



Prepared for

Georgia Power Company
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**2019 SEMIANNUAL GROUNDWATER
MONITORING & CORRECTIVE
ACTION REPORT – REVISION 01
GEORGIA POWER COMPANY
PLANT HAMMOND ASH POND 3 (AP-3)**

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CERTIFICATION STATEMENT

This 2019 Semiannual Groundwater Monitoring & Corrective Action Report, Georgia Power Company - Plant Hammond – Ash Pond 3 (AP-3) 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], specifically 40 CFR § 257.90(e), 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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LIST OF ACRONYMS

AP	ash pond
CCR	coal combustion residuals
CFR	Code of Federal Regulations
CFS	Civil Field Services
cm/sec	centimeters per second
DO	dissolved oxygen
ft	feet
ft/day	feet per day
ft/ft	feet per foot
GA EPD	Georgia Environmental Protection Division
GPC	Georgia Power Company
GWPS	Groundwater Protection Standard
HAR	Hydrogeologic Assessment Report
HDPE	high density polyethylene
K_h	horizontal hydraulic conductivity
mg/L	milligram per liter
NELAP	National Environmental Laboratory Accreditation Program
NTU	Nephelometric turbidity units
Pace Analytical	Pace Analytical Services, LLC.
PE	professional engineer
PL	prediction limit
QA/QC	Quality Assurance/Quality Control
SCS	Southern Company Services
SSI	statistically significant increase
s.u.	standard unit
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

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] and the Georgia Environmental Protection Division (GA EPD) Rules for Solid Waste Management 391-3-4-.10, Geosyntec Consultants (Geosyntec) has prepared this *2019 Semiannual Groundwater Monitoring & Corrective Action Report* to document groundwater monitoring activities conducted at Georgia Power Company (GPC) Plant Hammond (Site) Ash Pond 3 (AP-3).

Groundwater monitoring and reporting for the CCR unit is performed in accordance with the monitoring requirements of 40 CFR § 257.90 through 257.95 of the Federal CCR rule, and GA EPD Rules for Solid Waste Management 391-3-4-.10(6). 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-3 ceased receiving waste prior to the effective date of the CCR rule promulgated in April 2015. A notification of intent to initiate closure of the inactive CCR surface impoundment was certified on December 7, 2015 and posted to GPC's website. Groundwater monitoring and reporting for AP-3 are being completed in accordance with the alternate schedule in 40 CFR § 257.100(e)(5) of the revised CCR rule (August 5, 2016).

This report documents groundwater monitoring activities completed for AP-3 from August 2019 through December 2019. This report includes the results of the initial annual monitoring event for Appendix IV of § 257.95 conducted in August 2019 and the semiannual monitoring event conducted in October 2019.

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-3 is a 25-acre former ash pond that was constructed in 1973 and 1974. Ash sluicing and placement operations at AP-3 commenced in June 1977. In the early 1980's, AP-3 was converted into a dry ash disposal area and in the early 1990's the pond stopped receiving CCR materials.

Closure of AP-3 commenced in 2016. As part of closure, AP-3 was dewatered sufficiently to remove the free liquids. The CCR material remaining in AP-3 was graded and a final cover system installed. The final cover was constructed to control, minimize or eliminate, to the maximum extent feasible, the infiltration of liquids into the waste by providing sufficient grades and slopes to promote surface runoff from the unit. The final cover system consists of a 60-mil high density polyethylene (HDPE) liner, geocomposite drainage media, a minimum 18-inch thick protective soil cover, and a 6-inch thick vegetative layer. Final capping of the pond with a low-permeability cover system was completed in the second quarter of 2018.

1.2 Regional Geology & Hydrogeologic Setting

The following section summarizes the geologic and hydrogeologic conditions at AP-3 as described in the *Hydrogeologic Assessment Report Revision 01 – Ash Pond 3* (HAR Rev 01) submitted to GA EPD in November 2019 under separate cover in support of the AP-3 closure permit application (Geosyntec, 2019b)

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-3 is underlain by the middle units of the Cambrian age Conasauga Formation, consisting of mostly shaley limestone. Based on review of site-specific subsurface investigations, the bedrock at AP-3 was identified as limestone or shaley limestone. AP-3 is underlain primarily by five lithologic units; (i) fill material, (ii) terrace alluvium, (iii) residuum, (iv) highly weathered/fractured limestone bedrock, and (v) unweathered limestone bedrock.

