithium	mg/L	0.00084J	0.1	0.1	0.098	0.10	97	103	75-125	5	20	
Molybdenum	mg/L	0.0035J	0.1	0.1	0.10	0.11	100	105	75-125	4	20	
Selenium	mg/L	ND	0.1	0.1	0.098	0.10	98	102	75-125	4	20	
Thallium	mg/L	ND	0.1	0.1	0.095	0.099	95	99	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

QC Batch: 44950
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Atlanta, GA

Associated Lab Samples: 2630416001

LABORATORY CONTROL SAMPLE: 206865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	401	100	84-108	

SAMPLE DUPLICATE: 206866

Parameter	Units	2630389001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	859	854	1	10	

SAMPLE DUPLICATE: 206867

Parameter	Units	2630325025 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	714	672	6	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

QC Batch: 533750
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville

Associated Lab Samples: 2630416001

METHOD BLANK: 2848969 Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	04/02/20 17:18	
Fluoride	mg/L	ND	0.10	0.050	04/02/20 17:18	
Sulfate	mg/L	ND	1.0	0.50	04/02/20 17:18	

LABORATORY CONTROL SAMPLE: 2848970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	50.9	102	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	50	50.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2848971 2848972

Parameter	Units	2630325037 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1670	50	50	1670	1680	-1	8	90-110	0	10	M6
Fluoride	mg/L	0.056J	2.5	2.5	2.3	2.3	90	90	90-110	0	10	
Sulfate	mg/L	603	50	50	602	604	-2	2	90-110	0	10	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2848973 2848974

Parameter	Units	2630414001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.6	50	50	56.2	56.2	105	105	90-110	0	10	
Fluoride	mg/L	0.076J	2.5	2.5	2.5	2.5	95	96	90-110	1	10	
Sulfate	mg/L	1.6	50	50	53.5	53.4	104	104	90-110	0	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HAMMOND AP-4 BACKGROUND
Pace Project No.: 2630416

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2630416001	**HGWC-102**				
2630416001	**HGWC-102**	EPA 3010A	44977	EPA 6010D	45004
2630416001	**HGWC-102**	EPA 3005A	44978	EPA 6020B	45003
2630416001	**HGWC-102**	EPA 7470A	45075	EPA 7470A	45156
2630416001	**HGWC-102**	SM 2540C	44950		
2630416001	**HGWC-102**	EPA 300.0 Rev 2.1 1993	533750		

Pace Analytical™ www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

WO#: 2630416

2630416

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	GA Power	Report To:	SCS Contacts	Attention:	Southern Co.
Address:	Atlanta, GA	Copy To:	Geosyntec Contacts	Company Name:	
				Address:	
Email To:	SCS Contacts	Purchase Order No.:		Pace Quote Reference:	
Phone:	Fax:	Project Name:	Plant Hammond AP-4 Second Semiannual compliance Sampling	Pace Project Manager:	Kevin Herring
Requested Due Date/TAT:	10 Day	Project Number:	GW6581	Pace Profile #:	2912-7

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N): N N N N

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	TIME	COMPOSITE END/GRAB DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate	TDS	Metals 6010/6020*	RAD 226/228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	HGWC-102	WT	G	3/24/20	1600	—	—		5	2		3							X	X	X	X	N	pH = 5.58
2		WT	G						5	2		3							X	X	X	X	N	pH =
3		WT	G						5	2		3							X	X	X	X	N	pH =
4		WT	G						5	2		3							X	X	X	X	N	pH =
5		WT	G						5	2		3							X	X	X	X	N	pH =
6		WT	G						5	2		3							X	X	X	X	N	pH =
7		WT	G						5	2		3							X	X	X	X	N	pH =
8		WT	G						5	2		3							X	X	X	X	N	pH =
9		WT	G						5	2		3							X	X	X	X	N	pH =
10		WT	G						5	2		3							X	X	X	X	N	pH =
11		WT	G						5	2		3							X	X	X	X	N	pH =
12		WT	G						5	2		3							X	X	X	X	N	pH =

SL 3/24/2020

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Please note dry wells, strike thorugh any wells not sampled, and note when the last sample for the event has been taken.	Shawn Liu, Geosyntec	3/24/20	1730	[signature]	3-24-20	1730	
	[signature]	3-24-20	1730				
*Metals=As, Ba, Be, B, Cd, Ca, Cr, Co, Pb, Li	[signature]	3-24-20	1855	Nadia Munhoz / Geosyntec	3/24/20	1855	
	Nadia Munhoz / Geosyntec	3/25/20	0940	[signature] / Pace	3/25/20	941	
				[signature] Pace	3/25/20	1310	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Shawn Liu

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 3/24/2020

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Sample Condition Upon Receipt

Pace Analytical

Client Name: GA Power

Project #

WO#: 2630416

PM: KH Due Date: 04/08/20

CLIENT: 26-GA Power

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace Other

Tracking #:

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other Plastic Bag

Thermometer Used TH22M

Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.6

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents:

Temp should be above freezing to 6°C

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

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: **Date:**

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

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 30, 2020

Mr. Joju Abraham
Georgia Power
2480 Maner Road
Atlanta, GA 30339

RE: Project: 2629801
Pace Project No.: 30353743

Dear Mr. Abraham:
Enclosed are the analytical results for sample(s) received by the laboratory on March 07, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
(724)850-5612
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 2629801
Pace Project No.: 30353743

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 2629801
Pace Project No.: 30353743

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2629801001	**HGWC-102**	Water	03/04/20 10:07	03/07/20 10:30

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 2629801
Pace Project No.: 30353743

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2629801001	**HGWC-102**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2629801
Pace Project No.: 30353743

Sample: HGWC-102 **Lab ID: 2629801001** Collected: 03/04/20 10:07 Received: 03/07/20 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	**0.636 ± 0.219 (0.258) C:88% T:NA**	pCi/L	03/17/20 19:13	13982-63-3	
Radium-228	EPA 9320	**0.683 ± 0.362 (0.631) C:77% T:87%**	pCi/L	03/26/20 17:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.32 ± 0.581 (0.889)**	pCi/L	03/27/20 14:39	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2629801
Pace Project No.: 30353743

QC Batch: 387516 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Associated Lab Samples: 2629801001

METHOD BLANK: 1877158 Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0408 ± 0.333 (0.765) C:71% T:89%	pCi/L	03/26/20 17:45	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2629801
Pace Project No.: 30353743

QC Batch: 387515 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Associated Lab Samples: 2629801001

METHOD BLANK: 1877156 Matrix: Water
Associated Lab Samples: 2629801001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.400 ± 0.158 (0.182) C:89% T:NA	pCi/L	03/17/20 19:34	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 2629801
Pace Project No.: 30353743

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA
Cert. Needed: ☐ Yes ☐ No

Pace Analytical
www.pacelabs.com

7 days

Workorder: 2629801 **Workorder Name:** PLANT HAMMOND AP-4 BACKRGROUND **Owner Received Date:** 3/5/2020 **Results Requested By:** ~~3/19/2020~~

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HN03						Requested Analysis: RAD 9315	RAD 9320											LAB USE ONLY
1	HGWC-102	PS	3/4/2020 10:07	2629801001	Water	X	2					X	X											001
2																								
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1			Ben Mumm	3-7-2020 1030
2				
3				

Comments: BM 3-10-2020

Cooler Temperature on Receipt N/A °C | Custody Seal Y or (N) | Received on Ice Y or (N) | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

WO# : 30353743

30353743

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace NC

Project # 30353743

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ____

Label BLM
LIMS Login BLM

Tracking #: 1657 9506 8598

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

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp ✓ °C Correction Factor: ✓ °C Final Temp: ✓ °C

Temp should be above freezing to 6°C

BM 3-10-2020

pH paper Lot# 10003391

Date and Initials of person examining contents: DK 3-9-20

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓	✓		1. Received From Jac on 3-9-2020
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed DK Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DK Date: 3-9-20

Client Notification/ Resolution:

Person Contacted: ____ Date/Time: ____ Contacted By: ____

Comments/ Resolution: Received 2 BPN sample ID: 262801-001 sampled 3-4-20 10:07

received @ 3-720 10:36

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	3/17/2020
Worklist:	52846
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1877156
MB concentration:	0.400
M/B Counting Uncertainty:	0.147
MB MDC:	0.182
MB Numerical Performance Indicator:	5.34
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS52846	LCSD52846
Count Date:	3/18/2020	3/18/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.050	24.050
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.510	0.510
Target Conc. (pCi/L, g, F):	4.719	4.716
Uncertainty (Calculated):	0.057	0.057
Result (pCi/L, g, F):	4.977	4.863
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.742	0.718
Numerical Performance Indicator:	0.68	0.40
Percent Recovery:	105.46%	103.12%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS52846	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD52846	
Sample Result (pCi/L, g, F):	4.977	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.742	
Sample Duplicate Result (pCi/L, g, F):	4.863	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.718	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.215	2629703017
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	2.25%	2629703017DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*The method blank result is below the reporting limit for this analysis and is acceptable.

CMW 3/18/2020

LAM 3/18/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	3/17/2020
Worklist:	52846
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1877156
MB concentration:	0.400
M/B Counting Uncertainty:	0.147
MB MDC:	0.182
MB Numerical Performance Indicator:	5.34
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS52846	LCSD52846
Count Date:	3/18/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.050	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.510	
Target Conc. (pCi/L, g, F):	4.719	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	4.977	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.742	
Numerical Performance Indicator:	0.68	
Percent Recovery:	105.46%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	2629703017	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	2629703017DUP	
Sample Result (pCi/L, g, F):	0.904	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.207	
Sample Duplicate Result (pCi/L, g, F):	0.881	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.325	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.114	2629703017
Duplicate RPD:	2.52%	2629703017DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*The method blank result is below the reporting limit for this analysis and is acceptable.

3/18/2020

VAM3/18/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	3/17/2020
Worklist:	52847
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1877158
MB concentration:	0.041
M/B 2 Sigma CSU:	0.333
MB MDC:	0.765
MB Numerical Performance Indicator:	0.24
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS52847	LCSD52847
Count Date:	3/26/2020	3/26/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.708	34.708
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.804	0.814
Target Conc. (pCi/L, g, F):	4.316	4.266
Uncertainty (Calculated):	0.311	0.307
Result (pCi/L, g, F):	3.553	3.979
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.926	0.959
Numerical Performance Indicator:	-1.53	-0.56
Percent Recovery:	82.33%	93.27%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS52847	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD52847	
Sample Result (pCi/L, g, F):	3.553	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.926	
Sample Duplicate Result (pCi/L, g, F):	3.979	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.959	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.626	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	12.46%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 15, 2020

Mr. Joju Abraham
Georgia Power
2480 Maner Road
Atlanta, GA 30339

RE: Project: 2630416
Pace Project No.: 30356482

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 26, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
(724)850-5612
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 2630416
Pace Project No.: 30356482

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 2630416
Pace Project No.: 30356482

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2630416001	**HGWC-102**	Water	03/24/20 16:00	03/26/20 09:15

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 2630416
Pace Project No.: 30356482

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2630416001	**HGWC-102**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630416
Pace Project No.: 30356482

Sample: HGWC-102 **Lab ID: 2630416001** Collected: 03/24/20 16:00 Received: 03/26/20 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.256 ± 0.225 (0.388) C:95% T:NA**	pCi/L	04/06/20 07:40	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.971 ± 0.486 (0.866) C:75% T:83%**	pCi/L	04/10/20 15:27	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.23 ± 0.711 (1.25)**	pCi/L	04/15/20 12:46	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630416
Pace Project No.: 30356482

QC Batch: 390286
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630416001

METHOD BLANK: 1890325
Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.224 ± 0.189 (0.306) C:98% T:NA	pCi/L	04/06/20 08:11	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630416
Pace Project No.: 30356482

QC Batch: 390287
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630416001

METHOD BLANK: 1890327
Matrix: Water
Associated Lab Samples: 2630416001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.272 ± 0.343 (0.726) C:70% T:87%	pCi/L	04/10/20 14:06	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 2630416
Pace Project No.: 30356482

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

Pace Analytical®
www.pacelabs.com

State Of Origin: GA
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 3/25/2020 Results Requested By: ~~4/8/2020~~ 21 days

Workorder: 2630416 **Workorder Name:** AP-4 BACKGROUND

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30356482

30356482

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: RAD 9315	Requested Analysis: RAD 9320	LAB USE ONLY
1	HGWC-102	PS	3/24/2020 16:00	2630416001	Water	1	2					X	X	CCA
2														
3														
4														
5														

Transfers	Released By	Date/Time	Received By	Date/Time
1				3-26-20 9:15
2				
3				

Comments:

Cooler Temperature on Receipt N/A °C | **Custody Seal** Y or (N) | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace GA Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label DW

Tracking #: 1657 9507 1399 LIMS Login DW

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

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2191 Date and initials of person examining contents: DW 3-26-20

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed DW Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DW Date: 3-26-20

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 4/5/2020
Worklist: 53170
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1890325
MB concentration:	0.224
M/B Counting Uncertainty:	0.186
MB MDC:	0.306
MB Numerical Performance Indicator:	2.35
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53170	LCSD53170
Count Date:	4/6/2020	4/6/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.049	24.049
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.513	0.514
Target Conc. (pCi/L, g, F):	4.688	4.677
Uncertainty (Calculated):	0.056	0.056
Result (pCi/L, g, F):	5.858	4.262
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.840	0.712
Numerical Performance Indicator:	2.72	-1.14
Percent Recovery:	124.95%	91.13%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53170	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53170	
Sample Result (pCi/L, g, F):	5.858	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.840	
Sample Duplicate Result (pCi/L, g, F):	4.262	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.712	
Are sample and/or duplicate results below RL?	~~NO~~	
Duplicate Numerical Performance Indicator:	2.839 OK	2630255009
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	31.31%	2630255009DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

***~~Batch must be re-prepped due to unacceptable precision.~~ N/A LAM 4/6/20

KLB 4-6-2020

LAM 4/6/20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	4/5/2020
Worklist:	53170
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1890325
MB concentration:	0.224
M/B Counting Uncertainty:	0.186
MB MDC:	0.306
MB Numerical Performance Indicator:	2.35
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS53170	LCSD53170
Count Date:	4/6/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.049	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.513	
Target Conc. (pCi/L, g, F):	4.688	
Uncertainty (Calculated):	0.056	
Result (pCi/L, g, F):	5.858	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.840	
Numerical Performance Indicator:	2.72	
Percent Recovery:	124.95%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	2630255009	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	2630255009DUP	
Sample Result (pCi/L, g, F):	0.420	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.263	
Sample Duplicate Result (pCi/L, g, F):	0.234	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.236	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.030	2630255009
Duplicate RPD:	56.72%	2630255009DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ LAM 4/6/20 N/A

LAM 4/6/20

KLB
4-6-2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	4/1/2020
Worklist:	53171
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1890327
MB concentration:	0.272
M/B 2 Sigma CSU:	0.343
MB MDC:	0.726
MB Numerical Performance Indicator:	1.55
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53171	LCSD53171
Count Date:	4/10/2020	4/10/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.538	34.538
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.802	0.809
Target Conc. (pCi/L, g, F):	4.306	4.272
Uncertainty (Calculated):	0.310	0.308
Result (pCi/L, g, F):	3.899	3.884
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.963	0.957
Numerical Performance Indicator:	-0.79	-0.76
Percent Recovery:	90.54%	90.93%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53171	Enter Duplicate
Duplicate Sample I.D.	LCSD53171	sample IDs if
Sample Result (pCi/L, g, F):	3.899	other than
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.963	LCS/LCSD in
Sample Duplicate Result (pCi/L, g, F):	3.884	the space below.
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.957	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.021	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	0.43%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 17, 2020

Mr. Joju Abraham
Georgia Power
2480 Maner Road
Atlanta, GA 30339

RE: Project: 2630414
Pace Project No.: 30356484

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory between March 26, 2020 and March 27, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
(724)850-5612
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 2630414
Pace Project No.: 30356484

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 2630414
Pace Project No.: 30356484

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2630414001	**HGWA-111**	Water	03/24/20 10:25	03/26/20 09:15
2630414002	**HGWC-117**	Water	03/24/20 16:39	03/26/20 09:15
2630414003	**HGWA-112**	Water	03/24/20 11:00	03/26/20 09:15
2630414004	**HGWA-113**	Water	03/24/20 15:16	03/26/20 09:15
2630414005	**FB-04**	Water	03/25/20 10:00	03/27/20 10:35
2630414006	**HGWC-101**	Water	03/25/20 14:37	03/27/20 10:35
2630414007	**HGWC-105**	Water	03/25/20 12:10	03/27/20 10:35
2630414008	**HGWC-107**	Water	03/25/20 14:40	03/27/20 10:35
2630414009	**HGWC-118**	Water	03/25/20 09:35	03/27/20 10:35
2630414010	**HGWC-103**	Water	03/25/20 12:30	03/27/20 10:35
2630414011	**HGWC-109**	Water	03/25/20 16:55	03/27/20 10:35
2630414012	**FD-04**	Water	03/25/20 00:00	03/27/20 10:35

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 2630414
Pace Project No.: 30356484

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2630414001	**HGWA-111**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414002	**HGWC-117**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414003	**HGWA-112**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414005	**FB-04**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414006	**HGWC-101**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414007	**HGWC-105**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414008	**HGWC-107**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414009	**HGWC-118**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414010	**HGWC-103**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414011	**HGWC-109**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2630414012	**FD-04**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

Sample: HGWA-111 **Lab ID: 2630414001** Collected: 03/24/20 10:25 Received: 03/26/20 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.260 ± 0.231 (0.418) C:92% T:NA**	pCi/L	04/06/20 09:52	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**-0.258 ± 0.412 (0.986) C:78% T:87%**	pCi/L	04/15/20 14:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.260 ± 0.643 (1.40)**	pCi/L	04/16/20 14:02	7440-14-4	

Sample: HGWC-117 **Lab ID: 2630414002** Collected: 03/24/20 16:39 Received: 03/26/20 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.476 ± 0.269 (0.322) C:89% T:NA**	pCi/L	04/06/20 09:52	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.339 ± 0.379 (0.795) C:80% T:85%**	pCi/L	04/15/20 14:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.815 ± 0.648 (1.12)**	pCi/L	04/16/20 14:02	7440-14-4	

Sample: HGWA-112 **Lab ID: 2630414003** Collected: 03/24/20 11:00 Received: 03/26/20 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.444 ± 0.265 (0.378) C:97% T:NA**	pCi/L	04/06/20 09:52	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.233 ± 0.325 (0.697) C:82% T:91%**	pCi/L	04/15/20 14:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.677 ± 0.590 (1.08)**	pCi/L	04/16/20 14:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

Sample: FB-04 **Lab ID: 2630414005** Collected: 03/25/20 10:00 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0727 ± 0.161 (0.380) C:83% T:NA**	pCi/L	04/07/20 08:04	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.150 ± 0.396 (0.884) C:72% T:80%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.223 ± 0.557 (1.26)**	pCi/L	04/17/20 10:30	7440-14-4	

Sample: HGWC-101 **Lab ID: 2630414006** Collected: 03/25/20 14:37 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0464 ± 0.157 (0.391) C:83% T:NA**	pCi/L	04/07/20 08:04	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.557 ± 0.459 (0.923) C:76% T:77%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.603 ± 0.616 (1.31)**	pCi/L	04/17/20 10:30	7440-14-4	

Sample: HGWC-105 **Lab ID: 2630414007** Collected: 03/25/20 12:10 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0230 ± 0.141 (0.372) C:82% T:NA**	pCi/L	04/07/20 08:04	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.640 ± 0.424 (0.812) C:78% T:83%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.663 ± 0.565 (1.18)**	pCi/L	04/17/20 10:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

Sample: HGWC-107 **Lab ID: 2630414008** Collected: 03/25/20 14:40 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.0857 ± 0.203 (0.482) C:80% T:NA**	pCi/L	04/07/20 08:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.587 ± 0.403 (0.772) C:78% T:79%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.673 ± 0.606 (1.25)**	pCi/L	04/17/20 10:30	7440-14-4	

Sample: HGWC-118 **Lab ID: 2630414009** Collected: 03/25/20 09:35 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.275 ± 0.239 (0.443) C:76% T:NA**	pCi/L	04/07/20 08:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.640 ± 0.408 (0.774) C:79% T:84%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.915 ± 0.647 (1.22)**	pCi/L	04/17/20 10:30	7440-14-4	

Sample: HGWC-103 **Lab ID: 2630414010** Collected: 03/25/20 12:30 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.143 ± 0.156 (0.302) C:91% T:NA**	pCi/L	04/07/20 08:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.260 ± 0.403 (0.873) C:75% T:79%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.403 ± 0.559 (1.18)**	pCi/L	04/17/20 10:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

Sample: HGWC-109 **Lab ID: 2630414011** Collected: 03/25/20 16:55 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.122 ± 0.171 (0.360) C:70% T:NA**	pCi/L	04/07/20 08:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.386 ± 0.392 (0.814) C:79% T:87%**	pCi/L	04/16/20 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.508 ± 0.563 (1.17)**	pCi/L	04/17/20 10:30	7440-14-4	

Sample: FD-04 **Lab ID: 2630414012** Collected: 03/25/20 00:00 Received: 03/27/20 10:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.256 ± 0.198 (0.328) C:83% T:NA**	pCi/L	04/07/20 08:05	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.789 ± 0.659 (1.32) C:75% T:77%**	pCi/L	04/16/20 18:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.05 ± 0.857 (1.65)**	pCi/L	04/17/20 10:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

QC Batch: 390462
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414001, 2630414002, 2630414003

METHOD BLANK: 1890903 Matrix: Water
Associated Lab Samples: 2630414001, 2630414002, 2630414003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.720 ± 0.398 (0.719) C:76% T:93%	pCi/L	04/15/20 14:44	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

QC Batch: 390461
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414001, 2630414002, 2630414003

METHOD BLANK: 1890902 Matrix: Water
Associated Lab Samples: 2630414001, 2630414002, 2630414003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.480 ± 0.276 (0.342) C:87% T:NA	pCi/L	04/06/20 09:52	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

QC Batch: 390594 Analysis Method: EPA 9320
QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

METHOD BLANK: 1891466 Matrix: Water
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.184 ± 0.318 (0.783) C:80% T:81%	pCi/L	04/16/20 15:55	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30356484

QC Batch: 390591 Analysis Method: EPA 9315
QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

METHOD BLANK: 1891463 Matrix: Water
Associated Lab Samples: 2630414005, 2630414006, 2630414007, 2630414008, 2630414009, 2630414010, 2630414011, 2630414012

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0696 ± 0.172 (0.412) C:90% T:NA	pCi/L	04/07/20 08:03	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 2630414
Pace Project No.: 30356484

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

21 days

Workorder: 2630414 **Workorder Name:** AP-4 2ND SEMIANNUAL COMPLIANCE **Owner Received Date:** 3/25/2020 **Results Requested By:** ~~4/8/2020~~

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30356484

30356484

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: RAD 9315	Requested Analysis: RAD 9320	LAB USE ONLY
1	HGWA-111	PS	3/24/2020 10:25	2630414001	Water	1	2					X	X	001
2	HGWC-117	PS	3/24/2020 16:39	2630414002	Water	1	2					X	X	002
3	HGWA-112	PS	3/24/2020 11:00	2630414003	Water	1	2					X	X	003
4	HGWA-113	PS	3/24/2020 15:16	2630414004	Water	1	2					X	X	004
5														

Transfers	Released By	Date/Time	Received By	Date/Time
1				3/25/20 9:15
2				
3				

Comments:

Cooler Temperature on Receipt N/A °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 2630414 Workorder Name: AP-4 2ND SEMIANNUAL COMPLIANCE Owner Received Date: 3/25/2020 Results Requested By: ~~4/8/2020~~ 7 days

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30356484

PM: JAC Due Date: 04/16/20

CLIENT: PACE_26_ATGA

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: RAD 9315	RAD 9320										LAB USE ONLY
1	~~HGWA-111~~	PS	3/24/2020 10:25	2630414001	~~Water~~	1						X	X										
2	HGWC-117	PS	3/24/2020 ~~16:28~~	2630414002	Water	1						X	X										
3	HGWA-112	PS	3/24/2020 ~~14:06~~	2630414003	Water	1						X	X										
4	~~HGWA-113~~	PS	3/24/2020 15:16	2630414004	~~Water~~	1						X	X										
5	FB-04	PS	3/25/2020 10:50	2630414005	Water	1	2					X	X										CC5
6	HGWC-101	PS	3/25/2020 14:37	2630414006	Water	1	2					X	X										CC6
7	HGWC-105	PS	3/25/2020 12:10	2630414007	Water	1	2					X	X										CC7
8	HGWC-107	PS	3/25/2020 14:40	2630414008	Water	1	2					X	X										CC8
9	HGWC-118	PS	3/25/2020 09:35	2630414009	Water	1	2					X	X										CC9
10	HGWC-103	PS	3/25/2020 12:30	2630414010	Water	1	2					X	X										C10
11	HGWC-109	PS	3/25/2020 16:55	2630414011	Water	1	2					X	X										C11
12	FD-04	PS	3/25/2020 00:00	2630414012	Water	1	2					X	X										C12

Transfers	Released By	Date/Time	Received By	Date/Time
1				3-25-20 10:35
2				
3				

Comments: Add on project

Cooler Temperature on Receipt N/R °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace GA

Project # 30356484

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1657 9507 1399

Label DK

LIMS Login DK

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

Thermometer Used N/A **Type of Ice:** Wet Blue (None)

Cooler Temperature **Observed Temp** — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2191 **Date and initials of person examining contents:** DK 3-26-20

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed DK Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DK Date: 3/26/20

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pittsburgh Lab Sample Condition Upon Receipt

WO# : 30356484

PM: JAC Due Date: 04/16/20

CLIENT: PACE_25_ATGA

Pace Analytical

Client Name: Pace GH

Courier: ~~Fed Ex~~ UPS USPS Client Commercial Pace Other

Label: MC

Tracking #: 165 7950 7 1789

LIMS Login: MM

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

Thermometer Used: ~~—~~ Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp: ~~—~~ °C Correction Factor: ~~—~~ °C Final Temp: ~~—~~ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D2191 / Date and Initials of person examining contents: JSM 3/28/2020
Chain of Custody Present:	✓	~~✓~~		1. MC 3-30-20
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: JSM Date/time of preservation:
				Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JSM Date: 3/28/2020

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution: arrived 3/28/2020 1035 ~~WO# 260~~ JSM 3/28/2020

WO# 26 30414

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	4/5/2020
Worklist:	53204
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1890902
MB concentration:	0.480
M/B Counting Uncertainty:	0.268
MB MDC:	0.342
MB Numerical Performance Indicator:	3.52
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS53204	LCSD53204
Count Date:	4/6/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.049	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.502	
Target Conc. (pCi/L, g, F):	4.789	
Uncertainty (Calculated):	0.057	
Result (pCi/L, g, F):	5.112	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.790	
Numerical Performance Indicator:	0.80	
Percent Recovery:	106.73%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	2630417001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	2630417001DUP	
Sample Result (pCi/L, g, F):	0.379	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.246	
Sample Duplicate Result (pCi/L, g, F):	0.250	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.196	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.804	2630417001
Duplicate RPD:	41.04%	2630417001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*The method blank result is below the reporting limit for this analysis and is acceptable.

***Batch must be re-prepped due to unacceptable precision. N/A LAM 4/7/20

LAM 4/7/20

CLL 4/7/20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	4/5/2020
Worklist:	53222
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1891463
MB concentration:	0.070
M/B Counting Uncertainty:	0.172
MB MDC:	0.412
MB Numerical Performance Indicator:	0.79
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53222	LCSD53222
Count Date:	4/7/2020	4/7/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.049	24.049
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.514	0.501
Target Conc. (pCi/L, g, F):	4.675	4.798
Uncertainty (Calculated):	0.056	0.058
Result (pCi/L, g, F):	4.859	4.698
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.707	0.719
Numerical Performance Indicator:	0.51	-0.27
Percent Recovery:	103.94%	97.92%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53222	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53222	
Sample Result (pCi/L, g, F):	4.859	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.707	
Sample Duplicate Result (pCi/L, g, F):	4.698	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.719	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.313	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	5.96%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

KLB 4-7-2020

LAM 4/7/20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-226
Analyst:	LAL
Date:	4/5/2020
Worklist:	53222
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1891463
MB concentration:	0.070
M/B Counting Uncertainty:	0.172
MB MDC:	0.412
MB Numerical Performance Indicator:	0.79
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS53222	LCSD53222
Count Date:	4/7/2020	
Spike I.D.:	19-033	
Decay Corrected Spike Concentration (pCi/mL):	24.049	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.514	
Target Conc. (pCi/L, g, F):	4.675	
Uncertainty (Calculated):	0.056	
Result (pCi/L, g, F):	4.859	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.707	
Numerical Performance Indicator:	0.51	
Percent Recovery:	103.94%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	125%	
Lower % Recovery Limits:	75%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	2630449010	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	2630449010DUP	
Sample Result (pCi/L, g, F):	0.051	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.134	
Sample Duplicate Result (pCi/L, g, F):	0.127	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.138	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.770	2630449010
Duplicate RPD:	84.72%	2630449010DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~***Batch must be re-prepped due to unacceptable precision.~~ NJA 4/7/20

KLB 4-7-2020

LAM 4/7/20

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	4/3/2020
Worklist:	53205
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1890903
MB concentration:	0.720
M/B 2 Sigma CSU:	0.398
MB MDC:	0.719
MB Numerical Performance Indicator:	3.54
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53205	LCSD53205
Count Date:	4/15/2020	4/15/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.481	34.481
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.801	0.810
Target Conc. (pCi/L, g, F):	4.303	4.258
Uncertainty (Calculated):	0.310	0.307
Result (pCi/L, g, F):	3.571	3.944
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.873	0.923
Numerical Performance Indicator:	-1.55	-0.63
Percent Recovery:	83.00%	92.64%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53205	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53205	
Sample Result (pCi/L, g, F):	3.571	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.873	
Sample Duplicate Result (pCi/L, g, F):	3.944	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.923	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.575	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	10.98%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*The method blank result is below the reporting limit for this analysis and is acceptable.

JJ 4/16/20

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	4/7/2020
Worklist:	53225
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1891466
MB concentration:	-0.184
M/B 2 Sigma CSU:	0.318
MB MDC:	0.783
MB Numerical Performance Indicator:	-1.13
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53225	LCSD53225
Count Date:	4/16/2020	4/16/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.469	34.469
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.808	0.807
Target Conc. (pCi/L, g, F):	4.266	4.269
Uncertainty (Calculated):	0.307	0.307
Result (pCi/L, g, F):	4.487	4.458
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.030	1.019
Numerical Performance Indicator:	0.40	0.35
Percent Recovery:	105.19%	104.44%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53225	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53225	
Sample Result (pCi/L, g, F):	4.487	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.030	
Sample Duplicate Result (pCi/L, g, F):	4.458	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.019	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.039	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	0.72%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 07, 2020

Mr. Joju Abraham
Georgia Power
2480 Maner Road
Atlanta, GA 30339

RE: Project: 2630414
Pace Project No.: 30359852

Dear Mr. Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 14, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
(724)850-5612
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 2630414
Pace Project No.: 30359852

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 2630414
Pace Project No.: 30359852

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2630414013	**HGWA-113**	Water	04/09/20 16:17	04/14/20 09:30

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 2630414
Pace Project No.: 30359852

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2630414013	**HGWA-113**	EPA 9315	JJY	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30359852

Sample: HGWA-113 **Lab ID: 2630414013** Collected: 04/09/20 16:17 Received: 04/14/20 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.321 ± 0.181 (0.238) C:106% T:NA**	pCi/L	05/04/20 07:19	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.296 ± 0.376 (0.799) C:83% T:72%**	pCi/L	05/07/20 11:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.617 ± 0.557 (1.04)**	pCi/L	05/07/20 15:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30359852

QC Batch: 394230
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414013

METHOD BLANK: 1909547
Matrix: Water
Associated Lab Samples: 2630414013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.691 ± 0.438 (0.830) C:81% T:72%	pCi/L	05/07/20 11:03	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 2630414
Pace Project No.: 30359852

QC Batch: 394121
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 2630414013

METHOD BLANK: 1909177
Matrix: Water
Associated Lab Samples: 2630414013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0402 ± 0.129 (0.321) C:92% T:NA	pCi/L	05/04/20 07:19	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 2630414
Pace Project No.: 30359852

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: GA

Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

21 days

Workorder: 2630414 **Workorder Name:** HAMMOND AP-4 2ND SEMIANNUAL **Owner Received Date:** 3/25/2020 **Results Requested By:** ~~4/9/2020~~

Report To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: RAD 9315	RAD 9320										LAB USE ONLY
1	HGWA-111	PS	3/24/2020 10:25	2630414001	Water	1						X	X										
2	HGWC-117	PS	3/24/2020 16:39	2630414002	Water	1						X	X										
3	HGWA-112	PS	3/24/2020 11:00	2630414003	Water	1						X	X										
4	HGWA-113	PS	3/24/2020 15:16	2630414004	Water	1						X	X										
5	FB-04	PS	3/25/2020 10:55	2630414005	Water	1						X	X										
6	HGWC-101	PS	3/25/2020 14:37	2630414006	Water	1						X	X										
7	HGWC-105	PS	3/25/2020 12:10	2630414007	Water	1						X	X										
8	HGWC-107	PS	3/25/2020 14:18	2630414008	Water	1						X	X										
9	HGWC-118	PS	3/25/2020 09:35	2630414009	Water	1						X	X										
10	HGWC-103	PS	3/25/2020 12:30	2630414010	Water	1						X	X										
11	HGWC-109	PS	3/25/2020 16:55	2630414011	Water	1						X	X										
12	FD-04	PS	3/25/2020 00:00	2630414012	Water	1						X	X										
13	HGWA-113	PS	4/9/2020 16:17	2630414013	Water	1	7					X	X										013

WO# : 30359852

30359852

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1			[illegible]	4-14-2020 0930	Add on project
2					
3					

Cooler Temperature on Receipt N/A °C	Custody Seal Y or (N)	Received on Ice Y or (N)	Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

30359852

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace NC GA nmr 4/15/2020 Project # 30359852

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label NMR
LIMS Login NMR

Tracking #: 165795074468

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

Thermometer Used _____ Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

BLM 4-22-2020

pH paper Lot# 10D4281 Date and Initials of person examining contents: NMR 4/15/2020

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓	✗		1. Received via Fac
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: BLM Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: BLM Date: 4-22-2020

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: Received 4-14-2020 0930
ID, date, and time on sample is
2630414-013
4-9-2020
1617

☐ **A check in this box indicates that additional information has been stored in ereports.**

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: JJY
Date: 5/1/2020
Worklist: 53722
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1909177
MB concentration:	0.040
M/B Counting Uncertainty:	0.129
MB MDC:	0.321
MB Numerical Performance Indicator:	0.61
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53722	LCSD53722
Count Date:	5/4/2020	5/4/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.048	24.048
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.502	0.508
Target Conc. (pCi/L, g, F):	4.786	4.732
Uncertainty (Calculated):	0.057	0.057
Result (pCi/L, g, F):	4.883	4.367
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.645	0.609
Numerical Performance Indicator:	0.29	-1.17
Percent Recovery:	102.02%	92.29%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53722	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53722	
Sample Result (pCi/L, g, F):	4.883	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.645	
Sample Duplicate Result (pCi/L, g, F):	4.367	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.609	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.140	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	10.01%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

UAM 5/4/2020

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	5/1/2020
Worklist:	53742
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1909547
MB concentration:	0.691
M/B 2 Sigma CSU:	0.438
MB MDC:	0.830
MB Numerical Performance Indicator:	3.09
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS53742	LCSD53742
Count Date:	5/7/2020	5/7/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.233	34.233
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.800	0.812
Target Conc. (pCi/L, g, F):	4.279	4.216
Uncertainty (Calculated):	0.308	0.304
Result (pCi/L, g, F):	3.477	4.630
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.874	1.123
Numerical Performance Indicator:	-1.70	0.70
Percent Recovery:	81.26%	109.80%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS53742	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD53742	
Sample Result (pCi/L, g, F):	3.477	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.874	
Sample Duplicate Result (pCi/L, g, F):	4.630	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.123	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-1.589	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	29.89%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

July 14, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Ms. Lauren Petty, Southern Co. Services

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92482796001	**HGWC-102**	Water	06/18/20 14:09	06/19/20 13:10

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92482796001	**HGWC-102**	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92482796001	**HGWC-102**					
EPA 9315	Radium-226	0.470 ± 0.295 (0.419) C:89% T:NA	pCi/L		07/08/20 08:42	
EPA 9320	Radium-228	0.211 ± 0.442 (0.977) C:58% T:83%	pCi/L		07/06/20 16:02	
Total Radium Calculation	Total Radium	0.681 ± 0.737 (1.40)	pCi/L		07/09/20 09:57	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Sample: HGWC-102 **Lab ID: 92482796001** Collected: 06/18/20 14:09 Received: 06/19/20 13:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 9315	**0.470 ± 0.295 (0.419) C:89% T:NA**	pCi/L	07/08/20 08:42	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 9320	**0.211 ± 0.442 (0.977) C:58% T:83%**	pCi/L	07/06/20 16:02	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.681 ± 0.737 (1.40)**	pCi/L	07/09/20 09:57	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

QC Batch: 403006
QC Batch Method: EPA 9315
Analysis Method: EPA 9315
Analysis Description: 9315 Total Radium
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92482796001

METHOD BLANK: 1950655 Matrix: Water
Associated Lab Samples: 92482796001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0758 ± 0.123 (0.256) C:97% T:NA	pCi/L	07/07/20 19:54	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL - RADIOCHEMISTRY

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

QC Batch: 402596
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 92482796001

METHOD BLANK: 1948602
Matrix: Water
Associated Lab Samples: 92482796001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.856 ± 0.506 (0.940) C:63% T:80%	pCi/L	07/06/20 16:00	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HAMMOND AP-4 BKG 05 RADS
Pace Project No.: 92482796

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92482796001	**HGWC-102**	EPA 9315	403006		
92482796001	**HGWC-102**	EPA 9320	402596		
92482796001	**HGWC-102**	Total Radium Calculation	404343		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Docum[ent]

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed acc[urately]

WO# : 92482796
92482796

Page: 1 of 1

Section A Required Client Information

Company	GA Power
Address	Atlanta, GA
Email To	SCS Contacts
Phone	Fax
Requested Due Date/TAT:	5 Day

Section B Required Project Information

Report To	SCS Contacts
Copy To	Geosyntec Contacts
Purchase Order No.	
Project Name	Plant Hammond AP-4 BKG 05
Project Number	

Section C Invoice Information

Attention	Southern Co.
Company Name	
Address	
Pace Quote Reference	
Pace Project Manager	Kevin Herring
Pace Profile #	

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | ☑ OTHER ~~CCR~~

Site Location STATE: GA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate (N)	TDS (N)	Full App. III & IV Metals* (N)	RAD 226/228 (N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92482796
1	HGWC-102	WT	G	6/18/20	1409	—	—	26	5	2		3							X	X	X	X	N	pH=5.67
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

CR 6/18/2020

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Please note dry wells, strike thorough any wells not sampled, and note when the last sample for the event has been taken.	Chad Russo / GEO	6/18/2020	2030	Mollie Morton / Geosyntec	6/18	2030				
	Mollie Morton / Geosyntec	6/19/20	1310	[illegible] / Pace	6-19-20	1310				
*Metals=Sb,As,B,Ba,Be,Ca,Cd,Co,Cr,Li,Hg,Mo,Pb,Se,Tl	[illegible] / Pace	6-19-20	1515	K. [illegible] / Pace	6/19/20	1515	3.4	Y	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo

DATE Signed (MM/DD/YY): 6/18/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 7/7/2020
Worklist: 54859
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1950655
MB concentration:	0.076
M/B Counting Uncertainty:	0.122
MB MDC:	0.256
MB Numerical Performance Indicator:	1.21
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS54859	LCSD54859
Count Date:	7/8/2020	7/8/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.046	24.046
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.503	0.501
Target Conc. (pCi/L, g, F):	4.784	4.804
Uncertainty (Calculated):	0.057	0.058
Result (pCi/L, g, F):	4.691	3.943
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.717	0.694
Numerical Performance Indicator:	-0.25	-2.42
Percent Recovery:	98.05%	82.08%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS54859	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD54859	
Sample Result (pCi/L, g, F):	4.691	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.717	
Sample Duplicate Result (pCi/L, g, F):	3.943	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.694	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	1.468	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	17.74%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test: Ra-226
Analyst: LAL
Date: 7/7/2020
Worklist: 54859
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1950655
MB concentration:	0.076
M/B Counting Uncertainty:	0.122
MB MDC:	0.256
MB Numerical Performance Indicator:	1.21
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N/A
	LCS54859	LCSD54859
Count Date:	7/8/2020	7/8/2020
Spike I.D.:	19-033	19-033
Decay Corrected Spike Concentration (pCi/mL):	24.046	24.046
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.503	0.501
Target Conc. (pCi/L, g, F):	4.784	0.000
Uncertainty (Calculated):	0.057	0.000
Result (pCi/L, g, F):	4.691	3.943
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.717	
Numerical Performance Indicator:	-0.25	#VALUE!
Percent Recovery:	98.05%	#DIV/0!
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	#DIV/0!
Upper % Recovery Limits:	125%	125%
Lower % Recovery Limits:	75%	75%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	92482796001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	92482796001DUP	
Sample Result (pCi/L, g, F):	0.470	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.287	
Sample Dupiicate Result (pCi/L, g, F):	0.046	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.126	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	2.650	92482796001
Duplicate RPD:	~~164.10%~~	92482796001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	~~Fail***~~	
% RPD Limit:	25%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

#DIV/0!

~~***Batch must be re-prepped due to unacceptable precision.~~

~~Result~~ < 5x MDC 7/8/2020

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test: Ra-228
Analyst: VAL
Date: 7/1/2020
Worklist: 54819
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1948602
MB concentration:	0.856
MB 2 Sigma CSU:	0.506
MB MDC:	0.940
MB Numerical Performance Indicator:	3.31
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS54819	LCSD54819
Count Date:	7/6/2020	7/6/2020
Spike I.D.:	19-057	19-057
Decay Corrected Spike Concentration (pCi/mL):	33.559	33.559
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.810	0.820
Target Conc. (pCi/L, g, F):	4.142	4.093
Uncertainty (Calculated):	0.298	0.295
Result (pCi/L, g, F):	4.306	4.401
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.098	1.097
Numerical Performance Indicator:	0.28	0.53
Percent Recovery:	103.98%	107.53%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment		
Sample I.D.:	LCS54819	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD54819	
Sample Result (pCi/L, g, F):	4.306	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.098	
Sample Duplicate Result (pCi/L, g, F):	4.401	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.097	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.119	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	3.36%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

June 30, 2020

Joju Abraham
Georgia Power-CCR
2480 Maner Road
Atlanta, GA 30339

RE: Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Asheville
- Pace Analytical Services - Charlotte
- Pace Analytical Services - Peachtree Corners, GA

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

Sincerely,

Kevin Herring
kevin.herring@pacelabs.com
1(704)875-9092
HORIZON Database Administrator

Enclosures

cc: Kristen Jurinko
Whitney Law, Geosyntec Consultants
Noelia Muskus, Geosyntec Consultants
Ms. Lauren Petty, Southern Co. Services

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

CERTIFICATIONS

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Pace Analytical Services Charlotte
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services Asheville
2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services Peachtree Corners
110 Technology Pkwy, Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812
North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE SUMMARY

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92482798001	**HGWC-102**	Water	06/18/20 14:09	06/19/20 13:10

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SAMPLE ANALYTE COUNT

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92482798001	**HGWC-102**	EPA 6010D	DRB	1
		EPA 6020B	CW1	13
		EPA 7470A	VB	1
		SM 2450C-2011	JRS	1
		EPA 300.0 Rev 2.1 1993	BRJ	3

PASI-A = Pace Analytical Services - Asheville
PASI-C = Pace Analytical Services - Charlotte
PASI-GA = Pace Analytical Services - Peachtree Corners, GA

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

SUMMARY OF DETECTION

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92482798001	**HGWC-102**					
	pH	5.67	Std. Units		06/22/20 15:36	
EPA 6010D	Calcium	124	mg/L	1.0	06/22/20 17:56	
EPA 6020B	Arsenic	0.00092J	mg/L	0.0050	06/23/20 14:45	
EPA 6020B	Barium	0.029	mg/L	0.010	06/23/20 14:45	
EPA 6020B	Boron	2.9	mg/L	0.10	06/23/20 14:45	
EPA 6020B	Cadmium	0.00047J	mg/L	0.0025	06/23/20 14:45	
EPA 6020B	Cobalt	0.0012J	mg/L	0.0050	06/23/20 14:45	
EPA 6020B	Lithium	0.0013J	mg/L	0.030	06/23/20 14:45	
SM 2450C-2011	Total Dissolved Solids	652	mg/L	10.0	06/22/20 17:38	
EPA 300.0 Rev 2.1 1993	Chloride	6.9	mg/L	1.0	06/27/20 16:23	
EPA 300.0 Rev 2.1 1993	Sulfate	349	mg/L	7.0	06/29/20 12:56	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

ANALYTICAL RESULTS

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Sample: HGWC-102 **Lab ID: 92482798001** Collected: 06/18/20 14:09 Received: 06/19/20 13:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Charlotte								
pH	**5.67**	Std. Units			1		06/22/20 15:36		
6010D ATL ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Peachtree Corners, GA								
Calcium	**124**	mg/L	1.0	0.14	1	06/22/20 14:08	06/22/20 17:56	7440-70-2	
6020 MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3005A Pace Analytical Services - Peachtree Corners, GA								
Antimony	ND	mg/L	0.0030	0.00027	1	06/22/20 17:17	06/23/20 14:45	7440-36-0	
Arsenic	**0.00092J**	mg/L	0.0050	0.00035	1	06/22/20 17:17	06/23/20 14:45	7440-38-2	
Barium	**0.029**	mg/L	0.010	0.00049	1	06/22/20 17:17	06/23/20 14:45	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	06/22/20 17:17	06/23/20 14:45	7440-41-7	
Boron	**2.9**	mg/L	0.10	0.0049	1	06/22/20 17:17	06/23/20 14:45	7440-42-8	
Cadmium	**0.00047J**	mg/L	0.0025	0.00011	1	06/22/20 17:17	06/23/20 14:45	7440-43-9	
Chromium	ND	mg/L	0.010	0.00039	1	06/22/20 17:17	06/23/20 14:45	7440-47-3	
Cobalt	**0.0012J**	mg/L	0.0050	0.00030	1	06/22/20 17:17	06/23/20 14:45	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	06/22/20 17:17	06/23/20 14:45	7439-92-1	
Lithium	**0.0013J**	mg/L	0.030	0.00078	1	06/22/20 17:17	06/23/20 14:45	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00095	1	06/22/20 17:17	06/23/20 14:45	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	06/22/20 17:17	06/23/20 14:45	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	06/22/20 17:17	06/23/20 14:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470A Preparation Method: EPA 7470A Pace Analytical Services - Peachtree Corners, GA								
Mercury	ND	mg/L	0.00050	0.00014	1	06/29/20 08:50	06/30/20 09:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2450C-2011 Pace Analytical Services - Peachtree Corners, GA								
Total Dissolved Solids	**652**	mg/L	10.0	10.0	1		06/22/20 17:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Rev 2.1 1993 Pace Analytical Services - Asheville								
Chloride	**6.9**	mg/L	1.0	0.60	1		06/27/20 16:23	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		06/27/20 16:23	16984-48-8	
Sulfate	**349**	mg/L	7.0	3.5	7		06/29/20 12:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

QC Batch: 548844
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D ATL
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92482798001

METHOD BLANK: 2919468 Matrix: Water
Associated Lab Samples: 92482798001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	mg/L	ND	1.0	0.14	06/22/20 16:52	

LABORATORY CONTROL SAMPLE: 2919473

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	1	0.97J	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2919474 2919475

Parameter	Units	92482649003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	517	1	1	511	511	-681	-642	75-125	0	20	M6

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

QC Batch: 548895
QC Batch Method: EPA 3005A
Analysis Method: EPA 6020B
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92482798001

METHOD BLANK: 2919709 Matrix: Water
Associated Lab Samples: 92482798001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0050	0.00027	06/23/20 13:04	
Arsenic	mg/L	ND	0.0050	0.00035	06/23/20 13:04	
Barium	mg/L	ND	0.010	0.00049	06/23/20 13:04	
Beryllium	mg/L	ND	0.0030	0.000074	06/23/20 13:04	
Boron	mg/L	ND	0.10	0.0049	06/23/20 13:04	
Cadmium	mg/L	ND	0.0025	0.00011	06/23/20 13:04	
Chromium	mg/L	ND	0.010	0.00039	06/23/20 13:04	
Cobalt	mg/L	ND	0.0050	0.00030	06/23/20 13:04	
Lead	mg/L	ND	0.0050	0.000046	06/23/20 13:04	
Lithium	mg/L	ND	0.030	0.00078	06/23/20 13:04	
Molybdenum	mg/L	ND	0.010	0.00095	06/23/20 13:04	
Selenium	mg/L	ND	0.010	0.0013	06/23/20 13:04	
Thallium	mg/L	ND	0.0010	0.000052	06/23/20 13:04	

LABORATORY CONTROL SAMPLE: 2919710

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	101	80-120	
Arsenic	mg/L	0.1	0.098	98	80-120	
Barium	mg/L	0.1	0.10	101	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Boron	mg/L	1	1.0	102	80-120	
Cadmium	mg/L	0.1	0.099	99	80-120	
Chromium	mg/L	0.1	0.10	100	80-120	
Cobalt	mg/L	0.1	0.096	96	80-120	
Lead	mg/L	0.1	0.098	98	80-120	
Lithium	mg/L	0.1	0.11	106	80-120	
Molybdenum	mg/L	0.1	0.099	99	80-120	
Selenium	mg/L	0.1	0.099	99	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2919711 2919712

Parameter	Units	92482800001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	0.1	0.1	0.098	0.10	98	101	75-125	3	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	99	102	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2919711 2919712

Parameter	Units	92482800001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.17	0.1	0.1	0.26	0.28	92	109	75-125	6	20	
Beryllium	mg/L	ND	0.1	0.1	0.095	0.095	95	95	75-125	0	20	
Boron	mg/L	0.045J	1	1	1.0	0.98	95	94	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.099	0.10	99	100	75-125	1	20	
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.096	0.10	96	101	75-125	5	20	
Lead	mg/L	ND	0.1	0.1	0.096	0.096	96	96	75-125	1	20	
Lithium	mg/L	0.019J	0.1	0.1	0.12	0.12	99	98	75-125	0	20	
Molybdenum	mg/L	ND	0.1	0.1	0.098	0.10	98	100	75-125	2	20	
Selenium	mg/L	ND	0.1	0.1	0.097	0.099	97	99	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.096	0.097	96	97	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

QC Batch: 549882
QC Batch Method: EPA 7470A
Analysis Method: EPA 7470A
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Peachtree Corners, GA
Associated Lab Samples: 92482798001

METHOD BLANK: 2924000 Matrix: Water
Associated Lab Samples: 92482798001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.00014	06/30/20 09:44	

LABORATORY CONTROL SAMPLE: 2924001

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2924002 2924003

Parameter	Units	92483122001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	100	102	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

QC Batch: 548907
QC Batch Method: SM 2450C-2011
Analysis Method: SM 2450C-2011
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Peachtree Corners, GA

Associated Lab Samples: 92482798001

METHOD BLANK: 2919762 Matrix: Water
Associated Lab Samples: 92482798001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10.0	06/22/20 17:30	

LABORATORY CONTROL SAMPLE: 2919763

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	398	100	84-108	

SAMPLE DUPLICATE: 2919764

Parameter	Units	92482662002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	163	182	11	10	D6

SAMPLE DUPLICATE: 2919765

Parameter	Units	92482737002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	97.0	86.0	12	10	D6

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

QC Batch: 550052
QC Batch Method: EPA 300.0 Rev 2.1 1993
Analysis Method: EPA 300.0 Rev 2.1 1993
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Asheville
Associated Lab Samples: 92482798001

METHOD BLANK: 2925000 Matrix: Water
Associated Lab Samples: 92482798001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	06/27/20 15:08	
Fluoride	mg/L	ND	0.10	0.050	06/27/20 15:08	
Sulfate	mg/L	ND	1.0	0.50	06/27/20 15:08	

LABORATORY CONTROL SAMPLE: 2925001

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.5	103	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	50	50.9	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2925002 2925003

Parameter	Units	92482649008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	160	50	50	206	206	91	92	90-110	0	10	
Fluoride	mg/L	0.10	2.5	2.5	2.5	2.5	95	97	90-110	2	10	
Sulfate	mg/L	292	50	50	337	339	91	94	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2925004 2925005

Parameter	Units	92483686007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	33.3	50	50	84.9	86.5	103	106	90-110	2	10	
Fluoride	mg/L	0.28	2.5	2.5	2.7	2.9	97	103	90-110	5	10	
Sulfate	mg/L	1960	50	50	2020	2020	119	118	90-110	0	10	M6

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALIFIERS

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, LLC
110 Technology Parkway
Peachtree Corners, GA 30092
(770)734-4200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HAMMOND AP-4 BKG 05
Pace Project No.: 92482798

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92482798001	**HGWC-102**				
92482798001	**HGWC-102**	EPA 3010A	548844	EPA 6010D	548861
92482798001	**HGWC-102**	EPA 3005A	548895	EPA 6020B	548915
92482798001	**HGWC-102**	EPA 7470A	549882	EPA 7470A	550278
92482798001	**HGWC-102**	SM 2450C-2011	548907		
92482798001	**HGWC-102**	EPA 300.0 Rev 2.1 1993	550052		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Doc

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

WO#: 92482798

92482798

Section A Required Client Information

Company	GA Power
Address	Atlanta, GA
Email To	SCS Contacts
Phone	Fax
Requested Due Date/TAT:	5 Day

Section B Required Project Information

Report To	SCS Contacts
Copy To	Geosyntec Contacts
Purchase Order No.	
Project Name	Plant Hammond AP-4 BKG 05
Project Number	

Section C Invoice Information

Attention	Southern Co.
Company Name	
Address	
Pace Quote Reference	
Pace Project Manager	Kevin Herring
Pace Profile #	

REGULATORY AGENCY

NPDES — GROUND WATER — DRINKING WATER — UST — RCRA — ☑ OTHER ~~CCR~~

Site Location STATE: GA

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE DATE	COMPOSITE TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride, Fluoride, Sulfate (N)	TDS (N)	Full App. III & IV Metals* (N)	RAD 226/228 (N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92482798
1	HGWC-102	WT	G	6/18/20	1409	—	—	20	5	2		3							X	X	X	X	N	pH=5.67
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

(Rows 2–12 struck through; initialed, 6/18/2020)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Please note dry wells, strike thorugh any wells not sampled, and note when the last sample for the event has been taken	Chad Russo / GEO	6/18/2020	2030	Meilia Marden / Geosyntec	6/18	2030				
	Meilia Marden / Geosyntec	6/19/20	1310	[illegible] / Pace	6-19-20	1310				
*Metals=Sb,As,B,Ba,Be,Ca,Cd,Co,Cr,Li,Hg,Mo,Pb,Se,Tl	[illegible] / Pace	6-19-20	1515	K. Welly / Pace	6/19/20	1515	3.4	Y	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chad Russo

SIGNATURE of SAMPLER: Chad Russo — DATE Signed (MM/DD/YY): 6/18/2020

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Data Validation Reports

Geosyntec consultants

180A Market Place Boulevard
Knoxville, TN 37922
PH 865.330.0037
www.geosyntec.com

Memorandum

Date:	October 8, 2019
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2622317, 2622318, 2622352, 2622353, 2622354, 2622355, 2622398, 2622399, 2622400, 2622401, 2622402 and 2622403**

SITE: Plant Hammond AP

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fourteen aqueous samples and two equipment blanks, collected 21-23 August 2019, as part of the Plant Hammond AP on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Metals by Environmental Protection Agency (EPA) Methods 3005A/6020B
- Mercury by EPA Method 7470A
- Fluoride by EPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by EPA Method 9315
- Radium-228 by EPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012);

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2622317001	HGWA-111
2622317002	HGWA-112
2622317003	HGWA-113
2622318001	HGWA-111
2622318002	HGWA-112
2622318003	HGWA-113
2622352001	HGWA-122
2622352002	HGWC-121A
2622352003	HGWC-120
2622353001	HGWA-122
2622353002	HGWC-121A
2622353003	HGWC-120
2622354001	HGWC-117
2622354002	HGWC-101
2622354003	HGWC-118
2622354004	HGWC-103

Laboratory ID	Client ID
2622354005	HGWC-105
2622355001	HGWC-117
2622355002	HGWC-101
2622355003	HGWC-118
2622355004	HGWC-103
2622355005	HGWC-105
2622398001	HGWC-124
2622399001	HGWC-124
2622400001	EB-01
2622400002	EB-02
2622401001	EB-01
2622401002	EB-02
2622402001	HGWC-107
2622402002	HGWC-109
2622402001	HGWC-107
2622402002	HGWC-109

The samples were received within 0-6 degrees Celsius (ºC). No sample preservation issues were noted by the laboratory.

The following issues were noted with the chain of custody (COC) forms:

- 2622317, 2622318, 2622352, 2622353, 2622354 and 2622355: The relinquishing signature, date and time were missing for the final sample transfer on the COCs.
- 2622354 and 2622355: The collection time of HGWC-103 was listed as 1430 on the label and 1450 on the COC. The sample was logged in per the COC.
- 2622354, 2622355, 2622402 and 2622403: The years were missing from the start and end collection times from some or all of the samples.

- 2622400 and 2622401: There were time discrepancies between the relinquished by and received by times. For the first sample transfer the relinquished by time was documented as 08/23/19 1530 and the received by time was documented as 08/23/19 1540. For the second sample transfer the relinquished by time was documented as 08/26/19 0815 and the received by time was documented as 08/26/19 1830.
- 2622402 and 2622403: There were time discrepancies between the relinquished by and received by times. For the second sample transfer the relinquished by time was documented as 08/23/19 1530 and the received by time was documented as 08/23/19 1540. For the third sample transfer the relinquished by time was documented as 08/26/19 0815 and the received by time was documented as 08/26/19 1830.

1.0 METALS

The samples were analyzed for metals by EPA methods 3005A/6020B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
⊗ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 34179, 34320 and 34496). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exceptions.

2622317: Antimony was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in the method blank in batch 34179. Since antimony was not detected in the associated samples, no qualifications were applied to the data.

2622352 and 2622354: Chromium was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 34320. Therefore, the chromium concentrations in the associated samples less than five times the method blank concentration were U* qualified as not detected at the reported concentration.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-122	Chromium	0.00060	J	0.0006	U*	BL
HGWC-120	Chromium	0.00072	J	0.00072	U*	BL
HGWC-101	Chromium	0.00064	J	0.00064	U*	BL
HGWC-103	Chromium	0.00063	J	0.00063	U*	BL

mg/L- milligram per liter
J- estimated concentration greater than the MDL and less than the RL
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Two equipment blanks were collected with the sample set, EB-01 and EB-02. Metals were not detected in the equipment blanks above the MDLs.

1.7 Field Blank

A field blank was not collected with the sample set.

1.8 Field Duplicate

A field duplicate was not collected with the sample set.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were not reported.

1.10 Electronic Data Deliverables (EDDs) Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag B used in the level II reports were not included in the EDDs. In addition, there were project specific EDDs that included project data for samples from a different laboratory report or analytes were included in the EDDs that were not requested or reported in the laboratory report when the sample was used for laboratory batch QC (i.e. if the sample was used for the MS/MSD analyses). No other discrepancies were identified between the level II reports and the EDDs.

2.0 MERCURY

The samples were analyzed for mercury by EPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ⊗ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

2.2 Holding Time

The holding time for mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 34231, 34265 and 34391). Mercury was not detected in the method blanks above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Two equipment blanks were collected with the sample set, EB-01 and EB-02. Mercury was not detected in the equipment blanks above the MDL.

2.7 Field Blank

A field blank was not collected with the sample set.

2.8 Field Duplicate

A field duplicate was not collected with the sample set.

2.9 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported.

2.10 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. There were project specific EDDs that included project data for samples from a different laboratory report when the sample was used for laboratory batch QC (i.e. if the sample was used for the MS/MSD analyses). No other discrepancies were identified between the level II reports and the EDDs.

3.0 FLUORIDE

The samples were analyzed for fluoride by EPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The fluoride data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for these analyses, for this dataset is 100%.

3.2 Holding Times

The holding time for the fluoride analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 34532, 34533 and 34680). Fluoride was not detected in the method blanks above the MDL.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS was reported using sample HGWC-107. The recovery result was within the laboratory specified acceptance criteria.

Two batch MSs and three MS/MSD pairs were also reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Laboratory duplicates were not reported with the data.

3.7 Equipment Blank

Two equipment blanks were collected with the sample set, EB-01 and EB-02. Fluoride was not detected in the equipment blanks above the MDL.

3.8 Field Blank

A field blank was not collected with the sample set.

3.9 Field Duplicate

A field duplicate was not collected with the sample set.

3.10 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported.

3.11 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. There were project specific EDDs that included project data for samples from a different laboratory report or analytes were included in the EDDs that were not requested or reported in the laboratory report when the sample was used for laboratory batch QC (i.e. if the sample was used for the MS/MSD analyses). No other discrepancies were identified between the level II reports and the EDDs.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers

⊗ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported for the radium-228 data (batches 358895, 358894 and 359966). Three method blanks were reported for the radium-226 data (batches 359801, 359490 and 359964). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs), with the following exceptions.

2622318, 2622355 and 2622399: Radium-226 (0.563 pCi/L) was detected at a concentration greater than the MDC in the method blank in batch 359801. Therefore, the radium-226 concentration in the associated sample greater than the MDC and with a normalized absolute difference (NAD) less than 2.58 was U* qualified as not detected at the reported concentration. Also, samples with a combined radium 226 + 228 concentration greater than the MDC with a radium-228 concentration less than the MDC and a U* qualified radium-226 concentration were U* qualified as not detected at the reported concentration.

2622353: Radium-228 (0.862 pCi/L) was detected at a concentration greater than the MDC in the method blank in batch 358894. Therefore, the radium-228 concentration in the associated sample greater than the MDC and with a NAD less than 2.58 was U* qualified as not detected at the reported concentration.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWA-111	Radium-226	0.492	NA	0.492	U*	BL
HGWA-112	Radium-226	0.417	NA	0.417	U*	BL
HGWA-122	Radium-228	0.886	NA	0.886	U*	BL
HGWC-101	Radium-226	0.474	NA	0.474	U*	BL
HGWC-118	Radium-226	0.492	NA	0.492	U*	BL
HGWC-103	Radium-226	0.434	NA	0.434	U*	BL
HGWC-124	Radium-226	0.450	NA	0.450	U*	BL
HGWC-124	Combined Radium 226 + 228	0.834	NA	0.834	U*	BL

pCi/L- picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs and one LCS/LCS duplicate (LCSD) pair were reported for radium-226. One LCS and two LCS/LCSD pairs were reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

Four batch laboratory duplicates were reported for radium-226 and one batch laboratory duplicate was reported for radium-228. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Two equipment blanks were collected with the sample sets, EB-01 and EB-02. Radium-226 and Radium-228 were not detected in the equipment blank above the MDCs, with the following exception.

Radium-226 (0.539 pCi/L) was detected at a concentration greater than the MDC in EB-02. Therefore, the radium-226 concentration in the associated sample greater than the MDC and with a NAD less than 2.58 was U* qualified as not detected at the reported concentration. Also, samples with combined radium 226 + 228 concentrations greater than the MDC with a radium-228 concentration less than the MDC and a U* qualified radium-226 concentration were U* qualified as not detected at the reported concentration.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWA-111	Radium-226	0.492	NA	0.492	U*	BE
HGWA-112	Radium-226	0.417	NA	0.417	U*	BE
HGWC-121A	Radium-226	0.635	NA	0.635	U*	BE
HGWC-121A	Combined Radium 226 + 228	1.30	NA	1.30	U*	BE
HGWC-120	Radium-226	0.845	NA	0.845	U*	BE
HGWC-120	Combined Radium 226 + 228	1.35	NA	1.35	U*	BE
HGWC-101	Radium-226	0.474	NA	0.474	U*	BE
HGWC-118	Radium-226	0.492	NA	0.492	U*	BE
HGWC-103	Radium-226	0.434	NA	0.434	U*	BE
HGWC-124	Radium-226	0.450	NA	0.450	U*	BE
HGWC-124	Combined Radium 226 + 228	0.834	NA	0.834	U*	BE
HGWC-107	Radium-226	0.502	NA	0.502	U*	BE
HGWC-107	Combined Radium 226 + 228	1.69	NA	1.69	J	BE

pCi/L- picocuries per liter
NA-not applicable

4.9 Field Blank

A field blank was not collected with the sample set.

4.10 Field Duplicate

A field duplicate was not collected with the sample set.

4.11 Sensitivity

The samples were reported to the MDCs. No elevated non-detect results were reported.

4.12 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
L	LCS and LCSD recoveries outside acceptance limits, indeterminate bias
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

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Memorandum

Date:	20 January 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2624782, 2624784, 2624785, 2624786, 2624787, 2624788, 2624791, 2624792, 2624799, 2624800, 2624802 and 2624803**

SITE: Plant Hammond AP3/4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fifteen aqueous samples, one field duplicate sample and one field blank, collected 21-23 October 2019, as part of the Plant Hammond AP3/4 on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Metals by United States (US) Environmental Protection Agency (EPA) Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C
- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitations of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2624782001	HGWA-122
2624782002	HGWC-124
2624782003	HGWC-121A
2624784001	HGWA-122
2624784002	HGWC-124
2624784003	HGWC-121A
2624785001	HGWC-120
2624785002	FD-01
2624786001	HGWC-120
2624786002	FD-01
2624787001	HGWA-111
2624788001	HGWA-111
2624791001	HGWC-101
2624791002	HGWC-102
2624791003	HGWC-105
2624791004	HGWC-103
2624792001	HGWC-101

Laboratory ID	Client ID
2624792002	HGWC-102
2624792003	HGWC-105
2624792004	HGWC-103
2624799001	HGWA-112
2624799002	HGWC-117
2624799003	HGWC-118
2624799004	HGWA-113
2624799005	HGWC-109
2624799006	HGWC-107
2624800001	HGWA-112
2624800002	HGWC-117
2624800003	HGWC-118
2624800004	HGWA-113
2624800005	HGWC-109
2624800006	HGWC-107
2624802001	FB-01
2624803001	FB-01

The samples were received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted with the chain of custody (COC) forms:

- 2624785 and 2624786: There was no time of collection listed for the field duplicate, FD-01. The laboratory assigned the collection time of 00:00. Also, the year was not documented for the relinquished by and received by times for the second transfer.
- 2624787 and 2624788: The year was not documented for the sample collection time and relinquished by time for the sample transfer.

- 2624791, 2624792, 2624799 and 2624800: The year was not documented for the sample collection times for samples HGWC-101, HGWC-102, HGWA-112, HGWC-117 and HGWC-118 and the relinquished by and received by times for the sample transfers.
- 2624802 and 2624803: The year was not documented for the received by time for the first transfer and the relinquished by and received by times for the second transfer.

1.0 METALS

The samples were analyzed for metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
⊗ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 37696 and 38024). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

2624786, 2624792, 2624800 and 2624803: Boron (0.0059 mg/L) was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in the method blank in batch 38024. Therefore, the boron concentrations in the associated samples less than five times the method blank concentrations were U* qualified as not detected at the reported concentrations.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-112	Boron	0.016	J B	0.016	U*	BL
HGWA-113	Boron	0.010	J B	0.010	U*	BL

mg/L- milligram per liter
J- estimated concentration greater than the MDL and less than the RL
B-laboratory flag indicating analyte was detected in the associated method blank
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

An equipment blank was not collected with the sample set.

1.7 Field Blank

One field blank was collected with the sample sets, FB-01. Metals were not detected in the field blank above the MDLs, with the following exception.

Calcium (0.011 mg/L) was detected at an estimated concentration greater than the MDL and less than the RL in FB-01. Since calcium was detected in the associated samples at concentrations greater than five times the field blank concentration, no qualifications were applied to the data.

1.8 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-01. Acceptable precision [relative percent difference (RPD) $\leq$ 20% or the difference between the concentrations < RL] was demonstrated between the field duplicate and the original sample HGWC-120.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverables (EDDs) Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag B used in the level II reports was not included in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

2.0 MERCURY

The samples were analyzed by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 37720). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

An equipment blank was not collected with the sample set.

2.7 Field Blank

One field blank was collected with the sample sets, FB-01. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

The field duplicate was not analyzed for mercury.

2.9 Sensitivity

The samples were reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

3.0 WET CHEMISTRY

The samples were analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
⊗ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported for the anions (batches 37730, 37858 and 37870). The wet chemistry parameters were not detected in the method blanks above the MDLs, with the following exceptions.

2624784 and 2624787: Chloride (0.034 mg/L) was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 37730. Since chloride was detected in the associated samples at concentrations greater than five times the method blank concentration, no qualifications were applied to the data.

2624786: Chloride (0.0032 mg/L) and sulfate (0.36 mg/L) were detected at estimated concentrations greater than the MDLs and less than the RLs in the method blank in batch 37858. Since chloride and sulfate were detected in the associated samples at concentrations greater than five times the method blank concentrations, no qualifications were applied to the data.

3.4 Matrix Spike/Matrix Spike Duplicate

One sample set MS/MSD pair using sample FD-01 and one MS using sample HGWC-109 were reported for the anions. The RPD and recovery results were within the laboratory specified acceptance criteria, with the following exception.

2624800: The recovery of sulfate in the MS using sample HGWC-109 was low and outside the laboratory specified acceptance criteria. Therefore, the chloride concentration in sample HGWC-109 was J qualified as estimated.

One batch MS and two MS/MSD pairs were also reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
HGWC-109	Sulfate	23.2	M1	23.2	J	M-

mg/L- milligram per liter
M1-laboratory flag indicating MS recovery exceeded the QC limits

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Four sample set specific laboratory duplicates were reported for TDS using samples HGWA-122, HGWC-120, HGWA-113 and HGWC-109. The RPD results were within the laboratory specified acceptance criteria.

Two batch laboratory duplicates were also reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

An equipment blank was not collected with the sample set.

3.8 Field Blank

One field blank was collected with the sample sets, FB-01. The wet chemistry parameters were not detected in the field blank above the MDLs.

3.9 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-01. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-120.

3.10 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

3.11 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag M1 used in the level II report was not included in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported for the radium-228 data (batches 369306 and 369311). Two method blanks were reported for the radium-226 data (batches 369307 and 369310). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs), with the following exception.

2624785, 2624791 and 2624799: Radium-226 was detected at concentrations greater than the MDC in the method blank in batch 369310. Therefore, the radium-226 concentrations in the associated samples less than five times the method blank concentrations were U* qualified as not detected.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-120	Radium-226	0.760	NA	0.760	U*	BL
FD-01	Radium-226	0.420	NA	0.420	U*	BL
HGWC-103	Radium-226	0.571	NA	0.571	U*	BL
HGWC-118	Radium-226	0.424	NA	0.424	U*	BL
HGWA-113	Radium-226	0.401	NA	0.401	U*	BL
HGWC-109	Radium-226	0.545	NA	0.545	U*	BL

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCS duplicate (LCSD) pairs were reported for radium-226. Two LCS/LCSD pairs were reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One sample set specific laboratory duplicate was reported for radium-226 using sample BGWC-19. The RER (2σ) result was within the laboratory specified acceptance criteria.

Two batch laboratory duplicates were also reported for radium-226. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

An equipment blank was not collected with the sample set.

4.9 Field Blank

One field blank was collected with the sample sets, FB-01. Radium-226 and radium-228 were not detected in the field blank above the MDCs.

4.10 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-01. Acceptable precision (RER (2σ) < 3) was demonstrated between the field duplicates and the original samples BGWA-29, HGWC-120.

4.11 Sensitivity

The samples were reported to the MDCs. No elevated nondetect results were reported.

4.12 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Reason Code	Explanation
13	Other
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
H	Holding time exceedance.
L	LCS and LCSD recoveries outside acceptance limits, indeterminate bias
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2627481 and 2628188**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of two aqueous samples, two equipment blanks and two field blanks collected January 3, and January 22, 2020, as part of the Plant Hammond AP4 on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Boron and Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The samples were analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2629801001	HGWC-102
2629801002	FB-01
2629801003	EB-01

Laboratory ID	Client ID
30353743001	HGWC-102
30353743002	FB-01
30353743003	EB-01

The samples were received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2629801: The relinquished by signature, date and time were not documented for the third sample transfer. The relinquished by and received by signature, date and time were not documented for the transfers from Pace Charlotte to Pace Ashville and Pace Charlotte to Pace Pittsburgh.
- 30353743: The relinquished by signature, date and time were not documented for the sample transfer.

The field pH data included with the reports was not validated.

1.0 METALS

The samples were analyzed for boron and calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 41627 and 41623). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

One equipment blank was collected with the sample set, EB-1. Metals were not detected in the equipment blank above the MDLs.

1.7 Field Blank

One field blank was collected with the sample set, FB-1. Metals were not detected in the field blank above the MDLs, with the following exceptions.

Boron and chromium were detected in the field blank at estimated concentrations greater than the MDLs and less than the reporting limits (RLs). Since boron was detected in the associated sample at a concentration greater than the RL, no qualifications were applied to the boron data. However, the estimated chromium concentration in the associated sample was U qualified as not detected at the RL.

Sample	Laboratory Result (mg/L)	Analyte	Laboratory Flag	Validation Result	Validation Qualifier	Reason Code
HGWC-102	0.00063	Chromium	J	0.010	U	3

mg/L-milligrams per liter
J-estimated concentration greater than the MDL and less than the RL

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 41632). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, one using

sample FB-01. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

One equipment blank was collected with the sample set, EB-1. Mercury was not detected in the equipment blank above the MDL.

2.7 Field Blank

One field blank was collected with the sample set, FB-1. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The samples were reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The samples were analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 519389). The anions were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

One sample set MS/MSD pair was reported for the anions using sample EB-01. The RPD and recovery results were within the laboratory specified acceptance criteria.

One batch MS/MSD pair was also reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

One equipment blank was collected with the sample set, EB-1. The wet chemistry parameters were not detected in the equipment blank above the MDLs, with the following exception.

TDS (20.0 mg/L) was detected in the equipment blank at a concentration greater than the RL. Since TDS was detected in the associated sample at a concentration greater than ten times the equipment blank concentration, no qualifications were applied to the data.

3.8 Field Blank

One equipment blank was collected with the sample set, FB-1. The wet chemistry parameters were not detected in the field blank above the MDLs.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
⊗ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
⊗ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 381384). One method blank was reported for the radium-226 data (batch 382555). Radium-228 was not detected in the method blank above the minimum detectable concentration (MDC).

30353743: Radium-226 was detected in the method blank in batch 382555 (0.333 pCi/L) at a concentration greater than the MDC. Therefore, the radium-226 concentration in samples EB-01 and FB-01 greater than the method blank concentration were J+ qualified as estimated with high biases. Also, the total radium concentrations in samples EB-01 and FB-01 were J+ qualified as estimated with high bias.

Sample	Analyte	Result	Flag	Validation Result	Validation Qualifier	Reason Code
EB-01	Radium-226	0.565	NA	0.565	J+	3
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J+	3
FB-01	Radium-226	1.00	NA	1.00	J+	3
FB-01	Combined Radium 226 + 228	1.23	NA	1.23	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria, with the following exception.

The LCS recovery of radium-226 was high and outside the laboratory specified acceptance criteria. Therefore, the radium-226 concentration in the associated sample greater than the MDC was J qualified as estimated and the combined radium-226 + 228 results in EB-01 and FB-01 were J qualified as estimated.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J	5
FB-01	Radium-226	1.00	NA	1.00	J	5

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
FB-01	Combined Radium 226 + 228	1.23	NA	1.23	J	5

pCi/L-picocuries per liter
NA-not applicable

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

One equipment blank was collected with the sample sets, EB-01.

Radium-226 (0.565 pCi/L) and radium-228 (0.747 pCi/L) were detected in EB-01 at concentrations greater than the MDCs. Since radium-226 concentration in EB-01 was U qualified due to field blank contamination and based on professional and technical judgment, no additional qualifications were applied to the radium-226 data. However, the radium-228 concentration in sample HGWC-102 greater than the equipment blank concentration was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-102	Radium-228	0.755	NA	0.755	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.9 Field Blank

One field blank was collected with the sample sets, FB-01.

Radium-226 (1.00 pCi/L) was detected in FB-01 at a concentration greater than the MDC. Therefore, the radium-226 concentration in EB-01 less than the field blank concentration was U qualified as not detected at the reported concentration. Also, the total radium concentration in sample EB-01 was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
EB-01	Radium-226	0.565	NA	0.565	U	3
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2627481 and 2628188**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected 4 March 2020, as part of the Plant Hammond AP4 on-site sampling event.

The sample was analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Metals by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D and 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The sample was analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The sample was analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following sample was analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2627481001	HGWC-102

Laboratory ID	Client ID
2628188001	HGWC-102

The sample was received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2627481 and 2628188: The year was not documented for the sample collection date on the COC
- 2627481: There was a time discrepancy for the sample transfer. The relinquished by time was documented as 1/6/2020 1120 and the received by time was documented as 1/6/20 11:22.
- 2628188: There was a time discrepancy for the second sample transfer. The relinquished by time was documented as 1/23/2020 1212 and the received by time was documented as 1/23/20 12:15.

The field pH data included with the reports was not validated.

1.0 METALS

The sample was analyzed for metals by USEPA methods 3010A/6010D and USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 44427 and 44440). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exceptions.

Boron and chromium were detected in the method blank in batch 44440 at estimated concentrations greater than the MDLs and less than the RLs. Since boron was detected at a concentration greater than the RL and chromium was not detected in the associated sample, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The sample was analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 44367). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The sample was reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The sample was analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 529390). The anions were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Two batch MS/MSD pairs were reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The sample was analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 387516). One method blank was reported for the radium-226 data (batch 387515). Radium-228 was not detected in the method blank above the minimum detectable concentration (MDC).

2628188: Radium-226 was detected in the method blank in batch 387515 (0.400 pCi/L) at a concentration greater than the MDC. Therefore, the radium-226 concentration in sample HGWC-102 greater than the method blank concentration was J+ qualified as estimated with high bias. Also, the total radium concentration in sample HGWC-102 was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-102	Radium-226	0.636	NA	0.636	J+	3
HGWC-102	Combined Radium 226 + 228	1.32	NA	1.32	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

Field blanks were not collected with the sample set.

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2630414, 2630416, 30356482, 30356484 and 30359852**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of eleven aqueous samples, one field duplicate and one field blank collected 24-25 March 2020 and 9 April 2020, as part of the Plant Hammond AP4 on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The samples were analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2630414001	HGWA-111
2630414002	HGWC-117
2630414003	HGWA-112
2630414005	FB-04
2630414006	HGWC-101
2630414007	HGWC-105
2630414008	HGWC-107

Laboratory ID	Client ID
2630414009	HGWC-118
2630414010	HGWC-103
2630414011	HGWC-109
2630414012	FD-04
2630414013	HGWA-113
2630416001	HGWC-102

The samples were received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2630414: There was a time discrepancy for the third sample transfer. The relinquished by time was documented as 3/23/20 0940 and the received by time was documented as 3/23/20 941. The year was missing for the relinquished by date for the third sample transfer on page 2 of the COC.
- 2630416: There was a time discrepancy for the third sample transfer. The relinquished by time was documented as 3/25/20 0940 and the received by time was documented as 3/25/20 941. The year was missing for the relinquished by date for the third sample transfer on page 2 of the COC.
- 30356482 30356484: The relinquished by signature, date and time were not documented for the sample transfer.

The field pH data included with the reports was not validated.

1.0 METALS

The samples were analyzed for calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight method blanks were reported (batches 45066, 45121, 45533, 45065, 45113, 45531, 44977 and 44978). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Arsenic was detected in the method blank in batch 44978 at an estimated concentration greater than the MDL and less than the reporting limit (RL). Since arsenic was not detected in the associated sample, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three sample set specific MS/MSD pairs were reported using samples HGWC-117, HGWA-111 and HGWC-102. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

The calcium concentration in sample HGWC-117 was greater than four times the spiked concentration; therefore, no qualifications were applied to the calcium data based on the MS/MSD results.

Five batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

One field blank was collected with the sample set, FB-04. Metals were not detected in the field blank above the MDLs, with the following exceptions.

Boron and chromium were detected in the field blank at estimated concentrations greater than the MDLs and less than the RLs. Therefore, the estimated boron and chromium concentrations in the associated samples were U qualified as not detected at the RLs.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-111	Boron	0.011	J	0.10	U	3
HGWA-111	Chromium	0.0019	J	0.010	U	3
HGWC-117	Chromium	0.0012	J	0.010	U	3
HGWA-112	Boron	0.012	J	0.10	U	3

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-112	Chromium	0.0044	J	0.010	U	3
HGWC-101	Boron	0.080	J	0.10	U	3
HGWC-101	Chromium	0.00098	J	0.010	U	3
HGWC-105	Chromium	0.0013	J	0.010	U	3
HGWC-107	Chromium	0.00074	J	0.010	U	3
HGWC-118	Chromium	0.00081	J	0.010	U	3
HGWC-103	Chromium	0.00045	J	0.010	U	3
HGWC-109	Chromium	0.0014	J	0.010	U	3
FD-04	Chromium	0.0011	J	0.010	U	3
HGWA-113	Boron	0.012	J	0.10	U	3
HGWA-113	Chromium	0.0031	J	0.010	U	3

mg/L-milligrams per liter
J-estimated concentration greater than the MDL and less than the RL
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

1.8 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103, with the following exceptions.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverables (EDDs) Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag M1 reported in the laboratory reports was not reported in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

2.0 MERCURY

The samples were analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 45075). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample HGWC-102. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

One field blank was collected with the sample set, FB-1. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103.

2.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

3.0 WET CHEMISTRY

The samples were analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported for the anions (batches 533750, 533970 and 537769). The anions were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Three sample set specific MS/MSD pairs were reported for the anions using samples HGWA-111, HGWC-107 and HGWA-113. The RPD and recovery results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of sulfate in the HGWC-107 MS/MSD pair were low and outside the laboratory specified acceptance criteria. Therefore, the sulfate concentration in HGWC-107 was J- qualified as estimated with low bias.

Three batch MS/MSD pair was also reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
HGWC-107	Sulfate	116	NA	116	J-	4

mg/L-milligrams per liter

NA-not applicable

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

One sample set specific laboratory duplicate was reported for TDS using sample FB-04. The RPD result was within the laboratory specified acceptance criteria.

Seven batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

One field blank was collected with the sample set, FB-04. The wet chemistry parameters were not detected in the field blank above the MDLs, with the following exceptions.

TDS (21.0 mg/L) was detected in the field blank at a concentration greater than the RL and sulfate was detected in the field blank at an estimated concentration greater than the MDL and less than the RL. Since sulfate was either not detected or detected above the RL in the associated samples, no qualifications were applied to the sulfate data. However. the TDS concentrations in the associated samples were J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
HGWA-111	TDS	207	NA	207	J+	3
HGWA-112	TDS	52	NA	52	J+	3
HGWC-101	TDS	187	NA	187	J+	3
HGWA-113	TDS	48	NA	48	J+	3

mg/L-milligrams per liter
NA-not applicable

3.9 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103.

3.10 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag M1 reported in the laboratory reports was not reported in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported for the radium-228 data (batches 390287, 390462, 390594 and 394230). Three method blanks were reported for the radium-226 data (batches 390286, 390591 and 394121). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs), with the following exceptions.

30356484: Radium-228 (0.720 pCi/L) was detected in the method blank in batch 390462 at a concentration greater than the MDC. Since radium-228 was not detected above the MDCs in the associated samples, no qualifications were applied to the data. Radium-226 (0.480 pCi/L) was detected in the method blank in batch 390461 at a concentration greater than the MDC. Therefore, the radium-226 concentrations in the associated samples greater than the MDCs and less than the method blank concentration were U qualified as not detected at the reported concentrations.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-117	Radium-226	0.476	NA	0.476	U	3
HGWA-112	Radium-226	0.444	NA	0.444	U	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCS/LCS duplicate (LCSD) pairs were reported for radium-226. Four LCS/LCSD pairs were reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226 and one batch laboratory duplicate was reported for radium-228.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

One field blank was collected with the sample sets, FB-04. Radium-226 and radium-228 were not detected in the field blank above the minimum detectable concentrations (MDCs).

4.10 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RER (2σ) < 3) was demonstrated between the field duplicate and the original sample HGWC-103.

4.11 Sensitivity

The samples were reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	15 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 92482796 and 92482798**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected 18 June 2020, as part of the Plant Hammond AP4 on-site sampling event.

The sample was analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The sample was analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The sample was analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following sample was analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
92482796001	HGWC-102
92482798001	

The sample was received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The field pH data included with the reports was not validated.

1.0 METALS

The sample was analyzed for calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample

- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 548844 and 548895). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The sample results were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The sample was analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 549882). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The sample was reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The sample was analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 550052) and one method blank was reported for TDS (batch 548907). The wet chemistry parameters were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Two batch MS/MSD pairs were reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The sample was analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 394230). One method blank was reported for the radium-226 data (batch 394121). Radium-226 and radium-228 were not detected in the method blank above the minimum detectable concentrations (MDCs).

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One sample set specific laboratory duplicate was reported for radium-226 using sample HGWC-102.

The radium-226 concentration in sample HGWC-102 was greater than the MDC and the radium-226 concentration in the laboratory duplicate was less than the MDC. Therefore, based on professional and technical judgment, the radium-226 in sample HGWC-102 was J qualified as estimated.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result	Validation Qualifier*	Reason Code**
HGWC-102	Radium-226	0.47	NA	0.47	J	12

pCi/L-picocuries per liter
NA-not applicable
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

4.7 Tracers and Carriers

Carriers were reported for the -226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

Field blanks were not collected with the sample set.

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

Geosyntec consultants

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2627481 and 2628188**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of two aqueous samples, two equipment blanks and two field blanks collected January 3, and January 22, 2020, as part of the Plant Hammond AP4 on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Boron and Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The samples were analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2629801001	HGWC-102
2629801002	FB-01
2629801003	EB-01

Laboratory ID	Client ID
30353743001	HGWC-102
30353743002	FB-01
30353743003	EB-01

The samples were received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2629801: The relinquished by signature, date and time were not documented for the third sample transfer. The relinquished by and received by signature, date and time were not documented for the transfers from Pace Charlotte to Pace Ashville and Pace Charlotte to Pace Pittsburgh.
- 30353743: The relinquished by signature, date and time were not documented for the sample transfer.

The field pH data included with the reports was not validated.

1.0 METALS

The samples were analyzed for boron and calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 41627 and 41623). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

One equipment blank was collected with the sample set, EB-1. Metals were not detected in the equipment blank above the MDLs.

1.7 Field Blank

One field blank was collected with the sample set, FB-1. Metals were not detected in the field blank above the MDLs, with the following exceptions.

Boron and chromium were detected in the field blank at estimated concentrations greater than the MDLs and less than the reporting limits (RLs). Since boron was detected in the associated sample at a concentration greater than the RL, no qualifications were applied to the boron data. However, the estimated chromium concentration in the associated sample was U qualified as not detected at the RL.

Sample	Laboratory Result (mg/L)	Analyte	Laboratory Flag	Validation Result	Validation Qualifier	Reason Code
HGWC-102	0.00063	Chromium	J	0.010	U	3

mg/L-milligrams per liter
J-estimated concentration greater than the MDL and less than the RL

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 41632). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, one using

sample FB-01. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

One equipment blank was collected with the sample set, EB-1. Mercury was not detected in the equipment blank above the MDL.

2.7 Field Blank

One field blank was collected with the sample set, FB-1. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The samples were reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The samples were analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 519389). The anions were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

One sample set MS/MSD pair was reported for the anions using sample EB-01. The RPD and recovery results were within the laboratory specified acceptance criteria.

One batch MS/MSD pair was also reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

One equipment blank was collected with the sample set, EB-1. The wet chemistry parameters were not detected in the equipment blank above the MDLs, with the following exception.

TDS (20.0 mg/L) was detected in the equipment blank at a concentration greater than the RL. Since TDS was detected in the associated sample at a concentration greater than ten times the equipment blank concentration, no qualifications were applied to the data.

3.8 Field Blank

One equipment blank was collected with the sample set, FB-1. The wet chemistry parameters were not detected in the field blank above the MDLs.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
⊗ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
⊗ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 381384). One method blank was reported for the radium-226 data (batch 382555). Radium-228 was not detected in the method blank above the minimum detectable concentration (MDC).

30353743: Radium-226 was detected in the method blank in batch 382555 (0.333 pCi/L) at a concentration greater than the MDC. Therefore, the radium-226 concentration in samples EB-01 and FB-01 greater than the method blank concentration were J+ qualified as estimated with high biases. Also, the total radium concentrations in samples EB-01 and FB-01 were J+ qualified as estimated with high bias.

Sample	Analyte	Result	Flag	Validation Result	Validation Qualifier	Reason Code
EB-01	Radium-226	0.565	NA	0.565	J+	3
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J+	3
FB-01	Radium-226	1.00	NA	1.00	J+	3
FB-01	Combined Radium 226 + 228	1.23	NA	1.23	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria, with the following exception.

The LCS recovery of radium-226 was high and outside the laboratory specified acceptance criteria. Therefore, the radium-226 concentration in the associated sample greater than the MDC was J qualified as estimated and the combined radium-226 + 228 results in EB-01 and FB-01 were J qualified as estimated.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J	5
FB-01	Radium-226	1.00	NA	1.00	J	5

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
FB-01	Combined Radium 226 + 228	1.23	NA	1.23	J	5

pCi/L-picocuries per liter
NA-not applicable

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

One equipment blank was collected with the sample sets, EB-01.

Radium-226 (0.565 pCi/L) and radium-228 (0.747 pCi/L) were detected in EB-01 at concentrations greater than the MDCs. Since radium-226 concentration in EB-01 was U qualified due to field blank contamination and based on professional and technical judgment, no additional qualifications were applied to the radium-226 data. However, the radium-228 concentration in sample HGWC-102 greater than the equipment blank concentration was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-102	Radium-228	0.755	NA	0.755	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.9 Field Blank

One field blank was collected with the sample sets, FB-01.

Radium-226 (1.00 pCi/L) was detected in FB-01 at a concentration greater than the MDC. Therefore, the radium-226 concentration in EB-01 less than the field blank concentration was U qualified as not detected at the reported concentration. Also, the total radium concentration in sample EB-01 was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
EB-01	Radium-226	0.565	NA	0.565	U	3
EB-01	Combined Radium 226 + 228	1.31	NA	1.31	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2627481 and 2628188**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected 4 March 2020, as part of the Plant Hammond AP4 on-site sampling event.

The sample was analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Metals by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D and 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The sample was analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The sample was analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following sample was analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2627481001	HGWC-102

Laboratory ID	Client ID
2628188001	HGWC-102

The sample was received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2627481 and 2628188: The year was not documented for the sample collection date on the COC
- 2627481: There was a time discrepancy for the sample transfer. The relinquished by time was documented as 1/6/2020 1120 and the received by time was documented as 1/6/20 11:22.
- 2628188: There was a time discrepancy for the second sample transfer. The relinquished by time was documented as 1/23/2020 1212 and the received by time was documented as 1/23/20 12:15.

The field pH data included with the reports was not validated.

1.0 METALS

The sample was analyzed for metals by USEPA methods 3010A/6010D and USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 44427 and 44440). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exceptions.

Boron and chromium were detected in the method blank in batch 44440 at estimated concentrations greater than the MDLs and less than the RLs. Since boron was detected at a concentration greater than the RL and chromium was not detected in the associated sample, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The sample was analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 44367). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The sample was reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The sample was analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 529390). The anions were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Two batch MS/MSD pairs were reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The sample was analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 387516). One method blank was reported for the radium-226 data (batch 387515). Radium-228 was not detected in the method blank above the minimum detectable concentration (MDC).

2628188: Radium-226 was detected in the method blank in batch 387515 (0.400 pCi/L) at a concentration greater than the MDC. Therefore, the radium-226 concentration in sample HGWC-102 greater than the method blank concentration was J+ qualified as estimated with high bias. Also, the total radium concentration in sample HGWC-102 was J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-102	Radium-226	0.636	NA	0.636	J+	3
HGWC-102	Combined Radium 226 + 228	1.32	NA	1.32	J+	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

Field blanks were not collected with the sample set.

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	7 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 2630414, 2630416, 30356482, 30356484 and 30359852**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of eleven aqueous samples, one field duplicate and one field blank collected 24-25 March 2020 and 9 April 2020, as part of the Plant Hammond AP4 on-site sampling event.

The samples were analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The samples were analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The samples were analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following samples were analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
2630414001	HGWA-111
2630414002	HGWC-117
2630414003	HGWA-112
2630414005	FB-04
2630414006	HGWC-101
2630414007	HGWC-105
2630414008	HGWC-107

Laboratory ID	Client ID
2630414009	HGWC-118
2630414010	HGWC-103
2630414011	HGWC-109
2630414012	FD-04
2630414013	HGWA-113
2630416001	HGWC-102

The samples were received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted for the chain of custody (COC) form:

- 2630414: There was a time discrepancy for the third sample transfer. The relinquished by time was documented as 3/23/20 0940 and the received by time was documented as 3/23/20 941. The year was missing for the relinquished by date for the third sample transfer on page 2 of the COC.
- 2630416: There was a time discrepancy for the third sample transfer. The relinquished by time was documented as 3/25/20 0940 and the received by time was documented as 3/25/20 941. The year was missing for the relinquished by date for the third sample transfer on page 2 of the COC.
- 30356482 30356484: The relinquished by signature, date and time were not documented for the sample transfer.

The field pH data included with the reports was not validated.

1.0 METALS

The samples were analyzed for calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight method blanks were reported (batches 45066, 45121, 45533, 45065, 45113, 45531, 44977 and 44978). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Arsenic was detected in the method blank in batch 44978 at an estimated concentration greater than the MDL and less than the reporting limit (RL). Since arsenic was not detected in the associated sample, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three sample set specific MS/MSD pairs were reported using samples HGWC-117, HGWA-111 and HGWC-102. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

The calcium concentration in sample HGWC-117 was greater than four times the spiked concentration; therefore, no qualifications were applied to the calcium data based on the MS/MSD results.

Five batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

One field blank was collected with the sample set, FB-04. Metals were not detected in the field blank above the MDLs, with the following exceptions.

Boron and chromium were detected in the field blank at estimated concentrations greater than the MDLs and less than the RLs. Therefore, the estimated boron and chromium concentrations in the associated samples were U qualified as not detected at the RLs.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-111	Boron	0.011	J	0.10	U	3
HGWA-111	Chromium	0.0019	J	0.010	U	3
HGWC-117	Chromium	0.0012	J	0.010	U	3
HGWA-112	Boron	0.012	J	0.10	U	3

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier*	Reason Code**
HGWA-112	Chromium	0.0044	J	0.010	U	3
HGWC-101	Boron	0.080	J	0.10	U	3
HGWC-101	Chromium	0.00098	J	0.010	U	3
HGWC-105	Chromium	0.0013	J	0.010	U	3
HGWC-107	Chromium	0.00074	J	0.010	U	3
HGWC-118	Chromium	0.00081	J	0.010	U	3
HGWC-103	Chromium	0.00045	J	0.010	U	3
HGWC-109	Chromium	0.0014	J	0.010	U	3
FD-04	Chromium	0.0011	J	0.010	U	3
HGWA-113	Boron	0.012	J	0.10	U	3
HGWA-113	Chromium	0.0031	J	0.010	U	3

mg/L-milligrams per liter
J-estimated concentration greater than the MDL and less than the RL
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

1.8 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103, with the following exceptions.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverables (EDDs) Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag M1 reported in the laboratory reports was not reported in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

2.0 MERCURY

The samples were analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 45075). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample HGWC-102. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

One field blank was collected with the sample set, FB-1. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103.

2.9 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

3.0 WET CHEMISTRY

The samples were analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Equipment Blank
⊗ Field Blank
✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported for the anions (batches 533750, 533970 and 537769). The anions were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Three sample set specific MS/MSD pairs were reported for the anions using samples HGWA-111, HGWC-107 and HGWA-113. The RPD and recovery results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of sulfate in the HGWC-107 MS/MSD pair were low and outside the laboratory specified acceptance criteria. Therefore, the sulfate concentration in HGWC-107 was J- qualified as estimated with low bias.

Three batch MS/MSD pair was also reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
HGWC-107	Sulfate	116	NA	116	J-	4

mg/L-milligrams per liter

NA-not applicable

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

One sample set specific laboratory duplicate was reported for TDS using sample FB-04. The RPD result was within the laboratory specified acceptance criteria.

Seven batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

One field blank was collected with the sample set, FB-04. The wet chemistry parameters were not detected in the field blank above the MDLs, with the following exceptions.

TDS (21.0 mg/L) was detected in the field blank at a concentration greater than the RL and sulfate was detected in the field blank at an estimated concentration greater than the MDL and less than the RL. Since sulfate was either not detected or detected above the RL in the associated samples, no qualifications were applied to the sulfate data. However. the TDS concentrations in the associated samples were J+ qualified as estimated with high bias.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
HGWA-111	TDS	207	NA	207	J+	3
HGWA-112	TDS	52	NA	52	J+	3
HGWC-101	TDS	187	NA	187	J+	3
HGWA-113	TDS	48	NA	48	J+	3

mg/L-milligrams per liter
NA-not applicable

3.9 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RPD $\leq$ 20% or the difference between the concentrations < RL) was demonstrated between the field duplicate and the original sample HGWC-103.

3.10 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. The laboratory flag M1 reported in the laboratory reports was not reported in the EDDs. No other discrepancies were identified between the level II reports and the EDDs.

4.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverables Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported for the radium-228 data (batches 390287, 390462, 390594 and 394230). Three method blanks were reported for the radium-226 data (batches 390286, 390591 and 394121). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs), with the following exceptions.

30356484: Radium-228 (0.720 pCi/L) was detected in the method blank in batch 390462 at a concentration greater than the MDC. Since radium-228 was not detected above the MDCs in the associated samples, no qualifications were applied to the data. Radium-226 (0.480 pCi/L) was detected in the method blank in batch 390461 at a concentration greater than the MDC. Therefore, the radium-226 concentrations in the associated samples greater than the MDCs and less than the method blank concentration were U qualified as not detected at the reported concentrations.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result (pCi/L)	Validation Qualifier	Reason Code
HGWC-117	Radium-226	0.476	NA	0.476	U	3
HGWA-112	Radium-226	0.444	NA	0.444	U	3

pCi/L-picocuries per liter
NA-not applicable

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCS/LCS duplicate (LCSD) pairs were reported for radium-226. Four LCS/LCSD pairs were reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One batch laboratory duplicate was reported for radium-226 and one batch laboratory duplicate was reported for radium-228.

4.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

One field blank was collected with the sample sets, FB-04. Radium-226 and radium-228 were not detected in the field blank above the minimum detectable concentrations (MDCs).

4.10 Field Duplicate

One field duplicate sample was collected with the sample sets, FD-04. Acceptable precision (RER (2σ) < 3) was demonstrated between the field duplicate and the original sample HGWC-103.

4.11 Sensitivity

The samples were reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverables Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	15 July 2020
To:	Whitney Law
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverables – Pace Analytical Services, LLC Project Numbers 92482796 and 92482798**

SITE: Plant Hammond AP4

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected 18 June 2020, as part of the Plant Hammond AP4 on-site sampling event.

The sample was analyzed at Pace Analytical Services, LLC, Peachtree Corners, Georgia, for the following analytical tests:

- Calcium by United States (US) Environmental Protection Agency (EPA) Methods 3010A/6010D
- Metals by USEPA Methods 3005A/6020B
- Mercury by USEPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C

The sample was analyzed at Pace Analytical Services, LLC, Asheville, North Caroline, for the following analytical test:

- Chloride, Fluoride and Sulfate by USEPA Method 300.0

The sample was analyzed at Pace Analytical Services, LLC, Greensburg, Pennsylvania, for the following analytical tests:

- Radium-226 by USEPA Method 9315
- Radium-228 by USEPA Method 9320
- Total Radium by Calculation

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data as qualified are usable for meeting project objectives. Qualified data should be used within the limitation of the qualification.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001); and,
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012).

The following sample was analyzed and reported in the laboratory reports:

Laboratory ID	Client ID
92482796001	HGWC-102
92482798001	

The sample was received within 0-6ºC. No sample preservation issues were noted by the laboratory.

The field pH data included with the reports was not validated.

1.0 METALS

The sample was analyzed for calcium by USEPA methods 3010A/6010D and metals by USEPA methods 3005A/6020B. (Mercury was evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample

- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 548844 and 548895). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The sample results were reported to the MDLs. Elevated nondetect results were not reported.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The sample was analyzed for mercury by USEPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 549882). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The sample was reported to the MDL. Elevated nondetect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The sample was analyzed for TDS by Standard Method 2540C and chloride, fluoride and sulfate by USEPA method 300.0.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The wet chemistry data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the dataset is 100%.

3.2 Holding Times

The holding times for the analysis of a water sample for the wet chemistry parameters are listed below. The holding times were met for the sample analyses.

Analyte	Holding Time
TDS	7 days from collection to analysis
Chloride, Fluoride and Sulfate	28 days from collection to analysis

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the anions (batch 550052) and one method blank was reported for TDS (batch 548907). The wet chemistry parameters were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

Two batch MS/MSD pairs were reported for the anions. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch as appropriate. The recovery results were within the laboratory specified acceptance criteria.

3.6 Laboratory Duplicate

Two batch laboratory duplicates were reported for TDS. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Sensitivity

The sample was reported to the MDLs. Elevated nondetect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

4.0 RADIOCHEMISTRY

The sample was analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and total radium by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Laboratory Duplicate
✓ Tracers and Carriers
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

4.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported for the radium-228 data (batch 394230). One method blank was reported for the radium-226 data (batch 394121). Radium-226 and radium-228 were not detected in the method blank above the minimum detectable concentrations (MDCs).

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported with the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported for radium-226. One LCS/LCSD pair was reported for radium-228. The recovery and replicate error ratio (RER) [2 sigma (2σ)] results were within the laboratory specified acceptance criteria.

4.6 Laboratory Duplicate

One sample set specific laboratory duplicate was reported for radium-226 using sample HGWC-102.

The radium-226 concentration in sample HGWC-102 was greater than the MDC and the radium-226 concentration in the laboratory duplicate was less than the MDC. Therefore, based on professional and technical judgment, the radium-226 in sample HGWC-102 was J qualified as estimated.

Sample	Analyte	Laboratory Result (pCi/L)	Laboratory Flag	Validation Result	Validation Qualifier*	Reason Code**
HGWC-102	Radium-226	0.47	NA	0.47	J	12

pCi/L-picocuries per liter
NA-not applicable
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

4.7 Tracers and Carriers

Carriers were reported for the -226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory specified acceptance criteria.

4.8 Equipment Blank

Equipment blanks were not collected with the sample set.

4.9 Field Blank

Field blanks were not collected with the sample set.

4.10 Field Duplicate

Field duplicates were not collected with the sample set.

4.11 Sensitivity

The sample was reported to the MDCs. Elevated nondetect results were not reported.

4.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

Field Data Sheets

Product Name: Low-Flow System

Date: 2019-08-21 14:56:39

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWA-111	Final Pumping Rate	150 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	14.60 ft	Total Volume Pumped	8.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:33:14	600.02	22.43	6.29	144.85	0.42	15.44	4.22	33.11
Last 5	14:38:14	900.02	22.42	6.45	189.87	0.43	15.44	4.11	31.71
Last 5	14:43:14	1200.02	22.55	6.54	198.18	0.33	15.45	3.95	30.63
Last 5	14:48:14	1500.02	22.60	6.56	201.18	0.65	15.45	3.92	31.16
Last 5	14:53:14	1800.02	22.73	6.60	206.94	0.55	15.44	3.88	30.60
Variance 0			0.13	0.09	8.31			-0.16	-1.08
Variance 1			0.05	0.02	3.00			-0.03	0.53
Variance 2			0.13	0.03	5.76			-0.04	-0.56

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 43.21 ft.

Grab Samples

HGWA-111

Grab

Product Name: Low-Flow System

Date: 2019-08-21 17:45:59

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWA-112	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.07 ft	Total Volume Pumped	3.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:41:11	300.03	24.62	5.84	74.78	0.28	16.12	1.24	37.43
Last 5	16:46:11	600.02	25.00	5.81	74.14	2.80	16.18	1.22	36.38
Last 5	16:51:11	900.02	25.48	5.80	73.69	0.60	16.12	1.17	35.73
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.38	-0.03	-0.64			-0.03	-1.05
Variance 2			0.49	-0.01	-0.45			-0.05	-0.66

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 39.90 ft.

Grab Samples

HGWA-112

Grab

Product Name: Low-Flow System

Date: 2019-08-21 17:48:26

Project Information:		Pump Information:	
Operator Name	Noelia Muskus	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	613229		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWA-113	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	12.42 ft	Total Volume Pumped	7.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:32:54	1199.92	24.59	6.06	103.36	0.18	19.22	1.81	72.12
Last 5	16:37:54	1499.91	24.76	6.07	101.77	0.07	19.52	1.84	71.80
Last 5	16:42:54	1799.90	24.93	6.06	102.46	0.10	19.81	1.97	71.78
Last 5	16:47:54	2099.89	25.19	6.04	101.66	0.20	20.08	1.91	71.93
Last 5	16:52:54	2399.88	25.15	6.05	101.40	0.28	20.34	1.85	71.32
Variance 0			0.17	-0.01	0.69			0.13	-0.02
Variance 1			0.26	-0.01	-0.81			-0.06	0.15
Variance 2			-0.05	0.01	-0.25			-0.06	-0.61

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 36.11 ft.

Grab Samples

HGWA-113

Grab

Product Name: Low-Flow System

Date: 2019-08-22 13:58:13

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-101	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	13.58 ft	Total Volume Pumped	6.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:21:56	900.02	24.71	5.42	196.82	1.41	16.19	0.72	96.99
Last 5	12:26:56	1200.02	25.07	5.39	199.48	0.54	16.38	0.64	96.59
Last 5	12:31:56	1500.02	25.00	5.40	194.59	3.11	16.54	0.62	95.12
Last 5	12:36:56	1800.03	25.17	5.36	196.69	3.00	16.64	0.57	94.74
Last 5	12:41:56	2100.03	25.33	5.39	192.55	2.45	17.76	0.56	93.28
Variance 0			-0.07	0.02	-4.90			-0.02	-1.47
Variance 1			0.16	-0.04	2.11			-0.05	-0.37
Variance 2			0.16	0.03	-4.15			-0.01	-1.47

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 37.96 ft.

Grab Samples

HGWC-101

Grab

Product Name: Low-Flow System

Date: 2019-08-22 16:08:37

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-103	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	14.38 ft	Total Volume Pumped	4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:05:07	300.03	22.33	5.58	716.13	5.92	14.48	0.71	137.24
Last 5	14:10:07	600.02	22.29	5.58	708.82	6.01	14.47	0.53	135.35
Last 5	14:15:07	900.02	22.24	5.57	711.39	4.70	14.48	0.89	133.68
Last 5	14:20:07	1200.03	22.10	5.56	705.24	3.89	14.48	0.84	132.68
Last 5	14:25:07	1500.03	22.44	5.55	703.84	4.27	14.48	0.70	131.21
Variance 0			-0.05	-0.01	2.56			0.36	-1.68
Variance 1			-0.14	-0.01	-6.15			-0.06	-0.99
Variance 2			0.34	-0.01	-1.40			-0.14	-1.48

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 36.70 ft.

Grab Samples

HGWC-103

Grab

SmarTroll log output unavailable for the sampling of well HGWC-105. Paper purge log provided.

Geosyntec consultants

GROUNDWATER SAMPLING LOG SHEET

Client: Southern Company
Site: Plant Hammond
Well ID: HGWC-105
Total Depth (ft): 44.85
Depth to Water (ft): 18.21
Well Diameter (in): 2
Well Volume (gal) = 0.041d²h: 4.37
Well Volume (L) = gal * 3.785: 16.54
d = well diameter (inches); h = length of water column (feet)
Well Type: Flush (Stick Up)
Well Lock: (Yes) No
Well Cap Condition: (Good) Replace
Well Tag Present: (Yes) No

Project No.: GW6581
Location: AP-4
Pump Type/Model: peristaltic/
Tubing Material: polyethylene
Pump Intake Depth (ft): 39
Start/Stop Purge Time: 1605/1715
Purge Rate (mL/min): 100
Total Purge Volume (L): 4
Purge Method: (Low-Flow) Well Volume Other: —
Sampling Method: (Pump Discharge) Other: —

Sampling Date: 8/22/19
Sampler's Name: Chad Russo
Sample Collection Time: 1640
Sample Purge Rate (mL/min): 100
Sample ID: HGWC-105
Laboratory Analyses: App IV
QA/QC Collected? —
QA/QC I.D.

All sample containers requiring chemical preservation properly preserved prior to demob from well? (Yes) No

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
1617	6.02	207.90	120.20	0.94	25.76	3.72	18.43	100	1	
1622	6.02	205.00	117.80	0.74	25.78	2.37	18.42	100	1.75	
1627	6.03	206.30	115.80	0.49	25.70	2.74	18.42	100	2.25	
1632	6.01	207.50	#114.60	0.49	26.21	2.37	18.42	100	2.75	
1637	6.04	203.10	113.10	0.48	26.35	# 3.29	18.40	100	3.25	
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**	**< 0.3 ft**	**> 100 mL < 250 mL**	**> 3L**	

CLF 8/22/19

Product Name: Low-Flow System

Date: 2019-08-23 09:43:31

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-107	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.5 ft	Total Volume Pumped	3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:50:59	300.06	21.31	6.26	423.07	0.59	15.50	0.31	113.40
Last 5	08:55:59	600.02	21.19	6.26	422.22	0.76	15.50	0.24	101.09
Last 5	09:00:59	900.02	21.24	6.26	420.90	1.35	15.50	0.21	94.77
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.12	0.00	-0.85			-0.07	-12.31
Variance 2			0.05	0.01	-1.32			-0.03	-6.32

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 38.08 ft.

Grab Samples

HGWC-107

Grab

Product Name: Low-Flow System

Date: 2019-08-23 10:42:23

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-109	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	10.12 ft	Total Volume Pumped	4.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:04:28	300.05	20.77	6.69	365.18	3.66	10.17	0.25	10.59
Last 5	10:09:28	600.02	20.48	6.73	367.28	2.87	10.18	0.17	0.01
Last 5	10:14:28	900.02	20.27	6.76	365.30	2.45	10.17	0.13	-6.44
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.29	0.03	2.11			-0.08	-10.58
Variance 2			-0.21	0.03	-1.99			-0.04	-6.45

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 31.02 ft.

Grab Samples

HGWC-109

Grab

Product Name: Low-Flow System

Date: 2019-08-22 10:10:05

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-117	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	17.03 ft	Total Volume Pumped	3.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:16:40	300.06	21.66	5.50	245.91	0.31	17.05	0.24	78.38
Last 5	09:21:40	600.02	21.78	5.54	245.19	0.68	17.05	0.25	75.04
Last 5	09:26:40	900.02	21.88	5.53	243.65	0.43	17.05	0.24	74.48
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.12	0.03	-0.72			0.01	-3.35
Variance 2			0.10	-0.00	-1.54			-0.02	-0.56

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 39.92 ft.

Grab Samples

HGWC-117

Grab

Product Name: Low-Flow System

Date: 2019-08-22 11:36:25

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	541714		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-118	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	13.78 ft	Total Volume Pumped	3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:47:27	300.03	22.71	6.92	494.64	0.52	13.96	0.47	90.30
Last 5	10:52:27	600.02	22.51	6.91	504.01	0.52	13.96	0.25	90.26
Last 5	10:57:27	900.02	22.37	6.93	506.65	0.74	13.96	0.14	90.68
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.20	-0.01	9.37			-0.23	-0.04
Variance 2			-0.14	0.02	2.64			-0.11	0.42

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 250-mL plastic bottle for F (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. IV metals (EPA 6020B/7470A). Total depth = 40.82 ft.

Grab Samples

HGWC-118

Grab

Product Name: Low-Flow System

Date: 2019-10-21 15:49:03

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWA-111	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.95 ft	Total Volume Pumped	17 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:10:03	2400.00	19.68	6.98	311.16	8.39	17.16	3.34	64.34
Last 5	15:15:03	2699.99	19.60	6.98	312.60	8.92	17.16	3.34	64.86
Last 5	15:20:03	2999.99	19.55	6.98	312.38	8.22	17.16	3.34	65.14
Last 5	15:25:03	3299.99	19.59	7.01	316.53	6.92	17.16	3.32	64.94
Last 5	15:30:03	3599.99	19.53	7.02	318.32	4.98	17.16	3.31	65.23
Variance 0			-0.04	0.00	-0.22			0.00	0.29
Variance 1			0.04	0.02	4.15			-0.02	-0.20
Variance 2			-0.05	0.02	1.79			-0.02	0.29

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 43.24'

Grab Samples

HGWA-111

Grab

Product Name: Low-Flow System

Date: 2019-10-22 10:51:13

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	30 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	30 ft

Well Information:		Pumping Information:	
Well ID	HGWA-112	Final Pumping Rate	150 mL/min
Well diameter	2 in	Total System Volume	0.2239027 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	16.83 ft	Total Volume Pumped	2.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:58:01	300.09	20.48	5.72	82.17	0.82	17.65	1.66	62.05
Last 5	10:03:01	600.02	20.36	5.70	81.15	0.75	17.69	1.65	61.29
Last 5	10:08:01	900.02	20.27	5.70	80.76	1.04	17.72	1.69	61.17
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.13	-0.01	-1.02			-0.01	-0.76
Variance 2			-0.09	-0.01	-0.39			0.04	-0.13

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 39.92’

Grab Samples

HGWA-112

Grab

Product Name: Low-Flow System

Date: 2019-10-22 11:25:42

Project Information:		Pump Information:	
Operator Name	Dan Gibbs	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	31.53 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	31.53 ft

Well Information:		Pumping Information:	
Well ID	HGWA-113	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.6257317 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	13.98 ft	Total Volume Pumped	6.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:30:09	2699.94	20.47	5.97	93.99	11.21	18.01	1.31	-160.79
Last 5	10:35:09	2999.93	20.43	5.97	95.23	6.83	18.23	1.15	-161.28
Last 5	10:40:09	3299.92	20.39	5.97	96.44	4.98	18.41	1.01	-161.45
Last 5	10:45:09	3599.91	20.74	5.97	97.16	4.91	18.60	0.98	-164.42
Last 5	10:50:09	3899.90	21.05	5.98	97.58	4.93	18.73	0.97	-170.69
Variance 0			-0.04	0.00	1.21			-0.14	-0.17
Variance 1			0.35	-0.00	0.71			-0.03	-2.98
Variance 2			0.31	0.01	0.42			-0.01	-6.27

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EP A 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 36.21'

Grab Samples

HGWA-113

Grab

Product Name: Low-Flow System

Date: 2019-10-23 11:33:45

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	33 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	33 ft

Well Information:		Pumping Information:	
Well ID	HGWC-101	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.632293 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.23 ft	Total Volume Pumped	4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:26:48	300.07	17.68	5.31	297.72	2.74	17.56	0.29	74.66
Last 5	10:31:48	600.02	18.28	5.30	312.88	2.28	17.55	0.29	76.20
Last 5	10:36:48	900.01	18.50	5.32	316.85	1.70	17.58	0.27	76.96
Last 5	10:41:48	1200.01	18.64	5.33	314.30	1.42	17.61	0.29	77.62
Last 5									
Variance 0			0.60	-0.01	15.16			-0.01	1.55
Variance 1			0.22	0.02	3.97			-0.01	0.76
Variance 2			0.13	0.01	-2.54			0.02	0.65

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 38.01′

Grab Samples

HGWC-101

Grab

Product Name: Low-Flow System

Date: 2019-10-23 09:43:29

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	33 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	33 ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.237293 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.45 ft	Total Volume Pumped	4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:51:29	600.02	17.05	5.70	869.08	1.66	15.64	0.28	74.70
Last 5	08:56:29	900.02	17.05	5.70	917.48	1.09	15.64	0.23	76.35
Last 5	09:01:29	1200.02	17.02	5.69	987.24	1.19	15.64	0.23	81.32
Last 5	09:06:29	1500.01	17.10	5.68	987.95	1.09	15.64	0.22	82.93
Last 5	09:11:29	1800.01	17.10	5.68	986.80	0.85	15.64	0.19	84.19
Variance 0			-0.03	-0.01	69.75			0.00	4.97
Variance 1			0.08	-0.00	0.71			-0.00	1.61
Variance 2			-0.00	0.00	-1.15			-0.04	1.25

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 36.9′

Grab Samples

HGWC-102

Grab

Product Name: Low-Flow System

Date: 2019-10-23 11:38:05

Project Information:		Pump Information:	
Operator Name	Dan Gibbs	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	32.68 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	32.68 ft

Well Information:		Pumping Information:	
Well ID	HGWC-103	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.6308647 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.70 ft	Total Volume Pumped	8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:44:07	3599.91	16.82	5.49	701.07	8.71	15.78	0.24	-170.93
Last 5	10:49:07	3899.90	16.75	5.49	701.23	7.21	15.78	0.25	-170.94
Last 5	10:54:07	4199.90	16.82	5.49	699.65	7.03	15.78	0.25	-171.17
Last 5	10:59:07	4499.89	16.82	5.49	699.13	6.09	15.78	0.26	-171.41
Last 5	11:04:07	4799.87	16.82	5.49	698.06	4.93	15.78	0.26	-171.40
Variance 0			0.07	-0.00	-1.58			0.00	-0.23
Variance 1			0.00	-0.00	-0.52			0.01	-0.23
Variance 2			0.00	-0.00	-1.07			0.01	0.01

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 37.65'

Grab Samples

HGWC-103

Grab

Product Name: Low-Flow System

Date: 2019-10-23 09:22:18

Project Information:		Pump Information:	
Operator Name	Dan Gibbs	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	39.67 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	39.67 ft

Well Information:		Pumping Information:	
Well ID	HGWC-105	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.662064 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	20.33 ft	Total Volume Pumped	4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	08:28:40	1199.99	16.05	6.49	613.24	14.30	20.45	0.54	-167.24
Last 5	08:33:40	1499.98	16.14	6.46	616.07	9.23	20.45	0.38	-168.30
Last 5	08:38:40	1799.97	16.15	6.46	616.42	6.21	20.45	0.32	-168.90
Last 5	08:43:40	2099.96	16.10	6.46	617.32	4.97	20.45	0.30	-169.00
Last 5	08:48:39	2399.95	16.19	6.46	614.51	4.73	20.45	0.28	-169.45
Variance 0			0.01	-0.00	0.35			-0.06	-0.60
Variance 1			-0.04	-0.00	0.90			-0.02	-0.11
Variance 2			0.09	-0.00	-2.81			-0.02	-0.45

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 44.92'

Grab Samples

HGWC-105

Grab

Product Name: Low-Flow System

Date: 2019-10-22 16:02:49

Project Information:		Pump Information:	
Operator Name	Dan Gibbs	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	33.20 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	33.20 ft

Well Information:		Pumping Information:	
Well ID	HGWC-107	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.6331857 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	17.51 ft	Total Volume Pumped	3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:07:56	600.01	21.94	6.30	413.12	1.53	17.51	0.99	-99.10
Last 5	15:12:56	900.00	21.83	6.24	414.12	1.76	17.51	0.61	-99.27
Last 5	15:17:56	1199.99	21.72	6.22	413.54	2.43	17.51	0.44	-96.36
Last 5	15:22:56	1499.98	21.68	6.20	413.28	2.46	17.51	0.36	-93.79
Last 5	15:27:56	1799.97	21.49	6.19	410.95	2.55	17.51	0.32	-92.94
Variance 0			-0.11	-0.03	-0.58			-0.18	2.91
Variance 1			-0.05	-0.02	-0.26			-0.07	2.57
Variance 2			-0.19	-0.01	-2.33			-0.05	0.85

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 38.12'

Grab Samples

HGWC-107

Grab

Product Name: Low-Flow System

Date: 2019-10-22 14:36:48

Project Information:		Pump Information:	
Operator Name	Dan Gibbs	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	26.36 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	26.36 ft

Well Information:		Pumping Information:	
Well ID	HGWC-109	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.6026558 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	11.36 ft	Total Volume Pumped	3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:45:33	600.01	22.08	6.51	351.98	10.06	11.38	1.70	-153.01
Last 5	13:50:33	900.00	22.03	6.52	355.65	7.39	11.38	0.99	-143.29
Last 5	13:55:33	1199.99	21.54	6.54	356.67	6.27	11.38	0.54	-131.06
Last 5	14:00:33	1499.98	21.36	6.56	355.77	4.71	11.38	0.37	-118.46
Last 5	14:05:33	1799.97	21.30	6.58	353.13	4.07	11.38	0.30	-108.44
Variance 0			-0.49	0.02	1.02			-0.44	12.22
Variance 1			-0.18	0.02	-0.89			-0.17	12.60
Variance 2			-0.07	0.02	-2.64			-0.08	10.02

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 31.03'

Grab Samples

HGWC-109

Grab

Product Name: Low-Flow System

Date: 2019-10-22 15:09:17

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-117	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	18.83 ft	Total Volume Pumped	39 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:29:59	9899.92	19.19	6.16	512.49	5.91	18.83	0.12	71.73
Last 5	14:34:59	10199.92	19.17	6.16	513.10	5.70	18.83	0.12	71.86
Last 5	14:39:59	10499.91	19.19	6.16	513.00	5.65	18.83	0.11	72.01
Last 5	14:44:59	10799.91	19.19	6.16	515.05	5.15	18.83	0.12	72.30
Last 5	14:49:59	11099.91	19.24	6.17	516.86	4.91	18.83	0.12	72.36
Variance 0			0.01	-0.00	-0.10			-0.00	0.15
Variance 1			0.01	0.01	2.05			0.00	0.29
Variance 2			0.04	0.00	1.82			-0.00	0.06

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 39.94'

Grab Samples

HGWC-117

Grab

Product Name: Low-Flow System

Date: 2019-10-22 19:09:29

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-118	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	15.46 ft	Total Volume Pumped	35.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	18:34:19	10199.92	18.53	7.02	528.76	9.61	15.58	0.10	75.39
Last 5	18:39:19	10499.92	18.48	7.02	528.89	9.94	15.58	0.11	75.24
Last 5	18:44:19	10799.91	18.46	7.03	528.97	9.82	15.58	0.10	75.15
Last 5	18:49:19	11099.91	18.44	7.03	529.11	9.83	15.58	0.10	75.07
Last 5	18:54:19	11399.91	18.32	7.33	1.07	--	--	6.78	58.86
Variance 0			-0.02	0.00	0.08			-0.01	-0.09
Variance 1			-0.02	0.00	0.14			-0.00	-0.08
Variance 2			-0.12	0.30	-528.04			6.69	-16.21

Notes

Four bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A). Total depth = 41.80′

Grab Samples
HGWC-118
Grab

Product Name: Low-Flow System

Date: 2020-01-03 12:39:08

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	34 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	497259		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	33 ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.2417564 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	13.95 ft	Total Volume Pumped	4.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:45:00	299.99	17.13	5.93	748.43	11.08	14.09	0.30	25.68
Last 5	11:50:00	599.94	17.17	5.73	752.41	8.40	14.08	0.23	24.40
Last 5	11:55:00	899.93	17.19	5.67	754.77	7.52	14.06	0.22	23.31
Last 5	12:00:00	1199.92	17.13	5.65	765.76	5.52	14.05	0.20	21.82
Last 5	12:05:00	1499.91	17.08	5.64	782.00	2.32	14.03	0.21	19.68
Variance 0			0.02	-0.06	2.36			-0.01	-1.09
Variance 1			-0.06	-0.03	10.99			-0.01	-1.49
Variance 2			-0.05	-0.01	16.24			0.01	-2.14

Notes

Five bottles: One 250-mL plastic bottle with HNO3 for metals (EPA 6020B), one 250-mL plastic bottle for ions (EPA 300.0), one 500-mL plastic bottle for TDS (EPA 2540C), and two 1-L bottles for radium (EPA 9315/9320). Total depth = 36.85′

Grab Samples

HGWC-102

Grab

Product Name: Low-Flow System

Date: 2020-01-22 10:21:45

Project Information:		Pump Information:	
Operator Name	Grant Walter	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	642531		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	14.57 ft	Total Volume Pumped	23 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:05:27	299.98	15.29	5.65	965.19	6.76	14.90	0.71	64.73
Last 5	10:10:27	599.95	14.94	5.65	956.45	5.39	14.91	0.99	62.26
Last 5	10:15:27	899.95	15.04	5.66	960.39	4.50	14.90	0.82	60.16
Last 5	10:20:27	1199.95	14.76	5.66	955.94	3.78	14.90	0.79	59.04
Last 5									
Variance 0			-0.35	0.00	-8.73			0.28	-2.47
Variance 1			0.10	0.01	3.94			-0.17	-2.10
Variance 2			-0.28	-0.01	-4.46			-0.03	-1.12

Notes

Two bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320). Total depth = 36.80 ft.

Grab Samples

HGWC-102

Grab

Product Name: Low-Flow System

Date: 2020-03-04 09:34:59

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	32 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	538243		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	32 ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.2328295 L
Well Total Depth	37.43 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	7.01 ft	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:12:16	300.03	14.97	6.89	917.29	4.65	7.22	0.57	98.11
Last 5	09:17:16	600.02	15.22	6.18	928.03	3.09	7.22	0.46	101.02
Last 5	09:22:16	900.02	15.36	5.90	938.26	2.78	7.22	0.27	106.40
Last 5	09:27:16	1200.02	15.46	5.81	940.61	2.15	7.22	0.23	110.52
Last 5	09:32:16	1500.02	15.29	5.77	933.46	2.79	7.22	0.21	110.78
Variance 0			0.14	-0.29	10.23			-0.19	5.38
Variance 1			0.11	-0.09	2.35			-0.04	4.12
Variance 2			-0.18	-0.03	-7.15			-0.02	0.26

Notes

SmarTroll stopped by accident. Restarting SmarTroll while keeping track of stabilization criteria in paper log.

Product Name: Low-Flow System

Date: 2020-03-04 09:44:22

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	538243		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	37.43 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	7.01 ft	Total Volume Pumped	7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:41:17	300.03	15.37	5.75	936.94	2.13	7.22	0.20	113.90
Last 5									
Last 5									
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.00	0.00	0.00			0.00	0.00
Variance 2			0.00	0.00	0.00			0.00	0.00

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C), one 120-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWC-102

Grab

Product Name: Low-Flow System

Date: 2020-03-24 10:26:40

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	39 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	364452		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	39 ft

Well Information:		Pumping Information:	
Well ID	HGWA-111	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.6590735 L
Well Total Depth	43.67 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	9.48 ft	Total Volume Pumped	4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:07:01	300.06	17.01	7.35	357.41	1.55	10.38	3.52	57.08
Last 5	10:17:01	900.02	17.04	7.37	362.13	1.67	10.39	3.26	58.32
Last 5	10:22:01	1200.02	17.05	7.37	362.15	3.22	10.39	3.21	46.51
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.03	0.02	4.72			-0.26	1.24
Variance 2			0.01	-0.00	0.02			-0.05	-11.81

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWA-111

Grab

Product Name: Low-Flow System

Date: 2020-03-24 11:03:24

Project Information:		Pump Information:	
Operator Name	Aaron Reeder	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	32 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	2 ft

Well Information:		Pumping Information:	
Well ID	HGWA-112	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.6278296 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	6.25 ft	Total Volume Pumped	13.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:40:01	3000.02	17.14	5.64	84.64	7.72	7.60	4.63	85.69
Last 5	10:45:01	3300.02	17.11	5.65	84.37	7.72	7.62	2.58	86.44
Last 5	10:50:03	3602.02	17.36	5.64	84.42	6.62	7.91	2.50	81.65
Last 5	10:55:03	3902.02	17.23	5.64	84.27	4.51	7.82	2.44	82.50
Last 5	11:00:03	4202.02	17.14	5.65	84.29	--	--	5.67	94.77
Variance 0			0.25	-0.01	0.04			-0.08	-4.79
Variance 1			-0.14	0.00	-0.14			-0.06	0.85
Variance 2			-0.08	0.00	0.01			3.22	12.27

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWA-112

Grab

Product Name: Low-Flow System

Date: 2020-03-24 15:19:22

Project Information:		Pump Information:	
Operator Name	Aaron Reeder	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	30 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWA-113	Final Pumping Rate	50 mL/min
Well diameter	2 in	Total System Volume	0.6189027 L
Well Total Depth	36.53 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	2.80 ft	Total Volume Pumped	9.75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:56:33	7809.02	19.63	6.02	103.01	12.20	10.25	3.64	68.03
Last 5	15:01:33	8109.02	19.37	6.02	103.01	6.40	10.20	4.45	67.02
Last 5	15:06:33	8409.01	19.64	6.02	103.66	5.40	10.25	3.65	66.60
Last 5	15:11:33	8709.02	19.77	6.03	104.01	6.20	10.25	3.52	66.56
Last 5	15:16:33	9009.02	19.64	6.03	104.29	4.49	10.30	3.41	65.70
Variance 0			0.27	-0.00	0.65			-0.80	-0.42
Variance 1			0.13	0.01	0.35			-0.13	-0.05
Variance 2			-0.13	-0.00	0.29			-0.10	-0.86

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWA-113

Grab

Product Name: Low-Flow System

Date: 2020-04-09 16:21:52

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	31 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	647057		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	31 ft

Well Information:		Pumping Information:	
Well ID	HGWA-113	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.6233661 L
Well Total Depth	36.53 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	3.53 ft	Total Volume Pumped	23.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:58:25	10799.80	20.95	6.08	97.43	13.80	17.85	1.34	71.47
Last 5	16:03:25	11099.80	20.91	6.09	96.82	12.20	18.00	1.32	71.29
Last 5	16:08:25	11399.79	20.71	6.08	97.27	11.30	18.15	1.31	71.69
Last 5	16:13:25	11699.86	20.69	6.08	97.01	11.50	18.29	1.32	71.68
Last 5	16:18:25	11999.78	20.64	6.08	97.06	9.92	18.40	1.30	71.84
Variance 0			-0.20	-0.01	0.45			-0.01	0.40
Variance 1			-0.02	-0.00	-0.27			0.01	-0.00
Variance 2			-0.05	0.00	0.05			-0.02	0.15

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWA-113

Grab

Product Name: Low-Flow System

Date: 2020-03-25 09:53:16

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	32 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	364452		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	32 ft

Well Information:		Pumping Information:	
Well ID	HGWC-101	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.6278296 L
Well Total Depth	37.94 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	8.78 ft	Total Volume Pumped	6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:15:54	300.05	17.46	5.58	183.73	5.75	11.00	2.55	110.59
Last 5	09:20:54	600.02	17.55	5.56	187.72	3.24	11.70	2.24	100.29
Last 5	09:25:54	900.02	17.47	5.53	203.98	3.94	11.76	1.94	93.98
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.09	-0.02	3.98			-0.31	-10.30
Variance 2			-0.08	-0.03	16.26			-0.30	-6.32

Notes

SmarTroll battery died.

Low-Flow Test Report:

Test Date / Time: 3/25/2020 12:36:29 PM
Project: Plant Hammond
Operator Name: Chad Russo

Location Name: HGWC-101 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 10 ft** **Top of Screen: 28 ft** **Total Depth: 37.94 ft**	**Pump Type: Bladder** **Tubing Type: Poly ethylene** **Pump Intake From TOC: 33 ft** **Estimated Total Volume Pumped: 6 liter** **Flow Cell Volume: 90 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 3.25 ft**	**Instrument Used: SmarTROLL MP** **Serial Number: 364452**

Test Notes:
Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 5 %	+/- 10 %	+/- 10	+/- 10	+/- 0.3	
3/25/2020 12:36 PM	00:00	5.48 pH	18.67 °C	234.77 µS/cm	1.42 mg/L		110.5 mV		100.00 ml/min
3/25/2020 12:36 PM	00:28	5.48 pH	18.83 °C	234.63 µS/cm	1.42 mg/L		84.1 mV		100.00 ml/min
3/25/2020 12:39 PM	02:58	5.49 pH	18.70 °C	233.00 µS/cm	1.41 mg/L	0.69 NTU	63.5 mV	11.18 ft	100.00 ml/min
3/25/2020 12:44 PM	07:58	5.42 pH	17.81 °C	287.78 µS/cm	0.61 mg/L	0.59 NTU	56.7 mV	11.39 ft	100.00 ml/min
3/25/2020 12:49 PM	12:58	5.48 pH	17.89 °C	236.39 µS/cm	1.28 mg/L	0.71 NTU	59.6 mV	11.65 ft	100.00 ml/min
3/25/2020 12:54 PM	17:58	5.48 pH	18.21 °C	235.64 µS/cm	1.25 mg/L	0.64 NTU	61.8 mV	11.80 ft	100.00 ml/min
3/25/2020 12:59 PM	22:58	5.47 pH	18.88 °C	242.80 µS/cm	1.13 mg/L	0.64 NTU	59.8 mV	11.80 ft	100.00 ml/min
3/25/2020 1:01 PM	24:53	5.47 pH	18.70 °C	249.91 µS/cm	1.06 mg/L		79.1 mV	11.80 ft	100.00 ml/min
3/25/2020 1:06 PM	29:53	5.51 pH	18.62 °C	214.56 µS/cm	1.36 mg/L	0.37 NTU	61.8 mV	12.50 ft	100.00 ml/min
3/25/2020 1:11 PM	34:53	5.51 pH	19.42 °C	215.38 µS/cm	1.29 mg/L	0.63 NTU	60.7 mV	12.30 ft	100.00 ml/min
3/25/2020 1:16 PM	39:53	5.44 pH	19.06 °C	281.45 µS/cm	0.66 mg/L	0.47 NTU	54.3 mV	12.15 ft	100.00 ml/min
3/25/2020 1:21 PM	44:53	5.44 pH	18.66 °C	275.38 µS/cm	0.68 mg/L	0.84 NTU	54.0 mV	12.11 ft	100.00 ml/min
3/25/2020 1:26 PM	49:53	5.45 pH	18.97 °C	267.18 µS/cm	0.68 mg/L	0.51 NTU	51.6 mV	12.05 ft	100.00 ml/min
3/25/2020 1:27 PM	51:10	5.45 pH	18.97 °C	267.60 µS/cm	0.67 mg/L		62.8 mV	12.05 ft	100.00 ml/min

3/25/2020 1:32 PM	56:10	5.45 pH	18.98 °C	268.55 µS/cm	0.66 mg/L	0.60 NTU	49.6 mV	12.05 ft	100.00 ml/min

Samples

Sample ID:	Description:
HGWC-101	Grab

Product Name: Low-Flow System

Date: 2020-03-24 15:58:43

Project Information:		Pump Information:	
Operator Name	Shawn Lin	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	646777		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.09 L
Well Total Depth	37.43 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	10.18 ft	Total Volume Pumped	6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:40:53	300.08	18.21	5.60	653.59	2.30	10.51	2.64	145.01
Last 5	15:45:53	600.02	18.08	5.59	672.25	2.81	10.46	2.56	130.05
Last 5	15:50:53	900.00	18.38	5.58	666.75	2.29	10.44	2.80	119.74
Last 5	15:55:53	1200.00	18.45	5.58	672.53	1.65	10.42	2.81	111.92
Last 5									
Variance 0			-0.13	-0.02	18.66			-0.08	-14.96
Variance 1			0.31	-0.01	-5.49			0.24	-10.31
Variance 2			0.07	-0.00	5.78			0.01	-7.83

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWC-102

Grab

Product Name: Low-Flow System

Date: 2020-03-25 12:26:34

Project Information:		Pump Information:	
Operator Name	Shawn Lin	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	646777		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-103	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	37.68 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	9.56 ft	Total Volume Pumped	28 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:01:27	5400.02	17.18	5.49	700.27	6.77	9.53	0.10	82.41
Last 5	12:06:27	5700.02	17.19	5.49	700.88	6.21	9.53	0.10	82.85
Last 5	12:11:27	6000.02	17.20	5.49	700.81	6.02	9.53	0.12	82.48
Last 5	12:16:27	6300.02	17.26	5.49	698.89	5.18	9.53	0.11	82.58
Last 5	12:21:27	6600.02	17.23	5.49	701.02	4.94	9.53	0.10	82.39
Variance 0			0.01	-0.00	-0.07			0.03	-0.37
Variance 1			0.06	-0.00	-1.92			-0.02	0.11
Variance 2			-0.03	0.00	2.14			-0.01	-0.19

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWC-103

Grab

FD-04

Grab

Product Name: Low-Flow System

Date: 2020-03-25 12:01:21

Project Information:		Pump Information:	
Operator Name	Nelson Gunby	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	364456		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-105	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	44.67 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	12.75 ft	Total Volume Pumped	13 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:36:33	2700.03	12.16	6.52	615.65	6.24	12.97	0.30	-12.21
Last 5	11:41:33	3000.03	12.19	6.51	611.48	5.88	12.95	0.29	-14.58
Last 5	11:46:33	3300.03	12.21	6.49	607.93	4.84	12.95	0.27	-17.34
Last 5	11:51:33	3600.03	12.29	6.48	605.52	4.64	12.94	0.27	-18.93
Last 5	11:56:33	3900.03	12.34	6.47	600.89	4.62	12.93	0.26	-21.20
Variance 0			0.02	-0.02	-3.55			-0.02	-2.76
Variance 1			0.08	-0.01	-2.40			-0.01	-1.59
Variance 2			0.06	-0.01	-4.63			-0.01	-2.27

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWC-105

Grab

Product Name: Low-Flow System

Date: 2020-03-25 14:35:30

Project Information:		Pump Information:	
Operator Name	Nelson Gunby	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	364456		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-107	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	38.20 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	10.5 ft	Total Volume Pumped	18 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	14:13:17	3300.03	13.62	6.13	416.61	3.30	10.47	0.26	116.90
Last 5	14:18:17	3600.03	13.57	6.13	417.47	2.89	10.43	0.25	108.61
Last 5	14:23:17	3900.04	14.21	6.13	415.82	2.77	10.23	0.24	109.11
Last 5	14:28:17	4200.04	14.35	6.13	414.25	2.42	10.43	0.25	116.65
Last 5	14:33:17	4500.04	14.15	6.13	414.00	2.55	10.43	0.25	118.62
Variance 0			0.64	-0.00	-1.65			-0.01	0.49
Variance 1			0.14	-0.00	-1.57			0.00	7.54
Variance 2			-0.20	0.00	-0.25			0.00	1.97

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples
HGWC-107

Grab

Product Name: Low-Flow System

Date: 2020-03-25 16:07:20

Project Information:		Pump Information:	
Operator Name	Shawn Lin	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	646777		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-109	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	31.36 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	4.75 ft	Total Volume Pumped	30 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:45:35	6007.02	19.18	6.57	295.03	7.03	4.79	1.63	-44.62
Last 5	15:50:35	6307.02	19.28	6.57	345.53	5.21	4.79	0.25	-45.39
Last 5	15:55:36	6608.02	18.64	6.57	354.14	5.03	4.79	0.15	-46.61
Last 5	16:00:36	6908.02	18.75	6.58	355.32	4.39	4.79	0.14	-47.83
Last 5	16:05:36	7208.02	18.16	6.59	353.51	4.27	4.79	0.11	-47.89
Variance 0			-0.64	0.00	8.61			-0.10	-1.23
Variance 1			0.10	0.01	1.18			-0.01	-1.22
Variance 2			-0.58	0.01	-1.81			-0.03	-0.07

Notes

Battery died during purge.

Product Name: Low-Flow System

Date: 2020-03-25 16:56:13

Project Information:		Pump Information:	
Operator Name	Shawn Lin	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	646777		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-109	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	31.36 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	4.75 ft	Total Volume Pumped	30 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:43:36	300.07	17.67	6.51	354.23	3.63	4.68	0.16	-31.51
Last 5	16:48:36	600.02	17.45	6.54	355.06	3.02	4.68	0.10	-38.90
Last 5	16:53:36	900.02	17.37	6.56	356.22	2.69	4.68	0.11	-43.09
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.22	0.03	0.83			-0.06	-7.39
Variance 2			-0.08	0.02	1.16			0.01	-4.20

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWC-109

Grab

Product Name: Low-Flow System

Date: 2020-03-24 16:37:35

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	35 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	364452		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	35 ft

Well Information:		Pumping Information:	
Well ID	HGWC-117	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.6412198 L
Well Total Depth	40.26 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	14.04 ft	Total Volume Pumped	38 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:14:12	9901.00	18.43	5.99	478.29	10.06	14.00	0.12	31.83
Last 5	16:19:12	10201.00	18.39	5.99	477.44	9.66	14.00	0.13	31.67
Last 5	16:24:12	10501.00	18.33	5.99	477.58	9.92	14.00	0.13	31.51
Last 5	16:29:12	10801.00	18.43	5.99	476.36	8.49	14.00	0.12	31.85
Last 5	16:34:12	11101.00	18.35	5.99	478.91	8.52	14.00	0.13	31.33
Variance 0			-0.06	-0.00	0.14			0.00	-0.16
Variance 1			0.10	-0.00	-1.21			-0.01	0.34
Variance 2			-0.09	0.00	2.54			0.00	-0.52

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWC-117

Grab

Product Name: Low-Flow System

Date: 2020-03-25 09:33:16

Project Information:		Pump Information:	
Operator Name	Shawn Lin	Pump Model/Type	QED MP50
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	646777		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	ft

Well Information:		Pumping Information:	
Well ID	HGWC-118	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.485 L
Well Total Depth	40.90 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	8.91 ft	Total Volume Pumped	17 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:11:52	900.01	18.10	6.87	554.84	13.51	9.00	0.12	56.08
Last 5	09:16:52	1200.00	18.17	6.88	554.25	9.34	9.00	0.12	53.23
Last 5	09:21:52	1500.00	18.21	6.88	555.61	6.45	9.00	0.11	51.51
Last 5	09:26:52	1799.99	18.22	6.89	555.59	5.49	9.00	0.11	49.50
Last 5	09:31:52	2099.98	18.26	6.89	555.85	4.42	9.00	0.11	48.45
Variance 0			0.04	0.00	1.35			-0.01	-1.72
Variance 1			0.01	0.01	-0.02			-0.00	-2.01
Variance 2			0.03	-0.00	0.26			-0.00	-1.05

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B/7470A).

Grab Samples

HGWC-118

Grab

Product Name: Low-Flow System

Date: 2020-06-18 14:06:59

Project Information:		Pump Information:	
Operator Name	Chad Russo	Pump Model/Type	Alexis
Company Name	Geosyntec Consultants	Tubing Type	polyethylene
Project Name	GP-Plant Hammond	Tubing Diameter	0.17 in
Site Name	Plant Hammond	Tubing Length	33 ft
Latitude	0° 0' 0"		
Longitude	0° 0' 0"		
Sonde SN	643819		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	33 ft

Well Information:		Pumping Information:	
Well ID	HGWC-102	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.237293 L
Well Total Depth	ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	3.6 in
Depth to Water	12.87 ft	Total Volume Pumped	7 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	13:44:59	600.02	20.08	5.68	624.12	16.30	13.11	0.52	85.68
Last 5	13:49:59	900.02	20.35	5.68	622.45	13.00	13.11	0.52	84.05
Last 5	13:54:59	1200.02	20.39	5.67	634.42	9.19	13.11	0.51	83.07
Last 5	13:59:59	1500.02	20.12	5.67	623.08	9.77	13.11	0.51	81.76
Last 5	14:04:59	1800.02	19.95	5.67	622.53	4.36	13.11	0.49	81.35
Variance 0			0.05	-0.00	11.97			-0.01	-0.98
Variance 1			-0.28	-0.00	-11.34			0.00	-1.31
Variance 2			-0.17	-0.00	-0.55			-0.02	-0.41

Notes

Five bottles: Two 1-L plastic bottles with HNO3 for radium (EPA 9315/9320); one 500-mL plastic bottle for TDS (EPA 2540C); one 250-mL plastic bottle for Cl, F, SO4 (EPA 300.0); and one 250-mL plastic bottle with HNO3 for App. III and IV metals (EPA 6020B).

Grab Samples

HGWC-102

Grab

APPENDIX D

Statistical Analyses

Geosyntec consultants

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April 10, 2020

Ms. Lauren Petty, PG
SCS Groundwater Project Manager
Southern Company Services
Environmental Solutions
3535 Colonnade Parkway
Birmingham, Alabama 35243

Subject: 2019 Semi-Annual Groundwater Monitoring & Corrective Action Statistical Summary Letter

Dear Ms. Petty:

This 2019 Semi-Annual Groundwater Monitoring & Corrective Action Statistical Summary Letter provides the statistical analysis of the October 2019 Assessment Monitoring Event for Georgia Power Company's (Georgia Power) Plant Hammond Ash Pond 4 (AP-4). The analysis complies with the Georgia Environmental Protection Division (GA EPD) Rules for Solid Waste Management Chapter 391-3-4-.10 and follows the 2009 USEPA document *Statistical Analysis of Groundwater Data at RCRA Facilities Unified Guidance* (Unified Guidance).

A network of eleven compliance monitoring wells was installed to monitor groundwater conditions near AP-4. Three wells (HGWA-111, HGWA-112, and HGWA-113) are designated for monitoring background groundwater conditions and eight wells (HGWC-101, HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117 and HGWC-118) are designated for monitoring downgradient groundwater conditions. After the initial Appendix IV assessment monitoring event, Georgia Power reclassified groundwater level monitoring piezometer GWC-2 as compliance monitoring well HGWC-102. The reclassification was done in support of a recommendation issued by GA EPD. Background sampling in HGWC-102 began in October 2019. HGWC-102 will be statically analyzed once a sufficient number of background samples have been collected as recommended by the Unified Guidance.

1. First Semi-Annual Assessment Event Statistical Method

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 Unified Guidance.

Time series plots generated by Sanitas are used to identify suspected outliers, or extreme values, of Appendix III and Appendix IV constituents that would result in compliance limits that are not representative of the current background data population. Suspected outliers identified in all wells are formally tested using Tukey's box plot method and, when confirmed, flagged in the computer database with "o" and deselected prior to construction of statistical limits. Background well data were updated following the Unified Guidance recommendation, evaluating recent background data using Tukey's box plot method for outliers and Sen's Slope/Mann-Kendall methods for potential trends.

Following the Unified Guidance recommendation, HGWC-102 should be sampled a minimum of four times before performing a statistical analysis of its data.

1.1. Appendix III Statistical Methods

Based on guidance from GA EPD, statistical tests used to evaluate the groundwater monitoring data consist of interwell prediction limits combined with a 1-of-2 verification resample plan for each of the Appendix III parameters. Interwell prediction limits (PLs) are constructed pooling upgradient well data from wells HGWA-111, HGWA-112, and HGWA-113 to establish a background limit for an individual constituent. The most recent sample from each downgradient well is compared to the background limit to determine whether there are statistically significant increases (SSIs). An "initial exceedance" occurs when an Appendix III constituent reported in the groundwater of a downgradient compliance monitoring well exceeds the constituent's associated PL. The 1-of-2 resample plan allows for collection of an independent resample. A confirmed exceedance is noted only when the resample confirms the initial exceedance by also exceeding the statistical limit. If the resample falls within its respective prediction limit, no exceedance is declared.

1.2. Appendix IV Statistical Methods

Constituents detected during the initial annual Appendix IV sampling event (August 2019) were sampled during the October 2019 assessment monitoring event. To statistically compare groundwater data to groundwater protection standards (GWPS), confidence intervals are constructed for each of the detected Appendix IV constituents in each downgradient compliance monitoring well. Those confidence intervals are compared to the state GWPS. Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its GWPS. If a confidence interval exceeds a GWPS, a statistically significant level (SSL) exceedance is identified.

Background limits were used when determining the GWPS under GA EPD CCR Rule 391-3-4-.10(6)(a). Parametric tolerance limits were used when data followed a normal or transformed-

normal distribution to calculate background limits from pooled upgradient well data for Appendix IV parameters with a target of 95% confidence and 95% coverage. Nonparametric tolerance limits are utilized when the percentage of nondetects is greater than 50% or when data do not follow a normal or transformed-normal distribution. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples.

As described in the GA EPD CCR Rule, the GWPS is:

(1) The federally established MCL.
(2) Where an MCL has not been established, the background concentration.
(3) Background levels for constituents where the background level is higher than the MCL.

Following the above state rule requirements, GWPS have been established for statistical comparison of Appendix IV constituents and are presented in the attached Summary of Background Concentrations and Groundwater Protection Standards table.

2. First Semi-Annual Assessment Event Statistical Results

2.1. Appendix III Statistical Results

Review of the Sanitas results indicates that the following verified SSIs were noted following the October 2019 sampling event:

- Boron: HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118;
- Calcium: HGWC-103, HGWC-105, HGWC-117, HGWC-118;
- Chloride: HGWC-103, HGWC-117;
- pH: HGWC-101;
- Sulfate: HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118;
- TDS: HGWC-103, HGWC-105, HGWC-107, HGWC-117, HGWC-118.

2.2. Appendix IV Statistical Results

Review of the Sanitas results indicates that no SSLs were identified using the GWPS established according to 391-3-4-.10(6)(a).

Should you have any questions regarding these responses, please do not hesitate to contact either of the undersigned at (678) 202-9500.

Sincerely,

Whitney Law, P.E.
Senior Engineer

Noelia Muskus
Senior Staff Professional

Attachment:
1. Summary of Background Concentrations and Groundwater Protection Standards
2. Statistical Analyses

ATTACHMENT 1

Summary of Background Concentrations and Groundwater Protection Standards

Summary of Background Concentrations and Groundwater Protection Standards

October 2019 Assessment Monitoring

Plant Hammond AP-4, Floyd County, Georgia

Analyte	MCL	RSL[(1)]	Units	Background[(2)]	State GWPS[(3)]
Antimony	0.006	--	mg/L	0.003	0.006
Arsenic	0.01	--	mg/L	0.005	0.01
Barium	2	--	mg/L	0.033	2
Beryllium	0.004	--	mg/L	0.003	0.004
Cadmium	0.005	--	mg/L	0.0025	0.005
Chromium	0.1	--	mg/L	0.0086	0.1
Cobalt	N/A	0.006	mg/L	0.005	0.005
Fluoride	4	--	mg/L	0.25	4
Lead	N/A	0.015	mg/L	0.005	0.005
Lithium	N/A	0.04	mg/L	0.03	0.03
Mercury	0.002	--	mg/L	0.0005	0.002
Molybdenum	N/A	0.1	mg/L	0.01	0.01
Selenium	0.05	--	mg/L	0.01	0.05
Thallium	0.002	--	mg/L	0.001	0.002
Combined Radium-226/228	5	--	pCi/L	1.37	5

Notes:

"--" = not applicable

"MCL" - Maximum Contaminant Level

"mg/L" = milligrams per liter

"N/A" - Not Available

"pCi/L" = picocuries per liter

1. Regional Screening Level (RSL) per CCR Rule Amendment, July 30, 2018. The value listed for lead is the established United States Environmental Protection Agency (USEPA) Action Level for drinking water.
2. The background limits were used when determining the groundwater protection standard (GWPS) under Georgia Environmental Protection Division (EPD) Rule 391-3-4-.10(6)(a).
3. Under the existing Georgia EPD rules, the GWPS is: (i) the MCL, (ii) where the MCL is not established, the background concentration, or (iii) background concentrations for constituents were the background level is higher than the MCL.

ATTACHMENT 2

Statistical Analyses

OUTLIER TEST

Outlier Summary - AP-4

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:43 PM

	HGWA-112 Total Dissolved Solids (mg/L)
1/25/2017	152 (o)

Note:
1. Outlier was flagged during the 2019 Annual CCR Report statistical analysis.

Outlier Analysis - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Barium (mg/L) (1)	**HGWC-105**	**Yes**	**0.0745**	**10/25/2016**	**NP**	**NaN**	**10**	**0.0673**	**0.002725**	**ln(x)**	**ShapiroWilk**
pH (s.u.) (1)	**HGWC-103**	**Yes**	**5.98**	**5/23/2017**	**NP**	**NaN**	**12**	**5.563**	**0.1406**	**ln(x)**	**ShapiroWilk**
Selenium (mg/L) (2)	**HGWA-113 (bg)**	**Yes**	**0.01**	**11/14/2017**	**NP**	**NaN**	**9**	**0.003322**	**0.002537**	**ln(x)**	**ShapiroWilk**
Sulfate (mg/L) (3)	**HGWC-107**	**Yes**	**139,123**	**4/3/2019,10/22/2019**	**NP**	**NaN**	**11**	**130.2**	**3.92**	**ln(x)**	**ShapiroWilk**

Notes:
1. Value is similar to historical values within the well.
2. Non-Detect value.
3. Values are similar to values in neighboring wells.
4. No outliers were flagged in this round of analysis.

Outlier Analysis - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Antimony (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	9	0.002911	0.0002667	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	9	0.002789	0.0006333	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Antimony (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	9	0.003	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.00222	0.001109	ln(x)	ShapiroWilk
Arsenic (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Arsenic (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Barium (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.02693	0.003902	x^2	ShapiroWilk
Barium (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	0.02723	0.001126	normal	ShapiroWilk
Barium (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.02761	0.001753	ln(x)	ShapiroWilk
Barium (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.04493	0.00452	ln(x)	ShapiroWilk
Barium (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.03816	0.005238	x^4	ShapiroWilk
Barium (mg/L)	**HGWC-105**	**Yes**	**0.0745**	**10/25/2016**	**NP**	**NaN**	**10**	**0.0673**	**0.002725**	**ln(x)**	**ShapiroWilk**
Barium (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	10	0.03875	0.0009407	ln(x)	ShapiroWilk
Barium (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.08665	0.004622	normal	ShapiroWilk
Barium (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.04423	0.007545	x^4	ShapiroWilk
Barium (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	10	0.05986	0.005983	ln(x)	ShapiroWilk
Beryllium (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	10	0.00289	0.0003479	unknown	ShapiroWilk
Beryllium (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.001827	0.001514	ln(x)	ShapiroWilk
Beryllium (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Beryllium (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.002415	0.001234	ln(x)	ShapiroWilk
Beryllium (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	10	0.003	0	unknown	ShapiroWilk
Boron (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.01144	0.005325	ln(x)	ShapiroWilk
Boron (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	0.01477	0.009875	ln(x)	ShapiroWilk
Boron (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.01365	0.01375	ln(x)	ShapiroWilk
Boron (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.08548	0.01379	x^2	ShapiroWilk
Boron (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	2.294	0.1969	x^6	ShapiroWilk
Boron (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	10	1.295	0.09478	x^(1/3)	ShapiroWilk
Boron (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	11	0.7996	0.0802	x^3	ShapiroWilk
Boron (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	11	0.396	0.04077	x^(1/3)	ShapiroWilk
Boron (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.7912	0.2195	x^4	ShapiroWilk
Boron (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	10	0.6529	0.08149	x^2	ShapiroWilk

Outlier Analysis - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Cadmium (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Cadmium (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Cadmium (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Cadmium (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.0002615	0.0002661	ln(x)	ShapiroWilk
Cadmium (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.000722	0.0001036	normal	ShapiroWilk
Cadmium (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Cadmium (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	10	0.00082	0.001159	ln(x)	ShapiroWilk
Cadmium (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Cadmium (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.00063	0.000148	normal	ShapiroWilk
Cadmium (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	10	0.0025	0	unknown	ShapiroWilk
Calcium (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	37.78	14.23	x^2	ShapiroWilk
Calcium (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	6.492	0.4155	ln(x)	ShapiroWilk
Calcium (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	6.943	0.4325	x^3	ShapiroWilk
Calcium (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	19.36	1.738	x^(1/3)	ShapiroWilk
Calcium (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	83.76	13	ln(x)	ShapiroWilk
Calcium (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	11	79.47	6.457	sqrt(x)	ShapiroWilk
Calcium (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	11	52.27	4.193	x^6	ShapiroWilk
Calcium (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	38.42	3.54	ln(x)	ShapiroWilk
Calcium (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	11	57.92	16.47	x^4	ShapiroWilk
Calcium (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	11	80.57	3.543	ln(x)	ShapiroWilk
Chloride (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	3.02	0.5884	ln(x)	ShapiroWilk
Chloride (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	5.35	0.2273	normal	ShapiroWilk
Chloride (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	1.81	0.1524	x^3	ShapiroWilk
Chloride (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	5.62	0.2251	x^6	ShapiroWilk
Chloride (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	5.855	0.552	x^(1/3)	ShapiroWilk
Chloride (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	10	3.34	0.43	sqrt(x)	ShapiroWilk
Chloride (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	11	3.155	0.2911	ln(x)	ShapiroWilk
Chloride (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	5.1	0.3559	x^4	ShapiroWilk
Chloride (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	6.83	2.67	sqrt(x)	ShapiroWilk
Chloride (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	10	4.39	0.1912	ln(x)	ShapiroWilk
Chromium (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.006511	0.004552	ln(x)	ShapiroWilk
Chromium (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	0.00382	0.0001135	x^6	ShapiroWilk
Chromium (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.00337	0.003526	ln(x)	ShapiroWilk
Chromium (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.008124	0.003955	ln(x)	ShapiroWilk
Chromium (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.008213	0.003773	ln(x)	ShapiroWilk
Chromium (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	10	0.00904	0.003036	unknown	ShapiroWilk
Chromium (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	10	0.01	0	unknown	ShapiroWilk
Chromium (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	10	0.009062	0.002966	unknown	ShapiroWilk
Chromium (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	10	0.01	0	unknown	ShapiroWilk
Chromium (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	10	0.009066	0.002954	unknown	ShapiroWilk
Cobalt (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Cobalt (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Cobalt (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.00363	0.002207	ln(x)	ShapiroWilk
Cobalt (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.00269	0.001061	sqrt(x)	ShapiroWilk
Cobalt (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.00205	0.0004882	ln(x)	ShapiroWilk
Cobalt (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	10	0.001604	0.001821	ln(x)	ShapiroWilk
Cobalt (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Cobalt (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.001741	0.0005682	normal	ShapiroWilk
Cobalt (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.00602	0.002671	ln(x)	ShapiroWilk
Cobalt (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	10	0.005211	0.005049	ln(x)	ShapiroWilk

Outlier Analysis - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Fluoride (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	11	0.1093	0.1008	ln(x)	ShapiroWilk
Fluoride (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	11	0.1795	0.139	ln(x)	ShapiroWilk
Fluoride (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	11	0.1607	0.03663	x^5	ShapiroWilk
Fluoride (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	11	0.2527	0.1053	unknown	ShapiroWilk
Fluoride (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	0.2256	0.1071	sqrt(x)	ShapiroWilk
Fluoride (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	11	0.1613	0.1156	ln(x)	ShapiroWilk
Fluoride (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	11	0.183	0.1203	sqrt(x)	ShapiroWilk
Fluoride (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	11	0.1385	0.09066	ln(x)	ShapiroWilk
Fluoride (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	11	0.1838	0.1161	sqrt(x)	ShapiroWilk
Fluoride (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	12	0.2264	0.2288	ln(x)	ShapiroWilk
Lead (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.004026	0.002053	ln(x)	ShapiroWilk
Lead (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.005	0	unknown	ShapiroWilk
Lead (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.003524	0.002376	ln(x)	ShapiroWilk
Lead (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	10	0.00459	0.001297	unknown	ShapiroWilk
Lead (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	10	0.004543	0.001445	unknown	ShapiroWilk
Lead (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	10	0.004507	0.00156	unknown	ShapiroWilk
Lead (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	10	0.004508	0.001556	unknown	ShapiroWilk
Lead (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.004011	0.002085	ln(x)	ShapiroWilk
Lead (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	10	0.004516	0.001531	unknown	ShapiroWilk
Lead (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	10	0.004525	0.001502	unknown	ShapiroWilk
Lithium (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.01316	0.0145	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	10	0.03	0	unknown	ShapiroWilk
Lithium (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.02553	0.02579	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	10	0.03	0	unknown	ShapiroWilk
Lithium (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.01611	0.02339	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	10	0.00403	0.0002751	x^6	ShapiroWilk
Lithium (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	10	0.03529	0.02369	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.02556	0.02576	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.01644	0.02317	ln(x)	ShapiroWilk
Lithium (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	10	0.03072	0.02489	ln(x)	ShapiroWilk
Mercury (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	9	0.000347	0.0002295	ln(x)	ShapiroWilk
Mercury (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	9	0.0003467	0.00023	ln(x)	ShapiroWilk
Mercury (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	9	0.000347	0.0002295	ln(x)	ShapiroWilk
Mercury (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	9	0.0004548	0.0001357	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	9	0.0004533	0.00014	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	9	0.0005	0	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	9	0.0005	0	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	9	0.0004533	0.00014	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	9	0.0004522	0.0001433	unknown	ShapiroWilk
Mercury (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	9	0.0004544	0.0001367	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Molybdenum (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk

Outlier Analysis - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
pH (s.u.)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	11	6.596	0.434	x^6	ShapiroWilk
pH (s.u.)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	11	5.647	0.09498	x^3	ShapiroWilk
pH (s.u.)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	11	5.986	0.08801	x^(1/3)	ShapiroWilk
pH (s.u.)	HGWC-101	No	n/a	n/a	NP	NaN	12	5.353	0.0611	ln(x)	ShapiroWilk
pH (s.u.)	**HGWC-103**	**Yes**	**5.98**	**5/23/2017**	**NP**	**NaN**	**12**	**5.563**	**0.1406**	**ln(x)**	**ShapiroWilk**
pH (s.u.)	HGWC-105	No	n/a	n/a	NP	NaN	11	6.355	0.1618	x^6	ShapiroWilk
pH (s.u.)	HGWC-107	No	n/a	n/a	NP	NaN	11	6.081	0.09607	ln(x)	ShapiroWilk
pH (s.u.)	HGWC-109	No	n/a	n/a	NP	NaN	11	6.57	0.1185	ln(x)	ShapiroWilk
pH (s.u.)	HGWC-117	No	n/a	n/a	NP	NaN	11	5.843	0.3872	x^6	ShapiroWilk
pH (s.u.)	HGWC-118	No	n/a	n/a	NP	NaN	11	6.985	0.0561	normal	ShapiroWilk
Selenium (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	**HGWA-113 (bg)**	**Yes**	**0.01**	**11/14/2017**	**NP**	**NaN**	**9**	**0.003322**	**0.002537**	**ln(x)**	**ShapiroWilk**
Selenium (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Selenium (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	9	0.01	0	unknown	ShapiroWilk
Sulfate (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	1.5	0.2309	x^4	ShapiroWilk
Sulfate (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	0.632	0.077	ln(x)	ShapiroWilk
Sulfate (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	10.31	2.33	x^2	ShapiroWilk
Sulfate (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	11	105.2	9.558	ln(x)	ShapiroWilk
Sulfate (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	314.5	39.44	sqrt(x)	ShapiroWilk
Sulfate (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	11	179.1	14.34	ln(x)	ShapiroWilk
Sulfate (mg/L)	**HGWC-107**	**Yes**	**139,123**	**4/3/2019,10/22/2019**	**NP**	**NaN**	**11**	**130.2**	**3.92**	**ln(x)**	**ShapiroWilk**
Sulfate (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	11	37.83	6.742	x^2	ShapiroWilk
Sulfate (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	11	133.8	21.25	x^2	ShapiroWilk
Sulfate (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	11	80.15	8.348	x^5	ShapiroWilk
Thallium (mg/L)	HGWA-111 (bg)	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWA-112 (bg)	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWA-113 (bg)	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-101	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-103	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-105	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-107	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-109	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-117	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Thallium (mg/L)	HGWC-118	n/a	n/a	n/a	NP	NaN	9	0.001	0	unknown	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	171.5	70.68	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	9	69.33	9.11	x^4	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	97.2	22.7	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	212	44.72	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-103	No	n/a	n/a	NP	NaN	11	532.3	48.53	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-105	No	n/a	n/a	NP	NaN	11	373.9	34.18	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-107	No	n/a	n/a	NP	NaN	11	273.6	37.42	ln(x)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	212.6	27.83	x^(1/3)	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-117	No	n/a	n/a	NP	NaN	11	320.9	56.37	x^2	ShapiroWilk
Total Dissolved Solids (mg/L)	HGWC-118	No	n/a	n/a	NP	NaN	11	330.8	45.27	x^6	ShapiroWilk

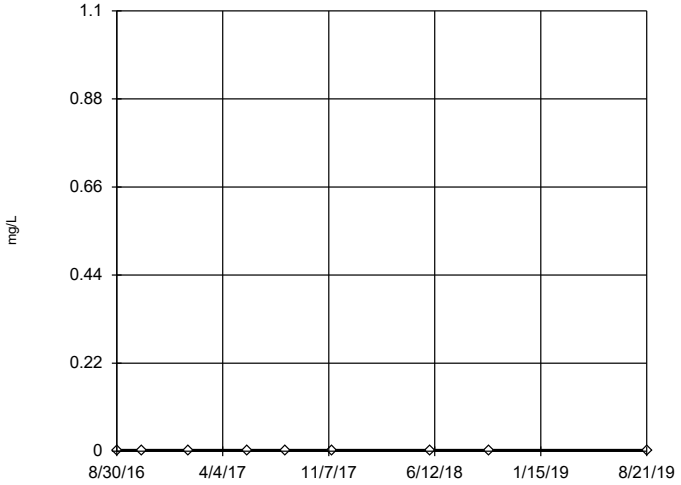
Outlier Analysis - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:38 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Total Radium (pCi/L)	HGWA-111 (bg)	No	n/a	n/a	NP	NaN	10	0.6959	0.2247	sqrt(x)	ShapiroWilk
Total Radium (pCi/L)	HGWA-112 (bg)	No	n/a	n/a	NP	NaN	10	0.7592	0.3645	x^(1/3)	ShapiroWilk
Total Radium (pCi/L)	HGWA-113 (bg)	No	n/a	n/a	NP	NaN	10	0.5928	0.3352	x^2	ShapiroWilk
Total Radium (pCi/L)	HGWC-101	No	n/a	n/a	NP	NaN	10	0.7946	0.3669	sqrt(x)	ShapiroWilk
Total Radium (pCi/L)	HGWC-103	No	n/a	n/a	NP	NaN	10	0.8129	0.3941	normal	ShapiroWilk
Total Radium (pCi/L)	HGWC-105	No	n/a	n/a	NP	NaN	10	0.7872	0.2802	sqrt(x)	ShapiroWilk
Total Radium (pCi/L)	HGWC-107	No	n/a	n/a	NP	NaN	10	0.9993	0.4305	normal	ShapiroWilk
Total Radium (pCi/L)	HGWC-109	No	n/a	n/a	NP	NaN	10	0.6804	0.2641	normal	ShapiroWilk
Total Radium (pCi/L)	HGWC-117	No	n/a	n/a	NP	NaN	10	0.771	0.3143	x^2	ShapiroWilk
Total Radium (pCi/L)	HGWC-118	No	n/a	n/a	NP	NaN	9	0.9217	0.5577	ln(x)	ShapiroWilk

Tukey's Outlier Screening

HGWA-111 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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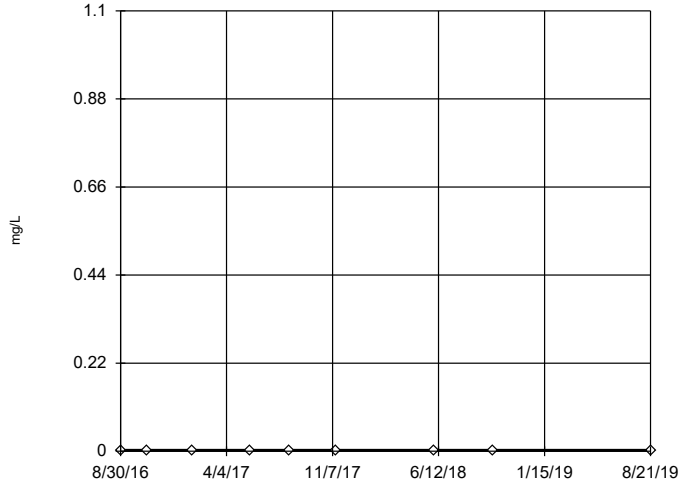
Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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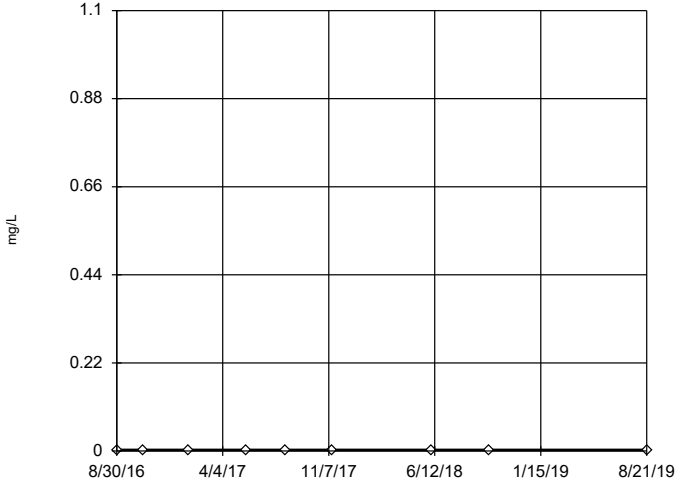
Tukey's Outlier Screening

HGWA-113 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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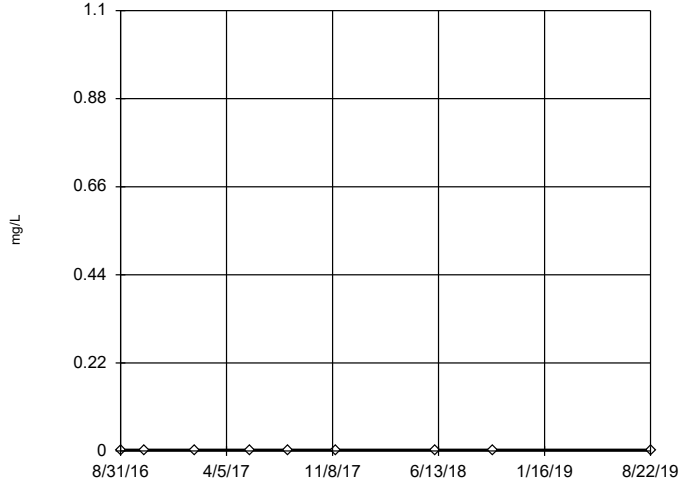
Tukey's Outlier Screening

HGWC-101



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

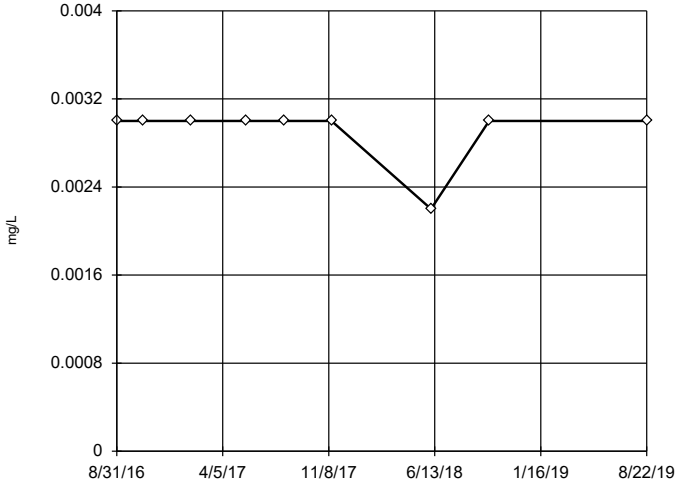
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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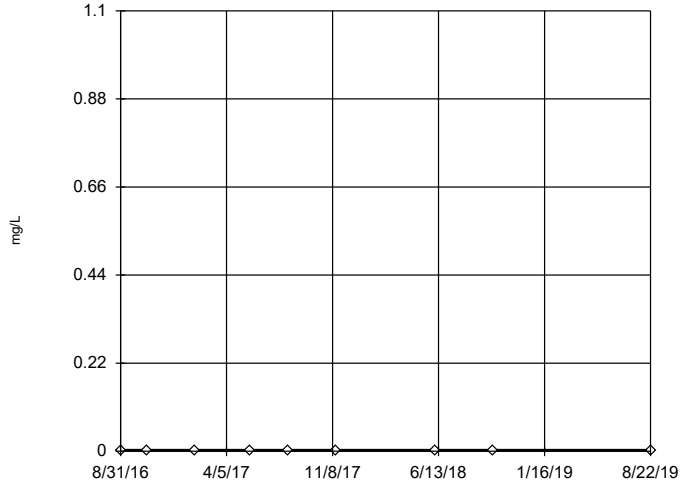
Tukey's Outlier Screening

HGWC-105



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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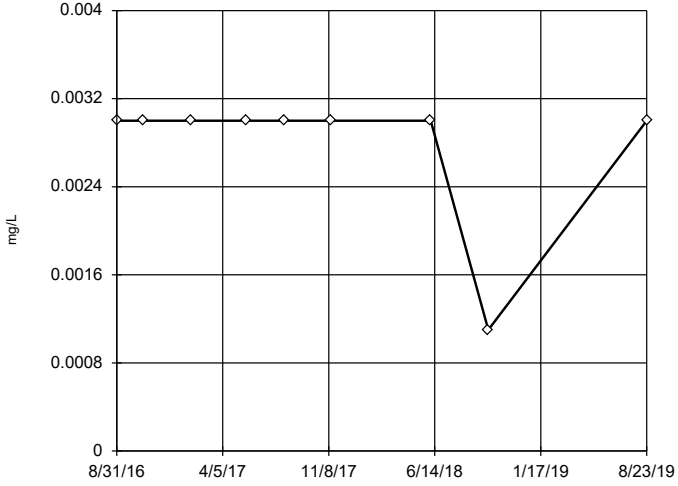
Tukey's Outlier Screening

HGWC-107



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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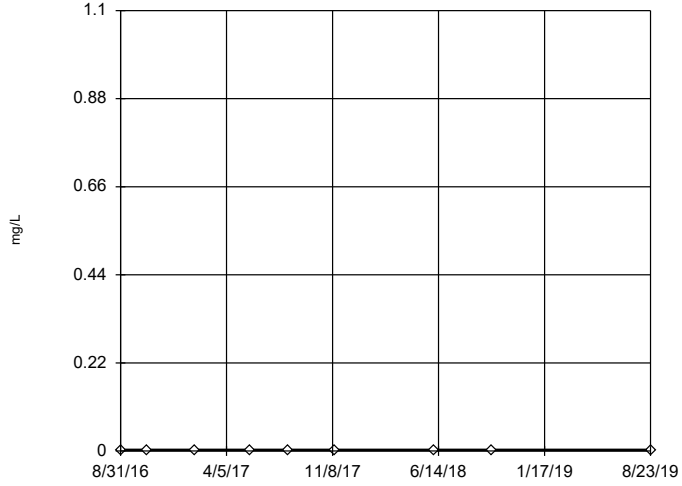
Tukey's Outlier Screening

HGWC-109



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

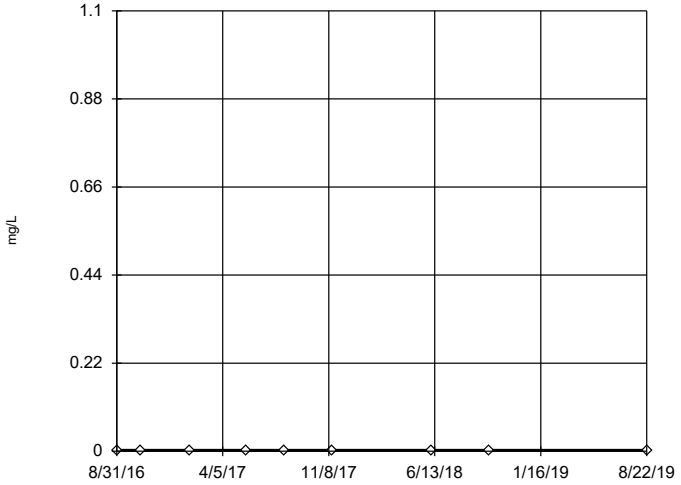
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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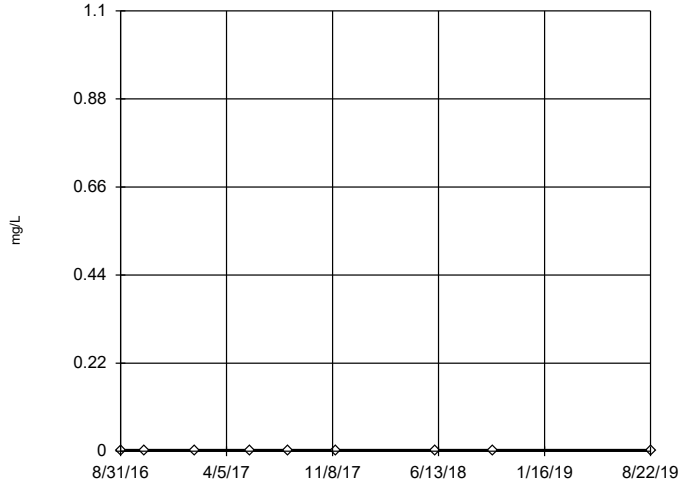
Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Antimony Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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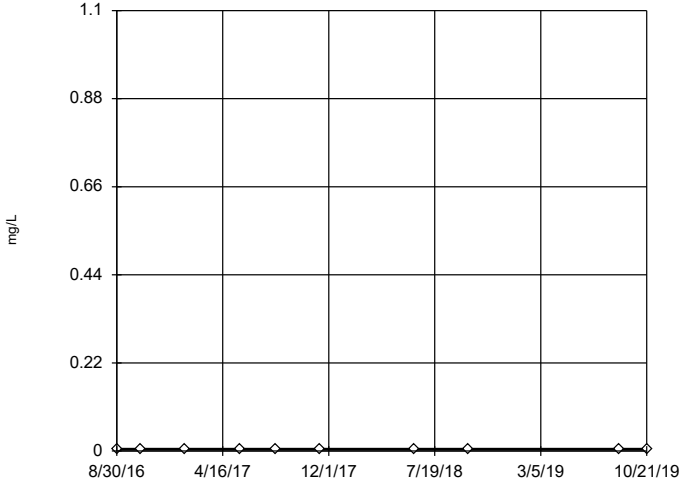
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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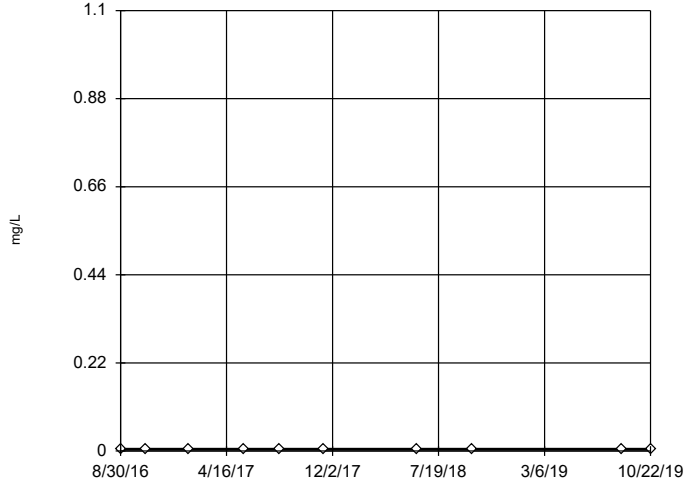
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

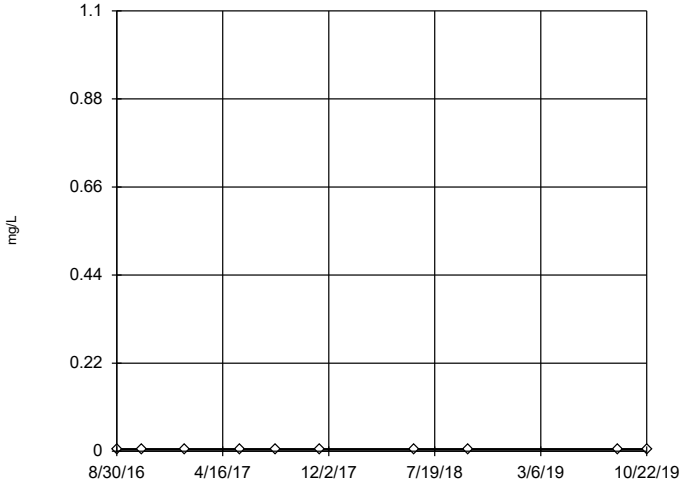
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

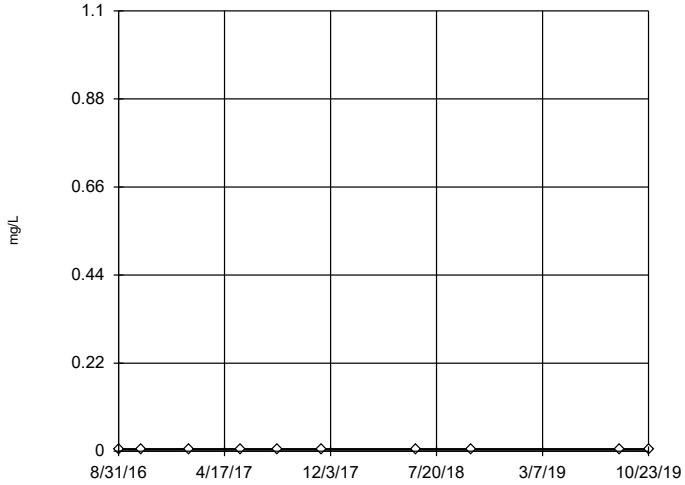
Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

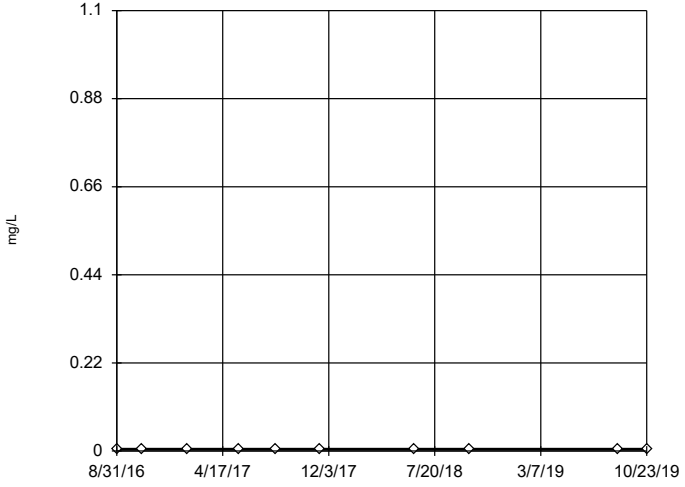
Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

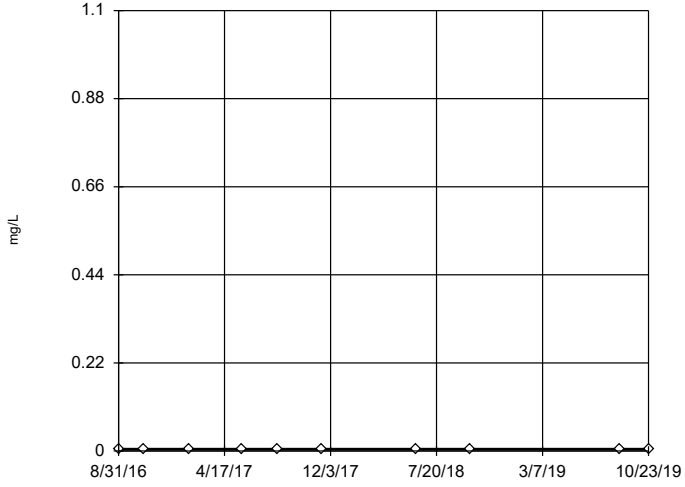
Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

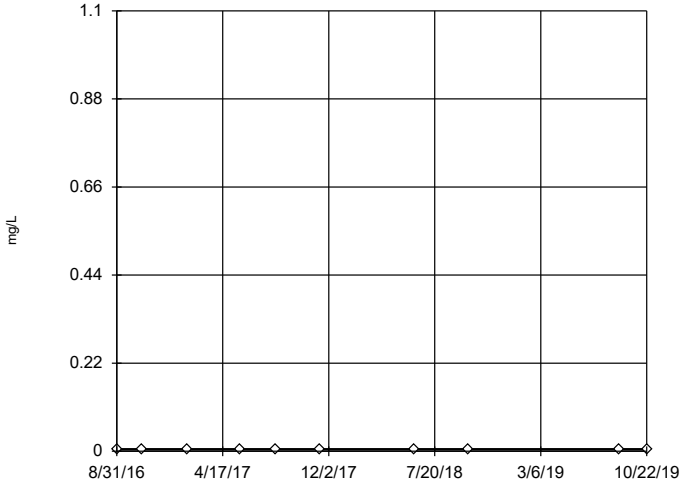
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

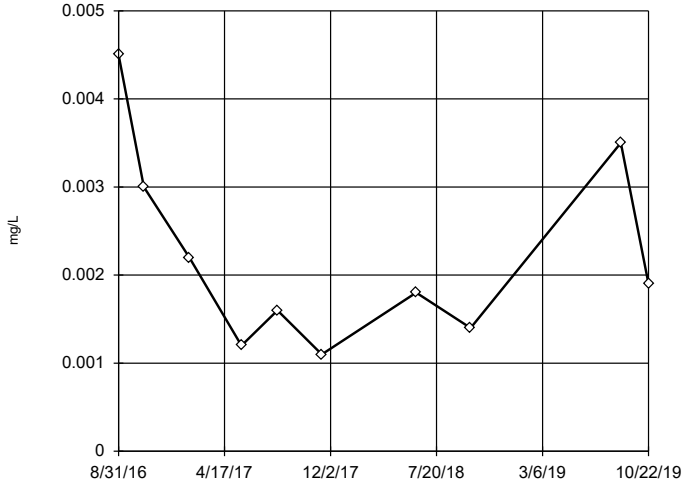
Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.05063, low cutoff = 0.00008295, based on IQR multiplier of 3.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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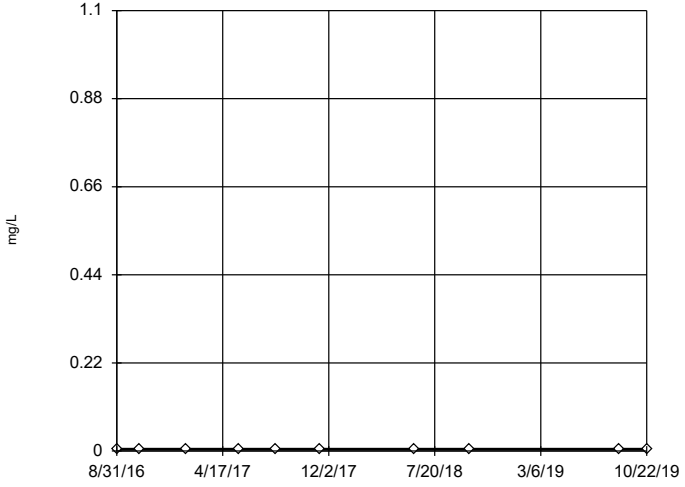
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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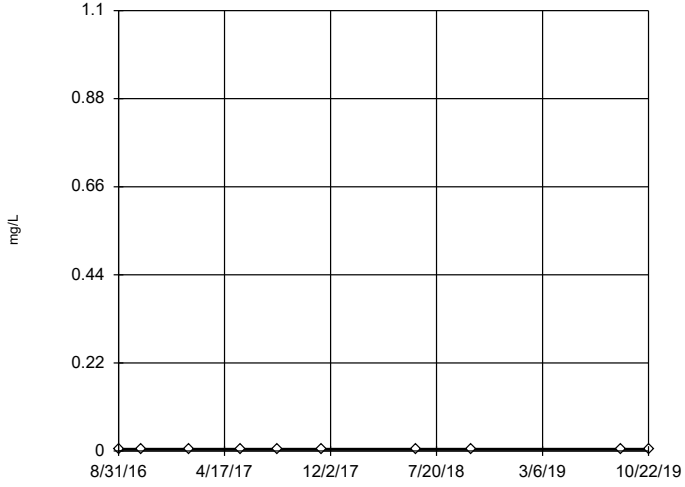
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

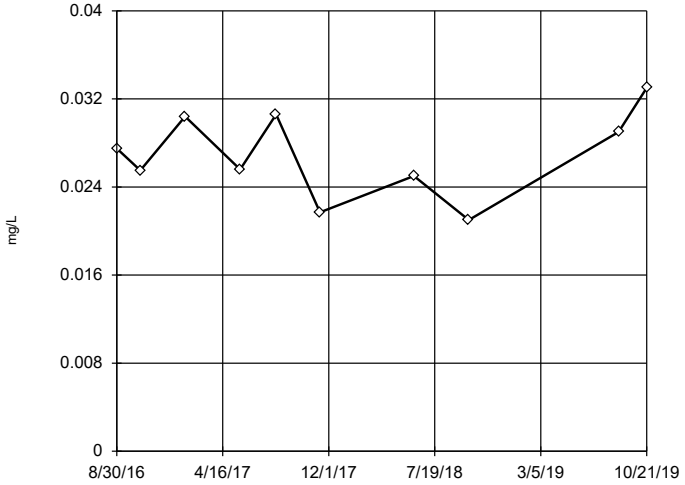
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Arsenic Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.04558, low cutoff = -0.02447, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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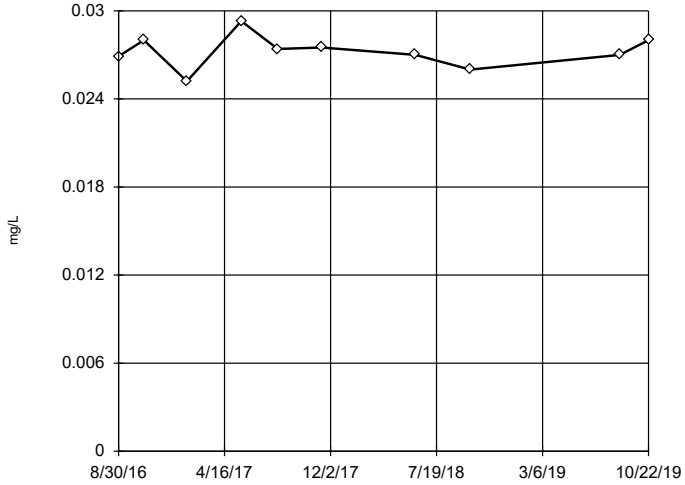
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.03265, low cutoff = 0.0218, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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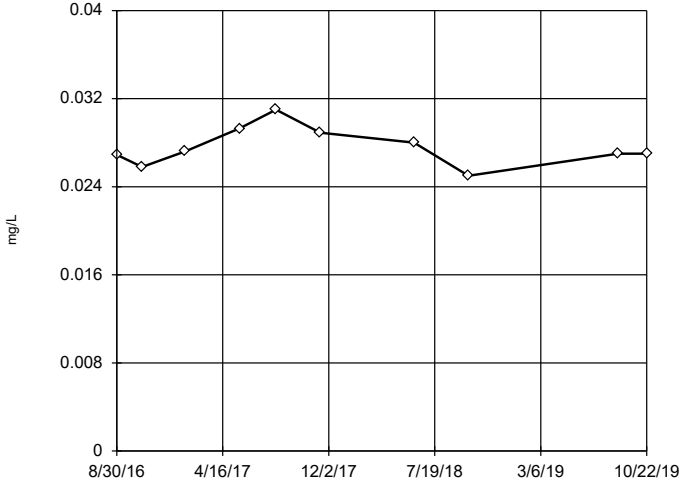
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.03922, low cutoff = 0.01955, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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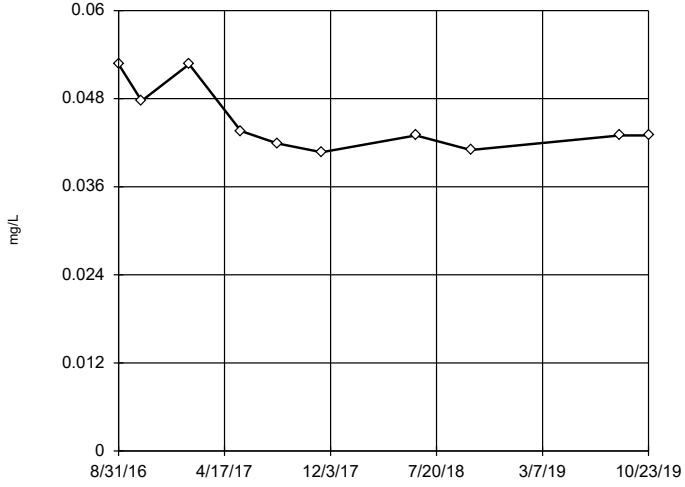
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

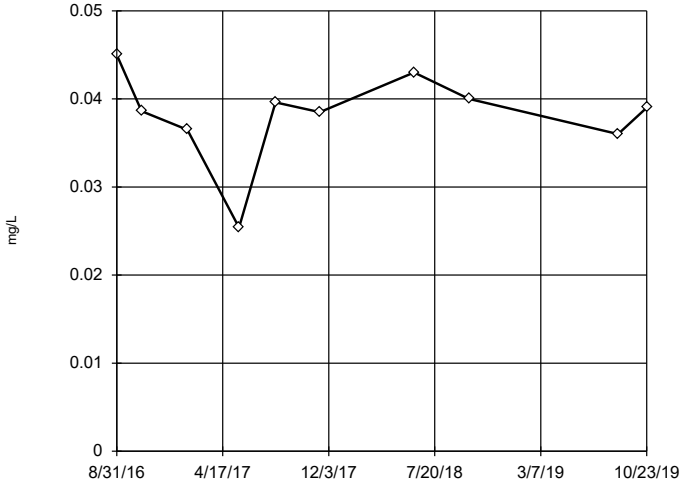
High cutoff = 0.08875, low cutoff = 0.02342, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.05102, low cutoff = -0.03788, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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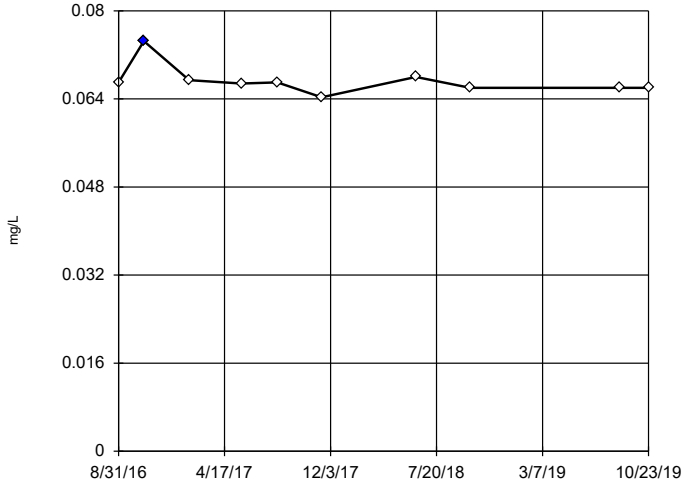
Tukey's Outlier Screening

HGWC-105



n = 10

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.07306, low cutoff = 0.06115, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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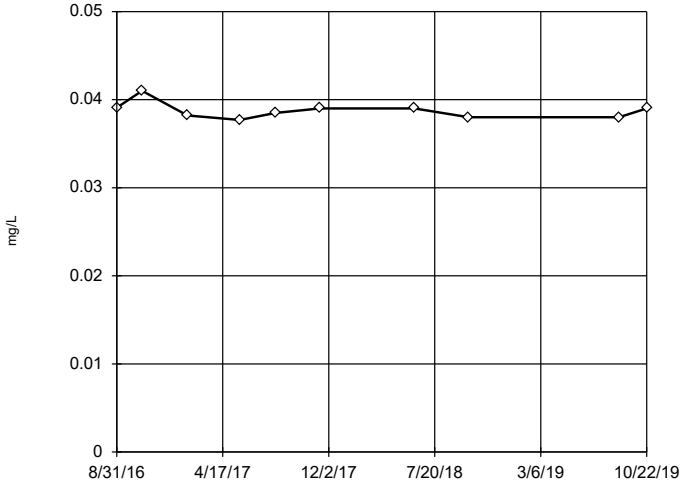
Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.04238, low cutoff = 0.03502, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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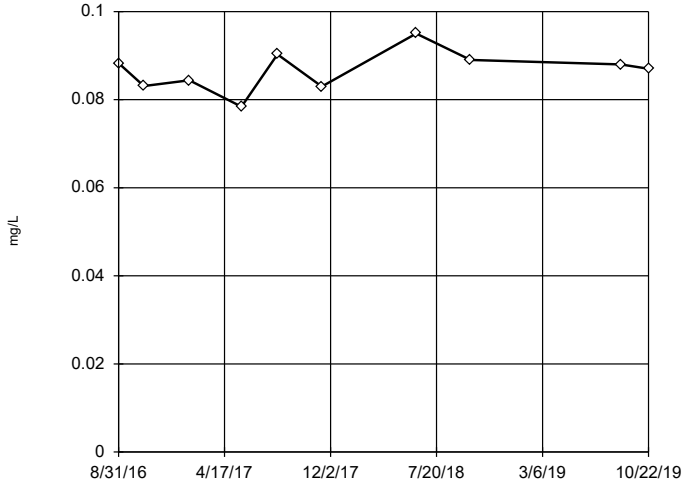
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

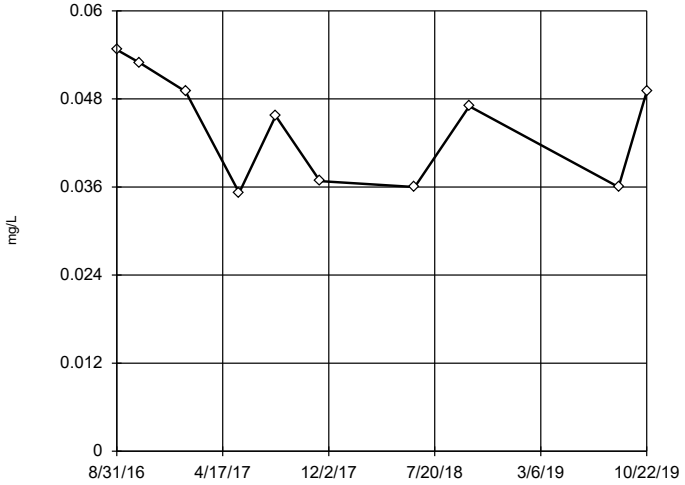
High cutoff = 0.1095, low cutoff = 0.06325, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.06861, low cutoff = -0.06081, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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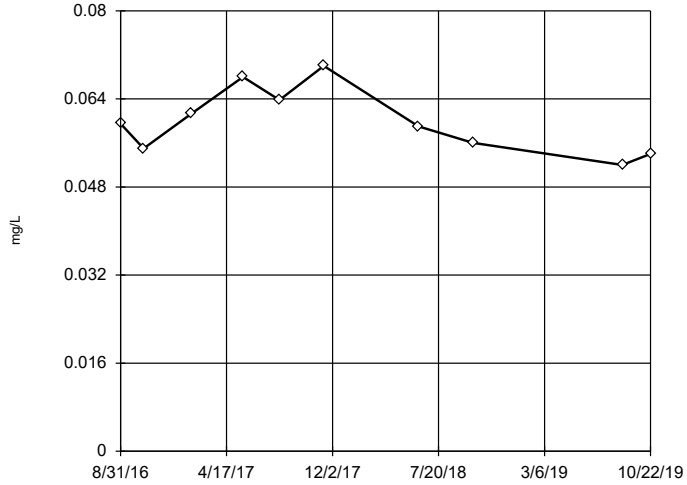
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.1163, low cutoff = 0.03087, based on IQR multiplier of 3.

Constituent: Barium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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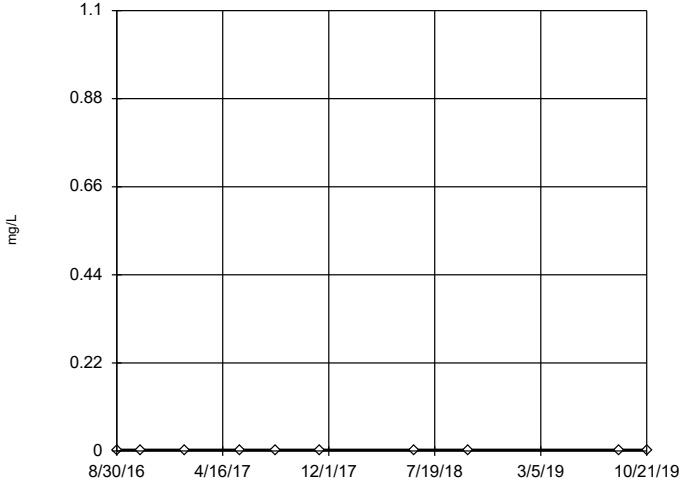
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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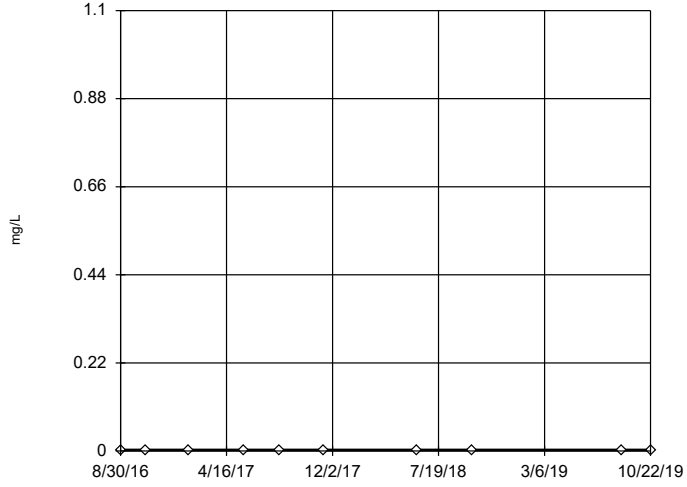
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

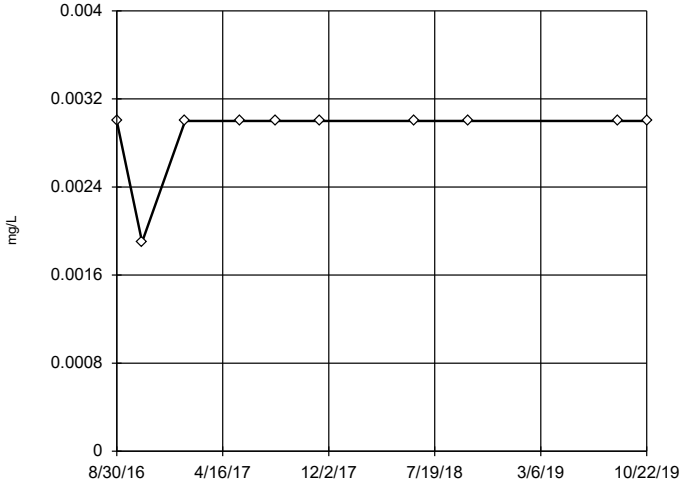
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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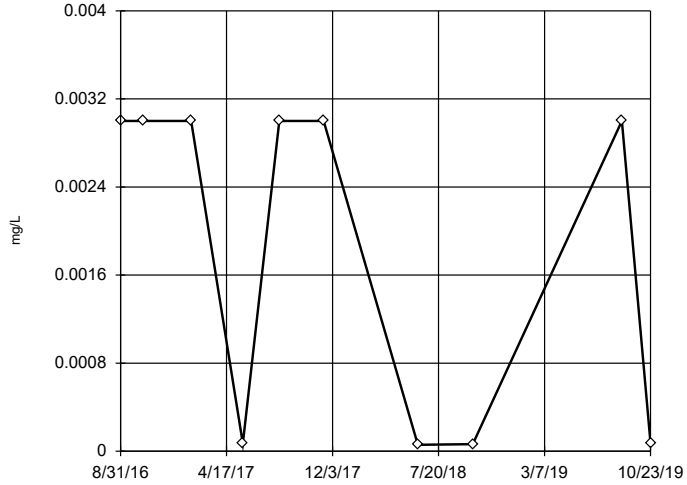
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 263.9, low cutoff = 7.7e-10, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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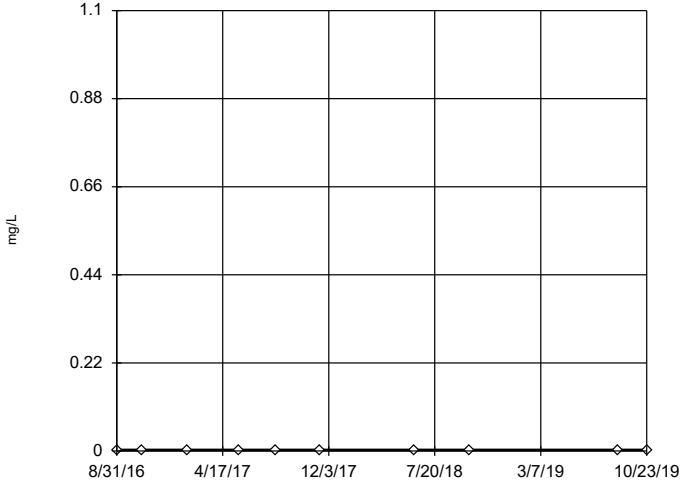
Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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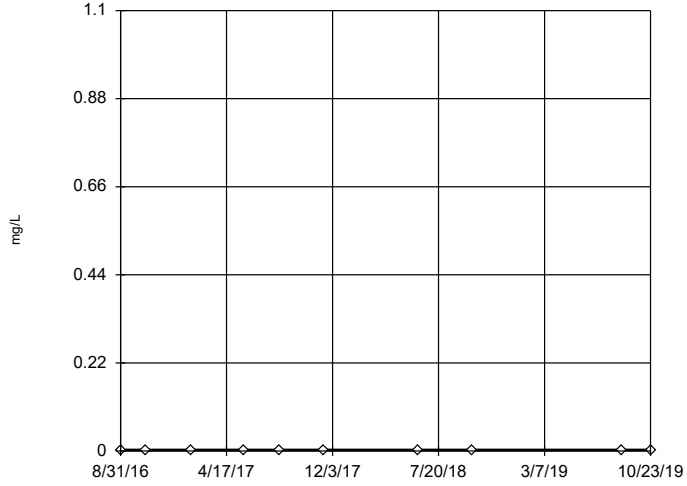
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

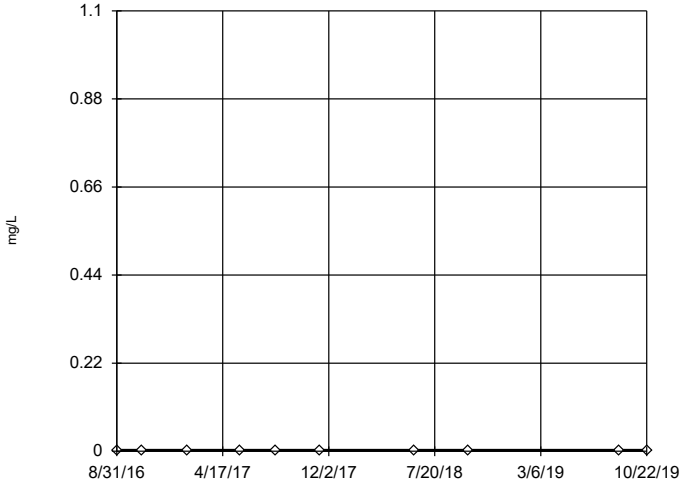
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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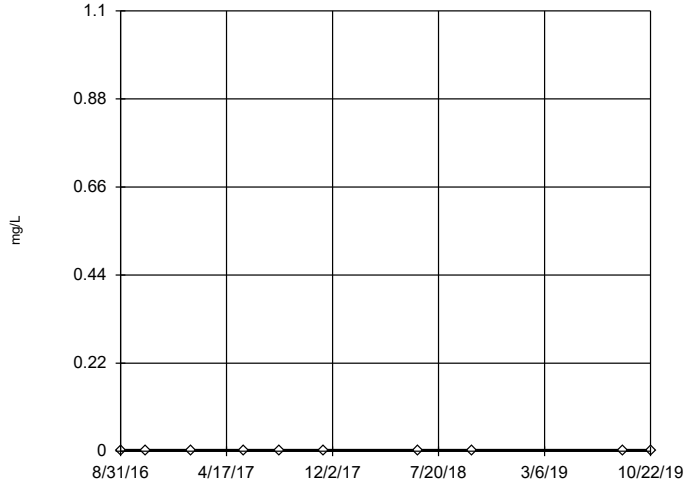
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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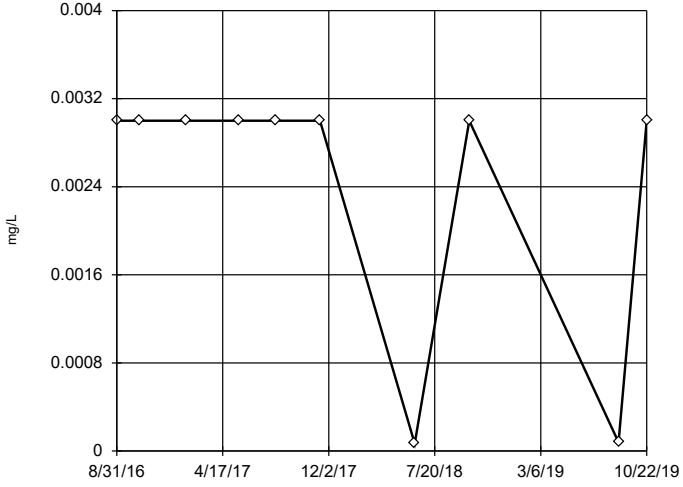
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.702, low cutoff = 0.00000208, based on IQR multiplier of 3.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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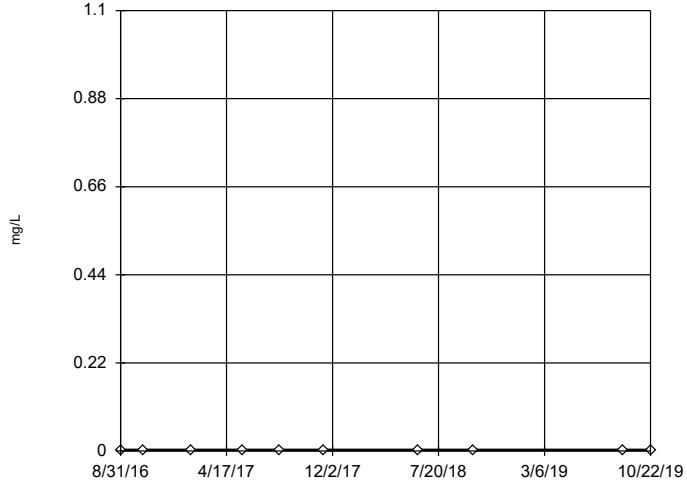
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

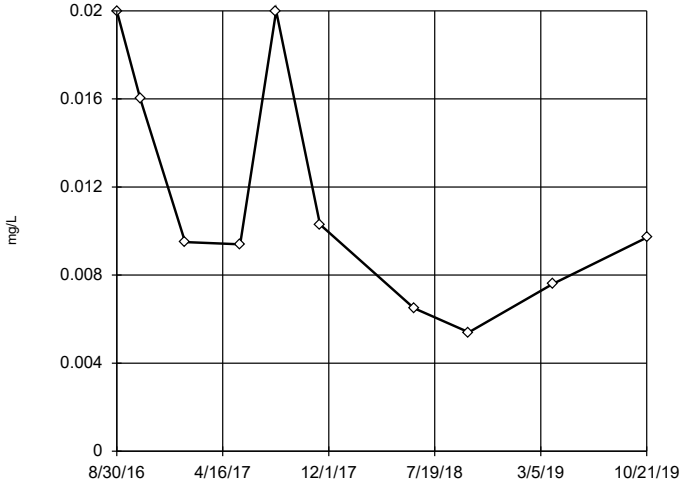
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Beryllium Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.2949, low cutoff = 0.0004263, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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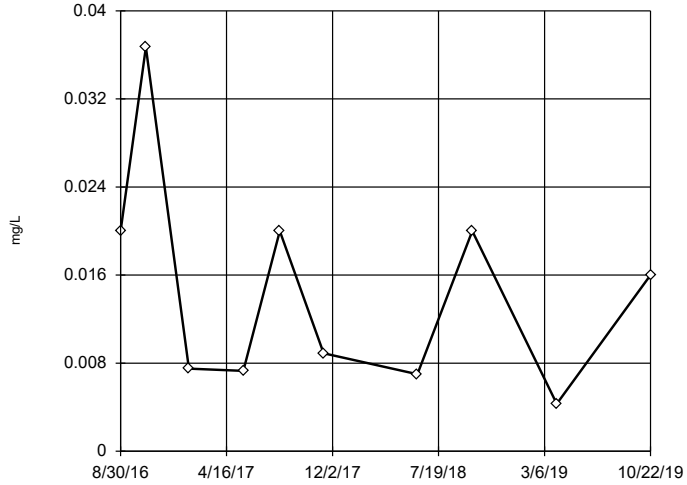
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.438, low cutoff = 0.0003264, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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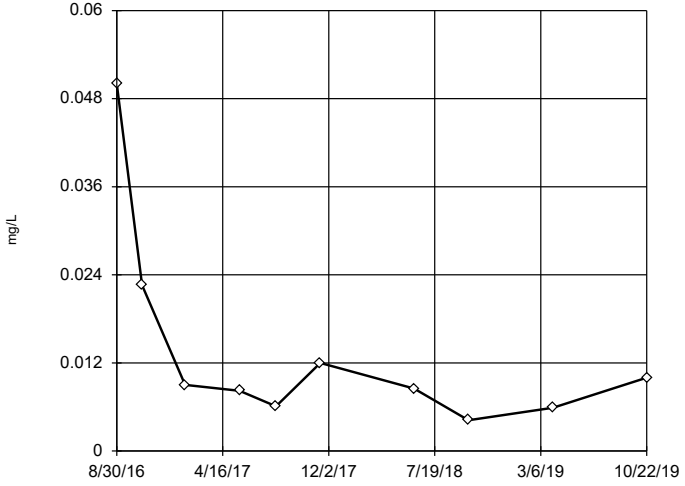
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3406, low cutoff = 0.00029, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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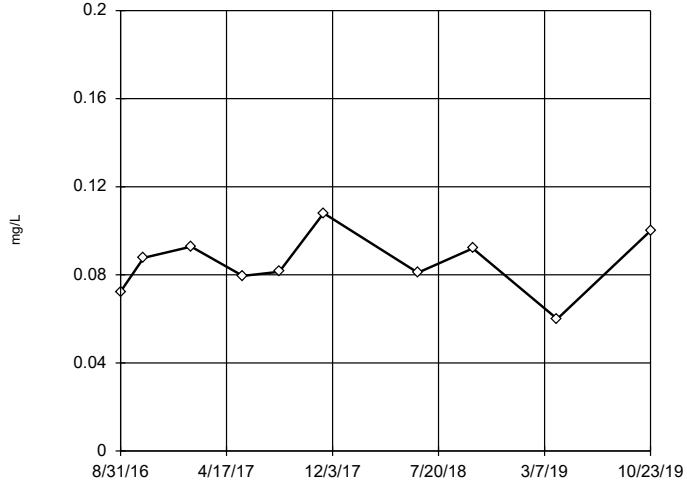
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

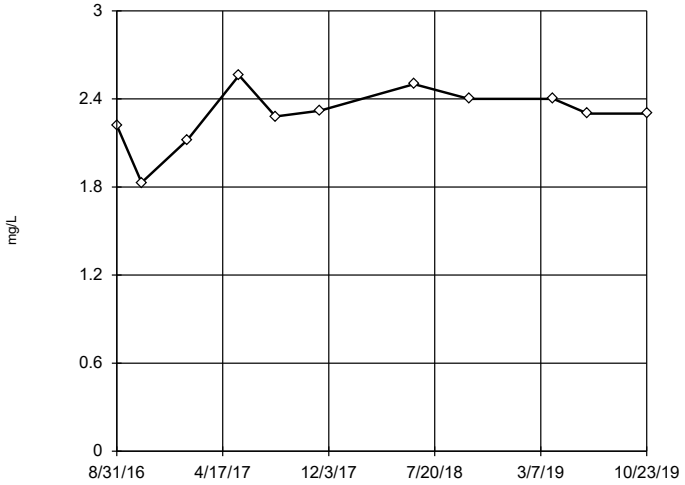
High cutoff = 0.141, low cutoff = -0.06924, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.72, low cutoff = -2.134, based on IQR multiplier of 3.

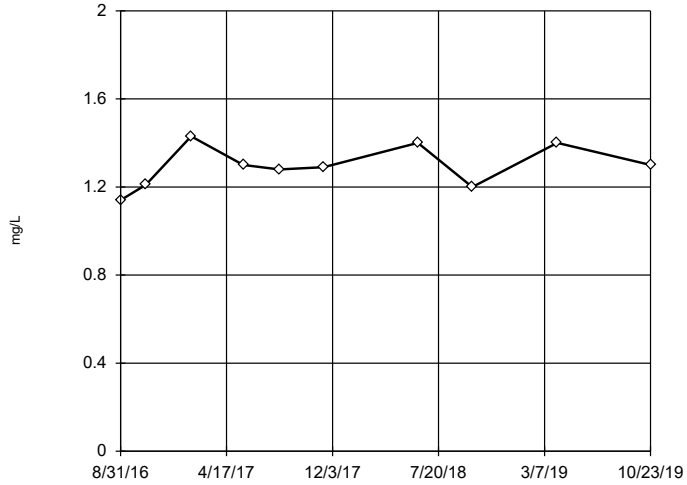
Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.109, low cutoff = 0.7301, based on IQR multiplier of 3.