Based on subsurface investigations the fill is composed of lean clay or gravelly lean clay with sand, sometimes identified by the presence of wood or roots. The terrace alluvium consists of unconsolidated sediments with high sand and gravel content associated with deposition from the Coosa River and Cabin Creek. Residual or native soils have been

derived from the in-place weathering of the shaley limestone bedrock. The residuum is generally described as fat clay with typically only trace amounts of sand, and rarely gravel. Just below the residuum clay layer is a gradational zone of varying proportions of clayey residuum and sand, gravel, and cobble-sized angular pieces of partially weathered limestone, grading into a zone of fractured limestone, before grading into unweathered, fresh limestone. The upper highly weathered zone appears more as residuum with various sized rock fragments. The lower zone becomes less clayey with depth and is estimated to be approximately 5 feet thick. Most of the limestone is described as medium to dark gray with a slabby or flaggy habit when broken in pieces by the sonic drilling. The limestone is very finely laminated with lighter and darker gray layers, and also contains interbeds of calcareous shale.

1.2.2 Hydrogeologic Setting

The uppermost aquifer at AP-3 is a regional groundwater aquifer that occurs within the residuum and the weathered and fractured bedrock. The uppermost aquifer is considered to be unconfined; however, localized, semi-confined conditions may be encountered due to the low-permeability clayey nature of the residual soils, or as a result of perched groundwater or poorly interconnected fracture networks in the bedrock. Based on observations of soil types and horizontal conductivity values, the movement of groundwater in the soil, and to some degree the highly weathered bedrock zone, can be characterized as low-to moderate permeability, porous media flow. Groundwater flow in the more competent underlying bedrock is characterized as fracture flow. Flow direction within the area of AP-3 is generally from west to east.

1.3 Groundwater Monitoring Well Network

In accordance with § 257.91, a groundwater monitoring system was installed at AP-3 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 well network was certified by a professional engineer (PE) on April 17, 2019; the certification is maintained in the AP-3 Operating Records.

The certified compliance monitoring well network for AP-3 consists of four 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 secondary groundwater level monitoring piezometers associated with AP-3 are shown on **Figure 2**; well construction details are listed in **Table 1**.

2.0 GROUNDWATER MONITORING ACTIVITIES

In accordance with § 257.90(e), the following describes groundwater monitoring-related activities performed for AP-3 during the second semiannual period of 2019. All groundwater sampling was performed in accordance with § 257.93.

2.1 Monitoring Well Installation and Maintenance

Two additional groundwater level monitoring piezometers (MW-31 and MW-32) were installed in November 2019 to provide additional data to characterize flow conditions downgradient of AP-3. A well installation report that includes detailed boring and well construction logs for these two piezometers is provided in **Appendix A**. The locations of piezometer MW-31 and MW-32 are shown on **Figure 2** and piezometer construction details are also provided in **Table 1**.

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 following groundwater monitoring event. The well inspection forms for the 2019 reporting period are provided in **Appendix B**.

SCS Civil Field Services (CFS) installed a dedicated QED bladder pump with dedicated tubing in wells HGWA-122, HGWC-121A, and HGWC-124 in September 2019.

2.2 Assessment Monitoring

Appendix III constituents exhibited statistically significant increases (SSIs) over background during the first detection monitoring event conducted in April 2019. Analytical results and statistical evaluation of those results were provided in the *2019 Annual Groundwater and Corrective Action Monitoring Report* (Geosyntec, 2019a). An Assessment Monitoring Program Notification was prepared for AP-3 on November 13, 2019, pursuant to 40 CFR § 257.94(e)(3) and placed in the Operating Records of the ash pond as required by 40 CFR § 257.105(h)(5).

Pursuant to § 257.95(b), the compliance monitoring well network (**Figure 2**) was sampled for the full suite of Appendix IV parameters in August 2019, within 90 days of initiating the assessment monitoring program. Pursuant to § 257.95(d)(1), the AP-3 compliance wells were resampled in October 2019. The groundwater samples were analyzed for

Appendix III parameters and the following Appendix IV constituents that were detected during the August 2019 event: barium, chromium, cobalt, fluoride, lead, lithium, molybdenum, and combined radium 226/228. The October 2019 monitoring event served as the first semiannual groundwater assessment monitoring event, as required by § 257.95(d)(1). Pursuant to 40 CFR § 257.90(e)(3), laboratory and field data reports for the August and October 2019 monitoring events are included in **Appendix C**. The number of AP-3 groundwater samples collected for analysis and the sample collection dates are summarized in **Table 2**.

3.0 SAMPLING METHODOLOGY & ANALYSES

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

3.1 Groundwater Level Measurement

Prior to each sampling event, a synoptic round of depth-to-groundwater level measurements were recorded from the AP-3 wells and piezometers and used to calculate the groundwater elevations. The calculated groundwater elevations for the August and October 2019 monitoring events are presented in **Table 3**. The groundwater elevations for the August 2019 event ranged from 575.48 feet (ft) (referenced to the North American Vertical Datum of 1988) in well MW-21 to 564.84 ft in well HGWC-124. The groundwater elevations for the October 2019 event ranged from 574.07 ft in well MW-21 to 564.21 ft in well HGWC-120. The elevations reported for these two events are representative of the prior monitoring events.

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

3.2 Groundwater Gradient and Flow Velocity

The representative groundwater hydraulic gradient within the uppermost aquifer beneath AP-3 was calculated using the August and October 2019 groundwater elevation data. Hydraulic gradients were calculated between wells MW-21 and HGWC-120. The general trajectory of the flow paths are shown on **Figures 3** and **4**. The average hydraulic gradient across AP-3 is 0.0076 feet per foot (ft/ft). The calculations are presented on **Table 4**.

The approximate horizontal flow velocity associated with AP-3 groundwater was calculated using the following derivative of Darcy's Law.

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

where:

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

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

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

$$n_e = \text{Effective porosity}$$

Aquifer testing was conducted by LETCO in 1977, SCS in 2014, and Geosyntec in 2017 to evaluate hydraulic conditions in the vicinity of AP-3. Slug testing was performed to estimate the horizontal hydraulic conductivity (K_h) for units above the top of bedrock, while single packer testing was used to estimate the K_h for the bedrock intervals. Additional details are presented in the HAR Rev 01 (Geosyntec, 2019b).

The groundwater flow velocity calculation was performed using the geometric mean value for K_h of the highly weathered/fractured rock of 9.8×10^{-4} centimeters per second (cm/sec) or 2.76 feet per day (ft/day). An estimated effective porosity of 0.15 is used to represent average lithologic conditions at AP-3, derived based on review of literature, observed site lithology, and professional judgement. With these variables determined, and accounting for the hydraulic gradient discussed above, the groundwater flow velocity underneath AP-3 was calculated to be 0.14 ft/day.

3.3 Groundwater Sampling Procedures

Groundwater samples were collected from the compliance monitoring network using low-flow sampling procedures in accordance with 40 CFR § 257.93(a). For the August 2019 event, well HGWC-120 was purged and sampled using the installed bladder pump with dedicated tubing; the remaining three wells (i.e., HGWA-122, HGWC-121A, and HGWC-124) were sampled using a peristaltic pump equipped with new disposable polyethylene tubing. For the October 2019 event, all four compliance wells were purged and sampled using installed bladder pumps with dedicated tubing. 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 \pm 0.1 Standard Units (s.u.).
- Conductivity \pm 5%.
- \pm 0.2 milligrams per liter (mg/L) or \pm 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 and October 2019 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 parameters 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 and October 2019 monitoring events 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 parameters 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 40 CFR § 257.93 following the PE-certified statistical method for AP-3, revised January 2020. Pursuant to 40 CFR § 257.95(d)(2), GPC will establish groundwater protection standards for the Appendix IV monitoring parameters and complete statistical analysis of the Appendix IV groundwater monitoring data obtained during the first semiannual assessment monitoring event within 90 days of obtaining the results. GPC will complete the assessment monitoring and statistical analysis in accordance with 40 CFR § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

4.1 Statistical Method

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 PLs are constructed using data from upgradient well HGWA-122 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 any downgradient well data exceed the PL. Statistical analyses of October 2019 Appendix III data are presented in **Appendix D**.

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).

Time series plots generated by Sanitas 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 parameters are 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. 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.

4.2 Appendix III Statistical Analyses Results

Statistical analysis of the October 2019 groundwater data was performed to determine if Appendix III constituents have returned to background levels. **Table D-1** in **Appendix D** presents a summarized comparison of the interwell PLs to the October 2019 semiannual monitoring data.

No newly suspected outliers or extreme trending data were identified in the dataset for Appendix III constituents during this reporting period. Based on review of the Appendix III statistical analysis presented in **Appendix D**, the following parameters represent SSIs over background interwell PLs:

- Boron: HGWC-120, HGWC-121A, HGWC-124;
- Calcium: HGWC-120, HGWC-121A, HGWC-124;
- Chloride: HGWC-121A;
- Fluoride: HGWC-120;
- pH: HGWC-124;
- Sulfate: HGWC-120, HGWC-121A, HGWC-124;
- TDS: HGWC-120, HGWC-121A.

The October 2019 statistical evaluation results are consistent with the *2019 Annual Groundwater and Corrective Action Monitoring Report* (Geosyntec, 2019a) statistical results, with the exception of a new SSI of pH at HGWC-124.