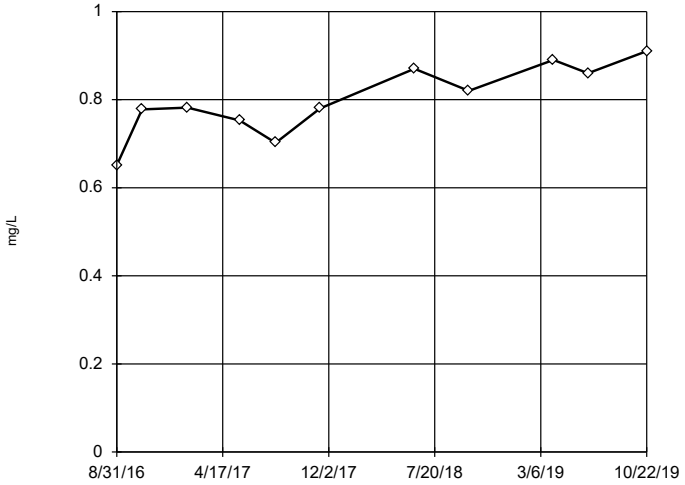
Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.106, low cutoff = -0.6445, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:34 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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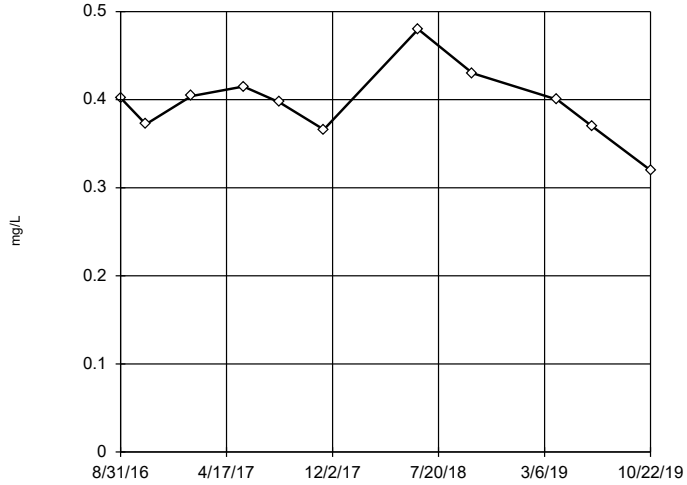
Tukey's Outlier Screening

HGWC-109



n = 11

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

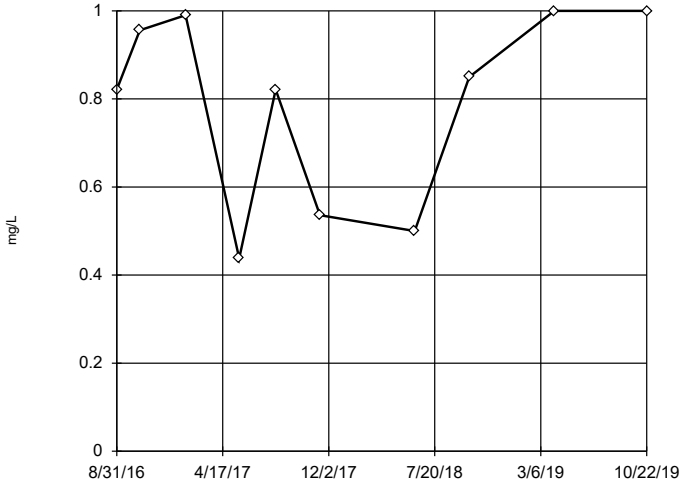
High cutoff = 0.5716, low cutoff = 0.2547, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.387, low cutoff = -1.276, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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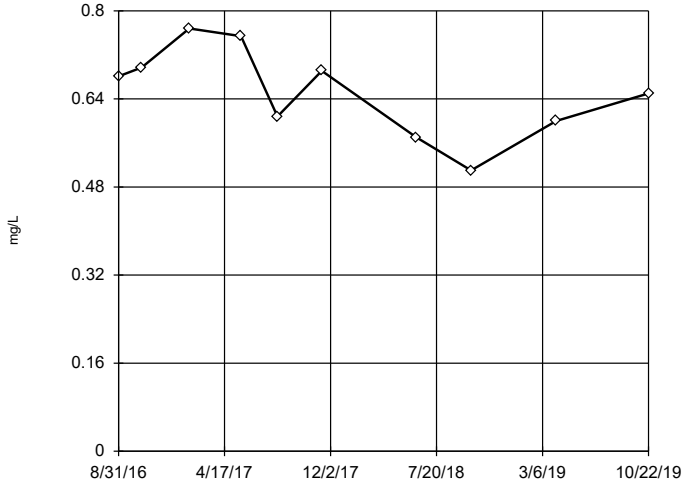
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.04, low cutoff = -0.4601, based on IQR multiplier of 3.

Constituent: Boron Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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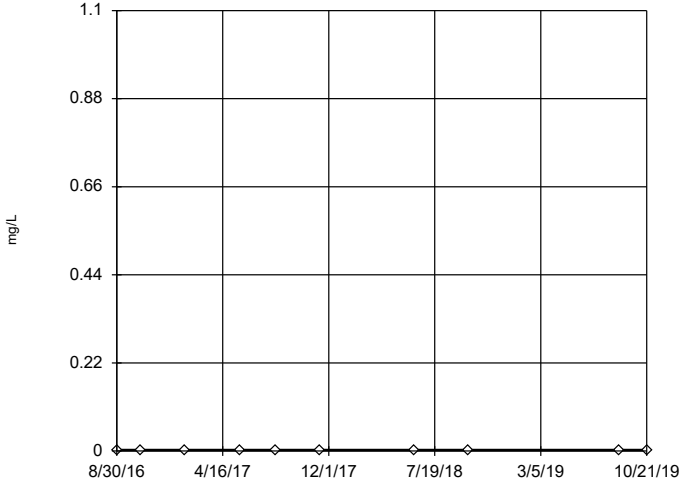
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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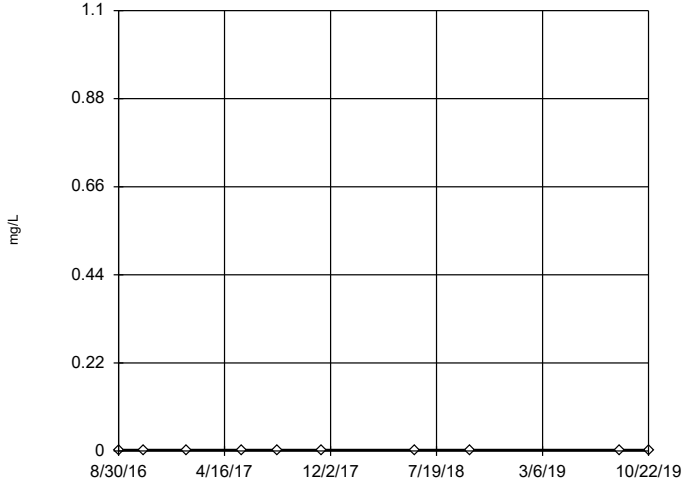
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

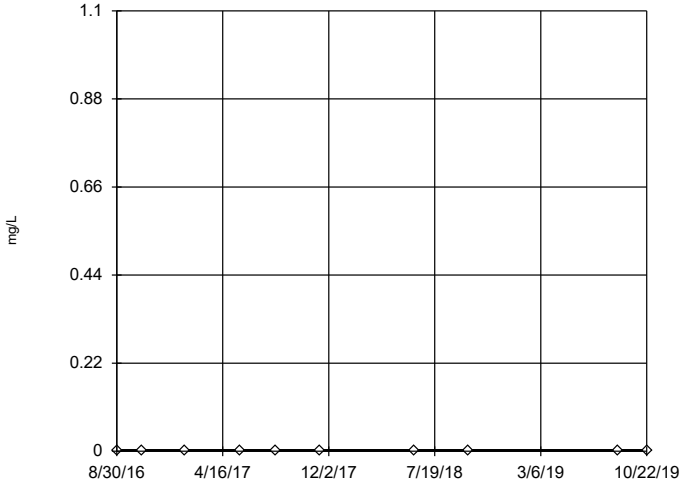
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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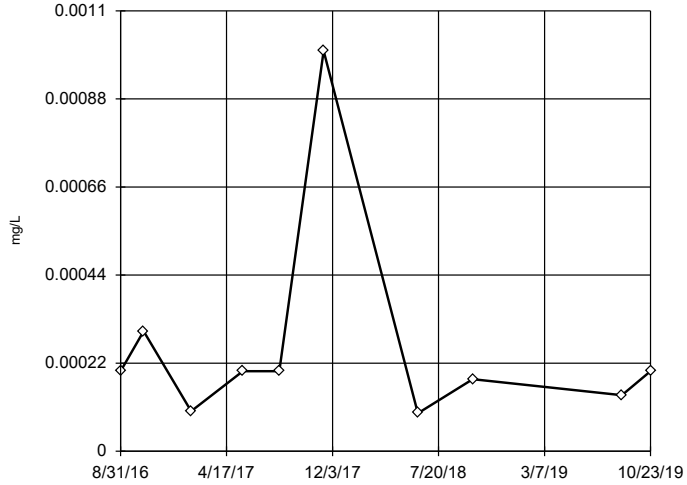
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.002173, low cutoff = 0.00001334, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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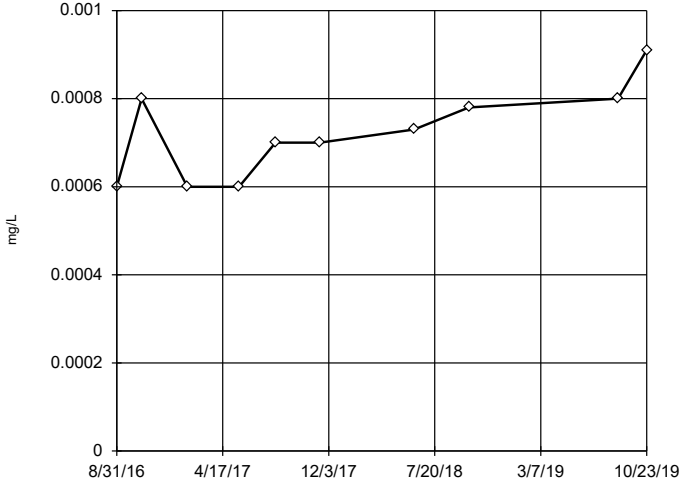
Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.0014, low cutoff = -3.3e-19, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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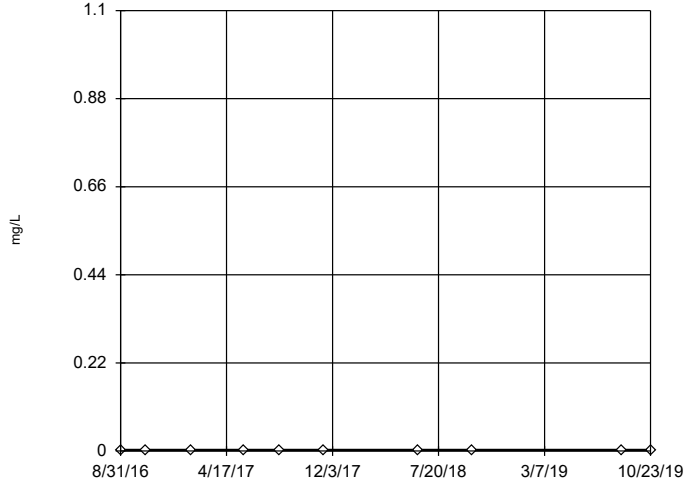
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

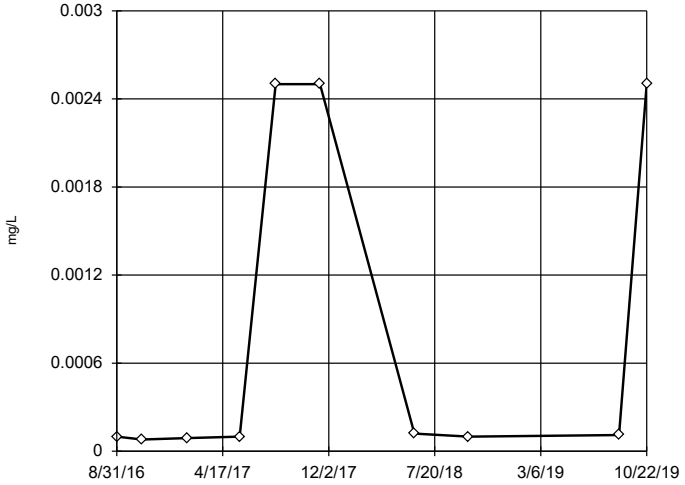
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 45.75, low cutoff = 5.2e-9, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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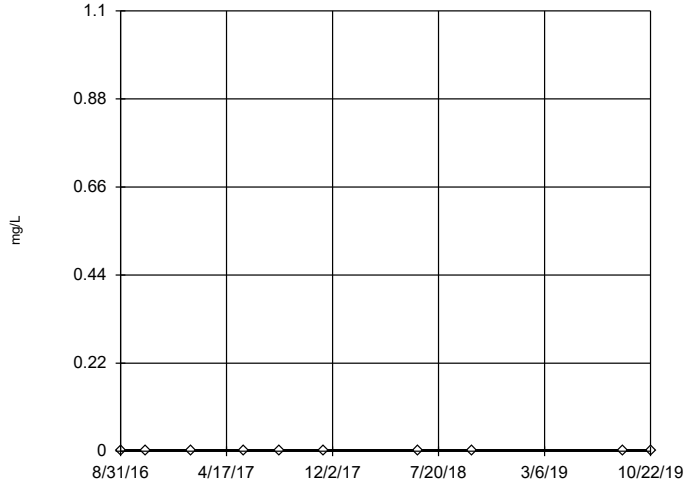
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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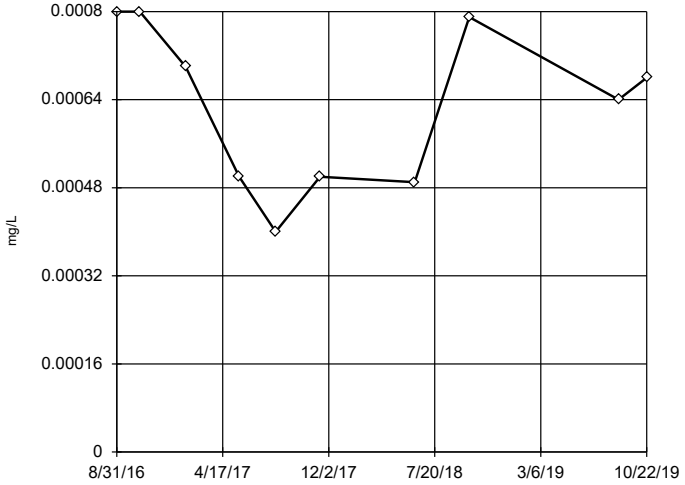
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.001695, low cutoff = -0.000405, based on IQR multiplier of 3.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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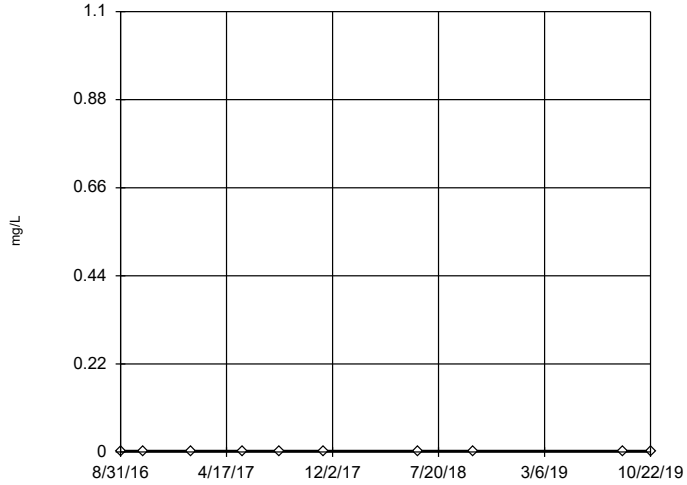
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

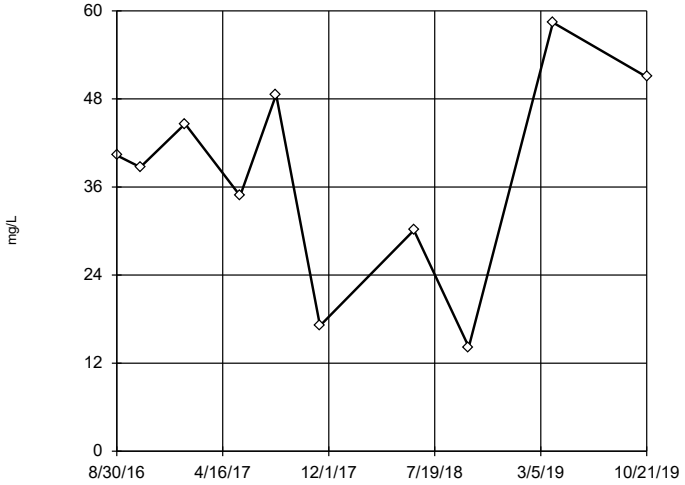
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cadmium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 90.16, low cutoff = -71.05, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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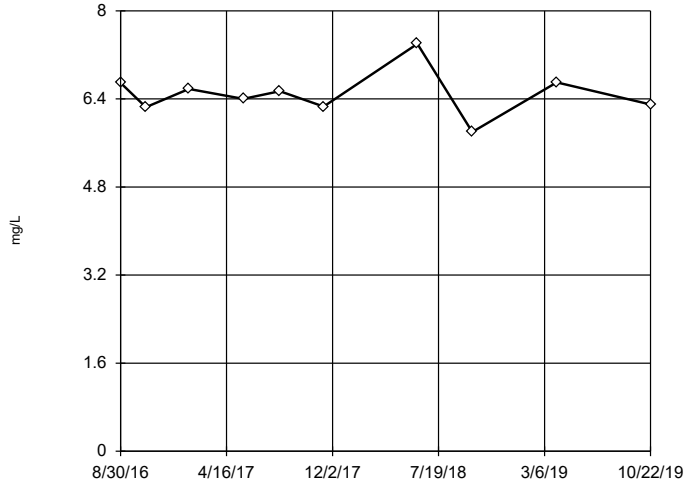
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.21, low cutoff = 5.101, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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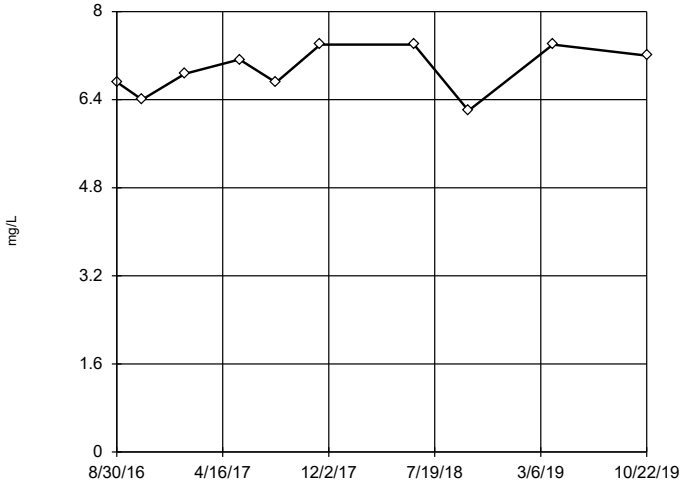
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.184, low cutoff = -4.434, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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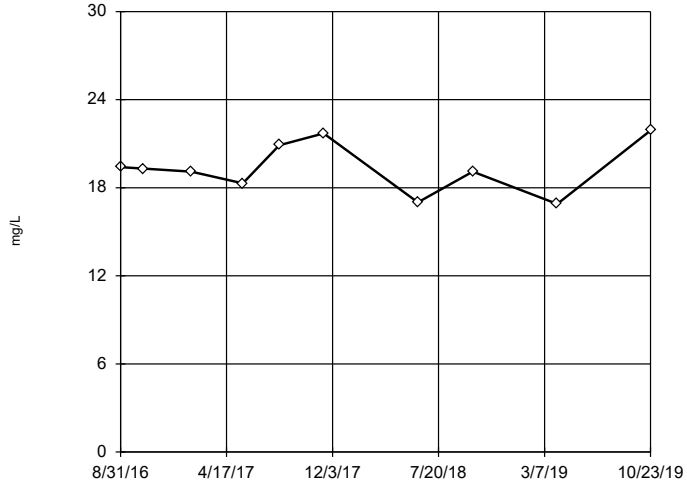
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

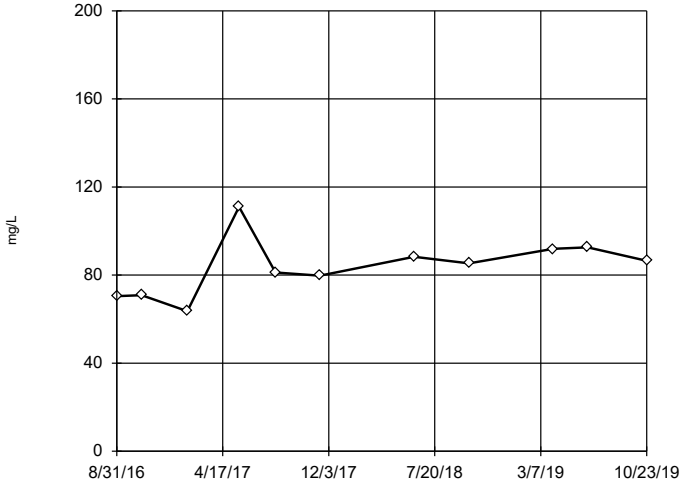
High cutoff = 35.22, low cutoff = 9.226, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 200.1, low cutoff = 32.56, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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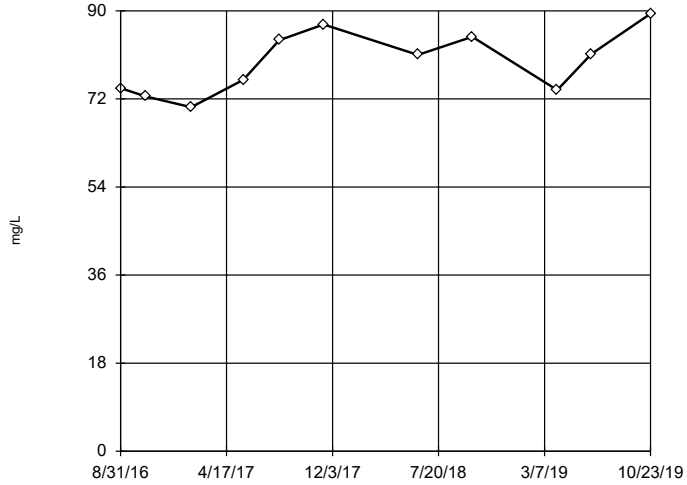
Tukey's Outlier Screening

HGWC-105



n = 11

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 121.9, low cutoff = 45.6, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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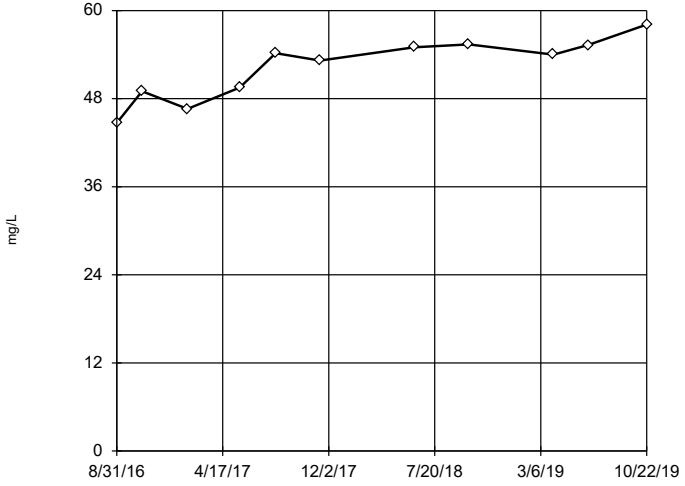
Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 64.63, low cutoff = -55.88, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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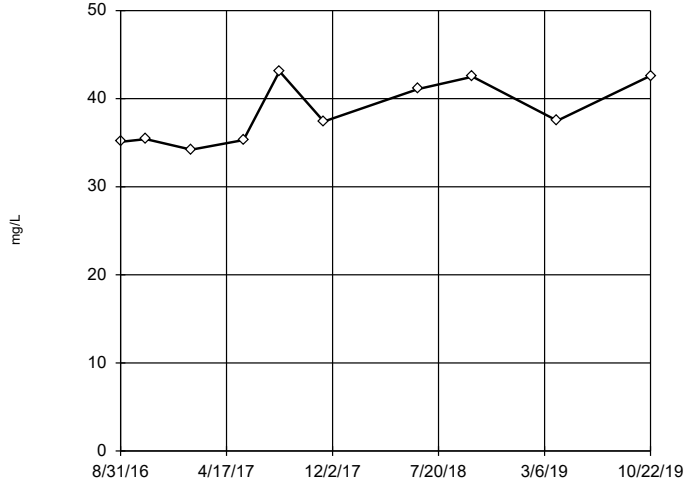
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

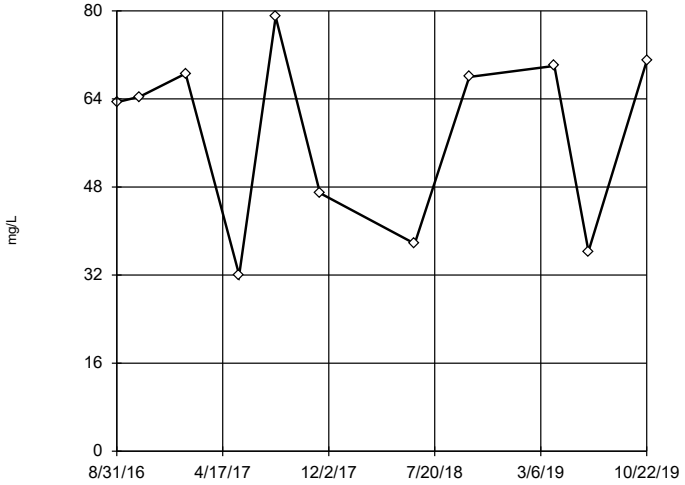
High cutoff = 75.16, low cutoff = 19.93, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 11

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 97.39, low cutoff = -89.43, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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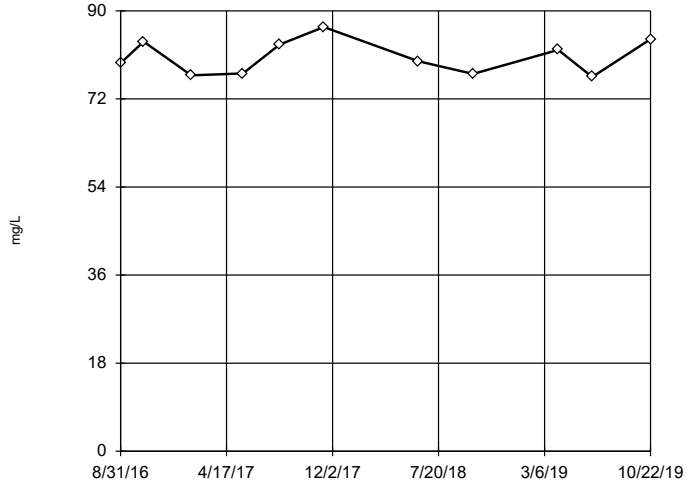
Tukey's Outlier Screening

HGWC-118



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 107.1, low cutoff = 60.26, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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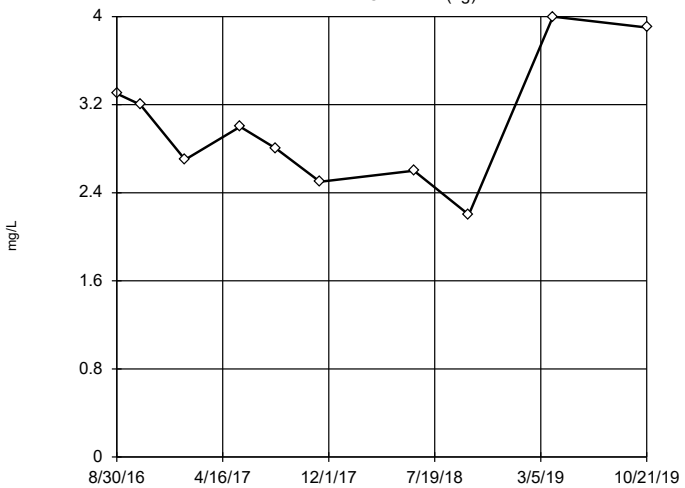
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 9.995, low cutoff = 0.9151, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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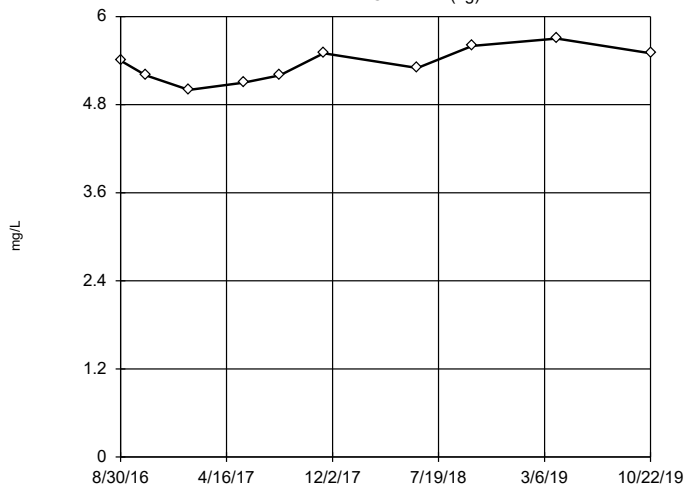
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

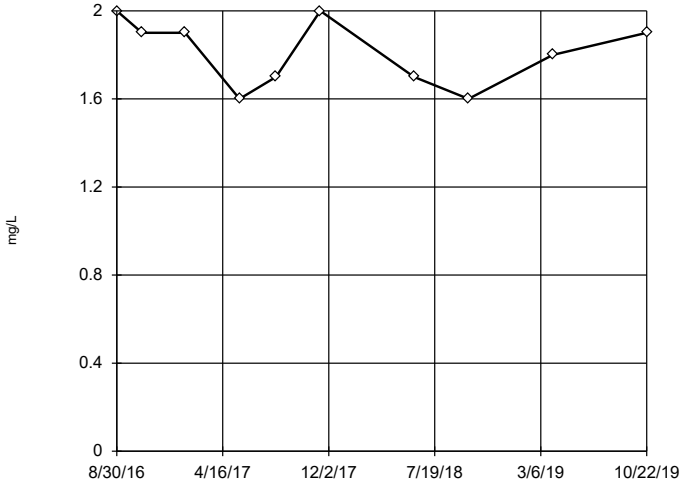
High cutoff = 6.75, low cutoff = 3.95, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.531, low cutoff = -1.622, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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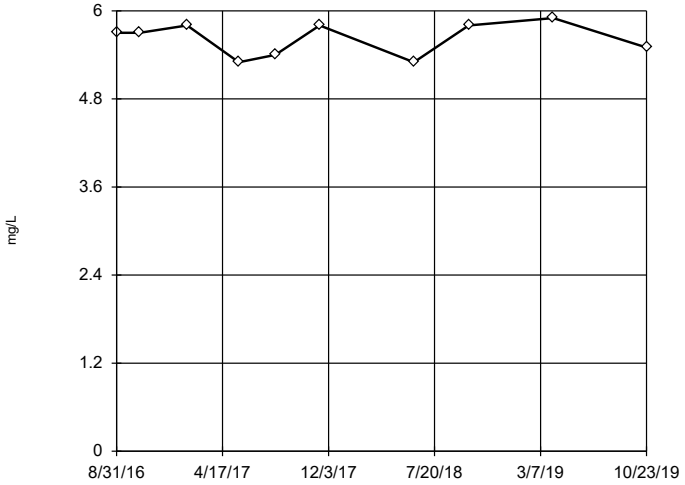
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.589, low cutoff = -5.222, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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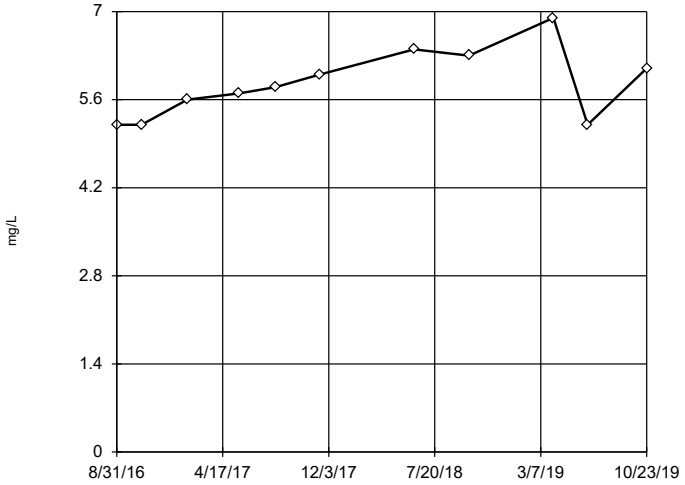
Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 10.51, low cutoff = 2.681, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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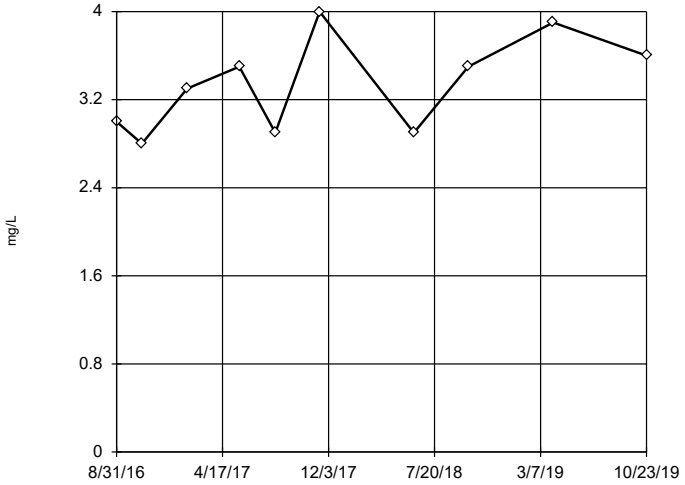
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

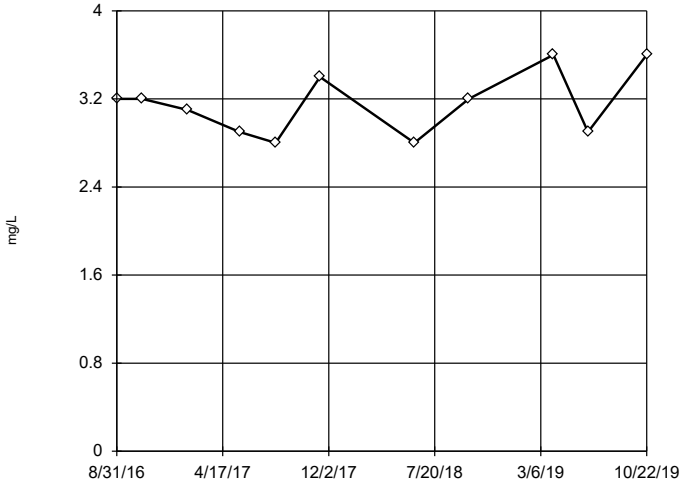
High cutoff = 6.946, low cutoff = 1.007, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.479, low cutoff = 1.8, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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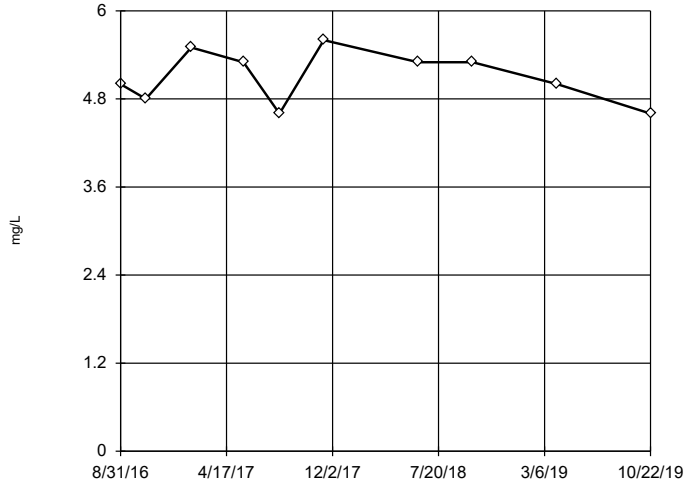
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.637, low cutoff = -4.947, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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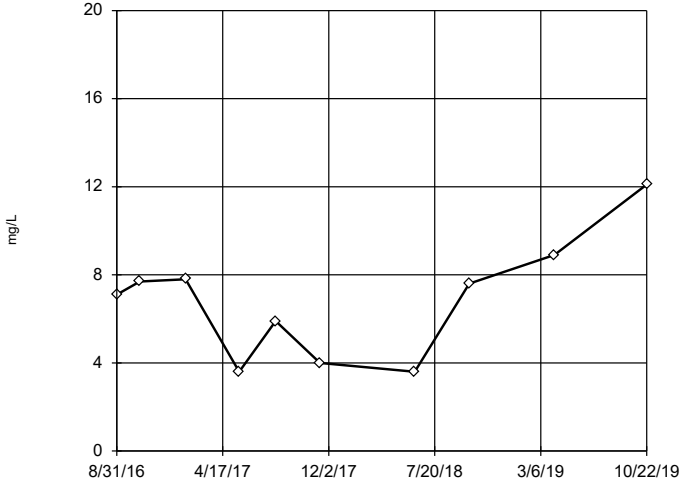
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 32.56, low cutoff = -0.756, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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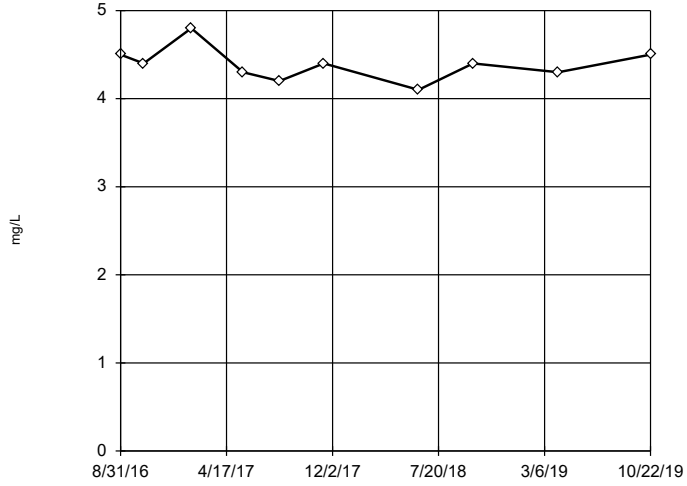
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

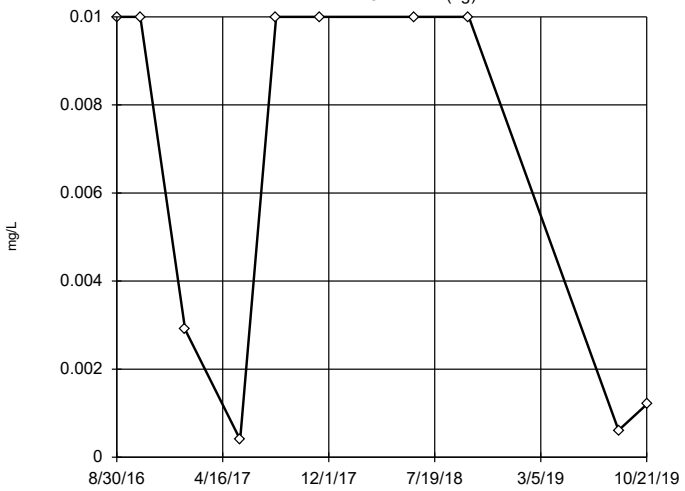
High cutoff = 5.343, low cutoff = 3.579, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 15.97, low cutoff = 5.4e-7, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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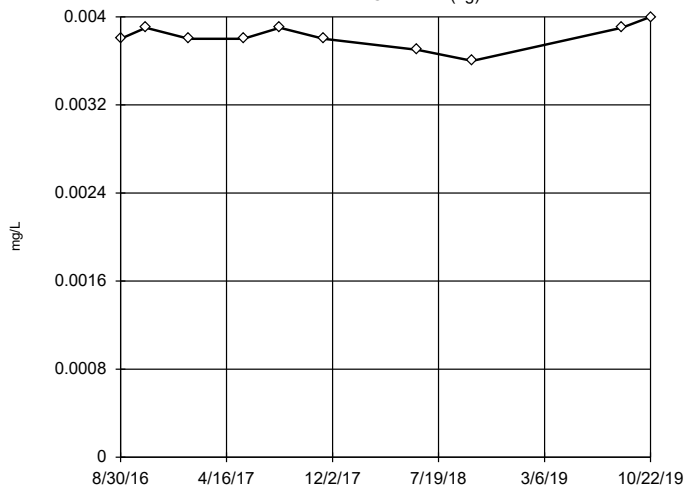
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.004228, low cutoff = 0.002902, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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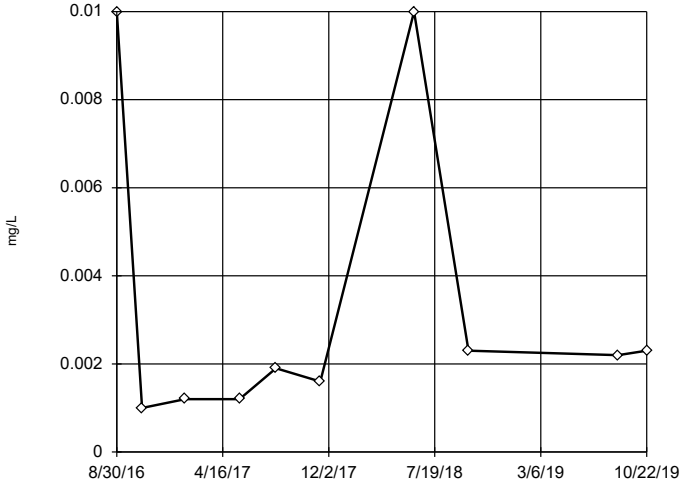
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.3061, low cutoff = 0.0000188, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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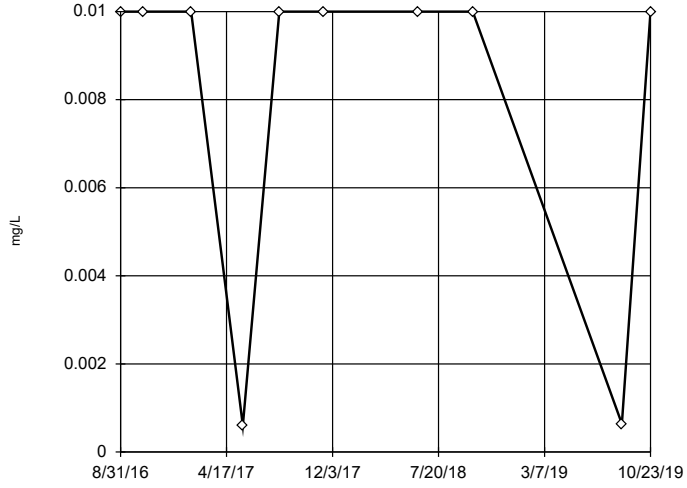
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

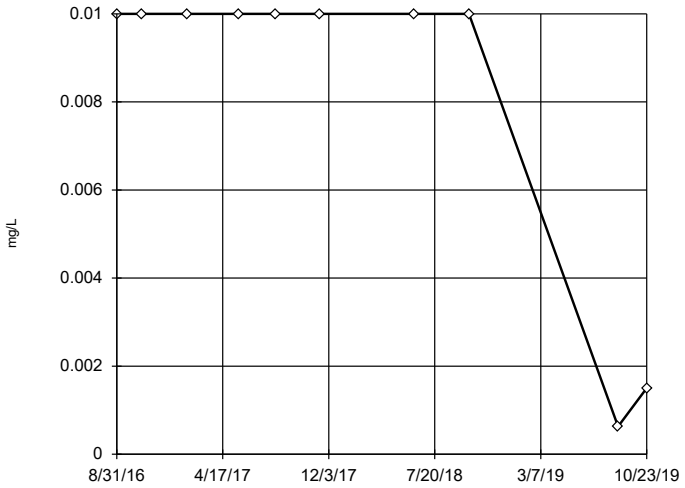
High cutoff = 0.6176, low cutoff = 0.00004096, based on IQR multiplier of 3.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.1721, low cutoff = 0.000225, based on IQR multiplier of 3.

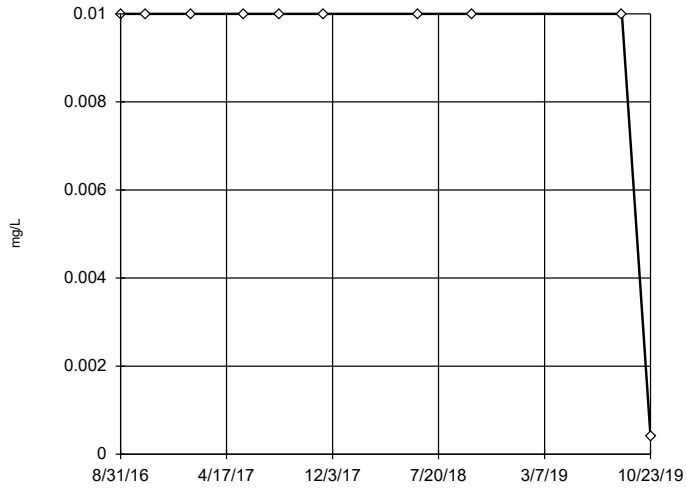
Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

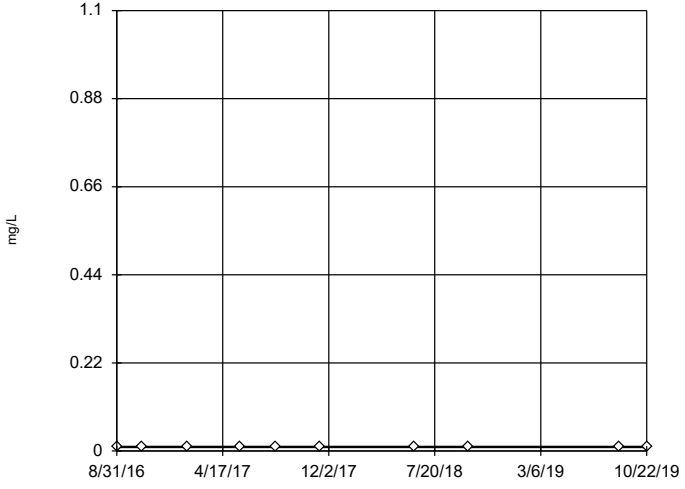
Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

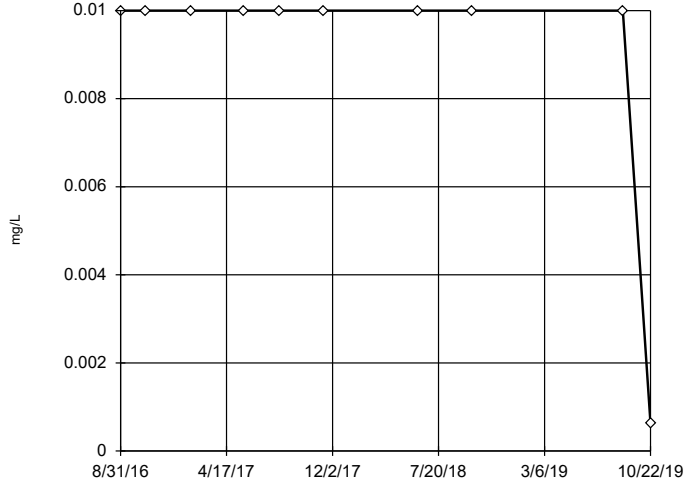
Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

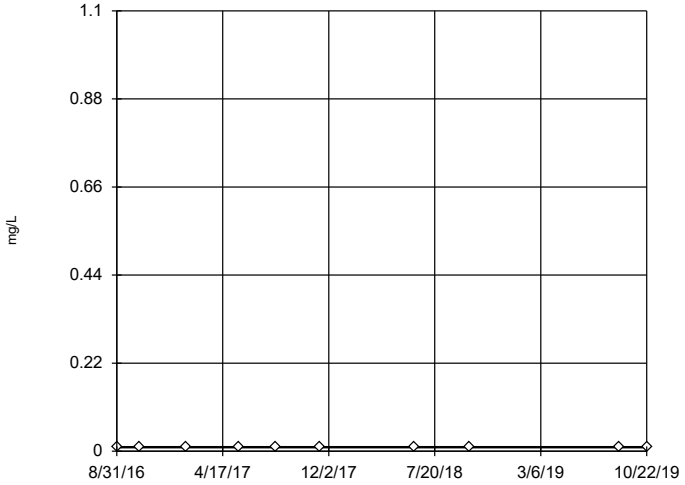
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

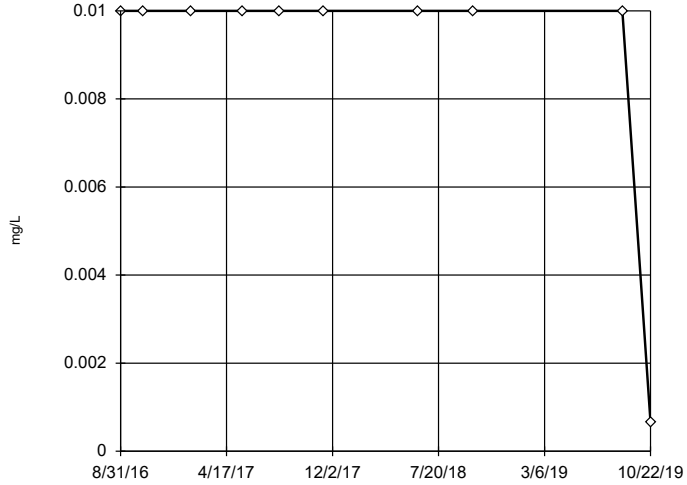
Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Chromium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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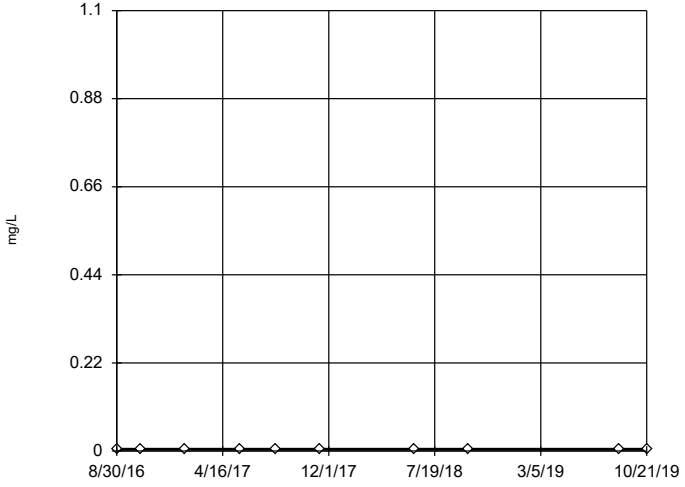
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

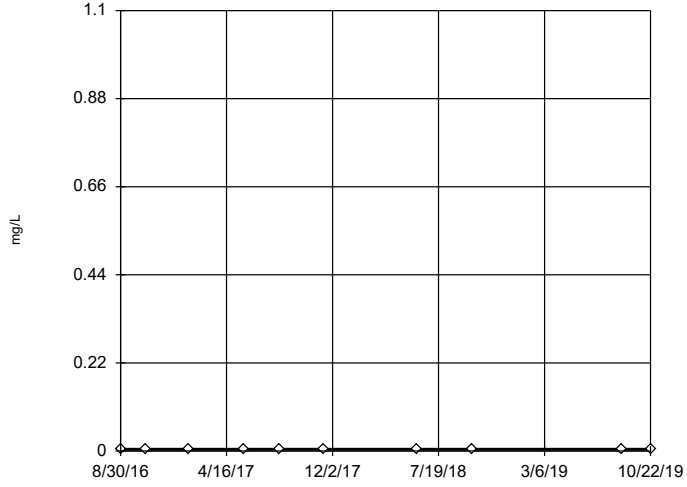
Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

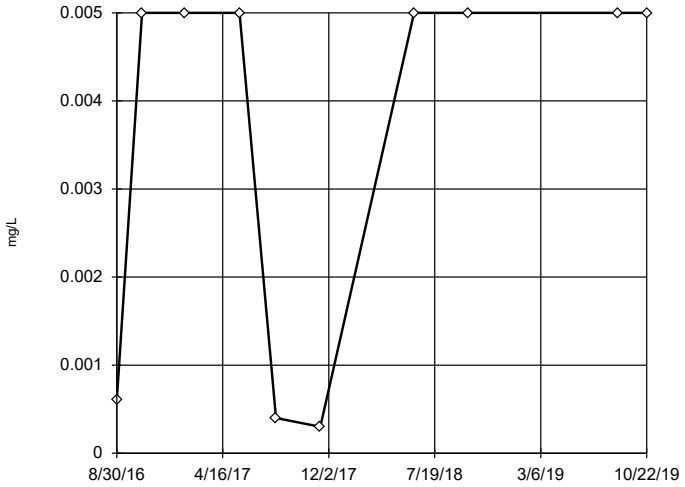
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.316, low cutoff = 4.6e-7, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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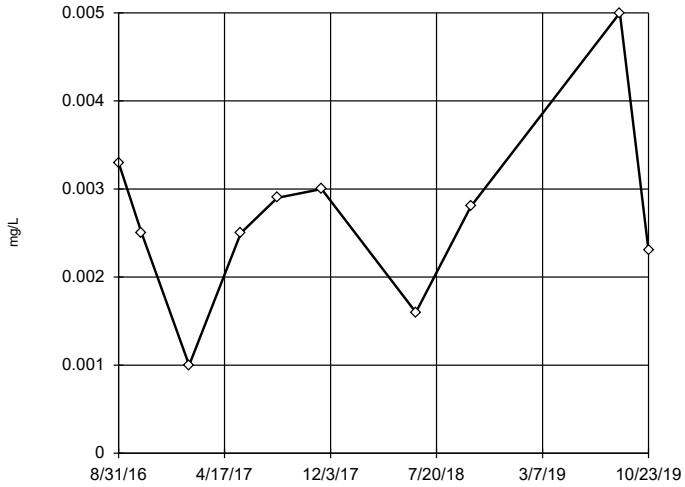
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.008556, low cutoff = 0.00005761, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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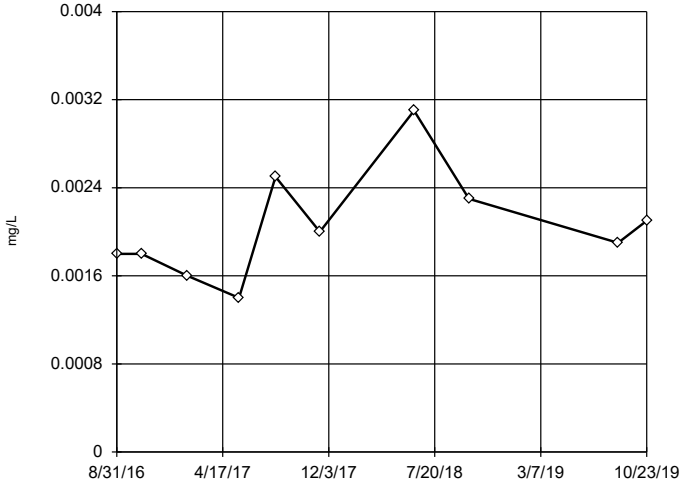
Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.006765, low cutoff = 0.0006016, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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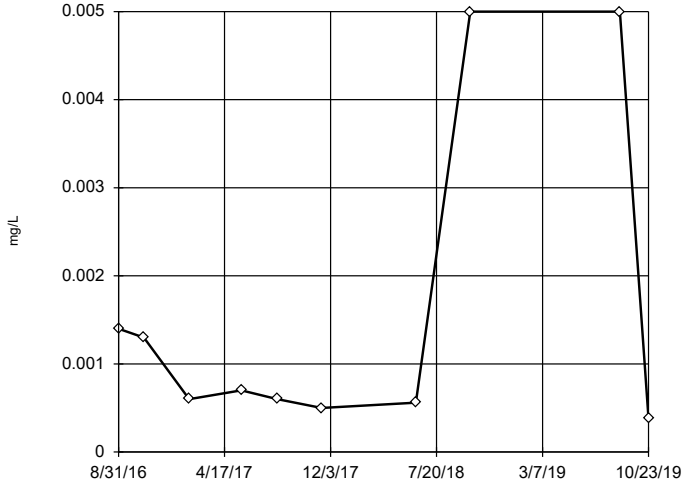
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

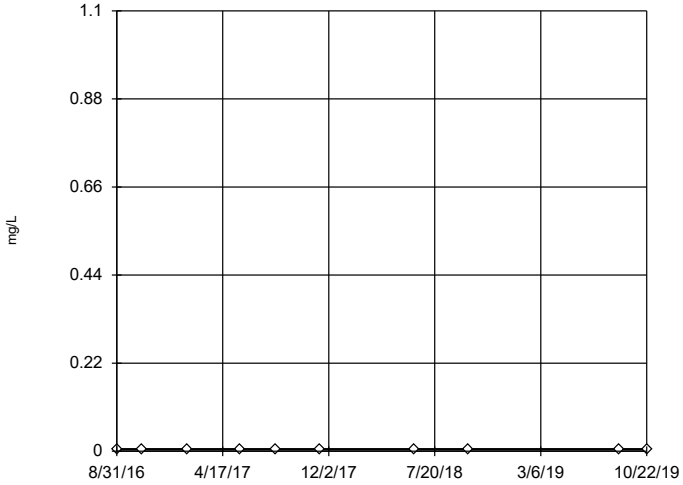
High cutoff = 0.3307, low cutoff = 0.000004233, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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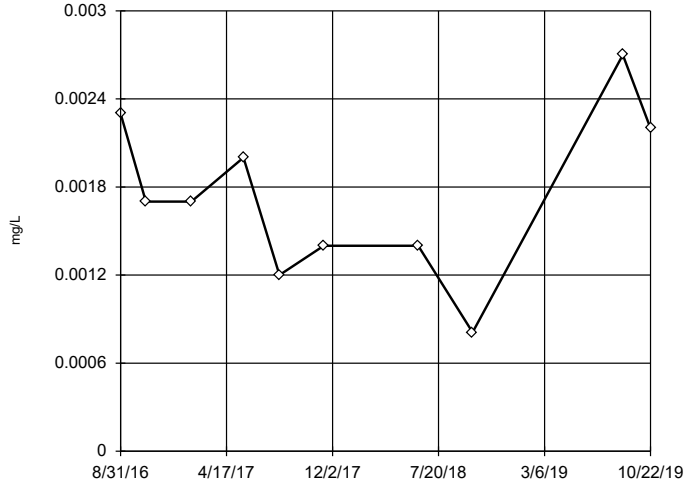
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 0.0051, low cutoff = -0.00155, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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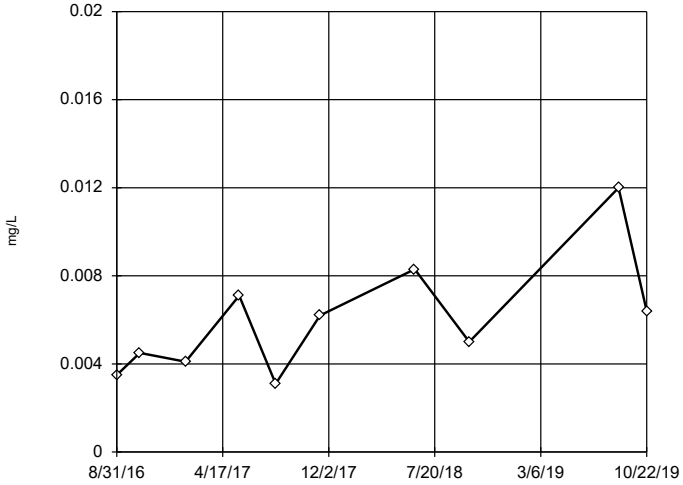
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.06388, low cutoff = 0.0004552, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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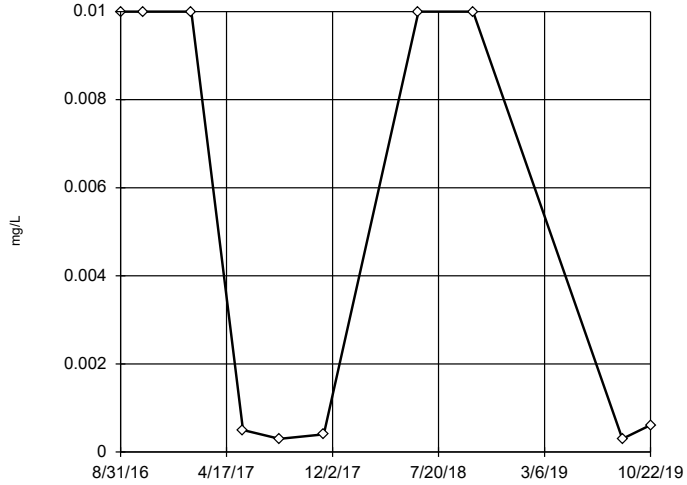
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

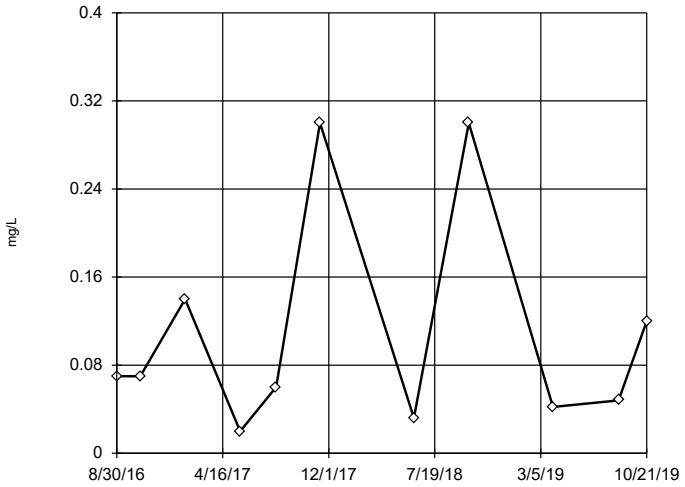
High cutoff = 240.6, low cutoff = 1.4e-8, based on IQR multiplier of 3.

Constituent: Cobalt Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.185, low cutoff = 0.001134, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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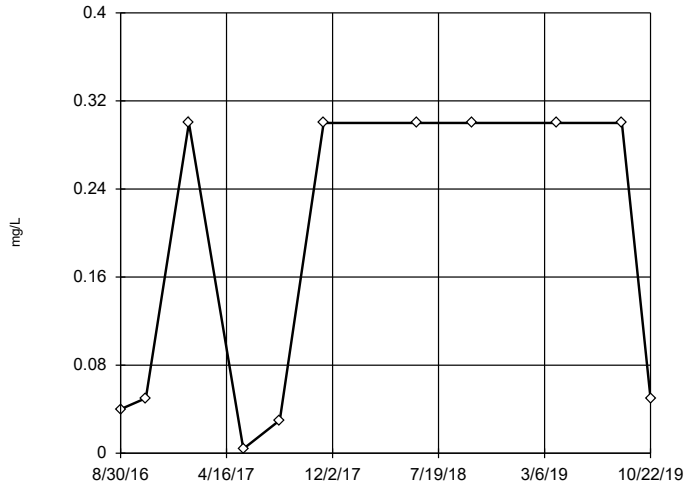
Tukey's Outlier Screening

HGWA-112 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 126.6, low cutoff = 0.00009481, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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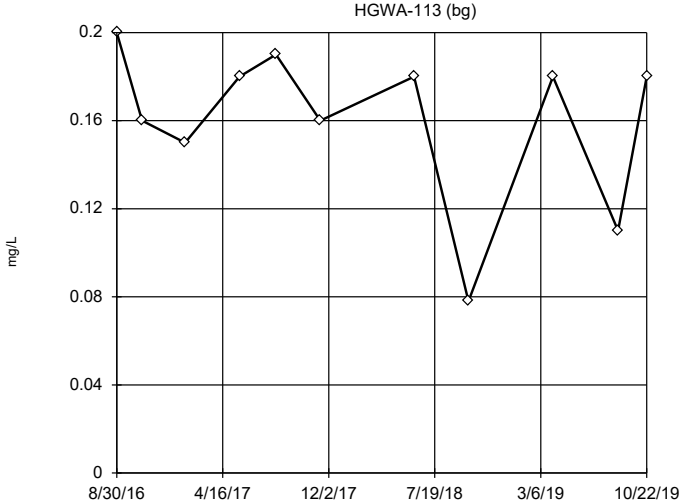
Tukey's Outlier Screening

HGWA-113 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.2211, low cutoff = -0.1923, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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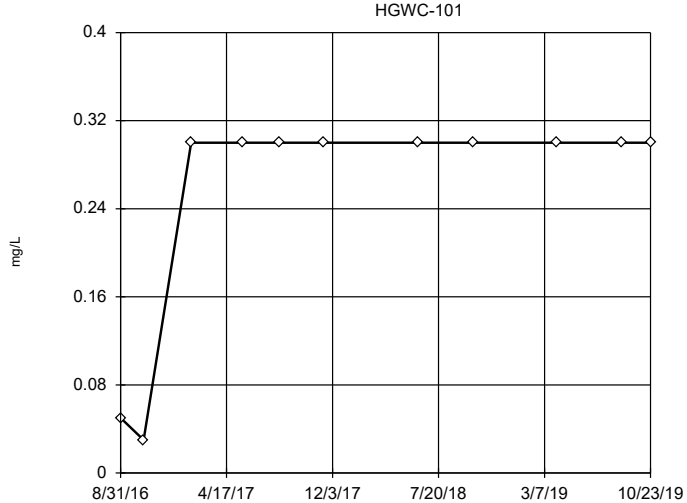
Tukey's Outlier Screening

HGWC-101



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

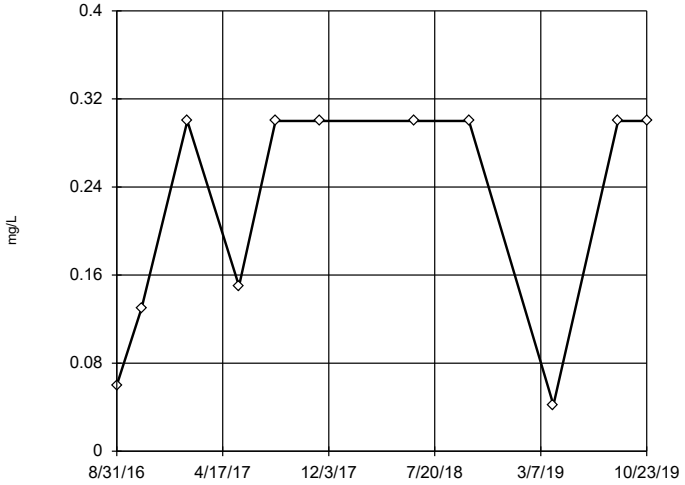
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.23, low cutoff = -0.04038, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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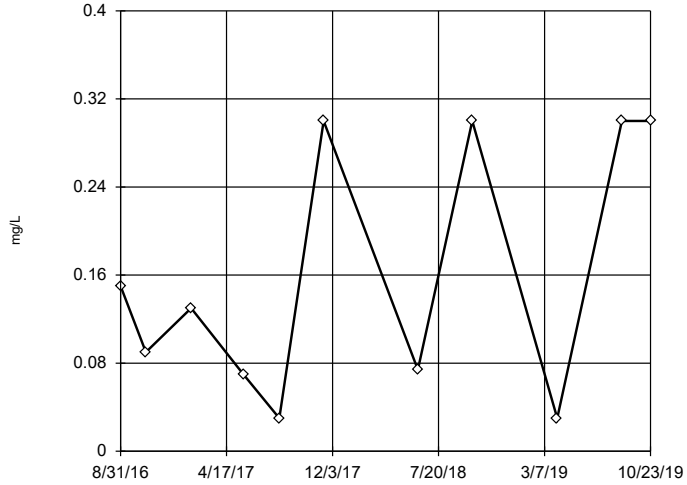
Tukey's Outlier Screening

HGWC-105



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 23.62, low cutoff = 0.0008893, based on IQR multiplier of 3.

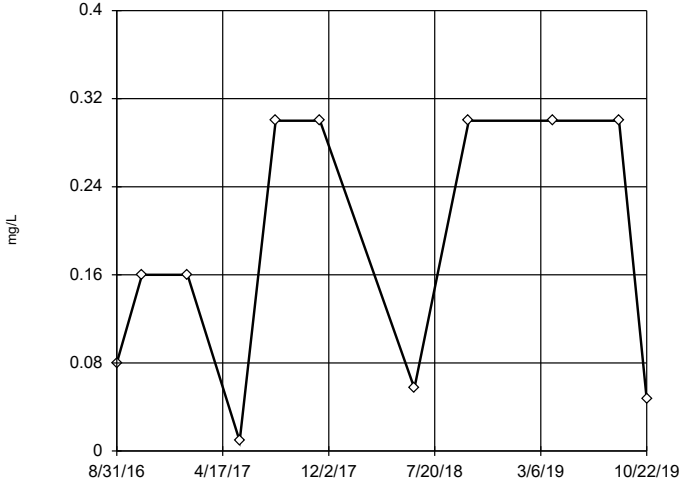
Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.175, low cutoff = -0.4736, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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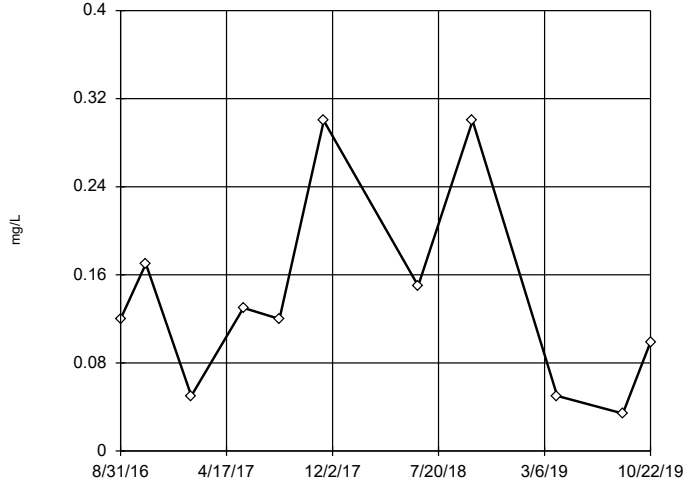
Tukey's Outlier Screening

HGWC-109



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

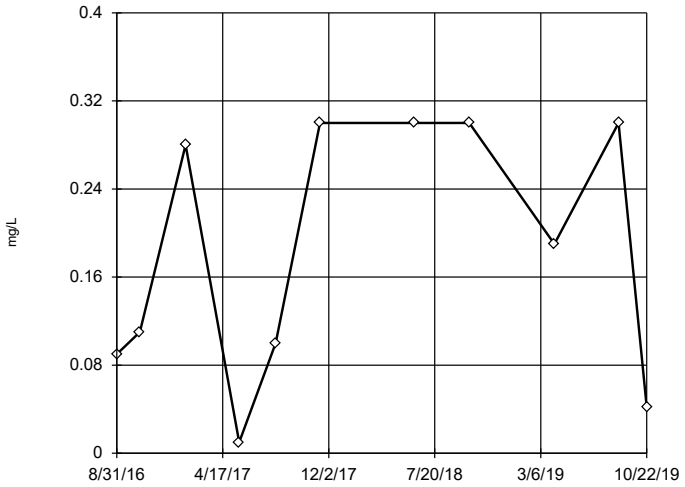
High cutoff = 6.682, low cutoff = 0.001272, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 11

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.666, low cutoff = -0.1964, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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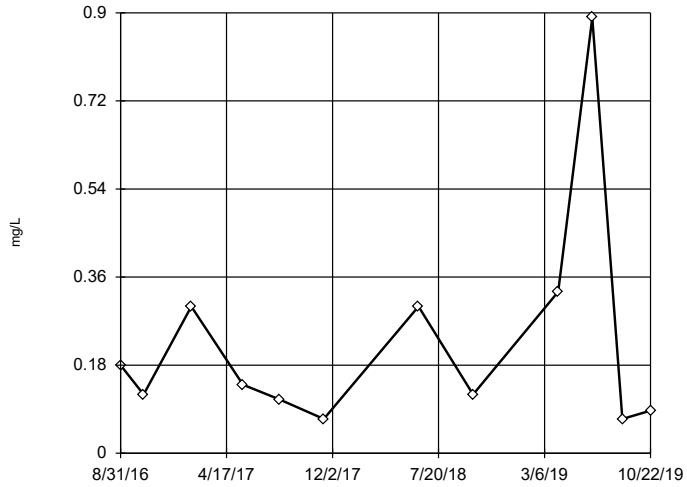
Tukey's Outlier Screening

HGWC-118



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.652, low cutoff = 0.003392, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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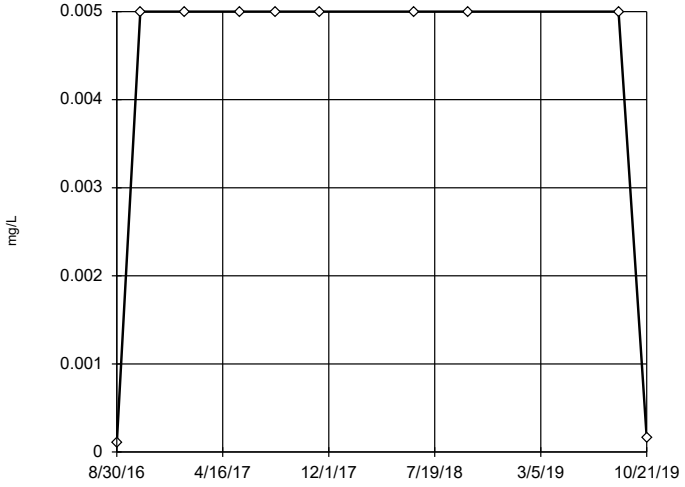
Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.8735, low cutoff = 0.00000512, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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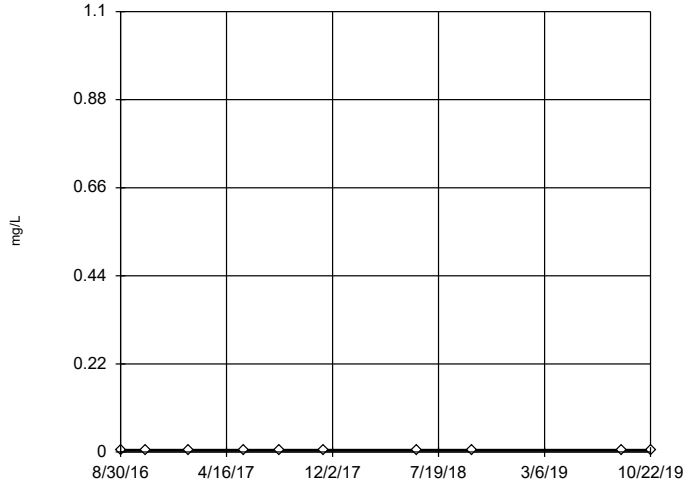
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

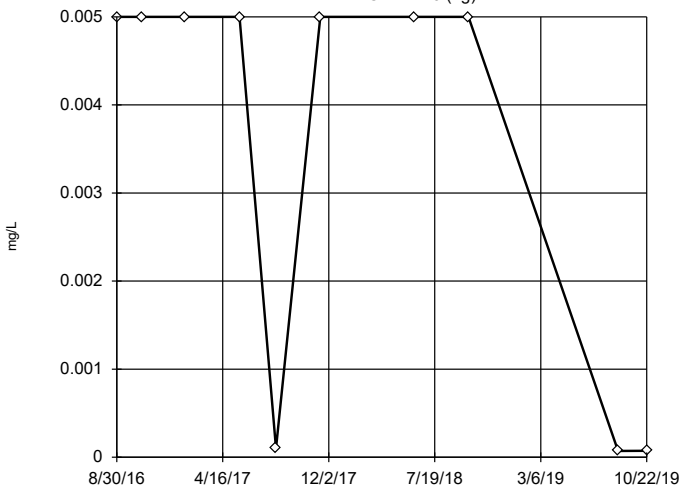
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1002, low cutoff = 4.3e-10, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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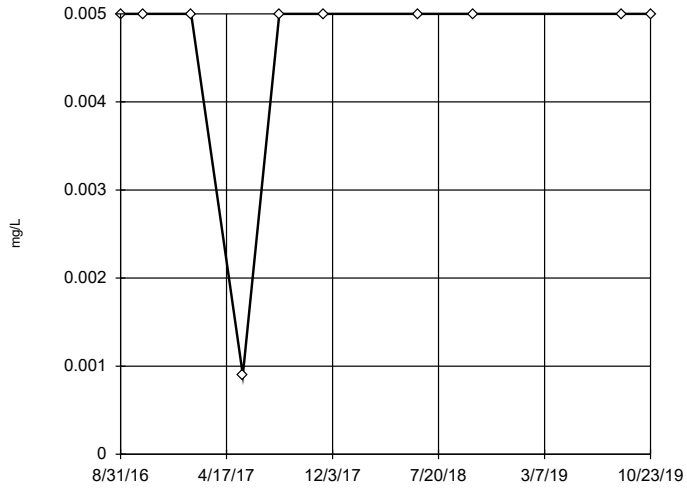
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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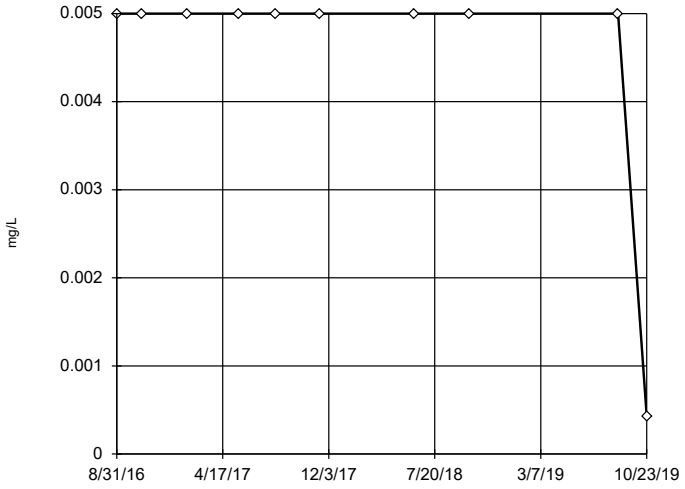
Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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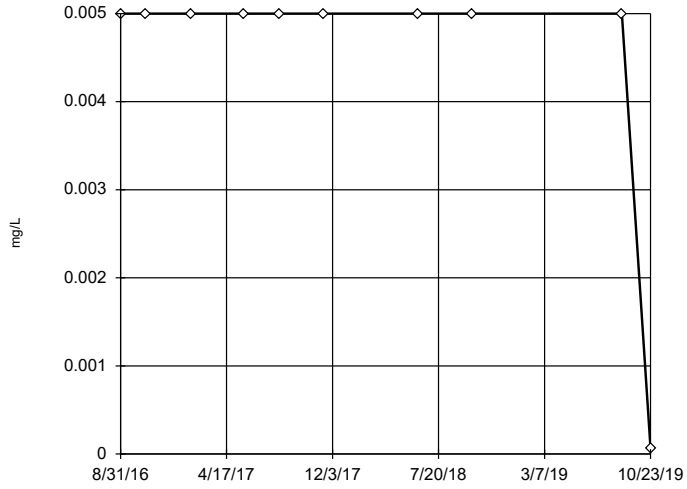
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

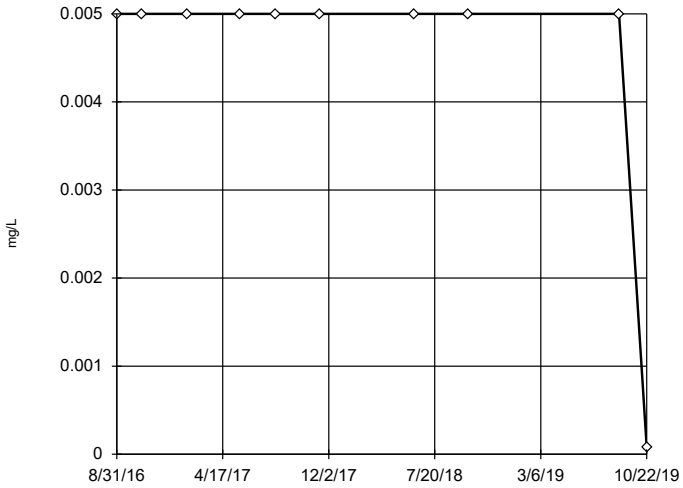
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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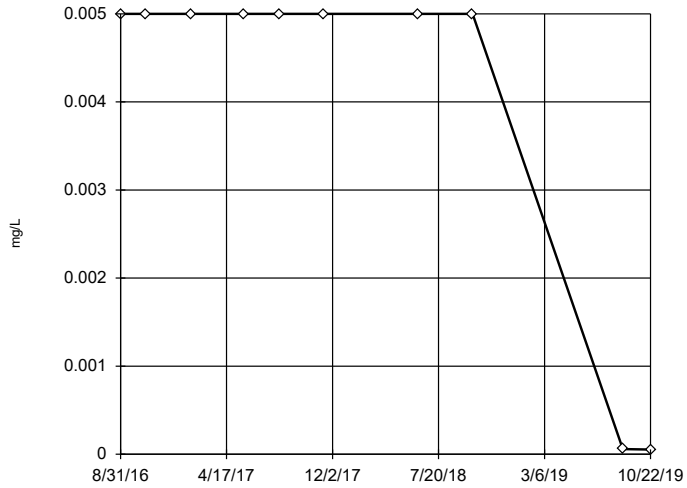
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.002, low cutoff = 6.7e-7, based on IQR multiplier of 3.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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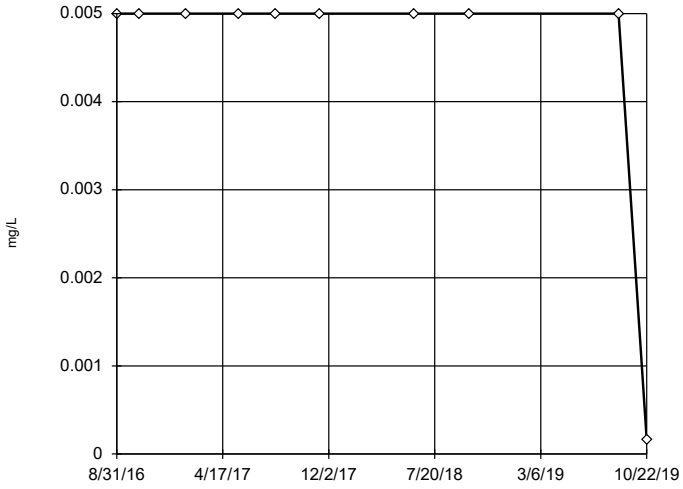
Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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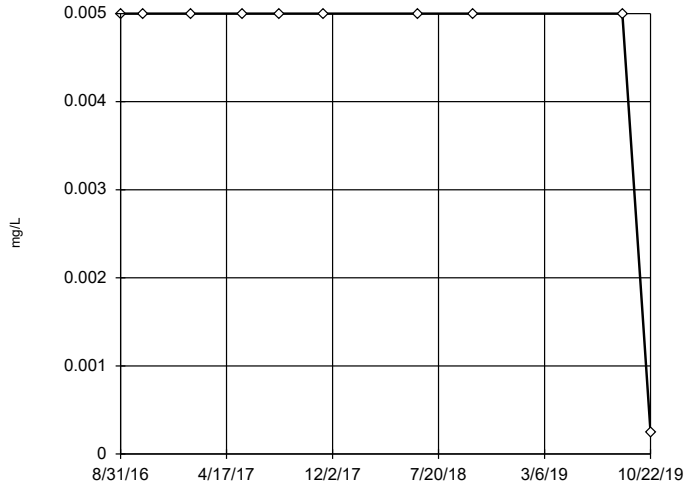
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

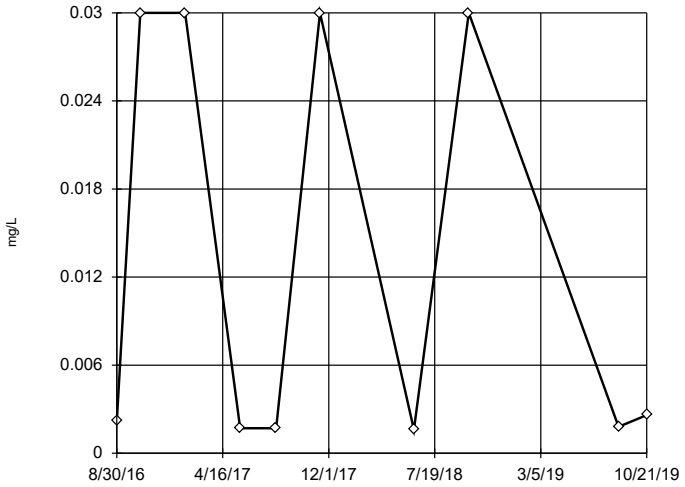
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lead Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 164.9, low cutoff = 3.1e-7, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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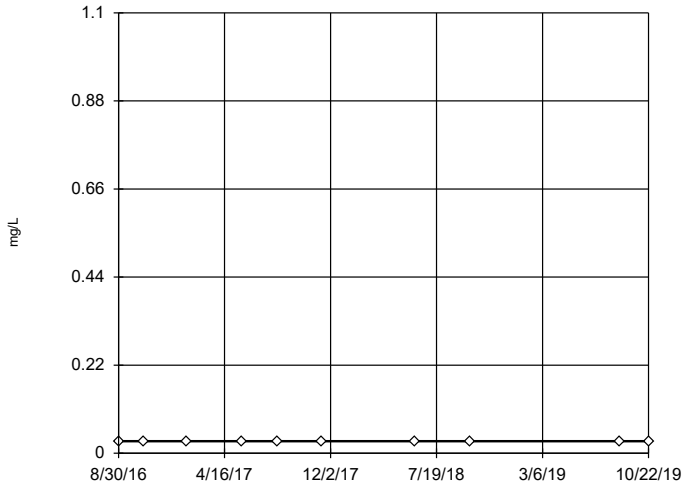
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lithium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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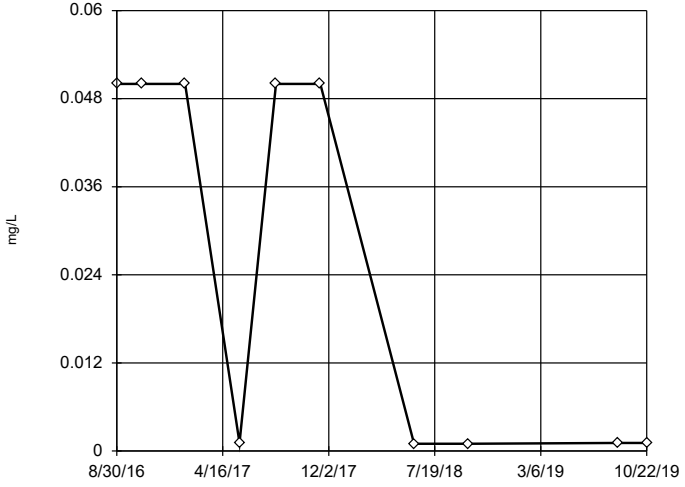
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5417, low cutoff = 9.7e-9, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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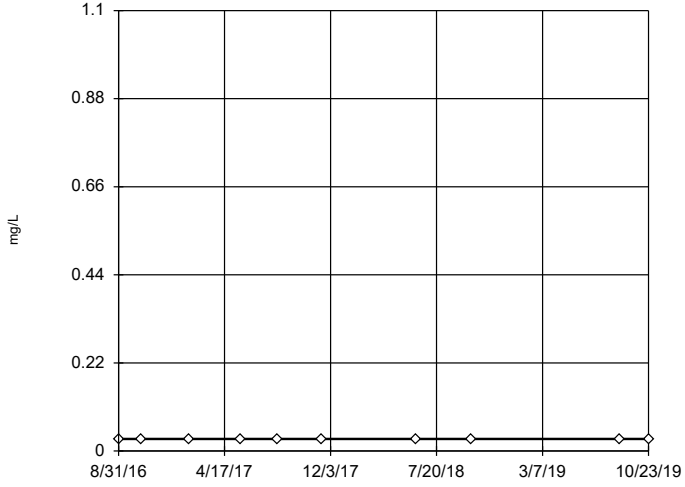
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

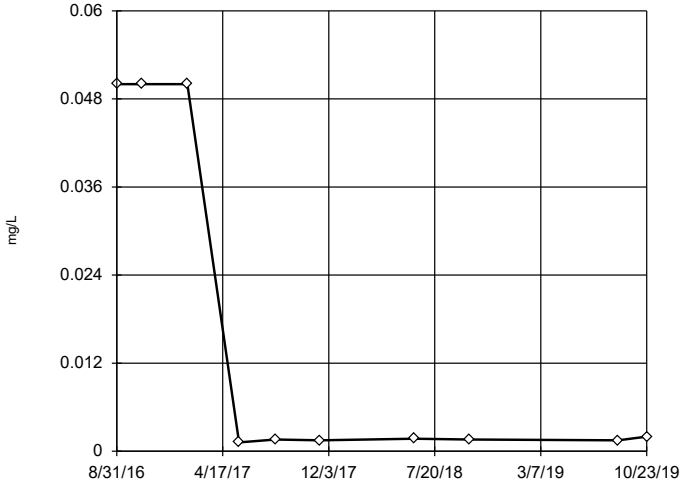
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Lithium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1852, low cutoff = 4.0e-8, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:35 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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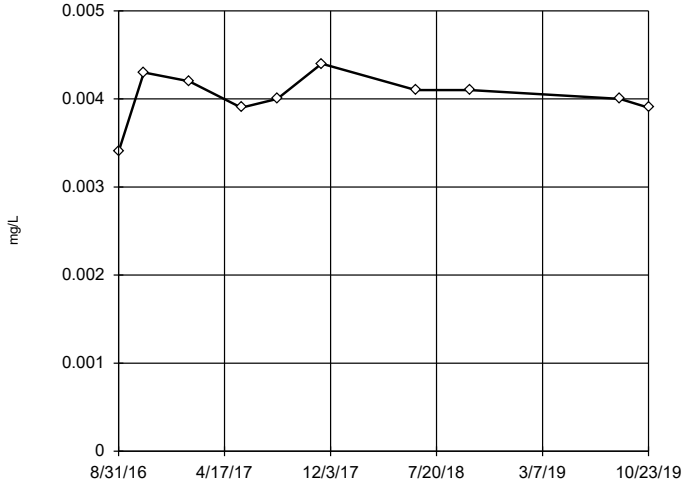
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.004853, low cutoff = -0.003922, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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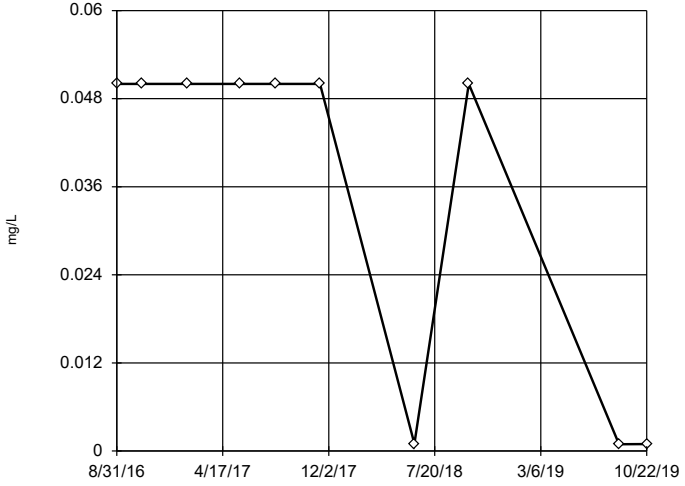
Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6962, low cutoff = 6.9e-9, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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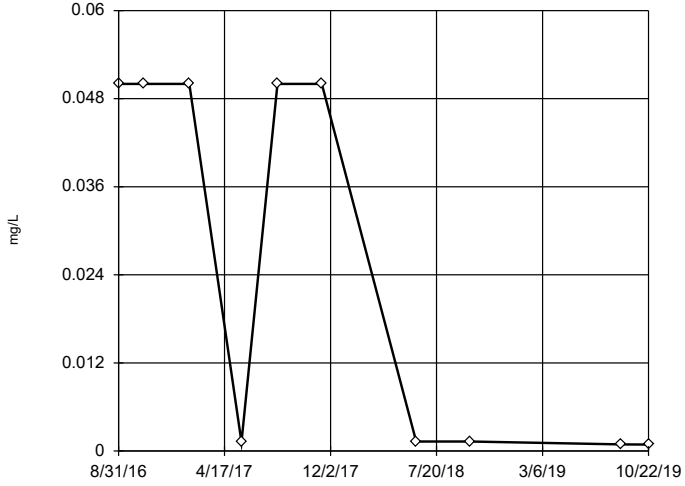
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

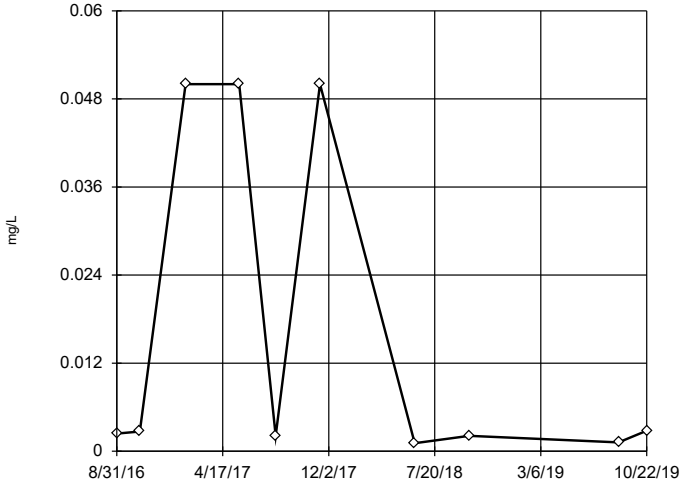
High cutoff = 5569, low cutoff = 9.3e-9, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1562, low cutoff = 5.1e-8, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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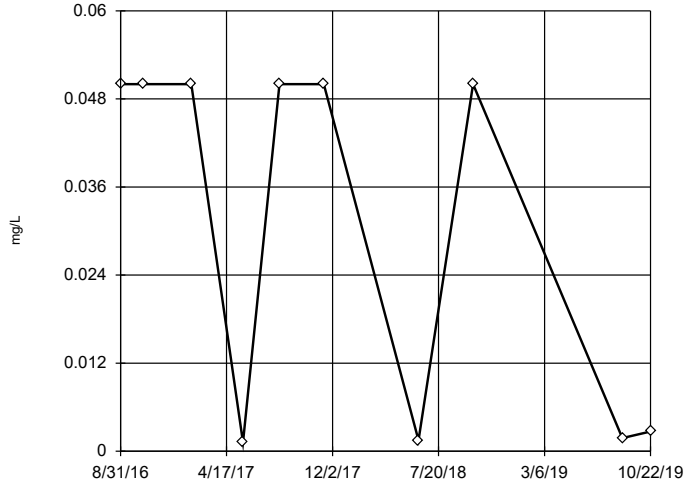
Tukey's Outlier Screening

HGWC-118



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1409, low cutoff = 5.8e-8, based on IQR multiplier of 3.

Constituent: Lithium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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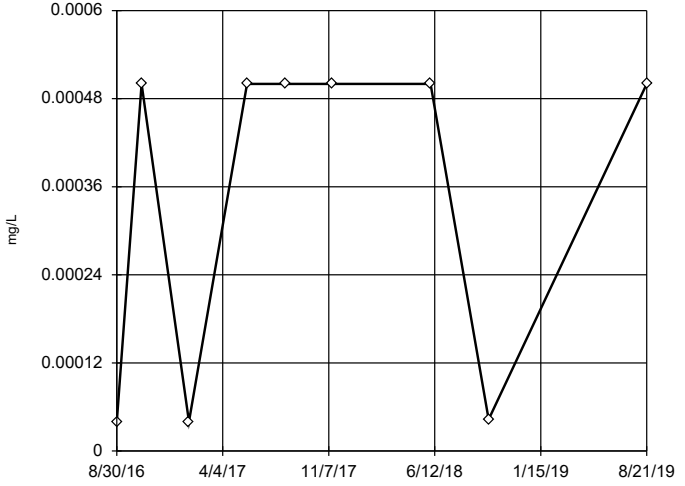
Tukey's Outlier Screening

HGWA-111 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.8762, low cutoff = 2.4e-8, based on IQR multiplier of 3.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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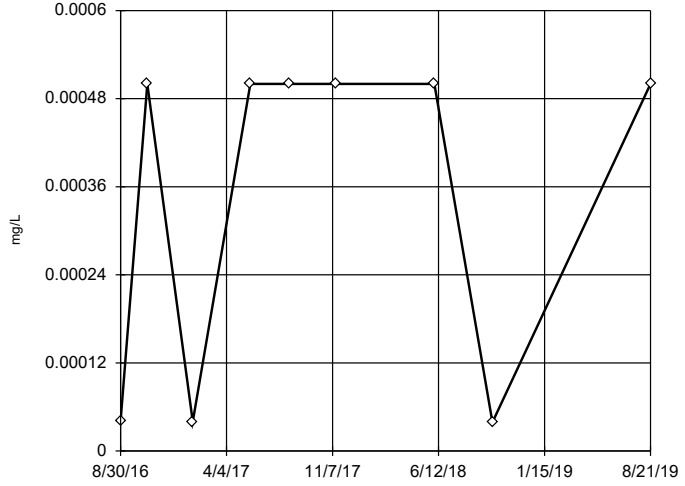
Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

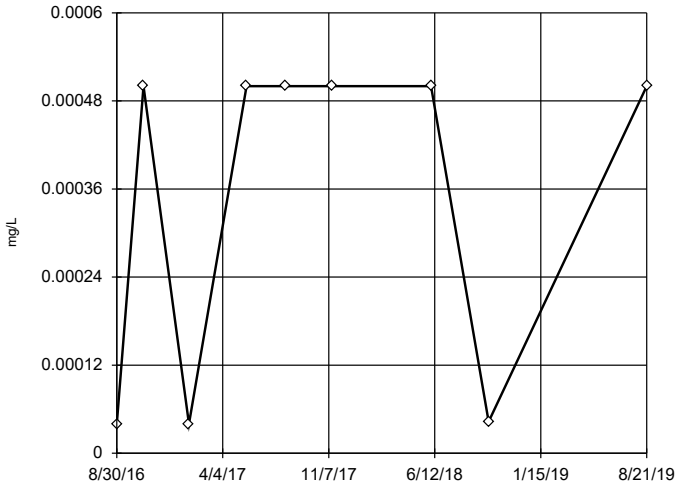
High cutoff = 0.9411, low cutoff = 2.2e-8, based on IQR multiplier of 3.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.8762, low cutoff = 2.4e-8, based on IQR multiplier of 3.

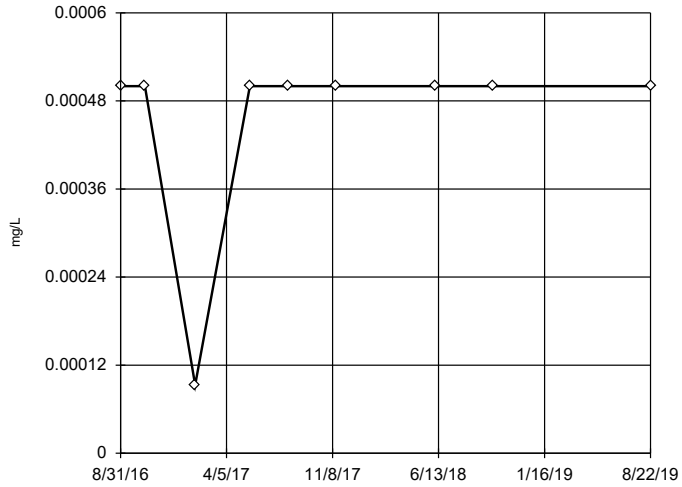
Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-101



n = 9

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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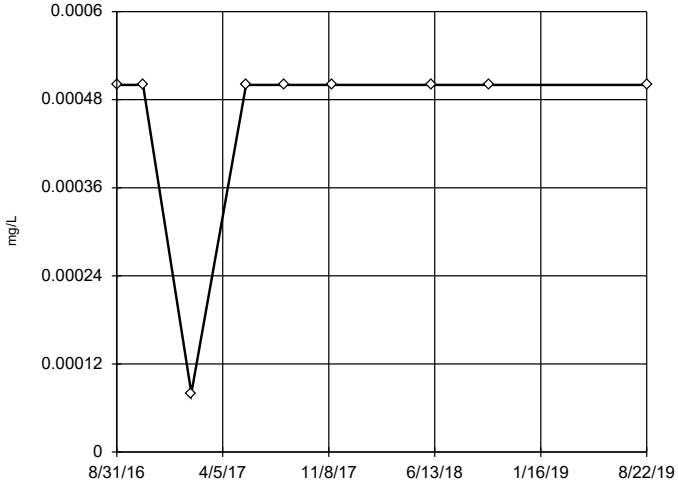
Tukey's Outlier Screening

HGWC-103



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

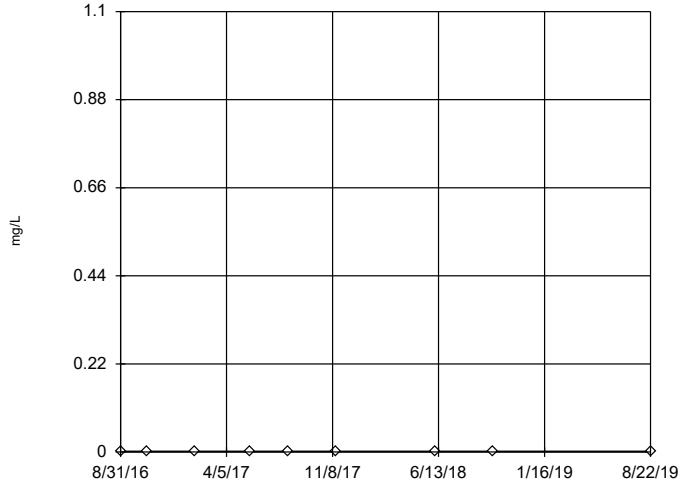
Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-105



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

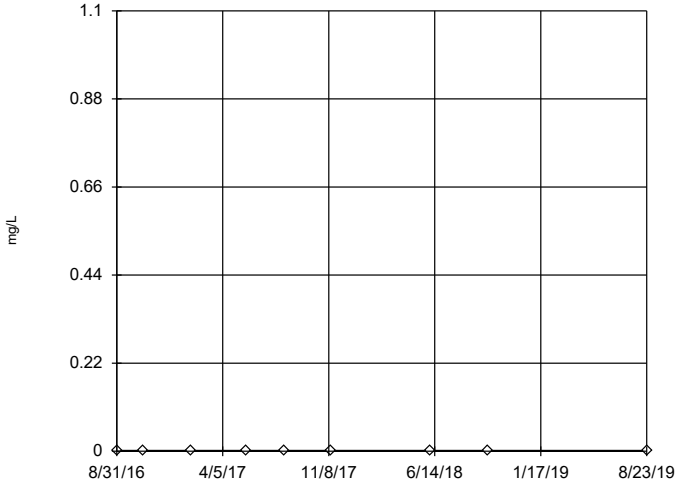
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 9

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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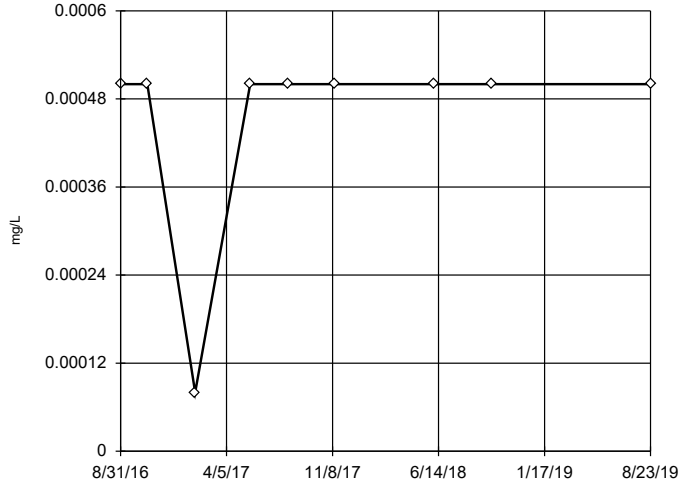
Tukey's Outlier Screening

HGWC-109



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

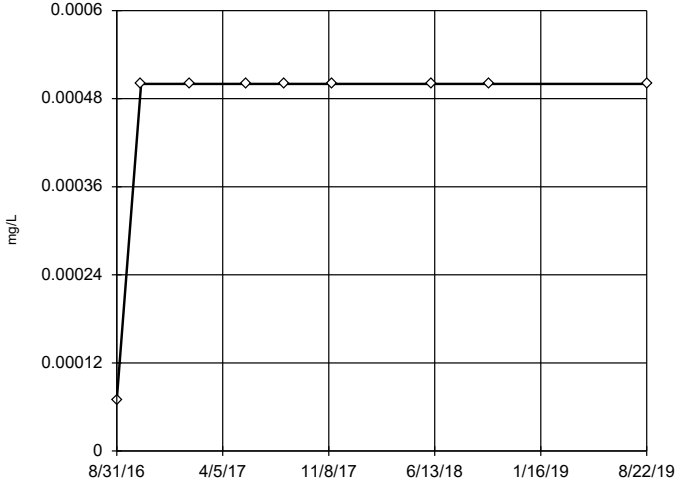
Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-117



n = 9

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

The results were invalidated, because the lower and upper quartiles are equal.