4.3 Appendix IV Statistical Analyses Results

Pursuant to 40 CFR § 257.95 and GA EPD rule 391-3-4-.10(6)(a), Appendix IV groundwater quality data will be statistically analyzed and compared to groundwater protection standards within 90 days of receiving data from the first (October 2019) semiannual assessment monitoring event. GPC will complete the assessment monitoring and statistical analysis in accordance with 40 CFR § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

5.0 MONITORING PROGRAM STATUS

Based on the statistical evaluation results presented, SSIs of Appendix III parameters have not returned to background levels. Pursuant to 40 CFR § 257.94(e), GPC will continue to monitor groundwater at AP-3 in accordance with the assessment monitoring program regulations of 40 CFR § 257.95. As part of the initial phases of the assessment monitoring program, GPC is currently evaluating Appendix IV data collected from AP-3 compliance wells to statistically establish GWPS for these constituents pursuant to 40 CFR § 257.95.

6.0 CONCLUSIONS & FUTURE ACTIONS

This *2019 Semiannual Groundwater Monitoring & Corrective Action Report* for GPC's Plant Hammond AP-3 was prepared to fulfill the requirements of USEPA's CCR Rule and GA EPD Rules for Solid Waste Management 391-3-4-.10. Statistical evaluations of the October 2019 groundwater monitoring data identified SSIs of Appendix III groundwater monitoring parameters in wells HGWC-120, HGWC-121A, and HGWC-124.

GPC initiated assessment monitoring in accordance with the requirements of 40 CFR § 257.95. The next scheduled sampling event for AP-3 is scheduled for March 2020. During the next semiannual reporting period of 2020, GPC will establish groundwater protection standards for Appendix IV constituents in accordance with 40 CFR § 257.95 and report the results in the Annual Groundwater Monitoring and Corrective Action Report, due August 1, 2020.

7.0 REFERENCES

- Geosyntec Consultants, 2019a. *2019 Annual Groundwater Monitoring & Corrective Action Report – Georgia Power Company, Plant Hammond Ash Pond 3 (AP-3)*. July 2019.
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TABLES

Table 1
Monitoring Well Network Summary
Plant Hammond AP-3, 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
<i>Compliance Monitoring Well</i>									
HGWA-122	Upgradient	11/20/2014	1551251.86	1941888.49	588.05	569.93	559.93	28.52	10
HGWC-120	Downgradient	6/27/2016	1551067.08	1942925.07	605.92	548.37	538.37	67.55	10
HGWC-121A	Downgradient	5/17/2017	1550606.53	1943030.72	584.85	556.69	546.69	38.16	10
HGWC-124	Downgradient	11/13/2014	1551624.63	1942779.73	582.64	557.52	547.52	35.52	10
<i>Groundwater Level Monitoring Piezometer</i>									
MW-21	Downgradient	12/3/2014	1550268.83	1941809.72	586.39	570.01	560.01	26.78	10
MW-23	Downgradient	11/24/2014	1551642.86	1942496.25	585.09	562.48	552.48	33.01	10
MW-31	Downgradient	11/25/2019	1550422.94	1942688.61	611.35	552.60	542.60	66.00	10
MW-32	Downgradient	11/22/2019	1551094.60	1943021.05	585.62	559.27	549.27	33.80	10

Notes:

ft = feet

ft BTOC = feet below top of casing

(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-3, Floyd County, Georgia

Well ID	Hydraulic Location	Aug 21-23, 2019	Oct 21-22, 2019	Status of Monitoring Well
Purpose of Sampling Event:		Initial App. IV Annual	Assessment	
HGWA-122	Upgradient	S01	A01	Assessment
HGWC-120	Downgradient	S01	A01	Assessment
HGWC-121A	Downgradient	S01	A01	Assessment
HGWC-124	Downgradient	S01	A01	Assessment

Notes:

S## = Initial annual Appendix IV sampling event number since initiation of the assessment monitoring program.