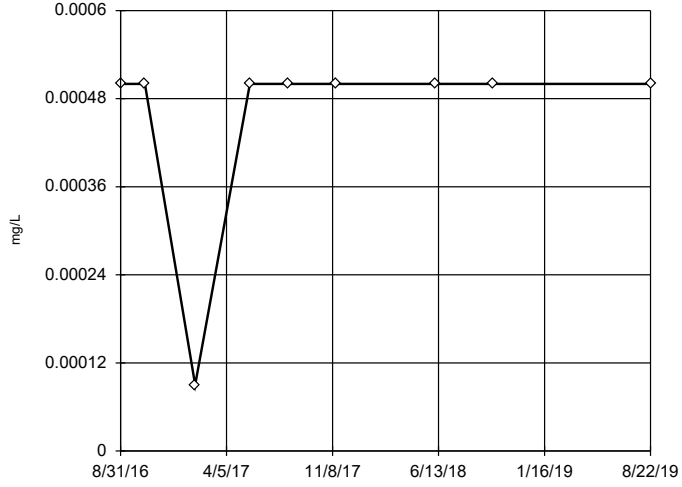
Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

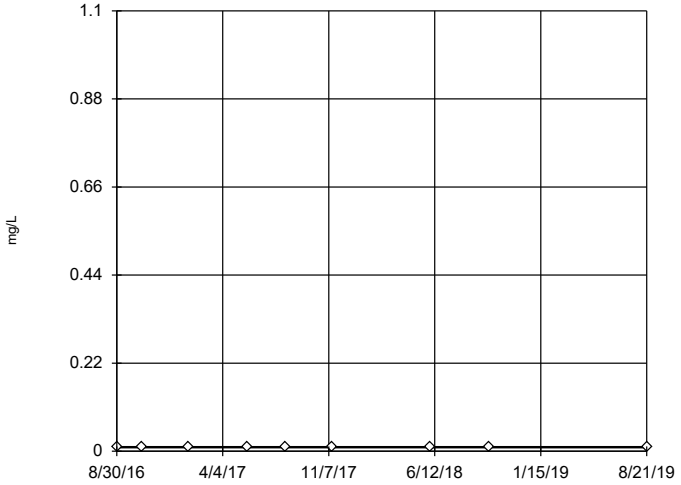
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Mercury Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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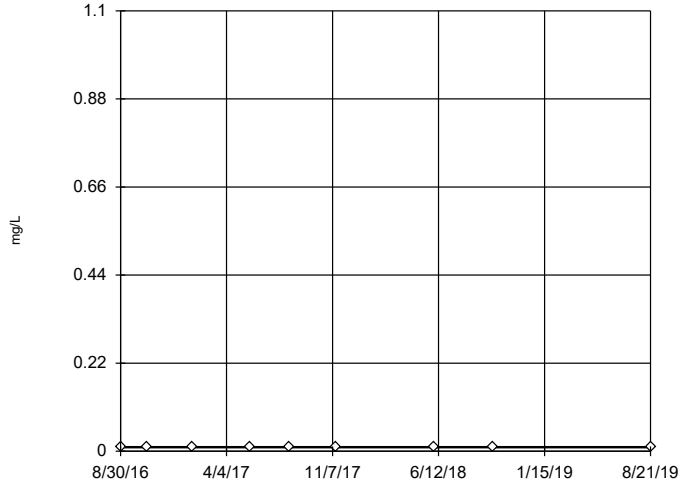
Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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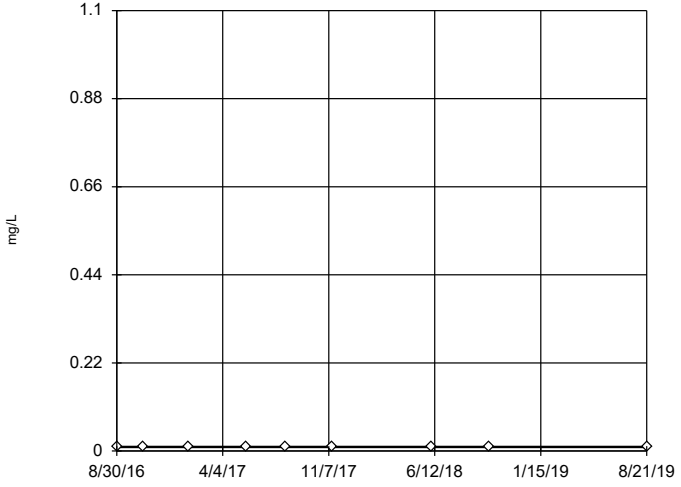
Tukey's Outlier Screening

HGWA-113 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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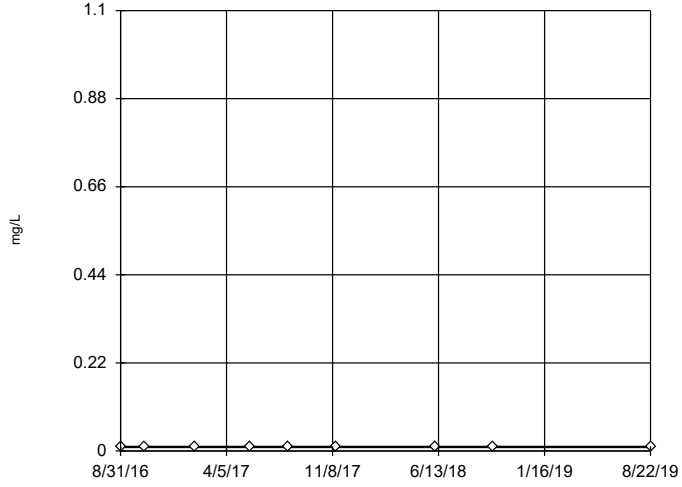
Tukey's Outlier Screening

HGWC-101



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

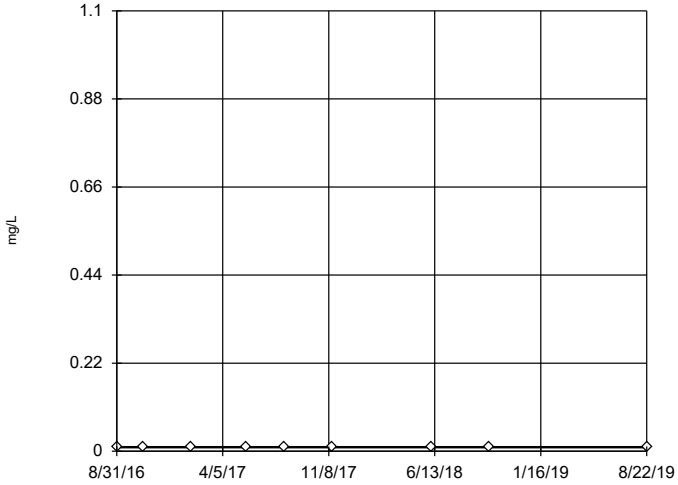
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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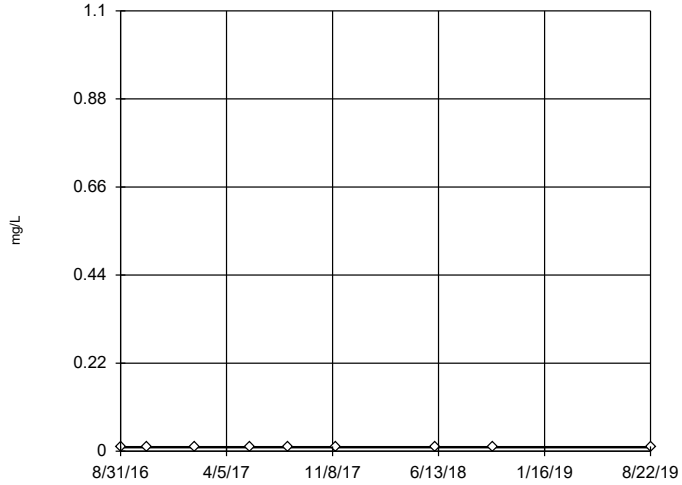
Tukey's Outlier Screening

HGWC-105



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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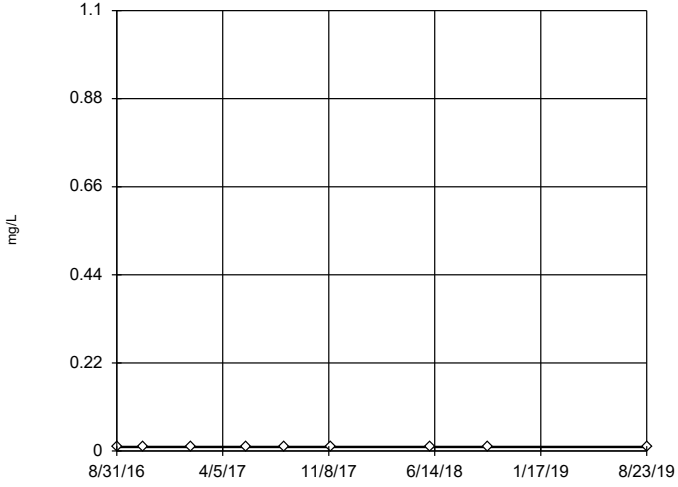
Tukey's Outlier Screening

HGWC-107



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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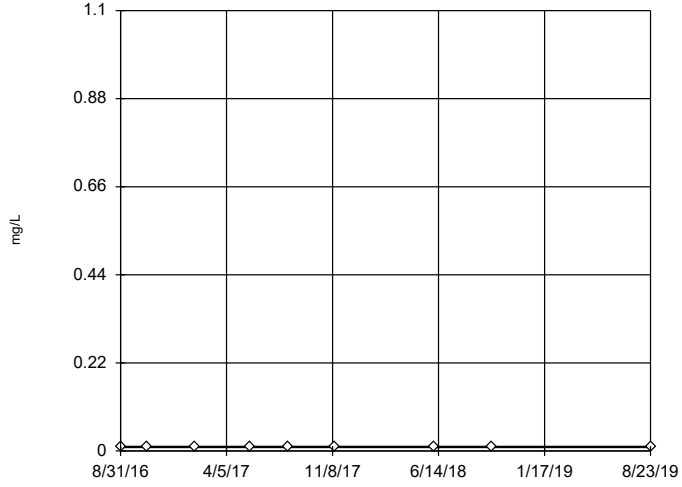
Tukey's Outlier Screening

HGWC-109



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

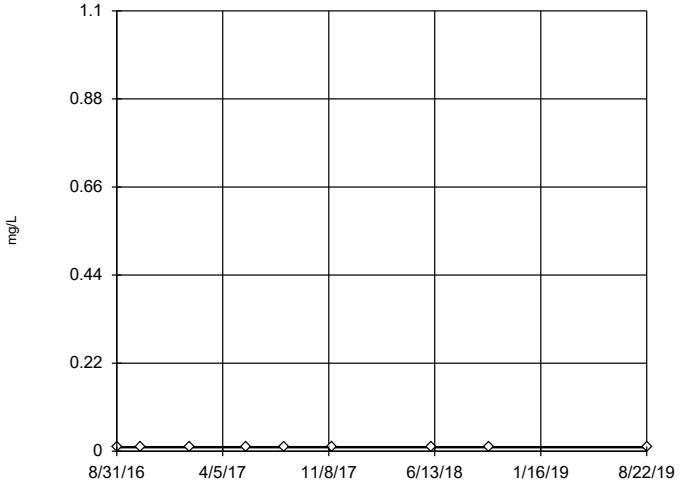
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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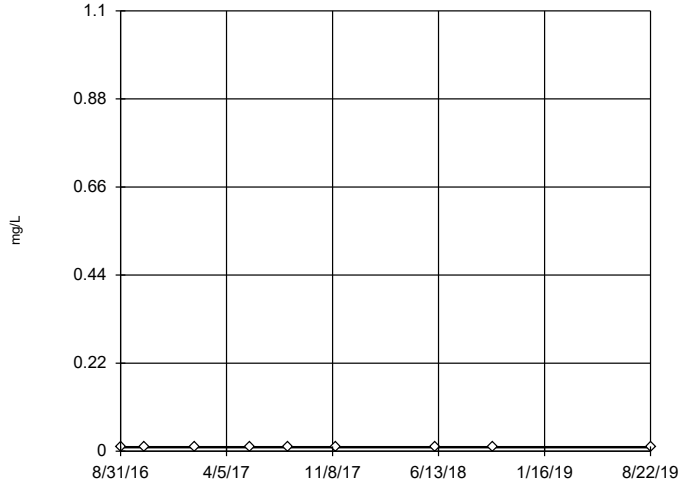
Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

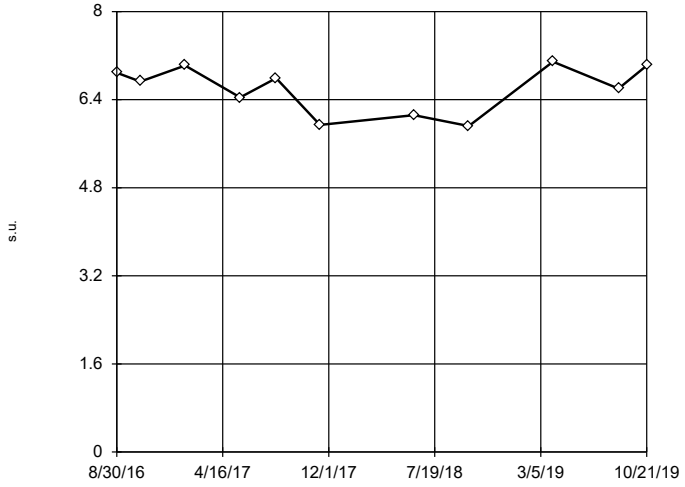
Constituent: Molybdenum Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-111 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.275, low cutoff = -7.28, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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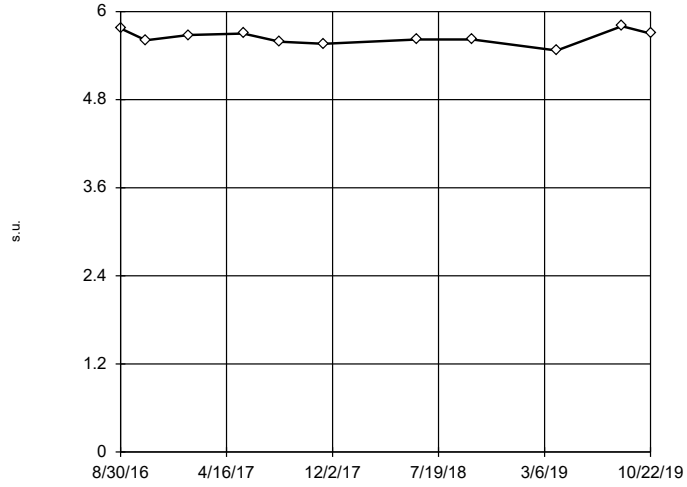
Tukey's Outlier Screening

HGWA-112 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

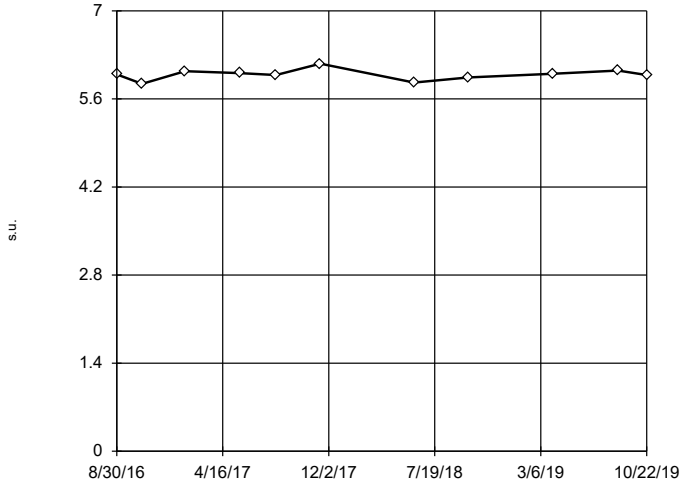
High cutoff = 6.007, low cutoff = 5.231, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 11

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.347, low cutoff = 5.647, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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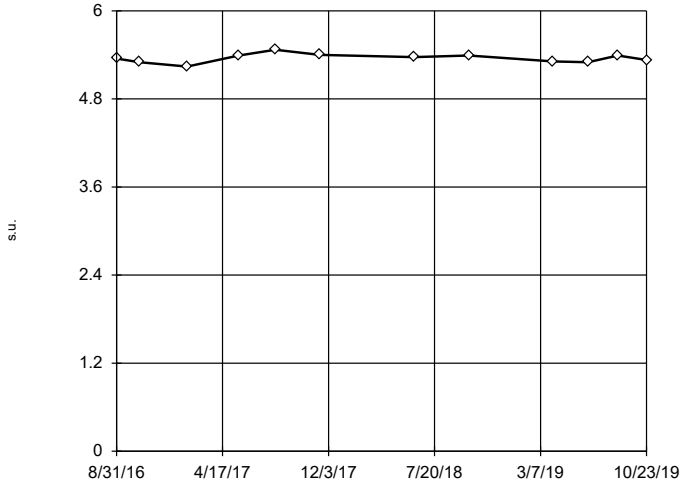
Tukey's Outlier Screening

HGWC-101



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.653, low cutoff = 5.058, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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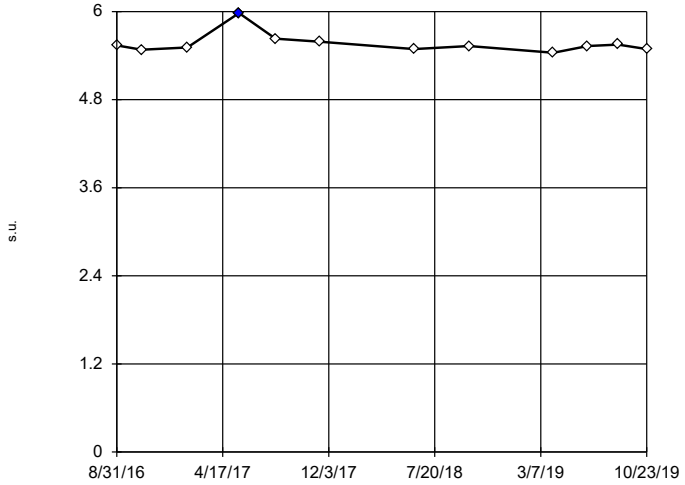
Tukey's Outlier Screening

HGWC-103



n = 12

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.817, low cutoff = 5.257, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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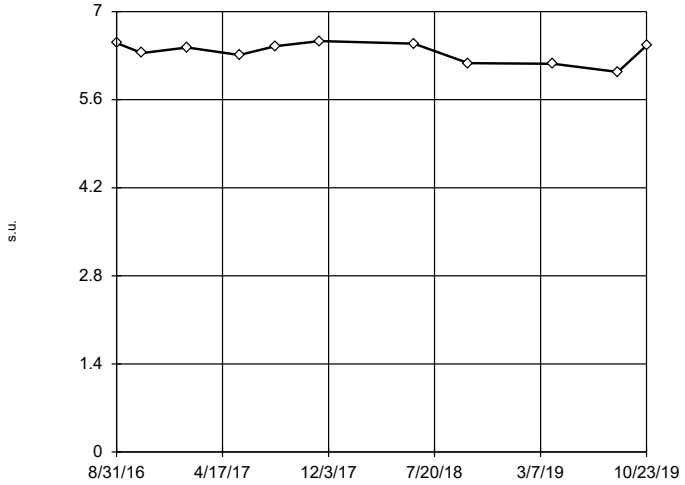
Tukey's Outlier Screening

HGWC-105



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

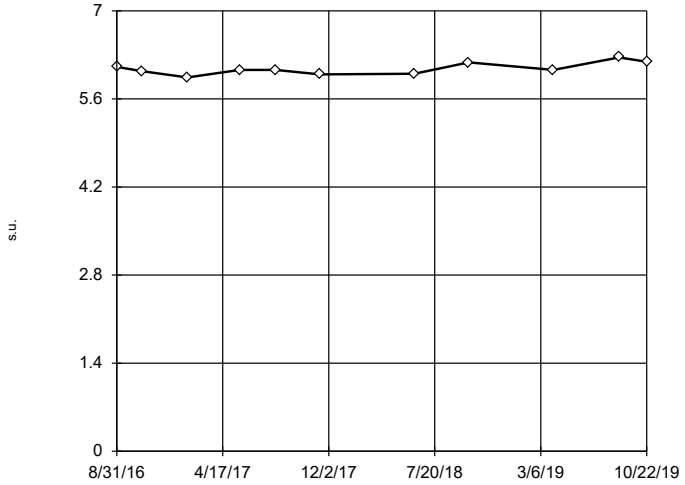
High cutoff = 7.134, low cutoff = -3.319, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.753, low cutoff = 5.491, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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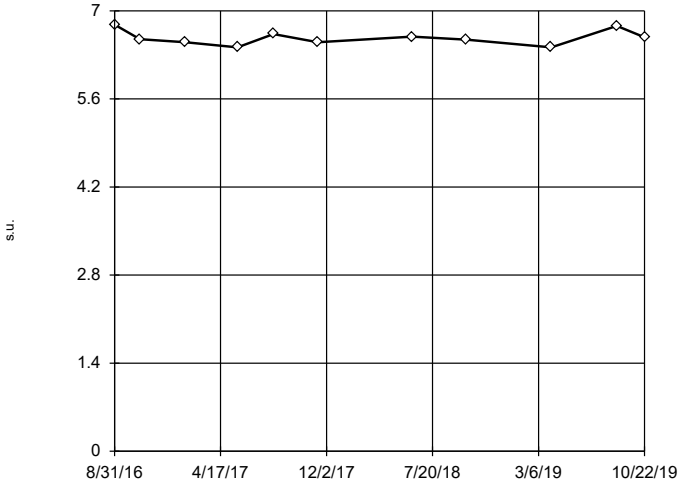
Tukey's Outlier Screening

HGWC-109



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.036, low cutoff = 6.125, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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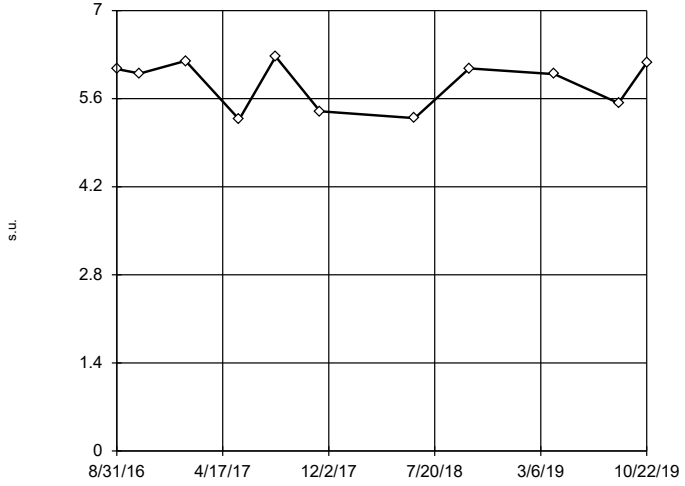
Tukey's Outlier Screening

HGWC-117



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.259, low cutoff = -6.362, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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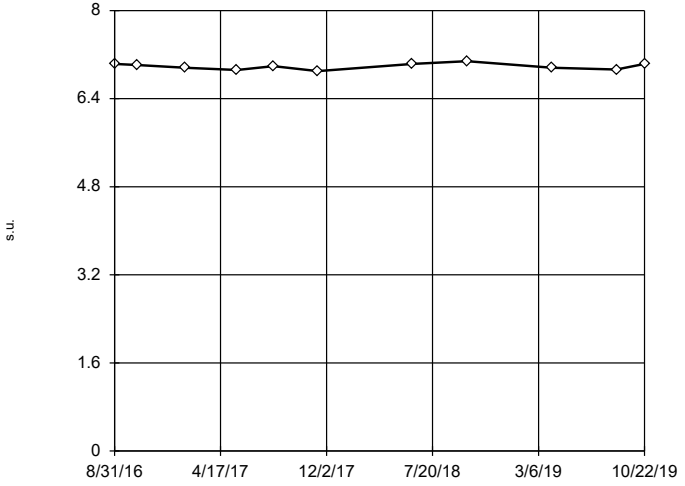
Tukey's Outlier Screening

HGWC-118



n = 11

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

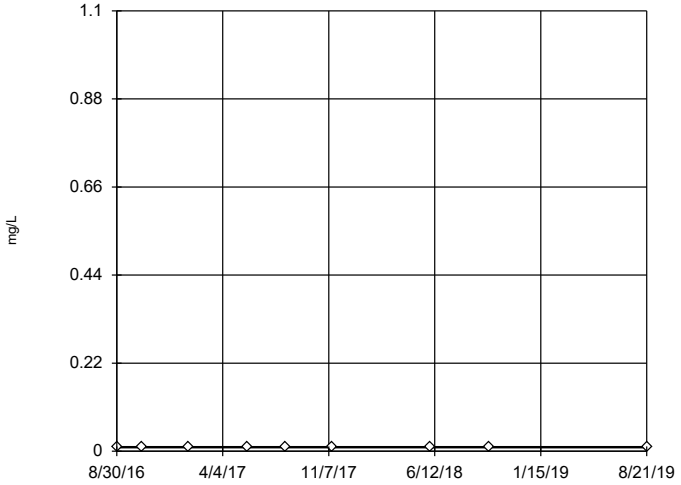
High cutoff = 7.33, low cutoff = 6.63, based on IQR multiplier of 3.

Constituent: pH Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

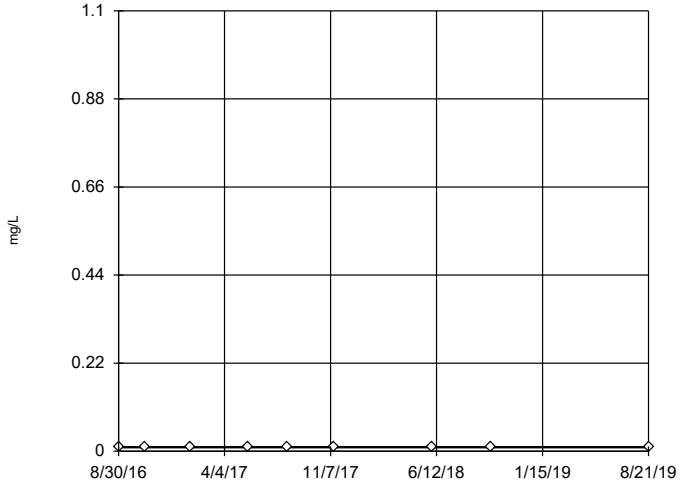
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

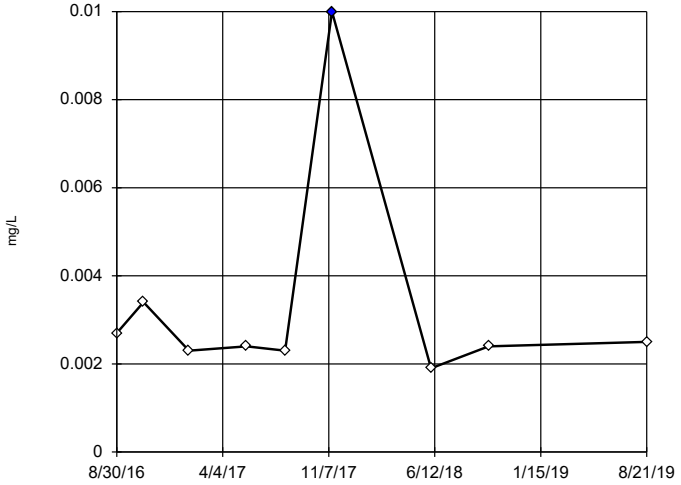
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-113 (bg)



n = 9

Outlier is drawn as solid. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.006926, low cutoff = 0.001006, based on IQR multiplier of 3.

Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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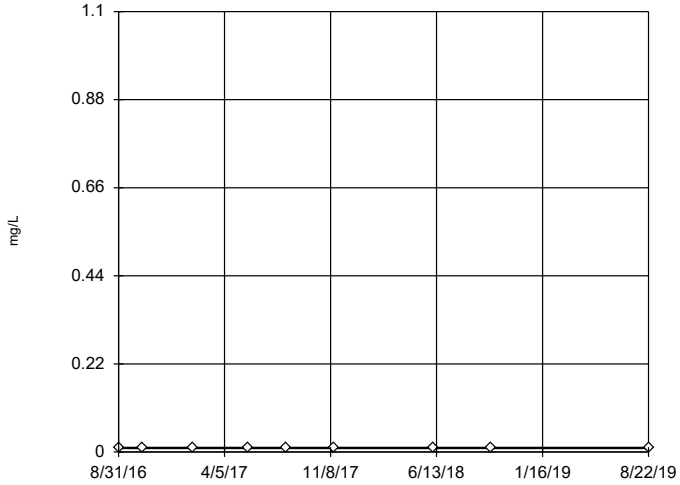
Tukey's Outlier Screening

HGWC-101



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

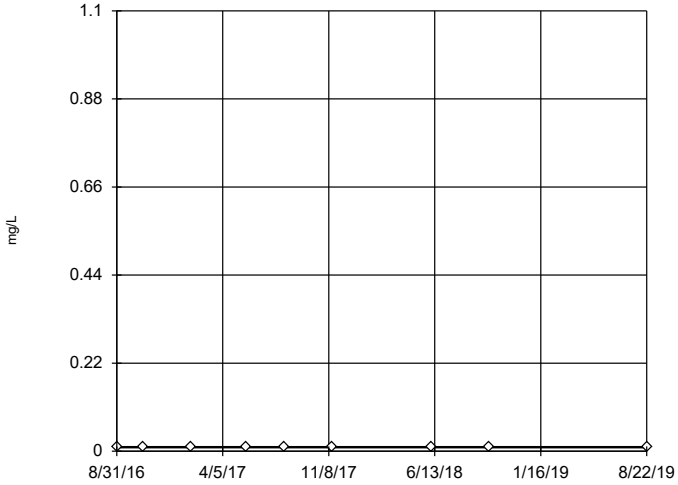
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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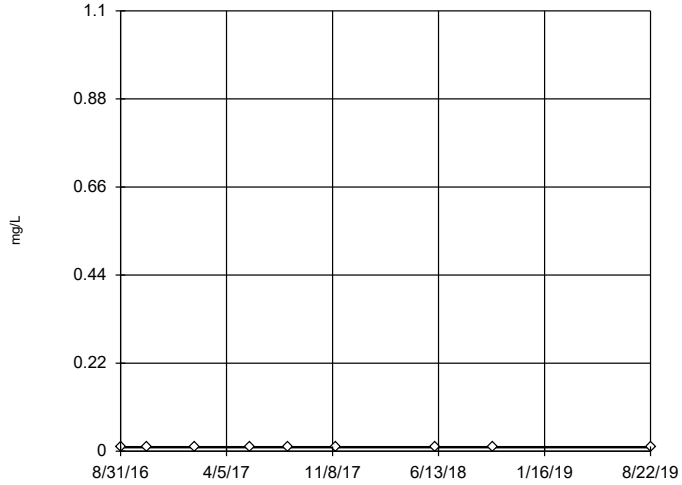
Tukey's Outlier Screening

HGWC-105



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

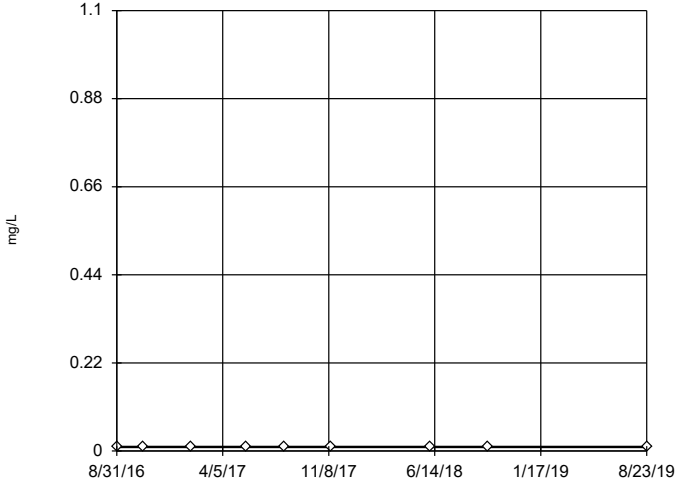
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-107



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

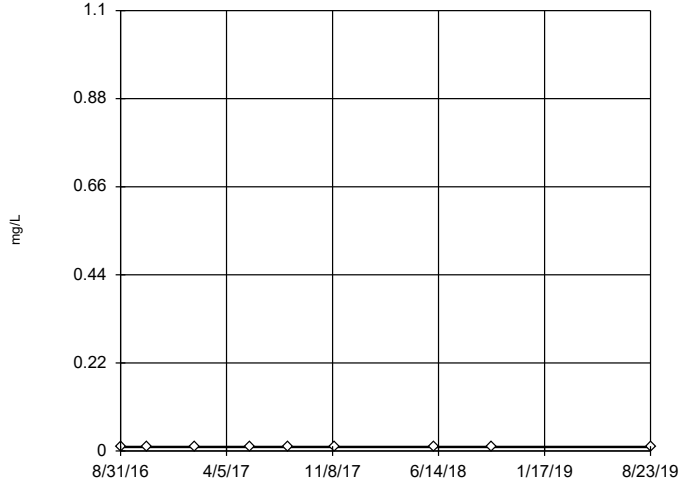
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-109



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

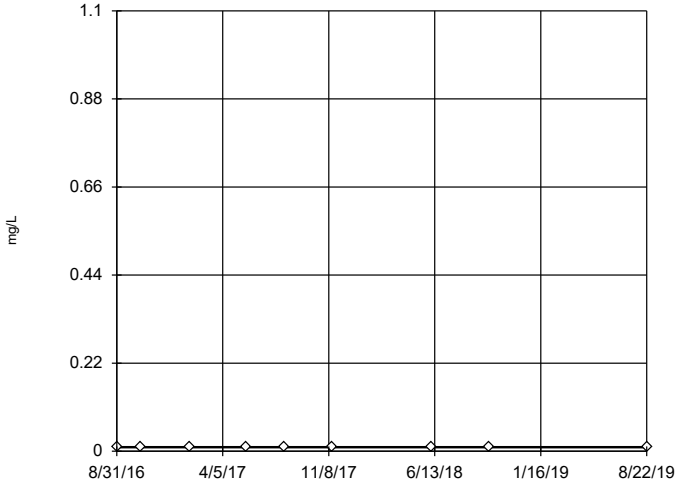
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

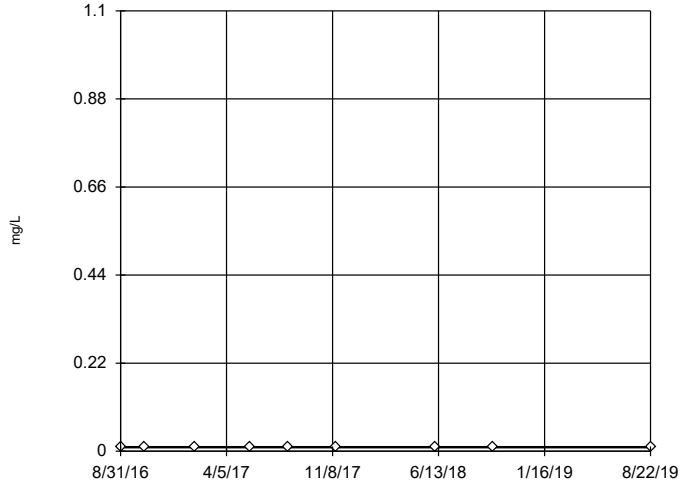
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

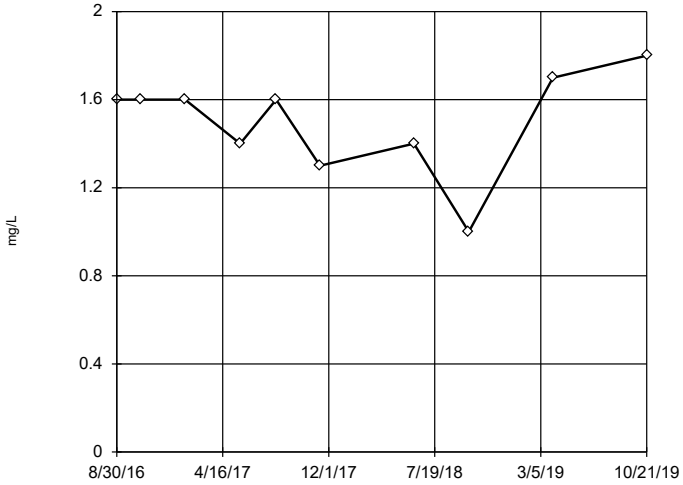
Constituent: Selenium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.108, low cutoff = -1.73, based on IQR multiplier of 3.

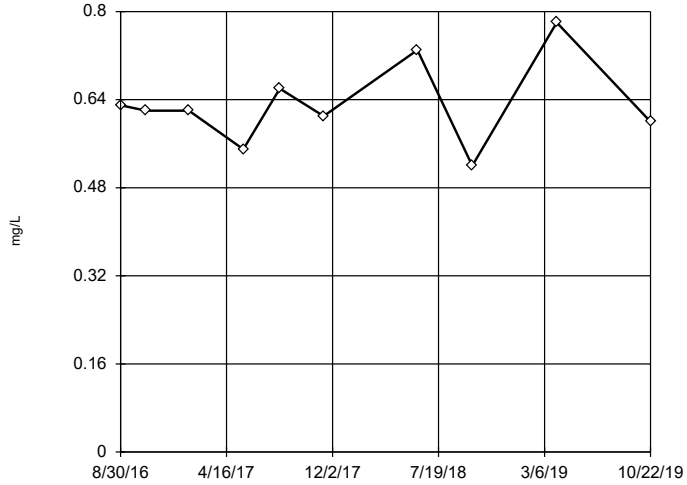
Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

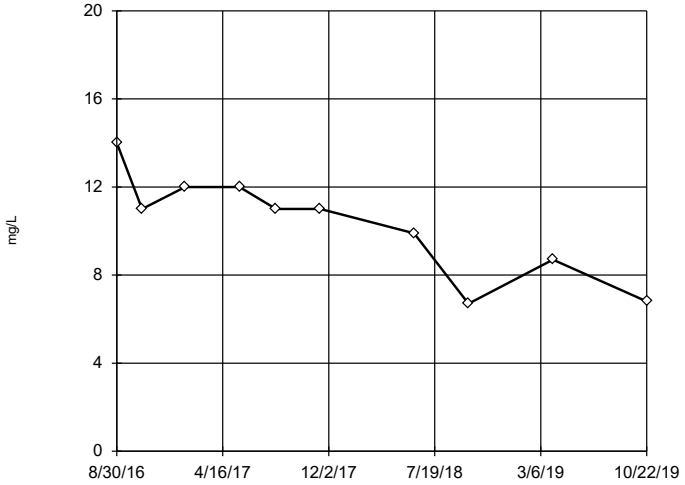
High cutoff = 1.225, low cutoff = 0.3256, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 19.83, low cutoff = -13.72, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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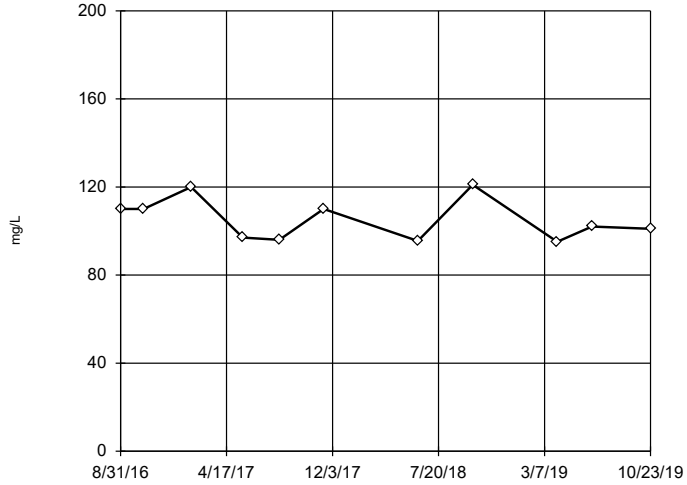
Tukey's Outlier Screening

HGWC-101



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 165.5, low cutoff = 63.81, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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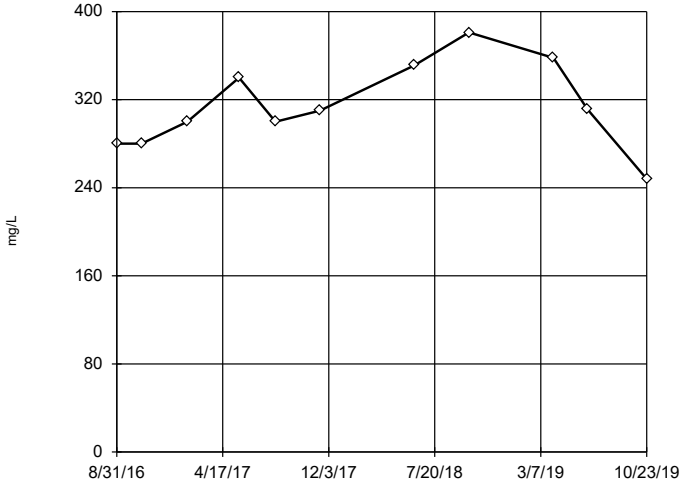
Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 612.1, low cutoff = 115.1, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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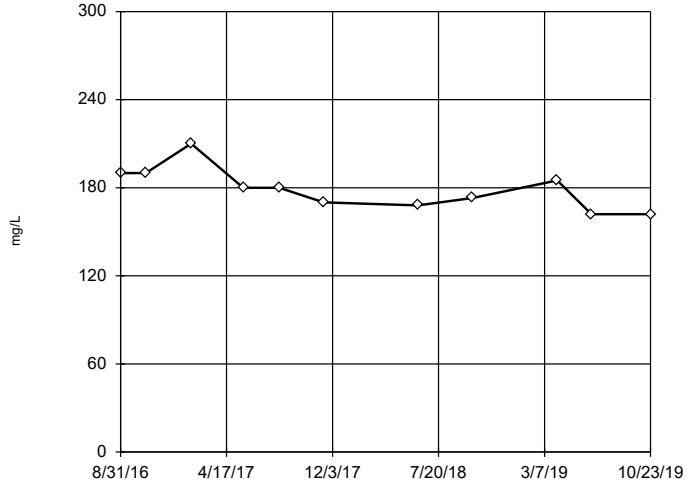
Tukey's Outlier Screening

HGWC-105



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

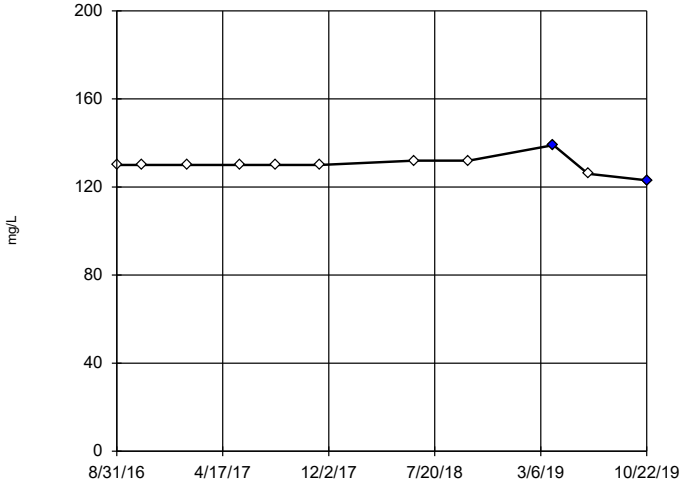
High cutoff = 274.8, low cutoff = 116.1, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 11

Outliers are drawn as solid.
Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 138.2, low cutoff = 124.2, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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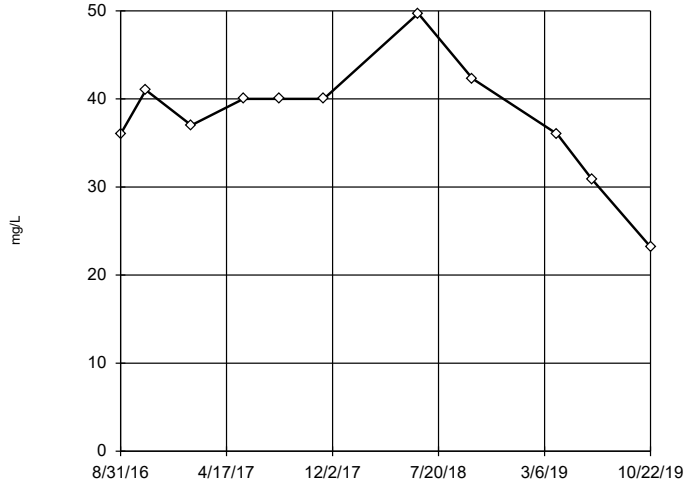
Tukey's Outlier Screening

HGWC-109



n = 11

No outliers found.
Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 53.25, low cutoff = 11.87, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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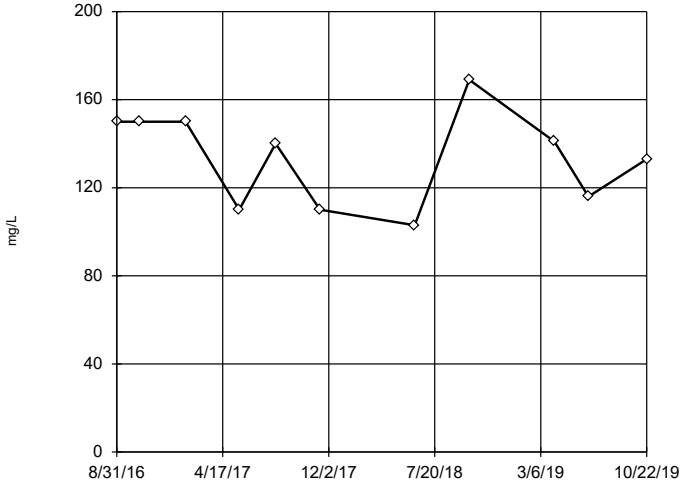
Tukey's Outlier Screening

HGWC-117



n = 11

No outliers found.
Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 231.7, low cutoff = -138.2, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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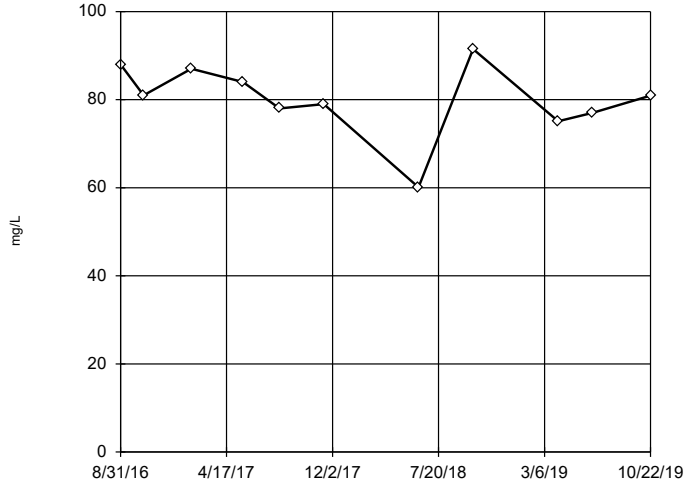
Tukey's Outlier Screening

HGWC-118



n = 11

No outliers found.
Tukey's method selected by user.

Data were x^5 transformed to achieve best W statistic (graph shown in original units).

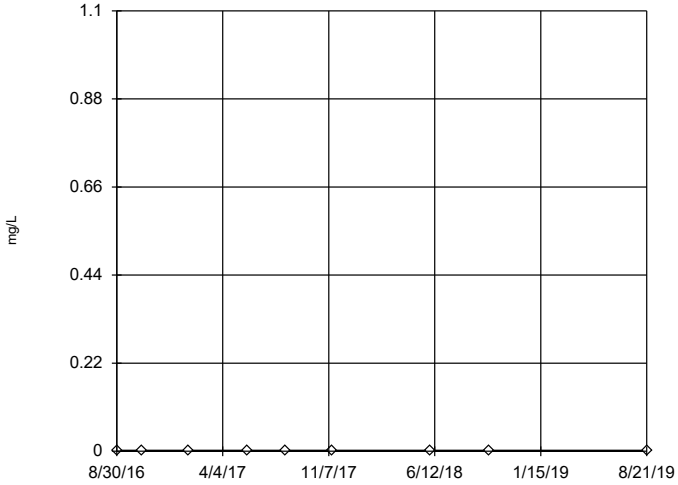
High cutoff = 103.4, low cutoff = -83.77, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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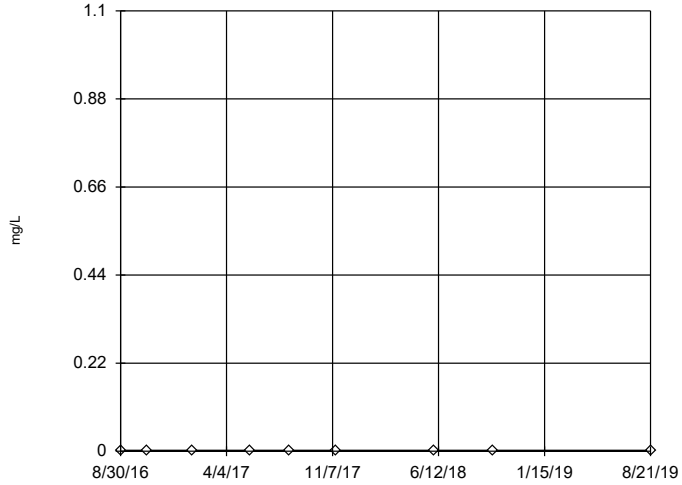
Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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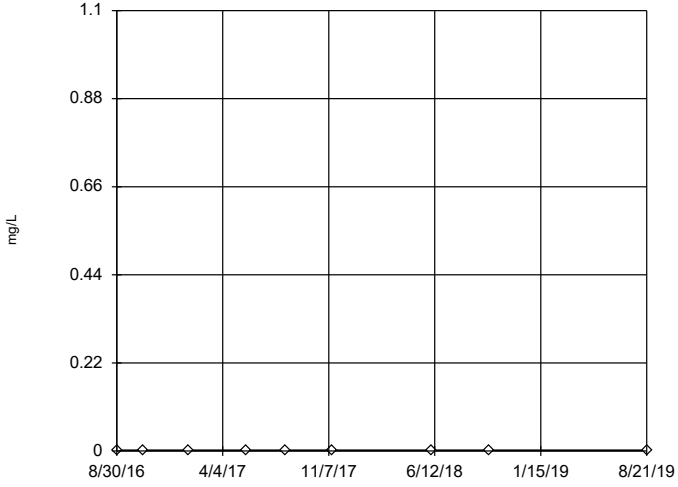
Tukey's Outlier Screening

HGWA-113 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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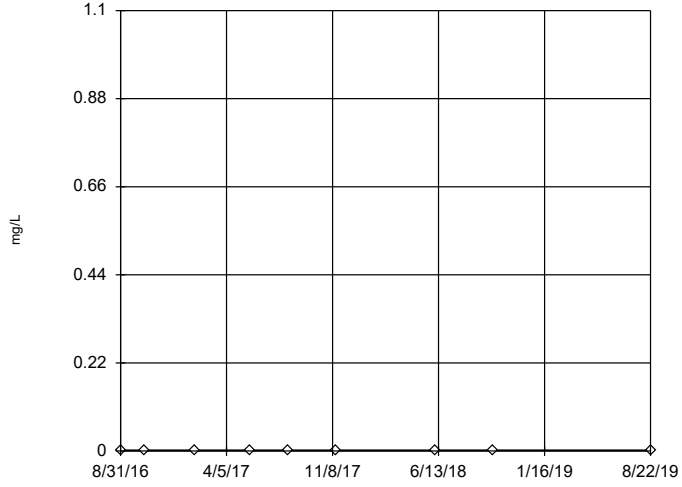
Tukey's Outlier Screening

HGWC-101



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

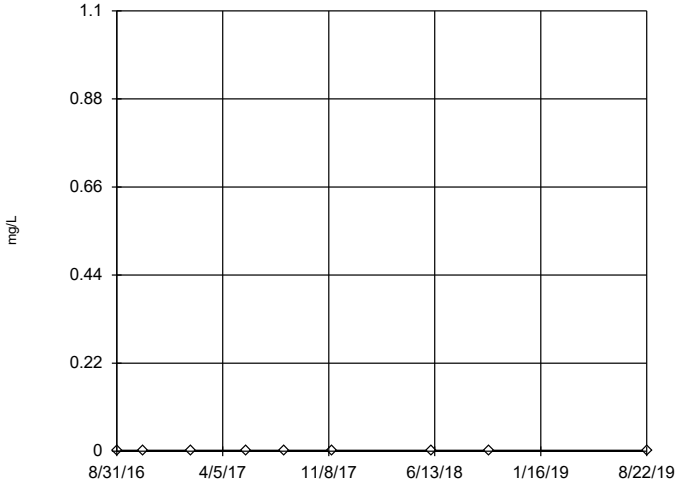
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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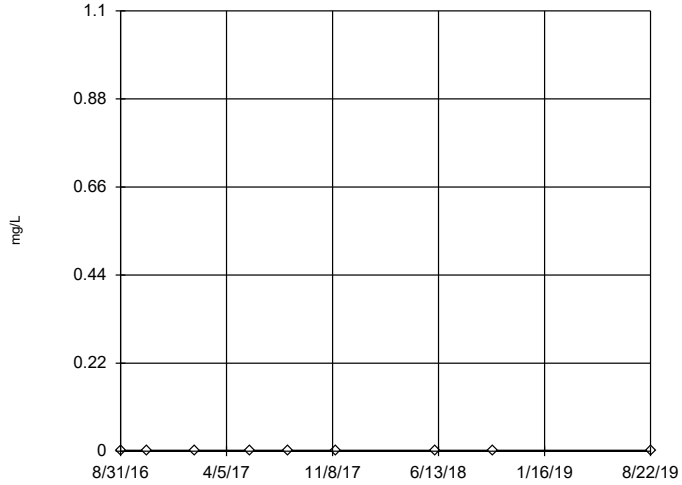
Tukey's Outlier Screening

HGWC-105



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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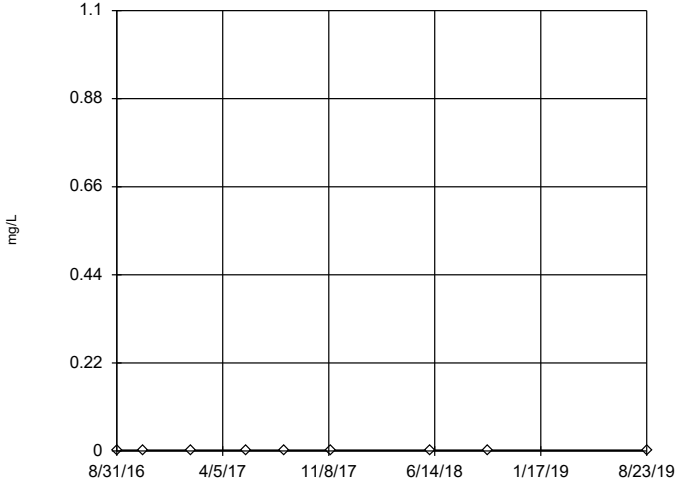
Tukey's Outlier Screening

HGWC-107



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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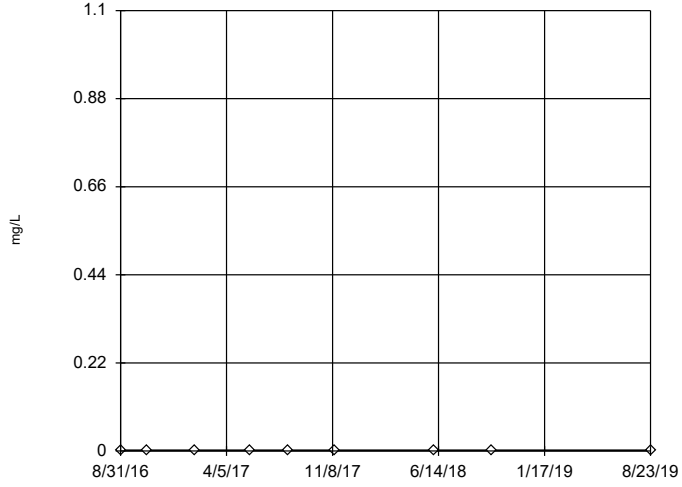
Tukey's Outlier Screening

HGWC-109



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

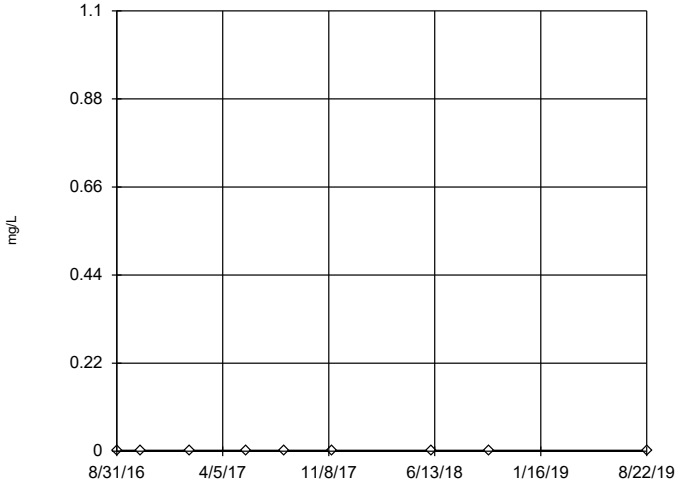
The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

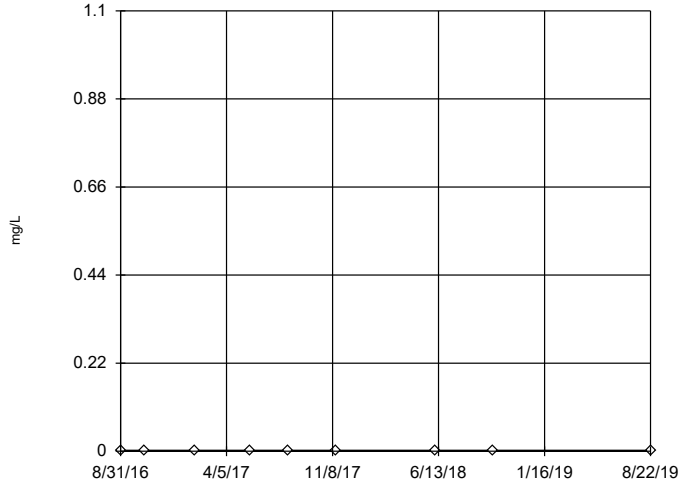
Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

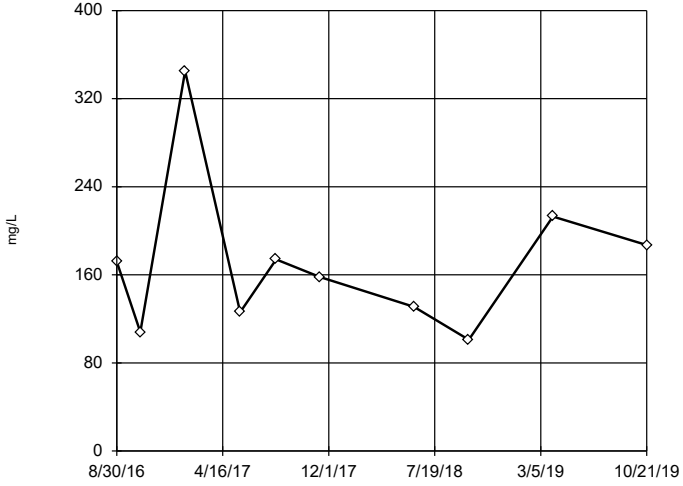
Constituent: Thallium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 999.4, low cutoff = 23.29, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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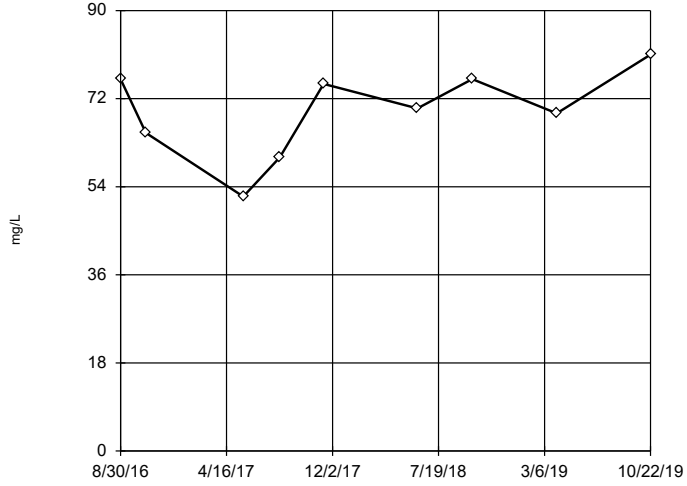
Tukey's Outlier Screening

HGWA-112 (bg)



n = 9

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

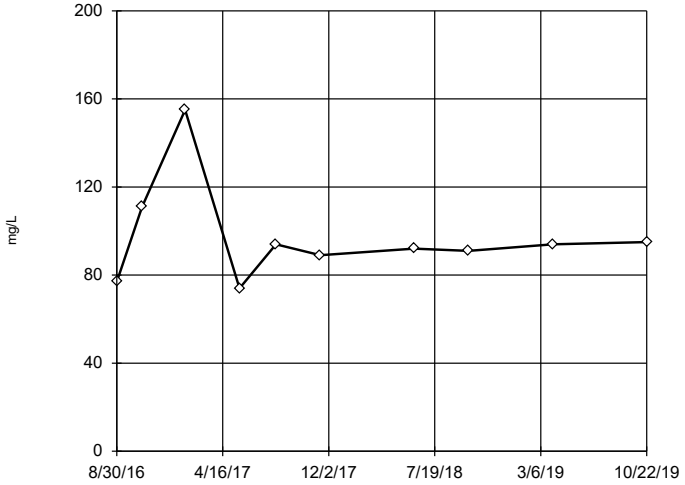
High cutoff = 96.64, low cutoff = -78.75, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 196, low cutoff = 43.37, based on IQR multiplier of 3.

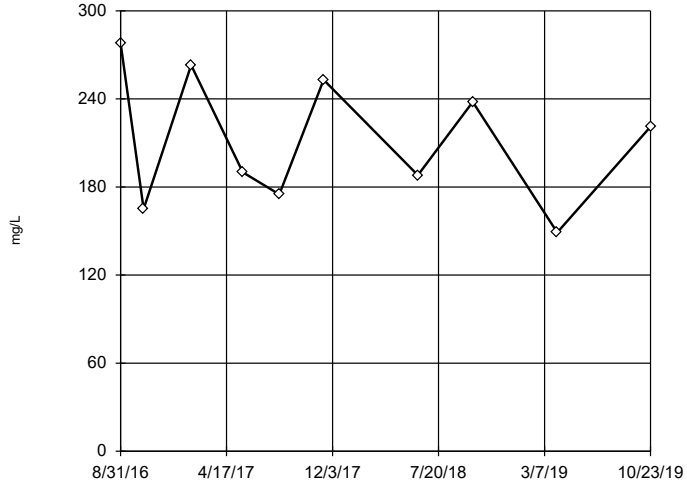
Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 902.3, low cutoff = 48.58, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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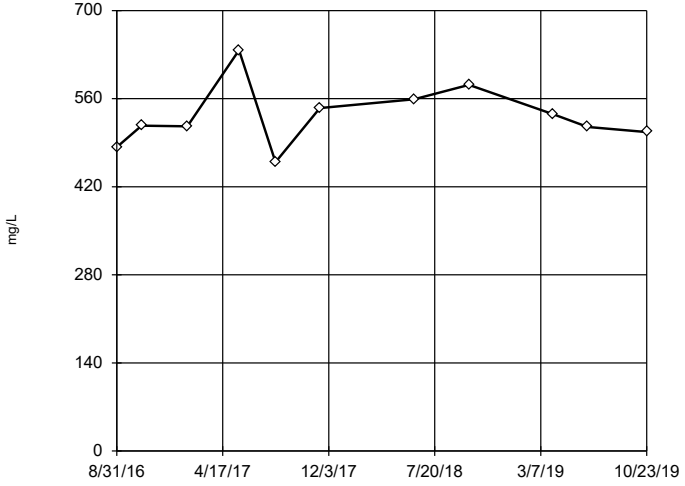
Tukey's Outlier Screening

HGWC-103



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 749.2, low cutoff = 378.3, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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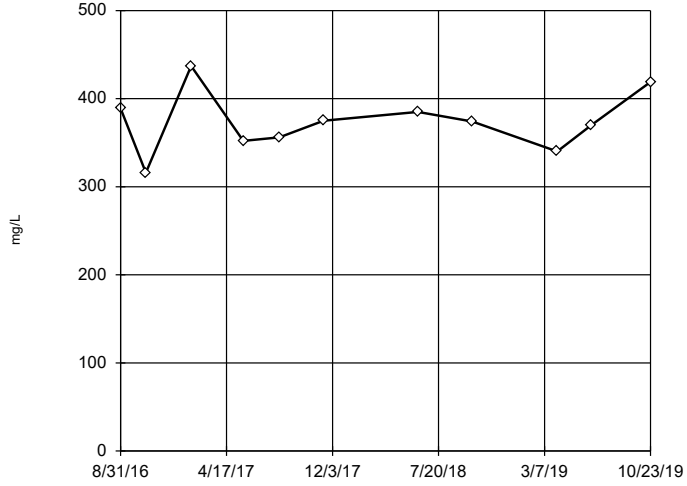
Tukey's Outlier Screening

HGWC-105



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

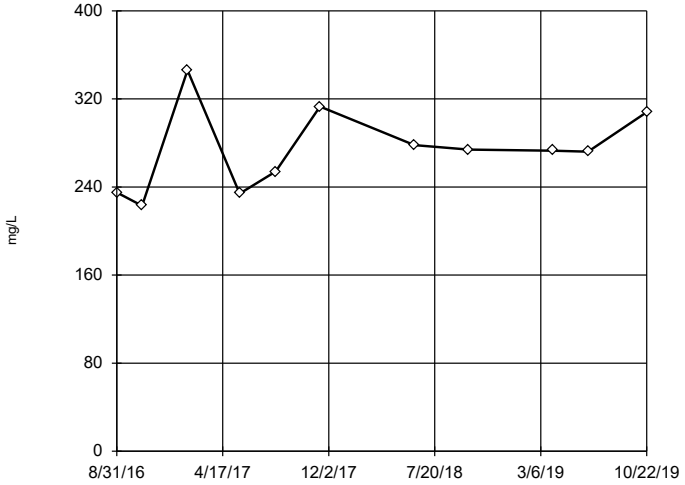
High cutoff = 525, low cutoff = 260.8, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-107



n = 11

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 693.4, low cutoff = 104.4, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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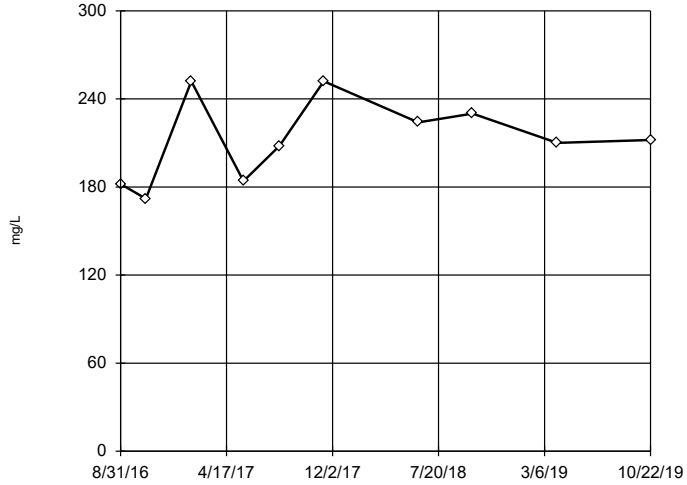
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 484.5, low cutoff = 66.17, based on IQR multiplier of 3.

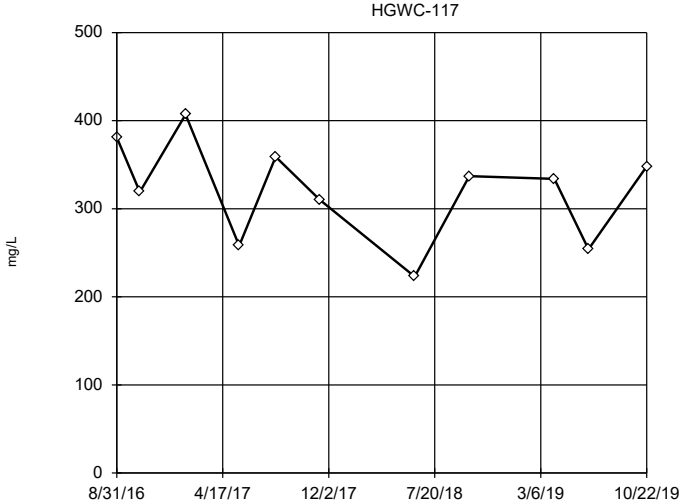
Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-117



n = 11

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 562, low cutoff = -347, based on IQR multiplier of 3.

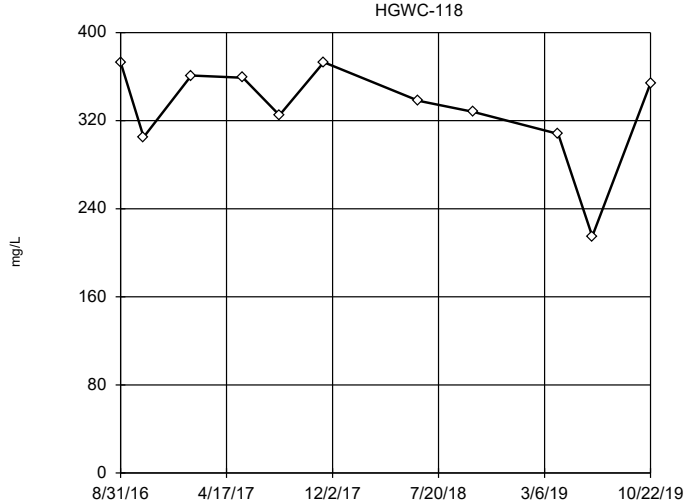
Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Tukey's Outlier Screening

HGWC-118



n = 11

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

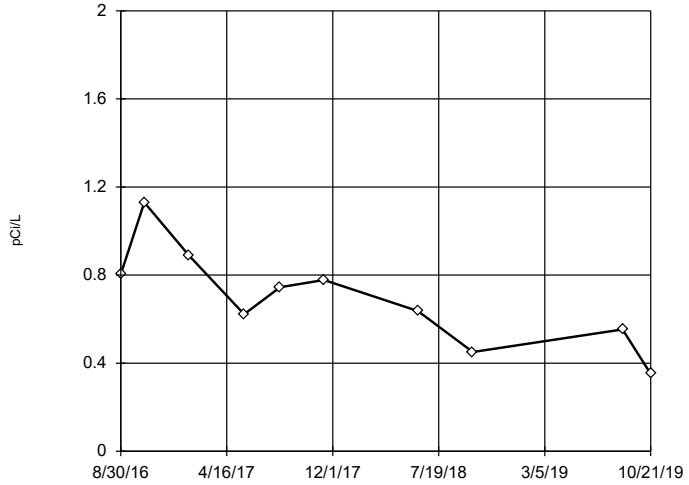
High cutoff = 429.7, low cutoff = -384.4, based on IQR multiplier of 3.

Constituent: Total Dissolved Solids Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWA-111 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.419, low cutoff = 0.005171, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:36 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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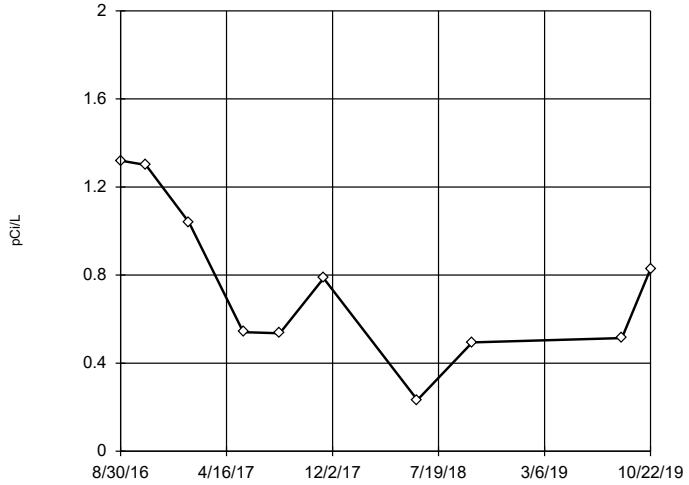
Tukey's Outlier Screening

HGWA-112 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.046, low cutoff = 0.00001815, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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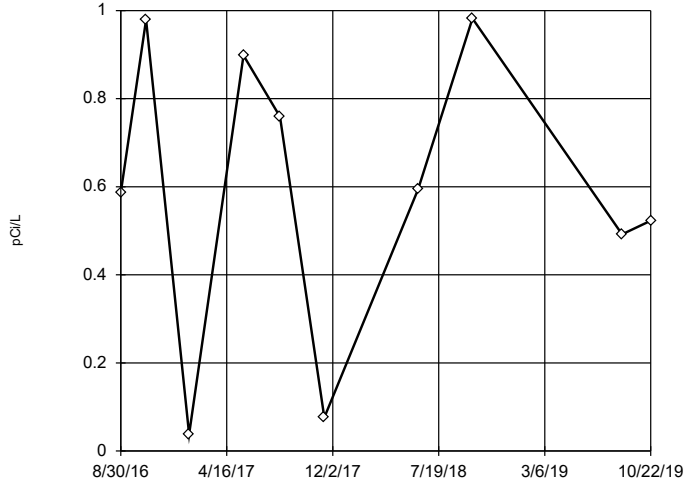
Tukey's Outlier Screening

HGWA-113 (bg)



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.777, low cutoff = -1.467, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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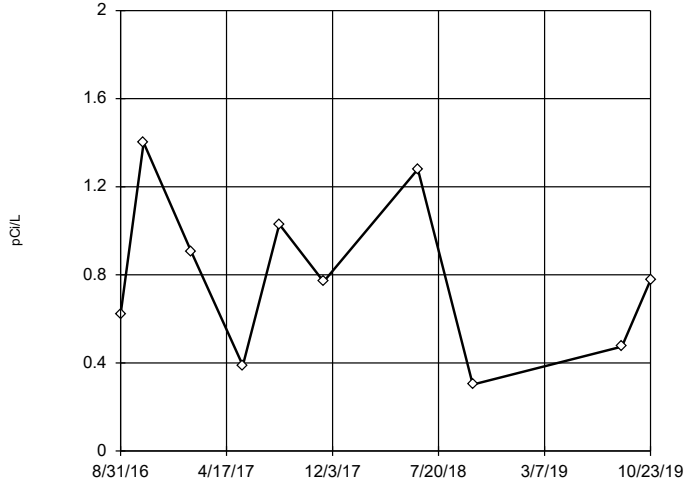
Tukey's Outlier Screening

HGWC-101



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

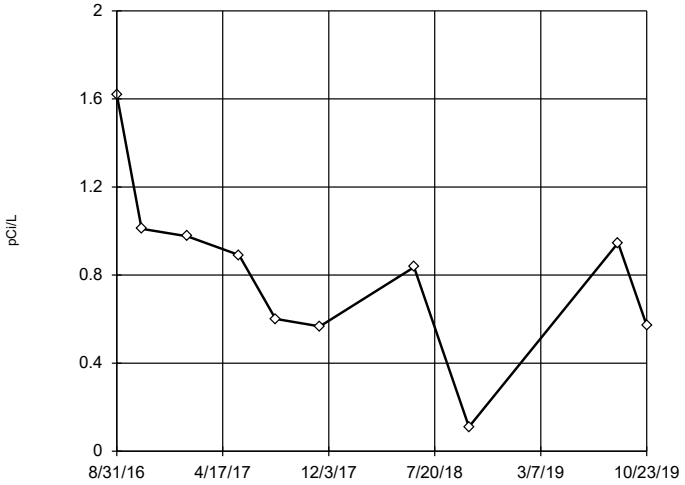
High cutoff = 5.408, low cutoff = -0.356, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-103



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 2.265, low cutoff = -0.703, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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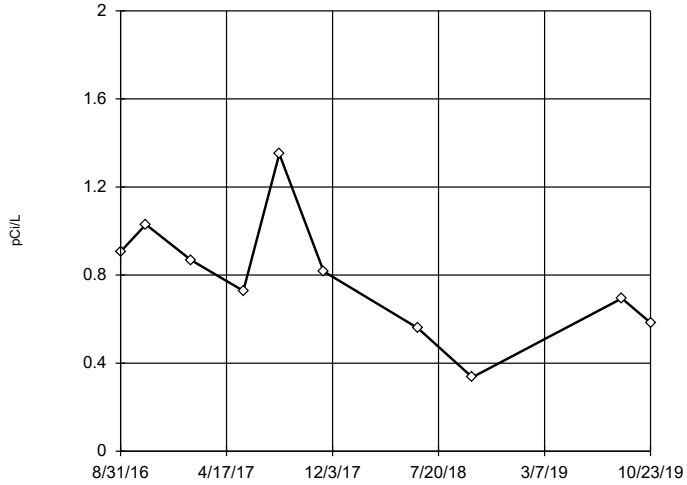
Tukey's Outlier Screening

HGWC-105



n = 10

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.774, low cutoff = 0.005421, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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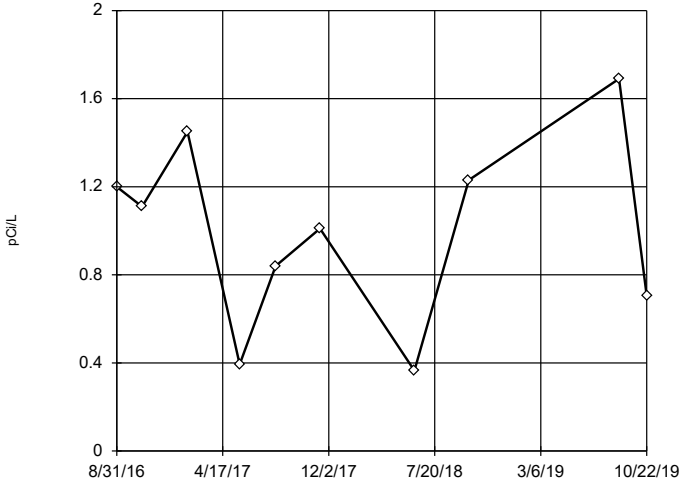
Tukey's Outlier Screening

HGWC-107



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 3.713, low cutoff = -1.824, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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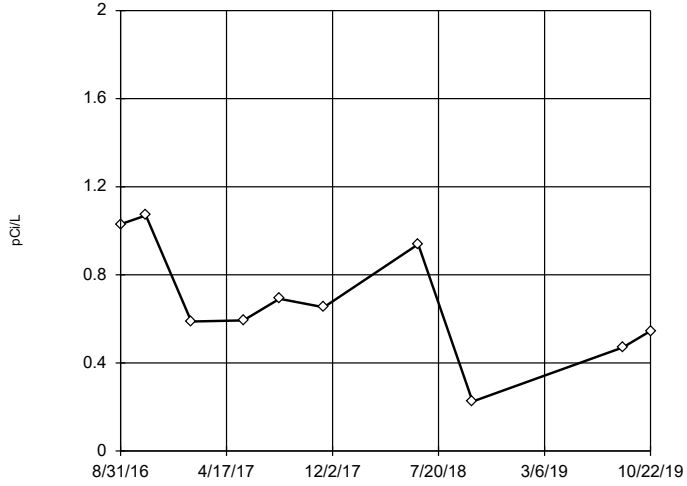
Tukey's Outlier Screening

HGWC-109



n = 10

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

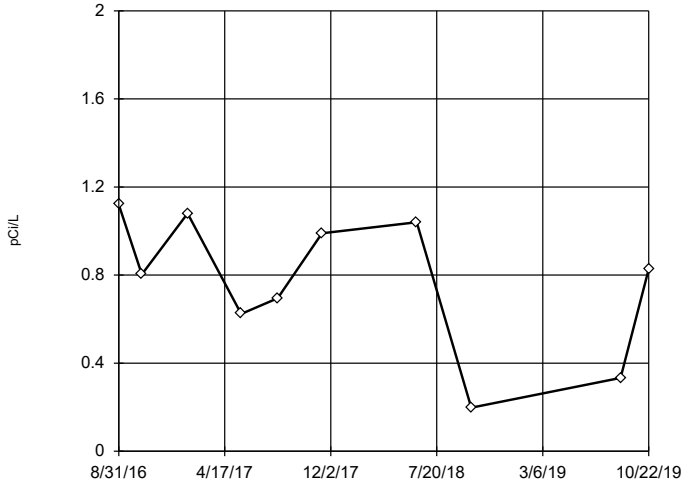
High cutoff = 2.416, low cutoff = -0.9235, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Tukey's Outlier Screening

HGWC-117



n = 10

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1.935, low cutoff = -1.54, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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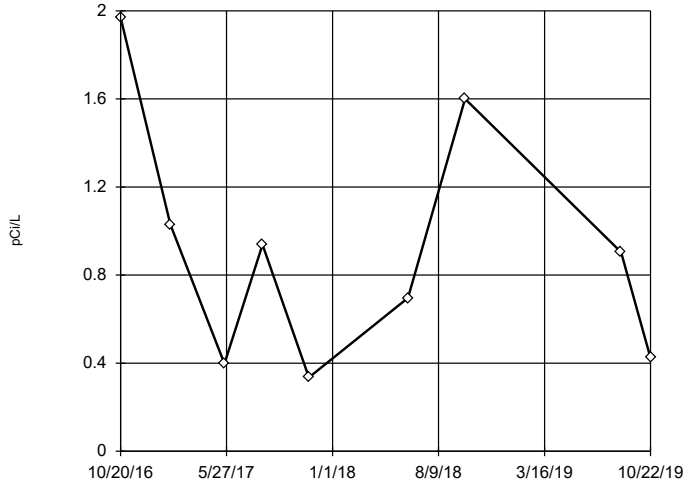
Tukey's Outlier Screening

HGWC-118



n = 9

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 39.18, low cutoff = 0.01346, based on IQR multiplier of 3.

Constituent: Total Radium Analysis Run 3/13/2020 2:37 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

TIME SERIES

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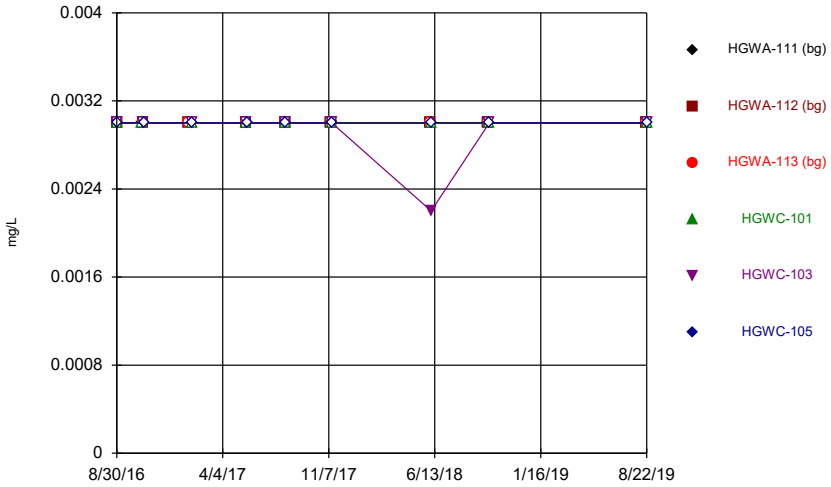
Hollow symbols indicate censored values.

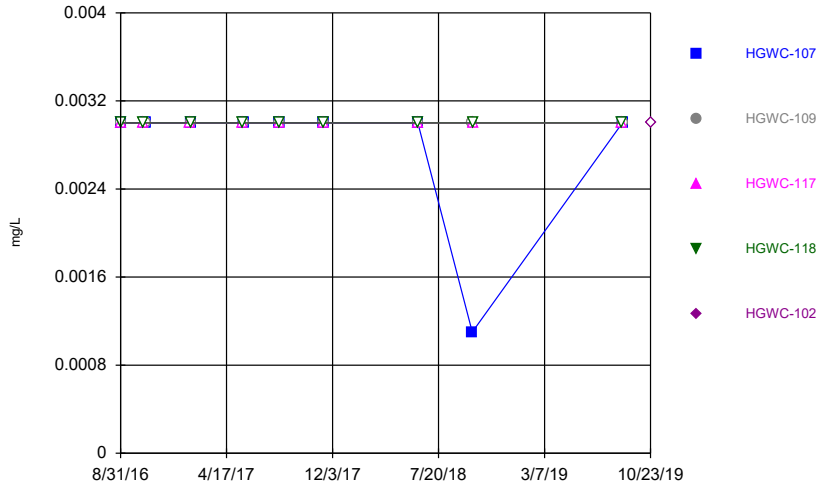
Time Series



Constituent: Antimony Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

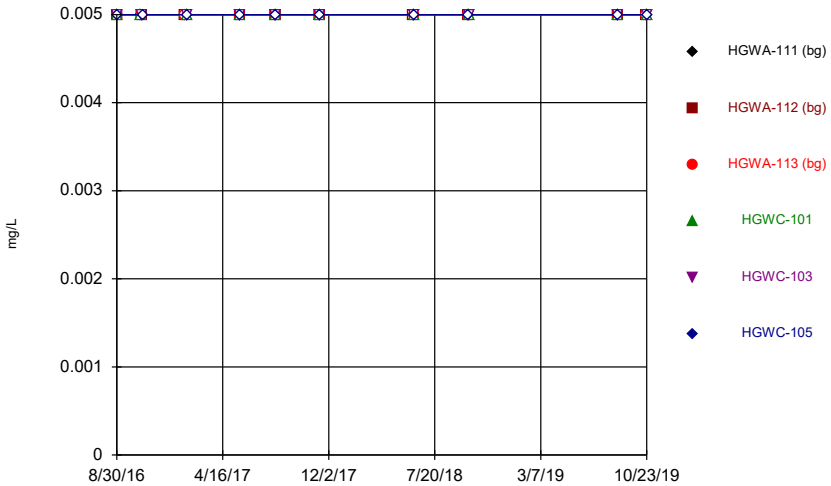
Time Series



Constituent: Antimony Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Arsenic Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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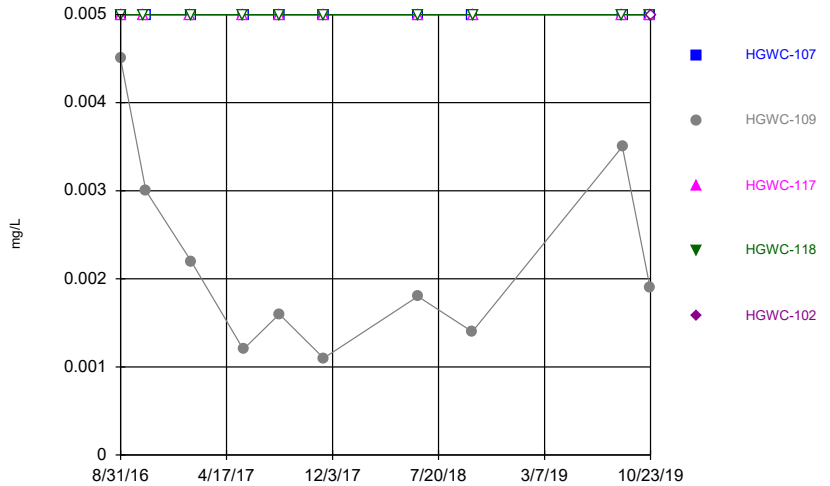
Hollow symbols indicate censored values.

Time Series



Constituent: Arsenic Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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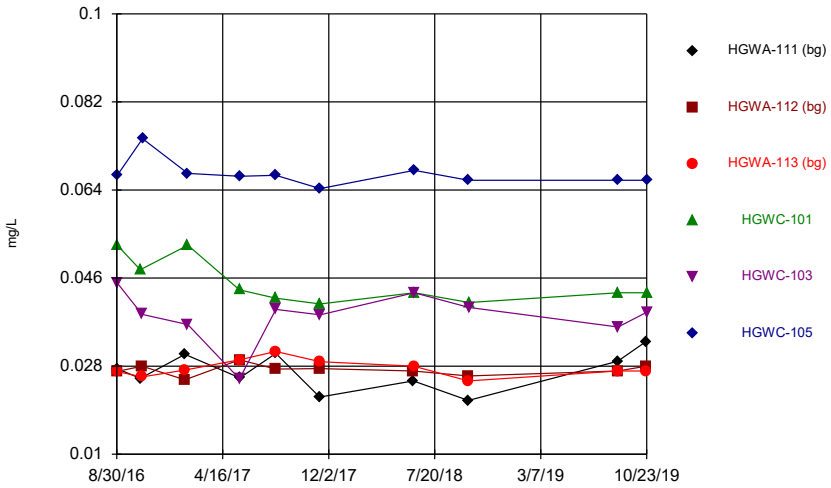
Time Series



Constituent: Barium Analysis Run 3/13/2020 3:17 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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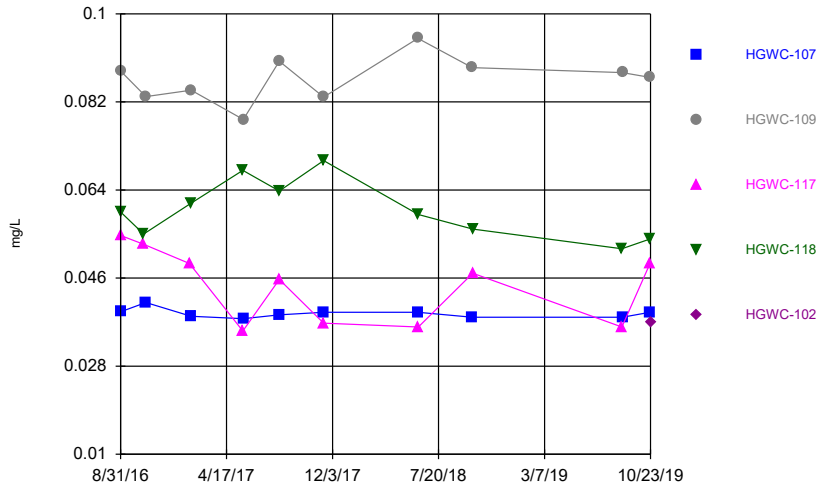
Time Series

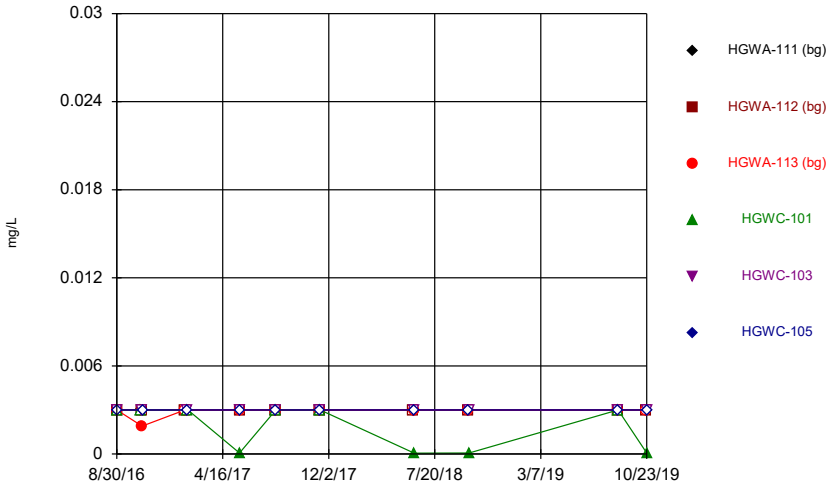


Constituent: Barium Analysis Run 3/13/2020 3:17 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Beryllium Analysis Run 3/13/2020 3:17 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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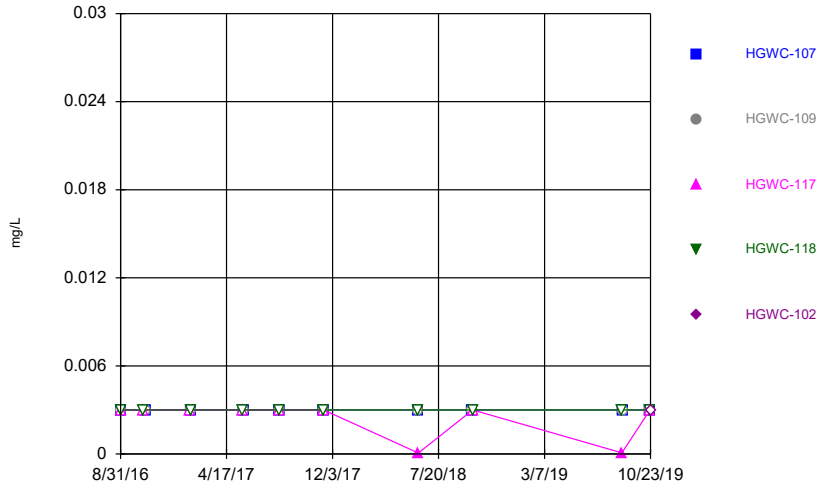
Hollow symbols indicate censored values.

Time Series



Constituent: Beryllium Analysis Run 3/13/2020 3:17 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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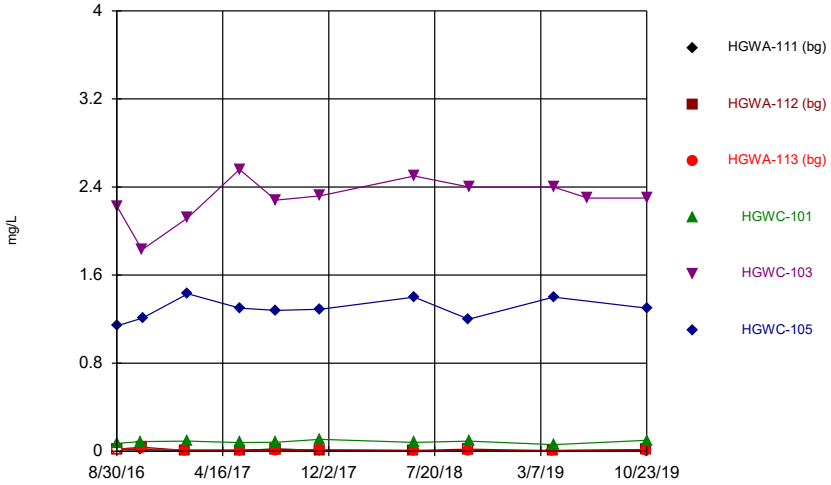
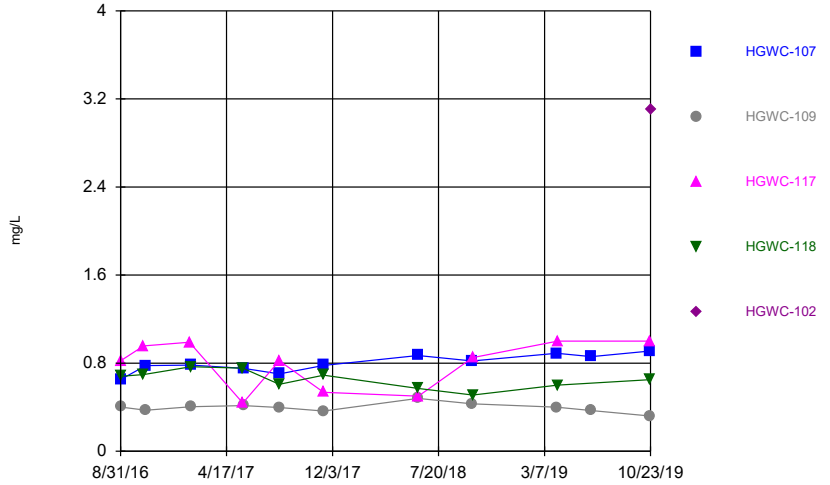
Time Series



Constituent: Boron Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

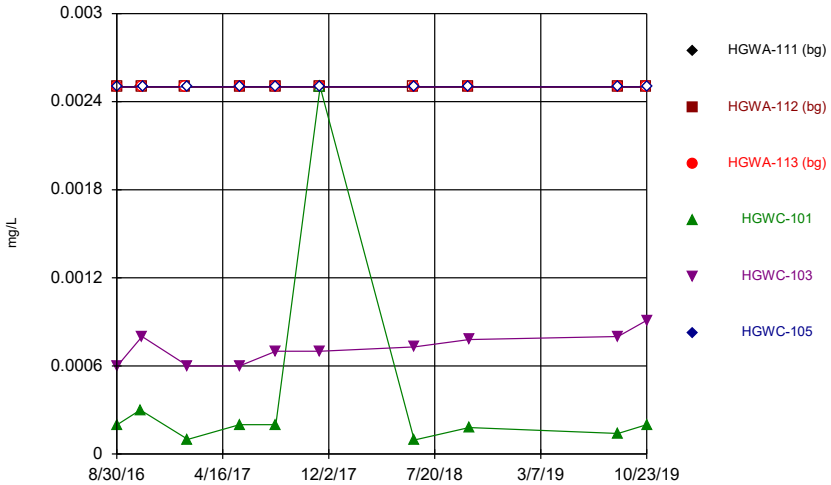
Time Series



Constituent: Boron Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Cadmium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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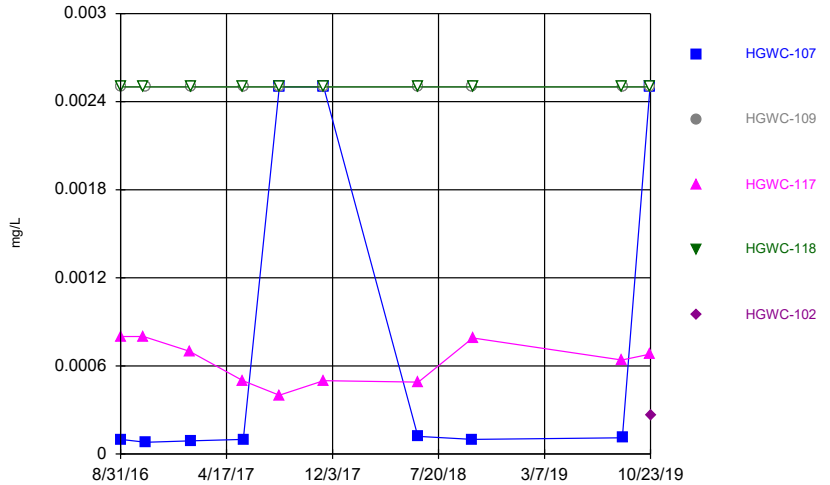
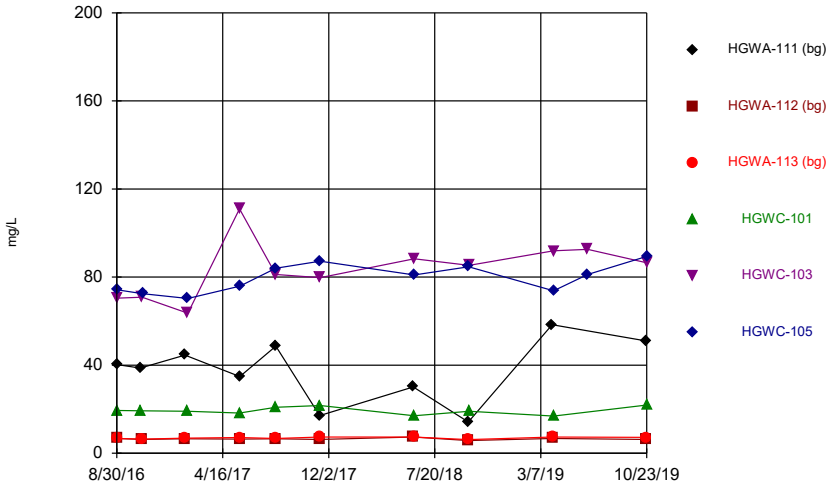
Hollow symbols indicate censored values.

Time Series



Constituent: Cadmium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Time Series



Constituent: Calcium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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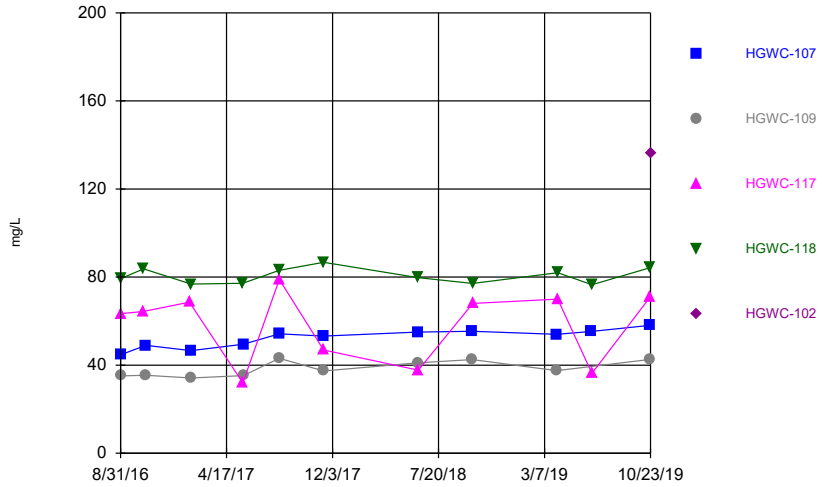
Time Series



Constituent: Calcium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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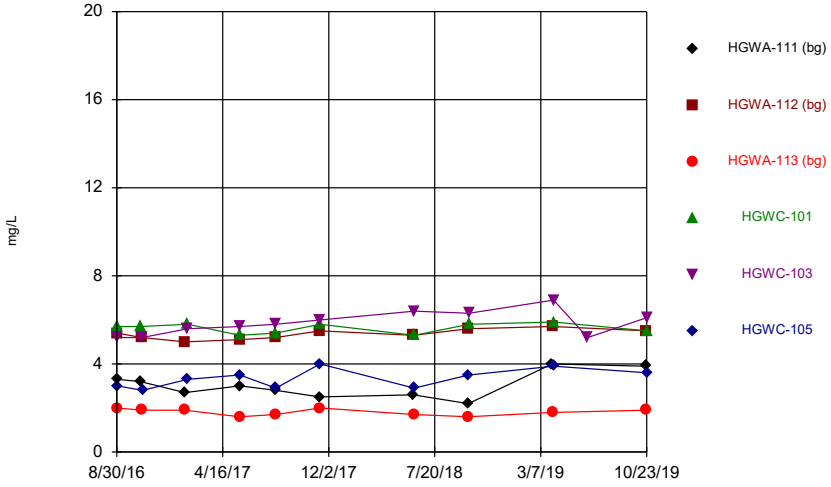
Time Series



Constituent: Chloride Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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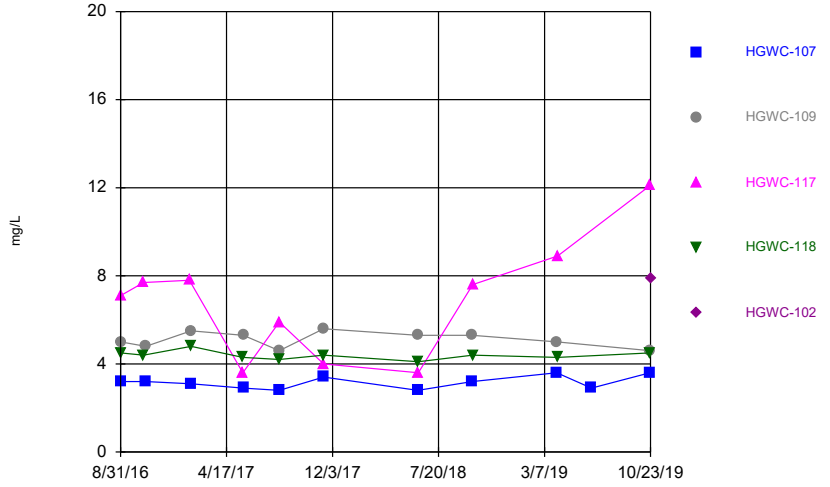
Time Series



Constituent: Chloride Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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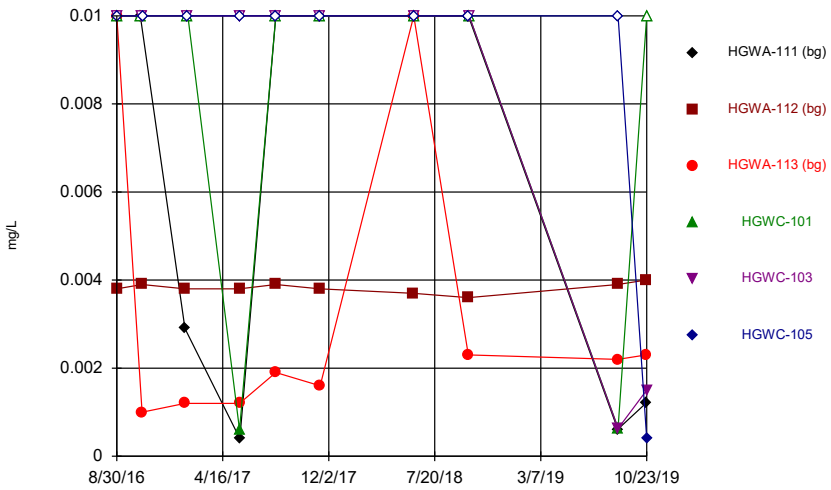
Hollow symbols indicate censored values.

Time Series



Constituent: Chromium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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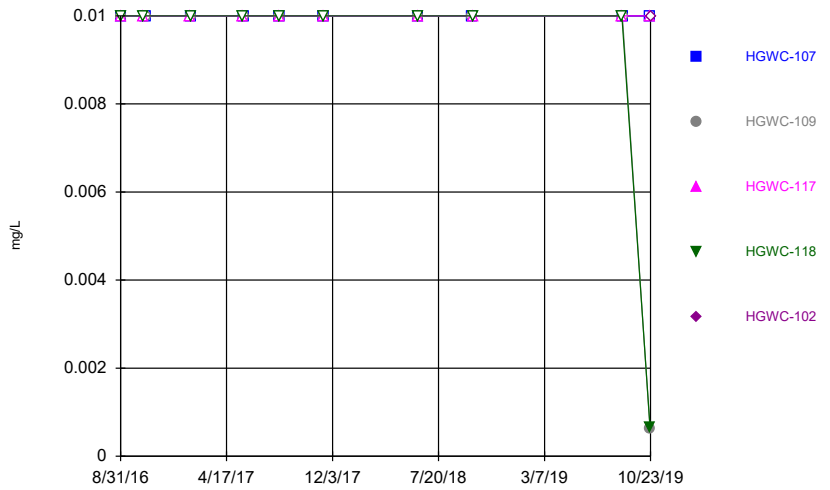
Hollow symbols indicate censored values.

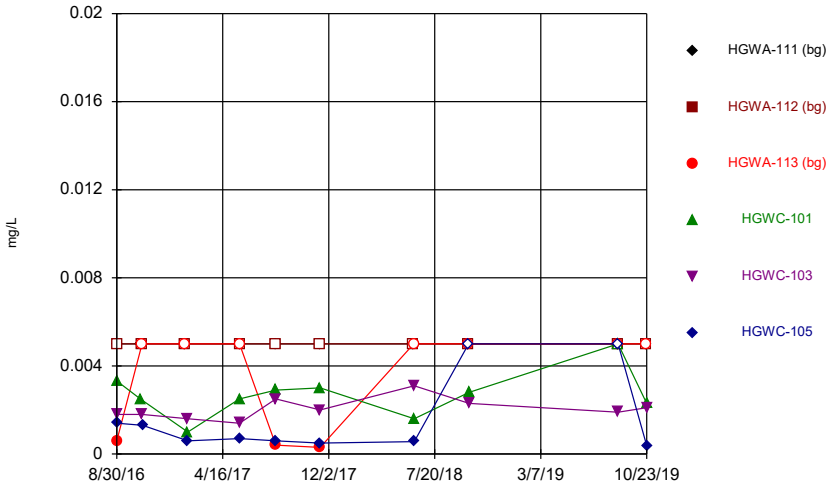
Time Series



Constituent: Chromium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Cobalt Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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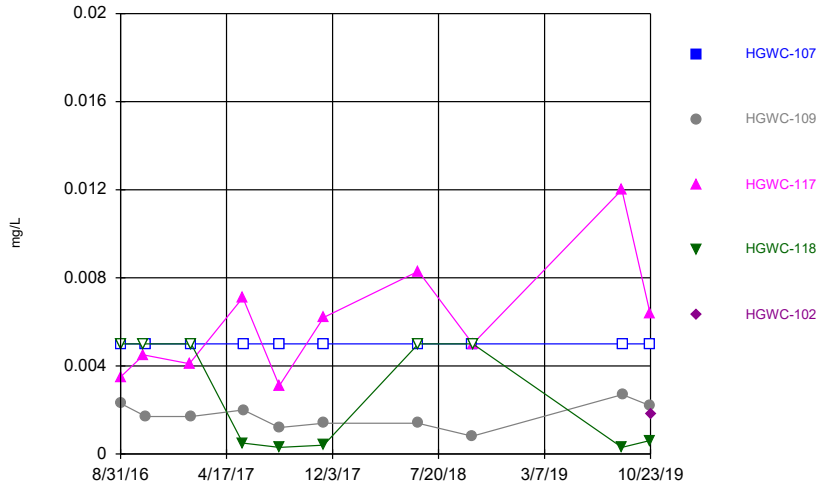
Hollow symbols indicate censored values.

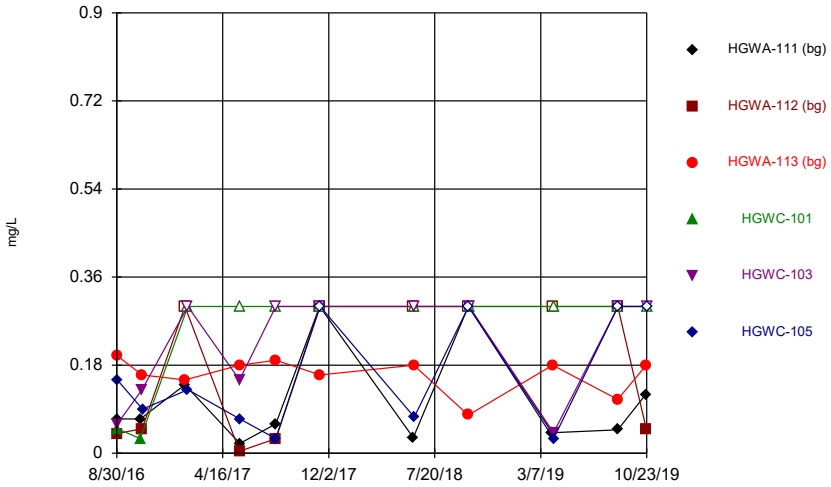
Time Series



Constituent: Cobalt Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Fluoride Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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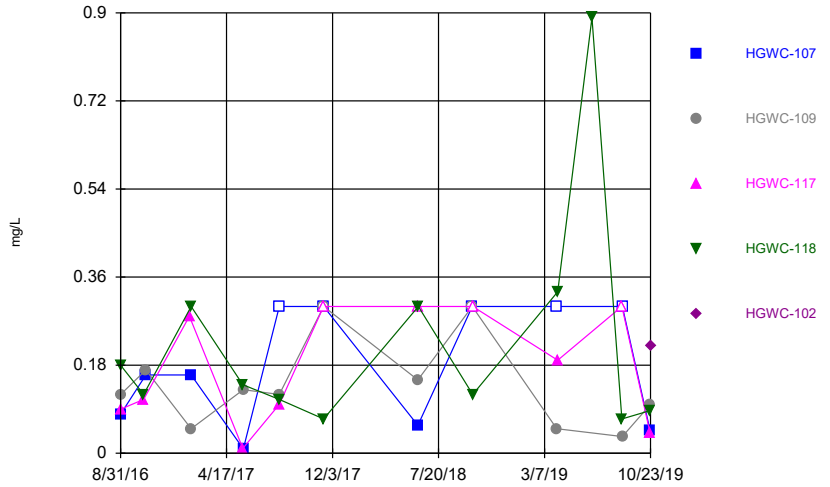
Hollow symbols indicate censored values.

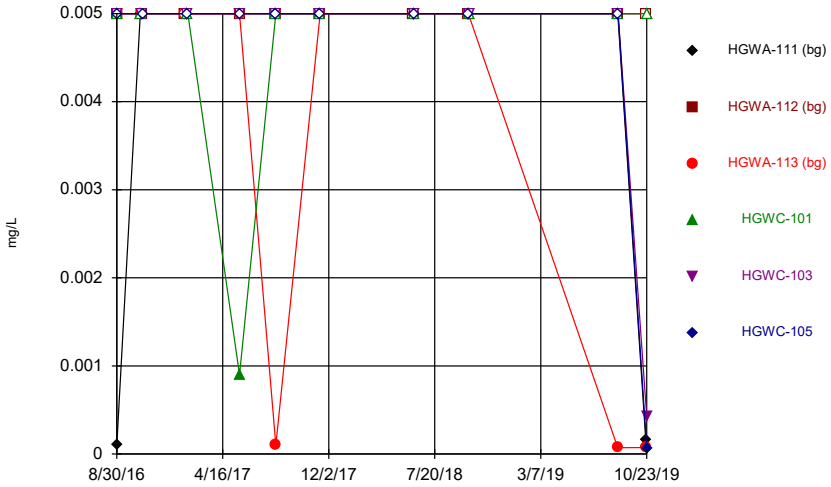
Time Series



Constituent: Fluoride Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

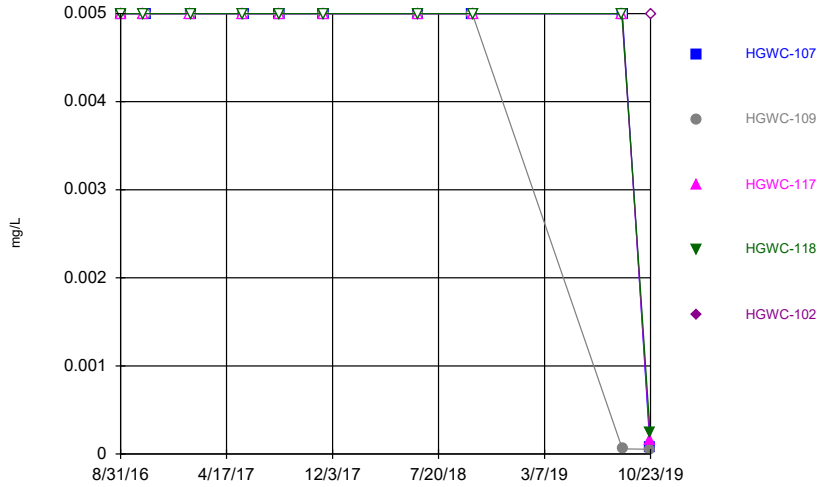
Time Series



Constituent: Lead Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Lead Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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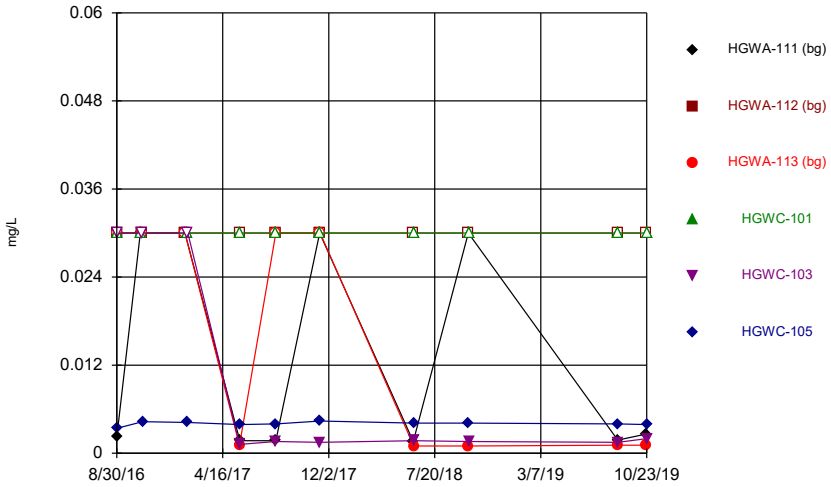
Hollow symbols indicate censored values.

Time Series



Constituent: Lithium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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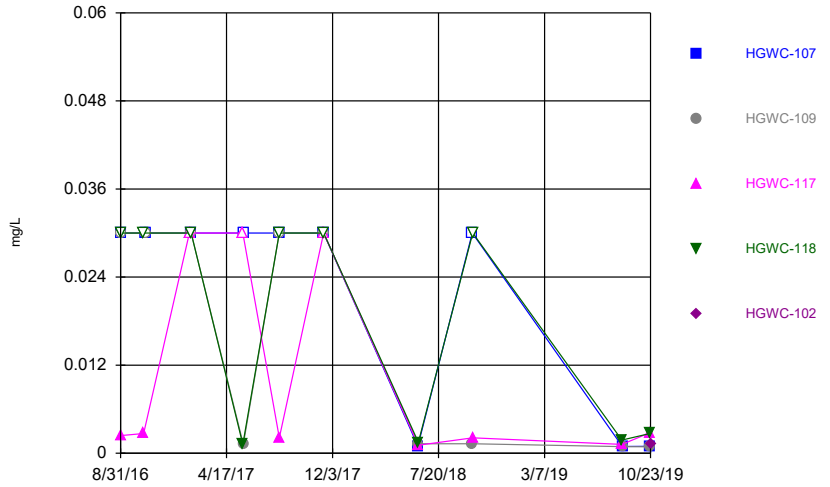
Hollow symbols indicate censored values.

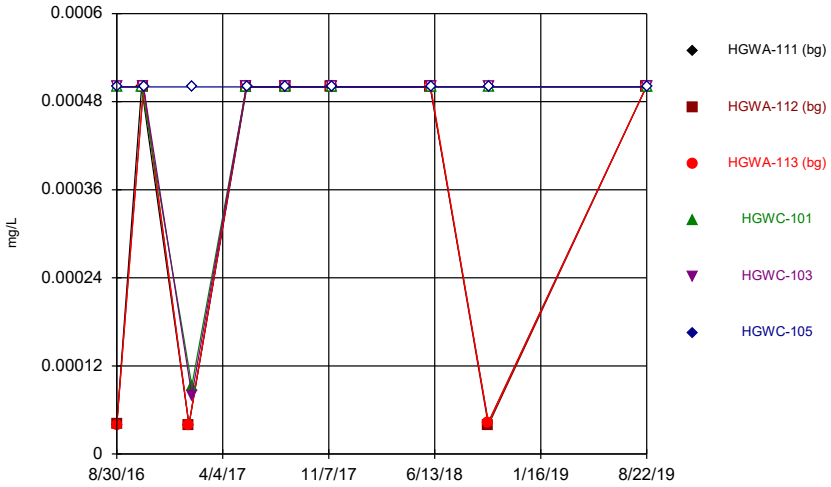
Time Series



Constituent: Lithium Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

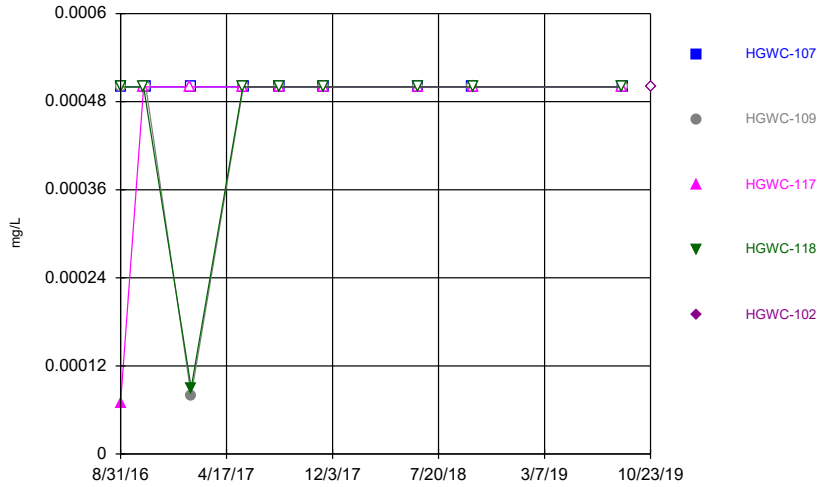
Time Series



Constituent: Mercury Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

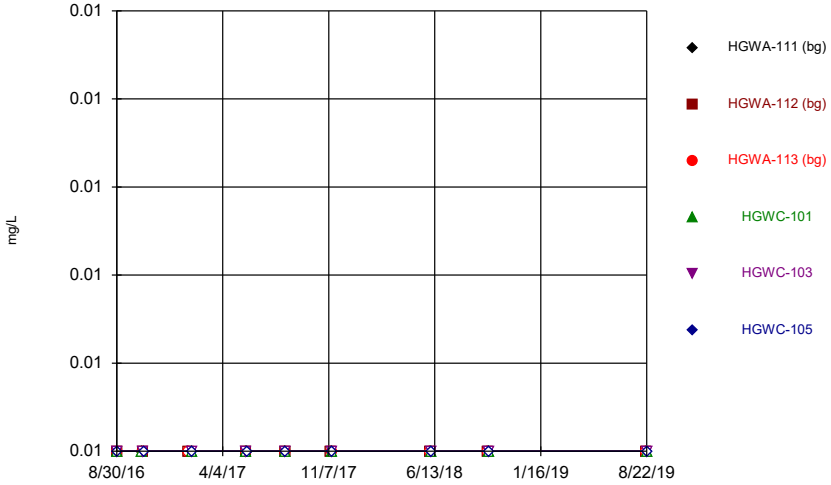
Time Series



Constituent: Mercury Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

Time Series



Constituent: Molybdenum Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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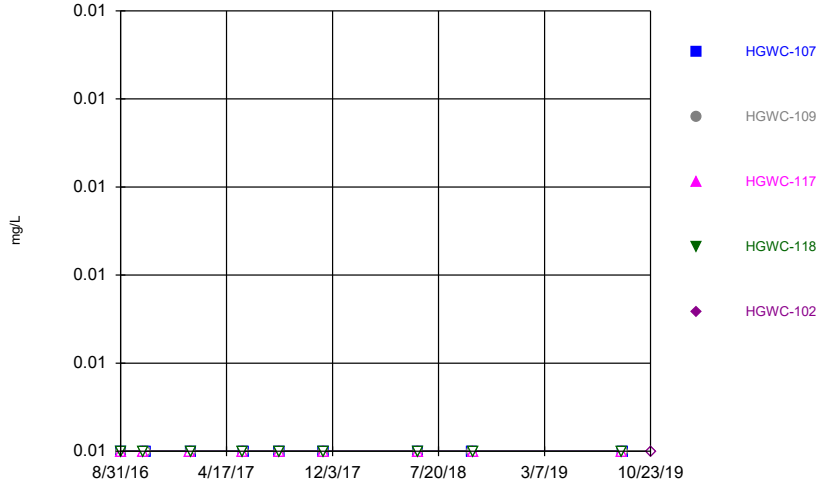
Hollow symbols indicate censored values.

Time Series



Constituent: Molybdenum Analysis Run 3/13/2020 3:17 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

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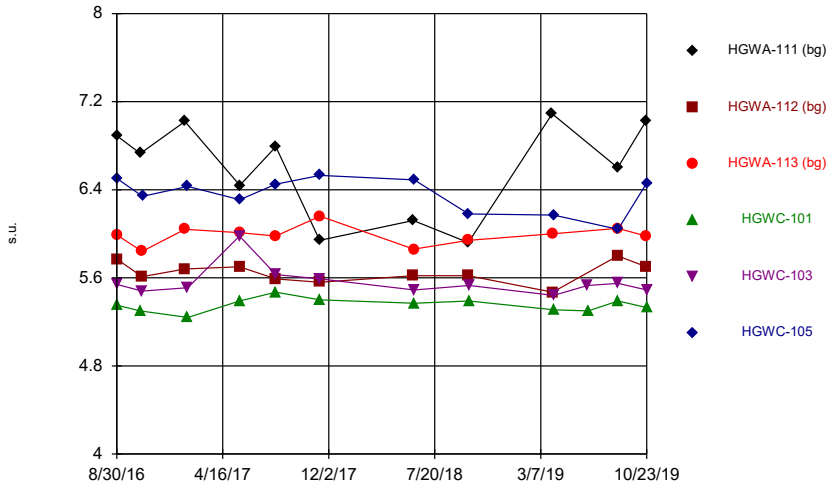
Time Series



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Hammond AP Client: Georgia Power Data: Hammond AP-4

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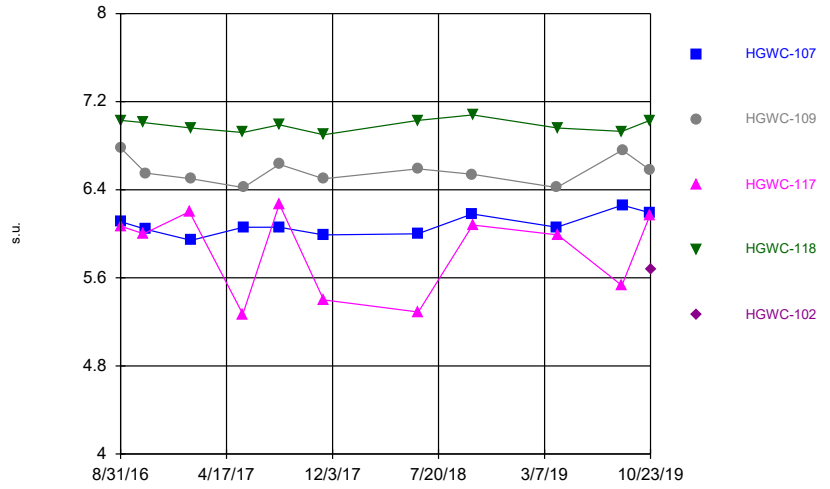
Time Series



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Hammond AP Client: Georgia Power Data: Hammond AP-4

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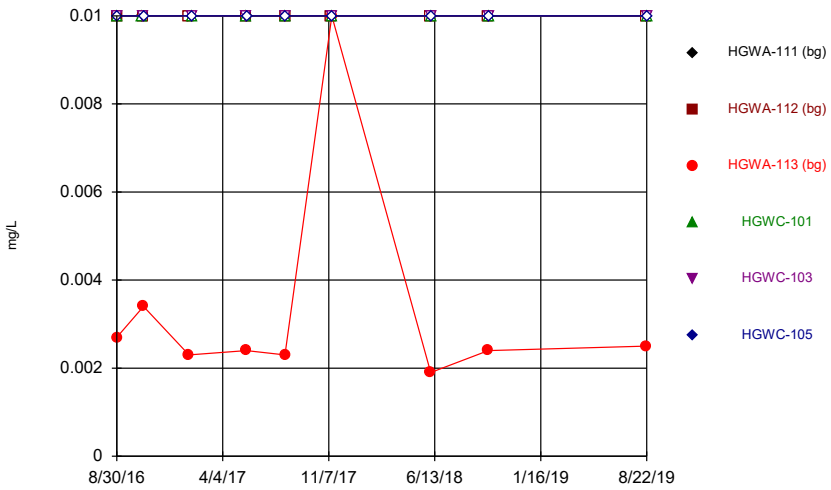
Hollow symbols indicate censored values.

Time Series



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Hammond AP Client: Georgia Power Data: Hammond AP-4

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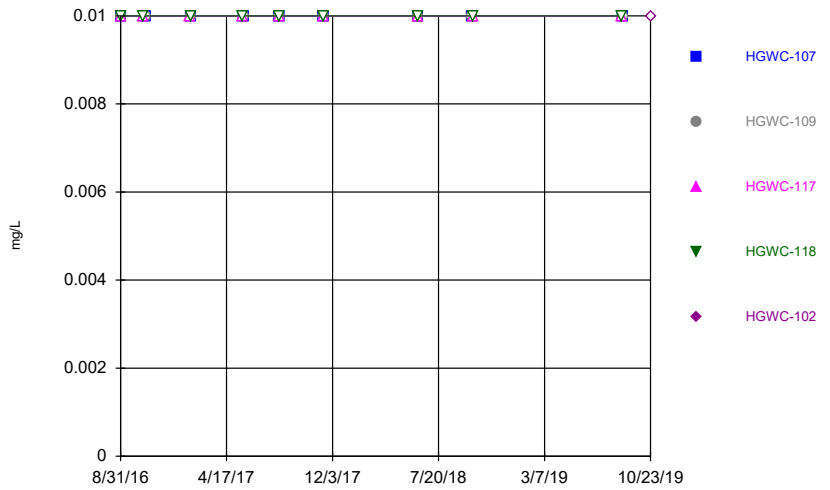
Hollow symbols indicate censored values.

Time Series



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Hammond AP Client: Georgia Power Data: Hammond AP-4

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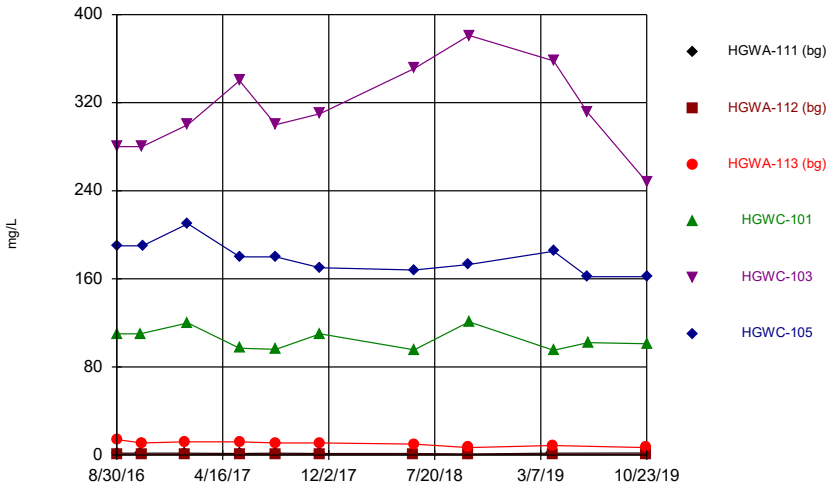
Time Series



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Hammond AP Client: Georgia Power Data: Hammond AP-4

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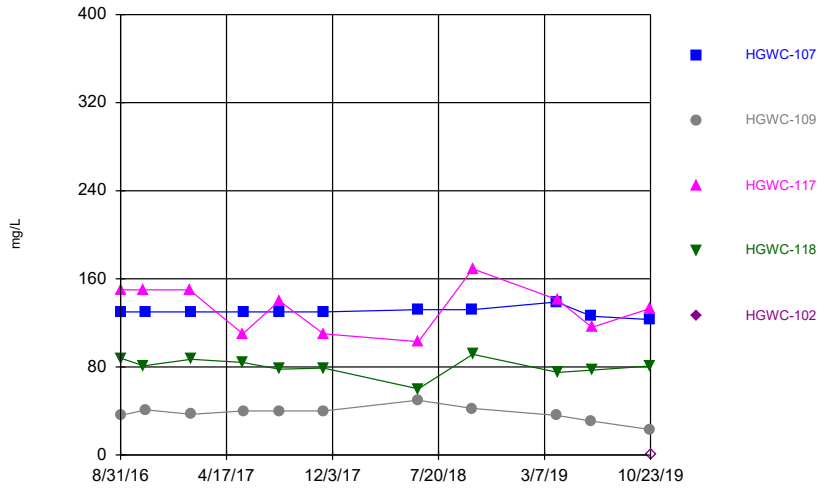
Hollow symbols indicate censored values.

Time Series



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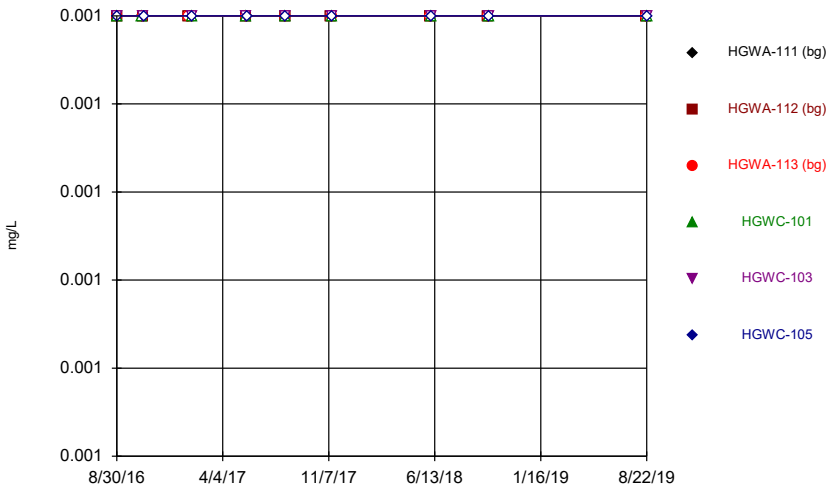
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

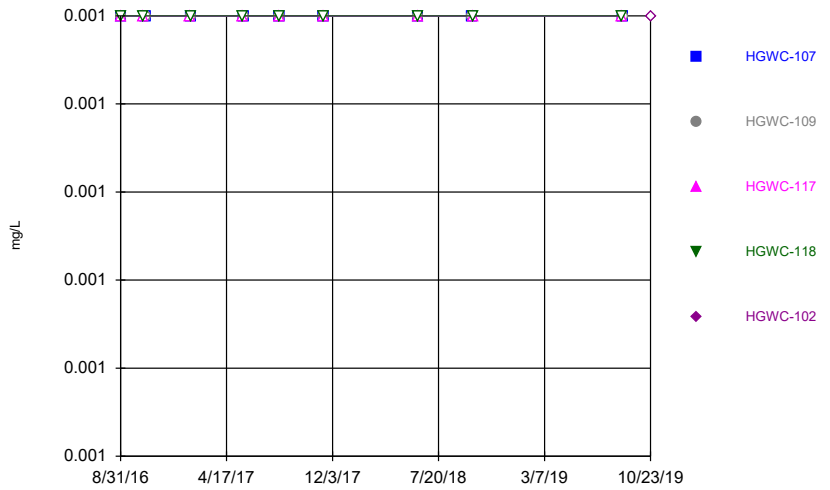
Time Series



Constituent: Thallium Analysis Run 3/13/2020 3:18 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG
Hollow symbols indicate censored values.

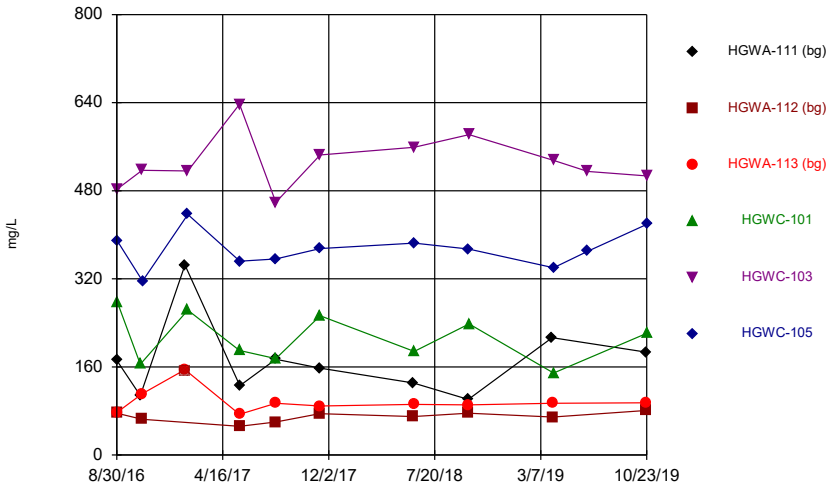
Time Series



Constituent: Thallium Analysis Run 3/13/2020 3:18 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

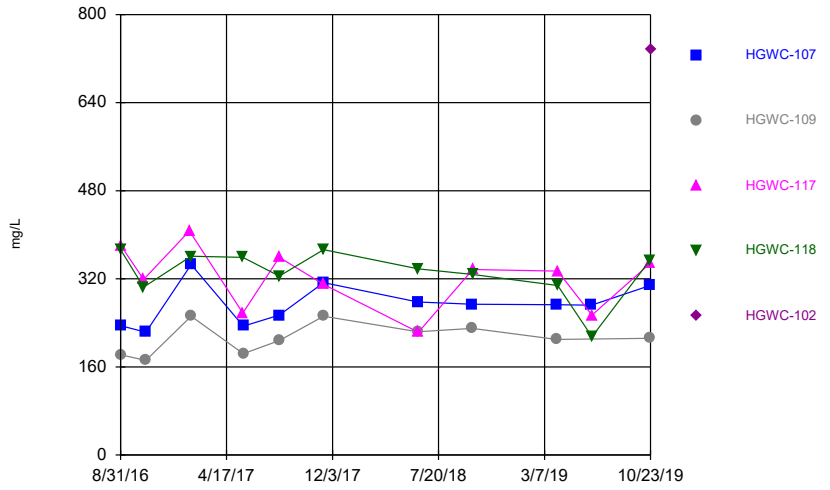
Time Series



Constituent: Total Dissolved Solids Analysis Run 3/13/2020 3:18 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Time Series



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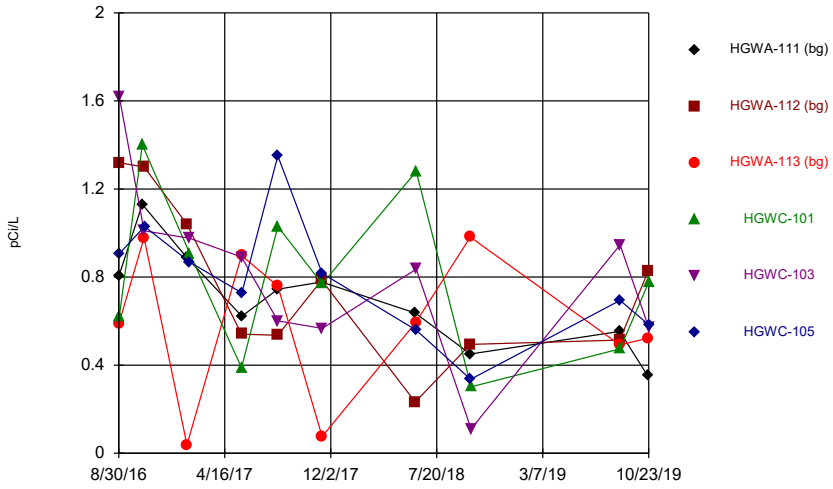
Hammond AP Client: Georgia Power Data: Hammond AP-4

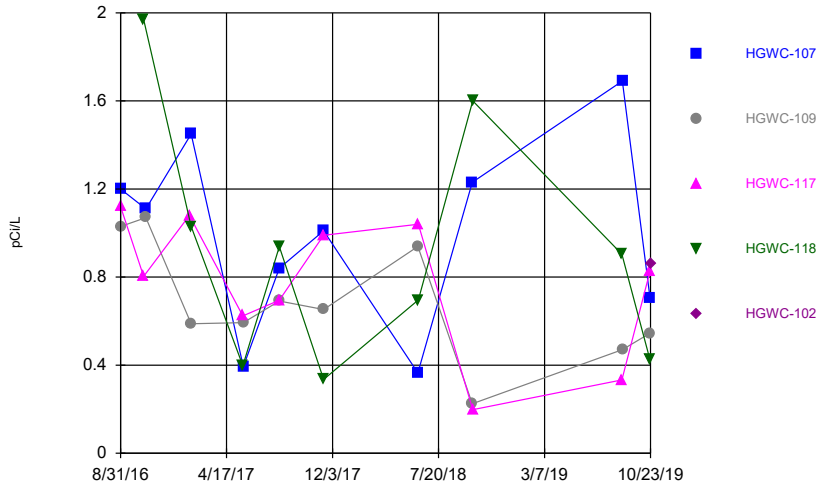
Time Series



Constituent: Total Radium Analysis Run 3/13/2020 3:18 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Time Series



Constituent: Total Radium Analysis Run 3/13/2020 3:18 PM
Hammond AP Client: Georgia Power Data: Hammond AP-4

APPENDIX III

Table 1
Assessment Monitoring Interwell Prediction Limit Comparison
Plant Hammond AP-4, Floyd County, Georgia

Parameter	Well ID	Upper PL	Lower PL	Oct 21-23 2019
			Purpose of Sampling Event:	**Verification**
Boron (mg/L)	HGWC-101	0.023	-	0.10
Boron (mg/L)	HGWC-103	0.023	-	2.3
Boron (mg/L)	HGWC-105	0.023	-	1.3
Boron (mg/L)	HGWC-107	0.023	-	0.91
Boron (mg/L)	HGWC-109	0.023	-	0.32
Boron (mg/L)	HGWC-117	0.023	-	1.0
Boron (mg/L)	HGWC-118	0.023	-	0.65
Calcium (mg/L)	HGWC-101	58.4	-	21.9
Calcium (mg/L)	HGWC-103	58.4	-	86.5
Calcium (mg/L)	HGWC-105	58.4	-	89.4
Calcium (mg/L)	HGWC-107	58.4	-	58.1
Calcium (mg/L)	HGWC-109	58.4	-	42.6
Calcium (mg/L)	HGWC-117	58.4	-	70.9
Calcium (mg/L)	HGWC-118	58.4	-	84.2
Chloride (mg/L)	HGWC-101	5.7	-	5.5
Chloride (mg/L)	HGWC-103	5.7	-	6.1
Chloride (mg/L)	HGWC-105	5.7	-	3.6
Chloride (mg/L)	HGWC-107	5.7	-	3.6
Chloride (mg/L)	HGWC-109	5.7	-	4.6
Chloride (mg/L)	HGWC-117	5.7	-	12.1
Chloride (mg/L)	HGWC-118	5.7	-	4.5
Fluoride (mg/L)	HGWC-101	0.23	-	ND
Fluoride (mg/L)	HGWC-103	0.23	-	ND
Fluoride (mg/L)	HGWC-105	0.23	-	ND
Fluoride (mg/L)	HGWC-107	0.23	-	0.047 J
Fluoride (mg/L)	HGWC-109	0.23	-	0.099 J
Fluoride (mg/L)	HGWC-117	0.23	-	0.042 J
Fluoride (mg/L)	HGWC-118	0.23	-	0.087 J
pH (s.u.)	HGWC-101	7.1	5.5	5.3
pH (s.u.)	HGWC-103	7.1	5.5	5.5
pH (s.u.)	HGWC-105	7.1	5.5	6.5
pH (s.u.)	HGWC-107	7.1	5.5	6.2
pH (s.u.)	HGWC-109	7.1	5.5	6.6
pH (s.u.)	HGWC-117	7.1	5.5	6.2
pH (s.u.)	HGWC-118	7.1	5.5	7.0
Sulfate (mg/L)	HGWC-101	14	-	101
Sulfate (mg/L)	HGWC-103	14	-	248
Sulfate (mg/L)	HGWC-105	14	-	162
Sulfate (mg/L)	HGWC-107	14	-	123
Sulfate (mg/L)	HGWC-109	14	-	23.2
Sulfate (mg/L)	HGWC-117	14	-	133
Sulfate (mg/L)	HGWC-118	14	-	80.9

Table 1
Assessment Monitoring Interwell Prediction Limit Comparison
Plant Hammond AP-4, Floyd County, Georgia

Parameter	Well ID	Upper PL	Lower PL	Oct 21-23 2019
			Purpose of Sampling Event:	Verification
TDS (mg/L)	HGWC-101	249	-	221
TDS (mg/L)	HGWC-103	249	-	507
TDS (mg/L)	HGWC-105	249	-	419
TDS (mg/L)	HGWC-107	249	-	308
TDS (mg/L)	HGWC-109	249	-	212
TDS (mg/L)	HGWC-117	249	-	348
TDS (mg/L)	HGWC-118	249	-	354

Notes:
- = Not applicable
-- = Indicates the parameter was not analyzed as part of the verification event.
J = Indicates that analyte was estimated and detected between the laboratory Method l
(MDL) and Reporting Limit (RL).
mg/L = milligrams per liter
ND = Indicates the parameter was not detected above the laboratory MDL.
PL = Prediction Limit
s.u. = standard unit
TDS = Total Dissolved Solids
(1) Shaded values indicate an exceedance of the statistically derived PL.
(2) The pH value presented was recorded at the time of sample collection in the field.
parameter in which the field result is compared to both the upper and lower PL.

Interwell Prediction Limit - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/12/2020, 3:51 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	**HGWC-101**	**0.02274**	**n/a**	**10/23/2019**	**0.1**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-103**	**0.02274**	**n/a**	**10/23/2019**	**2.3**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-105**	**0.02274**	**n/a**	**10/23/2019**	**1.3**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-107**	**0.02274**	**n/a**	**10/22/2019**	**0.91**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-109**	**0.02274**	**n/a**	**10/22/2019**	**0.32**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-117**	**0.02274**	**n/a**	**10/22/2019**	**1**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-118**	**0.02274**	**n/a**	**10/22/2019**	**0.65**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Calcium (mg/L)	**HGWC-103**	**58.4**	**n/a**	**10/23/2019**	**86.5**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-105**	**58.4**	**n/a**	**10/23/2019**	**89.4**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-117**	**58.4**	**n/a**	**10/22/2019**	**70.9**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-118**	**58.4**	**n/a**	**10/22/2019**	**84.2**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	**HGWC-103**	**5.7**	**n/a**	**10/23/2019**	**6.1**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	**HGWC-117**	**5.7**	**n/a**	**10/22/2019**	**12.1**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
pH (s.u.)	**HGWC-101**	**7.09**	**5.47**	**10/23/2019**	**5.33**	**Yes**	**33**	**0**	**n/a**	**0.003256**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-101**	**14**	**n/a**	**10/23/2019**	**101**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-103**	**14**	**n/a**	**10/23/2019**	**248**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-105**	**14**	**n/a**	**10/23/2019**	**162**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-107**	**14**	**n/a**	**10/22/2019**	**123**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-109**	**14**	**n/a**	**10/22/2019**	**23.2**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-117**	**14**	**n/a**	**10/22/2019**	**133**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-118**	**14**	**n/a**	**10/22/2019**	**80.9**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-103**	**248.8**	**n/a**	**10/23/2019**	**507**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-105**	**248.8**	**n/a**	**10/23/2019**	**419**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-107**	**248.8**	**n/a**	**10/22/2019**	**308**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-117**	**248.8**	**n/a**	**10/22/2019**	**348**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-118**	**248.8**	**n/a**	**10/22/2019**	**354**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**

Interwell Prediction Limit - All Results

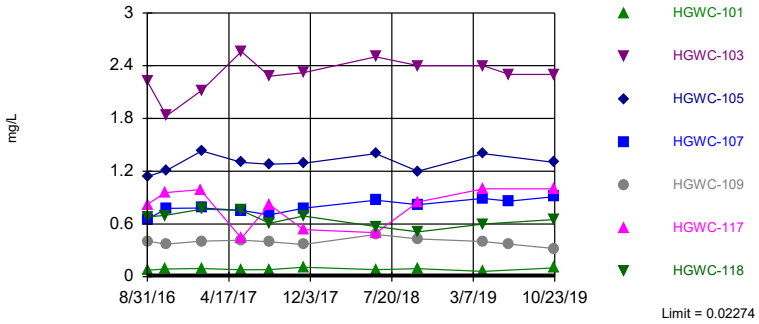
Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/12/2020, 3:51 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	**HGWC-101**	**0.02274**	**n/a**	**10/23/2019**	**0.1**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-103**	**0.02274**	**n/a**	**10/23/2019**	**2.3**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-105**	**0.02274**	**n/a**	**10/23/2019**	**1.3**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-107**	**0.02274**	**n/a**	**10/22/2019**	**0.91**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-109**	**0.02274**	**n/a**	**10/22/2019**	**0.32**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-117**	**0.02274**	**n/a**	**10/22/2019**	**1**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-118**	**0.02274**	**n/a**	**10/22/2019**	**0.65**	**Yes**	**30**	**20**	**sqrt(x)**	**0.001075**	**Param Inter 1 of 2**
Calcium (mg/L)	HGWC-101	58.4	n/a	10/23/2019	21.9	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-103**	**58.4**	**n/a**	**10/23/2019**	**86.5**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-105**	**58.4**	**n/a**	**10/23/2019**	**89.4**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	HGWC-107	58.4	n/a	10/22/2019	58.1	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-109	58.4	n/a	10/22/2019	42.6	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-117**	**58.4**	**n/a**	**10/22/2019**	**70.9**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-118**	**58.4**	**n/a**	**10/22/2019**	**84.2**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-101	5.7	n/a	10/23/2019	5.5	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-103**	**5.7**	**n/a**	**10/23/2019**	**6.1**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-105	5.7	n/a	10/23/2019	3.6	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-107	5.7	n/a	10/22/2019	3.6	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-109	5.7	n/a	10/22/2019	4.6	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-117**	**5.7**	**n/a**	**10/22/2019**	**12.1**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-118	5.7	n/a	10/22/2019	4.5	No	30	0	n/a	0.00191	NP Inter (normality) 1 of 2
Fluoride (mg/L)	HGWC-101	0.2306	n/a	10/23/2019	0.3ND	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-103	0.2306	n/a	10/23/2019	0.3ND	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-105	0.2306	n/a	10/23/2019	0.3ND	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-107	0.2306	n/a	10/22/2019	0.047	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-109	0.2306	n/a	10/22/2019	0.099	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-117	0.2306	n/a	10/22/2019	0.042	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-118	0.2306	n/a	10/22/2019	0.087	No	33	24.24	sqrt(x)	0.001075	Param Inter 1 of 2
pH (s.u.)	**HGWC-101**	**7.09**	**5.47**	**10/23/2019**	**5.33**	**Yes**	**33**	**0**	**n/a**	**0.003256**	**NP Inter (normality) 1 of 2**
pH (s.u.)	HGWC-103	7.09	5.47	10/23/2019	5.49	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-105	7.09	5.47	10/23/2019	6.46	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-107	7.09	5.47	10/22/2019	6.19	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-109	7.09	5.47	10/22/2019	6.58	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-117	7.09	5.47	10/22/2019	6.17	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-118	7.09	5.47	10/22/2019	7.03	No	33	0	n/a	0.003256	NP Inter (normality) 1 of 2
Sulfate (mg/L)	**HGWC-101**	**14**	**n/a**	**10/23/2019**	**101**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-103**	**14**	**n/a**	**10/23/2019**	**248**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-105**	**14**	**n/a**	**10/23/2019**	**162**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-107**	**14**	**n/a**	**10/22/2019**	**123**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-109**	**14**	**n/a**	**10/22/2019**	**23.2**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-117**	**14**	**n/a**	**10/22/2019**	**133**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-118**	**14**	**n/a**	**10/22/2019**	**80.9**	**Yes**	**30**	**0**	**n/a**	**0.00191**	**NP Inter (normality) 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-101	248.8	n/a	10/23/2019	221	No	29	0	ln(x)	0.001075	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-103**	**248.8**	**n/a**	**10/23/2019**	**507**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-105**	**248.8**	**n/a**	**10/23/2019**	**419**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-107**	**248.8**	**n/a**	**10/22/2019**	**308**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-109	248.8	n/a	10/22/2019	212	No	29	0	ln(x)	0.001075	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-117**	**248.8**	**n/a**	**10/22/2019**	**348**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-118**	**248.8**	**n/a**	**10/22/2019**	**354**	**Yes**	**29**	**0**	**ln(x)**	**0.001075**	**Param Inter 1 of 2**

Exceeds Limit: HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.09644, Std. Dev.=0.02682, n=30, 20% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9044, critical = 0.9. Kappa = 2.027 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

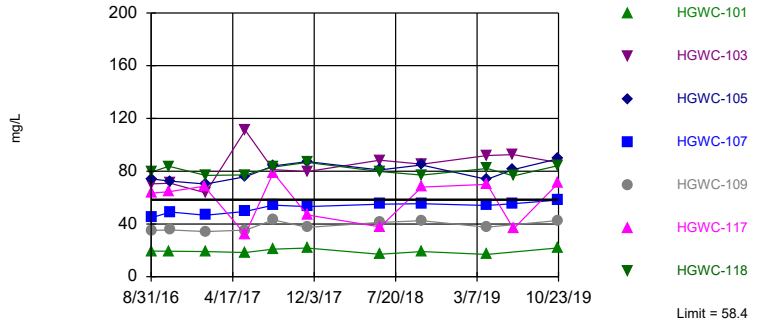
Constituent: Boron Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Exceeds Limit: HGWC-103, HGWC-105, HGWC-117, HGWC-118

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 30 background values. Annual per-constituent alpha = 0.02642. Individual comparison alpha = 0.00191 (1 of 2). Comparing 7 points to limit.

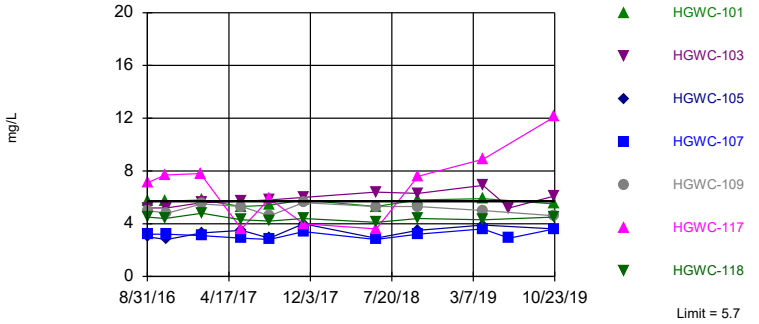
Constituent: Calcium Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Exceeds Limit: HGWC-103, HGWC-117

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 30 background values. Annual per-constituent alpha = 0.02642. Individual comparison alpha = 0.00191 (1 of 2). Comparing 7 points to limit.

Constituent: Chloride Analysis Run 3/12/2020 3:48 PM

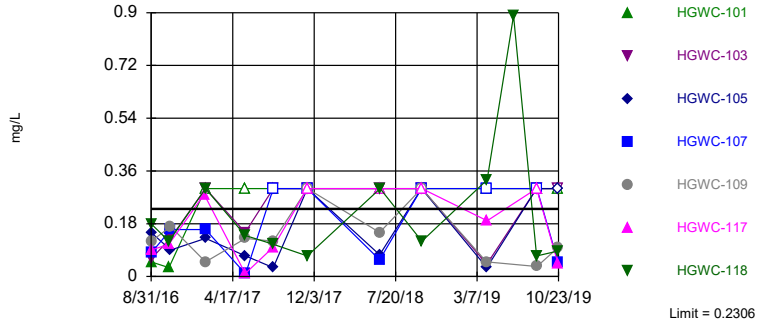
Hammond AP Client: Georgia Power Data: Hammond AP-4

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.2662, Std. Dev.=0.1067, n=33, 24.24% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9166, critical = 0.906. Kappa = 2.007 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

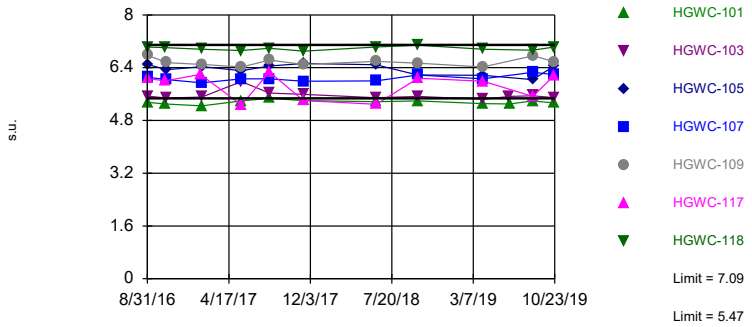
Constituent: Fluoride Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Exceeds Limits: HGWC-101

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 33 background values. Annual per-constituent alpha = 0.04511. Individual comparison alpha = 0.003256 (1 of 2). Comparing 7 points to limit.

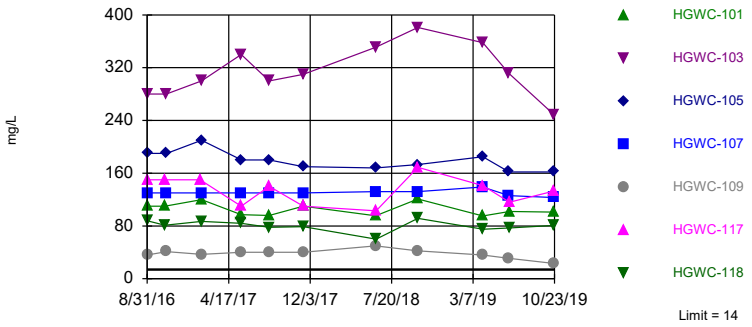
Constituent: pH Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Exceeds Limit: HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 30 background values. Annual per-constituent alpha = 0.02642. Individual comparison alpha = 0.00191 (1 of 2). Comparing 7 points to limit.

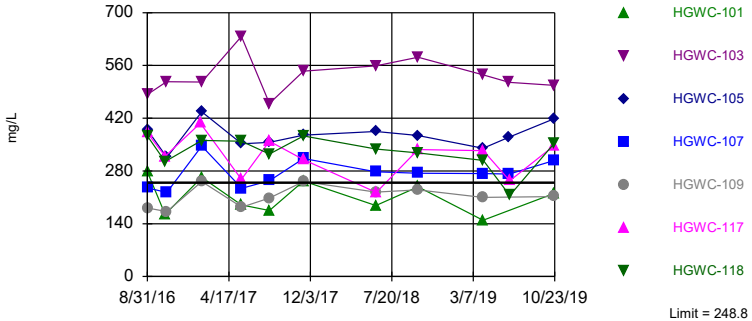
Constituent: Sulfate Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Exceeds Limit: HGWC-103, HGWC-105, HGWC-107, HGWC-117, HGWC-118

Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=4.636, Std. Dev.=0.4322, n=29. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9377, critical = 0.898. Kappa = 2.037 (c=7, w=7, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001075. Comparing 7 points to limit.

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:48 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Trend Test - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/12/2020, 3:58 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	**HGWC-107**	**0.05659**	**37**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Calcium (mg/L)	**HGWC-107**	**3.563**	**43**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Chloride (mg/L)	**HGWC-103**	**0.5087**	**30**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.978**	**-33**	**-23**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Sulfate (mg/L)	**HGWC-105**	**-9.35**	**-34**	**-27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**

Trend Test - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/12/2020, 3:58 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	HGWA-111 (bg)	-0.002949	-20	-23	No	10	20	n/a	n/a	0.05	NP
Boron (mg/L)	HGWA-112 (bg)	-0.001613	-14	-23	No	10	30	n/a	n/a	0.05	NP
Boron (mg/L)	HGWA-113 (bg)	-0.004208	-21	-23	No	10	10	n/a	n/a	0.05	NP
Boron (mg/L)	HGWC-101	0.004089	7	23	No	10	0	n/a	n/a	0.05	NP
Boron (mg/L)	HGWC-103	0.06603	15	27	No	11	0	n/a	n/a	0.05	NP
Boron (mg/L)	HGWC-105	0.03802	11	23	No	10	0	n/a	n/a	0.05	NP
Boron (mg/L)	**HGWC-107**	**0.05659**	**37**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Boron (mg/L)	HGWC-109	-0.008063	-11	-27	No	11	0	n/a	n/a	0.05	NP
Boron (mg/L)	HGWC-117	0.0179	11	23	No	10	0	n/a	n/a	0.05	NP
Boron (mg/L)	HGWC-118	-0.04563	-19	-23	No	10	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWA-111 (bg)	1.092	1	23	No	10	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWA-112 (bg)	-0.07411	-3	-23	No	10	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWA-113 (bg)	0.2427	14	23	No	10	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWC-103	7.128	27	27	No	11	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWC-105	4.589	25	27	No	11	0	n/a	n/a	0.05	NP
Calcium (mg/L)	**HGWC-107**	**3.563**	**43**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Calcium (mg/L)	HGWC-117	1.843	7	27	No	11	0	n/a	n/a	0.05	NP
Calcium (mg/L)	HGWC-118	0.1664	1	27	No	11	0	n/a	n/a	0.05	NP
Chloride (mg/L)	HGWA-111 (bg)	-0.25	-7	-23	No	10	0	n/a	n/a	0.05	NP
Chloride (mg/L)	HGWA-112 (bg)	0.1446	23	23	No	10	0	n/a	n/a	0.05	NP
Chloride (mg/L)	HGWA-113 (bg)	-0.04101	-9	-23	No	10	0	n/a	n/a	0.05	NP
Chloride (mg/L)	**HGWC-103**	**0.5087**	**30**	**27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Chloride (mg/L)	HGWC-117	0.6938	10	23	No	10	0	n/a	n/a	0.05	NP
pH (s.u.)	HGWA-111 (bg)	-0.04585	-4	-27	No	11	0	n/a	n/a	0.05	NP
pH (s.u.)	HGWA-112 (bg)	-0.02226	-3	-27	No	11	0	n/a	n/a	0.05	NP
pH (s.u.)	HGWA-113 (bg)	0.003891	4	27	No	11	0	n/a	n/a	0.05	NP
pH (s.u.)	HGWC-101	0	0	30	No	12	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWA-111 (bg)	0	0	23	No	10	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWA-112 (bg)	-0.005155	-2	-23	No	10	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.978**	**-33**	**-23**	**Yes**	**10**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Sulfate (mg/L)	HGWC-101	-2.86	-14	-27	No	11	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWC-103	12.72	19	27	No	11	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	**HGWC-105**	**-9.35**	**-34**	**-27**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.05**	**NP**
Sulfate (mg/L)	HGWC-107	0	1	27	No	11	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWC-109	-1.73	-11	-27	No	11	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWC-117	-5.41	-13	-27	No	11	0	n/a	n/a	0.05	NP
Sulfate (mg/L)	HGWC-118	-2.386	-19	-27	No	11	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWA-111 (bg)	4.773	3	23	No	10	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWA-112 (bg)	3.916	11	20	No	9	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWA-113 (bg)	2.173	6	23	No	10	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWC-103	7.365	1	27	No	11	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWC-105	8.714	3	27	No	11	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWC-107	18.53	13	27	No	11	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWC-117	-18.12	-13	-27	No	11	0	n/a	n/a	0.05	NP
Total Dissolved Solids (mg/L)	HGWC-118	-19.75	-18	-27	No	11	0	n/a	n/a	0.05	NP

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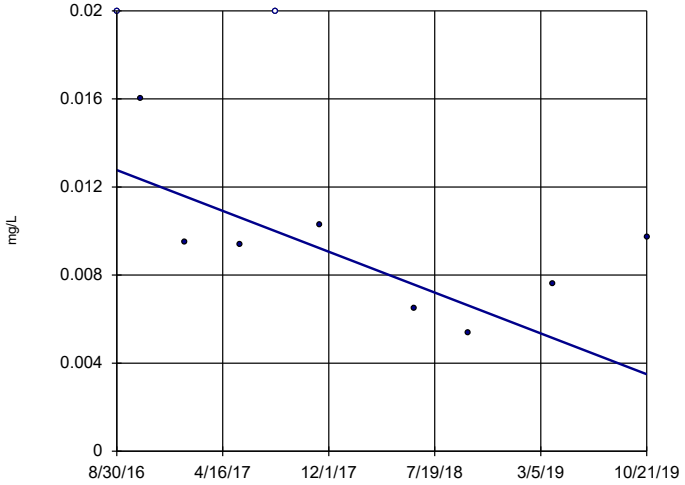
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-111 (bg)



n = 10

Slope = -0.002949 units per year.

Mann-Kendall statistic = -20
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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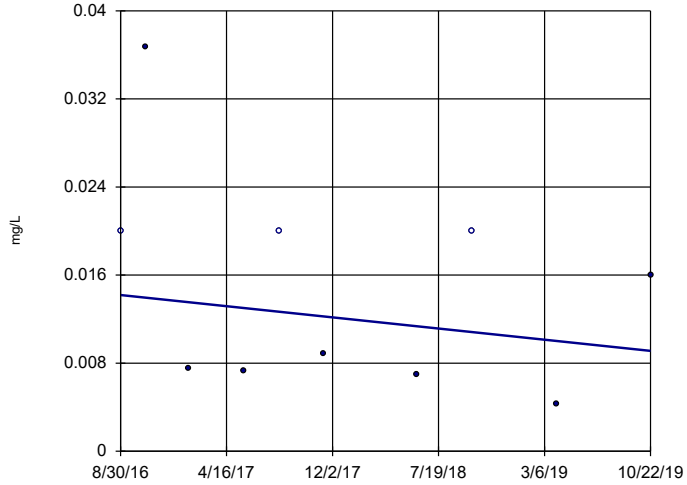
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-112 (bg)



n = 10

Slope = -0.001613 units per year.

Mann-Kendall statistic = -14
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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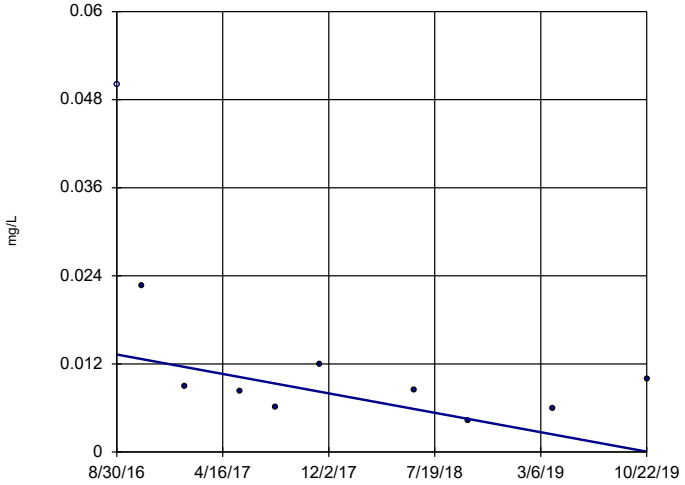
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-113 (bg)



n = 10

Slope = -0.004208 units per year.

Mann-Kendall statistic = -21
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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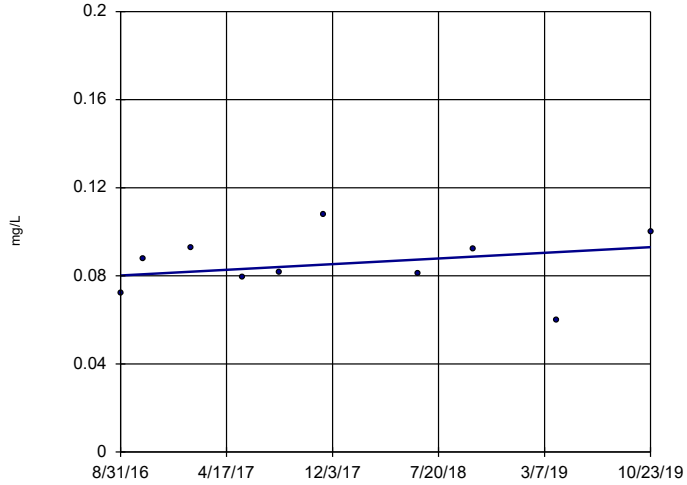
Sen's Slope Estimator

HGWC-101



n = 10

Slope = 0.004089 units per year.

Mann-Kendall statistic = 7
critical = 23

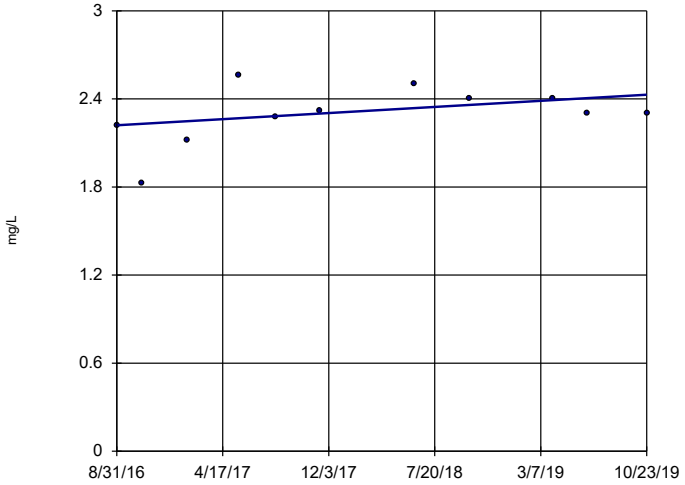
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-103



n = 11

Slope = 0.06603 units per year.

Mann-Kendall statistic = 15
critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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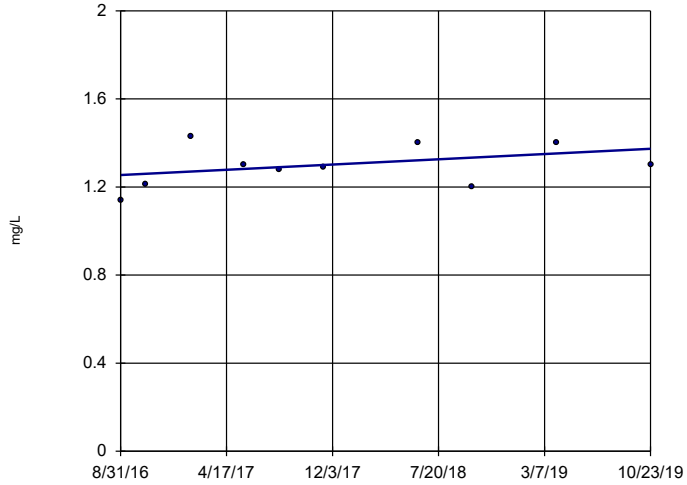
Sen's Slope Estimator

HGWC-105



n = 10

Slope = 0.03802 units per year.

Mann-Kendall statistic = 11
critical = 23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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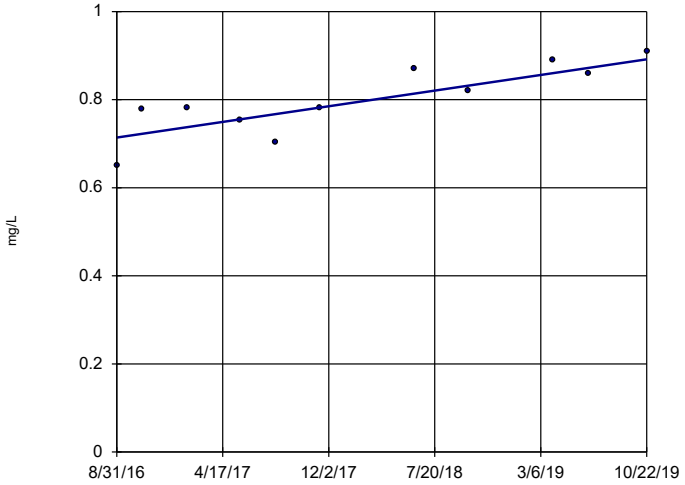
Sen's Slope Estimator

HGWC-107



n = 11

Slope = 0.05659 units per year.

Mann-Kendall statistic = 37
critical = 27

Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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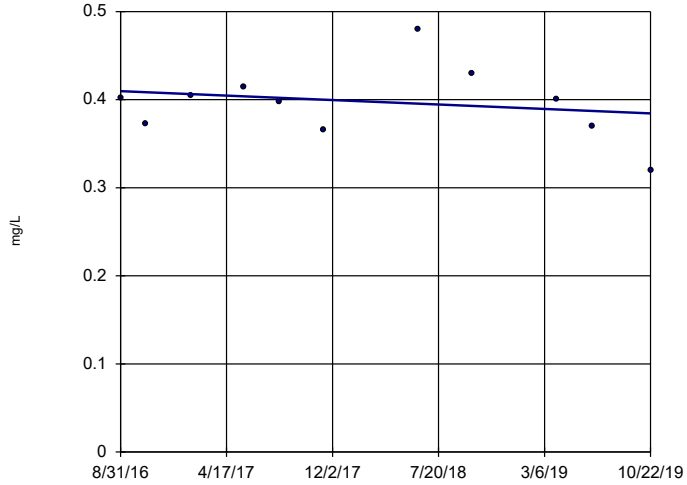
Sen's Slope Estimator

HGWC-109



n = 11

Slope = -0.008063 units per year.

Mann-Kendall statistic = -11
critical = -27

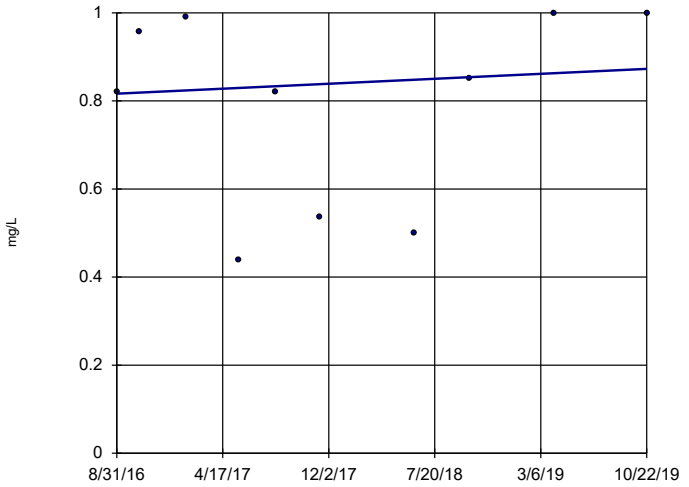
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



n = 10

Slope = 0.0179 units per year.

Mann-Kendall statistic = 11
critical = 23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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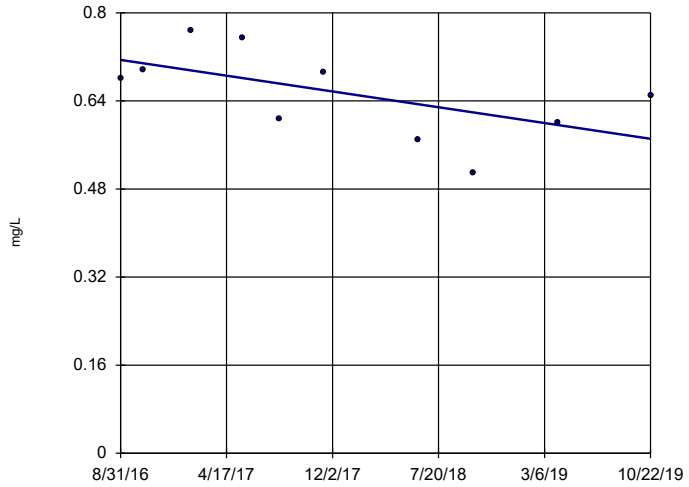
Sen's Slope Estimator

HGWC-118



n = 10

Slope = -0.04563 units per year.

Mann-Kendall statistic = -19
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

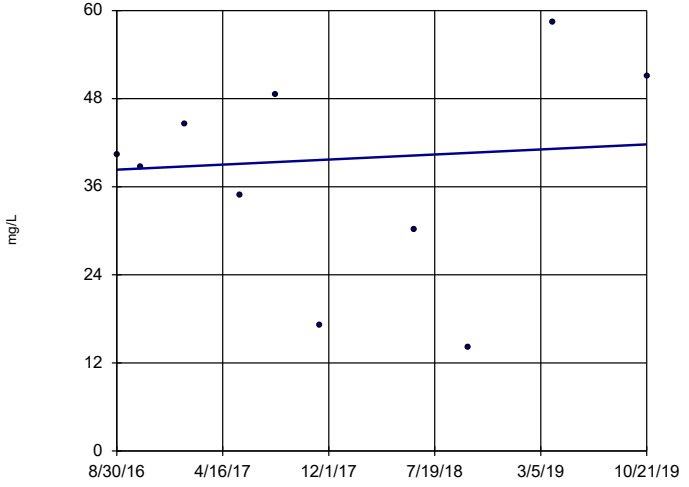
Constituent: Boron Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 10

Slope = 1.092 units per year.

Mann-Kendall statistic = 1
critical = 23

Trend not significant at 95% confidence level (α = 0.025 per tail).

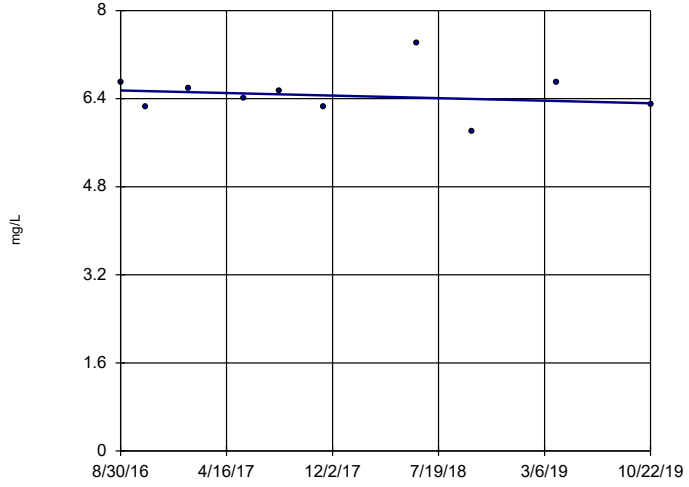
Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Sen's Slope Estimator

HGWA-112 (bg)



n = 10

Slope = -0.07411 units per year.

Mann-Kendall statistic = -3
critical = -23

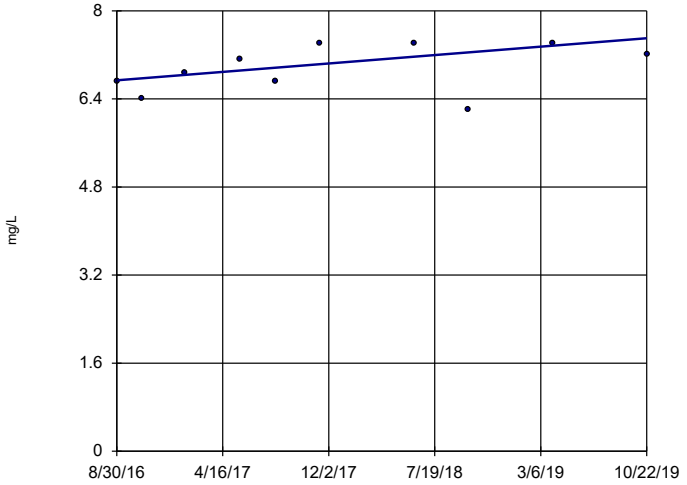
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 10

Slope = 0.2427 units per year.

Mann-Kendall statistic = 14 critical = 23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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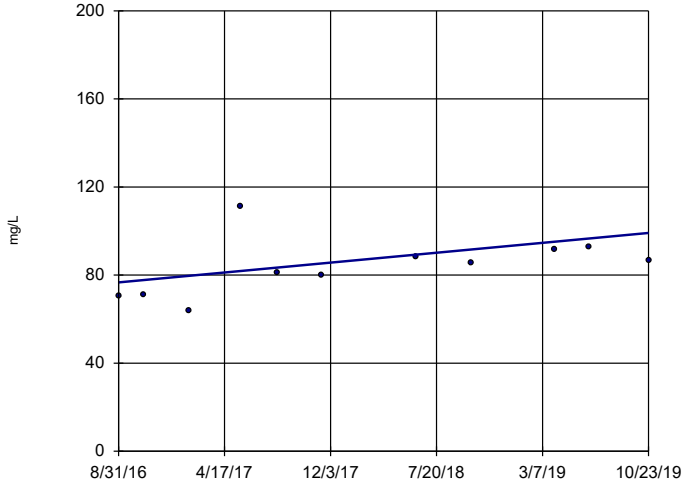
Sen's Slope Estimator

HGWC-103



n = 11

Slope = 7.128 units per year.

Mann-Kendall statistic = 27 critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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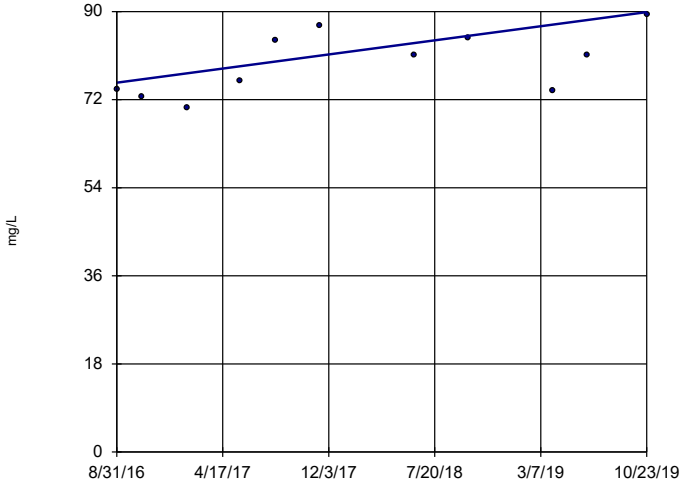
Sen's Slope Estimator

HGWC-105



n = 11

Slope = 4.589 units per year.

Mann-Kendall statistic = 25 critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

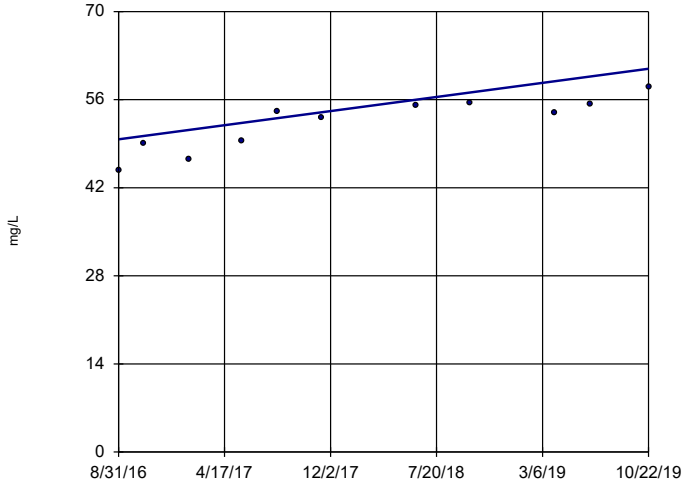
Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Sen's Slope Estimator

HGWC-107



n = 11

Slope = 3.563 units per year.

Mann-Kendall statistic = 43 critical = 27

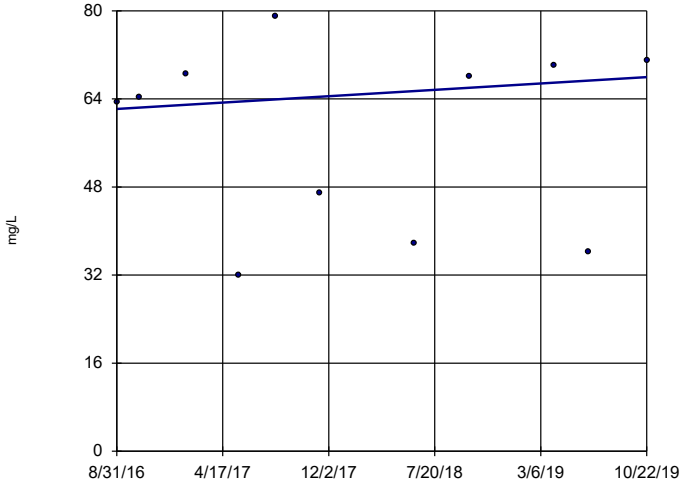
Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



n = 11

Slope = 1.843 units per year.

Mann-Kendall statistic = 7
critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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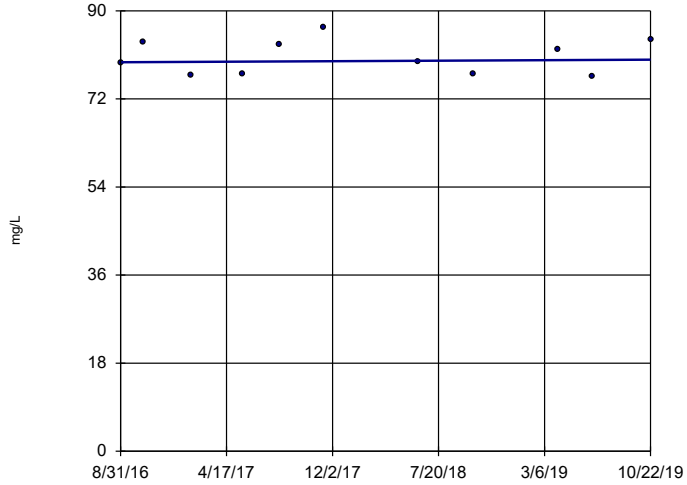
Sen's Slope Estimator

HGWC-118



n = 11

Slope = 0.1664 units per year.

Mann-Kendall statistic = 1
critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Calcium Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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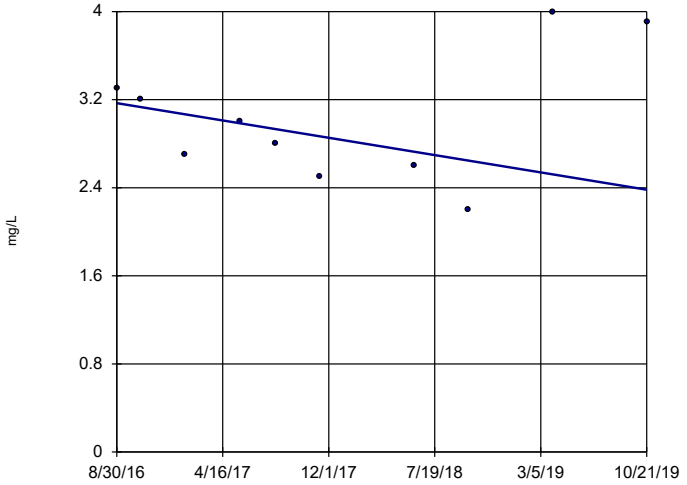
Sen's Slope Estimator

HGWA-111 (bg)



n = 10

Slope = -0.25 units per year.

Mann-Kendall statistic = -7
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Chloride Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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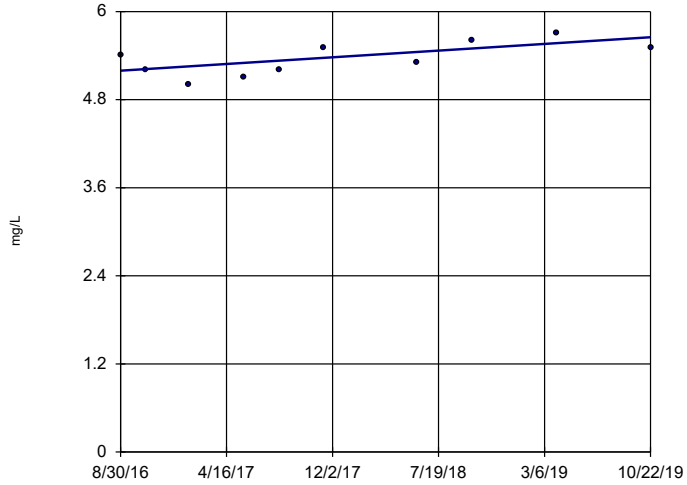
Sen's Slope Estimator

HGWA-112 (bg)



n = 10

Slope = 0.1446 units per year.

Mann-Kendall statistic = 23
critical = 23

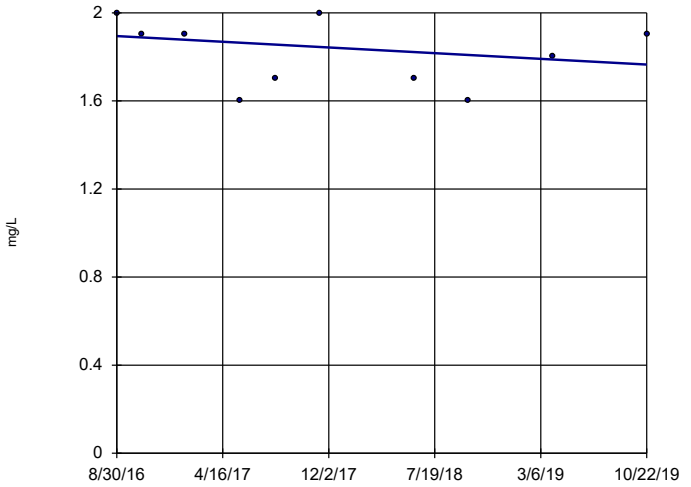
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Chloride Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 10

Slope = -0.04101 units per year.

Mann-Kendall statistic = -9
critical = -23

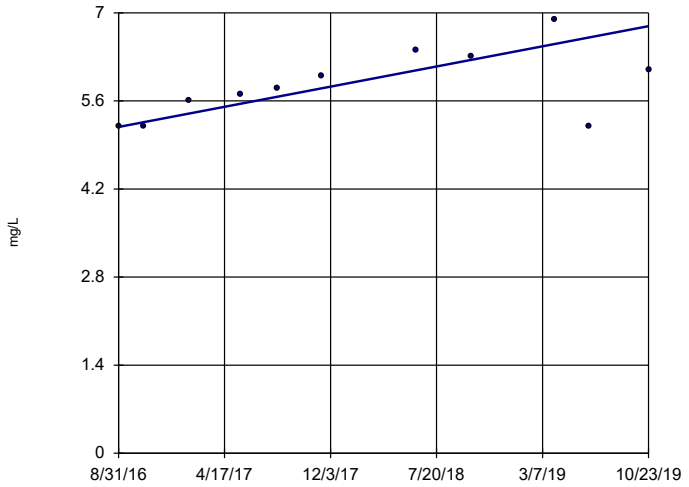
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Chloride Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-103



n = 11

Slope = 0.5087 units per year.

Mann-Kendall statistic = 30
critical = 27

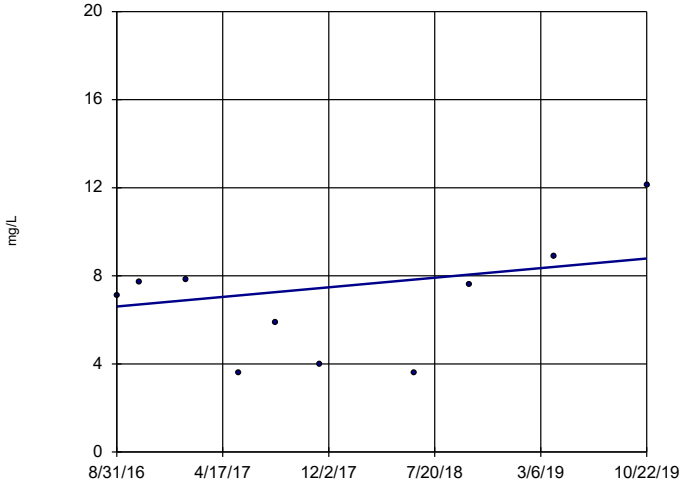
Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Constituent: Chloride Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



n = 10

Slope = 0.6938 units per year.

Mann-Kendall statistic = 10
critical = 23

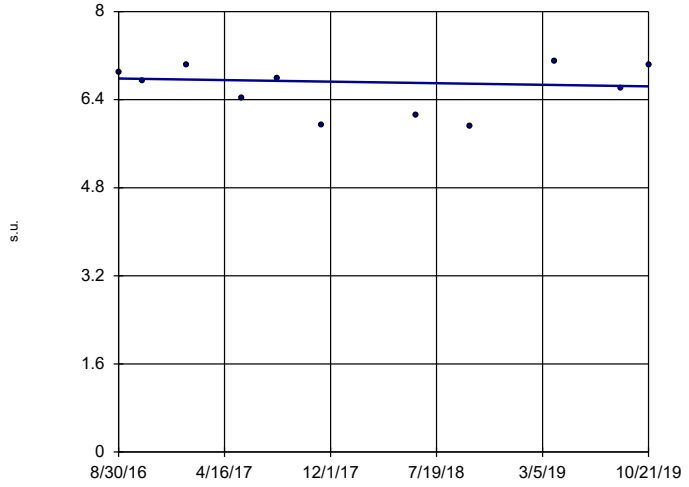
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Chloride Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-111 (bg)



n = 11

Slope = -0.04585 units per year.

Mann-Kendall statistic = -4
critical = -27

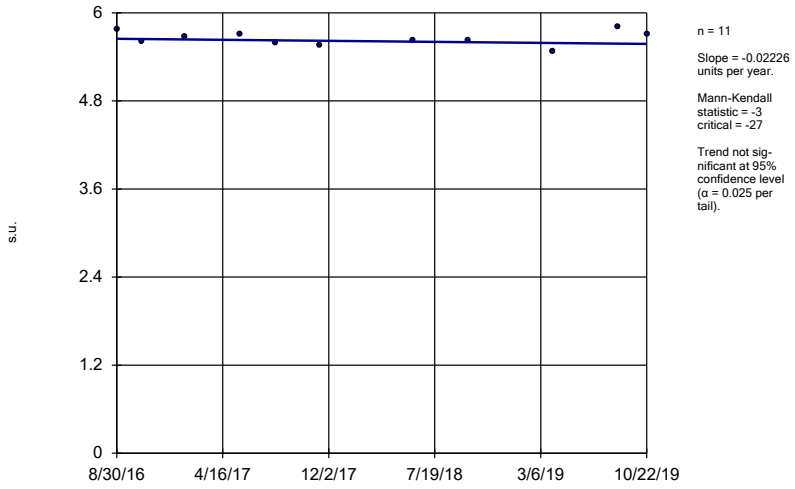
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: pH Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-112 (bg)



n = 11

Slope = -0.02226 units per year.

Mann-Kendall statistic = -3
critical = -27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: pH Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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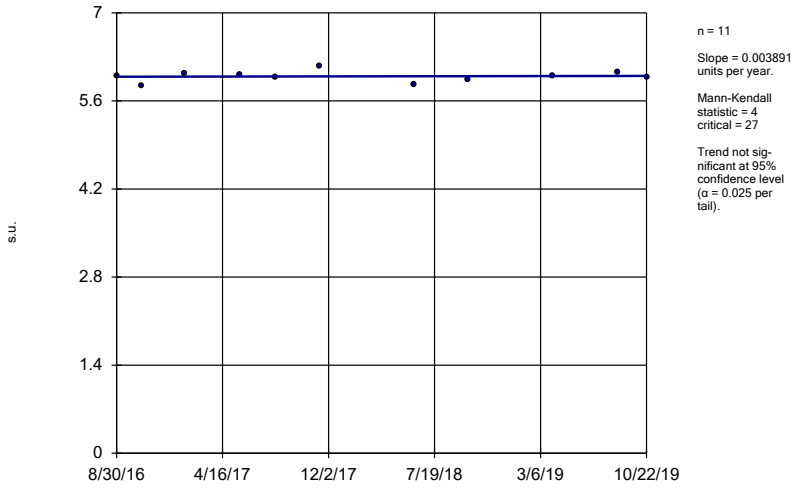
Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = 0.003891 units per year.

Mann-Kendall statistic = 4
critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: pH Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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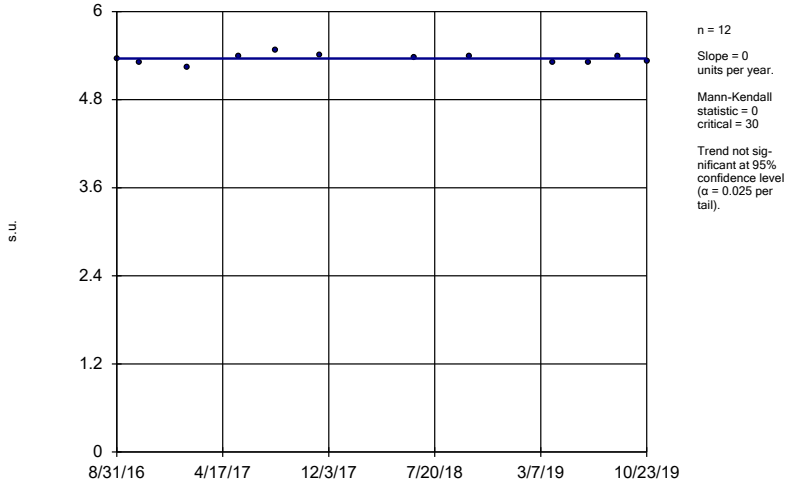
Sen's Slope Estimator

HGWC-101



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 30

Trend not significant at 95% confidence level (α = 0.025 per tail).

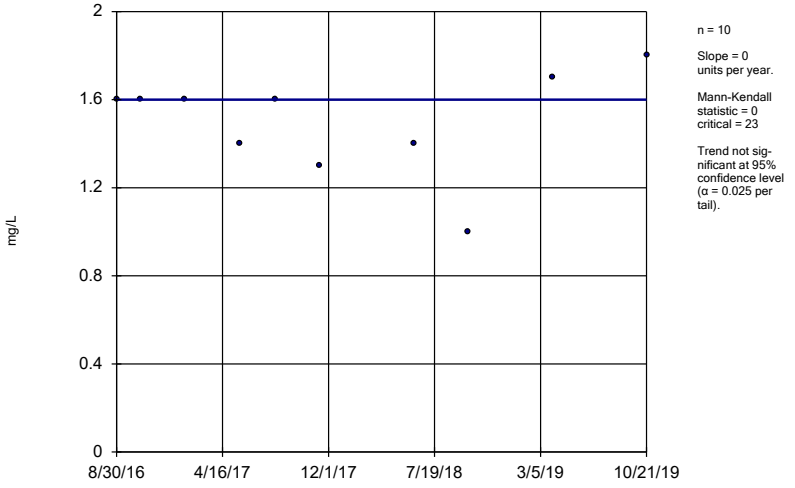
Constituent: pH Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 10

Slope = 0 units per year.

Mann-Kendall statistic = 0
critical = 23

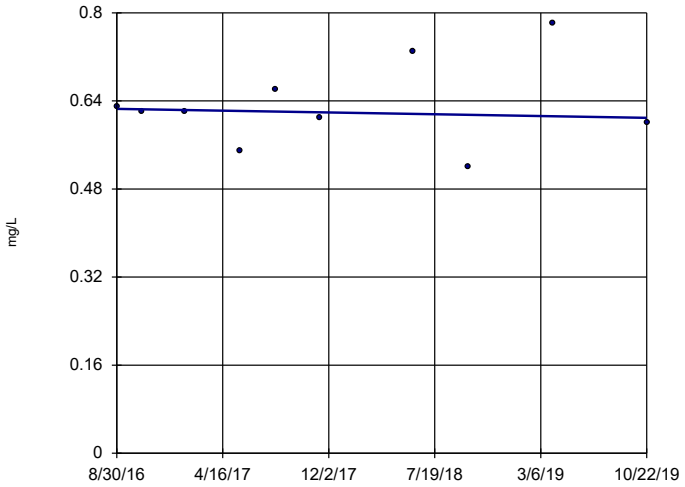
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-112 (bg)



n = 10

Slope = -0.005155 units per year.

Mann-Kendall statistic = -2
critical = -23

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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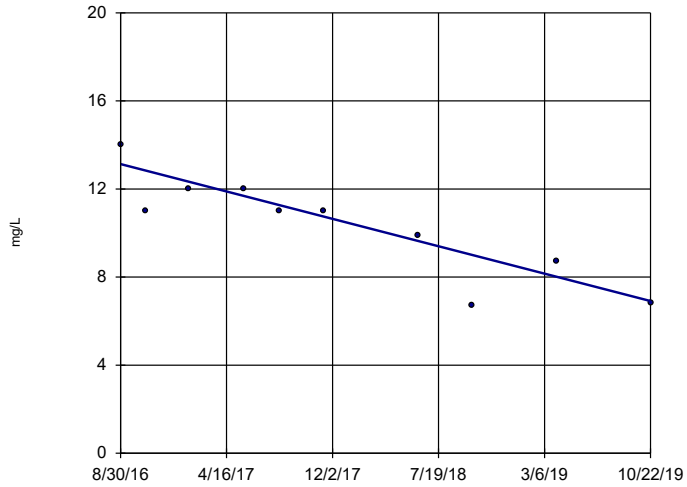
Sen's Slope Estimator

HGWA-113 (bg)



n = 10

Slope = -1.978 units per year.

Mann-Kendall statistic = -33
critical = -23

Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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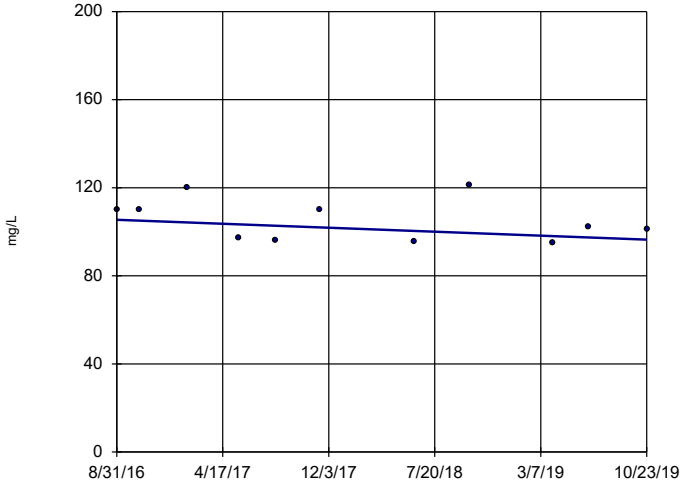
Sen's Slope Estimator

HGWC-101



n = 11

Slope = -2.86 units per year.

Mann-Kendall statistic = -14
critical = -27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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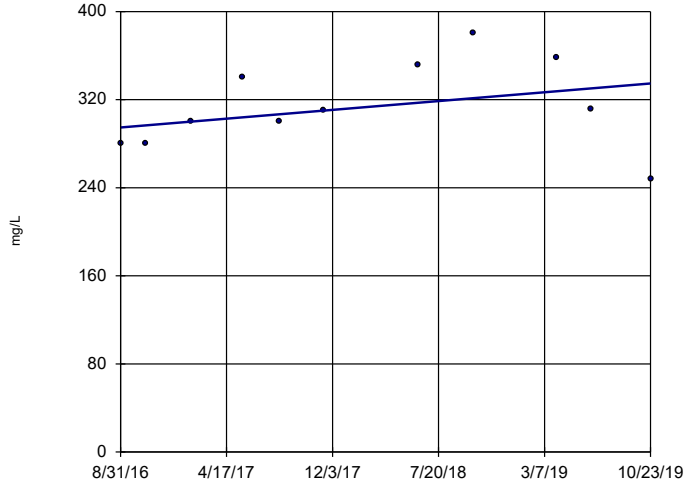
Sen's Slope Estimator

HGWC-103



n = 11

Slope = 12.72 units per year.

Mann-Kendall statistic = 19
critical = 27

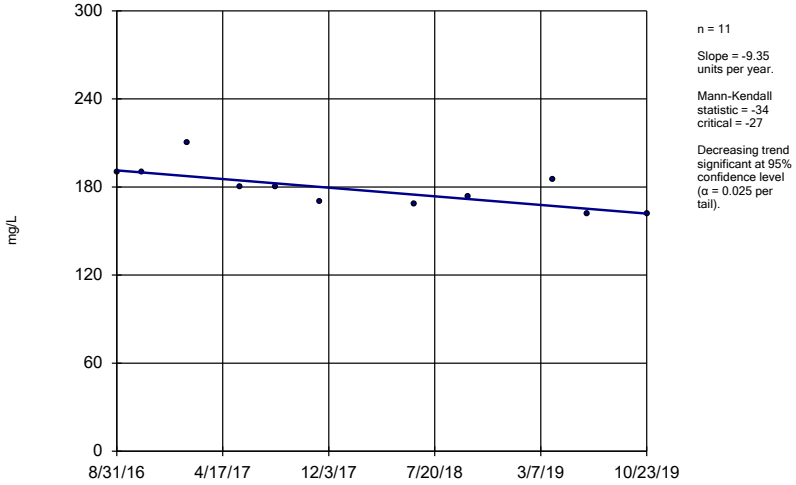
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-105



n = 11

Slope = -9.35 units per year.

Mann-Kendall statistic = -34
critical = -27

Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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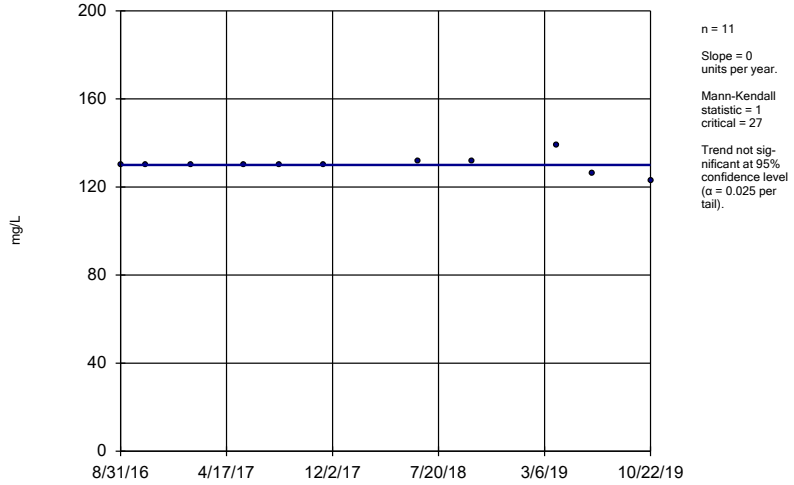
Sen's Slope Estimator

HGWC-107



n = 11

Slope = 0 units per year.

Mann-Kendall statistic = 1
critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

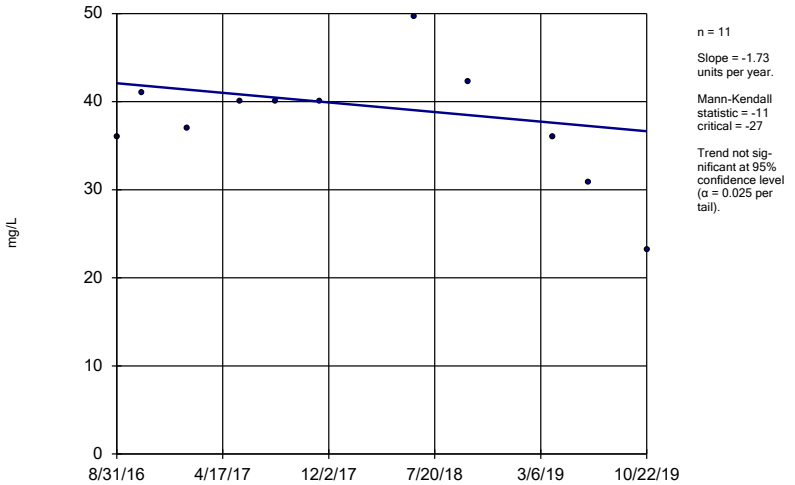
Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Sen's Slope Estimator

HGWC-109



n = 11

Slope = -1.73 units per year.

Mann-Kendall statistic = -11
critical = -27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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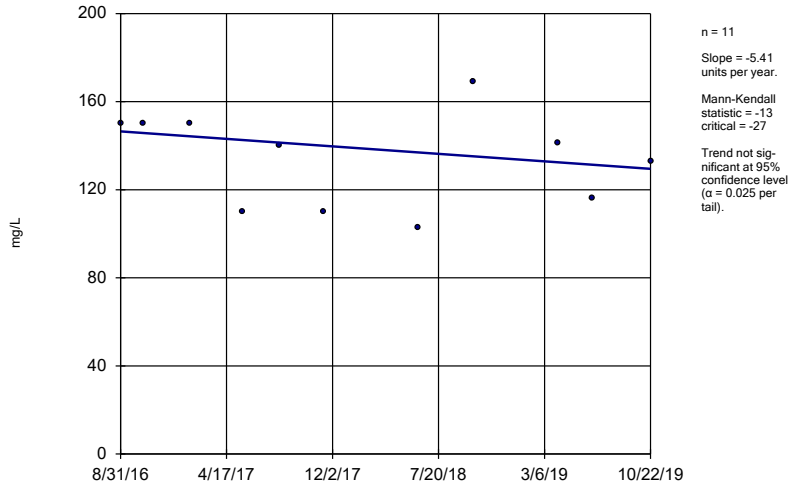
Sen's Slope Estimator

HGWC-117



n = 11

Slope = -5.41 units per year.

Mann-Kendall statistic = -13
critical = -27

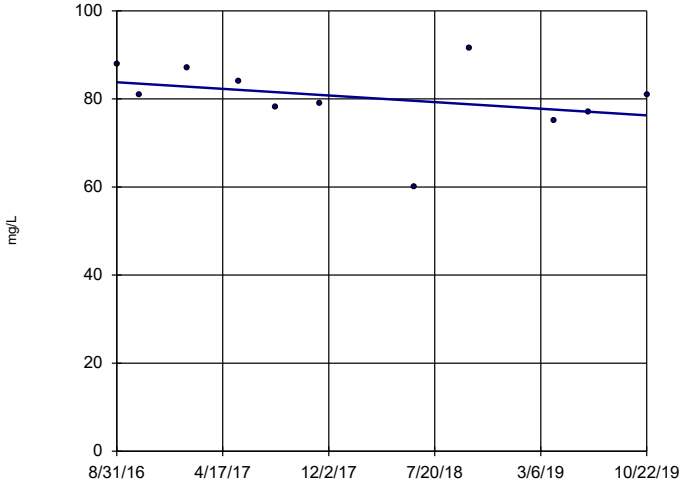
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-118



n = 11

Slope = -2.386 units per year.

Mann-Kendall statistic = -19
critical = -27

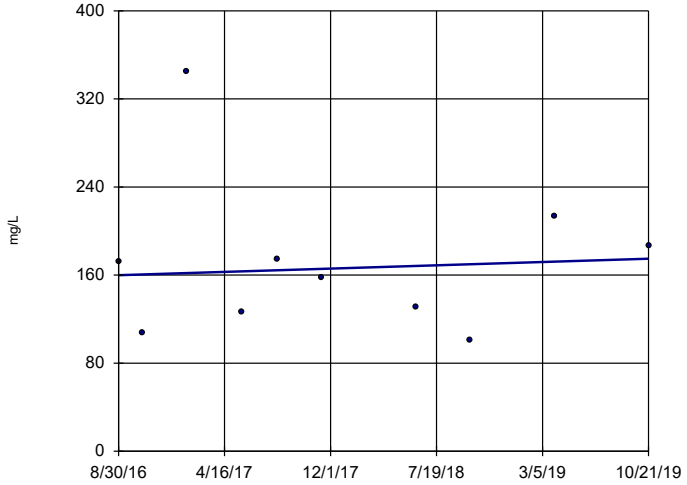
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Sulfate Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-111 (bg)



n = 10

Slope = 4.773 units per year.

Mann-Kendall statistic = 3
critical = 23

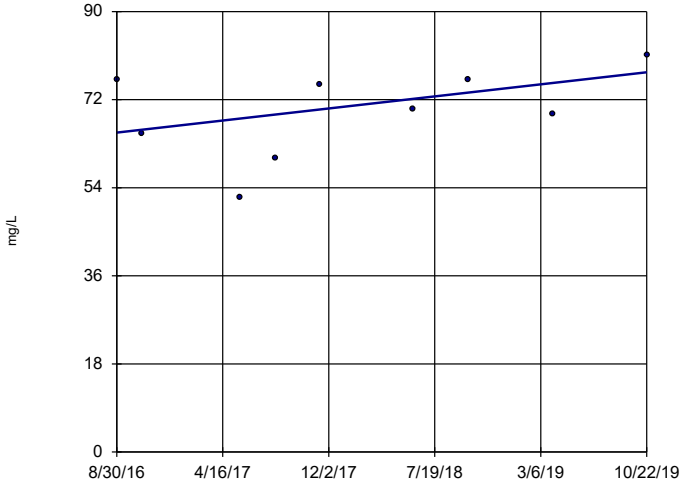
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-112 (bg)



n = 9

Slope = 3.916 units per year.

Mann-Kendall statistic = 11
critical = 20

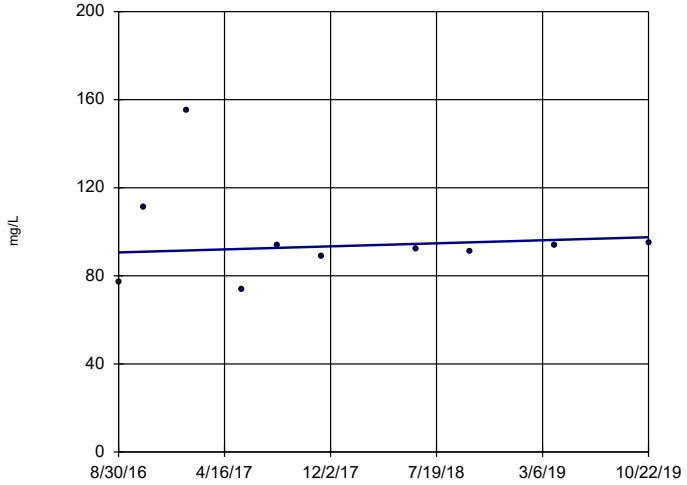
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 10

Slope = 2.173 units per year.

Mann-Kendall statistic = 6
critical = 23

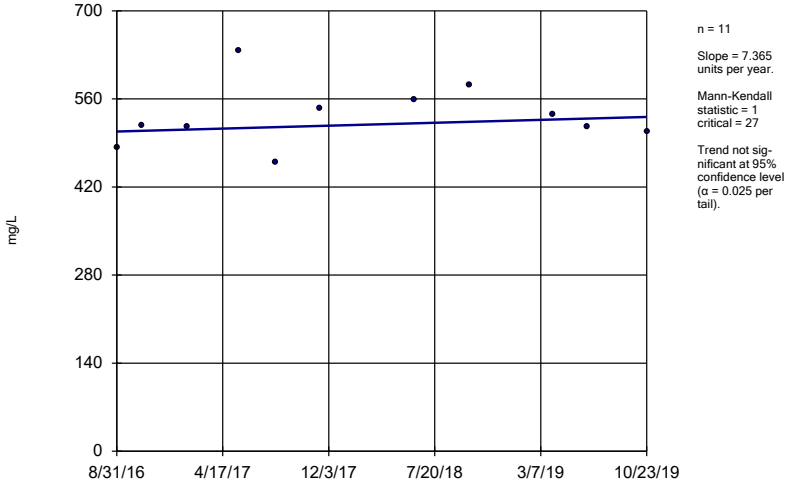
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-103



n = 11

Slope = 7.365 units per year.

Mann-Kendall statistic = 1 critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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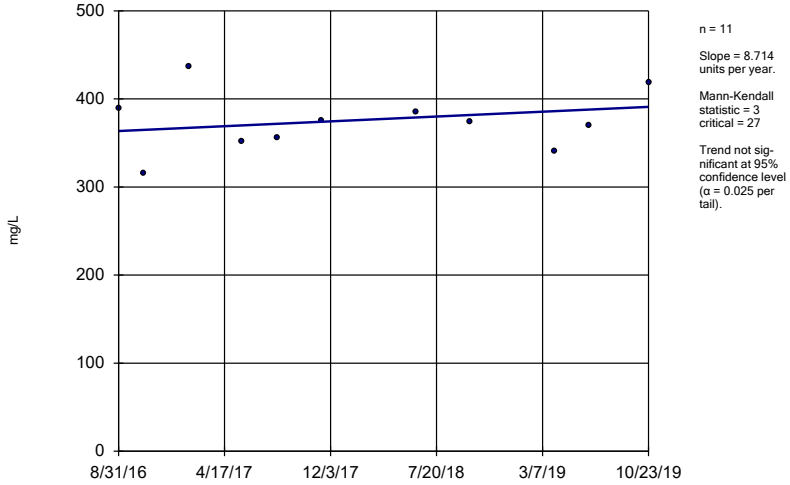
Sen's Slope Estimator

HGWC-105



n = 11

Slope = 8.714 units per year.

Mann-Kendall statistic = 3 critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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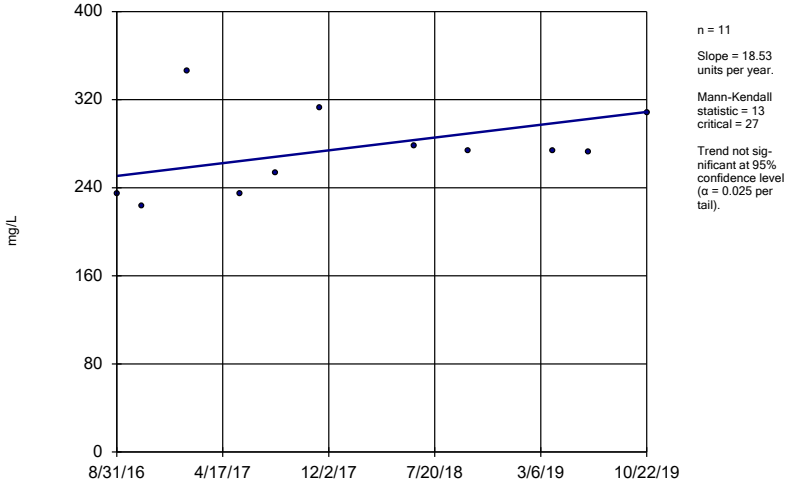
Sen's Slope Estimator

HGWC-107



n = 11

Slope = 18.53 units per year.

Mann-Kendall statistic = 13 critical = 27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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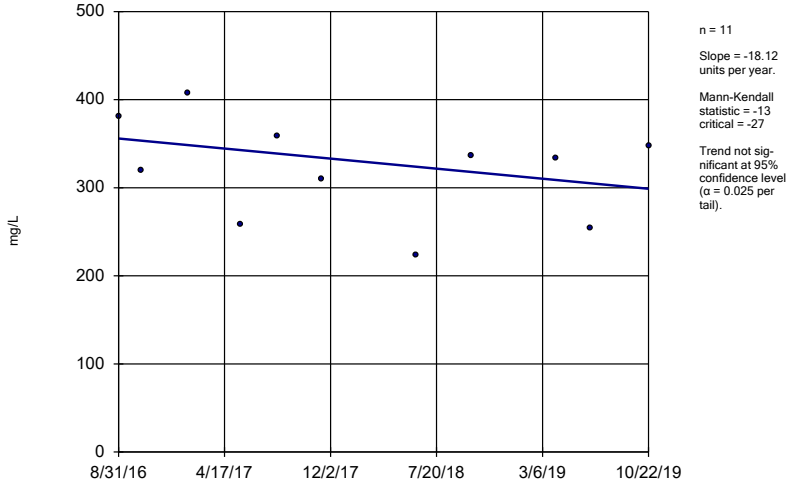
Sen's Slope Estimator

HGWC-117



n = 11

Slope = -18.12 units per year.

Mann-Kendall statistic = -13 critical = -27

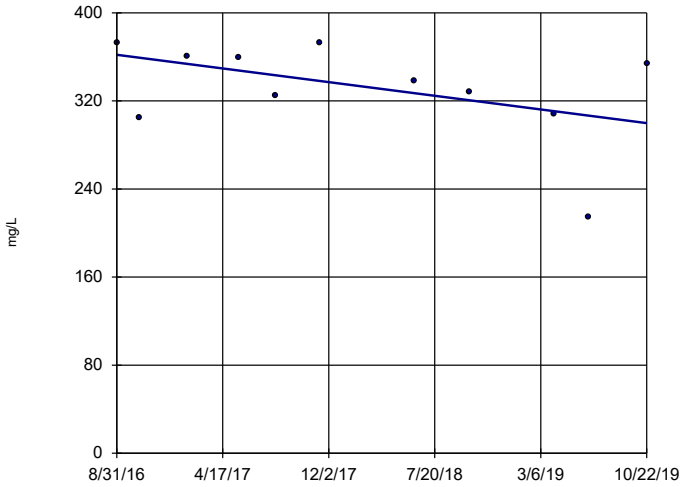
Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sen's Slope Estimator

HGWC-118



n = 11

Slope = -19.75 units per year.

Mann-Kendall statistic = -18
critical = -27

Trend not significant at 95% confidence level (α = 0.025 per tail).

Constituent: Total Dissolved Solids Analysis Run 3/12/2020 3:55 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

APPENDIX IV – GA EPD

Tolerance Limit (EPD)

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 2:54 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.003	n/a	n/a	n/a	27	100	n/a	0.2503	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.005	n/a	n/a	n/a	30	100	n/a	0.2146	NP Inter(NDs)
Barium (mg/L)	n/a	0.03276	n/a	n/a	n/a	30	0	No	0.05	Inter
Beryllium (mg/L)	n/a	0.003	n/a	n/a	n/a	30	96.67	n/a	0.2146	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0025	n/a	n/a	n/a	30	100	n/a	0.2146	NP Inter(NDs)
Chromium (mg/L)	n/a	0.008602	n/a	n/a	n/a	30	26.67	ln(x)	0.05	Inter
Cobalt (mg/L)	n/a	0.005	n/a	n/a	n/a	30	90	n/a	0.2146	NP Inter(NDs)
Fluoride (mg/L)	n/a	0.2495	n/a	n/a	n/a	33	24.24	sqrt(x)	0.05	Inter
Lead (mg/L)	n/a	0.005	n/a	n/a	n/a	30	83.33	n/a	0.2146	NP Inter(NDs)
Lithium (mg/L)	n/a	0.03	n/a	n/a	n/a	30	63.33	n/a	0.2146	NP Inter(NDs)
Mercury (mg/L)	n/a	0.0005	n/a	n/a	n/a	27	66.67	n/a	0.2503	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.01	n/a	n/a	n/a	27	100	n/a	0.2503	NP Inter(NDs)
Selenium (mg/L)	n/a	0.01	n/a	n/a	n/a	27	70.37	n/a	0.2503	NP Inter(NDs)
Thallium (mg/L)	n/a	0.001	n/a	n/a	n/a	27	100	n/a	0.2503	NP Inter(NDs)
Total Radium (pCi/L)	n/a	1.373	n/a	n/a	n/a	30	0	No	0.05	Inter

Table 2
EPD Based Groundwater Protection Standards
Plant Hammond - Ash Pond 4
Floyd County, Georgia

Constituent	CAS	Units	MCL	Statistically Derived Upper Tolerance Limits for Background	GWPS[1]
Antimony	7440-36-0	mg/L	0.006	0.003	0.006
Arsenic	7440-38-2	mg/L	0.01	0.005	0.01
Barium	7440-39-3	mg/L	2	0.033	2
Beryllium	7440-41-7	mg/L	0.004	0.003	0.004
Cadmium	7440-43-9	mg/L	0.005	0.0025	0.005
Chromium (III+VI)	7440-47-3	mg/L	0.1	0.0086	0.1
Cobalt[2]	7440-48-4	mg/L	N/A	0.005	0.005
Fluoride	16984-48-8	mg/L	4	0.25	4
Lead[2]	7439-92-1	mg/L	N/A	0.005	0.005
Lithium[2]	7439-93-2	mg/L	N/A	0.03	0.03
Mercury	7439-97-6	mg/L	0.002	0.0005	0.002
Molybdenum[2]	7439-98-7	mg/L	N/A	0.01	0.01
Selenium	7782-49-2	mg/L	0.05	0.01	0.05
Thallium	7440-28-0	mg/L	0.002	0.001	0.002
Total Radium	7440-14-4	pCi/L	5	1.37	5

Notes:
MCL - Maximum Contaminant Level
GWPS - Groundwater Protection Standards
mg/L - milligram per liter
N/A - Not Available
pCi/L - Picocuries per liter
[1]GWPS selected as the greater value between the MCL and the background Upper Tolerance Limit.
[2]Constituent without established MCL.

Confidence Interval (EPD) - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 3:05 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method

Confidence Interval (EPD) - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 3:05 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Arsenic (mg/L)	HGWC-101	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Arsenic (mg/L)	HGWC-103	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Arsenic (mg/L)	HGWC-105	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Arsenic (mg/L)	HGWC-107	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Arsenic (mg/L)	HGWC-109	0.00321	0.00123	0.01	No	10	0	No	0.01	Param.
Arsenic (mg/L)	HGWC-117	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Arsenic (mg/L)	HGWC-118	0.005	0.005	0.01	No	10	100	No	0.011	NP (NDs)
Barium (mg/L)	HGWC-101	0.04896	0.0409	2	No	10	0	No	0.01	Param.
Barium (mg/L)	HGWC-103	0.04283	0.03349	2	No	10	0	No	0.01	Param.
Barium (mg/L)	HGWC-105	0.068	0.066	2	No	10	0	No	0.011	NP (normality)
Barium (mg/L)	HGWC-107	0.03959	0.03791	2	No	10	0	No	0.01	Param.
Barium (mg/L)	HGWC-109	0.09077	0.08253	2	No	10	0	No	0.01	Param.
Barium (mg/L)	HGWC-117	0.05096	0.0375	2	No	10	0	No	0.01	Param.
Barium (mg/L)	HGWC-118	0.0652	0.05452	2	No	10	0	No	0.01	Param.
Beryllium (mg/L)	HGWC-101	0.003	0.000065	0.004	No	10	60	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-103	0.003	0.003	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-105	0.003	0.003	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-107	0.003	0.003	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-109	0.003	0.003	0.004	No	10	100	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-117	0.003	0.000079	0.004	No	10	80	No	0.011	NP (NDs)
Beryllium (mg/L)	HGWC-118	0.003	0.003	0.004	No	10	100	No	0.011	NP (NDs)
Cadmium (mg/L)	HGWC-101	0.0003	0.0001	0.005	No	10	10	No	0.011	NP (normality)
Cadmium (mg/L)	HGWC-103	0.0008144	0.0006296	0.005	No	10	0	No	0.01	Param.
Cadmium (mg/L)	HGWC-105	0.0025	0.0025	0.005	No	10	100	No	0.011	NP (NDs)
Cadmium (mg/L)	HGWC-107	0.0025	0.00009	0.005	No	10	30	No	0.011	NP (normality)
Cadmium (mg/L)	HGWC-109	0.0025	0.0025	0.005	No	10	100	No	0.011	NP (NDs)
Cadmium (mg/L)	HGWC-117	0.0007621	0.0004979	0.005	No	10	0	No	0.01	Param.
Cadmium (mg/L)	HGWC-118	0.0025	0.0025	0.005	No	10	100	No	0.011	NP (NDs)
Cobalt (mg/L)	HGWC-101	0.003637	0.001743	0.005	No	10	10	No	0.01	Param.
Cobalt (mg/L)	HGWC-103	0.002486	0.001614	0.005	No	10	0	No	0.01	Param.
Cobalt (mg/L)	HGWC-105	0.0009898	0.0004476	0.005	No	10	20	ln(x)	0.01	Param.
Cobalt (mg/L)	HGWC-107	0.005	0.005	0.005	No	10	100	No	0.011	NP (NDs)
Cobalt (mg/L)	HGWC-109	0.002248	0.001234	0.005	No	10	0	No	0.01	Param.
Cobalt (mg/L)	HGWC-117	0.008403	0.003637	0.005	No	10	0	No	0.01	Param.
Cobalt (mg/L)	HGWC-118	0.005	0.0003	0.005	No	10	50	No	0.011	NP (normality)
Fluoride (mg/L)	HGWC-101	0.3	0.05	4	No	11	81.82	No	0.006	NP (NDs)
Fluoride (mg/L)	HGWC-103	0.3	0.06	4	No	11	63.64	No	0.006	NP (NDs)
Fluoride (mg/L)	HGWC-105	0.1174	0.04663	4	No	11	36.36	No	0.01	Param.
Fluoride (mg/L)	HGWC-107	0.1067	0.02707	4	No	11	45.45	No	0.01	Param.
Fluoride (mg/L)	HGWC-109	0.135	0.05196	4	No	11	18.18	No	0.01	Param.
Fluoride (mg/L)	HGWC-117	0.1879	0.04697	4	No	11	36.36	No	0.01	Param.
Fluoride (mg/L)	HGWC-118	0.3482	0.08218	4	No	12	0	sqrt(x)	0.01	Param.
Lead (mg/L)	HGWC-101	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-103	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-105	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-107	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-109	0.005	0.000058	0.005	No	10	80	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-117	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lead (mg/L)	HGWC-118	0.005	0.005	0.005	No	10	90	No	0.011	NP (NDs)
Lithium (mg/L)	HGWC-101	0.03	0.03	0.03	No	10	100	No	0.011	NP (NDs)

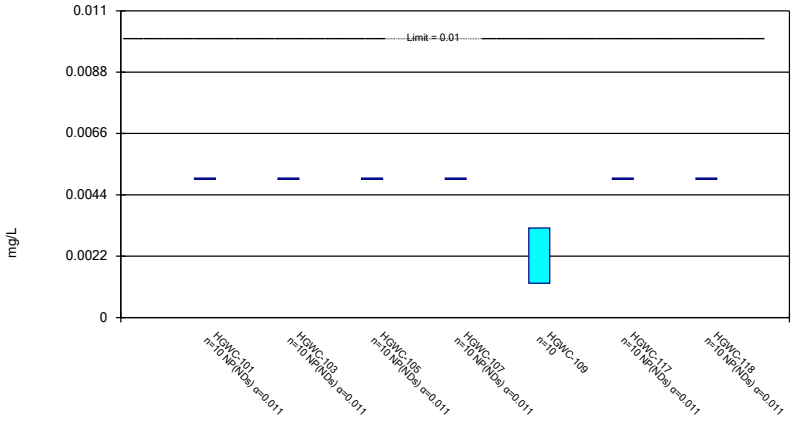
Confidence Interval (EPD) - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-4 Printed 3/13/2020, 3:05 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	Transform	Alpha	Method
Lithium (mg/L)	HGWC-103	0.03	0.0015	0.03	No	10	30	No	0.011	NP (normality)
Lithium (mg/L)	HGWC-105	0.004275	0.003785	0.03	No	10	0	No	0.01	Param.
Lithium (mg/L)	HGWC-107	0.03	0.00094	0.03	No	10	70	No	0.011	NP (NDs)
Lithium (mg/L)	HGWC-109	0.03	0.0009	0.03	No	10	50	No	0.011	NP (normality)
Lithium (mg/L)	HGWC-117	0.03	0.0012	0.03	No	10	30	No	0.011	NP (normality)
Lithium (mg/L)	HGWC-118	0.03	0.0015	0.03	No	10	60	No	0.011	NP (NDs)
Thallium (mg/L)	HGWC-101	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-103	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-105	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-107	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-109	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-117	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Thallium (mg/L)	HGWC-118	0.001	0.001	0.002	No	9	100	No	0.002	NP (NDs)
Total Radium (pCi/L)	HGWC-101	1.122	0.4672	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-103	1.165	0.4613	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-105	1.037	0.5372	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-107	1.383	0.6152	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-109	0.9161	0.4447	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-117	1.051	0.4905	5	No	10	0	No	0.01	Param.
Total Radium (pCi/L)	HGWC-118	1.46	0.3832	5	No	9	0	No	0.01	Param.

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Arsenic Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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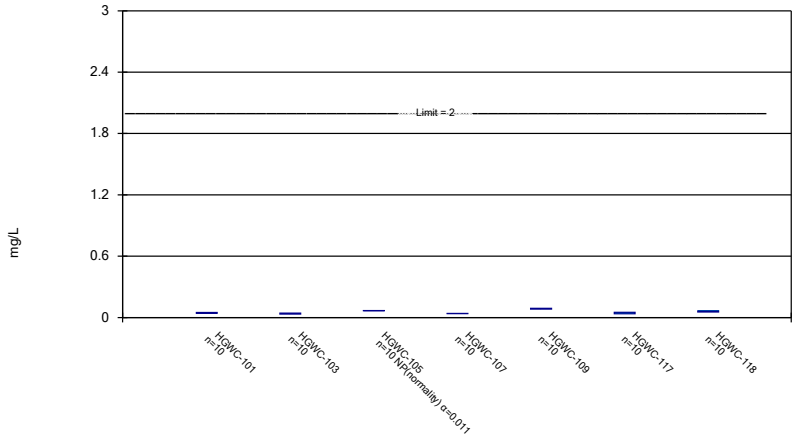
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Barium Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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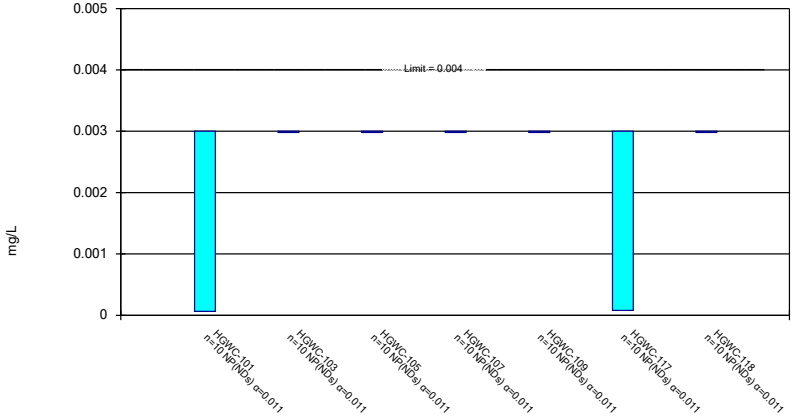
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



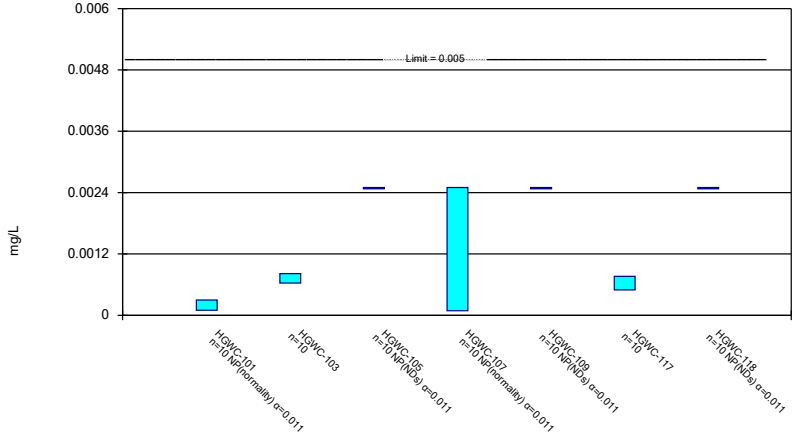
Constituent: Beryllium Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Sanitas™ v.9.6.23f Sanitas software licensed to Geosyntec Consultants. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cadmium Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Confidence Interval

Constituent: Arsenic (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	<0.005	<0.005	<0.005	<0.005	0.0045 (J)	<0.005	<0.005
10/20/2016	<0.005					<0.005	<0.005
10/24/2016		<0.005					
10/25/2016			<0.005	<0.005	0.003 (J)		
1/27/2017						<0.005	
1/31/2017	<0.005	<0.005	<0.005	<0.005	0.0022 (J)		<0.005
5/23/2017	<0.005	<0.005				<0.005	<0.005
5/24/2017			<0.005	<0.005	0.0012 (J)		
8/10/2017	<0.005	<0.005	<0.005	<0.005	0.0016 (J)	<0.005	<0.005
11/14/2017	<0.005	<0.005	<0.005	<0.005	0.0011 (J)	<0.005	<0.005
6/6/2018	<0.005	<0.005	<0.005	<0.005	0.0018 (J)		
6/7/2018						<0.005	<0.005
10/2/2018			<0.005	<0.005	0.0014 (J)		
10/3/2018	<0.005	<0.005				<0.005	<0.005
8/22/2019	<0.005	<0.005	<0.005			<0.005	<0.005
8/23/2019				<0.005	0.0035 (J)		
10/22/2019				<0.005	0.0019 (J)	<0.005	<0.005
10/23/2019	<0.005	<0.005	<0.005				
Mean	0.005	0.005	0.005	0.005	0.00222	0.005	0.005
Std. Dev.	0	0	0	0	0.001109	0	0
Upper Lim.	0.005	0.005	0.005	0.005	0.00321	0.005	0.005
Lower Lim.	0.005	0.005	0.005	0.005	0.00123	0.005	0.005

Confidence Interval

Constituent: Barium (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	0.0527	0.045	0.067	0.0391	0.0883	0.0547	0.0595
10/20/2016	0.0477					0.0529	0.055
10/24/2016		0.0386					
10/25/2016			0.0745	0.041	0.0831		
1/27/2017						0.049	
1/31/2017	0.0527	0.0365	0.0674	0.0382	0.0844		0.0613
5/23/2017	0.0436	0.0254				0.0352	0.068
5/24/2017			0.0668	0.0377	0.0784		
8/10/2017	0.0419	0.0396	0.067	0.0385	0.0903	0.0457	0.0638
11/14/2017	0.0407	0.0385	0.0643	0.039	0.083	0.0368	0.07
6/6/2018	0.043	0.043	0.068	0.039	0.095		
6/7/2018						0.036	0.059
10/2/2018			0.066	0.038	0.089		
10/3/2018	0.041	0.04				0.047	0.056
8/22/2019	0.043	0.036	0.066			0.036	0.052
8/23/2019				0.038	0.088		
10/22/2019				0.039	0.087	0.049	0.054
10/23/2019	0.043	0.039	0.066				
Mean	0.04493	0.03816	0.0673	0.03875	0.08665	0.04423	0.05986
Std. Dev.	0.00452	0.005238	0.002725	0.0009407	0.004622	0.007545	0.005983
Upper Lim.	0.04896	0.04283	0.068	0.03959	0.09077	0.05096	0.0652
Lower Lim.	0.0409	0.03349	0.066	0.03791	0.08253	0.0375	0.05452

Confidence Interval

Constituent: Beryllium (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
10/20/2016	<0.003					<0.003	<0.003
10/24/2016		<0.003					
10/25/2016			<0.003	<0.003	<0.003		
1/27/2017						<0.003	
1/31/2017	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003
5/23/2017	7E-05 (J)	<0.003				<0.003	<0.003
5/24/2017			<0.003	<0.003	<0.003		
8/10/2017	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
11/14/2017	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
6/6/2018	5.9E-05 (J)	<0.003	<0.003	<0.003	<0.003		
6/7/2018						6.8E-05 (J)	<0.003
10/2/2018			<0.003	<0.003	<0.003		
10/3/2018	6.5E-05 (J)	<0.003				<0.003	<0.003
8/22/2019	<0.003	<0.003	<0.003			7.9E-05 (J)	<0.003
8/23/2019				<0.003	<0.003		
10/22/2019				<0.003	<0.003	<0.003	<0.003
10/23/2019	7.5E-05 (J)	<0.003	<0.003				
Mean	0.001827	0.003	0.003	0.003	0.003	0.002415	0.003
Std. Dev.	0.001514	0	0	0	0	0.001234	0
Upper Lim.	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Lower Lim.	6.5E-05	0.003	0.003	0.003	0.003	7.9E-05	0.003

Confidence Interval

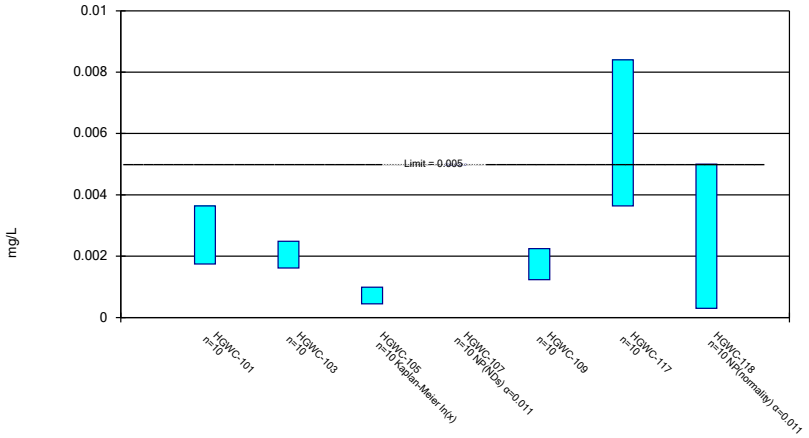
Constituent: Cadmium (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	0.0002 (J)	0.0006 (J)	<0.0025	0.0001 (J)	<0.0025	0.0008 (J)	<0.0025
10/20/2016	0.0003 (J)					0.0008 (J)	<0.0025
10/24/2016		0.0008 (J)					
10/25/2016			<0.0025	8E-05 (J)	<0.0025		
1/27/2017						0.0007 (J)	
1/31/2017	0.0001 (J)	0.0006 (J)	<0.0025	9E-05 (J)	<0.0025		<0.0025
5/23/2017	0.0002 (J)	0.0006 (J)				0.0005 (J)	<0.0025
5/24/2017			<0.0025	0.0001 (J)	<0.0025		
8/10/2017	0.0002 (J)	0.0007 (J)	<0.0025	<0.0025	<0.0025	0.0004 (J)	<0.0025
11/14/2017	<0.0025	0.0007 (J)	<0.0025	<0.0025	<0.0025	0.0005 (J)	<0.0025
6/6/2018	9.5E-05 (J)	0.00073 (J)	<0.0025	0.00012 (J)	<0.0025		
6/7/2018						0.00049 (J)	<0.0025
10/2/2018			<0.0025	0.0001 (J)	<0.0025		
10/3/2018	0.00018 (J)	0.00078 (J)				0.00079 (J)	<0.0025
8/22/2019	0.00014 (J)	0.0008 (J)	<0.0025			0.00064 (J)	<0.0025
8/23/2019				0.00011 (J)	<0.0025		
10/22/2019				<0.0025	<0.0025	0.00068 (J)	<0.0025
10/23/2019	0.0002 (J)	0.00091 (J)	<0.0025				
Mean	0.0004115	0.000722	0.0025	0.00082	0.0025	0.00063	0.0025
Std. Dev.	0.0007362	0.0001036	0	0.001159	0	0.000148	0
Upper Lim.	0.0003	0.0008144	0.0025	0.0025	0.0025	0.0007621	0.0025
Lower Lim.	0.0001	0.0006296	0.0025	9E-05	0.0025	0.0004979	0.0025

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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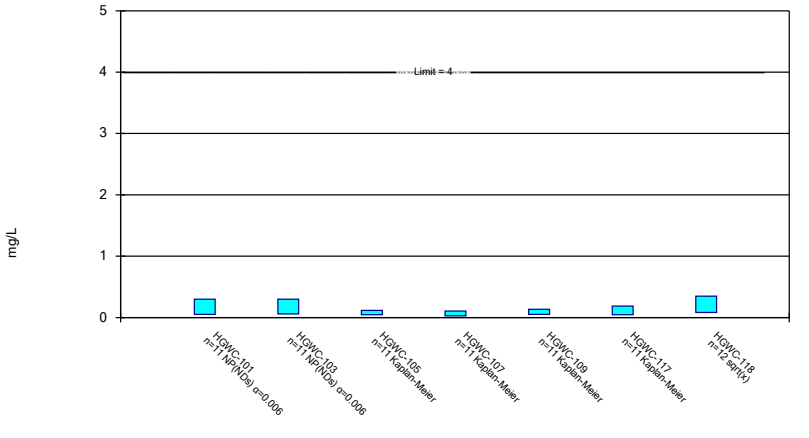
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Fluoride Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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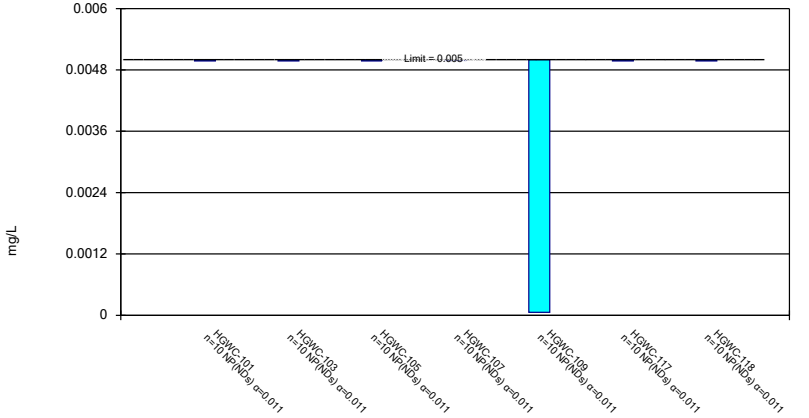
Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Lead Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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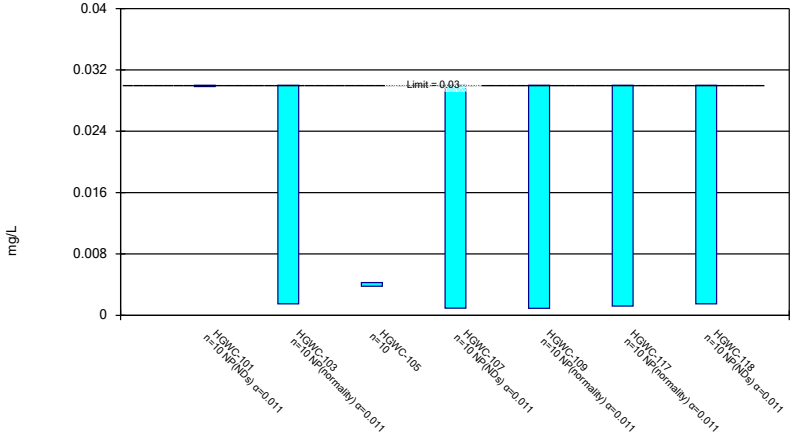
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Lithium Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Confidence Interval

Constituent: Cobalt (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	0.0033 (J)	0.0018 (J)	0.0014 (J)	<0.005	0.0023 (J)	0.0035 (J)	<0.005
10/20/2016	0.0025 (J)					0.0045 (J)	<0.005
10/24/2016		0.0018 (J)					
10/25/2016			0.0013 (J)	<0.005	0.0017 (J)		
1/27/2017						0.0041 (J)	
1/31/2017	0.001 (J)	0.0016 (J)	0.0006 (J)	<0.005	0.0017 (J)		<0.005
5/23/2017	0.0025 (J)	0.0014 (J)				0.0071 (J)	0.0005 (J)
5/24/2017			0.0007 (J)	<0.005	0.002 (J)		
8/10/2017	0.0029 (J)	0.0025 (J)	0.0006 (J)	<0.005	0.0012 (J)	0.0031 (J)	0.0003 (J)
11/14/2017	0.003 (J)	0.002 (J)	0.0005 (J)	<0.005	0.0014 (J)	0.0062 (J)	0.0004 (J)
6/6/2018	0.0016 (J)	0.0031 (J)	0.00056 (J)	<0.005	0.0014 (J)		
6/7/2018						0.0083 (J)	<0.005
10/2/2018			<0.005	<0.005	0.00081 (J)		
10/3/2018	0.0028 (J)	0.0023 (J)				0.005 (J)	<0.005
8/22/2019	<0.005	0.0019 (J)	<0.005			0.012	0.0003 (J)
8/23/2019				<0.005	0.0027 (J)		
10/22/2019				<0.005	0.0022 (J)	0.0064	0.00061 (J)
10/23/2019	0.0023 (J)	0.0021 (J)	0.00038 (J)				
Mean	0.00269	0.00205	0.001604	0.005	0.001741	0.00602	0.002711
Std. Dev.	0.001061	0.0004882	0.001821	0	0.0005682	0.002671	0.002414
Upper Lim.	0.003637	0.002486	0.0009898	0.005	0.002248	0.008403	0.005
Lower Lim.	0.001743	0.001614	0.0004476	0.005	0.001234	0.003637	0.0003

Confidence Interval

Constituent: Fluoride (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	0.05 (J)	0.06 (J)	0.15 (J)	0.08 (J)	0.12 (J)	0.09 (J)	0.18 (J)
10/20/2016	0.03 (J)					0.11 (J)	0.12 (J)
10/24/2016		0.13 (J)					
10/25/2016			0.09 (J)	0.16 (J)	0.17 (J)		
1/27/2017						0.28 (J)	
1/31/2017	<0.3	<0.3	0.13 (J)	0.16 (J)	0.05 (J)		0.3
5/23/2017	<0.3	0.15 (J)				0.01 (J)	0.14 (J)
5/24/2017			0.07 (J)	0.009 (J)	0.13 (J)		
8/10/2017	<0.3	<0.3	0.03 (J)	<0.3	0.12 (J)	0.1 (J)	0.11 (J)
11/14/2017	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.07 (J)
6/6/2018	<0.3	<0.3	0.074 (J)	0.057 (J)	0.15 (J)		
6/7/2018						<0.3	0.3
10/2/2018			<0.3	<0.3	<0.3		
10/3/2018	<0.3	<0.3				<0.3	0.12 (J)
4/3/2019				<0.3	0.05 (J)		
4/4/2019	<0.3	0.042 (J)	0.03 (J)				
4/5/2019						0.19 (J)	0.33
6/18/2019							0.89
8/22/2019	<0.3	<0.3	<0.3			<0.3	0.07 (J)
8/23/2019				<0.3	0.034 (J)		
10/22/2019				0.047 (J)	0.099 (J)	0.042 (J)	0.087 (J)
10/23/2019	<0.3	<0.3	<0.3				
Mean	0.2527	0.2256	0.1613	0.183	0.1385	0.1838	0.2264
Std. Dev.	0.1053	0.1071	0.1156	0.1203	0.09066	0.1161	0.2288
Upper Lim.	0.3	0.3	0.1174	0.1067	0.135	0.1879	0.3482
Lower Lim.	0.05	0.06	0.04663	0.02707	0.05196	0.04697	0.08218

Confidence Interval

Constituent: Lead (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
10/20/2016	<0.005					<0.005	<0.005
10/24/2016		<0.005					
10/25/2016			<0.005	<0.005	<0.005		
1/27/2017						<0.005	
1/31/2017	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005
5/23/2017	0.0009 (J)	<0.005				<0.005	<0.005
5/24/2017			<0.005	<0.005	<0.005		
8/10/2017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
11/14/2017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
6/6/2018	<0.005	<0.005	<0.005	<0.005	<0.005		
6/7/2018						<0.005	<0.005
10/2/2018			<0.005	<0.005	<0.005		
10/3/2018	<0.005	<0.005				<0.005	<0.005
8/22/2019	<0.005	<0.005	<0.005			<0.005	<0.005
8/23/2019				<0.005	5.8E-05 (J)		
10/22/2019				7.9E-05 (J)	5.4E-05 (J)	0.00016 (J)	0.00025 (J)
10/23/2019	<0.005	0.00043 (J)	6.8E-05 (J)				
Mean	0.00459	0.004543	0.004507	0.004508	0.004011	0.004516	0.004525
Std. Dev.	0.001297	0.001445	0.00156	0.001556	0.002085	0.001531	0.001502
Upper Lim.	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Lower Lim.	0.005	0.005	0.005	0.005	5.8E-05	0.005	0.005

Confidence Interval

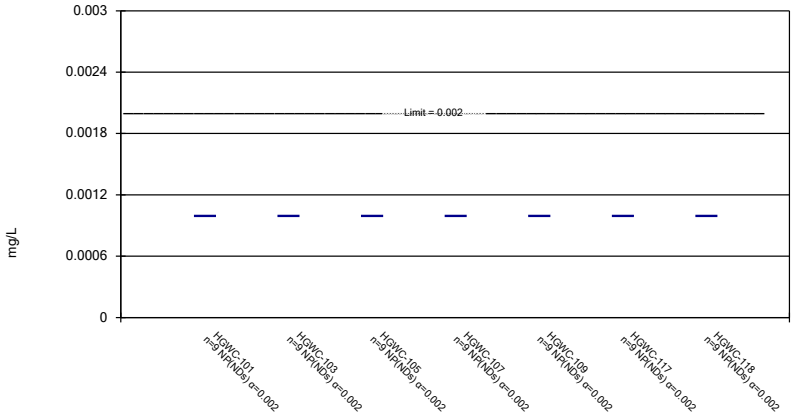
Constituent: Lithium (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	<0.03	<0.03	0.0034 (J)	<0.03	<0.03	0.0024 (J)	<0.03
10/20/2016	<0.03					0.0027 (J)	<0.03
10/24/2016		<0.03					
10/25/2016			0.0043 (J)	<0.03	<0.03		
1/27/2017						<0.03	
1/31/2017	<0.03	<0.03	0.0042 (J)	<0.03	<0.03		<0.03
5/23/2017	<0.03	0.0012 (J)				<0.03	0.0012 (J)
5/24/2017			0.0039 (J)	<0.03	0.0012 (J)		
8/10/2017	<0.03	0.0016 (J)	0.004 (J)	<0.03	<0.03	0.0021 (J)	<0.03
11/14/2017	<0.03	0.0015 (J)	0.0044 (J)	<0.03	<0.03	<0.03	<0.03
6/6/2018	<0.03	0.0017 (J)	0.0041 (J)	0.00099 (J)	0.0013 (J)		
6/7/2018						0.0011 (J)	0.0015 (J)
10/2/2018			0.0041 (J)	<0.03	0.0013 (J)		
10/3/2018	<0.03	0.0016 (J)				0.0021 (J)	<0.03
8/22/2019	<0.03	0.0015 (J)	0.004 (J)			0.0012 (J)	0.0018 (J)
8/23/2019				0.00092 (J)	0.0009 (J)		
10/22/2019				0.00094 (J)	0.00088 (J)	0.0028 (J)	0.0027 (J)
10/23/2019	<0.03	0.002 (J)	0.0039 (J)				
Mean	0.03	0.01011	0.00403	0.02128	0.01556	0.01044	0.01872
Std. Dev.	0	0.01373	0.0002751	0.01403	0.01522	0.01351	0.01457
Upper Lim.	0.03	0.03	0.004275	0.03	0.03	0.03	0.03
Lower Lim.	0.03	0.0015	0.003785	0.00094	0.0009	0.0012	0.0015

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 3/13/2020 3:03 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

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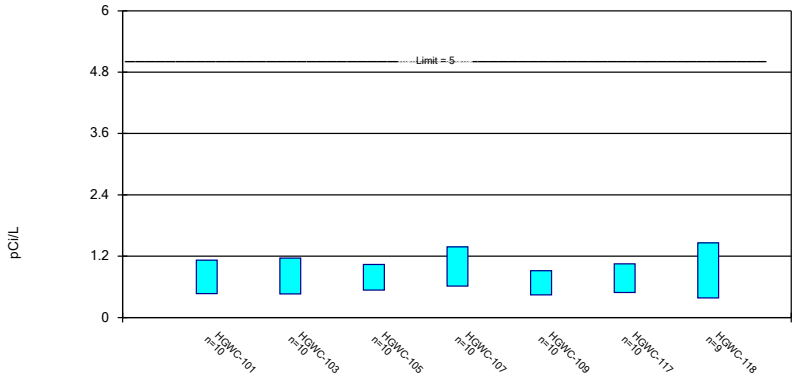
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Total Radium Analysis Run 3/13/2020 3:04 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

Confidence Interval

Constituent: Thallium (mg/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
10/20/2016	<0.001					<0.001	<0.001
10/24/2016		<0.001					
10/25/2016			<0.001	<0.001	<0.001		
1/27/2017						<0.001	
1/31/2017	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
5/23/2017	<0.001	<0.001				<0.001	<0.001
5/24/2017			<0.001	<0.001	<0.001		
8/10/2017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
11/14/2017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6/6/2018	<0.001	<0.001	<0.001	<0.001	<0.001		
6/7/2018						<0.001	<0.001
10/2/2018			<0.001	<0.001	<0.001		
10/3/2018	<0.001	<0.001				<0.001	<0.001
8/22/2019	<0.001	<0.001	<0.001			<0.001	<0.001
8/23/2019				<0.001	<0.001		
Mean	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Std. Dev.	0	0	0	0	0	0	0
Upper Lim.	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Lower Lim.	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Confidence Interval

Constituent: Total Radium (pCi/L) Analysis Run 3/13/2020 3:05 PM

Hammond AP Client: Georgia Power Data: Hammond AP-4

	HGWC-101	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-118
8/31/2016	0.621 (U)	1.62	0.906 (U)	1.2	1.03	1.12	
10/20/2016	1.4					0.803 (U)	1.97
10/24/2016		1.01 (U)					
10/25/2016			1.03	1.11 (U)	1.07		
1/27/2017						1.08 (U)	
1/31/2017	0.906 (U)	0.976 (U)	0.868 (U)	1.45	0.588 (U)		1.03
5/23/2017	0.388 (U)	0.891 (U)				0.624 (U)	0.398 (U)
5/24/2017			0.728 (U)	0.393 (U)	0.593 (U)		
8/10/2017	1.03 (U)	0.601 (U)	1.35	0.84 (U)	0.691 (U)	0.695 (U)	0.938 (U)
11/14/2017	0.769 (U)	0.567 (U)	0.817 (U)	1.01 (U)	0.653 (U)	0.99 (U)	0.335 (U)
6/6/2018	1.28 (U)	0.836 (U)	0.559 (U)	0.365 (U)	0.939 (U)		
6/7/2018						1.04 (U)	0.696 (U)
10/2/2018			0.336 (U)	1.23	0.225 (U)		
10/3/2018	0.302 (U)	0.111 (U)				0.198 (U)	1.6 (U)
8/22/2019	0.474 (U)	0.946 (U)	0.694 (U)			0.333 (U)	0.904 (U)
8/23/2019				1.69	0.47 (U)		
10/22/2019				0.705 (U)	0.545 (U)	0.827 (U)	0.424 (U)
10/23/2019	0.776 (U)	0.571 (U)	0.584 (U)				
Mean	0.7946	0.8129	0.7872	0.9993	0.6804	0.771	0.9217
Std. Dev.	0.3669	0.3941	0.2802	0.4305	0.2641	0.3143	0.5577
Upper Lim.	1.122	1.165	1.037	1.383	0.9161	1.051	1.46
Lower Lim.	0.4672	0.4613	0.5372	0.6152	0.4447	0.4905	0.3832

GROUNDWATER STATS CONSULTING

July 27, 2020

Southern Company Services
Attn: Ms. Lauren Petty
3535 Colonnade Parkway
Birmingham, AL 35243

Re: Plant Hammond Ash Pond 4 (AP-4)
Statistical Analysis Spring 2020

Dear Ms. Petty,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the Spring 2020 Semi-Annual Groundwater Monitoring and Corrective Action Statistical summary of the analysis of groundwater quality for Georgia Power Company's Plant Hammond AP-4. The analysis complies with the Georgia Environmental Protection Division Rules for Solid Waste Management Chapter 391-3-4-.10, and follows the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began for Hammond AP-4 in 2016, and at least 8 background samples have been collected at each of the groundwater monitoring wells analyzed in this report. The monitoring well network, as provided by Southern Company Services, consists of the following:

- **Upgradient well:** HGWA-111, HGWA-112, HGWA-113
- **Downgradient wells:** HGWC-101, HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Note that well HGWC-102 was first sampled in October 2019. The most recent sampling event for this well occurred in June 2020, whereas the most recent sampling event at the other wells occurred in April 2020.

Data were sent electronically to Groundwater Stats Consulting, and the statistical analysis was reviewed Kristina Rayner, Groundwater Statistician and Founder of Groundwater Stats Consulting.

The following constituents are evaluated:

- **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

Note that when there are no detections present in downgradient wells for a given constituent, statistical analyses are not required. A summary of well/constituent pairs with 100% nondetects follows this letter. A substitution of the most recent reporting limit is used for nondetect data.

Additionally, the following constituents, which were not detected during the Scan event in August 2019 at existing wells (all wells besides HGWC-102) were not sampled during the April 2020 sampling event: antimony, mercury, molybdenum, selenium, and thallium. These constituents, however, were sampled during the April 2020 and June 2020 sampling events at well HGWC-102 and are included in this analysis.

Time series plots for Appendix III and IV parameters at all wells are provided for the purpose of screening data at these wells (Figure A). Additionally, a separate section of box plots is included for all constituents at upgradient and downgradient wells (Figure B). The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells. Values in background which have been flagged as outliers may be seen in a lighter font and as a disconnected symbol on the graphs. A summary of flagged outliers follows this report (Figure C).

In earlier analyses, data at all wells were evaluated for the following: 1) outliers; 2) trends; 3) most appropriate statistical method for Appendix III parameters based on site characteristics of groundwater data upgradient of the facility; and 4) eligibility of downgradient wells when intrawell statistical methods are recommended. A power curve is provided to demonstrate that the selected statistical methods for Appendix III parameters comply with the USEPA Unified Guidance. The EPA suggests the selected statistical method should provide at least 55% power at 3 standard deviations or at least 80% power at 4 standard deviations. The power curve is based on the following:

CCR Appendix III Constituents:

- Semi-Annual Sampling
- Interwell Prediction Limits with 1-of-2 resample plan – (all parameters)
- # Constituents: 7
- # Downgradient wells: 8

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. While the false positive rate associated with the parametric limits is based on an annual 10% (5% per semi-annual event) as recommended by the EPA Unified Guidance (2009), the false positive rate associated with the nonparametric limits is dependent upon the available background sample size, number of future comparisons, and verification resample plan. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009) data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Periodic updating of background statistical limits is necessary to accommodate these types of changes. In the interwell case, prediction limits are updated with upgradient well data during each event after careful screening for any new outliers. In some cases, the earlier portion of data are deselected prior to construction of limits to provide sensitive limits that will rapidly detect changes in groundwater quality. Even

though the data are excluded from the calculation, the values will continue to be reported and shown in tables and graphs.

Background Screening

Outlier and Trend Testing

Time series plots are used to identify suspected outliers, or extreme values that would result in limits that are not representative of the current background data population. Suspected outliers at all wells for Appendix III and Appendix IV parameters were formally tested using Tukey's box plot method and, when identified, flagged in the computer database with "o" and deselected prior to construction of statistical limits.

Using the Tukey box plot method, a few outliers were identified. Often, when the most recent value is identified as an outlier, values are not flagged in the database at this time as they may represent a possible trend. If future values do not remain at similar concentrations, these values will be flagged as outliers and deselected. Several low values exist in the data sets and appear on the graphs as possible low outliers relative to the laboratory's Practical Quantitation Limit. However, these values are observed trace values (i.e. measurements reported by the laboratory between the Method Detection Limit and the Practical Quantitation Limit) and, therefore, were not flagged as outliers.

Of the outliers identified by Tukey's method, only one outlier was flagged as all other values are similar to remaining measurements within a given well or neighboring wells, or were reported nondetects.

Additionally, when any values are flagged in the database as outliers, they are plotted in a disconnected and lighter symbol on the time series graph. The accompanying data pages display the flagged value in a lighter font as well. A substitution of the most recent reporting limit was applied when varying detection limits existed in data.

No obvious seasonal patterns were observed on the time series plots for any of the detected data; therefore, no deseasonalizing adjustments were made to the data. When seasonal patterns are observed, data may be deseasonalized so that the resulting limits will correctly account for the seasonality as a predictable pattern rather than random variation or a release.

While trends may be identified by visual inspection, a quantification of the trend and its significance is needed. The Sen's Slope/Mann Kendall trend test was used to evaluate all data at each well to identify statistically significant increasing or decreasing trends. In the

absence of suspected contamination, significant trending data are typically not included as part of the background data used for construction of prediction limits. This step serves to eliminate the trend and, thus, reduce variation in background. When statistically significant decreasing trends are present, all available data are evaluated to determine whether earlier concentration levels are significantly different than current reported concentrations and will be deselected as necessary. When any records of data are truncated for the reasons above, a summary report will be provided to show the date ranges used in construction of the statistical limits.

The results of the trend analyses were included with the previous screening and showed a few statistically significant decreasing and increasing trends for the Appendix III parameters. Most trends noted were relatively low in magnitude when compared to average concentrations, and the background period is short; therefore, no adjustments were made to the data sets at this time.

Appendix III – Determination of Spatial Variation

The Analysis of Variance (ANOVA) was used to statistically evaluate differences in average concentrations among upgradient wells, which assists in identifying the most appropriate statistical approach. Interwell tests, which compare downgradient well data to statistical limits constructed from pooled upgradient well data, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter.

The ANOVA identified no variation among upgradient well data for boron or fluoride, making these constituents eligible for interwell analyses. Variation was noted for calcium, chloride, pH, sulfate and TDS. While data were further tested for intrawell eligibility during the screening, interwell methods will be used for all Appendix III constituents in accordance with Georgia EPD requirements.

Statistical Analysis of Appendix III Parameters – Spring 2020

Interwell prediction limits, combined with a 1-of-2 resample plan, were constructed using all historical upgradient well data through April 2020 (Figure D). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. The most recent sample from each downgradient well, which is April 2020 for wells

HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, and HGWC-118 and June 2020 for well HGWC-102, is compared to the background limit to determine whether there are statistically significant increases (SSIs).

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of one additional sample to determine whether the initial exceedance is confirmed. When a resample confirms the initial exceedance, a statistically significant increase is identified and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no exceedance is noted and no further action is necessary. If no resample is collected, the original result is considered a confirmed exceedance. Several prediction limit exceedances were noted for Appendix III parameters. A summary table of the interwell prediction limits follows this letter.

When prediction limit exceedances are identified in downgradient wells, data are further evaluated using the Sen's Slope/Mann Kendall trend test to determine whether concentrations are statistically increasing, decreasing, or stable (Figure E). Upgradient wells are included in the trend analyses for all parameters found to exceed their prediction limit in downgradient wells to identify whether similar patterns exist upgradient of the site which is an indication of natural variability in groundwater unrelated to practices at the site. A summary of the trend test results follows this letter. Statistically significant trends were noted for the following well/constituent pairs:

Increasing trends:

- Boron: HGWC-107

Decreasing trends:

- Sulfate: HGWA-113 (upgradient) and HGWC-105

Statistical Analysis of Appendix IV Parameters – Spring 2020

Interwell tolerance limits were used to calculate the site-specific background limits from pooled upgradient well data for Appendix IV constituents (Figure F). Parametric tolerance limits are used when data follow a normal or transformed-normal distribution such as for barium, chromium, combined radium, and fluoride. When data contained greater than 50% nondetects or did not follow a normal or transformed-normal distribution, non-parametric tolerance limits were used. The background limits were then used when determining the groundwater protection standard (GWPS) Georgia EPD Rule 391-3-4-.10(6)(a). For sites regulated under Georgia 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 Georgia EPD Rule requirements, State GWPS were established for statistical comparison of Appendix IV constituents for the Spring 2020 sampling event (Figure G).

To complete the statistical comparison to GWPS, State confidence intervals were constructed for the Appendix IV constituents in accordance with the state requirements in each downgradient well (Figure H). Well/constituent pairs with 100% nondetects require no statistical analysis. The Sanitas software was used to calculate the tolerance limits and the confidence intervals. The confidence intervals were compared to the GWPS established using the Georgia EPD Rules 391-3-4-.10(6)(a) for the State requirements. Only when the entire confidence interval is above a GWPS is the downgradient well/constituent pair considered to exceed its respective standard. A summary of the confidence intervals follows this letter. If there is an exceedance of the GWPS, a statistically significant level (SSL) exceedance is identified. No exceedances were noted for any well/constituent pairs.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for Hammond AP-4. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

Andrew T. Collins
Groundwater Analyst

Kristina L. Rayner
Groundwater Statistician

100% Non-Detects

Analysis Run 7/16/2020 2:52 PM View: 100% Nondetect Well-Constituent Pairs
Plant Hammond Client: Southern Company Data: Hammond AP-4

Antimony (mg/L)
HGWA-111, HGWA-112, HGWA-113, HGWC-101, HGWC-105, HGWC-109, HGWC-117, HGWC-118

Arsenic (mg/L)
HGWA-112, HGWC-103, HGWC-105, HGWC-107, HGWC-118

Beryllium (mg/L)
HGWA-111, HGWA-112, HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-118

Cadmium (mg/L)
HGWA-111, HGWA-112, HGWA-113, HGWC-105, HGWC-109, HGWC-118

Cobalt (mg/L)
HGWA-111, HGWA-112, HGWC-107

Lithium (mg/L)
HGWA-112, HGWC-101

Mercury (mg/L)
HGWC-102, HGWC-105, HGWC-107

Molybdenum (mg/L)
HGWA-111, HGWA-112, HGWA-113, HGWC-101, HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Selenium (mg/L)
HGWA-111, HGWA-112, HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Thallium (mg/L)
HGWA-111, HGWA-112, HGWA-113, HGWC-101, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Outlier Summary

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:34 PM

	HGWA-112 Total Dissolved Solids (mg/L)
1/25/2017	152 (o)

Appendix III Interwell Prediction Limits - Significant Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	HGWC-102	0.022	n/a	6/18/2020	2.9	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-103	0.022	n/a	3/25/2020	2.3	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-105	0.022	n/a	3/25/2020	1.4	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-107	0.022	n/a	3/25/2020	0.87	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-109	0.022	n/a	3/25/2020	0.36	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-117	0.022	n/a	3/24/2020	1	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-118	0.022	n/a	3/25/2020	0.7	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Calcium (mg/L)	HGWC-102	61	n/a	6/18/2020	124	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-103	61	n/a	3/25/2020	86.8	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-105	61	n/a	3/25/2020	91.4	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-117	61	n/a	3/24/2020	68	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-118	61	n/a	3/25/2020	86.8	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-102	5.7	n/a	6/18/2020	6.9	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-117	5.7	n/a	3/24/2020	12.5	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-103	7.4	5.5	3/25/2020	5.49	Yes	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-101	14	n/a	3/25/2020	85.5	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-102	14	n/a	6/18/2020	349	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-103	14	n/a	3/25/2020	251	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-105	14	n/a	3/25/2020	161	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-107	14	n/a	3/25/2020	116	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-109	14	n/a	3/25/2020	27.9	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-117	14	n/a	3/24/2020	129	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-118	14	n/a	3/25/2020	78.4	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	HGWC-102	250	n/a	6/18/2020	652	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-103	250	n/a	3/25/2020	507	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-105	250	n/a	3/25/2020	417	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-107	250	n/a	3/25/2020	297	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-117	250	n/a	3/24/2020	331	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-118	250	n/a	3/25/2020	347	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2

Appendix III Interwell Prediction Limits - All Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	HGWC-101	0.022	n/a	3/25/2020	0.08J	No	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	**HGWC-102**	**0.022**	**n/a**	**6/18/2020**	**2.9**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-103**	**0.022**	**n/a**	**3/25/2020**	**2.3**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-105**	**0.022**	**n/a**	**3/25/2020**	**1.4**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-107**	**0.022**	**n/a**	**3/25/2020**	**0.87**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-109**	**0.022**	**n/a**	**3/25/2020**	**0.36**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-117**	**0.022**	**n/a**	**3/24/2020**	**1**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-118**	**0.022**	**n/a**	**3/25/2020**	**0.7**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Calcium (mg/L)	HGWC-101	61	n/a	3/25/2020	18.4	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-102**	**61**	**n/a**	**6/18/2020**	**124**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-103**	**61**	**n/a**	**3/25/2020**	**86.8**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-105**	**61**	**n/a**	**3/25/2020**	**91.4**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	HGWC-107	61	n/a	3/25/2020	59.5	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-109	61	n/a	3/25/2020	42.6	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-117**	**61**	**n/a**	**3/24/2020**	**68**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-118**	**61**	**n/a**	**3/25/2020**	**86.8**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-101	5.7	n/a	3/25/2020	5.2	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-102**	**5.7**	**n/a**	**6/18/2020**	**6.9**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-103	5.7	n/a	3/25/2020	5.1	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-105	5.7	n/a	3/25/2020	3.2	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-107	5.7	n/a	3/25/2020	3	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-109	5.7	n/a	3/25/2020	3.9	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-117**	**5.7**	**n/a**	**3/24/2020**	**12.5**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-118	5.7	n/a	3/25/2020	3.6	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Fluoride (mg/L)	HGWC-101	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-102	0.2	n/a	6/18/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-103	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-105	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-107	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-109	0.2	n/a	3/25/2020	0.075J	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-117	0.2	n/a	3/24/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-118	0.2	n/a	3/25/2020	0.078J	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
pH (s.u.)	HGWC-101	7.4	5.5	3/25/2020	5.53	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-102	7.4	5.5	6/18/2020	5.67	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	**HGWC-103**	**7.4**	**5.5**	**3/25/2020**	**5.49**	**Yes**	**36**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.002737**	**NP Inter (normality) 1 of 2**
pH (s.u.)	HGWC-105	7.4	5.5	3/25/2020	6.47	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-107	7.4	5.5	3/25/2020	6.13	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-109	7.4	5.5	3/25/2020	6.56	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-117	7.4	5.5	3/24/2020	5.99	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-118	7.4	5.5	3/25/2020	6.89	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
Sulfate (mg/L)	**HGWC-101**	**14**	**n/a**	**3/25/2020**	**85.5**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-102**	**14**	**n/a**	**6/18/2020**	**349**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-103**	**14**	**n/a**	**3/25/2020**	**251**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-105**	**14**	**n/a**	**3/25/2020**	**161**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-107**	**14**	**n/a**	**3/25/2020**	**116**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-109**	**14**	**n/a**	**3/25/2020**	**27.9**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-117**	**14**	**n/a**	**3/24/2020**	**129**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-118**	**14**	**n/a**	**3/25/2020**	**78.4**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-101	250	n/a	3/25/2020	187	No	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-102**	**250**	**n/a**	**6/18/2020**	**652**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-103**	**250**	**n/a**	**3/25/2020**	**507**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-105**	**250**	**n/a**	**3/25/2020**	**417**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-107**	**250**	**n/a**	**3/25/2020**	**297**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-109	250	n/a	3/25/2020	213	No	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-117**	**250**	**n/a**	**3/24/2020**	**331**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-118**	**250**	**n/a**	**3/25/2020**	**347**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**

Appendix III Trend Tests - Prediction Limit Exceedances - Significant Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:44 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	**HGWC-107**	**0.05006**	**43**	**38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.874**	**-43**	**-34**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**HGWC-105**	**-8.601**	**-45**	**-38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Appendix III Trend Tests - Prediction Limit Exceedances - All Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:44 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	HGWA-111 (bg)	-0.002212	-16	-34	No	11	18.18	n/a	n/a	0.01	NP
Boron (mg/L)	HGWA-112 (bg)	-0.001613	-14	-34	No	11	27.27	n/a	n/a	0.01	NP
Boron (mg/L)	HGWA-113 (bg)	-0.002853	-16	-34	No	11	9.091	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-102	-0.6991	-2	-12	No	5	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-103	0.02703	14	38	No	12	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-105	0.04572	17	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	**HGWC-107**	**0.05006**	**43**	**38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Boron (mg/L)	HGWC-109	-0.01236	-20	-38	No	12	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-117	0.02526	19	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-118	-0.0216	-13	-34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-111 (bg)	4.806	11	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-112 (bg)	0.0167	5	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-113 (bg)	0.3746	24	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-102	-42.96	-2	-12	No	5	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-103	5.162	30	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-105	4.827	36	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-117	1.467	9	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-118	0.9722	12	38	No	12	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-111 (bg)	-0.07374	-1	-34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-112 (bg)	0.1134	19	34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-113 (bg)	-0.08753	-19	-34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-102	-1.861	-6	-12	No	5	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-117	1.481	20	34	No	11	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-111 (bg)	0.0729	7	38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-112 (bg)	-0.006326	-2	-38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-113 (bg)	0.01899	13	38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWC-103	-0.01538	-16	-43	No	13	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWA-111 (bg)	0	2	34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWA-112 (bg)	-0.0125	-12	-34	No	11	9.091	n/a	n/a	0.01	NP
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.874**	**-43**	**-34**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	HGWC-101	-4.024	-25	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-102	140.5	2	12	No	5	20	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-103	7.785	10	38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	**HGWC-105**	**-8.601**	**-45**	**-38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	HGWC-107	0	-10	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-109	-2.35	-20	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-117	-5.533	-16	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-118	-2.25	-22	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-111 (bg)	9.812	9	34	No	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-112 (bg)	1.134	3	30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-113 (bg)	-2.626	-4	-34	No	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-102	-131.9	-4	-12	No	5	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-103	-1.807	-5	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-105	12.77	10	38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-107	17.93	18	38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-117	-10.59	-14	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-118	-10.05	-17	-38	No	12	0	n/a	n/a	0.01	NP

Tolerance Limit Summary Table

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:47 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0030	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	93.94	n/a	n/a	0.184	NP Inter(NDs)
Barium (mg/L)	n/a	0.034	n/a	n/a	n/a	n/a	33	0.02766	0.002762	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0030	n/a	n/a	n/a	n/a	33	n/a	n/a	96.97	n/a	n/a	0.184	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0025	n/a	n/a	n/a	n/a	33	n/a	n/a	100	n/a	n/a	0.184	NP Inter(NDs)
Chromium (mg/L)	n/a	0.009	n/a	n/a	n/a	n/a	33	-6.416	0.7793	24.24	Kaplan-Meier	ln(x)	0.05	Inter
Cobalt (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	87.88	n/a	n/a	0.184	NP Inter(NDs)
Combined Radium 226 & 228 (pCi/L)	n/a	1.3	n/a	n/a	n/a	n/a	33	0.6677	0.3051	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	0.24	n/a	n/a	n/a	n/a	36	0.2649	0.1036	25	Kaplan-Meier	sqrt(x)	0.05	Inter
Lead (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	75.76	n/a	n/a	0.184	NP Inter(NDs)
Lithium (mg/L)	n/a	0.030	n/a	n/a	n/a	n/a	33	n/a	n/a	60.61	n/a	n/a	0.184	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00050	n/a	n/a	n/a	n/a	27	n/a	n/a	66.67	n/a	n/a	0.2503	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.010	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)
Selenium (mg/L)	n/a	0.010	n/a	n/a	n/a	n/a	27	n/a	n/a	70.37	n/a	n/a	0.2503	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0010	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)

PLANT HAMMOND AP-4 GWPS			
Constituent Name	**MCL**	**Background Limit**	**GWPS**
Antimony, Total (mg/L)	0.006	0.003	0.006
Arsenic, Total (mg/L)	0.01	0.005	0.01
Barium, Total (mg/L)	2	0.034	2
Beryllium, Total (mg/L)	0.004	0.003	0.004
Cadmium, Total (mg/L)	0.005	0.0025	0.005
Chromium, Total (mg/L)	0.1	0.01*	0.1
Cobalt, Total (mg/L)		0.005	0.005
Combined Radium, Total (pCi/L)	5	1.3	5
Fluoride, Total (mg/L)	4	0.24	4
Lead, Total (mg/L)		0.005	0.005
Lithium, Total (mg/L)		0.03	0.03
Mercury, Total (mg/L)	0.002	0.0005	0.002
Molybdenum, Total (mg/L)		0.01	0.01
Selenium, Total (mg/L)	0.05	0.01	0.05
Thallium, Total (mg/L)	0.002	0.001	0.002

**No detections of chromium in upgradient wells. Background limit is established at the reporting limit of 0.01 mg/L.*

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

State Confidence Interval Summary - All Results (No Significant)

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/17/2020, 12:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	HGWC-102	0.003	0.00076	0.006	No	5	0.002552	0.001002	80	None	No	0.031	NP (NDs)
Antimony (mg/L)	HGWC-103	0.003	0.0022	0.006	No	9	0.002911	0.0002667	88.89	None	No	0.002	NP (NDs)
Antimony (mg/L)	HGWC-107	0.003	0.0011	0.006	No	9	0.002789	0.0006333	88.89	None	No	0.002	NP (NDs)
Arsenic (mg/L)	HGWC-101	0.005	0.005	0.01	No	11	0.004581	0.00139	90.91	None	No	0.006	NP (NDs)
Arsenic (mg/L)	HGWC-102	0.001092	0.0003012	0.01	No	5	0.002386	0.002394	40	Kaplan-Meier	x^(1/3)	0.01	Param.
Arsenic (mg/L)	HGWC-109	0.003125	0.001366	0.01	No	11	0.002245	0.001056	0	None	No	0.01	Param.
Arsenic (mg/L)	HGWC-117	0.005	0.005	0.01	No	11	0.004579	0.001396	90.91	None	No	0.006	NP (NDs)
Barium (mg/L)	HGWC-101	0.04827	0.04033	2	No	11	0.0443	0.00477	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-102	0.04078	0.02282	2	No	5	0.0318	0.005357	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-103	0.04214	0.03379	2	No	11	0.03796	0.005012	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-105	0.074	0.066	2	No	11	0.06791	0.003281	0	None	No	0.006	NP (normality)
Barium (mg/L)	HGWC-107	0.03945	0.03773	2	No	11	0.03859	0.001037	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-109	0.09012	0.08269	2	No	11	0.08641	0.004457	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-117	0.05105	0.03864	2	No	11	0.04485	0.007443	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-118	0.0646	0.05514	2	No	11	0.05987	0.005676	0	None	No	0.01	Param.
Beryllium (mg/L)	HGWC-101	0.003	0.000065	0.004	No	11	0.001934	0.00148	63.64	None	No	0.006	NP (NDs)
Beryllium (mg/L)	HGWC-117	0.003	0.000079	0.004	No	11	0.002468	0.001184	81.82	None	No	0.006	NP (NDs)
Cadmium (mg/L)	HGWC-101	0.0003	0.0001	0.005	No	11	0.0002732	0.000329	9.091	None	No	0.006	NP (normality)
Cadmium (mg/L)	HGWC-102	0.0007082	0.00003979	0.005	No	5	0.000374	0.0001994	0	None	No	0.01	Param.
Cadmium (mg/L)	HGWC-103	0.0008007	0.0006356	0.005	No	11	0.0007182	0.00009908	0	None	No	0.01	Param.
Cadmium (mg/L)	HGWC-107	0.00125	0.00009	0.005	No	11	0.0005182	0.0005803	36.36	None	No	0.006	NP (normality)
Cadmium (mg/L)	HGWC-117	0.0007683	0.0005208	0.005	No	11	0.0006445	0.0001485	0	None	No	0.01	Param.
Chromium (mg/L)	HGWC-101	0.01	0.00064	0.1	No	11	0.007475	0.004326	72.73	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-102	0.01	0.00051	0.1	No	5	0.006228	0.005165	60	None	No	0.031	NP (NDs)
Chromium (mg/L)	HGWC-103	0.01	0.00063	0.1	No	11	0.007507	0.004277	72.73	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-105	0.01	0.0013	0.1	No	11	0.008336	0.003707	81.82	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-107	0.01	0.01	0.1	No	11	0.009158	0.002792	90.91	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-109	0.01	0.0014	0.1	No	11	0.008365	0.003641	81.82	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-117	0.01	0.01	0.1	No	11	0.0092	0.002653	90.91	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-118	0.01	0.00081	0.1	No	11	0.008315	0.003748	81.82	None	No	0.006	NP (NDs)
Cobalt (mg/L)	HGWC-101	0.002956	0.001862	0.005	No	11	0.002409	0.0006564	9.091	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-102	0.003796	0.0005242	0.005	No	5	0.00216	0.0009762	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-103	0.002451	0.001676	0.005	No	11	0.002064	0.0004653	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-105	0.0009181	0.0004465	0.005	No	11	0.001046	0.0007903	18.18	Kaplan-Meier	ln(x)	0.01	Param.
Cobalt (mg/L)	HGWC-109	0.002246	0.001319	0.005	No	11	0.001783	0.0005565	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-117	0.00848	0.004047	0.005	No	11	0.006264	0.00266	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-118	0.0025	0.0003	0.005	No	11	0.001555	0.001088	54.55	None	No	0.006	NP (NDs)
Combined Radium 226 & 228 (pCi/L)	HGWC-101	1.071	0.4831	5	No	11	0.7772	0.3529	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-102	1.466	0.586	5	No	5	1.026	0.2624	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-103	1.104	0.4475	5	No	11	0.7756	0.3938	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-105	0.9996	0.5522	5	No	11	0.7759	0.2684	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-107	1.32	0.6196	5	No	11	0.9696	0.4201	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-109	0.878	0.4515	5	No	11	0.6647	0.2559	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-117	1.024	0.5262	5	No	11	0.775	0.2985	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-118	1.39	0.4518	5	No	10	0.921	0.5258	0	None	No	0.01	Param.
Fluoride (mg/L)	HGWC-101	0.1	0.05	4	No	12	0.09	0.02374	83.33	None	No	0.01	NP (NDs)
Fluoride (mg/L)	HGWC-102	0.22	0.1	4	No	5	0.124	0.05367	80	None	No	0.031	NP (NDs)
Fluoride (mg/L)	HGWC-103	0.13	0.06	4	No	12	0.0985	0.02753	66.67	None	No	0.01	NP (NDs)
Fluoride (mg/L)	HGWC-105	0.1153	0.0487	4	No	12	0.0895	0.0351	41.67	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-107	0.1044	0.02939	4	No	12	0.09275	0.04254	50	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-109	0.1291	0.05501	4	No	12	0.09983	0.04165	16.67	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-117	0.19	0.042	4	No	12	0.1102	0.06804	41.67	None	No	0.01	NP (normality)
Fluoride (mg/L)	HGWC-118	0.2752	0.08951	4	No	13	0.215	0.2229	0	None	ln(x)	0.01	Param.
Lead (mg/L)	HGWC-101	0.005	0.005	0.005	No	11	0.004627	0.001236	90.91	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-102	0.005	0.00011	0.005	No	5	0.004022	0.002187	80	None	No	0.031	NP (NDs)

State Confidence Interval Summary - All Results (No Significant)

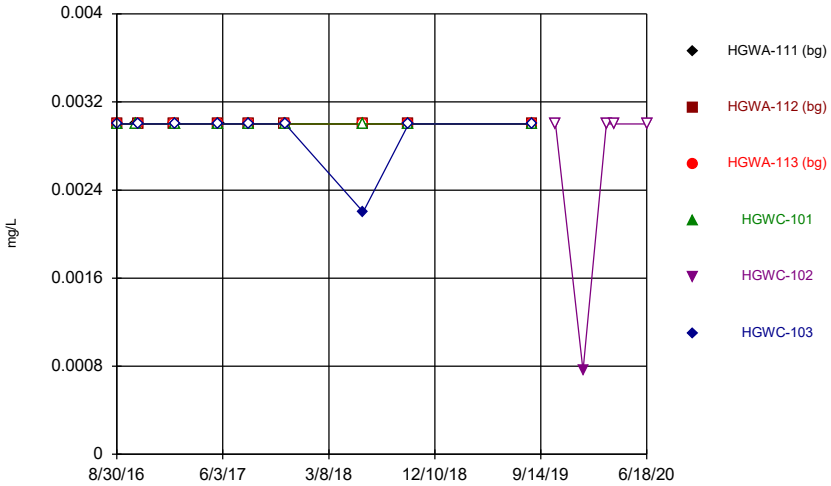
Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/17/2020, 12:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lead (mg/L)	HGWC-103	0.005	0.00043	0.005	No	11	0.004137	0.001922	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-105	0.005	0.000085	0.005	No	11	0.004105	0.001992	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-107	0.005	0.00021	0.005	No	11	0.004117	0.001964	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-109	0.005	0.000058	0.005	No	11	0.004101	0.002	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-117	0.005	0.00025	0.005	No	11	0.004128	0.00194	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-118	0.005	0.00025	0.005	No	11	0.004123	0.001952	81.82	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-102	0.001468	0.0008278	0.03	No	5	0.001148	0.0001911	0	None	No	0.01	Param.
Lithium (mg/L)	HGWC-103	0.03	0.0015	0.03	No	11	0.009336	0.01327	27.27	None	No	0.006	NP (normality)
Lithium (mg/L)	HGWC-105	0.004255	0.003818	0.03	No	11	0.004036	0.0002618	0	None	No	0.01	Param.
Lithium (mg/L)	HGWC-107	0.03	0.00092	0.03	No	11	0.01943	0.01466	63.64	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-109	0.03	0.0009	0.03	No	11	0.01687	0.01508	54.55	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-117	0.03	0.0012	0.03	No	11	0.009755	0.01302	27.27	None	No	0.006	NP (normality)
Lithium (mg/L)	HGWC-118	0.03	0.0015	0.03	No	11	0.01717	0.01474	54.55	None	No	0.006	NP (NDs)
Mercury (mg/L)	HGWC-101	0.0005	0.000093	0.002	No	9	0.0004548	0.0001357	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-103	0.0005	0.00008	0.002	No	9	0.0004533	0.00014	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-109	0.0005	0.00008	0.002	No	9	0.0004533	0.00014	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-117	0.0005	0.00007	0.002	No	9	0.0004522	0.0001433	88.89	None	No	0.002	NP (NDs)
Selenium (mg/L)	HGWC-102	0.01	0.0015	0.05	No	5	0.0083	0.003801	80	None	No	0.031	NP (NDs)
Thallium (mg/L)	HGWC-102	0.001	0.00008	0.002	No	5	0.000816	0.0004114	80	None	No	0.031	NP (NDs)

FIGURE A.

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

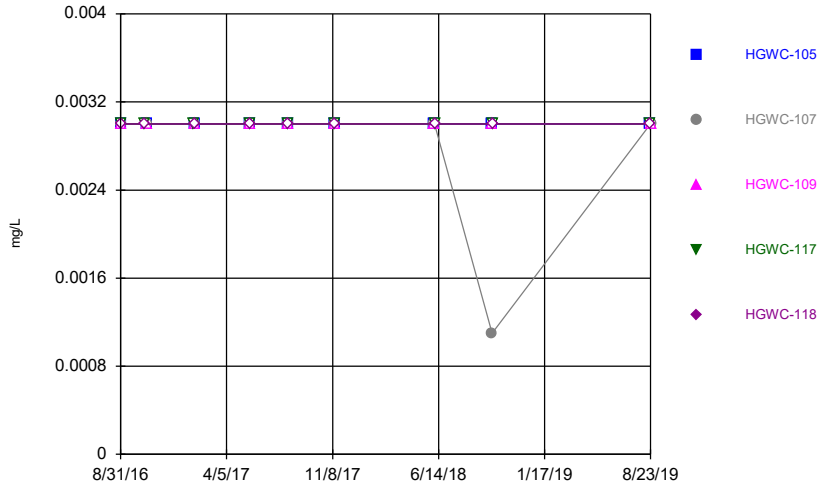
Time Series



Constituent: Antimony Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

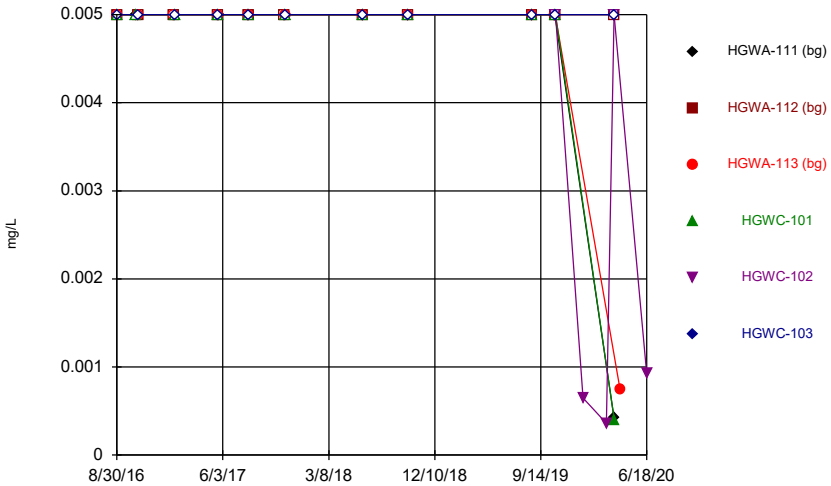
Time Series



Constituent: Antimony Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

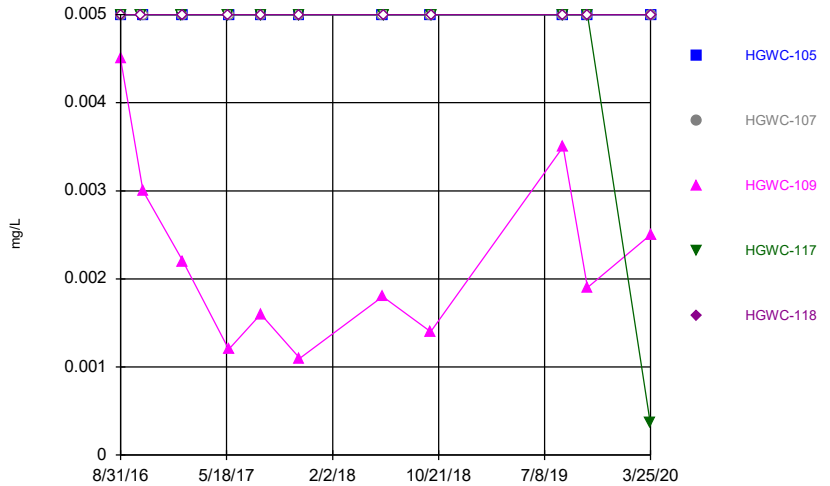
Time Series



Constituent: Arsenic Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

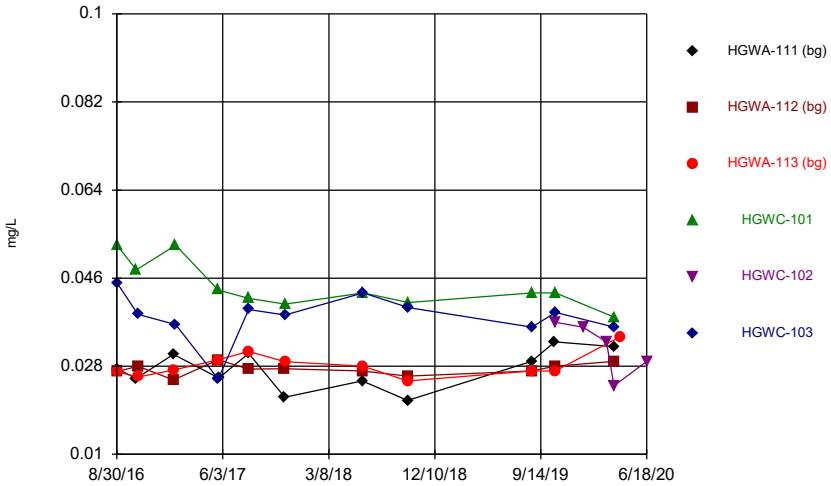
Time Series



Constituent: Arsenic Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

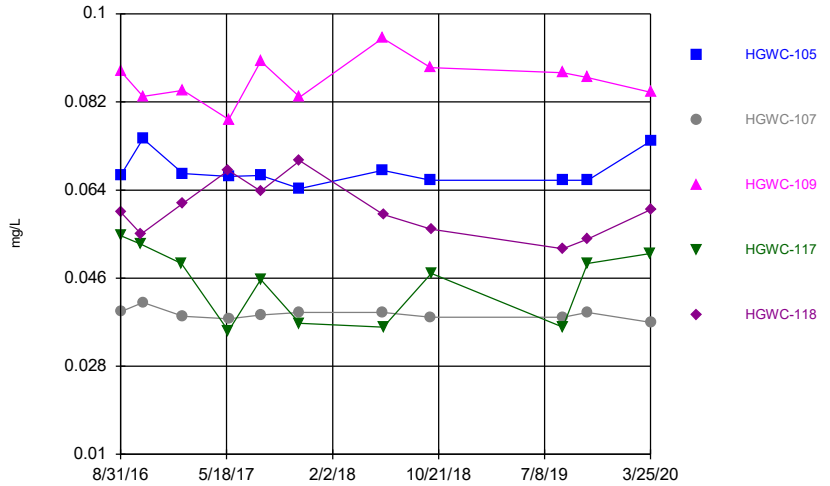
Time Series



Constituent: Barium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

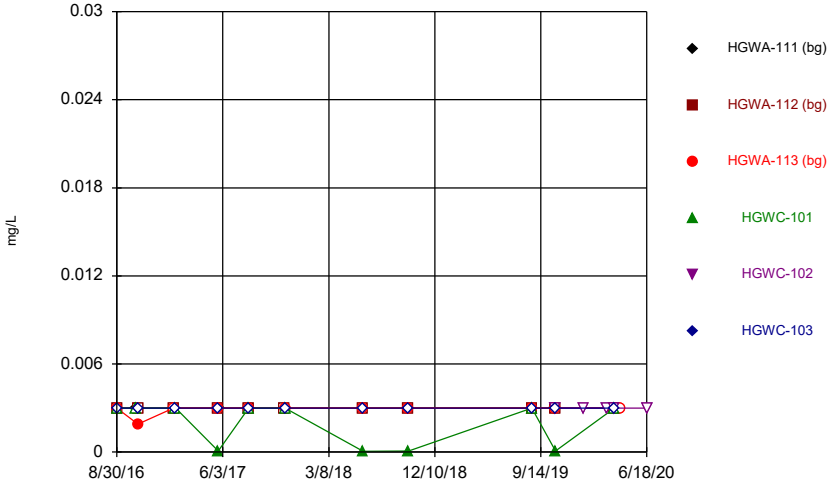
Time Series



Constituent: Barium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

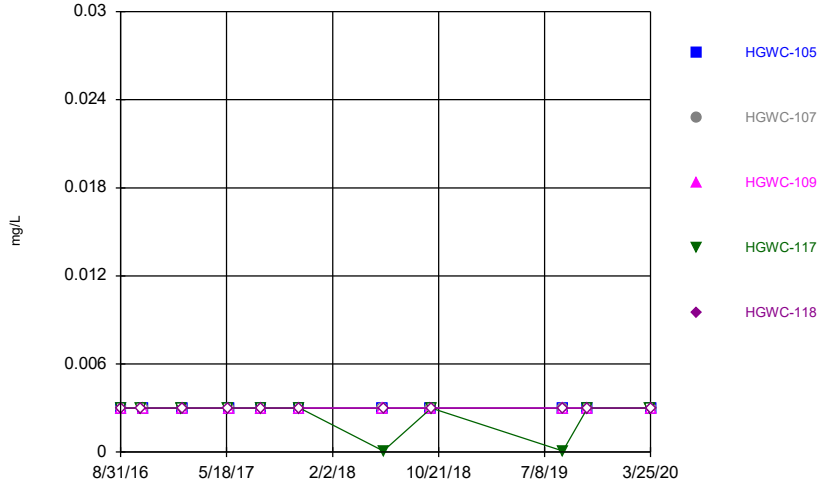
Time Series



Constituent: Beryllium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

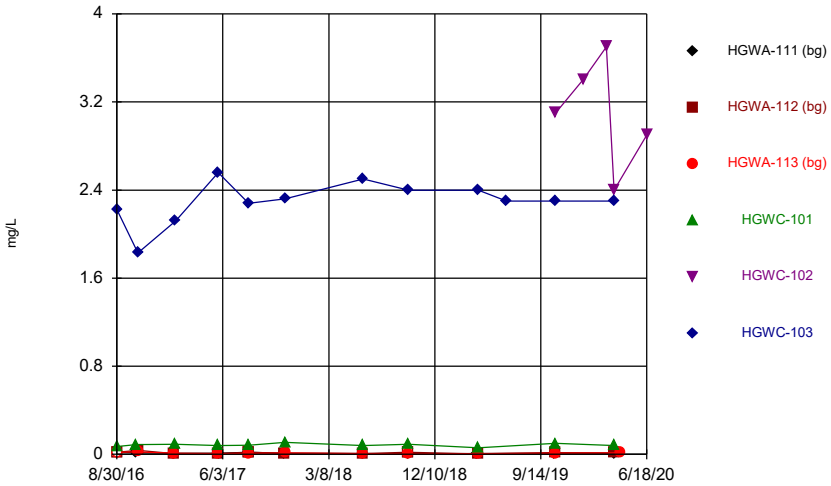
Time Series



Constituent: Beryllium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

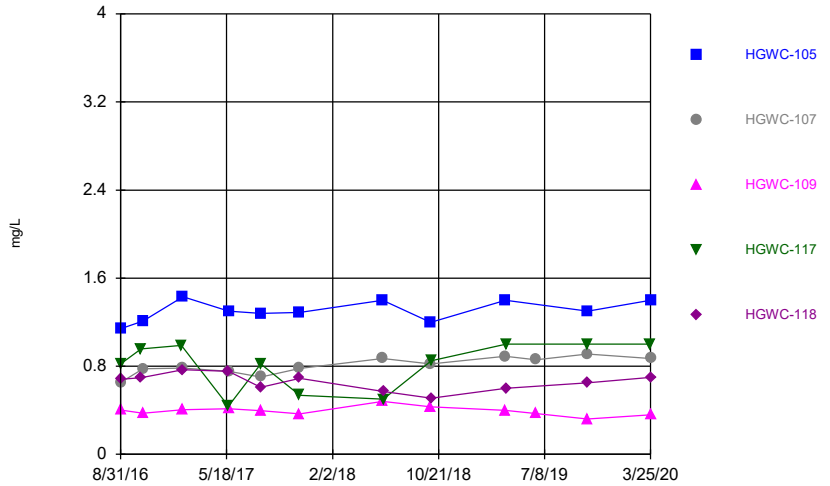
Time Series



Constituent: Boron Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

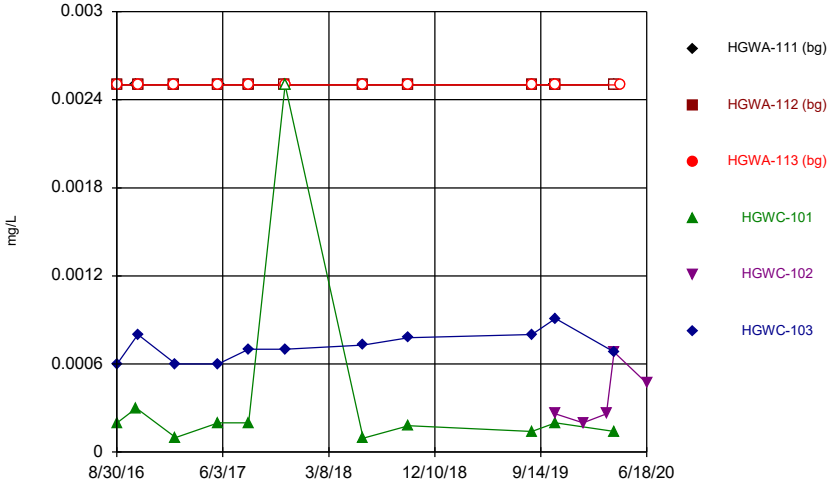
Time Series



Constituent: Boron Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

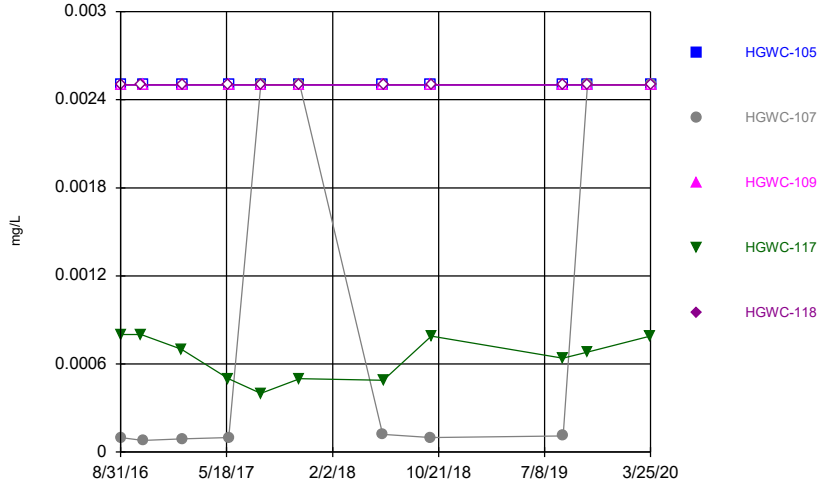
Time Series



Constituent: Cadmium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

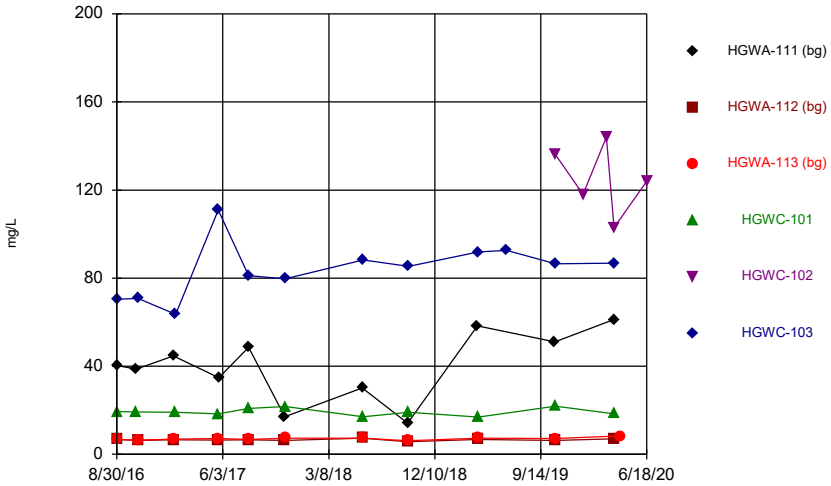
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

Time Series



Constituent: Cadmium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

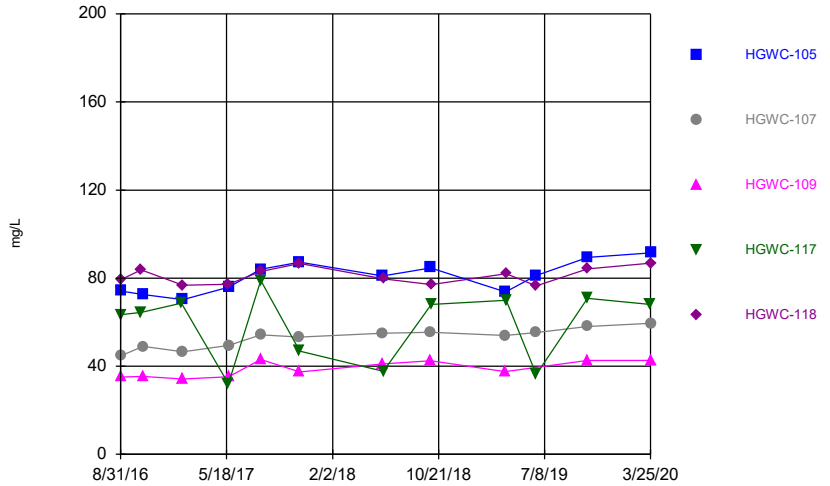
Time Series



Constituent: Calcium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

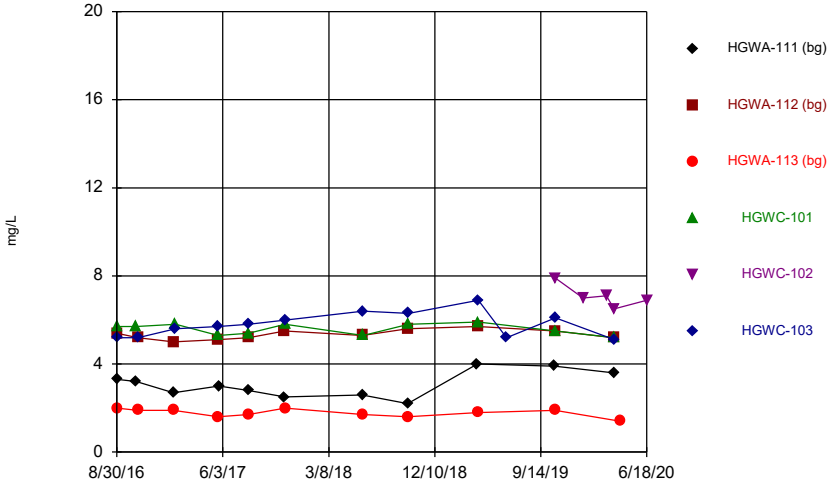
Time Series



Constituent: Calcium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

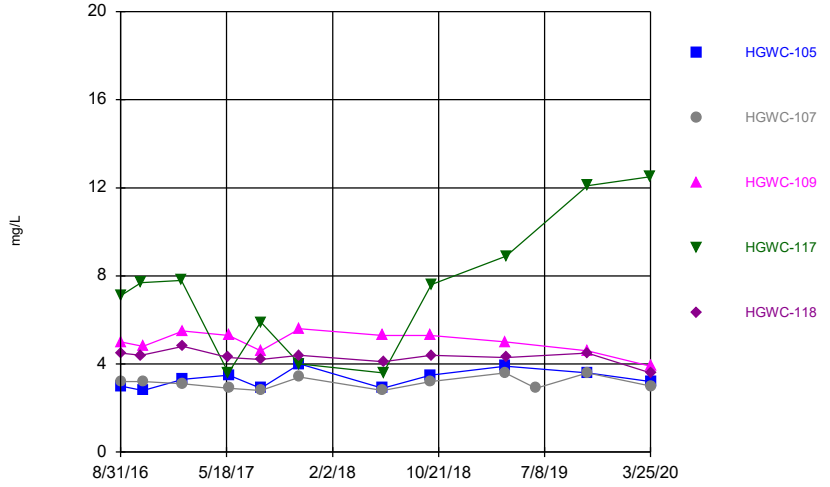
Time Series



Constituent: Chloride Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

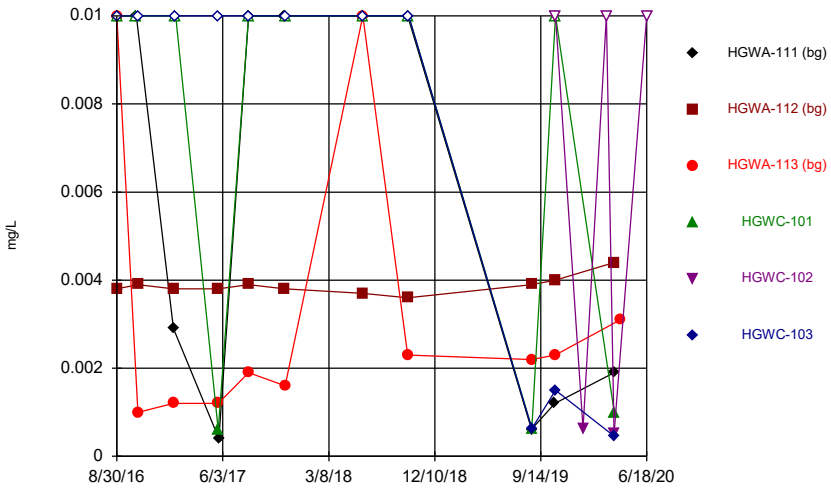
Time Series



Constituent: Chloride Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

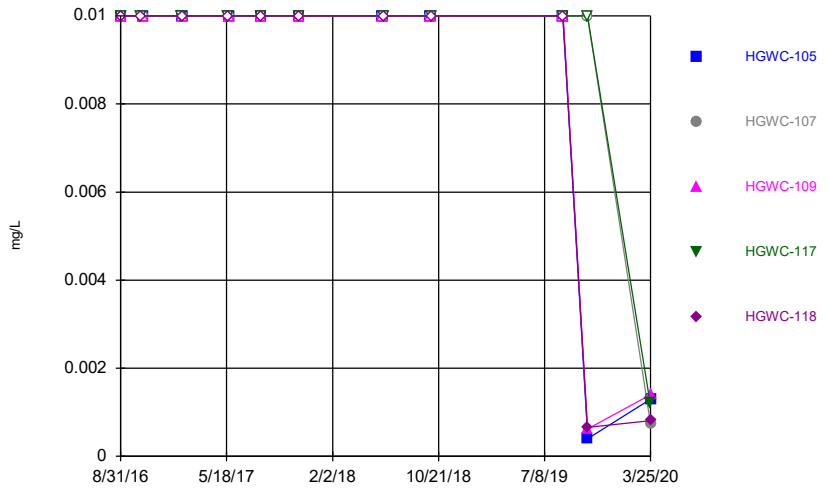
Time Series



Constituent: Chromium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

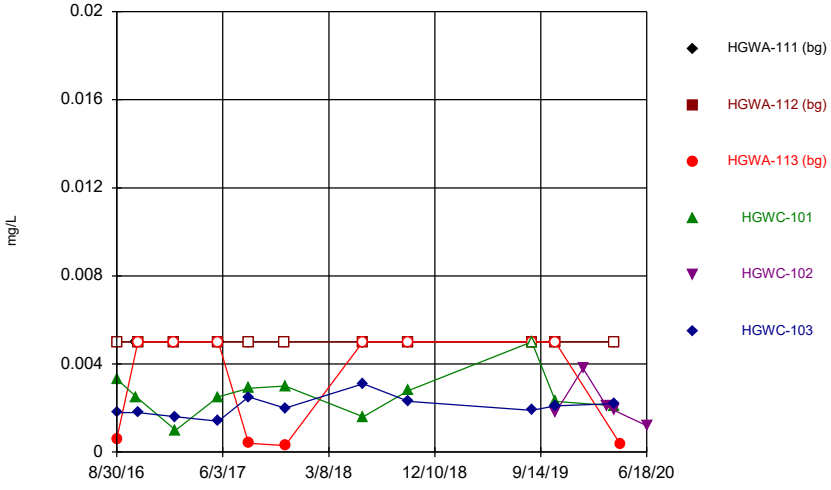
Time Series



Constituent: Chromium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

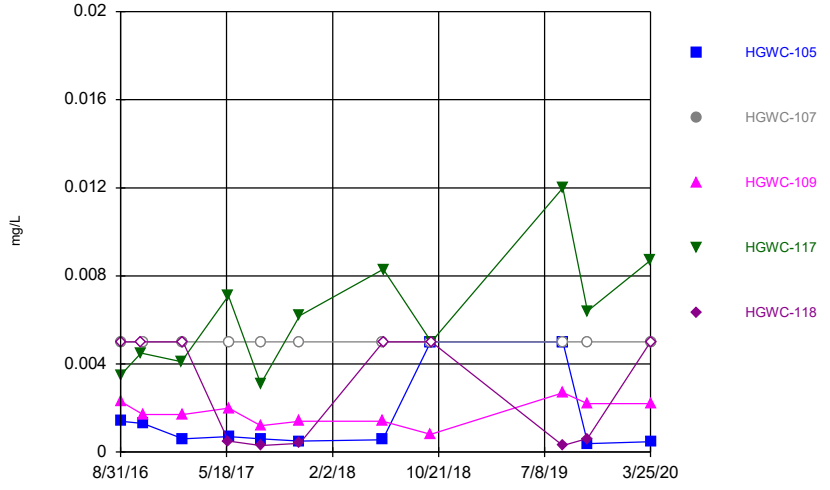
Time Series



Constituent: Cobalt Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

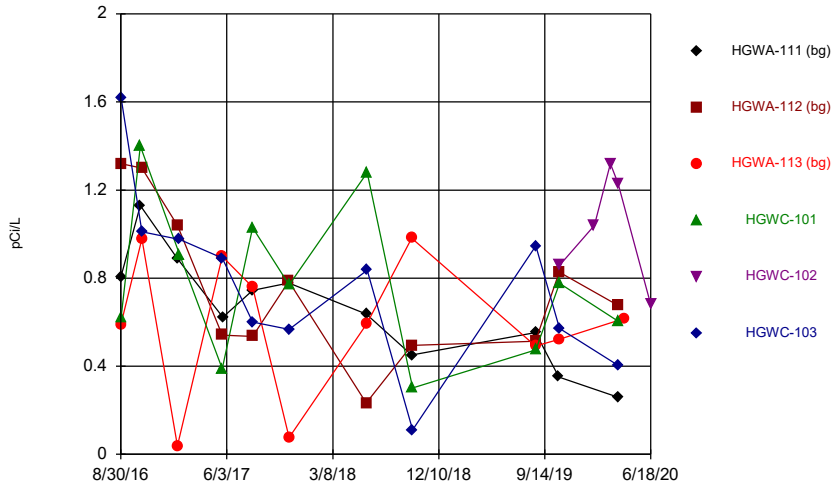
Time Series



Constituent: Cobalt Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

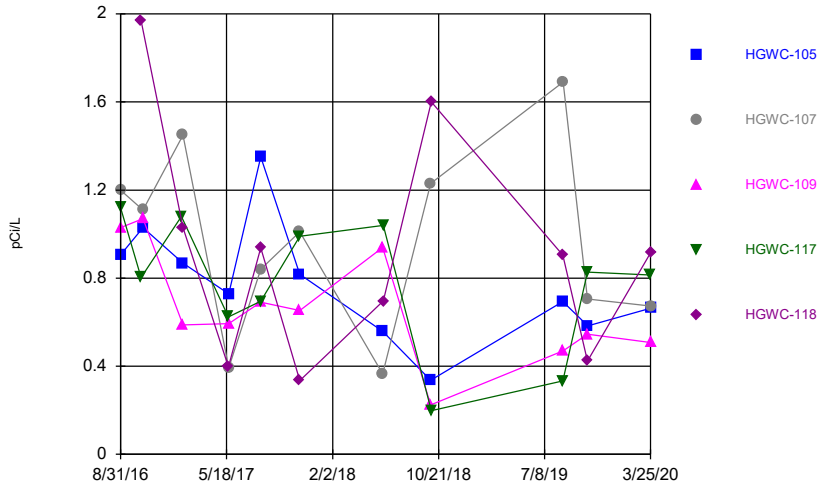
Time Series



Constituent: Combined Radium 226 & 228 Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

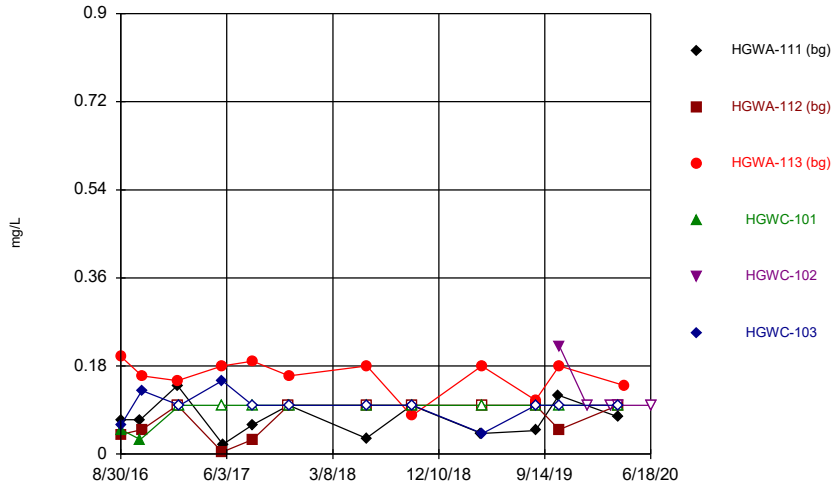
Time Series



Constituent: Combined Radium 226 & 228 Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

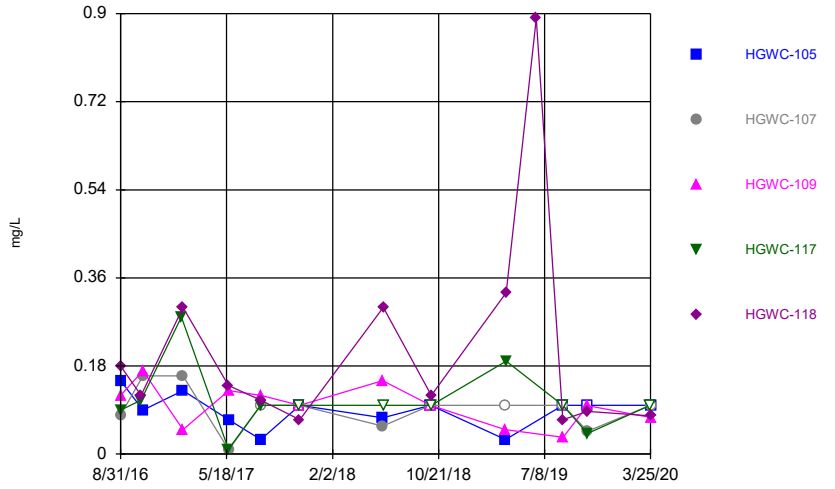
Time Series



Constituent: Fluoride Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

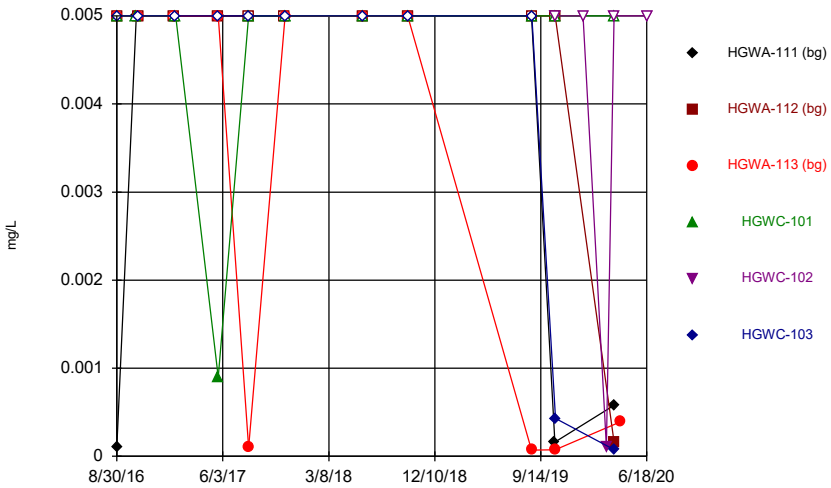
Time Series



Constituent: Fluoride Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

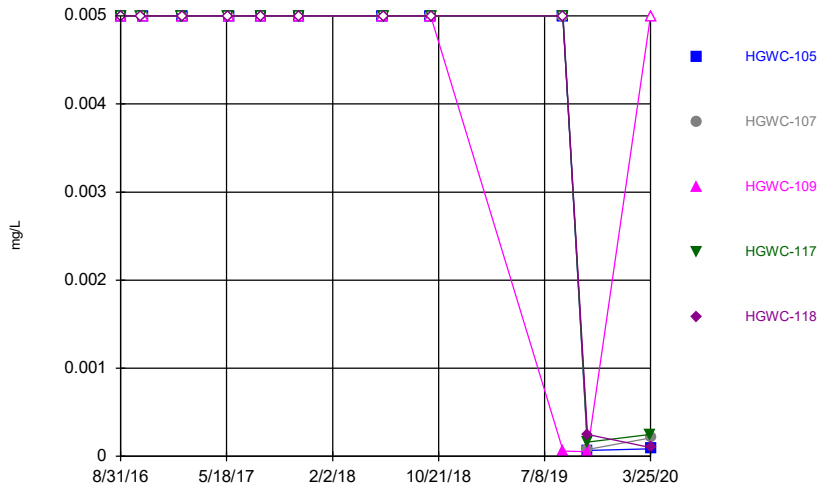
Time Series



Constituent: Lead Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

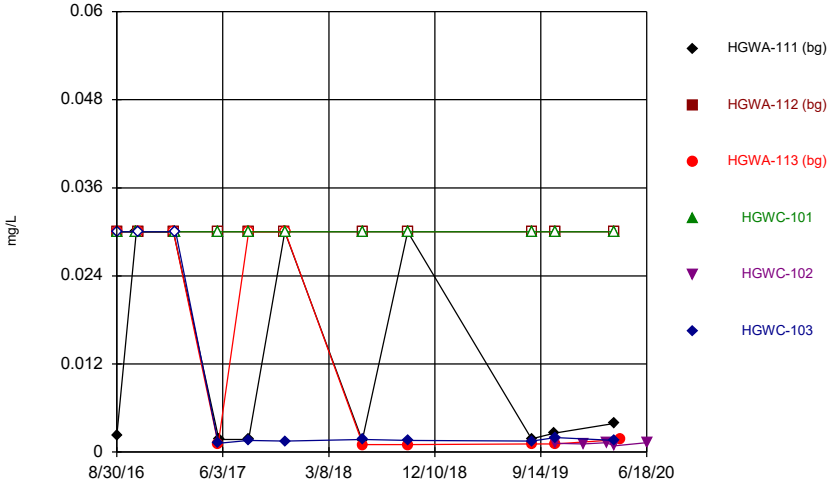
Time Series



Constituent: Lead Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

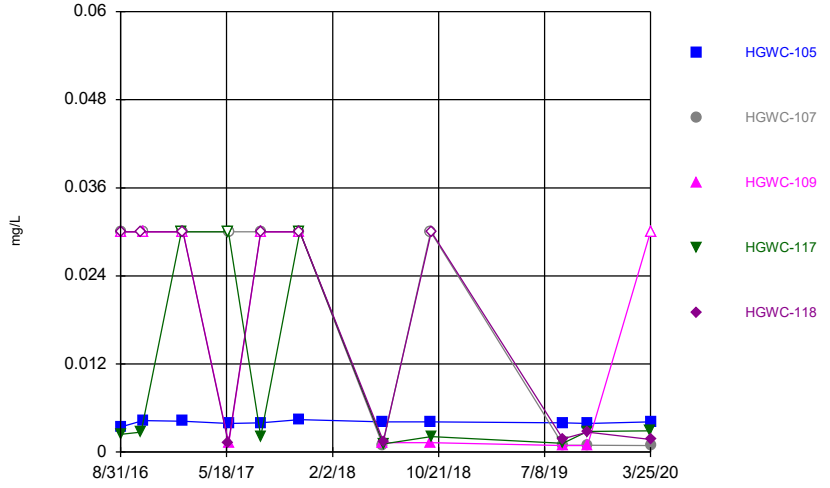
Time Series



Constituent: Lithium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

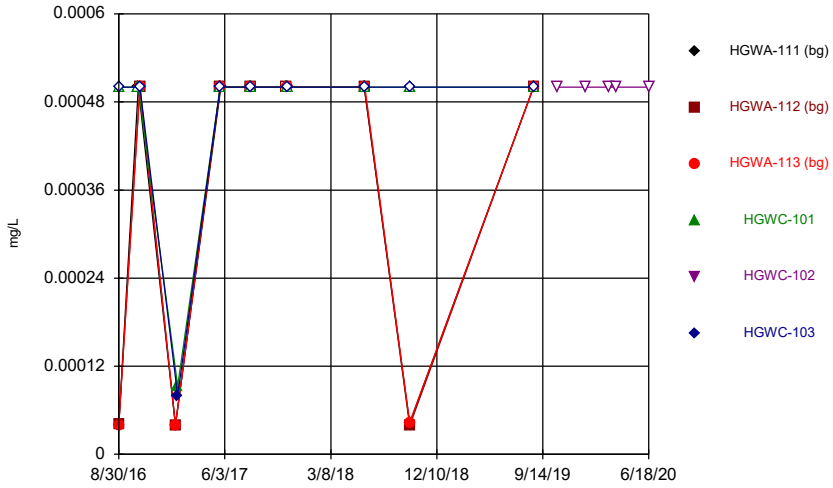
Time Series



Constituent: Lithium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

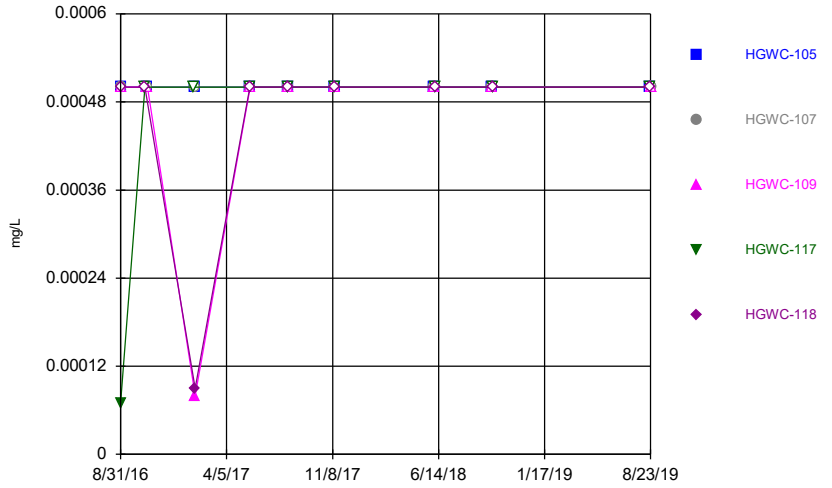
Time Series



Constituent: Mercury Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

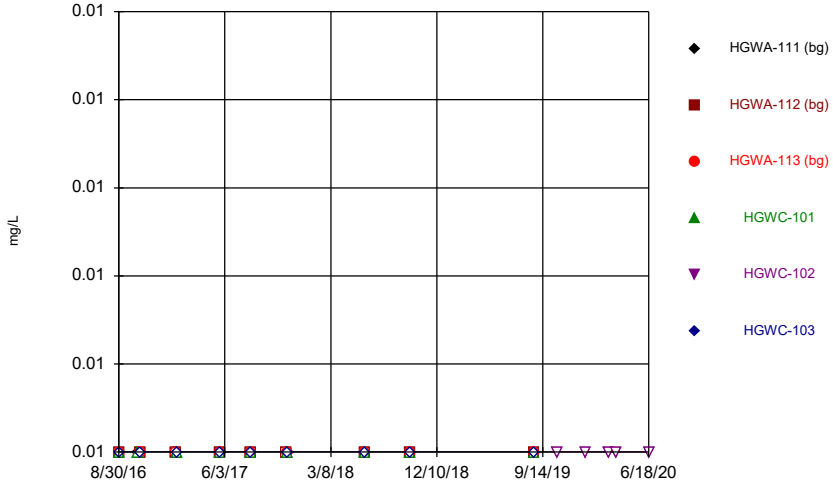
Time Series



Constituent: Mercury Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

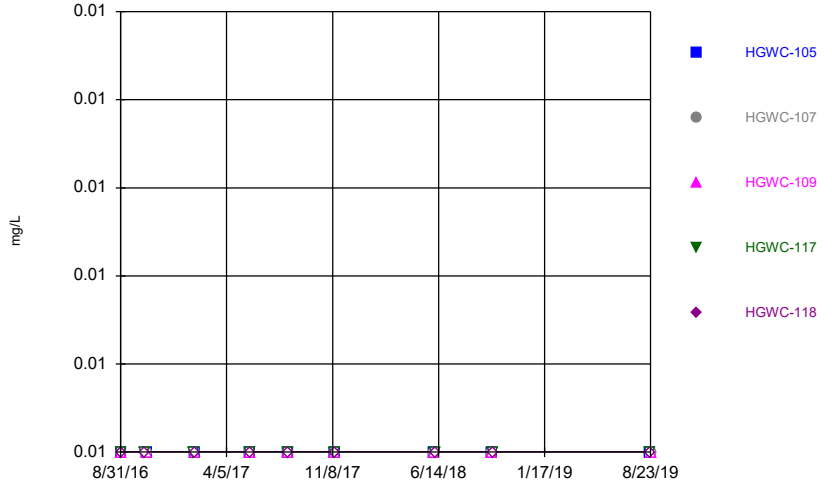
Time Series



Constituent: Molybdenum Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

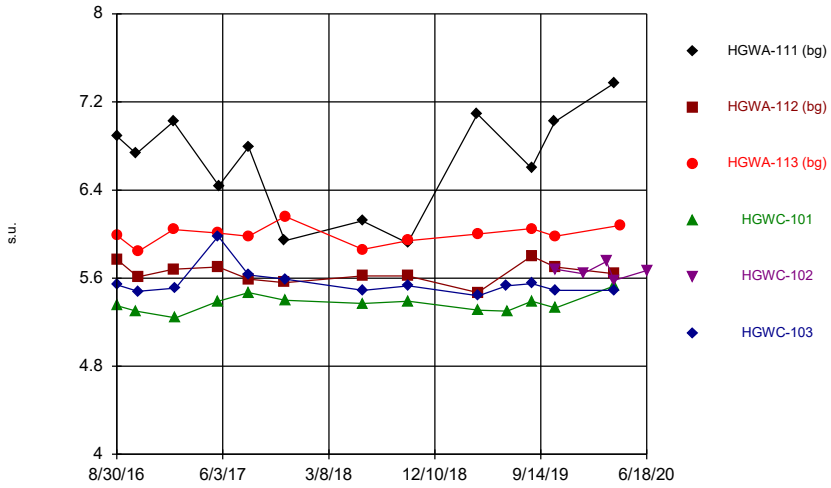
Time Series



Constituent: Molybdenum Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

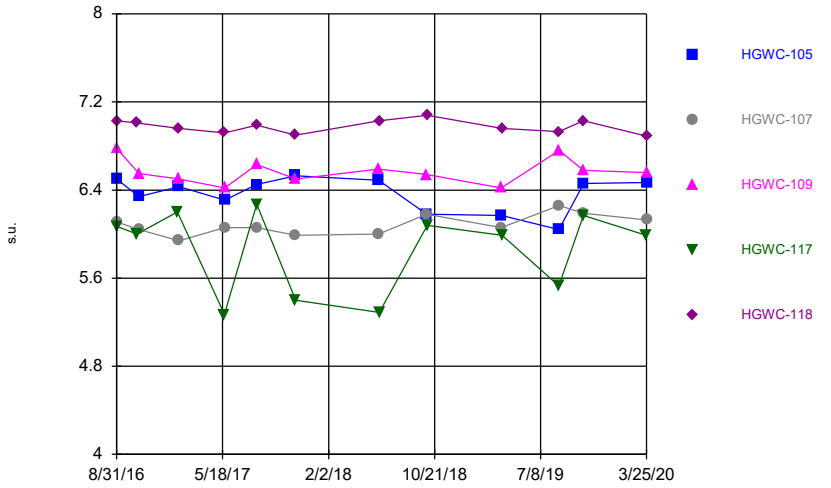
Time Series



Constituent: pH Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

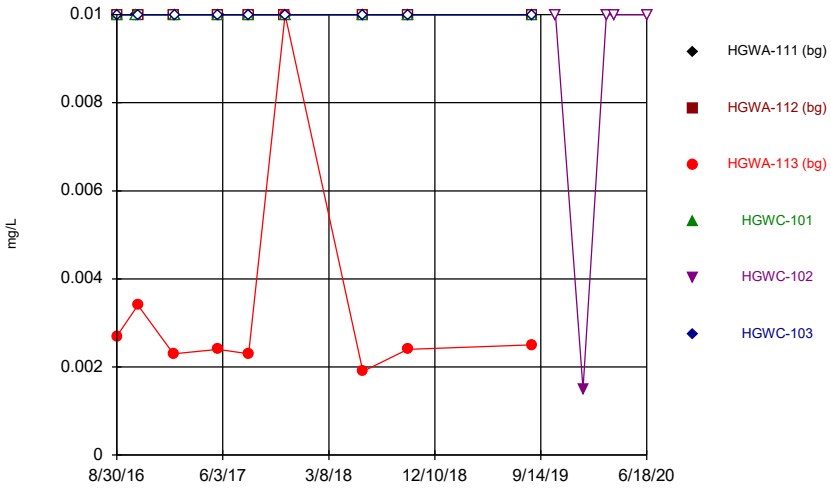
Time Series



Constituent: pH Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

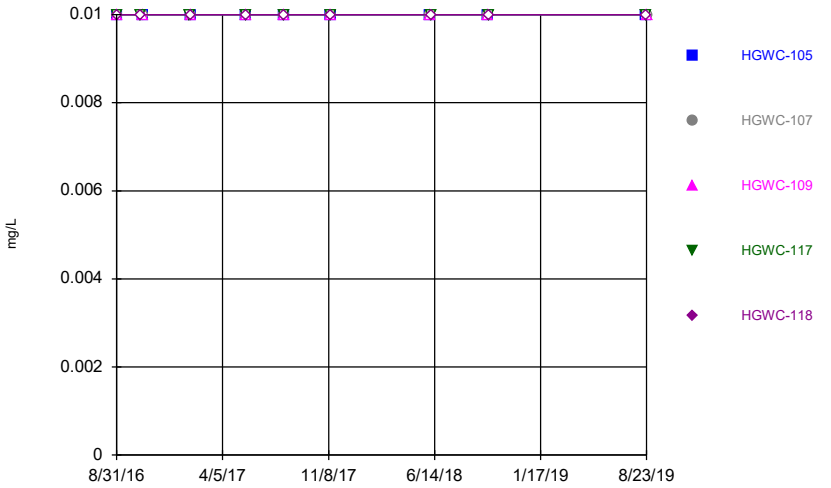
Time Series



Constituent: Selenium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

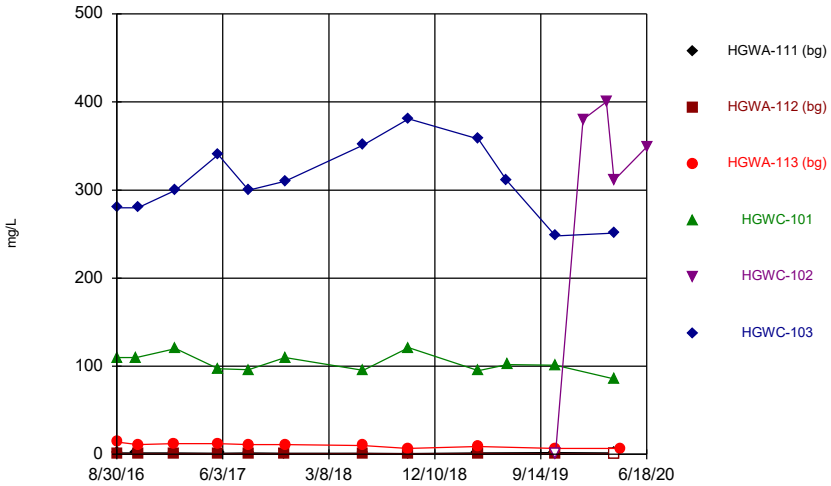
Time Series



Constituent: Selenium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

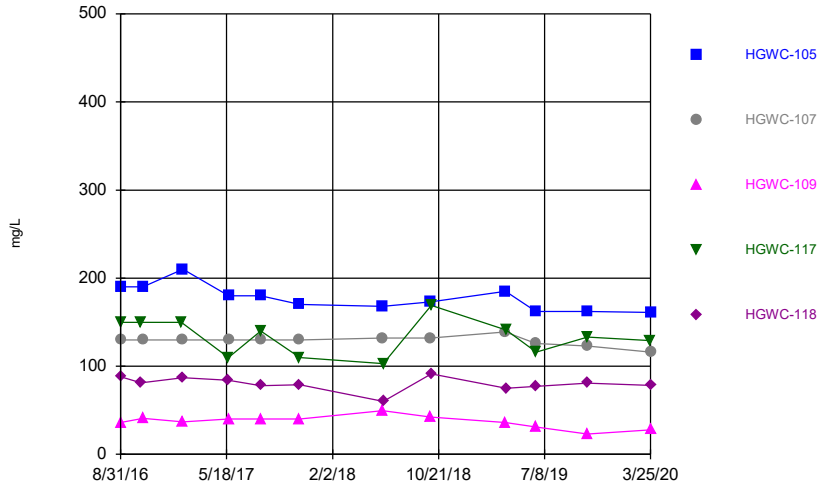
Time Series



Constituent: Sulfate Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

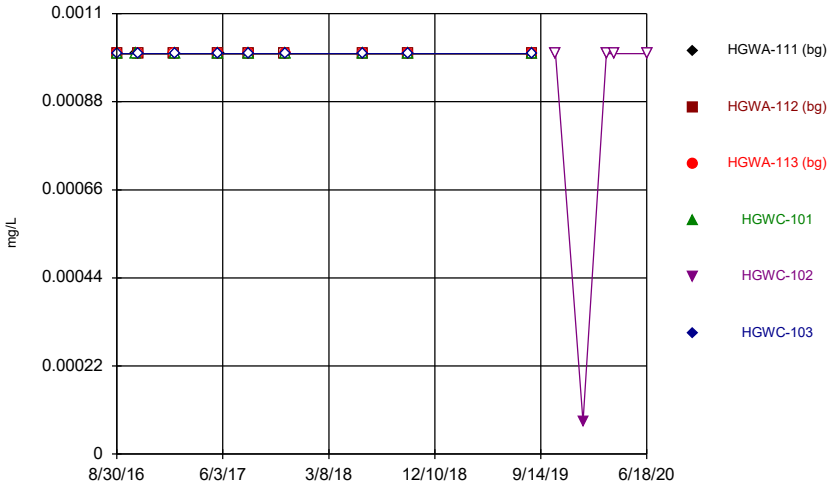
Time Series



Constituent: Sulfate Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

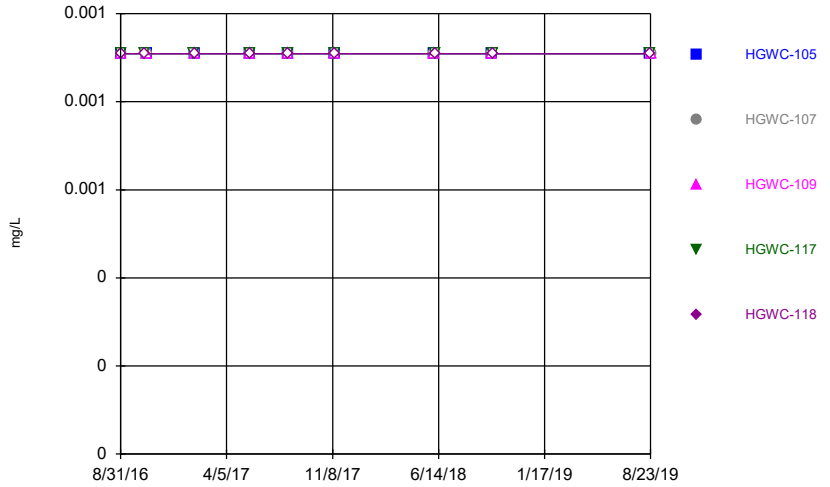
Time Series



Constituent: Thallium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

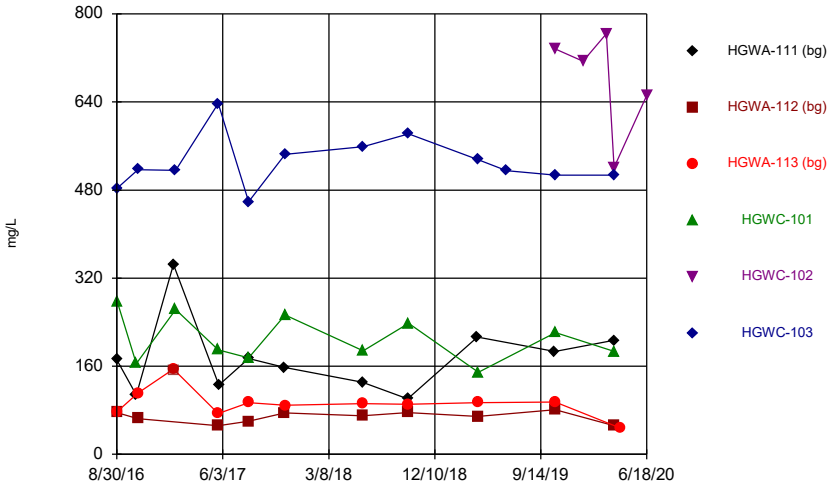
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA
Hollow symbols indicate censored values.

Time Series



Constituent: Thallium Analysis Run 7/17/2020 12:24 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

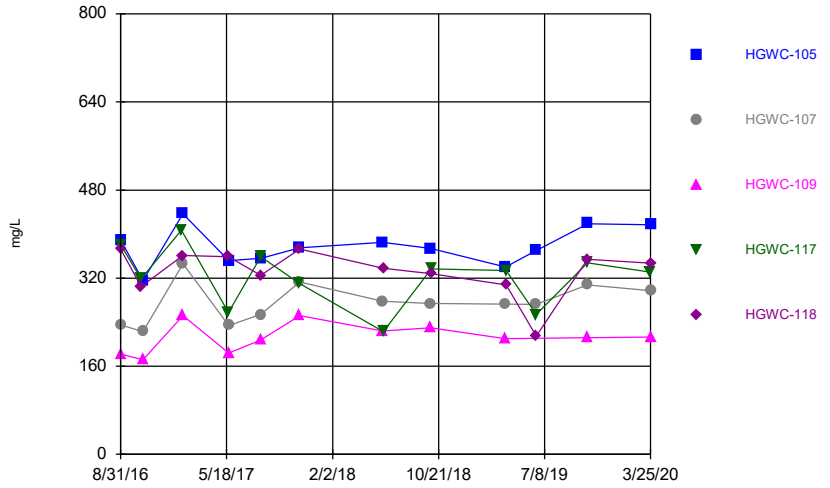
Time Series



Constituent: Total Dissolved Solids Analysis Run 7/17/2020 12:25 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Time Series



Constituent: Total Dissolved Solids Analysis Run 7/17/2020 12:25 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Time Series

Constituent: Antimony (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.003	<0.003	<0.003						
8/31/2016				<0.003		<0.003	<0.003	<0.003	<0.003
10/20/2016	<0.003			<0.003					
10/24/2016		<0.003	<0.003			<0.003			
10/25/2016							<0.003	<0.003	<0.003
1/25/2017	<0.003	<0.003	<0.003						
1/31/2017				<0.003		<0.003	<0.003	<0.003	<0.003
5/23/2017		<0.003	<0.003	<0.003		<0.003			
5/24/2017	<0.003						<0.003	<0.003	<0.003
8/10/2017	<0.003	<0.003	<0.003	<0.003		<0.003	<0.003	<0.003	<0.003
11/13/2017	<0.003	<0.003							
11/14/2017			<0.003	<0.003		<0.003	<0.003	<0.003	<0.003
6/4/2018	<0.003	<0.003							
6/5/2018			<0.003						
6/6/2018				<0.003		0.0022 (J)	<0.003	<0.003	<0.003
10/1/2018	<0.003	<0.003	<0.003						
10/2/2018							<0.003	0.0011 (J)	<0.003
10/3/2018				<0.003		<0.003			
8/21/2019	<0.003	<0.003	<0.003						
8/22/2019				<0.003		<0.003	<0.003		
8/23/2019								<0.003	<0.003
10/23/2019					<0.003				
1/3/2020					0.00076 (J)				
3/4/2020					<0.003				
3/24/2020					<0.003				
6/18/2020					<0.003				

Time Series

Constituent: Antimony (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.003	<0.003
10/20/2016	<0.003	<0.003
1/27/2017	<0.003	
1/31/2017		<0.003
5/23/2017	<0.003	<0.003
8/10/2017	<0.003	<0.003
11/14/2017	<0.003	<0.003
6/7/2018	<0.003	<0.003
10/3/2018	<0.003	<0.003
8/22/2019	<0.003	<0.003

Time Series

Constituent: Arsenic (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.005	<0.005	<0.005						
8/31/2016				<0.005		<0.005	<0.005	<0.005	0.0045 (J)
10/20/2016	<0.005			<0.005					
10/24/2016		<0.005	<0.005			<0.005			
10/25/2016							<0.005	<0.005	0.003 (J)
1/25/2017	<0.005	<0.005	<0.005						
1/31/2017				<0.005		<0.005	<0.005	<0.005	0.0022 (J)
5/23/2017		<0.005	<0.005	<0.005		<0.005			
5/24/2017	<0.005						<0.005	<0.005	0.0012 (J)
8/10/2017	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	0.0016 (J)
11/13/2017	<0.005	<0.005							
11/14/2017			<0.005	<0.005		<0.005	<0.005	<0.005	0.0011 (J)
6/4/2018	<0.005	<0.005							
6/5/2018			<0.005						
6/6/2018				<0.005		<0.005	<0.005	<0.005	0.0018 (J)
10/1/2018	<0.005	<0.005	<0.005						
10/2/2018							<0.005	<0.005	0.0014 (J)
10/3/2018				<0.005		<0.005			
8/21/2019	<0.005	<0.005	<0.005						
8/22/2019				<0.005		<0.005	<0.005		
8/23/2019								<0.005	0.0035 (J)
10/21/2019	<0.005								
10/22/2019		<0.005	<0.005					<0.005	0.0019 (J)
10/23/2019				<0.005	<0.005	<0.005	<0.005		
1/3/2020					0.00065 (J)				
3/4/2020					0.00036 (J)				
3/24/2020	0.00042 (J)	<0.005			<0.005				
3/25/2020				0.00039 (J)		<0.005	<0.005	<0.005	0.0025 (J)
4/9/2020			0.00074 (J)						
6/18/2020					0.00092 (J)				

Time Series

Constituent: Arsenic (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.005	<0.005
10/20/2016	<0.005	<0.005
1/27/2017	<0.005	
1/31/2017		<0.005
5/23/2017	<0.005	<0.005
8/10/2017	<0.005	<0.005
11/14/2017	<0.005	<0.005
6/7/2018	<0.005	<0.005
10/3/2018	<0.005	<0.005
8/22/2019	<0.005	<0.005
10/22/2019	<0.005	<0.005
3/24/2020	0.00037 (J)	
3/25/2020		<0.005

Time Series

Constituent: Barium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	0.0275	0.0269	0.0269						
8/31/2016				0.0527		0.045	0.067	0.0391	0.0883
10/20/2016	0.0255			0.0477					
10/24/2016		0.028	0.0258			0.0386			
10/25/2016							0.0745	0.041	0.0831
1/25/2017	0.0304	0.0252	0.0272						
1/31/2017				0.0527		0.0365	0.0674	0.0382	0.0844
5/23/2017		0.0293	0.0293	0.0436		0.0254			
5/24/2017	0.0256						0.0668	0.0377	0.0784
8/10/2017	0.0306	0.0274	0.031	0.0419		0.0396	0.067	0.0385	0.0903
11/13/2017	0.0217	0.0275							
11/14/2017			0.0289	0.0407		0.0385	0.0643	0.039	0.083
6/4/2018	0.025	0.027							
6/5/2018			0.028						
6/6/2018				0.043		0.043	0.068	0.039	0.095
10/1/2018	0.021	0.026	0.025						
10/2/2018							0.066	0.038	0.089
10/3/2018				0.041		0.04			
8/21/2019	0.029	0.027	0.027						
8/22/2019				0.043		0.036	0.066		
8/23/2019								0.038	0.088
10/21/2019	0.033								
10/22/2019		0.028	0.027					0.039	0.087
10/23/2019				0.043	0.037	0.039	0.066		
1/3/2020					0.036				
3/4/2020					0.033				
3/24/2020	0.032	0.029			0.024				
3/25/2020				0.038		0.036	0.074	0.037	0.084
4/9/2020			0.034						
6/18/2020					0.029				

Time Series

Constituent: Barium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.0547	0.0595
10/20/2016	0.0529	0.055
1/27/2017	0.049	
1/31/2017		0.0613
5/23/2017	0.0352	0.068
8/10/2017	0.0457	0.0638
11/14/2017	0.0368	0.07
6/7/2018	0.036	0.059
10/3/2018	0.047	0.056
8/22/2019	0.036	0.052
10/22/2019	0.049	0.054
3/24/2020	0.051	
3/25/2020		0.06

Time Series

Constituent: Beryllium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.003	<0.003	<0.003						
8/31/2016				<0.003		<0.003	<0.003	<0.003	<0.003
10/20/2016	<0.003			<0.003					
10/24/2016		<0.003	0.0019 (J)			<0.003			
10/25/2016							<0.003	<0.003	<0.003
1/25/2017	<0.003	<0.003	<0.003						
1/31/2017				<0.003		<0.003	<0.003	<0.003	<0.003
5/23/2017		<0.003	<0.003	7E-05 (J)		<0.003			
5/24/2017	<0.003						<0.003	<0.003	<0.003
8/10/2017	<0.003	<0.003	<0.003	<0.003		<0.003	<0.003	<0.003	<0.003
11/13/2017	<0.003	<0.003							
11/14/2017			<0.003	<0.003		<0.003	<0.003	<0.003	<0.003
6/4/2018	<0.003	<0.003							
6/5/2018			<0.003						
6/6/2018				5.9E-05 (J)		<0.003	<0.003	<0.003	<0.003
10/1/2018	<0.003	<0.003	<0.003						
10/2/2018							<0.003	<0.003	<0.003
10/3/2018				6.5E-05 (J)		<0.003			
8/21/2019	<0.003	<0.003	<0.003						
8/22/2019				<0.003		<0.003	<0.003		
8/23/2019								<0.003	<0.003
10/21/2019	<0.003								
10/22/2019		<0.003	<0.003					<0.003	<0.003
10/23/2019				7.5E-05 (J)	<0.003	<0.003	<0.003		
1/3/2020					<0.003				
3/4/2020					<0.003				
3/24/2020	<0.003	<0.003			<0.003				
3/25/2020				<0.003		<0.003	<0.003	<0.003	<0.003
4/9/2020			<0.003						
6/18/2020					<0.003				

Time Series

Constituent: Beryllium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.003	<0.003
10/20/2016	<0.003	<0.003
1/27/2017	<0.003	
1/31/2017		<0.003
5/23/2017	<0.003	<0.003
8/10/2017	<0.003	<0.003
11/14/2017	<0.003	<0.003
6/7/2018	6.8E-05 (J)	<0.003
10/3/2018	<0.003	<0.003
8/22/2019	7.9E-05 (J)	<0.003
10/22/2019	<0.003	<0.003
3/24/2020	<0.003	
3/25/2020		<0.003

Time Series

Constituent: Boron (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.04	<0.04	<0.04						
8/31/2016				0.0724 (J)		2.22	1.14	0.651	0.402
10/20/2016	0.016 (J)			0.0877 (J)					
10/24/2016		0.0367 (J)	0.0226 (J)			1.83			
10/25/2016							1.21	0.778	0.372
1/25/2017	0.0095 (J)	0.0075 (J)	0.009 (J)						
1/31/2017				0.0928		2.12	1.43	0.782	0.404
5/23/2017		0.0073 (J)	0.0082 (J)	0.0795		2.56			
5/24/2017	0.0094 (J)						1.3	0.753	0.415
8/10/2017	<0.04	<0.04	0.0061 (J)	0.0814		2.28	1.28	0.702	0.397
11/13/2017	0.0103 (J)	0.0089 (J)							
11/14/2017			0.012 (J)	0.108		2.32	1.29	0.78	0.366
6/4/2018	0.0065 (J)	0.007 (J)							
6/5/2018			0.0085 (J)						
6/6/2018				0.081		2.5	1.4	0.87	0.48
10/1/2018	0.0054 (J)	<0.04	0.0042 (J)						
10/2/2018							1.2	0.82	0.43
10/3/2018				0.092		2.4			
4/1/2019	0.0076 (J)								
4/2/2019		0.0043 (J)	0.0059 (J)						
4/3/2019								0.89	0.4
4/4/2019				0.06 (X)		2.4	1.4 (X)		
6/17/2019						2.3		0.86	0.37
10/21/2019	0.0097 (J)								
10/22/2019		0.016 (J)	0.01 (J)					0.91	0.32
10/23/2019				0.1	3.1	2.3	1.3		
1/3/2020					3.4				
3/4/2020					3.7				
3/24/2020	0.011 (J)	0.012 (J)			2.4				
3/25/2020				0.08 (J)		2.3	1.4	0.87	0.36
4/9/2020			0.012 (J)						
6/18/2020					2.9				

Time Series

Constituent: Boron (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.821	0.681
10/20/2016	0.956	0.697
1/27/2017	0.99	
1/31/2017		0.768
5/23/2017	0.438	0.754
8/10/2017	0.821	0.608
11/14/2017	0.536	0.691
6/7/2018	0.5	0.57
10/3/2018	0.85	0.51
4/5/2019	1 (X)	0.6 (X)
10/22/2019	1	0.65
3/24/2020	1	
3/25/2020		0.7

Time Series

Constituent: Cadmium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.0025	<0.0025	<0.0025						
8/31/2016				0.0002 (J)		0.0006 (J)	<0.0025	0.0001 (J)	<0.0025
10/20/2016	<0.0025			0.0003 (J)					
10/24/2016		<0.0025	<0.0025			0.0008 (J)			
10/25/2016							<0.0025	8E-05 (J)	<0.0025
1/25/2017	<0.0025	<0.0025	<0.0025						
1/31/2017				0.0001 (J)		0.0006 (J)	<0.0025	9E-05 (J)	<0.0025
5/23/2017		<0.0025	<0.0025	0.0002 (J)		0.0006 (J)			
5/24/2017	<0.0025						<0.0025	0.0001 (J)	<0.0025
8/10/2017	<0.0025	<0.0025	<0.0025	0.0002 (J)		0.0007 (J)	<0.0025	<0.0025	<0.0025
11/13/2017	<0.0025	<0.0025							
11/14/2017			<0.0025	<0.0025		0.0007 (J)	<0.0025	<0.0025	<0.0025
6/4/2018	<0.0025	<0.0025							
6/5/2018			<0.0025						
6/6/2018				9.5E-05 (J)		0.00073 (J)	<0.0025	0.00012 (J)	<0.0025
10/1/2018	<0.0025	<0.0025	<0.0025						
10/2/2018							<0.0025	0.0001 (J)	<0.0025
10/3/2018				0.00018 (J)		0.00078 (J)			
8/21/2019	<0.0025	<0.0025	<0.0025						
8/22/2019				0.00014 (J)		0.0008 (J)	<0.0025		
8/23/2019								0.00011 (J)	<0.0025
10/21/2019	<0.0025								
10/22/2019		<0.0025	<0.0025					<0.0025	<0.0025
10/23/2019				0.0002 (J)	0.00026 (J)	0.00091 (J)	<0.0025		
1/3/2020					0.0002 (J)				
3/4/2020					0.00026 (J)				
3/24/2020	<0.0025	<0.0025			0.00068 (J)				
3/25/2020				0.00014 (J)		0.00068 (J)	<0.0025	<0.0025	<0.0025
4/9/2020			<0.0025						
6/18/2020					0.00047 (J)				

Time Series

Constituent: Cadmium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.0008 (J)	<0.0025
10/20/2016	0.0008 (J)	<0.0025
1/27/2017	0.0007 (J)	
1/31/2017		<0.0025
5/23/2017	0.0005 (J)	<0.0025
8/10/2017	0.0004 (J)	<0.0025
11/14/2017	0.0005 (J)	<0.0025
6/7/2018	0.00049 (J)	<0.0025
10/3/2018	0.00079 (J)	<0.0025
8/22/2019	0.00064 (J)	<0.0025
10/22/2019	0.00068 (J)	<0.0025
3/24/2020	0.00079 (J)	
3/25/2020		<0.0025

Time Series

Constituent: Calcium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	40.3	6.69	6.72						
8/31/2016				19.4		70.4	74.2	44.7	35.1
10/20/2016	38.7			19.3					
10/24/2016		6.25	6.4			70.9			
10/25/2016							72.5	49	35.4
1/25/2017	44.6	6.58	6.87						
1/31/2017				19.1		63.6	70.3	46.6	34.2
5/23/2017		6.4	7.13	18.3		111			
5/24/2017	34.8						75.9	49.5	35.3
8/10/2017	48.6	6.54	6.71	20.9		81.2	84	54.2	43.1
11/13/2017	17.1	6.26							
11/14/2017			7.4	21.7		79.7	87.2	53.2	37.4
6/4/2018	30.1	7.4							
6/5/2018			7.4						
6/6/2018				17		88.3	81	55	41.1
10/1/2018	14.2 (J)	5.8	6.2						
10/2/2018							84.7	55.4	42.5
10/3/2018				19.1 (J)		85.3			
4/1/2019	58.4								
4/2/2019		6.7	7.4						
4/3/2019								54	37.5
4/4/2019				16.9		91.9	73.8		
6/17/2019						92.6	81.2	55.3	
10/21/2019	51								
10/22/2019		6.3	7.2					58.1	42.6
10/23/2019				21.9	136	86.5	89.4		
1/3/2020					118				
3/4/2020					144				
3/24/2020	61.2	7			103				
3/25/2020				18.4		86.8	91.4	59.5	42.6
4/9/2020			8.3						
6/18/2020					124				

Time Series

Constituent: Calcium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	63.4	79.3
10/20/2016	64.4	83.7
1/27/2017	68.6	
1/31/2017		76.8
5/23/2017	32	77.2
8/10/2017	78.9	83.1
11/14/2017	46.9	86.7
6/7/2018	37.7	79.7
10/3/2018	68	77.1
4/5/2019	70	82
6/18/2019	36.3	76.5
10/22/2019	70.9	84.2
3/24/2020	68	
3/25/2020		86.8

Time Series

Constituent: Chloride (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	3.3	5.4	2						
8/31/2016				5.7		5.2	3	3.2	5
10/20/2016	3.2			5.7					
10/24/2016		5.2	1.9			5.2			
10/25/2016							2.8	3.2	4.8
1/25/2017	2.7	5	1.9						
1/31/2017				5.8		5.6	3.3	3.1	5.5
5/23/2017		5.1	1.6	5.3		5.7			
5/24/2017	3						3.5	2.9	5.3
8/10/2017	2.8	5.2	1.7	5.4		5.8	2.9	2.8	4.6
11/13/2017	2.5	5.5							
11/14/2017			2	5.8		6	4	3.4	5.6
6/4/2018	2.6	5.3							
6/5/2018			1.7						
6/6/2018				5.3		6.4	2.9	2.8	5.3
10/1/2018	2.2	5.6	1.6						
10/2/2018							3.5	3.2	5.3
10/3/2018				5.8		6.3			
4/1/2019	4								
4/2/2019		5.7	1.8						
4/3/2019								3.6	5
4/4/2019				5.9		6.9	3.9		
6/17/2019						5.2		2.9	
10/21/2019	3.9								
10/22/2019		5.5	1.9					3.6	4.6
10/23/2019				5.5	7.9	6.1	3.6		
1/3/2020					7				
3/4/2020					7.1				
3/24/2020	3.6	5.2			6.5				
3/25/2020				5.2		5.1	3.2	3	3.9
4/9/2020			1.4						
6/18/2020					6.9				

Time Series

Constituent: Chloride (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	7.1	4.5
10/20/2016	7.7	4.4
1/27/2017	7.8	
1/31/2017		4.8
5/23/2017	3.6	4.3
8/10/2017	5.9	4.2
11/14/2017	4	4.4
6/7/2018	3.6	4.1
10/3/2018	7.6	4.4
4/5/2019	8.9	4.3
10/22/2019	12.1	4.5
3/24/2020	12.5	
3/25/2020		3.6

Time Series

Constituent: Chromium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.01	0.0038 (J)	<0.01						
8/31/2016				<0.01		<0.01	<0.01	<0.01	<0.01
10/20/2016	<0.01			<0.01					
10/24/2016		0.0039 (J)	0.001 (J)			<0.01			
10/25/2016							<0.01	<0.01	<0.01
1/25/2017	0.0029 (J)	0.0038 (J)	0.0012 (J)						
1/31/2017				<0.01		<0.01	<0.01	<0.01	<0.01
5/23/2017		0.0038 (J)	0.0012 (J)	0.0006 (J)		<0.01			
5/24/2017	0.0004 (J)						<0.01	<0.01	<0.01
8/10/2017	<0.01	0.0039 (J)	0.0019 (J)	<0.01		<0.01	<0.01	<0.01	<0.01
11/13/2017	<0.01	0.0038 (J)							
11/14/2017			0.0016 (J)	<0.01		<0.01	<0.01	<0.01	<0.01
6/4/2018	<0.01	0.0037 (J)							
6/5/2018			<0.01						
6/6/2018				<0.01		<0.01	<0.01	<0.01	<0.01
10/1/2018	<0.01	0.0036 (J)	0.0023 (J)						
10/2/2018							<0.01	<0.01	<0.01
10/3/2018				<0.01		<0.01			
8/21/2019	0.00061 (J)	0.0039 (J)	0.0022 (J)						
8/22/2019				0.00064 (J)		0.00063 (J)	<0.01		
8/23/2019								<0.01	<0.01
10/21/2019	0.0012 (J)								
10/22/2019		0.004 (J)	0.0023 (J)					<0.01	0.00062 (J)
10/23/2019				<0.01	<0.01	0.0015 (J)	0.0004 (J)		
1/3/2020					0.00063 (J)				
3/4/2020					<0.01				
3/24/2020	0.0019 (J)	0.0044 (J)			0.00051 (J)				
3/25/2020				0.00098 (J)		0.00045 (J)	0.0013 (J)	0.00074 (J)	0.0014 (J)
4/9/2020			0.0031 (J)						
6/18/2020					<0.01				

Time Series

Constituent: Chromium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.01	<0.01
10/20/2016	<0.01	<0.01
1/27/2017	<0.01	
1/31/2017		<0.01
5/23/2017	<0.01	<0.01
8/10/2017	<0.01	<0.01
11/14/2017	<0.01	<0.01
6/7/2018	<0.01	<0.01
10/3/2018	<0.01	<0.01
8/22/2019	<0.01	<0.01
10/22/2019	<0.01	0.00066 (J)
3/24/2020	0.0012 (J)	
3/25/2020		0.00081 (J)

Time Series

Constituent: Cobalt (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.005	<0.005	0.0006 (J)						
8/31/2016				0.0033 (J)		0.0018 (J)	0.0014 (J)	<0.005	0.0023 (J)
10/20/2016	<0.005			0.0025 (J)					
10/24/2016		<0.005	<0.005			0.0018 (J)			
10/25/2016							0.0013 (J)	<0.005	0.0017 (J)
1/25/2017	<0.005	<0.005	<0.005						
1/31/2017				0.001 (J)		0.0016 (J)	0.0006 (J)	<0.005	0.0017 (J)
5/23/2017		<0.005	<0.005	0.0025 (J)		0.0014 (J)			
5/24/2017	<0.005						0.0007 (J)	<0.005	0.002 (J)
8/10/2017	<0.005	<0.005	0.0004 (J)	0.0029 (J)		0.0025 (J)	0.0006 (J)	<0.005	0.0012 (J)
11/13/2017	<0.005	<0.005							
11/14/2017			0.0003 (J)	0.003 (J)		0.002 (J)	0.0005 (J)	<0.005	0.0014 (J)
6/4/2018	<0.005	<0.005							
6/5/2018			<0.005						
6/6/2018				0.0016 (J)		0.0031 (J)	0.00056 (J)	<0.005	0.0014 (J)
10/1/2018	<0.005	<0.005	<0.005						
10/2/2018							<0.005	<0.005	0.00081 (J)
10/3/2018				0.0028 (J)		0.0023 (J)			
8/21/2019	<0.005	<0.005	<0.005						
8/22/2019				<0.005		0.0019 (J)	<0.005		
8/23/2019								<0.005	0.0027 (J)
10/21/2019	<0.005								
10/22/2019		<0.005	<0.005					<0.005	0.0022 (J)
10/23/2019				0.0023 (J)	0.0018 (J)	0.0021 (J)	0.00038 (J)		
1/3/2020					0.0038 (J)				
3/4/2020					0.0021 (J)				
3/24/2020	<0.005	<0.005			0.0019 (J)				
3/25/2020				0.0021 (J)		0.0022 (J)	0.00047 (J)	<0.005	0.0022 (J)
4/9/2020			0.00037 (J)						
6/18/2020					0.0012 (J)				

Time Series

Constituent: Cobalt (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.0035 (J)	<0.005
10/20/2016	0.0045 (J)	<0.005
1/27/2017	0.0041 (J)	
1/31/2017		<0.005
5/23/2017	0.0071 (J)	0.0005 (J)
8/10/2017	0.0031 (J)	0.0003 (J)
11/14/2017	0.0062 (J)	0.0004 (J)
6/7/2018	0.0083 (J)	<0.005
10/3/2018	0.005 (J)	<0.005
8/22/2019	0.012	0.0003 (J)
10/22/2019	0.0064	0.00061 (J)
3/24/2020	0.0087	
3/25/2020		<0.005

Time Series

Constituent: Combined Radium 226 & 228 (pCi/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	0.804 (U)	1.32 (U)	0.587 (U)						
8/31/2016				0.621 (U)		1.62	0.906 (U)	1.2	1.03
10/20/2016	1.13 (U)			1.4					
10/24/2016		1.3 (U)	0.979 (U)			1.01 (U)			
10/25/2016							1.03	1.11 (U)	1.07
1/25/2017	0.888 (U)	1.04 (U)	0.038 (U)						
1/31/2017				0.906 (U)		0.976 (U)	0.868 (U)	1.45	0.588 (U)
5/23/2017		0.541 (U)	0.898 (U)	0.388 (U)		0.891 (U)			
5/24/2017	0.622 (U)						0.728 (U)	0.393 (U)	0.593 (U)
8/10/2017	0.745 (U)	0.536 (U)	0.759 (U)	1.03 (U)		0.601 (U)	1.35	0.84 (U)	0.691 (U)
11/13/2017	0.778 (U)	0.786 (U)							
11/14/2017			0.0762 (U)	0.769 (U)		0.567 (U)	0.817 (U)	1.01 (U)	0.653 (U)
6/4/2018	0.637 (U)	0.233 (U)							
6/5/2018			0.594 (U)						
6/6/2018				1.28 (U)		0.836 (U)	0.559 (U)	0.365 (U)	0.939 (U)
10/1/2018	0.451 (U)	0.494 (U)	0.982						
10/2/2018							0.336 (U)	1.23	0.225 (U)
10/3/2018				0.302 (U)		0.111 (U)			
8/21/2019	0.553 (U)	0.514 (U)	0.492 (U)						
8/22/2019				0.474 (U)		0.946 (U)	0.694 (U)		
8/23/2019								1.69	0.47 (U)
10/21/2019	0.351 (U)								
10/22/2019		0.828 (U)	0.523 (U)					0.705 (U)	0.545 (U)
10/23/2019				0.776 (U)	0.858 (U)	0.571 (U)	0.584 (U)		
1/22/2020					1.04 (U)				
3/4/2020					1.32				
3/24/2020	0.26 (U)	0.677 (U)			1.23 (U)				
3/25/2020				0.603 (U)		0.403 (U)	0.663 (U)	0.673 (U)	0.508 (U)
4/9/2020			0.617 (U)						
6/18/2020					0.681 (U)				

Time Series

Constituent: Combined Radium 226 & 228 (pCi/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	1.12	
10/20/2016	0.803 (U)	1.97
1/27/2017	1.08 (U)	
1/31/2017		1.03
5/23/2017	0.624 (U)	0.398 (U)
8/10/2017	0.695 (U)	0.938 (U)
11/14/2017	0.99 (U)	0.335 (U)
6/7/2018	1.04 (U)	0.696 (U)
10/3/2018	0.198 (U)	1.6 (U)
8/22/2019	0.333 (U)	0.904 (U)
10/22/2019	0.827 (U)	0.424 (U)
3/24/2020	0.815 (U)	
3/25/2020		0.915 (U)

Time Series

Constituent: Fluoride (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	0.07 (J)	0.04 (J)	0.2 (J)						
8/31/2016				0.05 (J)		0.06 (J)	0.15 (J)	0.08 (J)	0.12 (J)
10/20/2016	0.07 (J)			0.03 (J)					
10/24/2016		0.05 (J)	0.16 (J)			0.13 (J)			
10/25/2016							0.09 (J)	0.16 (J)	0.17 (J)
1/25/2017	0.14 (J)	<0.1	0.15 (J)						
1/31/2017				<0.1		<0.1	0.13 (J)	0.16 (J)	0.05 (J)
5/23/2017		0.004 (J)	0.18 (J)	<0.1		0.15 (J)			
5/24/2017	0.02 (J)						0.07 (J)	0.009 (J)	0.13 (J)
8/10/2017	0.06 (J)	0.03 (J)	0.19 (J)	<0.1		<0.1	0.03 (J)	<0.1	0.12 (J)
11/13/2017	<0.1	<0.1							
11/14/2017			0.16 (J)	<0.1		<0.1	<0.1	<0.1	<0.1
6/4/2018	0.032 (J)	<0.1							
6/5/2018			0.18 (J)						
6/6/2018				<0.1		<0.1	0.074 (J)	0.057 (J)	0.15 (J)
10/1/2018	<0.1	<0.1	0.078 (J)						
10/2/2018							<0.1	<0.1	<0.1
10/3/2018				<0.1		<0.1			
4/1/2019	0.042 (J)								
4/2/2019		<0.1	0.18 (J)						
4/3/2019								<0.1	0.05 (J)
4/4/2019				<0.1		0.042 (J)	0.03 (J)		
8/21/2019	0.048 (J)	<0.1	0.11 (J)						
8/22/2019				<0.1		<0.1	<0.1		
8/23/2019								<0.1	0.034 (J)
10/21/2019	0.12 (J)								
10/22/2019		0.05 (J)	0.18 (J)					0.047 (J)	0.099 (J)
10/23/2019				<0.1	0.22 (J)	<0.1	<0.1		
1/3/2020					<0.1				
3/4/2020					<0.1				
3/24/2020	0.076 (J)	<0.1			<0.1				
3/25/2020				<0.1		<0.1	<0.1	<0.1	0.075 (J)
4/9/2020			0.14 (J)						
6/18/2020					<0.1				

Time Series

Constituent: Fluoride (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.09 (J)	0.18 (J)
10/20/2016	0.11 (J)	0.12 (J)
1/27/2017	0.28 (J)	
1/31/2017		0.3
5/23/2017	0.01 (J)	0.14 (J)
8/10/2017	0.1 (J)	0.11 (J)
11/14/2017	<0.1	0.07 (J)
6/7/2018	<0.1	0.3
10/3/2018	<0.1	0.12 (J)
4/5/2019	0.19 (J)	0.33
6/18/2019		0.89
8/22/2019	<0.1	0.07 (J)
10/22/2019	0.042 (J)	0.087 (J)
3/24/2020	<0.1	
3/25/2020		0.078 (J)

Time Series

Constituent: Lead (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	0.0001 (J)	<0.005	<0.005						
8/31/2016				<0.005		<0.005	<0.005	<0.005	<0.005
10/20/2016	<0.005			<0.005					
10/24/2016		<0.005	<0.005			<0.005			
10/25/2016							<0.005	<0.005	<0.005
1/25/2017	<0.005	<0.005	<0.005						
1/31/2017				<0.005		<0.005	<0.005	<0.005	<0.005
5/23/2017		<0.005	<0.005	0.0009 (J)		<0.005			
5/24/2017	<0.005						<0.005	<0.005	<0.005
8/10/2017	<0.005	<0.005	0.0001 (J)	<0.005		<0.005	<0.005	<0.005	<0.005
11/13/2017	<0.005	<0.005							
11/14/2017			<0.005	<0.005		<0.005	<0.005	<0.005	<0.005
6/4/2018	<0.005	<0.005							
6/5/2018			<0.005						
6/6/2018				<0.005		<0.005	<0.005	<0.005	<0.005
10/1/2018	<0.005	<0.005	<0.005						
10/2/2018							<0.005	<0.005	<0.005
10/3/2018				<0.005		<0.005			
8/21/2019	<0.005	<0.005	7.1E-05 (J)						
8/22/2019				<0.005		<0.005	<0.005		
8/23/2019								<0.005	5.8E-05 (J)
10/21/2019	0.00016 (J)								
10/22/2019		<0.005	7.3E-05 (J)					7.9E-05 (J)	5.4E-05 (J)
10/23/2019				<0.005	<0.005	0.00043 (J)	6.8E-05 (J)		
1/3/2020					<0.005				
3/4/2020					0.00011 (J)				
3/24/2020	0.00058 (J)	0.00016 (J)			<0.005				
3/25/2020				<0.005		7.6E-05 (J)	8.5E-05 (J)	0.00021 (J)	<0.005
4/9/2020			0.00039 (J)						
6/18/2020					<0.005				

Time Series

Constituent: Lead (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.005	<0.005
10/20/2016	<0.005	<0.005
1/27/2017	<0.005	
1/31/2017		<0.005
5/23/2017	<0.005	<0.005
8/10/2017	<0.005	<0.005
11/14/2017	<0.005	<0.005
6/7/2018	<0.005	<0.005
10/3/2018	<0.005	<0.005
8/22/2019	<0.005	<0.005
10/22/2019	0.00016 (J)	0.00025 (J)
3/24/2020	0.00025 (J)	
3/25/2020		0.0001 (J)

Time Series

Constituent: Lithium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	0.0022 (J)	<0.03	<0.03						
8/31/2016				<0.03		<0.03	0.0034 (J)	<0.03	<0.03
10/20/2016	<0.03			<0.03					
10/24/2016		<0.03	<0.03			<0.03			
10/25/2016							0.0043 (J)	<0.03	<0.03
1/25/2017	<0.03	<0.03	<0.03						
1/31/2017				<0.03		<0.03	0.0042 (J)	<0.03	<0.03
5/23/2017		<0.03	0.0011 (J)	<0.03		0.0012 (J)			
5/24/2017	0.0017 (J)						0.0039 (J)	<0.03	0.0012 (J)
8/10/2017	0.0017 (J)	<0.03	<0.03	<0.03		0.0016 (J)	0.004 (J)	<0.03	<0.03
11/13/2017	<0.03	<0.03							
11/14/2017			<0.03	<0.03		0.0015 (J)	0.0044 (J)	<0.03	<0.03
6/4/2018	0.0016 (J)	<0.03							
6/5/2018			0.001 (J)						
6/6/2018				<0.03		0.0017 (J)	0.0041 (J)	0.00099 (J)	0.0013 (J)
10/1/2018	<0.03	<0.03	0.001 (J)						
10/2/2018							0.0041 (J)	<0.03	0.0013 (J)
10/3/2018				<0.03		0.0016 (J)			
8/21/2019	0.0018 (J)	<0.03	0.0011 (J)						
8/22/2019				<0.03		0.0015 (J)	0.004 (J)		
8/23/2019								0.00092 (J)	0.0009 (J)
10/21/2019	0.0026 (J)								
10/22/2019		<0.03	0.0011 (J)					0.00094 (J)	0.00088 (J)
10/23/2019				<0.03	0.0012 (J)	0.002 (J)	0.0039 (J)		
1/3/2020					0.0011 (J)				
3/4/2020					0.0013 (J)				
3/24/2020	0.0039 (J)	<0.03			0.00084 (J)				
3/25/2020				<0.03		0.0016 (J)	0.0041 (J)	0.00091 (J)	<0.03
4/9/2020			0.0017 (J)						
6/18/2020					0.0013 (J)				

Time Series

Constituent: Lithium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	0.0024 (J)	<0.03
10/20/2016	0.0027 (J)	<0.03
1/27/2017	<0.03	
1/31/2017		<0.03
5/23/2017	<0.03	0.0012 (J)
8/10/2017	0.0021 (J)	<0.03
11/14/2017	<0.03	<0.03
6/7/2018	0.0011 (J)	0.0015 (J)
10/3/2018	0.0021 (J)	<0.03
8/22/2019	0.0012 (J)	0.0018 (J)
10/22/2019	0.0028 (J)	0.0027 (J)
3/24/2020	0.0029 (J)	
3/25/2020		0.0017 (J)

Time Series

Constituent: Mercury (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	4E-05 (J)	4.1E-05 (J)	4E-05 (J)						
8/31/2016				<0.0005		<0.0005	<0.0005	<0.0005	<0.0005
10/20/2016	<0.0005			<0.0005					
10/24/2016		<0.0005	<0.0005			<0.0005			
10/25/2016							<0.0005	<0.0005	<0.0005
1/25/2017	4E-05 (J)	4E-05 (J)	4E-05 (J)						
1/31/2017				9.3E-05 (J)		8E-05 (J)	<0.0005	<0.0005	8E-05 (J)
5/23/2017		<0.0005	<0.0005	<0.0005		<0.0005			
5/24/2017	<0.0005						<0.0005	<0.0005	<0.0005
8/10/2017	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005
11/13/2017	<0.0005	<0.0005							
11/14/2017			<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005
6/4/2018	<0.0005	<0.0005							
6/5/2018			<0.0005						
6/6/2018				<0.0005		<0.0005	<0.0005	<0.0005	<0.0005
10/1/2018	4.3E-05 (J)	3.9E-05 (J)	4.3E-05 (J)						
10/2/2018							<0.0005	<0.0005	<0.0005
10/3/2018				<0.0005		<0.0005			
8/21/2019	<0.0005	<0.0005	<0.0005						
8/22/2019				<0.0005		<0.0005	<0.0005		
8/23/2019								<0.0005	<0.0005
10/23/2019					<0.0005				
1/3/2020					<0.0005				
3/4/2020					<0.0005				
3/24/2020					<0.0005				
6/18/2020					<0.0005				

Time Series

Constituent: Mercury (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	7E-05 (J)	<0.0005
10/20/2016	<0.0005	<0.0005
1/27/2017	<0.0005	
1/31/2017		9E-05 (J)
5/23/2017	<0.0005	<0.0005
8/10/2017	<0.0005	<0.0005
11/14/2017	<0.0005	<0.0005
6/7/2018	<0.0005	<0.0005
10/3/2018	<0.0005	<0.0005
8/22/2019	<0.0005	<0.0005

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.01	<0.01	<0.01						
8/31/2016				<0.01		<0.01	<0.01	<0.01	<0.01
10/20/2016	<0.01			<0.01					
10/24/2016		<0.01	<0.01			<0.01			
10/25/2016							<0.01	<0.01	<0.01
1/25/2017	<0.01	<0.01	<0.01						
1/31/2017				<0.01		<0.01	<0.01	<0.01	<0.01
5/23/2017		<0.01	<0.01	<0.01		<0.01			
5/24/2017	<0.01						<0.01	<0.01	<0.01
8/10/2017	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01
11/13/2017	<0.01	<0.01							
11/14/2017			<0.01	<0.01		<0.01	<0.01	<0.01	<0.01
6/4/2018	<0.01	<0.01							
6/5/2018			<0.01						
6/6/2018				<0.01		<0.01	<0.01	<0.01	<0.01
10/1/2018	<0.01	<0.01	<0.01						
10/2/2018							<0.01	<0.01	<0.01
10/3/2018				<0.01		<0.01			
8/21/2019	<0.01	<0.01	<0.01						
8/22/2019				<0.01		<0.01	<0.01		
8/23/2019								<0.01	<0.01
10/23/2019					<0.01				
1/3/2020					<0.01				
3/4/2020					<0.01				
3/24/2020					<0.01				
6/18/2020					<0.01				

Time Series

Constituent: Molybdenum (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.01	<0.01
10/20/2016	<0.01	<0.01
1/27/2017	<0.01	
1/31/2017		<0.01
5/23/2017	<0.01	<0.01
8/10/2017	<0.01	<0.01
11/14/2017	<0.01	<0.01
6/7/2018	<0.01	<0.01
10/3/2018	<0.01	<0.01
8/22/2019	<0.01	<0.01

Time Series

Constituent: pH (s.u.) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	6.89	5.77	5.99						
8/31/2016				5.35		5.54	6.5	6.11	6.78
10/20/2016	6.73			5.3					
10/24/2016		5.61	5.84			5.48			
10/25/2016							6.34	6.04	6.55
1/25/2017	7.02	5.68	6.04						
1/31/2017				5.24		5.51	6.43	5.94	6.5
5/23/2017		5.7	6.01	5.39		5.98			
5/24/2017	6.44						6.31	6.06	6.42
8/10/2017	6.79	5.59	5.98	5.47		5.63	6.45	6.06	6.63
11/13/2017	5.94	5.56							
11/14/2017			6.16	5.4		5.59	6.53	5.99	6.5
6/4/2018	6.12	5.62							
6/5/2018			5.86						
6/6/2018				5.37		5.49	6.49	6	6.59
10/1/2018	5.92	5.62	5.94						
10/2/2018							6.18	6.18	6.54
10/3/2018				5.39		5.53			
4/1/2019	7.09								
4/2/2019		5.47	6						
4/3/2019								6.06	6.42
4/4/2019				5.31		5.44	6.17		
6/17/2019						5.53			
6/18/2019				5.3					
8/21/2019	6.6	5.8	6.05						
8/22/2019				5.39		5.55	6.04		
8/23/2019								6.26	6.76
10/21/2019	7.02								
10/22/2019		5.7	5.98					6.19	6.58
10/23/2019				5.33	5.68	5.49	6.46		
1/3/2020					5.64				
3/4/2020					5.75				
3/24/2020	7.37	5.64			5.58				
3/25/2020				5.53		5.49	6.47	6.13	6.56
4/9/2020			6.08						
6/18/2020					5.67				

Time Series

Constituent: pH (s.u.) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	6.07	7.03
10/20/2016	6	7.01
1/27/2017	6.2	
1/31/2017		6.96
5/23/2017	5.27	6.92
8/10/2017	6.27	6.99
11/14/2017	5.4	6.9
6/7/2018	5.29	7.03
10/3/2018	6.08	7.08
4/5/2019	5.99	6.96
8/22/2019	5.53	6.93
10/22/2019	6.17	7.03
3/24/2020	5.99	
3/25/2020		6.89

Time Series

Constituent: Selenium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.01	<0.01	0.0027 (J)						
8/31/2016				<0.01		<0.01	<0.01	<0.01	<0.01
10/20/2016	<0.01			<0.01					
10/24/2016		<0.01	0.0034 (J)			<0.01			
10/25/2016							<0.01	<0.01	<0.01
1/25/2017	<0.01	<0.01	0.0023 (J)						
1/31/2017				<0.01		<0.01	<0.01	<0.01	<0.01
5/23/2017		<0.01	0.0024 (J)	<0.01		<0.01			
5/24/2017	<0.01						<0.01	<0.01	<0.01
8/10/2017	<0.01	<0.01	0.0023 (J)	<0.01		<0.01	<0.01	<0.01	<0.01
11/13/2017	<0.01	<0.01							
11/14/2017			<0.01	<0.01		<0.01	<0.01	<0.01	<0.01
6/4/2018	<0.01	<0.01							
6/5/2018			0.0019 (J)						
6/6/2018				<0.01		<0.01	<0.01	<0.01	<0.01
10/1/2018	<0.01	<0.01	0.0024 (J)						
10/2/2018							<0.01	<0.01	<0.01
10/3/2018				<0.01		<0.01			
8/21/2019	<0.01	<0.01	0.0025 (J)						
8/22/2019				<0.01		<0.01	<0.01		
8/23/2019								<0.01	<0.01
10/23/2019					<0.01				
1/3/2020					0.0015 (J)				
3/4/2020					<0.01				
3/24/2020					<0.01				
6/18/2020					<0.01				

Time Series

Constituent: Selenium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.01	<0.01
10/20/2016	<0.01	<0.01
1/27/2017	<0.01	
1/31/2017		<0.01
5/23/2017	<0.01	<0.01
8/10/2017	<0.01	<0.01
11/14/2017	<0.01	<0.01
6/7/2018	<0.01	<0.01
10/3/2018	<0.01	<0.01
8/22/2019	<0.01	<0.01

Time Series

Constituent: Sulfate (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	1.6	0.63 (J)	14						
8/31/2016				110		280	190	130	36
10/20/2016	1.6			110					
10/24/2016		0.62 (J)	11			280			
10/25/2016							190	130	41
1/25/2017	1.6	0.62 (J)	12						
1/31/2017				120		300	210	130	37
5/23/2017		0.55 (J)	12	97		340			
5/24/2017	1.4						180	130	40
8/10/2017	1.6	0.66 (J)	11	96		300	180	130	40
11/13/2017	1.3	0.61 (J)							
11/14/2017			11	110		310	170	130	40
6/4/2018	1.4	0.73 (J)							
6/5/2018			9.9						
6/6/2018				95.5		351	168	132	49.7
10/1/2018	1	0.52 (J)	6.7						
10/2/2018							173	132	42.3
10/3/2018				121		381			
4/1/2019	1.7								
4/2/2019		0.78 (J)	8.7						
4/3/2019								139	36
4/4/2019				95.1		358	185		
6/17/2019						311	162	126	30.9
6/18/2019				102					
10/21/2019	1.8								
10/22/2019		0.6 (J)	6.8					123	23.2
10/23/2019				101	<1	248	162		
1/3/2020					380				
3/4/2020					400				
3/24/2020	1.6	<1			311				
3/25/2020				85.5		251	161	116	27.9
4/9/2020			6.6						
6/18/2020					349				

Time Series

Constituent: Sulfate (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	150	88
10/20/2016	150	81
1/27/2017	150	
1/31/2017		87
5/23/2017	110	84
8/10/2017	140	78
11/14/2017	110	79
6/7/2018	103	60.1
10/3/2018	169	91.5
4/5/2019	141	75.1
6/18/2019	116	77
10/22/2019	133	80.9
3/24/2020	129	
3/25/2020		78.4

Time Series

Constituent: Thallium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	<0.001	<0.001	<0.001						
8/31/2016				<0.001		<0.001	<0.001	<0.001	<0.001
10/20/2016	<0.001			<0.001					
10/24/2016		<0.001	<0.001			<0.001			
10/25/2016							<0.001	<0.001	<0.001
1/25/2017	<0.001	<0.001	<0.001						
1/31/2017				<0.001		<0.001	<0.001	<0.001	<0.001
5/23/2017		<0.001	<0.001	<0.001		<0.001			
5/24/2017	<0.001						<0.001	<0.001	<0.001
8/10/2017	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
11/13/2017	<0.001	<0.001							
11/14/2017			<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
6/4/2018	<0.001	<0.001							
6/5/2018			<0.001						
6/6/2018				<0.001		<0.001	<0.001	<0.001	<0.001
10/1/2018	<0.001	<0.001	<0.001						
10/2/2018							<0.001	<0.001	<0.001
10/3/2018				<0.001		<0.001			
8/21/2019	<0.001	<0.001	<0.001						
8/22/2019				<0.001		<0.001	<0.001		
8/23/2019								<0.001	<0.001
10/23/2019					<0.001				
1/3/2020					8E-05 (J)				
3/4/2020					<0.001				
3/24/2020					<0.001				
6/18/2020					<0.001				

Time Series

Constituent: Thallium (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	<0.001	<0.001
10/20/2016	<0.001	<0.001
1/27/2017	<0.001	
1/31/2017		<0.001
5/23/2017	<0.001	<0.001
8/10/2017	<0.001	<0.001
11/14/2017	<0.001	<0.001
6/7/2018	<0.001	<0.001
10/3/2018	<0.001	<0.001
8/22/2019	<0.001	<0.001

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-101	HGWC-102	HGWC-103	HGWC-105	HGWC-107	HGWC-109
8/30/2016	172	76	77						
8/31/2016				278		483	389	235	182
10/20/2016	108			165					
10/24/2016		65	111			517			
10/25/2016							316	223	172
1/25/2017	345	152 (o)	155						
1/31/2017				263		516	437	346	252
5/23/2017		52	74	190		637			
5/24/2017	126						352	234	184
8/10/2017	174	60	94	175		459	356	254	208
11/13/2017	158	75							
11/14/2017			89	253		545	375	313	252
6/4/2018	131	70							
6/5/2018			92						
6/6/2018				188		559	385	278	224
10/1/2018	101	76	91						
10/2/2018							374	274	230
10/3/2018				238		582			
4/1/2019	213								
4/2/2019		69	94						
4/3/2019								273	210
4/4/2019				149		535	340		
6/17/2019						515	370	272	
10/21/2019	187								
10/22/2019		81	95					308	212
10/23/2019				221	736	507	419		
1/3/2020					714				
3/4/2020					764				
3/24/2020	207	52			521				
3/25/2020				187		507	417	297	213
4/9/2020			48						
6/18/2020					652				

Time Series

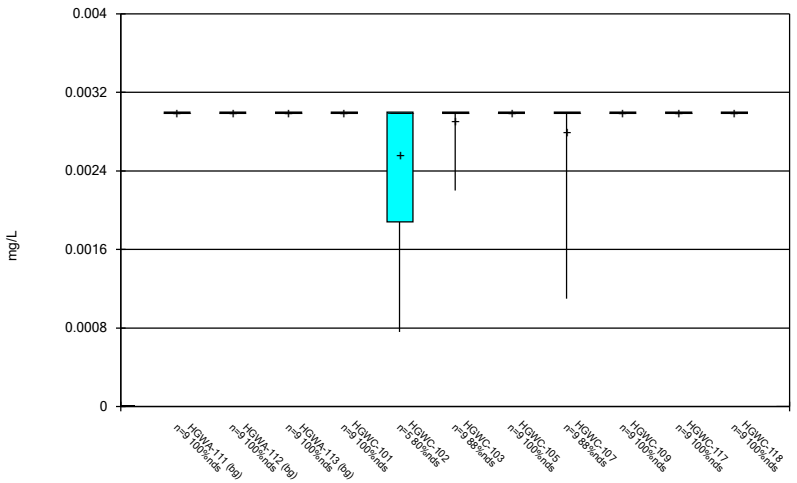
Constituent: Total Dissolved Solids (mg/L) Analysis Run 7/17/2020 12:26 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-117	HGWC-118
8/31/2016	381	373
10/20/2016	319	305
1/27/2017	407	
1/31/2017		361
5/23/2017	258	359
8/10/2017	359	325
11/14/2017	310	373
6/7/2018	223	338
10/3/2018	337	328
4/5/2019	334	308
6/18/2019	254	215
10/22/2019	348	354
3/24/2020	331	
3/25/2020		347

FIGURE B.

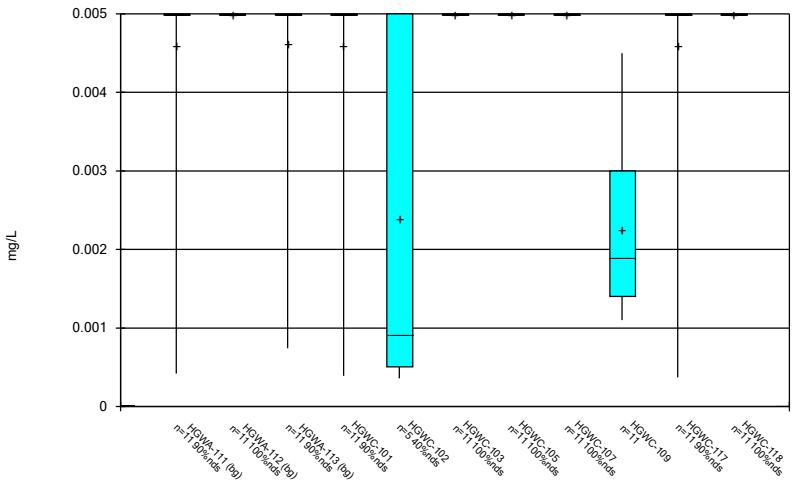
Box & Whiskers Plot



Constituent: Antimony Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

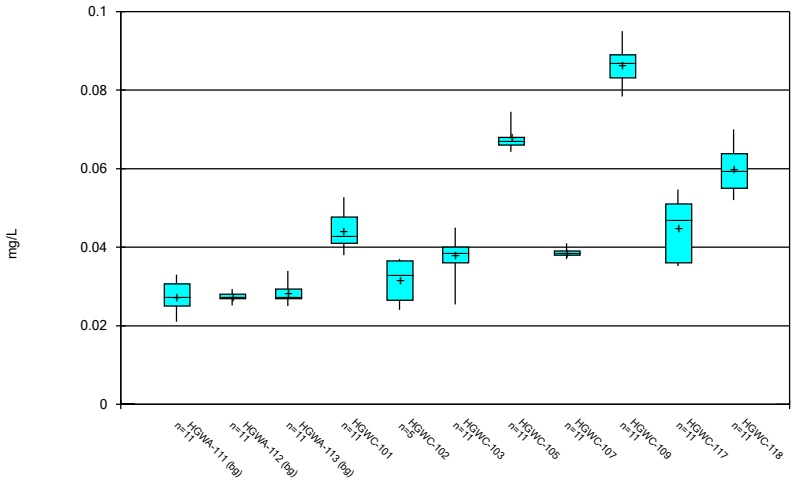
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

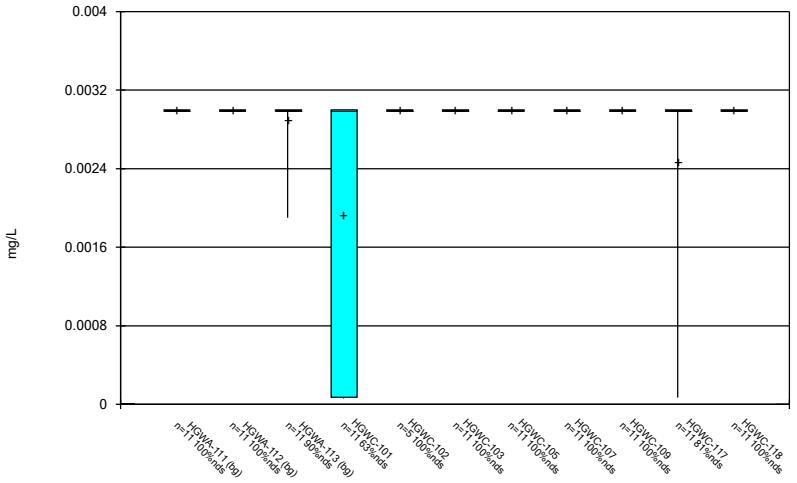
Box & Whiskers Plot



Constituent: Barium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

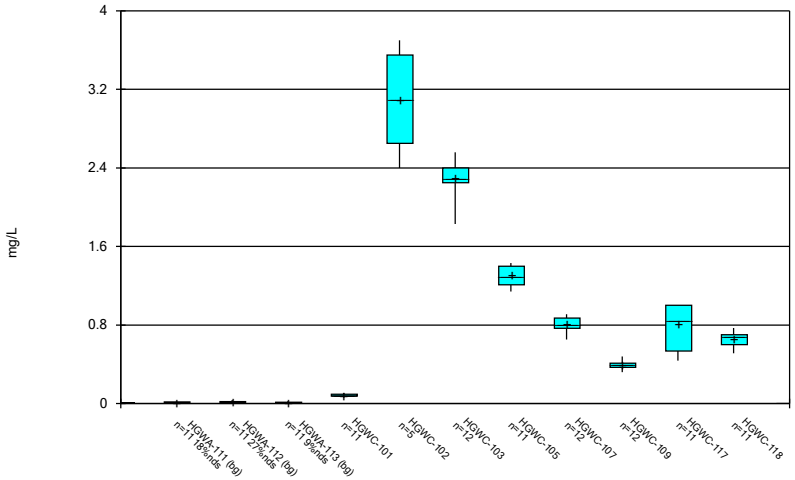
Box & Whiskers Plot



Constituent: Beryllium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

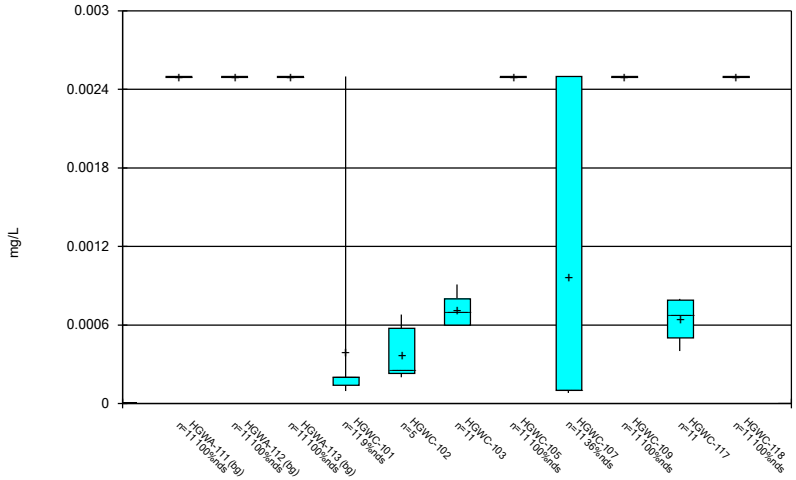
Box & Whiskers Plot



Constituent: Boron Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

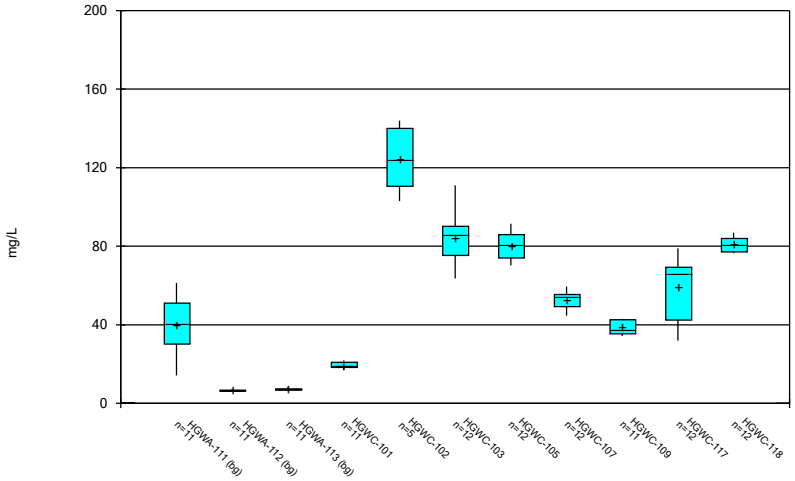
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

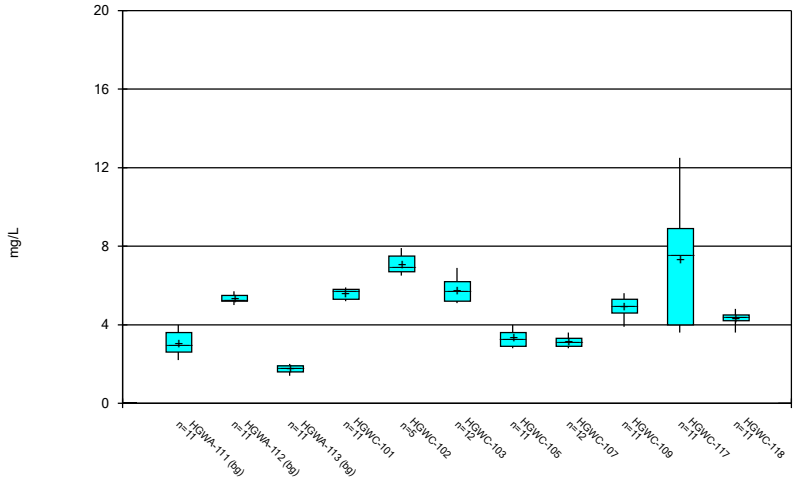
Box & Whiskers Plot



Constituent: Calcium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

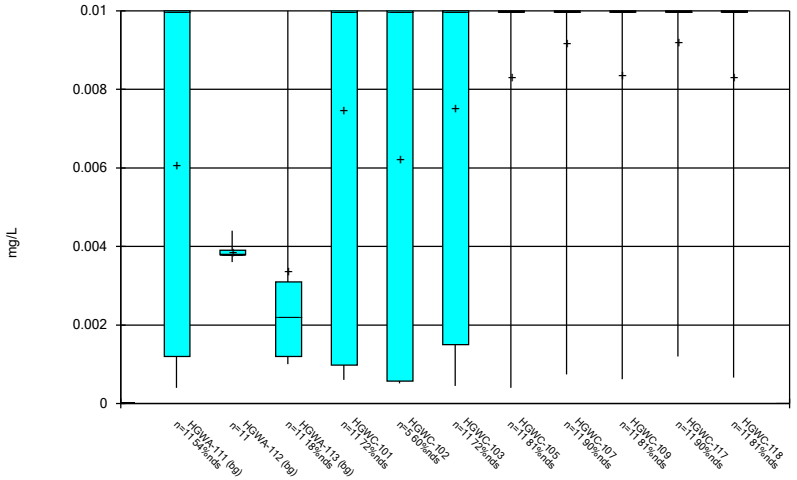
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Box & Whiskers Plot



Constituent: Chloride Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

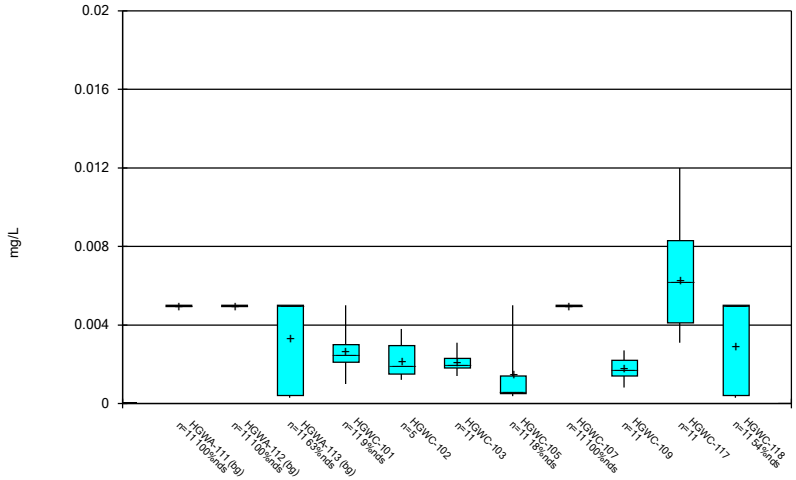
Box & Whiskers Plot



Constituent: Chromium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

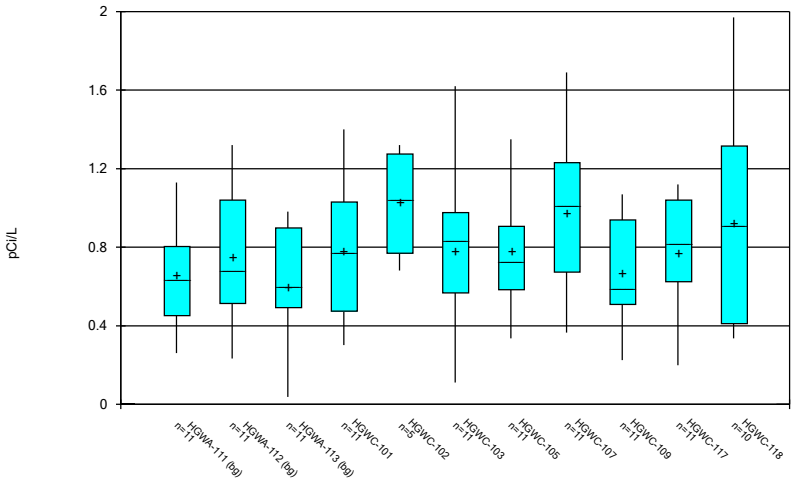
Box & Whiskers Plot



Constituent: Cobalt Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

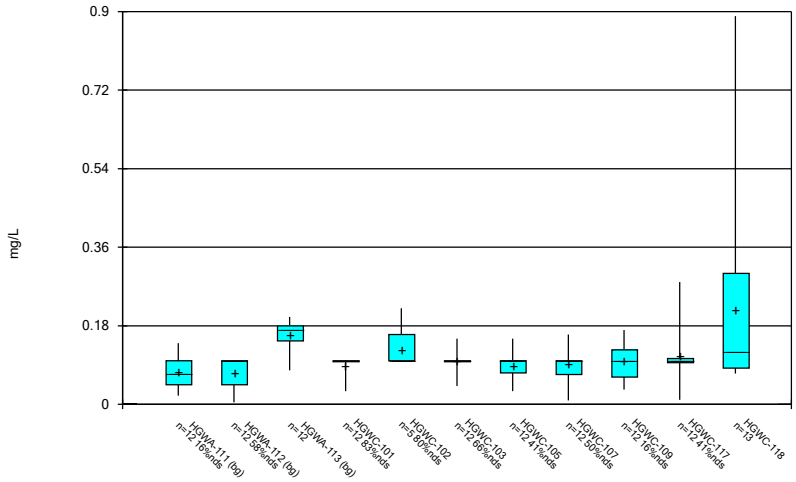
Box & Whiskers Plot



Constituent: Combined Radium 226 & 228 Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

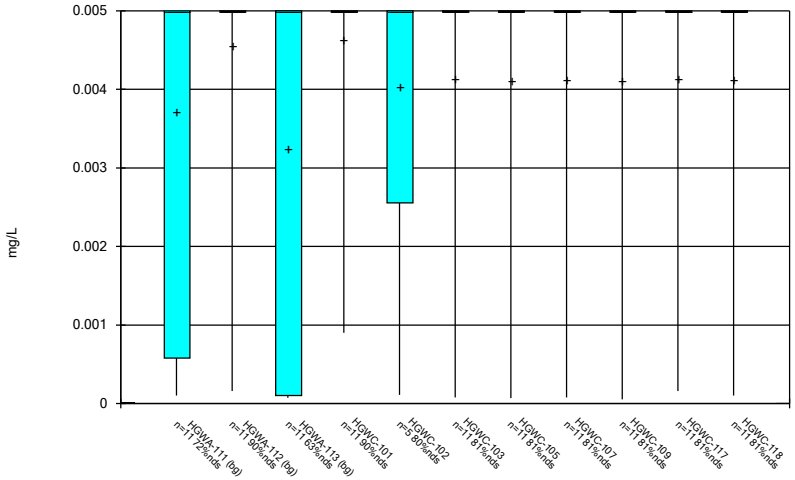
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Box & Whiskers Plot



Constituent: Fluoride Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

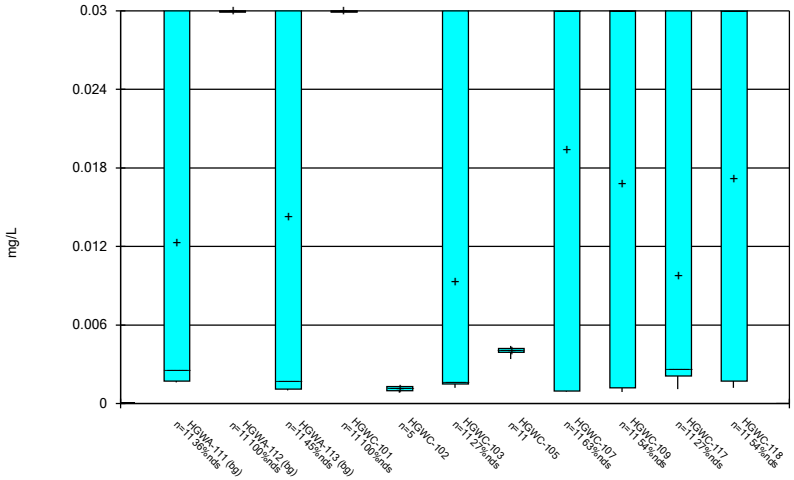
Box & Whiskers Plot



Constituent: Lead Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

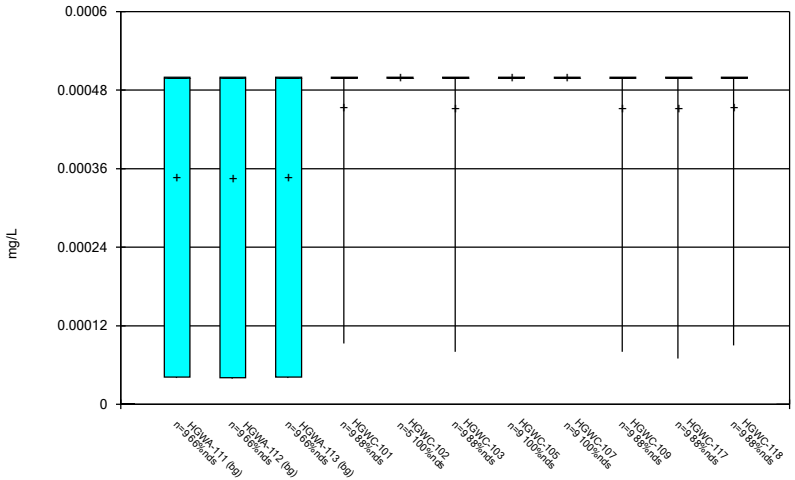
Box & Whiskers Plot



Constituent: Lithium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

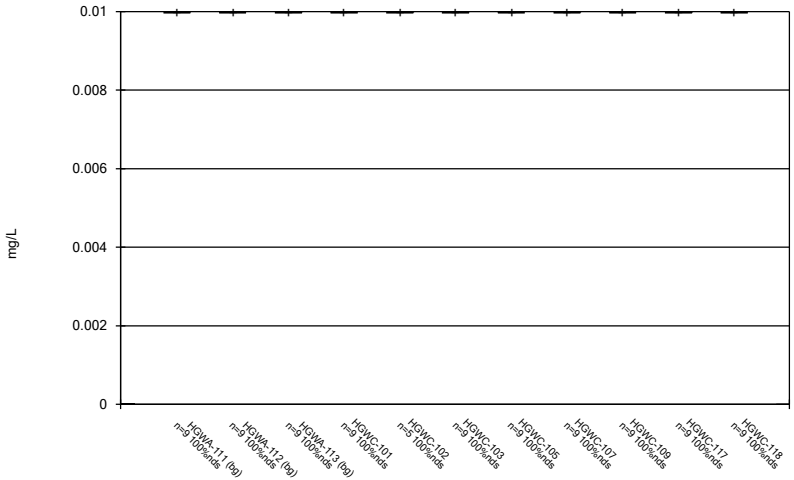
Box & Whiskers Plot



Constituent: Mercury Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

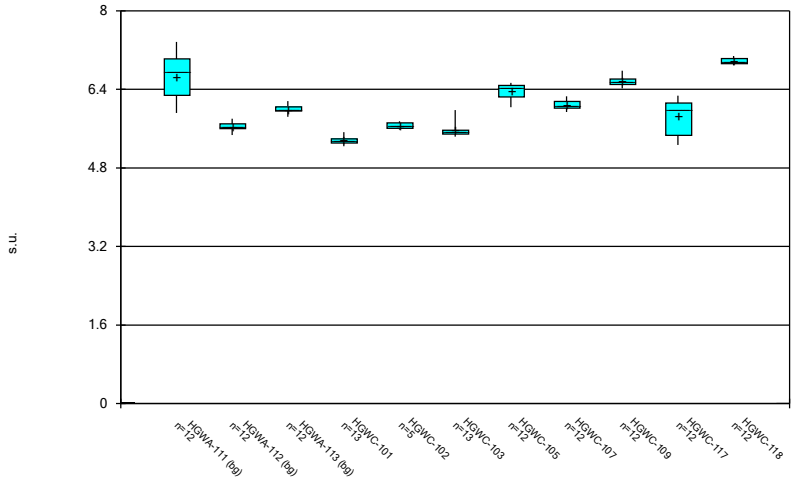
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Box & Whiskers Plot



Constituent: Molybdenum Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

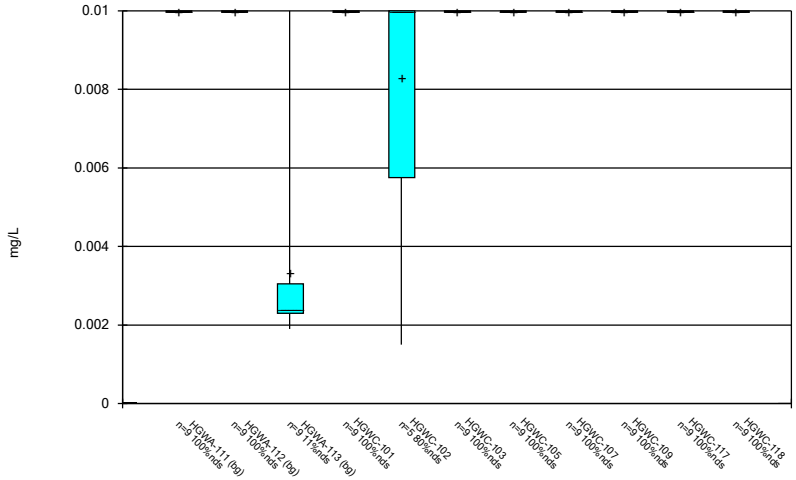
Box & Whiskers Plot



Constituent: pH Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

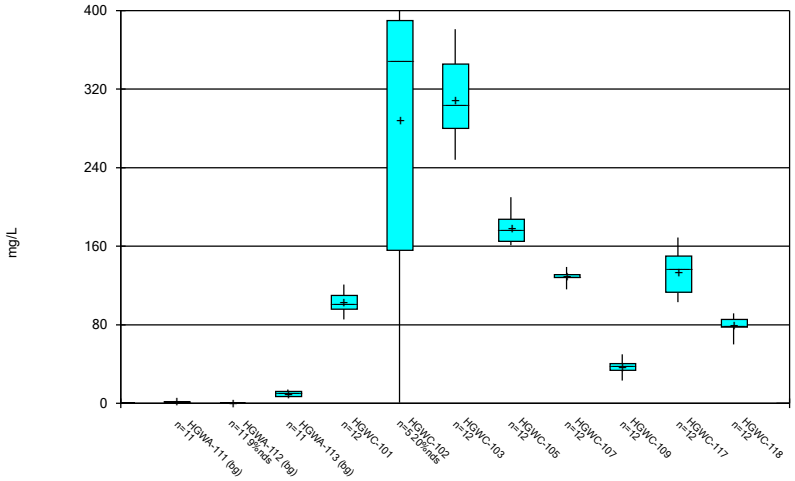
Box & Whiskers Plot



Constituent: Selenium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

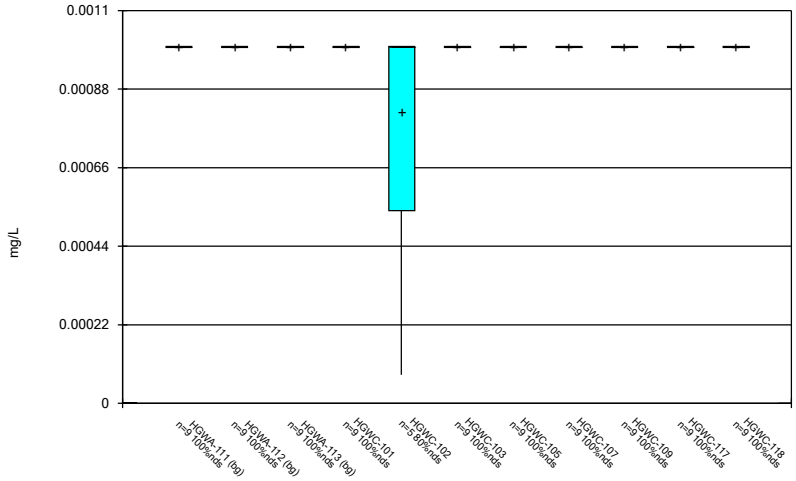
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

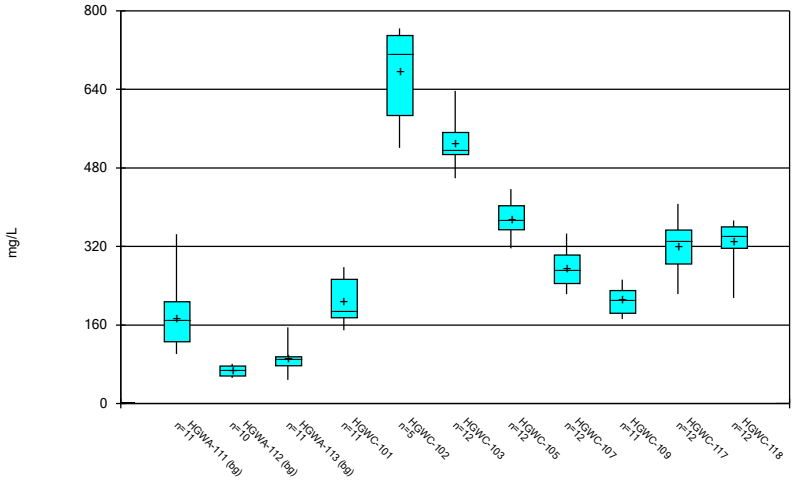
Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Box & Whiskers Plot



Constituent: Thallium Analysis Run 7/17/2020 12:27 PM View: Descriptive
Plant Hammond Client: Southern Company Data: Hammond AP-4

Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 7/17/2020 12:27 PM View: Descriptive

Plant Hammond Client: Southern Company Data: Hammond AP-4

FIGURE C.

Outlier Summary

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:34 PM

	HGWA-112 Total Dissolved Solids (mg/L)
1/25/2017	152 (o)

FIGURE D.

Appendix III Interwell Prediction Limits - Significant Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:37 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	HGWC-102	0.022	n/a	6/18/2020	2.9	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-103	0.022	n/a	3/25/2020	2.3	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-105	0.022	n/a	3/25/2020	1.4	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-107	0.022	n/a	3/25/2020	0.87	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-109	0.022	n/a	3/25/2020	0.36	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-117	0.022	n/a	3/24/2020	1	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	HGWC-118	0.022	n/a	3/25/2020	0.7	Yes	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Calcium (mg/L)	HGWC-102	61	n/a	6/18/2020	124	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-103	61	n/a	3/25/2020	86.8	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-105	61	n/a	3/25/2020	91.4	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-117	61	n/a	3/24/2020	68	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-118	61	n/a	3/25/2020	86.8	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-102	5.7	n/a	6/18/2020	6.9	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-117	5.7	n/a	3/24/2020	12.5	Yes	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-103	7.4	5.5	3/25/2020	5.49	Yes	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-101	14	n/a	3/25/2020	85.5	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-102	14	n/a	6/18/2020	349	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-103	14	n/a	3/25/2020	251	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-105	14	n/a	3/25/2020	161	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-107	14	n/a	3/25/2020	116	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-109	14	n/a	3/25/2020	27.9	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-117	14	n/a	3/24/2020	129	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Sulfate (mg/L)	HGWC-118	14	n/a	3/25/2020	78.4	Yes	33	n/a	n/a	3.03	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Total Dissolved Solids (mg/L)	HGWC-102	250	n/a	6/18/2020	652	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-103	250	n/a	3/25/2020	507	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-105	250	n/a	3/25/2020	417	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-107	250	n/a	3/25/2020	297	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-117	250	n/a	3/24/2020	331	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	HGWC-118	250	n/a	3/25/2020	347	Yes	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2

Appendix III Interwell Prediction Limits - All Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:37 PM

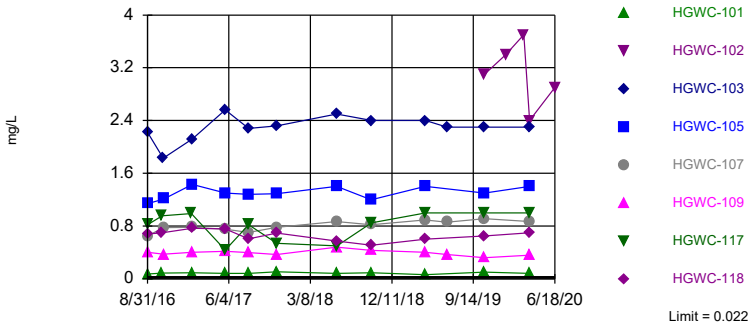
Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	HGWC-101	0.022	n/a	3/25/2020	0.08J	No	33	0.09613	0.02563	18.18	Kaplan-Meier	sqrt(x)	0.0009403	Param Inter 1 of 2
Boron (mg/L)	**HGWC-102**	**0.022**	**n/a**	**6/18/2020**	**2.9**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-103**	**0.022**	**n/a**	**3/25/2020**	**2.3**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-105**	**0.022**	**n/a**	**3/25/2020**	**1.4**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-107**	**0.022**	**n/a**	**3/25/2020**	**0.87**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-109**	**0.022**	**n/a**	**3/25/2020**	**0.36**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-117**	**0.022**	**n/a**	**3/24/2020**	**1**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Boron (mg/L)	**HGWC-118**	**0.022**	**n/a**	**3/25/2020**	**0.7**	**Yes**	**33**	**0.09613**	**0.02563**	**18.18**	**Kaplan-Meier**	**sqrt(x)**	**0.0009403**	**Param Inter 1 of 2**
Calcium (mg/L)	HGWC-101	61	n/a	3/25/2020	18.4	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-102**	**61**	**n/a**	**6/18/2020**	**124**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-103**	**61**	**n/a**	**3/25/2020**	**86.8**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-105**	**61**	**n/a**	**3/25/2020**	**91.4**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	HGWC-107	61	n/a	3/25/2020	59.5	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	HGWC-109	61	n/a	3/25/2020	42.6	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Calcium (mg/L)	**HGWC-117**	**61**	**n/a**	**3/24/2020**	**68**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Calcium (mg/L)	**HGWC-118**	**61**	**n/a**	**3/25/2020**	**86.8**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-101	5.7	n/a	3/25/2020	5.2	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-102**	**5.7**	**n/a**	**6/18/2020**	**6.9**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-103	5.7	n/a	3/25/2020	5.1	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-105	5.7	n/a	3/25/2020	3.2	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-107	5.7	n/a	3/25/2020	3	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	HGWC-109	5.7	n/a	3/25/2020	3.9	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Chloride (mg/L)	**HGWC-117**	**5.7**	**n/a**	**3/24/2020**	**12.5**	**Yes**	**33**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Chloride (mg/L)	HGWC-118	5.7	n/a	3/25/2020	3.6	No	33	n/a	n/a	0	n/a	n/a	0.001617	NP Inter (normality) 1 of 2
Fluoride (mg/L)	HGWC-101	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-102	0.2	n/a	6/18/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-103	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-105	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-107	0.2	n/a	3/25/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-109	0.2	n/a	3/25/2020	0.075J	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-117	0.2	n/a	3/24/2020	0.1ND	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
Fluoride (mg/L)	HGWC-118	0.2	n/a	3/25/2020	0.078J	No	36	0.08088	0.05726	25	Kaplan-Meier	No	0.0009403	Param Inter 1 of 2
pH (s.u.)	HGWC-101	7.4	5.5	3/25/2020	5.53	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-102	7.4	5.5	6/18/2020	5.67	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	**HGWC-103**	**7.4**	**5.5**	**3/25/2020**	**5.49**	**Yes**	**36**	**n/a**	**n/a**	**0**	**n/a**	**n/a**	**0.002737**	**NP Inter (normality) 1 of 2**
pH (s.u.)	HGWC-105	7.4	5.5	3/25/2020	6.47	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-107	7.4	5.5	3/25/2020	6.13	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-109	7.4	5.5	3/25/2020	6.56	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-117	7.4	5.5	3/24/2020	5.99	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
pH (s.u.)	HGWC-118	7.4	5.5	3/25/2020	6.89	No	36	n/a	n/a	0	n/a	n/a	0.002737	NP Inter (normality) 1 of 2
Sulfate (mg/L)	**HGWC-101**	**14**	**n/a**	**3/25/2020**	**85.5**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-102**	**14**	**n/a**	**6/18/2020**	**349**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-103**	**14**	**n/a**	**3/25/2020**	**251**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-105**	**14**	**n/a**	**3/25/2020**	**161**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-107**	**14**	**n/a**	**3/25/2020**	**116**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-109**	**14**	**n/a**	**3/25/2020**	**27.9**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-117**	**14**	**n/a**	**3/24/2020**	**129**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Sulfate (mg/L)	**HGWC-118**	**14**	**n/a**	**3/25/2020**	**78.4**	**Yes**	**33**	**n/a**	**n/a**	**3.03**	**n/a**	**n/a**	**0.001617**	**NP Inter (normality) 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-101	250	n/a	3/25/2020	187	No	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-102**	**250**	**n/a**	**6/18/2020**	**652**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-103**	**250**	**n/a**	**3/25/2020**	**507**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-105**	**250**	**n/a**	**3/25/2020**	**417**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-107**	**250**	**n/a**	**3/25/2020**	**297**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	HGWC-109	250	n/a	3/25/2020	213	No	32	4.71	0.7713	0	None	x^(1/3)	0.0009403	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	**HGWC-117**	**250**	**n/a**	**3/24/2020**	**331**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**
Total Dissolved Solids (mg/L)	**HGWC-118**	**250**	**n/a**	**3/25/2020**	**347**	**Yes**	**32**	**4.71**	**0.7713**	**0**	**None**	**x^(1/3)**	**0.0009403**	**Param Inter 1 of 2**

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Exceeds Limit: HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Prediction Limit

Interwell Parametric



Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.09613, Std. Dev.=0.02563, n=33, 18.18% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.92, critical = 0.906. Kappa = 2.05 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009403. Comparing 8 points to limit.

Constituent: Boron Analysis Run 7/16/2020 2:35 PM View: Appendix III

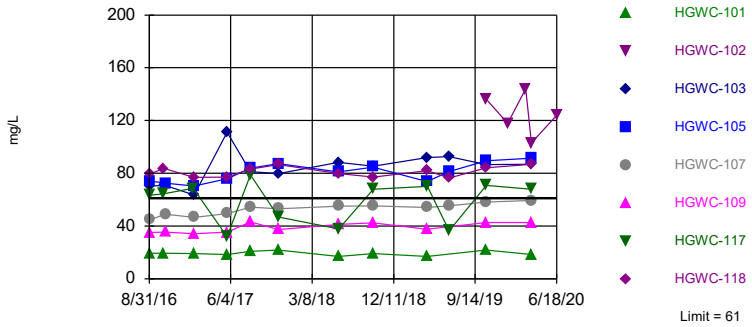
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Exceeds Limit: HGWC-102, HGWC-103, HGWC-105, HGWC-117, HGWC-118

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 8 points to limit.

Constituent: Calcium Analysis Run 7/16/2020 2:35 PM View: Appendix III

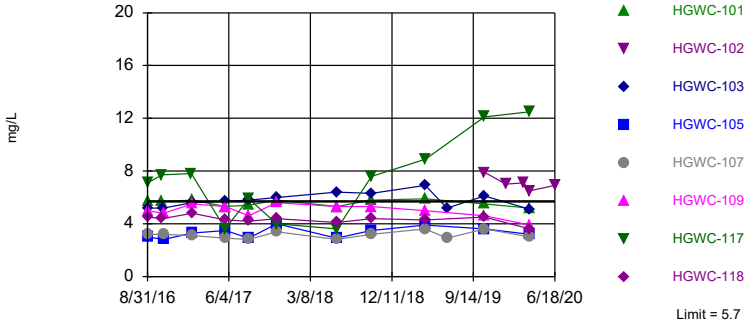
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Exceeds Limit: HGWC-102, HGWC-117

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 8 points to limit.

Constituent: Chloride Analysis Run 7/16/2020 2:35 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

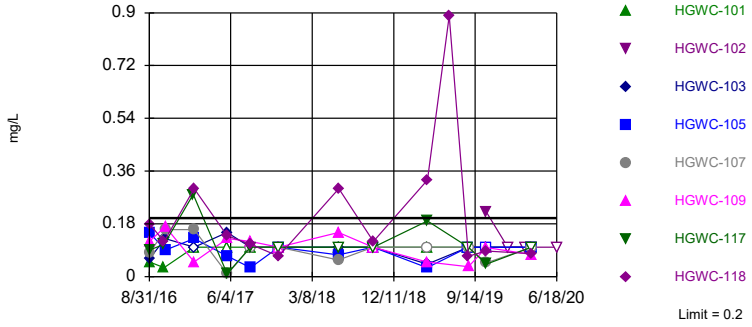
Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Interwell Parametric



Background Data Summary (after Kaplan-Meier Adjustment): Mean=0.08088, Std. Dev.=0.05726, n=36, 25% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9469, critical = 0.912. Kappa = 2.031 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009403. Comparing 8 points to limit.

Constituent: Fluoride Analysis Run 7/16/2020 2:35 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

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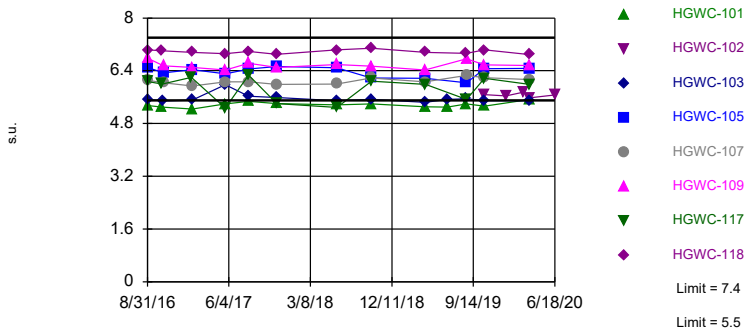
Exceeds Limits: HGWC-103

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 36 background values. Annual per-constituent alpha = 0.04335. Individual comparison alpha = 0.002737 (1 of 2). Comparing 8 points to limit.

Constituent: pH Analysis Run 7/16/2020 2:35 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

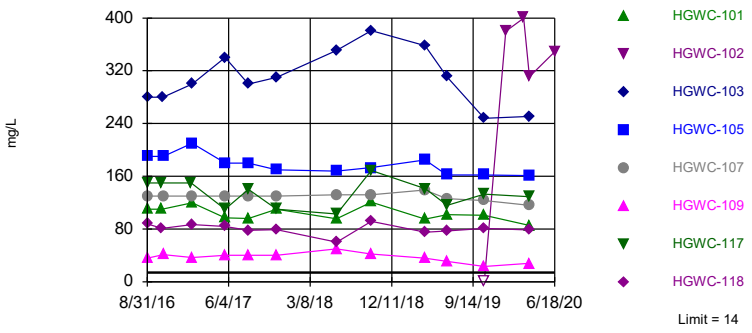
Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Exceeds Limit: HGWC-101, HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-109, HGWC-117, HGWC-118

Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 33 background values. 3.03% NDs. Annual per-constituent alpha = 0.02556. Individual comparison alpha = 0.001617 (1 of 2). Comparing 8 points to limit.

Constituent: Sulfate Analysis Run 7/16/2020 2:35 PM View: Appendix III

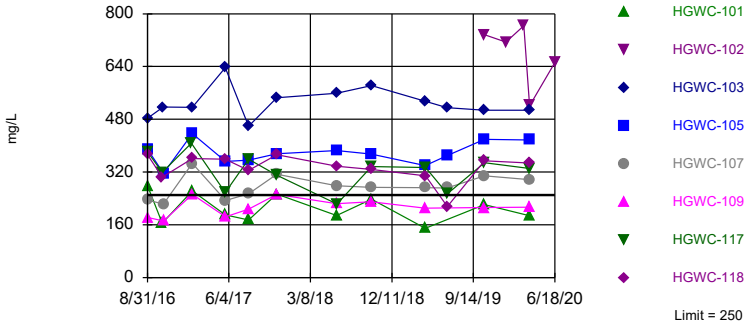
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Exceeds Limit: HGWC-102, HGWC-103, HGWC-105, HGWC-107, HGWC-117, HGWC-118

Prediction Limit

Interwell Parametric



Background Data Summary (based on cube root transformation): Mean=4.71, Std. Dev.=0.7713, n=32. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9206, critical = 0.904. Kappa = 2.056 (c=7, w=8, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.0009403. Comparing 8 points to limit.

Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:35 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-113 (bg)	HGWA-112 (bg)	HGWC-107	HGWC-105	HGWC-118	HGWC-109	HGWC-117	HGWC-101
8/30/2016	<0.04	<0.04	<0.04						
8/31/2016				0.651	1.14	0.681	0.402	0.821	0.0724 (J)
10/20/2016	0.016 (J)					0.697		0.956	0.0877 (J)
10/24/2016		0.0226 (J)	0.0367 (J)						
10/25/2016				0.778	1.21		0.372		
1/25/2017	0.0095 (J)	0.009 (J)	0.0075 (J)						
1/27/2017								0.99	
1/31/2017				0.782	1.43	0.768	0.404		0.0928
5/23/2017		0.0082 (J)	0.0073 (J)			0.754		0.438	0.0795
5/24/2017	0.0094 (J)			0.753	1.3		0.415		
8/10/2017	<0.04	0.0061 (J)	<0.04	0.702	1.28	0.608	0.397	0.821	0.0814
11/13/2017	0.0103 (J)		0.0089 (J)						
11/14/2017		0.012 (J)		0.78	1.29	0.691	0.366	0.536	0.108
6/4/2018	0.0065 (J)		0.007 (J)						
6/5/2018		0.0085 (J)							
6/6/2018				0.87	1.4		0.48		0.081
6/7/2018						0.57		0.5	
10/1/2018	0.0054 (J)	0.0042 (J)	<0.04						
10/2/2018				0.82	1.2		0.43		
10/3/2018						0.51		0.85	0.092
4/1/2019	0.0076 (J)								
4/2/2019		0.0059 (J)	0.0043 (J)						
4/3/2019				0.89			0.4		
4/4/2019					1.4 (X)				0.06 (X)
4/5/2019						0.6 (X)		1 (X)	
6/17/2019				0.86			0.37		
10/21/2019	0.0097 (J)								
10/22/2019		0.01 (J)	0.016 (J)	0.91		0.65	0.32	1	
10/23/2019					1.3				0.1
1/3/2020									
3/4/2020									
3/24/2020	0.011 (J)		0.012 (J)					1	
3/25/2020				0.87	1.4	0.7	0.36		0.08 (J)
4/9/2020		0.012 (J)							
6/18/2020									

Prediction Limit

Constituent: Boron (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-103	HGWC-102
8/30/2016		
8/31/2016	2.22	
10/20/2016		
10/24/2016	1.83	
10/25/2016		
1/25/2017		
1/27/2017		
1/31/2017	2.12	
5/23/2017	2.56	
5/24/2017		
8/10/2017	2.28	
11/13/2017		
11/14/2017	2.32	
6/4/2018		
6/5/2018		
6/6/2018	2.5	
6/7/2018		
10/1/2018		
10/2/2018		
10/3/2018	2.4	
4/1/2019		
4/2/2019		
4/3/2019		
4/4/2019	2.4	
4/5/2019		
6/17/2019	2.3	
10/21/2019		
10/22/2019		
10/23/2019	2.3	3.1
1/3/2020		3.4
3/4/2020		3.7
3/24/2020		2.4
3/25/2020	2.3	
4/9/2020		
6/18/2020		2.9

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-117	HGWC-109	HGWC-107	HGWC-105	HGWC-103	HGWC-118
8/30/2016	40.3	6.69	6.72						
8/31/2016				63.4	35.1	44.7	74.2	70.4	79.3
10/20/2016	38.7			64.4					83.7
10/24/2016		6.25	6.4					70.9	
10/25/2016					35.4	49	72.5		
1/25/2017	44.6	6.58	6.87						
1/27/2017				68.6					
1/31/2017					34.2	46.6	70.3	63.6	76.8
5/23/2017		6.4	7.13	32				111	77.2
5/24/2017	34.8				35.3	49.5	75.9		
8/10/2017	48.6	6.54	6.71	78.9	43.1	54.2	84	81.2	83.1
11/13/2017	17.1	6.26							
11/14/2017			7.4	46.9	37.4	53.2	87.2	79.7	86.7
6/4/2018	30.1	7.4							
6/5/2018			7.4						
6/6/2018					41.1	55	81	88.3	
6/7/2018				37.7					79.7
10/1/2018	14.2 (J)	5.8	6.2						
10/2/2018					42.5	55.4	84.7		
10/3/2018				68				85.3	77.1
4/1/2019	58.4								
4/2/2019		6.7	7.4						
4/3/2019					37.5	54			
4/4/2019							73.8	91.9	
4/5/2019				70					82
6/17/2019						55.3	81.2	92.6	
6/18/2019				36.3					76.5
10/21/2019	51								
10/22/2019		6.3	7.2	70.9	42.6	58.1			84.2
10/23/2019							89.4	86.5	
1/3/2020									
3/4/2020									
3/24/2020	61.2	7		68					
3/25/2020					42.6	59.5	91.4	86.8	86.8
4/9/2020			8.3						
6/18/2020									

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-101	HGWC-102
8/30/2016		
8/31/2016	19.4	
10/20/2016	19.3	
10/24/2016		
10/25/2016		
1/25/2017		
1/27/2017		
1/31/2017	19.1	
5/23/2017	18.3	
5/24/2017		
8/10/2017	20.9	
11/13/2017		
11/14/2017	21.7	
6/4/2018		
6/5/2018		
6/6/2018	17	
6/7/2018		
10/1/2018		
10/2/2018		
10/3/2018	19.1 (J)	
4/1/2019		
4/2/2019		
4/3/2019		
4/4/2019	16.9	
4/5/2019		
6/17/2019		
6/18/2019		
10/21/2019		
10/22/2019		
10/23/2019	21.9	136
1/3/2020		118
3/4/2020		144
3/24/2020		103
3/25/2020	18.4	
4/9/2020		
6/18/2020		124

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-113 (bg)	HGWA-112 (bg)	HGWC-109	HGWC-107	HGWC-117	HGWC-105	HGWC-103	HGWC-101
8/30/2016	3.3	2	5.4						
8/31/2016				5	3.2	7.1	3	5.2	5.7
10/20/2016	3.2					7.7			5.7
10/24/2016		1.9	5.2					5.2	
10/25/2016				4.8	3.2		2.8		
1/25/2017	2.7	1.9	5						
1/27/2017						7.8			
1/31/2017				5.5	3.1		3.3	5.6	5.8
5/23/2017		1.6	5.1			3.6		5.7	5.3
5/24/2017	3			5.3	2.9		3.5		
8/10/2017	2.8	1.7	5.2	4.6	2.8	5.9	2.9	5.8	5.4
11/13/2017	2.5		5.5						
11/14/2017		2		5.6	3.4	4	4	6	5.8
6/4/2018	2.6		5.3						
6/5/2018		1.7							
6/6/2018				5.3	2.8		2.9	6.4	5.3
6/7/2018						3.6			
10/1/2018	2.2	1.6	5.6						
10/2/2018				5.3	3.2		3.5		
10/3/2018						7.6		6.3	5.8
4/1/2019	4								
4/2/2019		1.8	5.7						
4/3/2019				5	3.6				
4/4/2019							3.9	6.9	5.9
4/5/2019						8.9			
6/17/2019					2.9			5.2	
10/21/2019	3.9								
10/22/2019		1.9	5.5	4.6	3.6	12.1			
10/23/2019							3.6	6.1	5.5
1/3/2020									
3/4/2020									
3/24/2020	3.6		5.2			12.5			
3/25/2020				3.9	3		3.2	5.1	5.2
4/9/2020		1.4							
6/18/2020									

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-118	HGWC-102
8/30/2016		
8/31/2016	4.5	
10/20/2016	4.4	
10/24/2016		
10/25/2016		
1/25/2017		
1/27/2017		
1/31/2017	4.8	
5/23/2017	4.3	
5/24/2017		
8/10/2017	4.2	
11/13/2017		
11/14/2017	4.4	
6/4/2018		
6/5/2018		
6/6/2018		
6/7/2018	4.1	
10/1/2018		
10/2/2018		
10/3/2018	4.4	
4/1/2019		
4/2/2019		
4/3/2019		
4/4/2019		
4/5/2019	4.3	
6/17/2019		
10/21/2019		
10/22/2019	4.5	
10/23/2019		7.9
1/3/2020		7
3/4/2020		7.1
3/24/2020		6.5
3/25/2020	3.6	
4/9/2020		
6/18/2020		6.9

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-113 (bg)	HGWA-112 (bg)	HGWC-118	HGWC-103	HGWC-105	HGWC-107	HGWC-101	HGWC-117
8/30/2016	0.07 (J)	0.2 (J)	0.04 (J)						
8/31/2016				0.18 (J)	0.06 (J)	0.15 (J)	0.08 (J)	0.05 (J)	0.09 (J)
10/20/2016	0.07 (J)			0.12 (J)				0.03 (J)	0.11 (J)
10/24/2016		0.16 (J)	0.05 (J)		0.13 (J)				
10/25/2016						0.09 (J)	0.16 (J)		
1/25/2017	0.14 (J)	0.15 (J)	<0.1						
1/27/2017									0.28 (J)
1/31/2017				0.3	<0.1	0.13 (J)	0.16 (J)	<0.1	
5/23/2017		0.18 (J)	0.004 (J)	0.14 (J)	0.15 (J)			<0.1	0.01 (J)
5/24/2017	0.02 (J)					0.07 (J)	0.009 (J)		
8/10/2017	0.06 (J)	0.19 (J)	0.03 (J)	0.11 (J)	<0.1	0.03 (J)	<0.1	<0.1	0.1 (J)
11/13/2017	<0.1		<0.1						
11/14/2017		0.16 (J)		0.07 (J)	<0.1	<0.1	<0.1	<0.1	<0.1
6/4/2018	0.032 (J)		<0.1						
6/5/2018		0.18 (J)							
6/6/2018					<0.1	0.074 (J)	0.057 (J)	<0.1	
6/7/2018				0.3					<0.1
10/1/2018	<0.1	0.078 (J)	<0.1						
10/2/2018						<0.1	<0.1		
10/3/2018				0.12 (J)	<0.1			<0.1	<0.1
4/1/2019	0.042 (J)								
4/2/2019		0.18 (J)	<0.1						
4/3/2019							<0.1		
4/4/2019					0.042 (J)	0.03 (J)		<0.1	
4/5/2019				0.33					0.19 (J)
6/18/2019				0.89					
8/21/2019	0.048 (J)	0.11 (J)	<0.1						
8/22/2019				0.07 (J)	<0.1	<0.1		<0.1	<0.1
8/23/2019							<0.1		
10/21/2019	0.12 (J)								
10/22/2019		0.18 (J)	0.05 (J)	0.087 (J)			0.047 (J)		0.042 (J)
10/23/2019					<0.1	<0.1		<0.1	
1/3/2020									
3/4/2020									
3/24/2020	0.076 (J)		<0.1						<0.1
3/25/2020				0.078 (J)	<0.1	<0.1	<0.1	<0.1	
4/9/2020		0.14 (J)							
6/18/2020									

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-109	HGWC-102
8/30/2016		
8/31/2016	0.12 (J)	
10/20/2016		
10/24/2016		
10/25/2016	0.17 (J)	
1/25/2017		
1/27/2017		
1/31/2017	0.05 (J)	
5/23/2017		
5/24/2017	0.13 (J)	
8/10/2017	0.12 (J)	
11/13/2017		
11/14/2017	<0.1	
6/4/2018		
6/5/2018		
6/6/2018	0.15 (J)	
6/7/2018		
10/1/2018		
10/2/2018	<0.1	
10/3/2018		
4/1/2019		
4/2/2019		
4/3/2019	0.05 (J)	
4/4/2019		
4/5/2019		
6/18/2019		
8/21/2019		
8/22/2019		
8/23/2019	0.034 (J)	
10/21/2019		
10/22/2019	0.099 (J)	
10/23/2019		0.22 (J)
1/3/2020		<0.1
3/4/2020		<0.1
3/24/2020		<0.1
3/25/2020	0.075 (J)	
4/9/2020		
6/18/2020		<0.1

Prediction Limit

Constituent: pH (s.u.) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-113 (bg)	HGWA-112 (bg)	HGWC-107	HGWC-105	HGWC-103	HGWC-117	HGWC-101	HGWC-118
8/30/2016	6.89	5.99	5.77						
8/31/2016				6.11	6.5	5.54	6.07	5.35	7.03
10/20/2016	6.73						6	5.3	7.01
10/24/2016		5.84	5.61			5.48			
10/25/2016				6.04	6.34				
1/25/2017	7.02	6.04	5.68						
1/27/2017							6.2		
1/31/2017				5.94	6.43	5.51		5.24	6.96
5/23/2017		6.01	5.7			5.98	5.27	5.39	6.92
5/24/2017	6.44			6.06	6.31				
8/10/2017	6.79	5.98	5.59	6.06	6.45	5.63	6.27	5.47	6.99
11/13/2017	5.94		5.56						
11/14/2017		6.16		5.99	6.53	5.59	5.4	5.4	6.9
6/4/2018	6.12		5.62						
6/5/2018		5.86							
6/6/2018				6	6.49	5.49		5.37	
6/7/2018							5.29		7.03
10/1/2018	5.92	5.94	5.62						
10/2/2018				6.18	6.18				
10/3/2018						5.53	6.08	5.39	7.08
4/1/2019	7.09								
4/2/2019		6	5.47						
4/3/2019				6.06					
4/4/2019					6.17	5.44		5.31	
4/5/2019							5.99		6.96
6/17/2019						5.53			
6/18/2019								5.3	
8/21/2019	6.6	6.05	5.8						
8/22/2019					6.04	5.55	5.53	5.39	6.93
8/23/2019				6.26					
10/21/2019	7.02								
10/22/2019		5.98	5.7	6.19			6.17		7.03
10/23/2019					6.46	5.49		5.33	
1/3/2020									
3/4/2020									
3/24/2020	7.37		5.64				5.99		
3/25/2020				6.13	6.47	5.49		5.53	6.89
4/9/2020		6.08							
6/18/2020									

Prediction Limit

Constituent: pH (s.u.) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-109	HGWC-102
8/30/2016		
8/31/2016	6.78	
10/20/2016		
10/24/2016		
10/25/2016	6.55	
1/25/2017		
1/27/2017		
1/31/2017	6.5	
5/23/2017		
5/24/2017	6.42	
8/10/2017	6.63	
11/13/2017		
11/14/2017	6.5	
6/4/2018		
6/5/2018		
6/6/2018	6.59	
6/7/2018		
10/1/2018		
10/2/2018	6.54	
10/3/2018		
4/1/2019		
4/2/2019		
4/3/2019	6.42	
4/4/2019		
4/5/2019		
6/17/2019		
6/18/2019		
8/21/2019		
8/22/2019		
8/23/2019	6.76	
10/21/2019		
10/22/2019	6.58	
10/23/2019		5.68
1/3/2020		5.64
3/4/2020		5.75
3/24/2020		5.58
3/25/2020	6.56	
4/9/2020		
6/18/2020		5.67

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-112 (bg)	HGWA-113 (bg)	HGWC-117	HGWC-109	HGWC-107	HGWC-105	HGWC-103	HGWC-118
8/30/2016	1.6	0.63 (J)	14						
8/31/2016				150	36	130	190	280	88
10/20/2016	1.6			150					81
10/24/2016		0.62 (J)	11					280	
10/25/2016					41	130	190		
1/25/2017	1.6	0.62 (J)	12						
1/27/2017				150					
1/31/2017					37	130	210	300	87
5/23/2017		0.55 (J)	12	110				340	84
5/24/2017	1.4				40	130	180		
8/10/2017	1.6	0.66 (J)	11	140	40	130	180	300	78
11/13/2017	1.3	0.61 (J)							
11/14/2017			11	110	40	130	170	310	79
6/4/2018	1.4	0.73 (J)							
6/5/2018			9.9						
6/6/2018					49.7	132	168	351	
6/7/2018				103					60.1
10/1/2018	1	0.52 (J)	6.7						
10/2/2018					42.3	132	173		
10/3/2018				169				381	91.5
4/1/2019	1.7								
4/2/2019		0.78 (J)	8.7						
4/3/2019					36	139			
4/4/2019							185	358	
4/5/2019				141					75.1
6/17/2019					30.9	126	162	311	
6/18/2019				116					77
10/21/2019	1.8								
10/22/2019		0.6 (J)	6.8	133	23.2	123			80.9
10/23/2019							162	248	
1/3/2020									
3/4/2020									
3/24/2020	1.6	<1		129					
3/25/2020					27.9	116	161	251	78.4
4/9/2020			6.6						
6/18/2020									

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-101	HGWC-102
8/30/2016		
8/31/2016	110	
10/20/2016	110	
10/24/2016		
10/25/2016		
1/25/2017		
1/27/2017		
1/31/2017	120	
5/23/2017	97	
5/24/2017		
8/10/2017	96	
11/13/2017		
11/14/2017	110	
6/4/2018		
6/5/2018		
6/6/2018	95.5	
6/7/2018		
10/1/2018		
10/2/2018		
10/3/2018	121	
4/1/2019		
4/2/2019		
4/3/2019		
4/4/2019	95.1	
4/5/2019		
6/17/2019		
6/18/2019	102	
10/21/2019		
10/22/2019		
10/23/2019	101	<1
1/3/2020		380
3/4/2020		400
3/24/2020		311
3/25/2020	85.5	
4/9/2020		
6/18/2020		349

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWA-111 (bg)	HGWA-113 (bg)	HGWA-112 (bg)	HGWC-103	HGWC-105	HGWC-107	HGWC-109	HGWC-117	HGWC-101
8/30/2016	172	77	76						
8/31/2016				483	389	235	182	381	278
10/20/2016	108							319	165
10/24/2016		111	65	517					
10/25/2016					316	223	172		
1/25/2017	345	155	152 (o)						
1/27/2017								407	
1/31/2017				516	437	346	252		263
5/23/2017		74	52	637				258	190
5/24/2017	126				352	234	184		
8/10/2017	174	94	60	459	356	254	208	359	175
11/13/2017	158		75						
11/14/2017		89		545	375	313	252	310	253
6/4/2018	131		70						
6/5/2018		92							
6/6/2018				559	385	278	224		188
6/7/2018								223	
10/1/2018	101	91	76						
10/2/2018					374	274	230		
10/3/2018				582				337	238
4/1/2019	213								
4/2/2019		94	69						
4/3/2019						273	210		
4/4/2019				535	340				149
4/5/2019								334	
6/17/2019				515	370	272			
6/18/2019								254	
10/21/2019	187								
10/22/2019		95	81			308	212	348	
10/23/2019				507	419				221
1/3/2020									
3/4/2020									
3/24/2020	207		52					331	
3/25/2020				507	417	297	213		187
4/9/2020		48							
6/18/2020									

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 7/16/2020 2:37 PM View: Appendix III

Plant Hammond Client: Southern Company Data: Hammond AP-4

	HGWC-118	HGWC-102
8/30/2016		
8/31/2016	373	
10/20/2016	305	
10/24/2016		
10/25/2016		
1/25/2017		
1/27/2017		
1/31/2017	361	
5/23/2017	359	
5/24/2017		
8/10/2017	325	
11/13/2017		
11/14/2017	373	
6/4/2018		
6/5/2018		
6/6/2018		
6/7/2018	338	
10/1/2018		
10/2/2018		
10/3/2018	328	
4/1/2019		
4/2/2019		
4/3/2019		
4/4/2019		
4/5/2019	308	
6/17/2019		
6/18/2019	215	
10/21/2019		
10/22/2019	354	
10/23/2019		736
1/3/2020		714
3/4/2020		764
3/24/2020		521
3/25/2020	347	
4/9/2020		
6/18/2020		652

FIGURE E.

Appendix III Trend Tests - Prediction Limit Exceedances - Significant Results

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:44 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	**HGWC-107**	**0.05006**	**43**	**38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.874**	**-43**	**-34**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	**HGWC-105**	**-8.601**	**-45**	**-38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**

Appendix III Trend Tests - Prediction Limit Exceedances - All Results

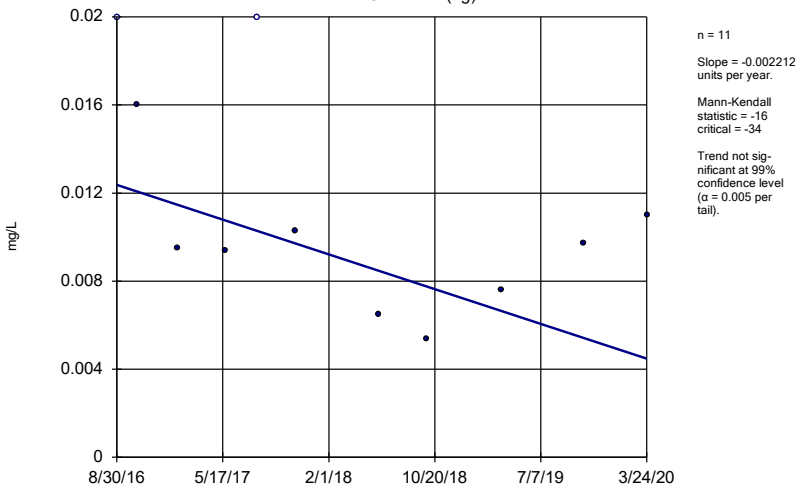
Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:44 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	HGWA-111 (bg)	-0.002212	-16	-34	No	11	18.18	n/a	n/a	0.01	NP
Boron (mg/L)	HGWA-112 (bg)	-0.001613	-14	-34	No	11	27.27	n/a	n/a	0.01	NP
Boron (mg/L)	HGWA-113 (bg)	-0.002853	-16	-34	No	11	9.091	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-102	-0.6991	-2	-12	No	5	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-103	0.02703	14	38	No	12	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-105	0.04572	17	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	**HGWC-107**	**0.05006**	**43**	**38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Boron (mg/L)	HGWC-109	-0.01236	-20	-38	No	12	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-117	0.02526	19	34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-118	-0.0216	-13	-34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-111 (bg)	4.806	11	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-112 (bg)	0.0167	5	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-113 (bg)	0.3746	24	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-102	-42.96	-2	-12	No	5	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-103	5.162	30	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-105	4.827	36	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-117	1.467	9	38	No	12	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-118	0.9722	12	38	No	12	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-111 (bg)	-0.07374	-1	-34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-112 (bg)	0.1134	19	34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-113 (bg)	-0.08753	-19	-34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-102	-1.861	-6	-12	No	5	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-117	1.481	20	34	No	11	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-111 (bg)	0.0729	7	38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-112 (bg)	-0.006326	-2	-38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-113 (bg)	0.01899	13	38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWC-103	-0.01538	-16	-43	No	13	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWA-111 (bg)	0	2	34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWA-112 (bg)	-0.0125	-12	-34	No	11	9.091	n/a	n/a	0.01	NP
Sulfate (mg/L)	**HGWA-113 (bg)**	**-1.874**	**-43**	**-34**	**Yes**	**11**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	HGWC-101	-4.024	-25	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-102	140.5	2	12	No	5	20	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-103	7.785	10	38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	**HGWC-105**	**-8.601**	**-45**	**-38**	**Yes**	**12**	**0**	**n/a**	**n/a**	**0.01**	**NP**
Sulfate (mg/L)	HGWC-107	0	-10	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-109	-2.35	-20	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-117	-5.533	-16	-38	No	12	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-118	-2.25	-22	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-111 (bg)	9.812	9	34	No	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-112 (bg)	1.134	3	30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-113 (bg)	-2.626	-4	-34	No	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-102	-131.9	-4	-12	No	5	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-103	-1.807	-5	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-105	12.77	10	38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-107	17.93	18	38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-117	-10.59	-14	-38	No	12	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-118	-10.05	-17	-38	No	12	0	n/a	n/a	0.01	NP

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-111 (bg)



n = 11

Slope = -0.002212 units per year.

Mann-Kendall statistic = -16
critical = -34

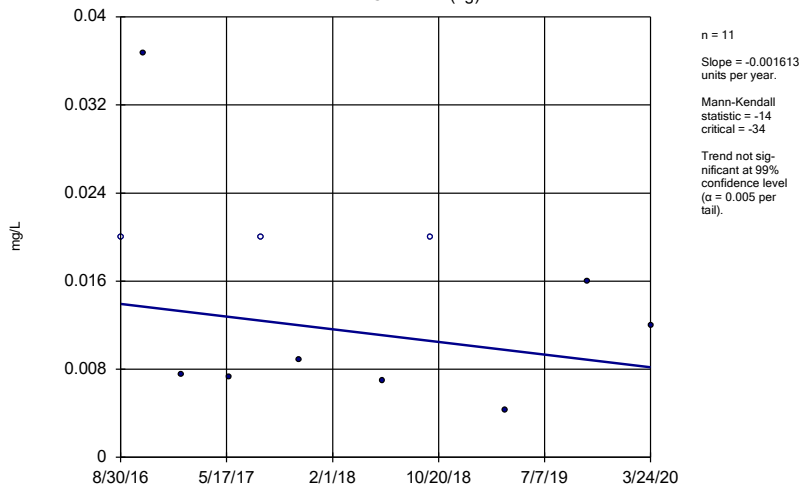
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-112 (bg)



n = 11

Slope = -0.001613 units per year.

Mann-Kendall statistic = -14
critical = -34

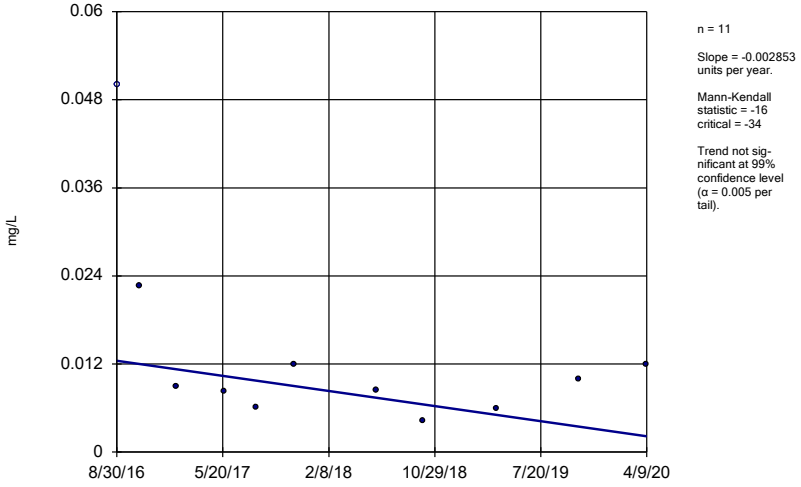
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = -0.002853 units per year.

Mann-Kendall statistic = -16
critical = -34

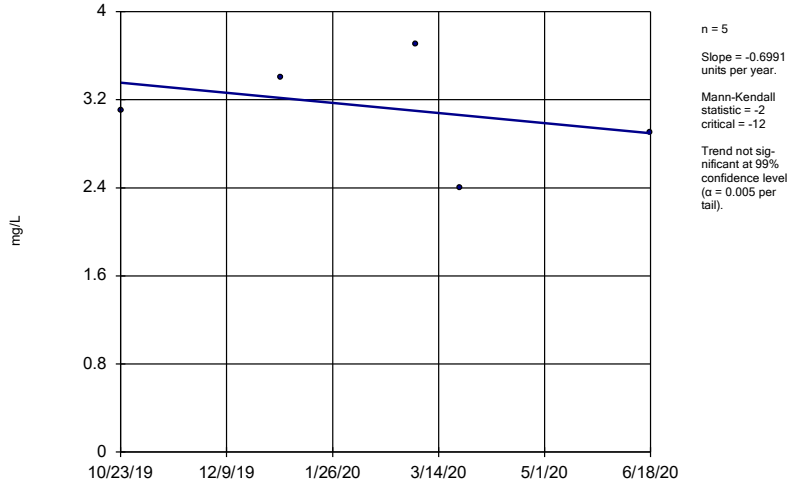
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-102



n = 5

Slope = -0.6991 units per year.

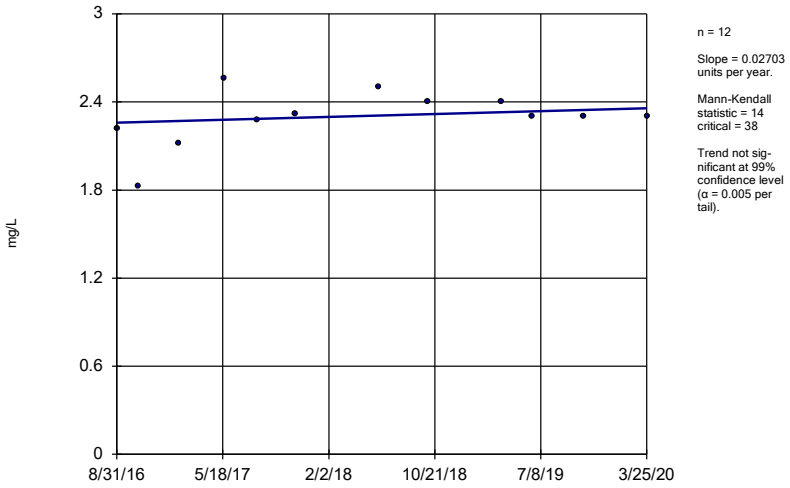
Mann-Kendall statistic = -2
critical = -12

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-103



n = 12

Slope = 0.02703 units per year.

Mann-Kendall statistic = 14
critical = 38

Trend not significant at 99% confidence level (α = 0.005 per tail).

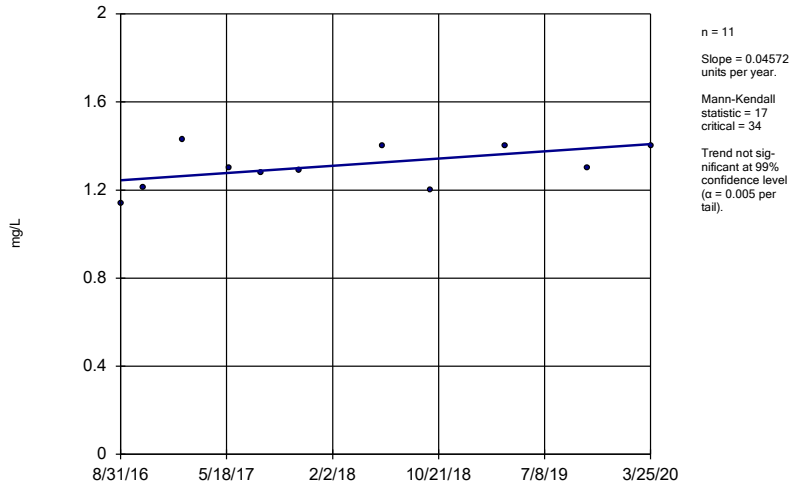
Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-105



n = 11

Slope = 0.04572 units per year.

Mann-Kendall statistic = 17
critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

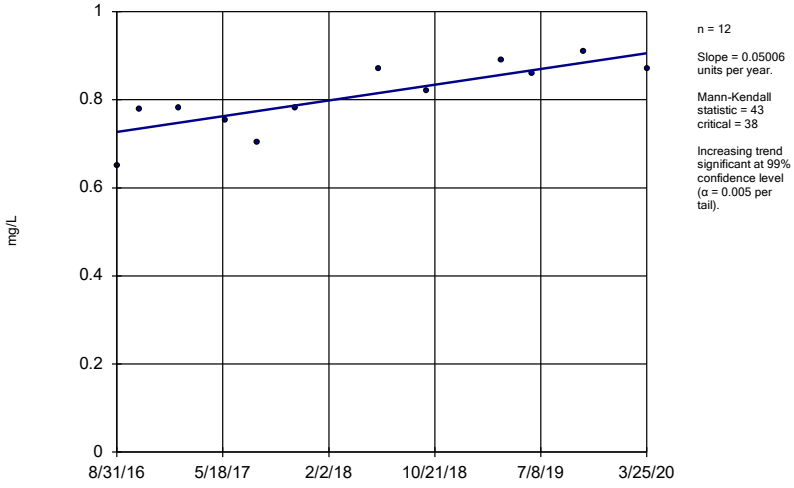
Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-107



n = 12

Slope = 0.05006 units per year.

Mann-Kendall statistic = 43
critical = 38

Increasing trend significant at 99% confidence level (α = 0.005 per tail).

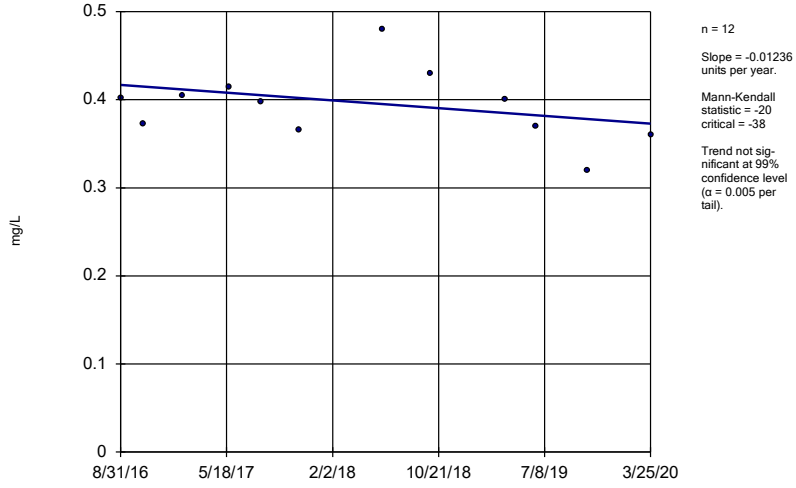
Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-109



n = 12

Slope = -0.01236 units per year.

Mann-Kendall statistic = -20
critical = -38

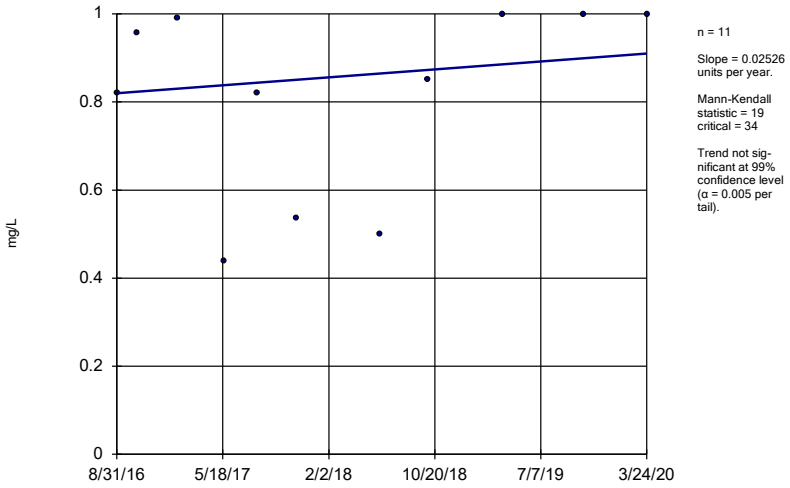
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



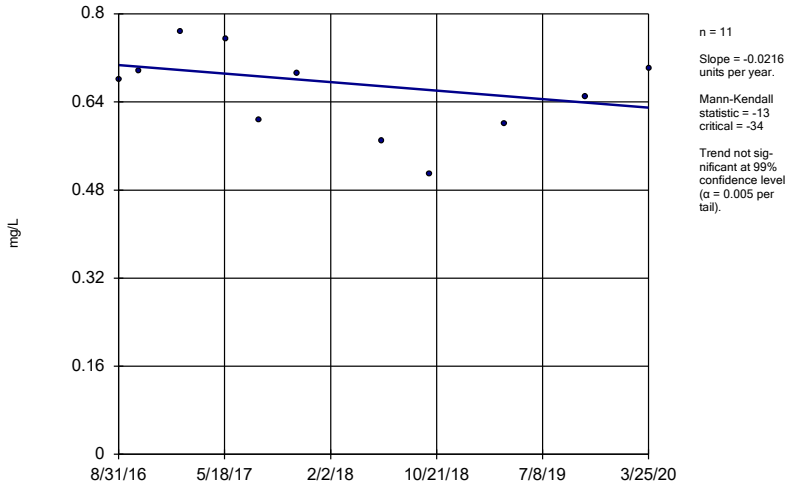
Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-118



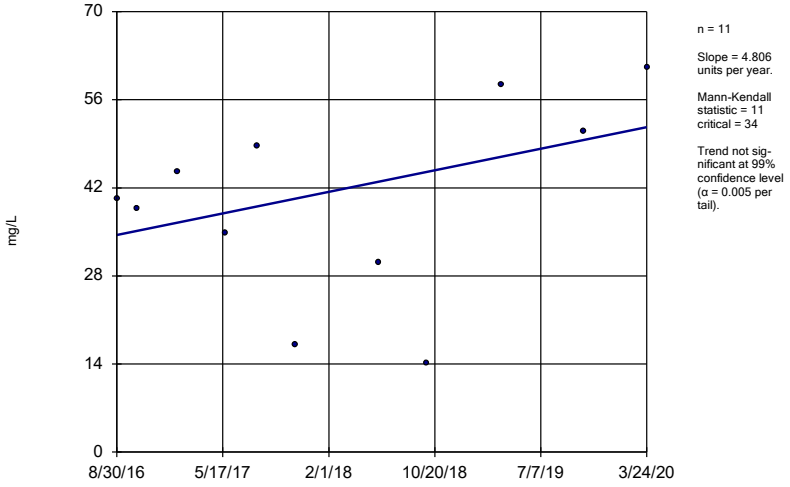
Constituent: Boron Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-111 (bg)



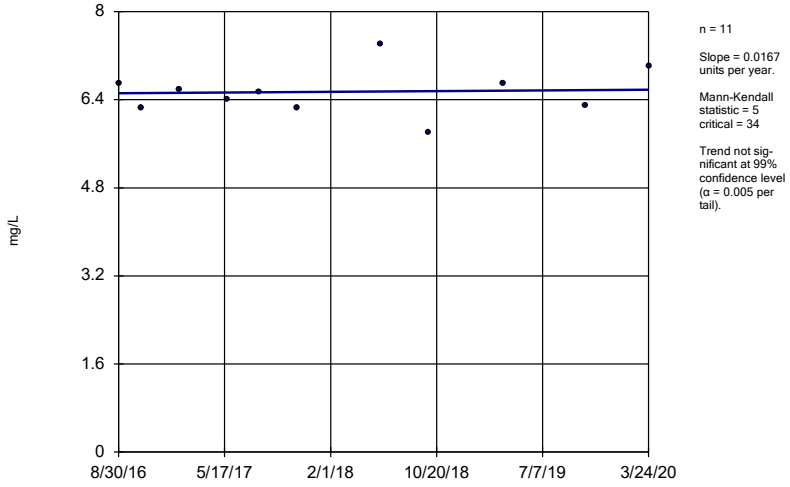
Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-112 (bg)

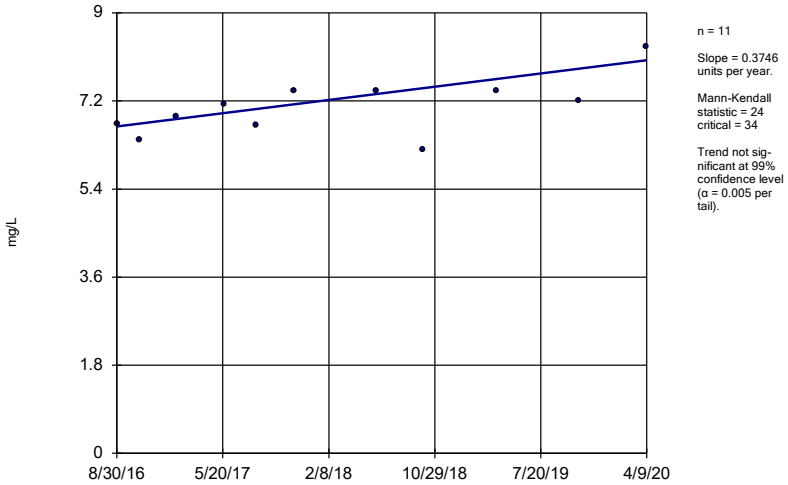


Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = 0.3746 units per year.

Mann-Kendall statistic = 24 critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

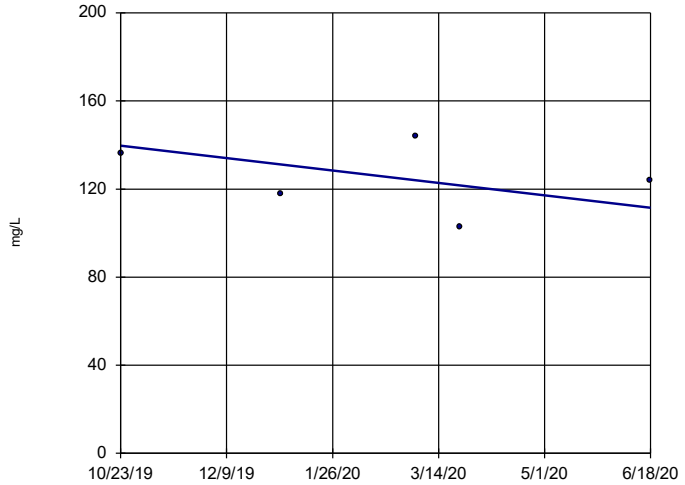
Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-102



n = 5

Slope = -42.96 units per year.

Mann-Kendall statistic = -2 critical = -12

Trend not significant at 99% confidence level (α = 0.005 per tail).

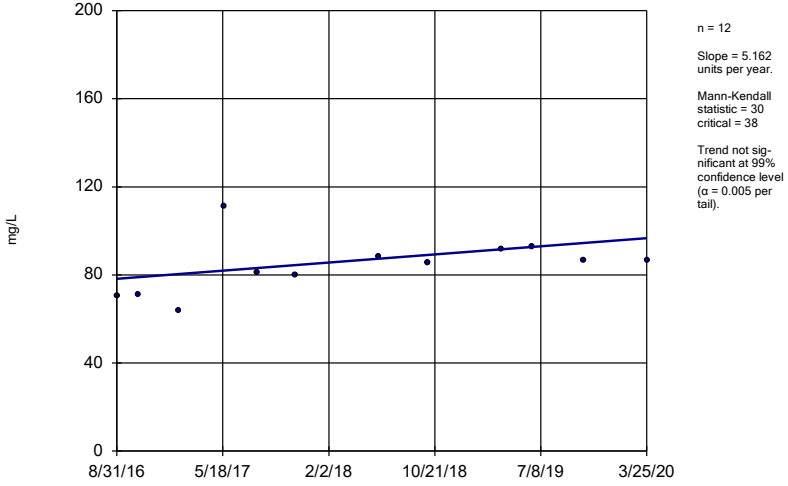
Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-103



n = 12

Slope = 5.162 units per year.

Mann-Kendall statistic = 30 critical = 38

Trend not significant at 99% confidence level (α = 0.005 per tail).

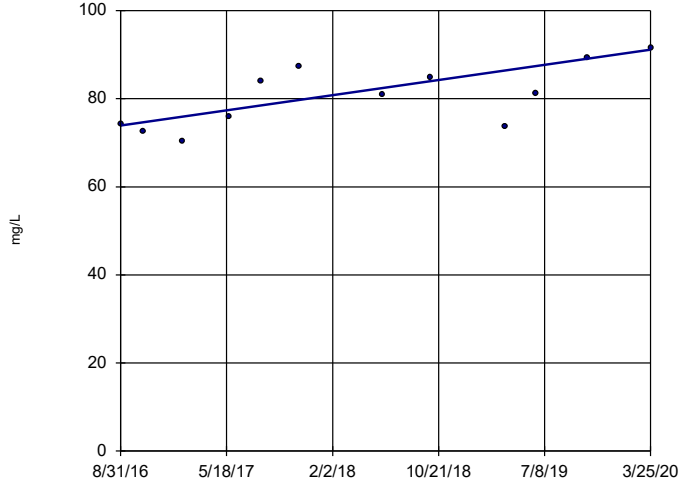
Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-105



n = 12

Slope = 4.827 units per year.

Mann-Kendall statistic = 36 critical = 38

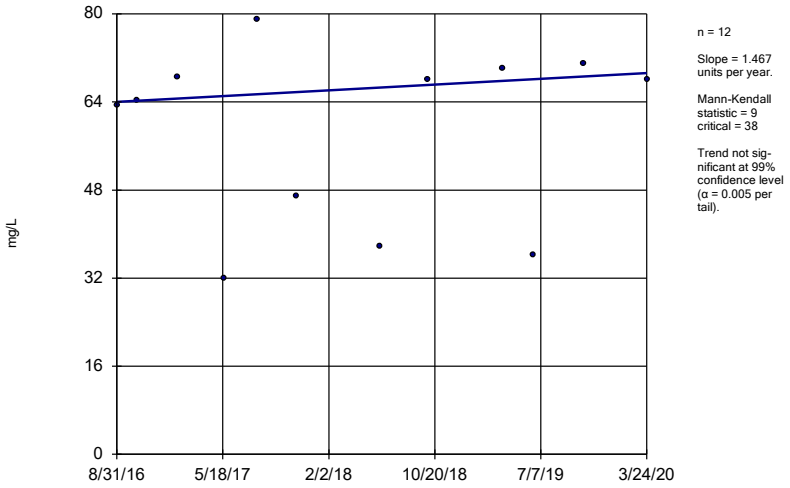
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



n = 12

Slope = 1.467 units per year.

Mann-Kendall statistic = 9
critical = 38

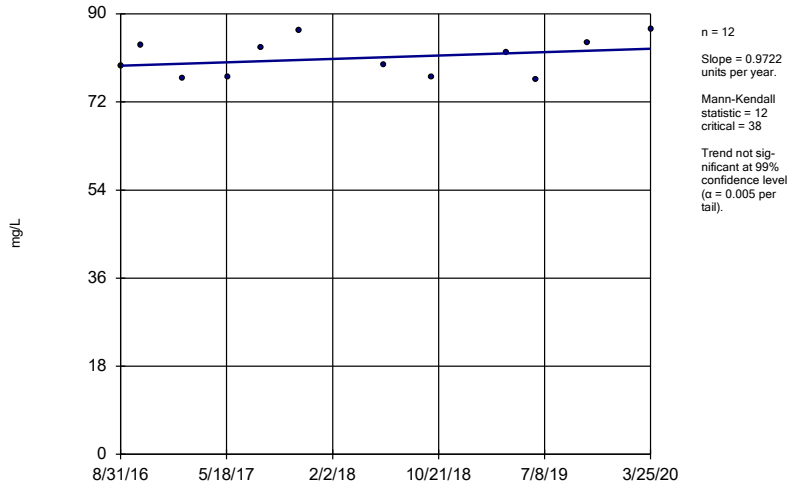
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-118



n = 12

Slope = 0.9722 units per year.

Mann-Kendall statistic = 12
critical = 38

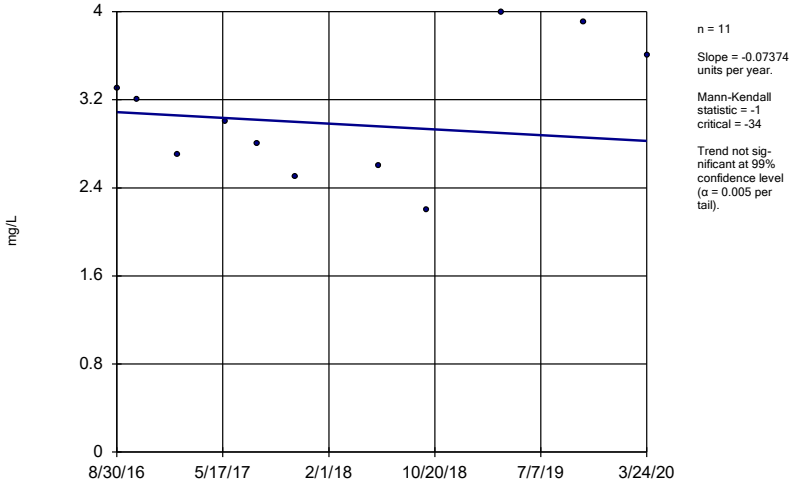
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Calcium Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 11

Slope = -0.07374 units per year.

Mann-Kendall statistic = -1
critical = -34

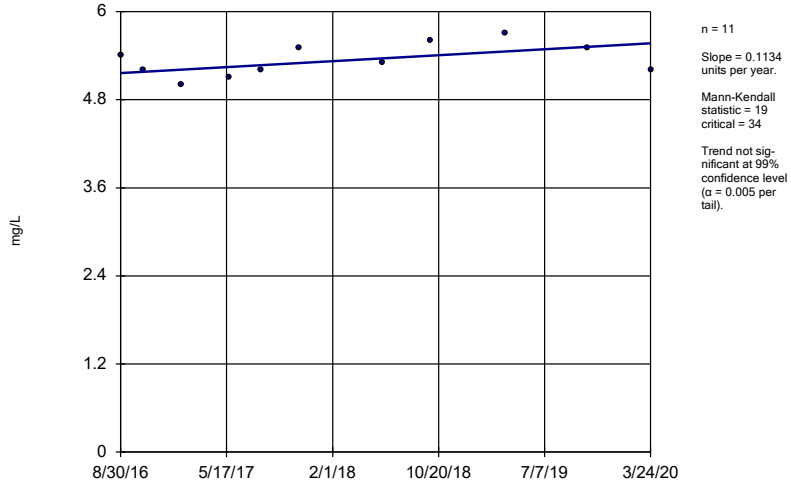
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-112 (bg)



n = 11

Slope = 0.1134 units per year.

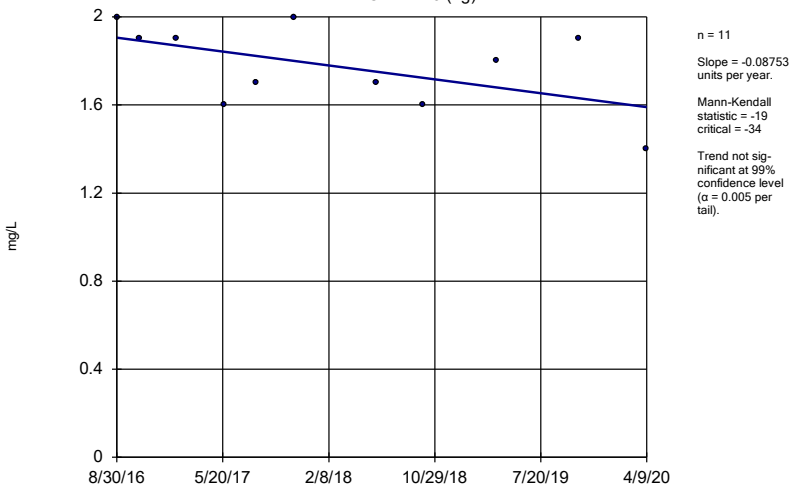
Mann-Kendall statistic = 19
critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Chloride Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = -0.08753 units per year.

Mann-Kendall statistic = -19 critical = -34

Trend not significant at 99% confidence level (α = 0.005 per tail).

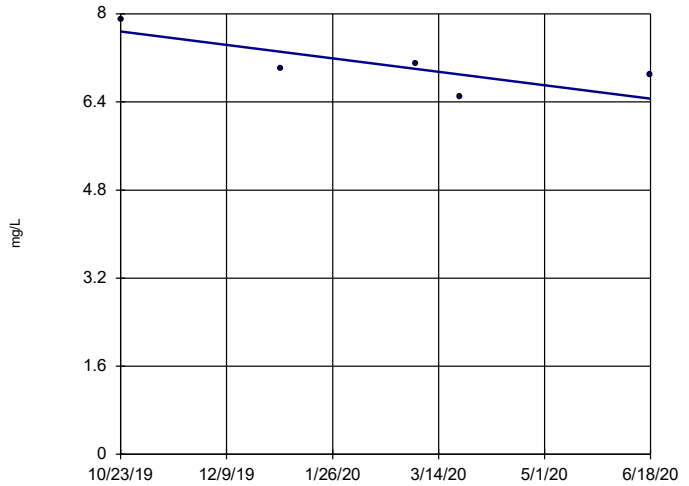
Constituent: Chloride Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-102



n = 5

Slope = -1.861 units per year.

Mann-Kendall statistic = -6 critical = -12

Trend not significant at 99% confidence level (α = 0.005 per tail).

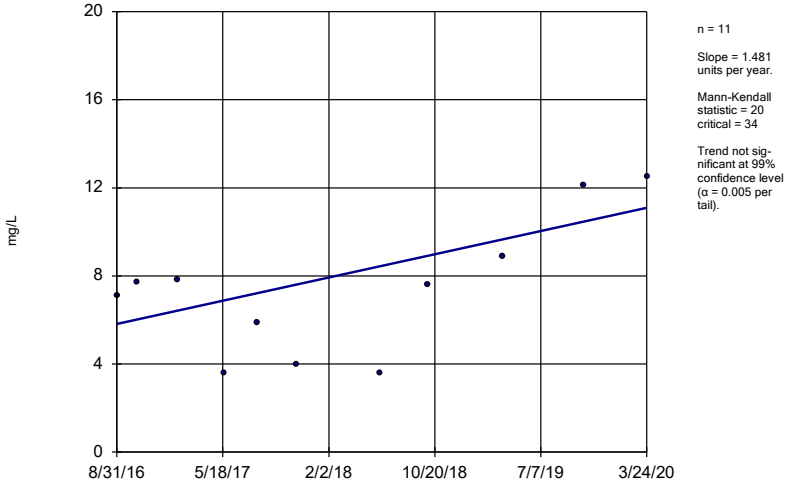
Constituent: Chloride Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-117



n = 11

Slope = 1.481 units per year.

Mann-Kendall statistic = 20 critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

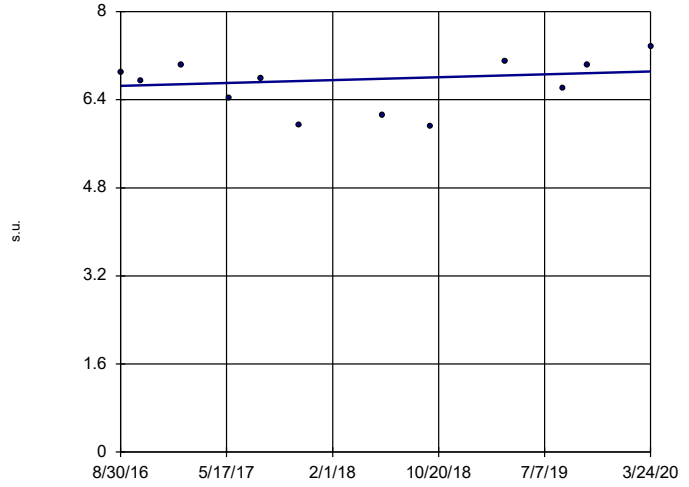
Constituent: Chloride Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 12

Slope = 0.0729 units per year.

Mann-Kendall statistic = 7 critical = 38

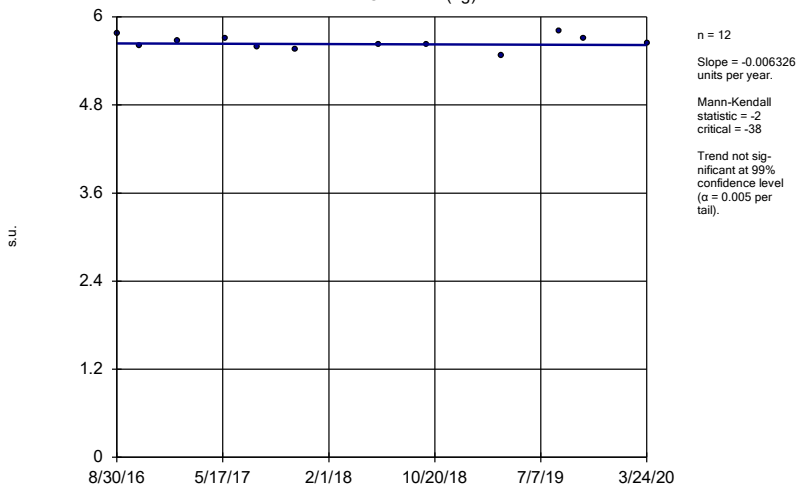
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWA-112 (bg)



n = 12

Slope = -0.006326 units per year.

Mann-Kendall statistic = -2 critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

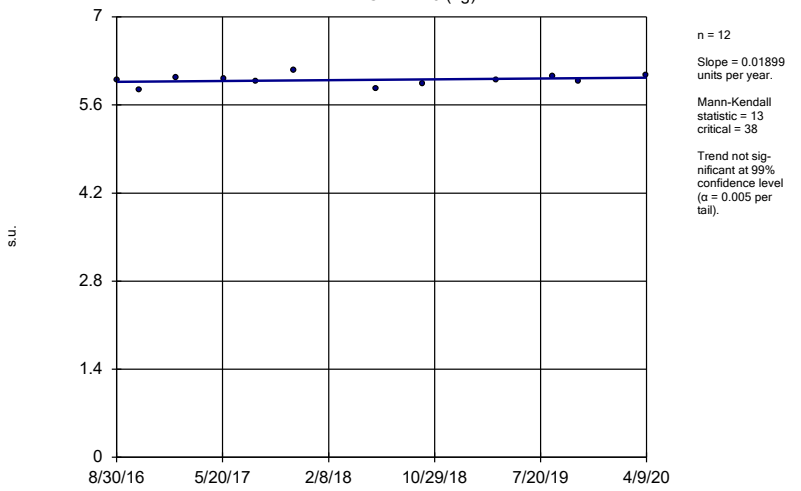
Constituent: pH Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-113 (bg)



n = 12

Slope = 0.01899 units per year.

Mann-Kendall statistic = 13 critical = 38

Trend not significant at 99% confidence level (α = 0.005 per tail).

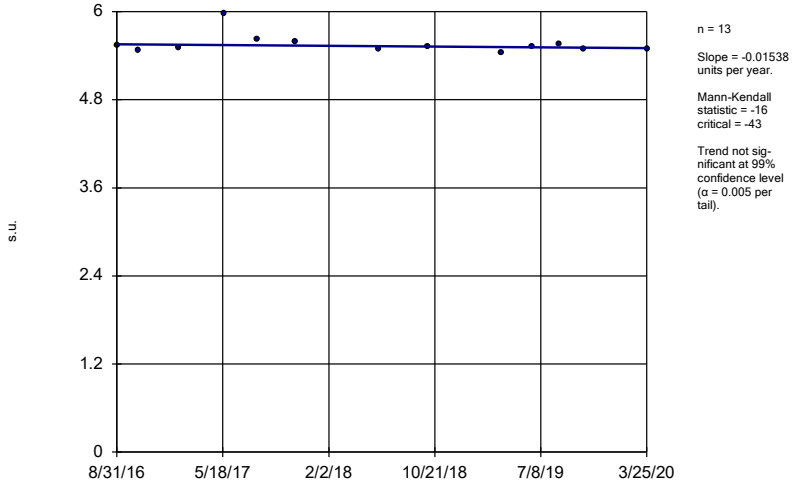
Constituent: pH Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-103



n = 13

Slope = -0.01538 units per year.

Mann-Kendall statistic = -16 critical = -43

Trend not significant at 99% confidence level (α = 0.005 per tail).

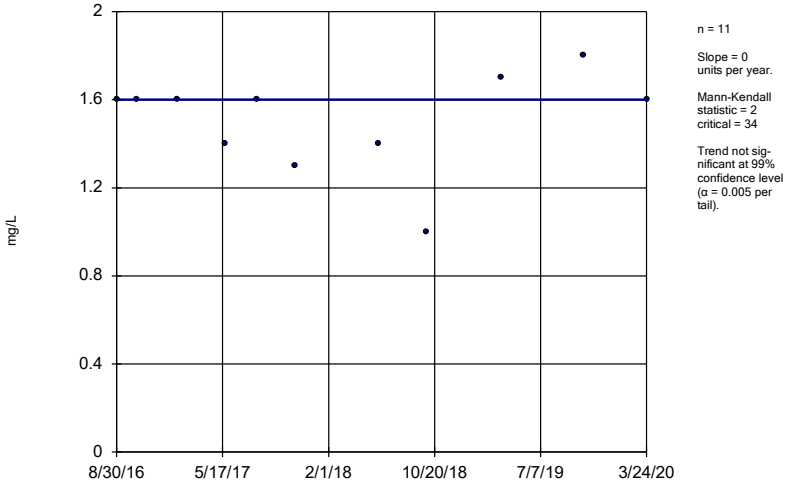
Constituent: pH Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 11

Slope = 0 units per year.

Mann-Kendall statistic = 2 critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

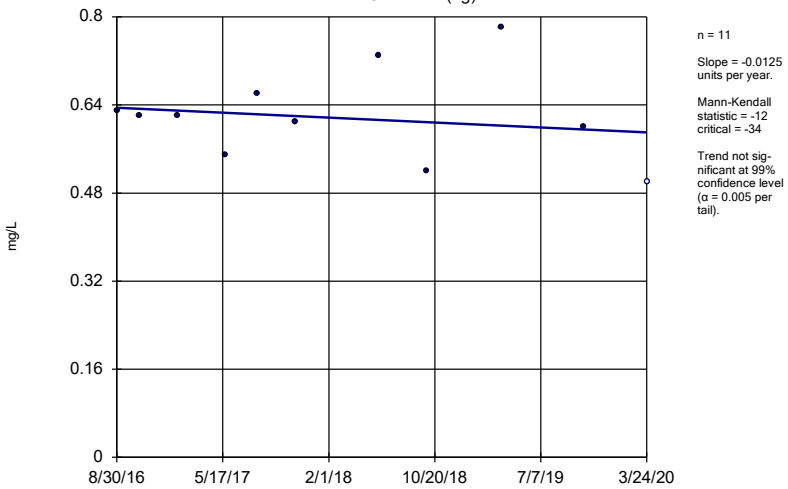
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWA-112 (bg)



n = 11

Slope = -0.0125 units per year.

Mann-Kendall statistic = -12
critical = -34

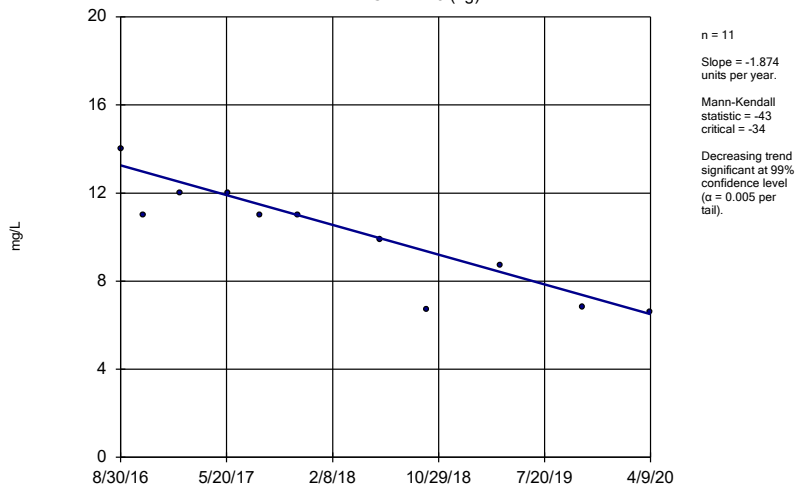
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = -1.874 units per year.

Mann-Kendall statistic = -43
critical = -34

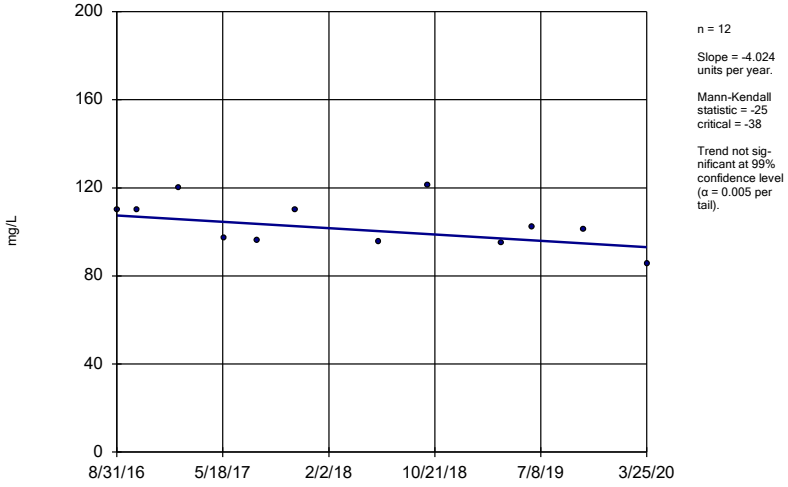
Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-101



n = 12

Slope = -4.024 units per year.

Mann-Kendall statistic = -25
critical = -38

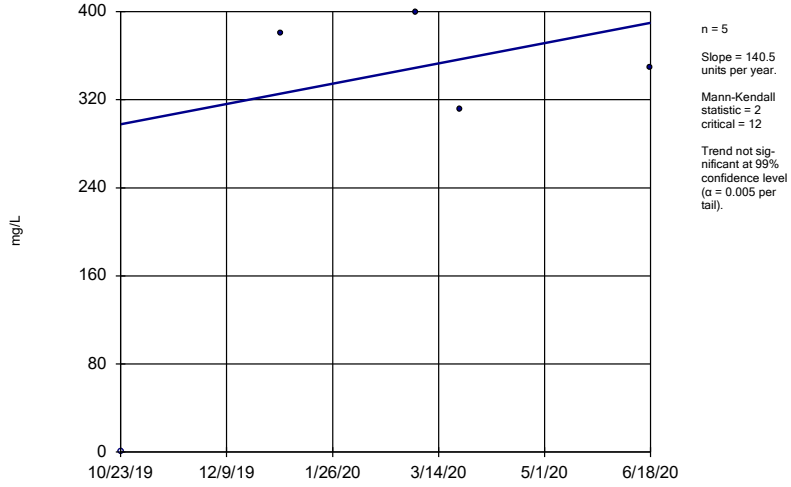
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

HGWC-102



n = 5

Slope = 140.5 units per year.

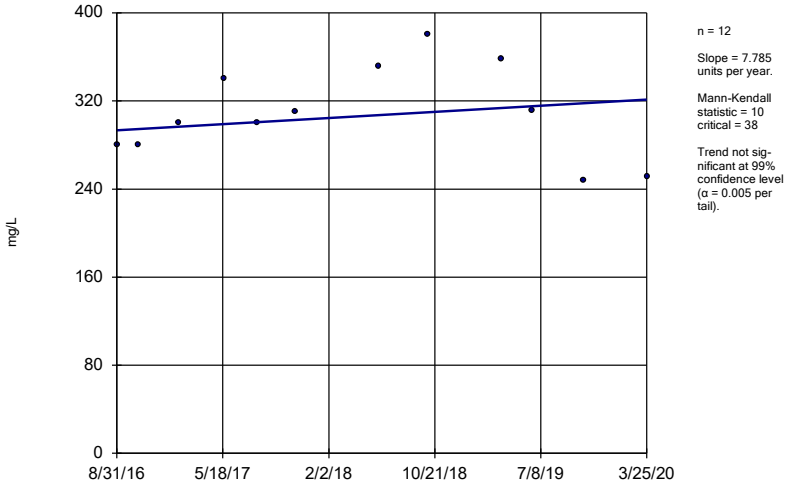
Mann-Kendall statistic = 2
critical = 12

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-103



n = 12

Slope = 7.785 units per year.

Mann-Kendall statistic = 10 critical = 38

Trend not significant at 99% confidence level (α = 0.005 per tail).

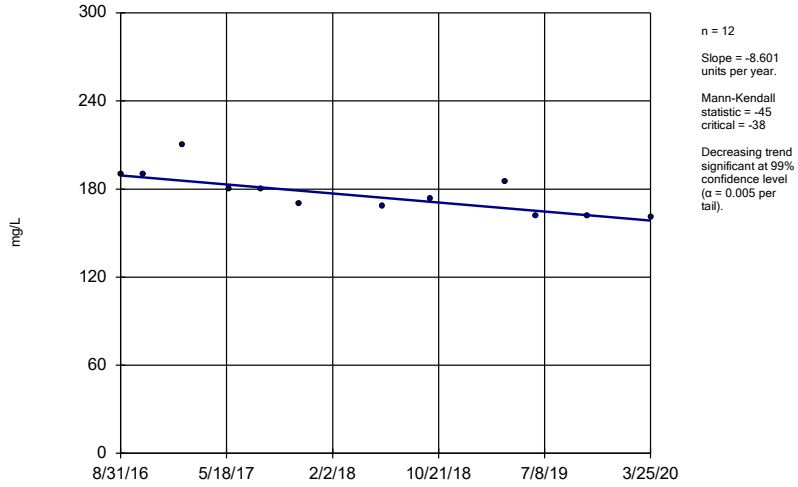
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-105



n = 12

Slope = -8.601 units per year.

Mann-Kendall statistic = -45 critical = -38

Decreasing trend significant at 99% confidence level (α = 0.005 per tail).

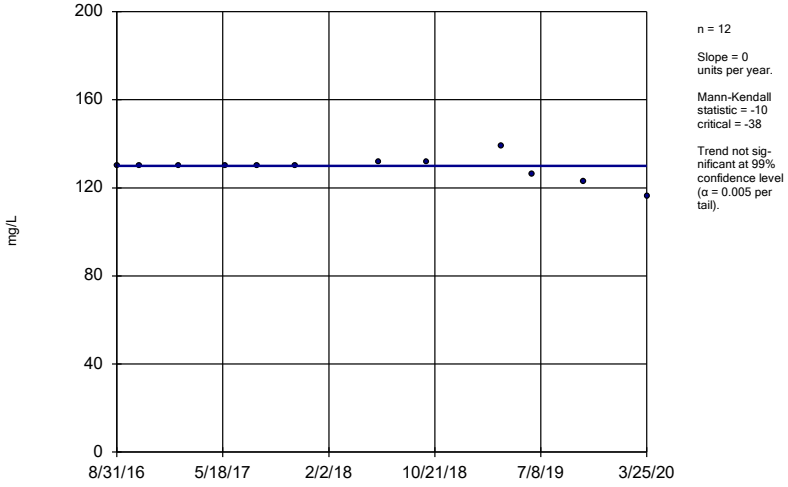
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-107



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = -10 critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

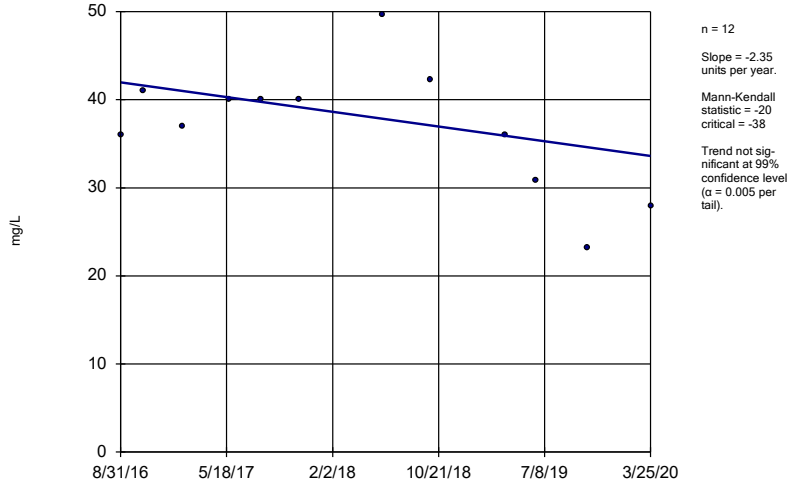
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-109



n = 12

Slope = -2.35 units per year.

Mann-Kendall statistic = -20 critical = -38

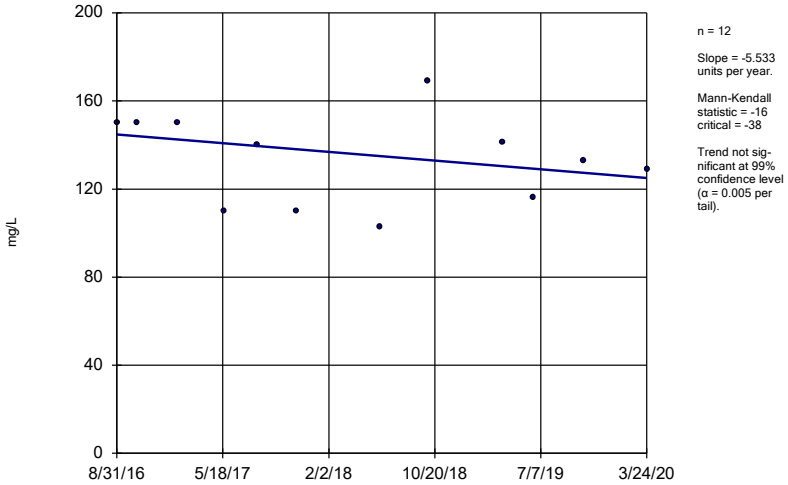
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-117



n = 12

Slope = -5.533 units per year.

Mann-Kendall statistic = -16 critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

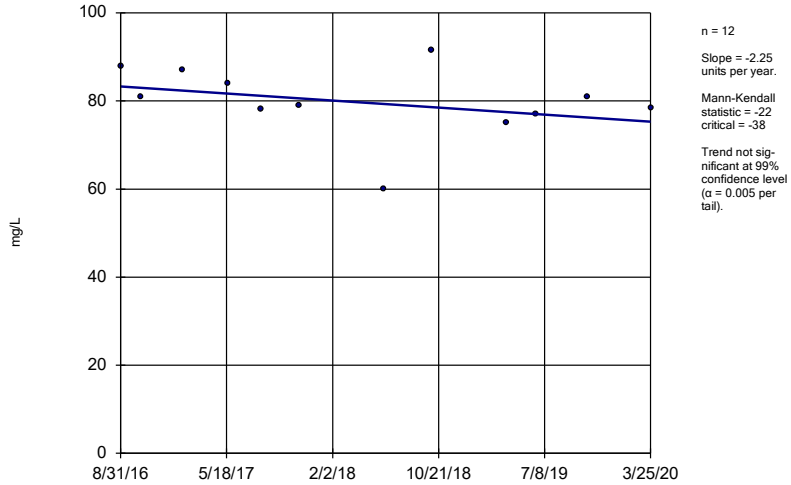
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-118



n = 12

Slope = -2.25 units per year.

Mann-Kendall statistic = -22 critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

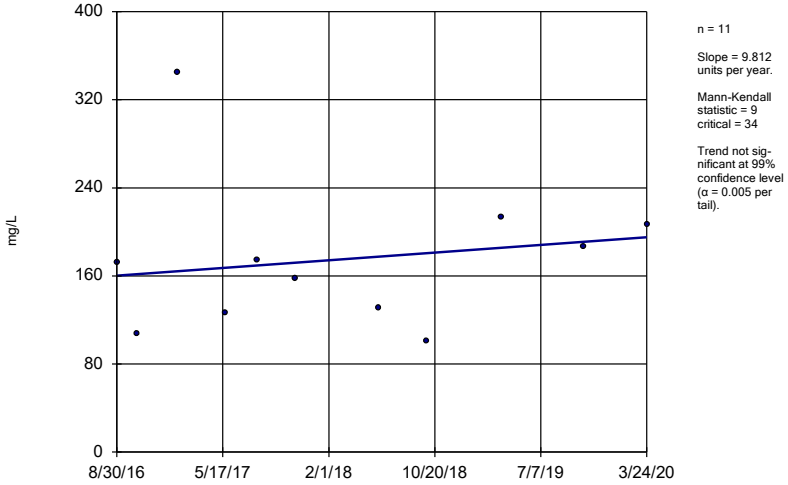
Constituent: Sulfate Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-111 (bg)



n = 11

Slope = 9.812 units per year.

Mann-Kendall statistic = 9 critical = 34

Trend not significant at 99% confidence level (α = 0.005 per tail).

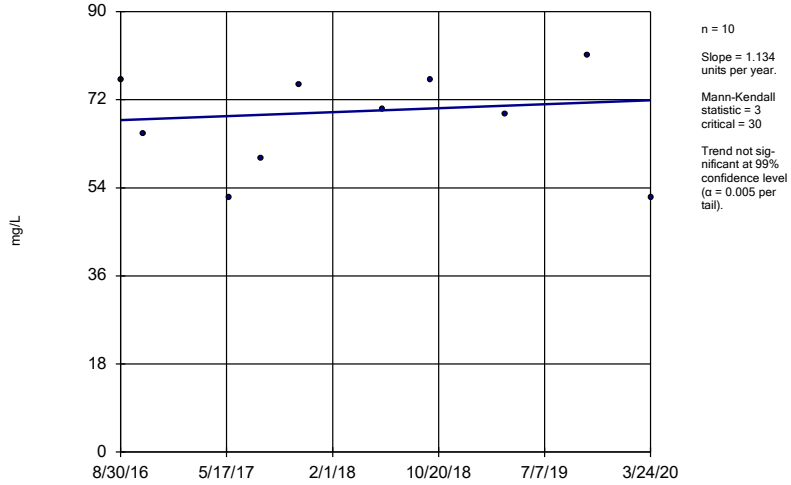
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWA-112 (bg)



n = 10

Slope = 1.134 units per year.

Mann-Kendall statistic = 3 critical = 30

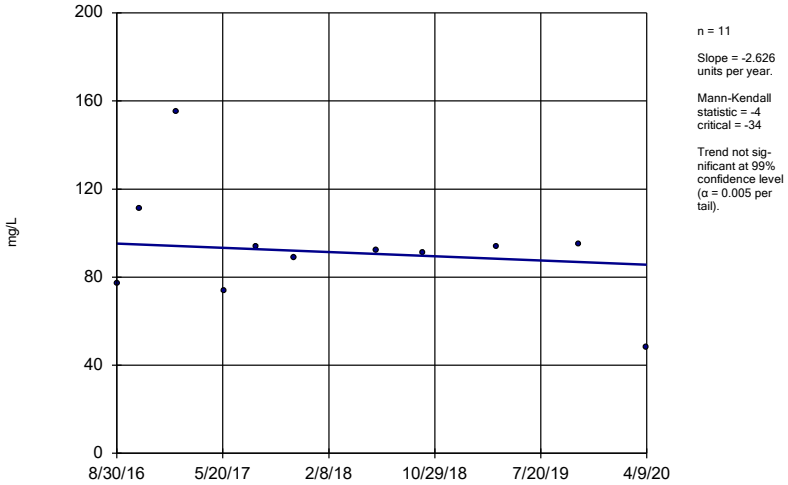
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWA-113 (bg)



n = 11

Slope = -2.626 units per year.

Mann-Kendall statistic = -4 critical = -34

Trend not significant at 99% confidence level (α = 0.005 per tail).

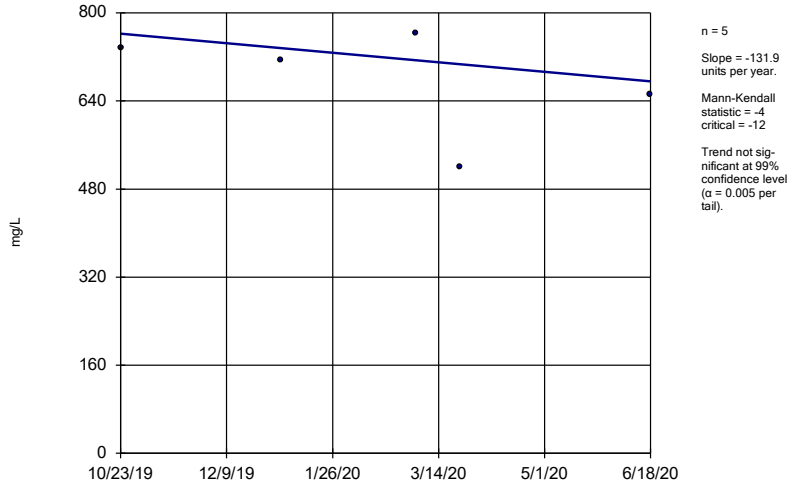
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-102



n = 5

Slope = -131.9 units per year.

Mann-Kendall statistic = -4 critical = -12

Trend not significant at 99% confidence level (α = 0.005 per tail).

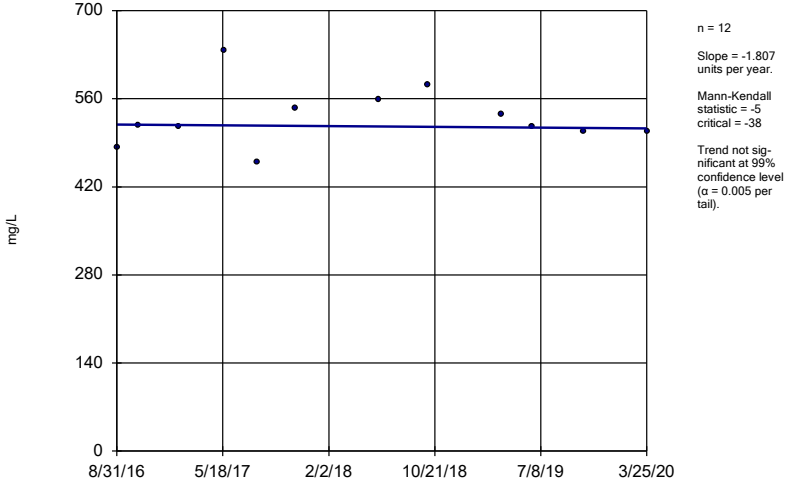
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-103



n = 12

Slope = -1.807 units per year.

Mann-Kendall statistic = -5 critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

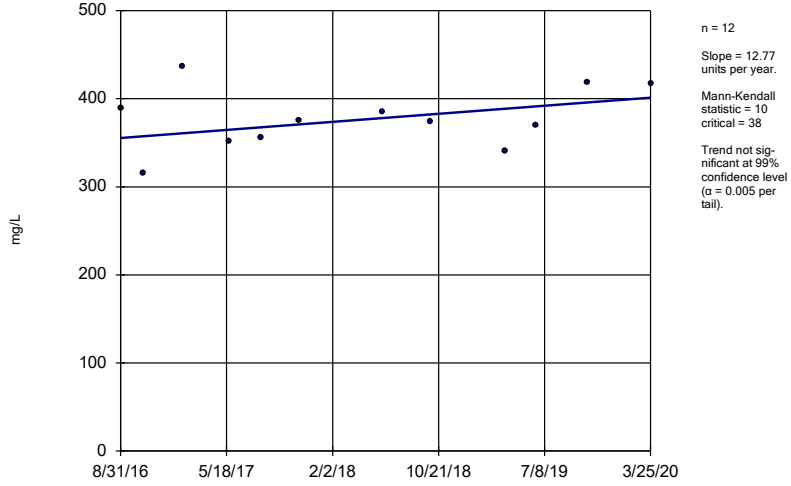
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-105



n = 12

Slope = 12.77 units per year.

Mann-Kendall statistic = 10 critical = 38

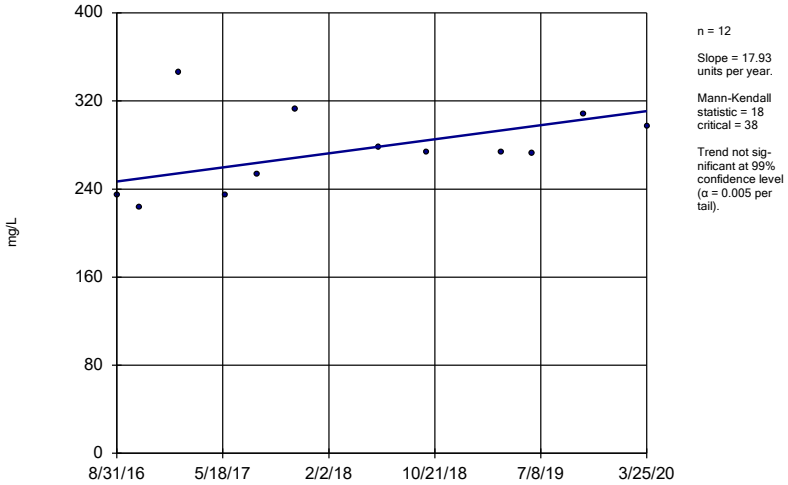
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sen's Slope Estimator

HGWC-107



n = 12

Slope = 17.93 units per year.

Mann-Kendall statistic = 18
critical = 38

Trend not sig-nificant at 99% confidence level (α = 0.005 per tail).

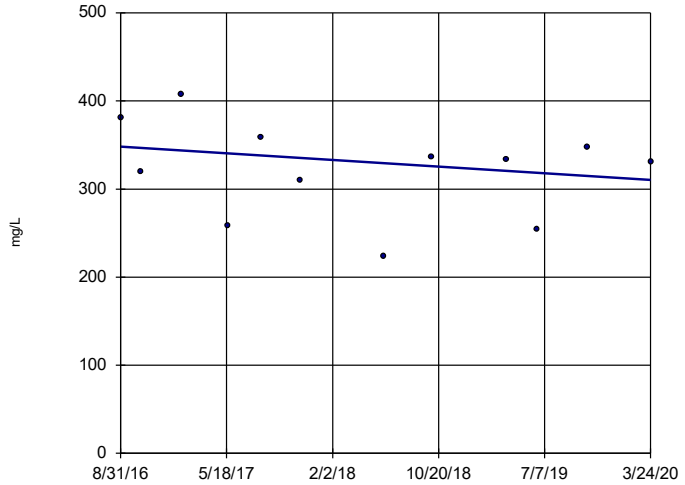
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-117



n = 12

Slope = -10.59 units per year.

Mann-Kendall statistic = -14
critical = -38

Trend not sig-nificant at 99% confidence level (α = 0.005 per tail).

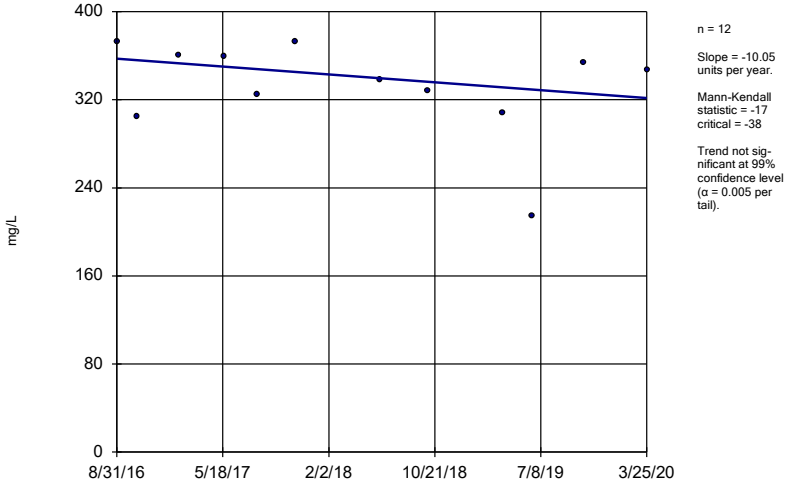
Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26d Groundwater Stats Consulting. UG

Sen's Slope Estimator

HGWC-118



n = 12

Slope = -10.05 units per year.

Mann-Kendall statistic = -17
critical = -38

Trend not sig-nificant at 99% confidence level (α = 0.005 per tail).

Constituent: Total Dissolved Solids Analysis Run 7/16/2020 2:43 PM View: Appendix III - Trend Tests

Plant Hammond Client: Southern Company Data: Hammond AP-4

FIGURE F.

Tolerance Limit Summary Table

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/16/2020, 2:47 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	n/a	0.0030	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)
Arsenic (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	93.94	n/a	n/a	0.184	NP Inter(NDs)
Barium (mg/L)	n/a	0.034	n/a	n/a	n/a	n/a	33	0.02766	0.002762	0	None	No	0.05	Inter
Beryllium (mg/L)	n/a	0.0030	n/a	n/a	n/a	n/a	33	n/a	n/a	96.97	n/a	n/a	0.184	NP Inter(NDs)
Cadmium (mg/L)	n/a	0.0025	n/a	n/a	n/a	n/a	33	n/a	n/a	100	n/a	n/a	0.184	NP Inter(NDs)
Chromium (mg/L)	n/a	0.009	n/a	n/a	n/a	n/a	33	-6.416	0.7793	24.24	Kaplan-Meier	ln(x)	0.05	Inter
Cobalt (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	87.88	n/a	n/a	0.184	NP Inter(NDs)
Combined Radium 226 & 228 (pCi/L)	n/a	1.3	n/a	n/a	n/a	n/a	33	0.6677	0.3051	0	None	No	0.05	Inter
Fluoride (mg/L)	n/a	0.24	n/a	n/a	n/a	n/a	36	0.2649	0.1036	25	Kaplan-Meier	sqrt(x)	0.05	Inter
Lead (mg/L)	n/a	0.0050	n/a	n/a	n/a	n/a	33	n/a	n/a	75.76	n/a	n/a	0.184	NP Inter(NDs)
Lithium (mg/L)	n/a	0.030	n/a	n/a	n/a	n/a	33	n/a	n/a	60.61	n/a	n/a	0.184	NP Inter(NDs)
Mercury (mg/L)	n/a	0.00050	n/a	n/a	n/a	n/a	27	n/a	n/a	66.67	n/a	n/a	0.2503	NP Inter(NDs)
Molybdenum (mg/L)	n/a	0.010	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)
Selenium (mg/L)	n/a	0.010	n/a	n/a	n/a	n/a	27	n/a	n/a	70.37	n/a	n/a	0.2503	NP Inter(NDs)
Thallium (mg/L)	n/a	0.0010	n/a	n/a	n/a	n/a	27	n/a	n/a	100	n/a	n/a	0.2503	NP Inter(NDs)

FIGURE G.

PLANT HAMMOND AP-4 GWPS			
Constituent Name	**MCL**	**Background Limit**	**GWPS**
Antimony, Total (mg/L)	0.006	0.003	0.006
Arsenic, Total (mg/L)	0.01	0.005	0.01
Barium, Total (mg/L)	2	0.034	2
Beryllium, Total (mg/L)	0.004	0.003	0.004
Cadmium, Total (mg/L)	0.005	0.0025	0.005
Chromium, Total (mg/L)	0.1	0.01*	0.1
Cobalt, Total (mg/L)		0.005	0.005
Combined Radium, Total (pCi/L)	5	1.3	5
Fluoride, Total (mg/L)	4	0.24	4
Lead, Total (mg/L)		0.005	0.005
Lithium, Total (mg/L)		0.03	0.03
Mercury, Total (mg/L)	0.002	0.0005	0.002
Molybdenum, Total (mg/L)		0.01	0.01
Selenium, Total (mg/L)	0.05	0.01	0.05
Thallium, Total (mg/L)	0.002	0.001	0.002

**No detections of chromium in upgradient wells. Background limit is established at the reporting limit of 0.01 mg/L.*

**MCL = Maximum Contaminant Level*

**GWPS = Groundwater Protection Standard*

FIGURE H.

State Confidence Interval Summary - All Results (No Significant)

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/17/2020, 12:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Antimony (mg/L)	HGWC-102	0.003	0.00076	0.006	No	5	0.002552	0.001002	80	None	No	0.031	NP (NDs)
Antimony (mg/L)	HGWC-103	0.003	0.0022	0.006	No	9	0.002911	0.0002667	88.89	None	No	0.002	NP (NDs)
Antimony (mg/L)	HGWC-107	0.003	0.0011	0.006	No	9	0.002789	0.0006333	88.89	None	No	0.002	NP (NDs)
Arsenic (mg/L)	HGWC-101	0.005	0.005	0.01	No	11	0.004581	0.00139	90.91	None	No	0.006	NP (NDs)
Arsenic (mg/L)	HGWC-102	0.001092	0.0003012	0.01	No	5	0.002386	0.002394	40	Kaplan-Meier	x^(1/3)	0.01	Param.
Arsenic (mg/L)	HGWC-109	0.003125	0.001366	0.01	No	11	0.002245	0.001056	0	None	No	0.01	Param.
Arsenic (mg/L)	HGWC-117	0.005	0.005	0.01	No	11	0.004579	0.001396	90.91	None	No	0.006	NP (NDs)
Barium (mg/L)	HGWC-101	0.04827	0.04033	2	No	11	0.0443	0.00477	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-102	0.04078	0.02282	2	No	5	0.0318	0.005357	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-103	0.04214	0.03379	2	No	11	0.03796	0.005012	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-105	0.074	0.066	2	No	11	0.06791	0.003281	0	None	No	0.006	NP (normality)
Barium (mg/L)	HGWC-107	0.03945	0.03773	2	No	11	0.03859	0.001037	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-109	0.09012	0.08269	2	No	11	0.08641	0.004457	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-117	0.05105	0.03864	2	No	11	0.04485	0.007443	0	None	No	0.01	Param.
Barium (mg/L)	HGWC-118	0.0646	0.05514	2	No	11	0.05987	0.005676	0	None	No	0.01	Param.
Beryllium (mg/L)	HGWC-101	0.003	0.000065	0.004	No	11	0.001934	0.00148	63.64	None	No	0.006	NP (NDs)
Beryllium (mg/L)	HGWC-117	0.003	0.000079	0.004	No	11	0.002468	0.001184	81.82	None	No	0.006	NP (NDs)
Cadmium (mg/L)	HGWC-101	0.0003	0.0001	0.005	No	11	0.0002732	0.000329	9.091	None	No	0.006	NP (normality)
Cadmium (mg/L)	HGWC-102	0.0007082	0.00003979	0.005	No	5	0.000374	0.0001994	0	None	No	0.01	Param.
Cadmium (mg/L)	HGWC-103	0.0008007	0.0006356	0.005	No	11	0.0007182	0.00009908	0	None	No	0.01	Param.
Cadmium (mg/L)	HGWC-107	0.00125	0.00009	0.005	No	11	0.0005182	0.0005803	36.36	None	No	0.006	NP (normality)
Cadmium (mg/L)	HGWC-117	0.0007683	0.0005208	0.005	No	11	0.0006445	0.0001485	0	None	No	0.01	Param.
Chromium (mg/L)	HGWC-101	0.01	0.00064	0.1	No	11	0.007475	0.004326	72.73	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-102	0.01	0.00051	0.1	No	5	0.006228	0.005165	60	None	No	0.031	NP (NDs)
Chromium (mg/L)	HGWC-103	0.01	0.00063	0.1	No	11	0.007507	0.004277	72.73	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-105	0.01	0.0013	0.1	No	11	0.008336	0.003707	81.82	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-107	0.01	0.01	0.1	No	11	0.009158	0.002792	90.91	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-109	0.01	0.0014	0.1	No	11	0.008365	0.003641	81.82	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-117	0.01	0.01	0.1	No	11	0.0092	0.002653	90.91	None	No	0.006	NP (NDs)
Chromium (mg/L)	HGWC-118	0.01	0.00081	0.1	No	11	0.008315	0.003748	81.82	None	No	0.006	NP (NDs)
Cobalt (mg/L)	HGWC-101	0.002956	0.001862	0.005	No	11	0.002409	0.0006564	9.091	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-102	0.003796	0.0005242	0.005	No	5	0.00216	0.0009762	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-103	0.002451	0.001676	0.005	No	11	0.002064	0.0004653	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-105	0.0009181	0.0004465	0.005	No	11	0.001046	0.0007903	18.18	Kaplan-Meier	ln(x)	0.01	Param.
Cobalt (mg/L)	HGWC-109	0.002246	0.001319	0.005	No	11	0.001783	0.0005565	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-117	0.00848	0.004047	0.005	No	11	0.006264	0.00266	0	None	No	0.01	Param.
Cobalt (mg/L)	HGWC-118	0.0025	0.0003	0.005	No	11	0.001555	0.001088	54.55	None	No	0.006	NP (NDs)
Combined Radium 226 & 228 (pCi/L)	HGWC-101	1.071	0.4831	5	No	11	0.7772	0.3529	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-102	1.466	0.586	5	No	5	1.026	0.2624	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-103	1.104	0.4475	5	No	11	0.7756	0.3938	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-105	0.9996	0.5522	5	No	11	0.7759	0.2684	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-107	1.32	0.6196	5	No	11	0.9696	0.4201	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-109	0.878	0.4515	5	No	11	0.6647	0.2559	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-117	1.024	0.5262	5	No	11	0.775	0.2985	0	None	No	0.01	Param.
Combined Radium 226 & 228 (pCi/L)	HGWC-118	1.39	0.4518	5	No	10	0.921	0.5258	0	None	No	0.01	Param.
Fluoride (mg/L)	HGWC-101	0.1	0.05	4	No	12	0.09	0.02374	83.33	None	No	0.01	NP (NDs)
Fluoride (mg/L)	HGWC-102	0.22	0.1	4	No	5	0.124	0.05367	80	None	No	0.031	NP (NDs)
Fluoride (mg/L)	HGWC-103	0.13	0.06	4	No	12	0.0985	0.02753	66.67	None	No	0.01	NP (NDs)
Fluoride (mg/L)	HGWC-105	0.1153	0.0487	4	No	12	0.0895	0.0351	41.67	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-107	0.1044	0.02939	4	No	12	0.09275	0.04254	50	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-109	0.1291	0.05501	4	No	12	0.09983	0.04165	16.67	Kaplan-Meier	No	0.01	Param.
Fluoride (mg/L)	HGWC-117	0.19	0.042	4	No	12	0.1102	0.06804	41.67	None	No	0.01	NP (normality)
Fluoride (mg/L)	HGWC-118	0.2752	0.08951	4	No	13	0.215	0.2229	0	None	ln(x)	0.01	Param.
Lead (mg/L)	HGWC-101	0.005	0.005	0.005	No	11	0.004627	0.001236	90.91	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-102	0.005	0.00011	0.005	No	5	0.004022	0.002187	80	None	No	0.031	NP (NDs)

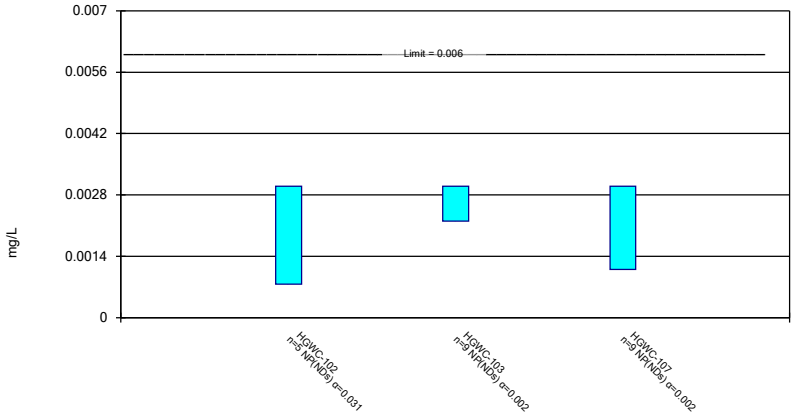
State Confidence Interval Summary - All Results (No Significant)

Plant Hammond Client: Southern Company Data: Hammond AP-4 Printed 7/17/2020, 12:31 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Lead (mg/L)	HGWC-103	0.005	0.00043	0.005	No	11	0.004137	0.001922	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-105	0.005	0.000085	0.005	No	11	0.004105	0.001992	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-107	0.005	0.00021	0.005	No	11	0.004117	0.001964	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-109	0.005	0.000058	0.005	No	11	0.004101	0.002	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-117	0.005	0.00025	0.005	No	11	0.004128	0.00194	81.82	None	No	0.006	NP (NDs)
Lead (mg/L)	HGWC-118	0.005	0.00025	0.005	No	11	0.004123	0.001952	81.82	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-102	0.001468	0.0008278	0.03	No	5	0.001148	0.0001911	0	None	No	0.01	Param.
Lithium (mg/L)	HGWC-103	0.03	0.0015	0.03	No	11	0.009336	0.01327	27.27	None	No	0.006	NP (normality)
Lithium (mg/L)	HGWC-105	0.004255	0.003818	0.03	No	11	0.004036	0.0002618	0	None	No	0.01	Param.
Lithium (mg/L)	HGWC-107	0.03	0.00092	0.03	No	11	0.01943	0.01466	63.64	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-109	0.03	0.0009	0.03	No	11	0.01687	0.01508	54.55	None	No	0.006	NP (NDs)
Lithium (mg/L)	HGWC-117	0.03	0.0012	0.03	No	11	0.009755	0.01302	27.27	None	No	0.006	NP (normality)
Lithium (mg/L)	HGWC-118	0.03	0.0015	0.03	No	11	0.01717	0.01474	54.55	None	No	0.006	NP (NDs)
Mercury (mg/L)	HGWC-101	0.0005	0.000093	0.002	No	9	0.0004548	0.0001357	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-103	0.0005	0.00008	0.002	No	9	0.0004533	0.00014	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-109	0.0005	0.00008	0.002	No	9	0.0004533	0.00014	88.89	None	No	0.002	NP (NDs)
Mercury (mg/L)	HGWC-117	0.0005	0.00007	0.002	No	9	0.0004522	0.0001433	88.89	None	No	0.002	NP (NDs)
Selenium (mg/L)	HGWC-102	0.01	0.0015	0.05	No	5	0.0083	0.003801	80	None	No	0.031	NP (NDs)
Thallium (mg/L)	HGWC-102	0.001	0.00008	0.002	No	5	0.000816	0.0004114	80	None	No	0.031	NP (NDs)

Non-Parametric Confidence Interval

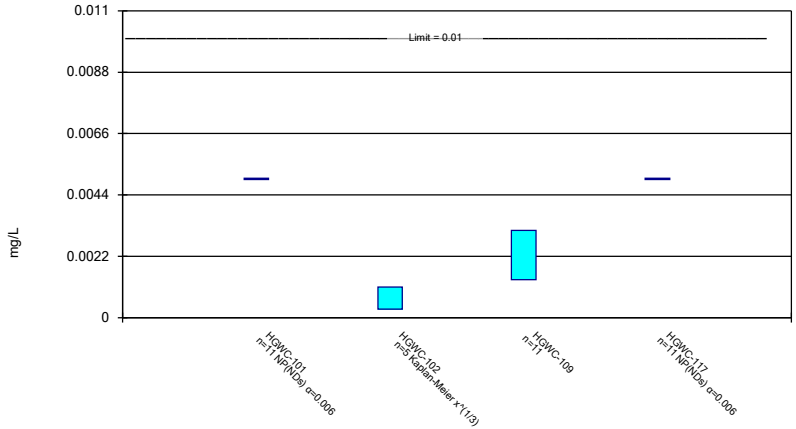
Compliance Limit is not exceeded.



Constituent: Antimony Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric and Non-Parametric (NP) Confidence Interval

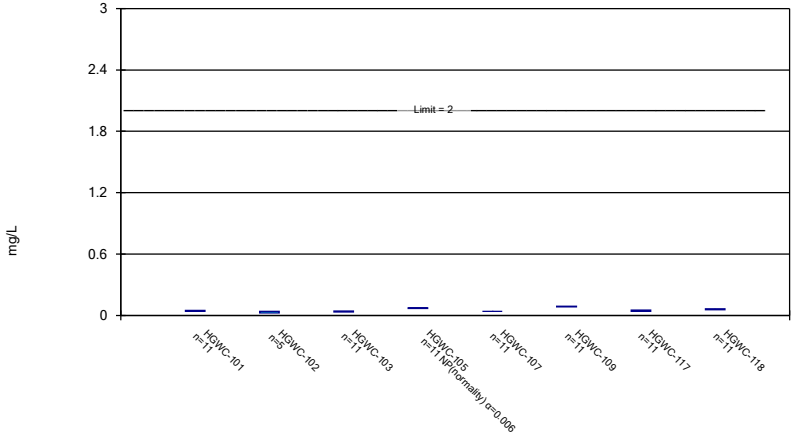
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric and Non-Parametric (NP) Confidence Interval

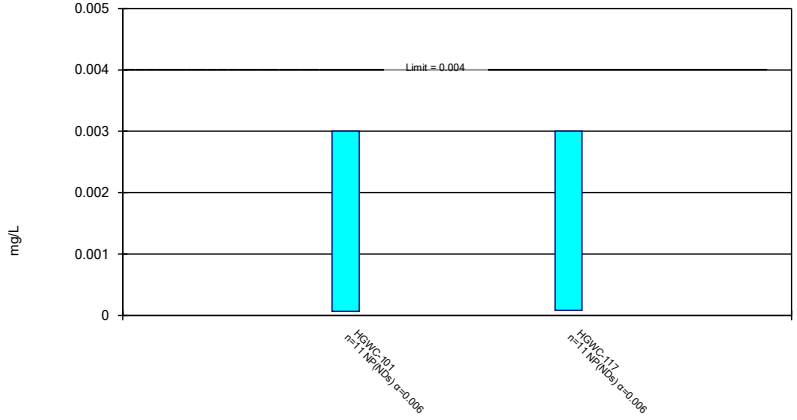
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Non-Parametric Confidence Interval

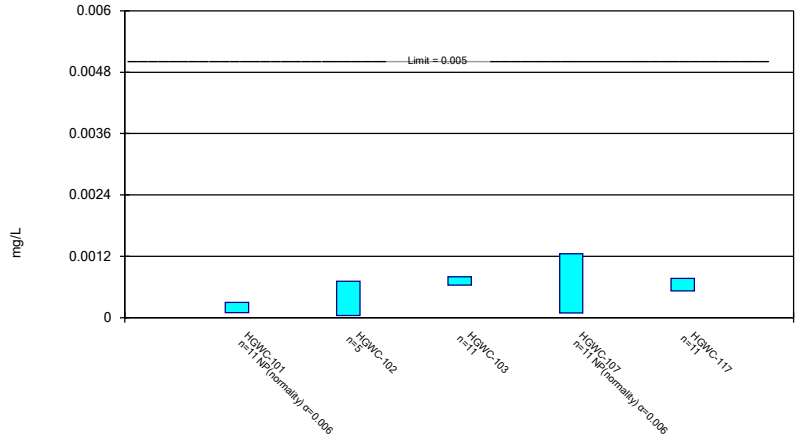
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric and Non-Parametric (NP) Confidence Interval

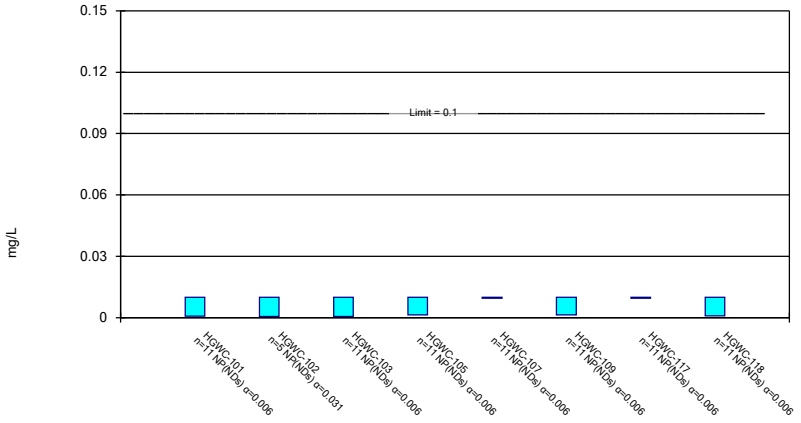
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cadmium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Non-Parametric Confidence Interval

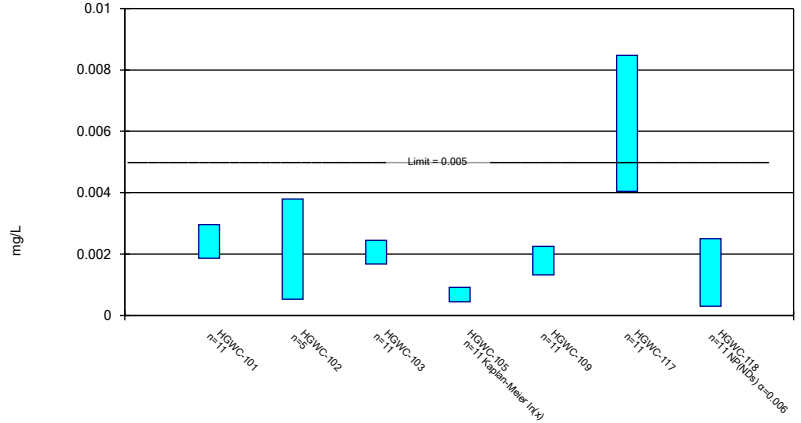
Compliance Limit is not exceeded.



Constituent: Chromium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric and Non-Parametric (NP) Confidence Interval

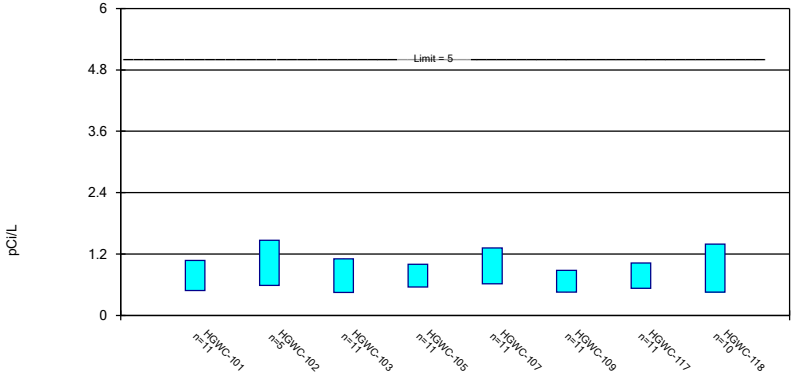
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric Confidence Interval

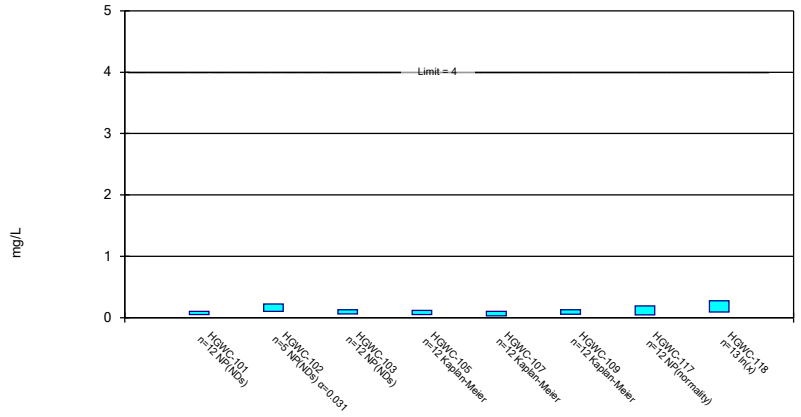
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Combined Radium 226 & 228 Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

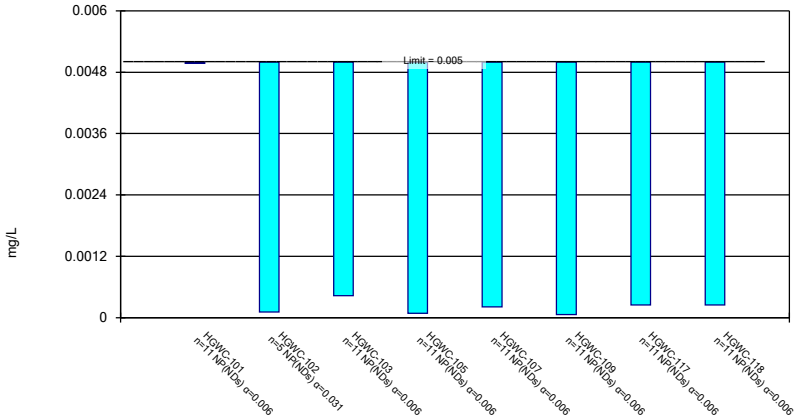


Constituent: Fluoride Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

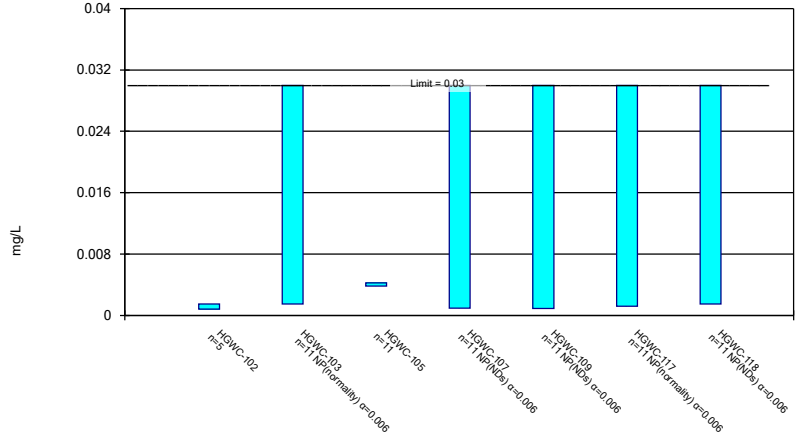


Constituent: Lead Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.

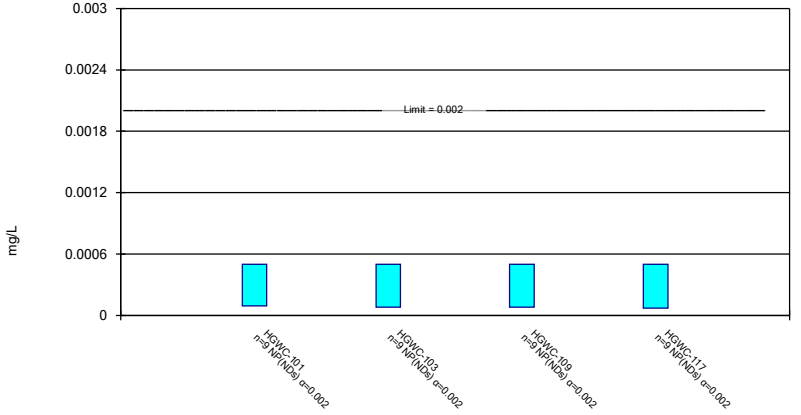


Constituent: Lithium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Non-Parametric Confidence Interval

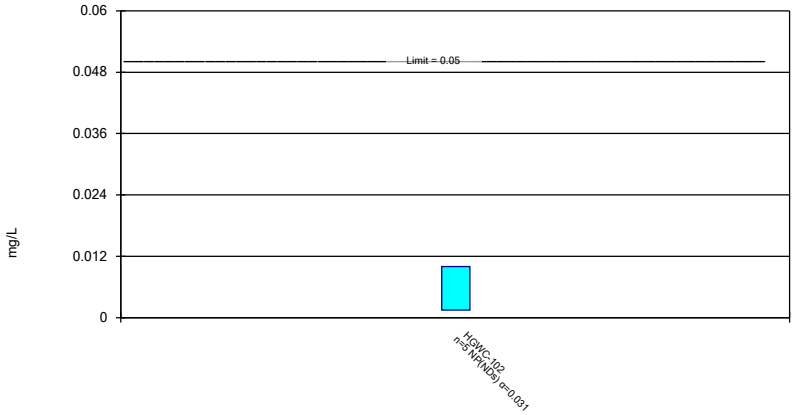
Compliance Limit is not exceeded.



Constituent: Mercury Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.

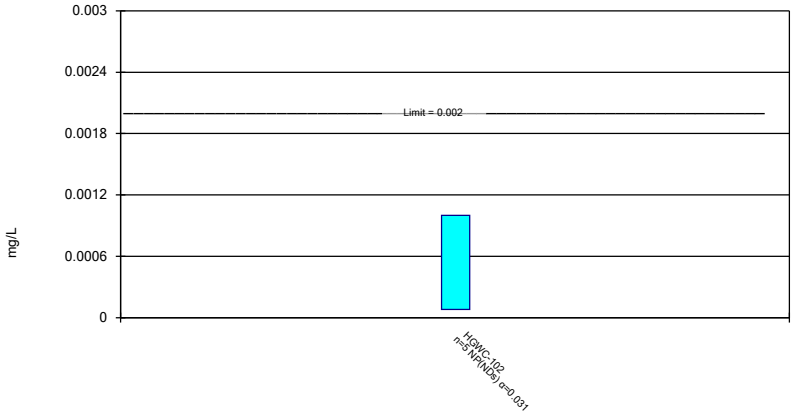


Constituent: Selenium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4

Sanitas™ v.9.6.26f Sanitas software utilized by Groundwater Stats Consulting. EPA

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 7/17/2020 12:29 PM View: Confidence Intervals
Plant Hammond Client: Southern Company Data: Hammond AP-4