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

Table 3
 Summary of Groundwater Elevations
 Plant Hammond AP-3, Floyd County, Georgia

Well ID	Top of Casing Elevation (ft NAVD88) ⁽¹⁾	Aug 21, 2019		Oct 21, 2019	
		Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)
<i>Compliance Monitoring Well</i>					
HGWA-122	588.05	15.38	572.67	16.96	571.09
HGWC-120	605.92	40.98	564.94	41.71	564.21
HGWC-121A	584.85	18.46	566.39	19.32	565.53
HGWC-124	582.64	17.80	564.84	17.90	564.74
<i>Groundwater Level Monitoring Piezometer</i>					
MW-21	586.39	10.91	575.48	12.32	574.07
MW-23	585.09	15.67	569.42	16.65	568.44

Notes:

ft = feet

ft BTOC = feet below top of casing

(1) Survey data recorded March 14, 2018. Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

Table 4
Groundwater Gradient and Flow Velocity Calculations
Plant Hammond AP-3, Floyd County, Georgia

Flow Path Direction ⁽¹⁾	August 21, 2019				October 21, 2019				Average $\Delta h/\Delta l$ (ft/ft)
	h_1 (ft)	h_2 (ft)	Δl (ft)	$\Delta h/\Delta l$ (ft/ft)	h_1 (ft)	h_2 (ft)	Δl (ft)	$\Delta h/\Delta l$ (ft/ft)	
Westerly Flow Path	575.48	564.94	1,350	0.0078	574.07	564.21	1,350	0.0073	0.0076

Averaged for Fall 2019				
Flow Path Direction ⁽¹⁾	K (ft/d)	n	$\Delta h/\Delta l$ (ft/ft)	V (ft/d) ⁽²⁾
Westerly Flow Path	2.76	0.15	0.0076	0.14

Notes:

ft = feet

ft/d = feet per day

ft/ft = feet per foot

h_1, h_2 = groundwater elevation for identified location

$\Delta h/\Delta l$ = hydraulic gradient

K = hydraulic conductivity

Δl = distance between identified location 1 and 2

n = effective porosity

V = groundwater flow velocity

(1) Gradients calculated between wells MW-21 (h_1) and HGWC-120 (h_2).

(2) Groundwater flow velocity equation: $V = [K * (\Delta h/\Delta l)] / n$

Table 5
Summary of Groundwater Analytical Data
Plant Hammond AP-3, Floyd County, Georgia

Well ID:		HGWA-122	HGWA-122	HGWC-120	HGWC-120	HGWC-121A	HGWC-121A	HGWC-124	HGWC-124
Sample Date:		8/22/2019	10/21/2019	8/22/2019	10/22/2019	8/22/2019	10/21/2019	8/23/2019	10/21/2019
Parameter ^(1,2)									
APPENDIX III	Boron	--	0.25	--	1.0	--	2.4	--	0.50
	Calcium	--	80.8	--	171	--	173	--	96.9
	Chloride	--	4.5	--	3.4	--	29.9	--	3.6
	Fluoride	ND (0.12 J)	ND (0.15 J)	ND (0.30 J)	0.53	ND (0.20 J)	ND (0.18 J)	ND (0.11 J)	ND (0.073 J)
	pH ⁽³⁾	6.51	6.69	6.79	6.74	6.77	6.74	7.02	7.05
	Sulfate	--	45.6	--	266	--	238	--	78.5
	TDS	--	296	--	693	--	771	--	357
APPENDIX IV	Antimony	ND	--	ND	--	ND	--	ND	--
	Arsenic	ND	--	ND	--	ND	--	ND	--
	Barium	0.044	0.040	0.050	0.051	0.066	0.074	0.066	0.075
	Beryllium	ND	--	ND	--	ND	--	ND	--
	Cadmium	ND	--	ND	--	ND	--	ND	--
	Chromium	ND (0.00060 J)	ND (0.00068 J)	ND (0.00072 J)	ND	ND	ND	ND	ND (0.00046 J)
	Cobalt	ND	ND	ND (0.0028 J)	ND (0.0031 J)	ND	ND	ND	ND
	Fluoride	ND (0.12 J)	ND (0.15 J)	ND (0.30 J)	0.53	ND (0.20 J)	ND (0.18 J)	ND (0.11 J)	ND (0.073 J)
	Lead	ND	ND (0.000097 J)	ND	ND	ND	ND	ND (0.000049 J)	ND (0.000049 J)
	Lithium	ND	ND	ND (0.029 J)	ND (0.030 J)	ND (0.0084 J)	ND (0.0090 J)	ND (0.0011 J)	ND (0.0011 J)
	Mercury	ND	--	ND	--	ND	--	ND	--
	Molybdenum	ND (0.0030 J)	ND (0.0049 J)	0.039	0.040	ND	ND	ND (0.0014 J)	ND (0.0013 J)
	Comb. Radium 226/228	1.19 U	0.772 U	1.35	0.760 U	1.30	0.393 U	0.834	1.11 U
	Selenium	ND	--	ND	--	ND	--	ND	--
Thallium	ND	--	ND	--	ND	--	ND	--	

Notes:

-- = Parameter was not analyzed

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

ND = 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)

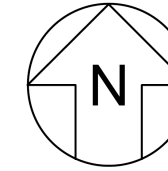
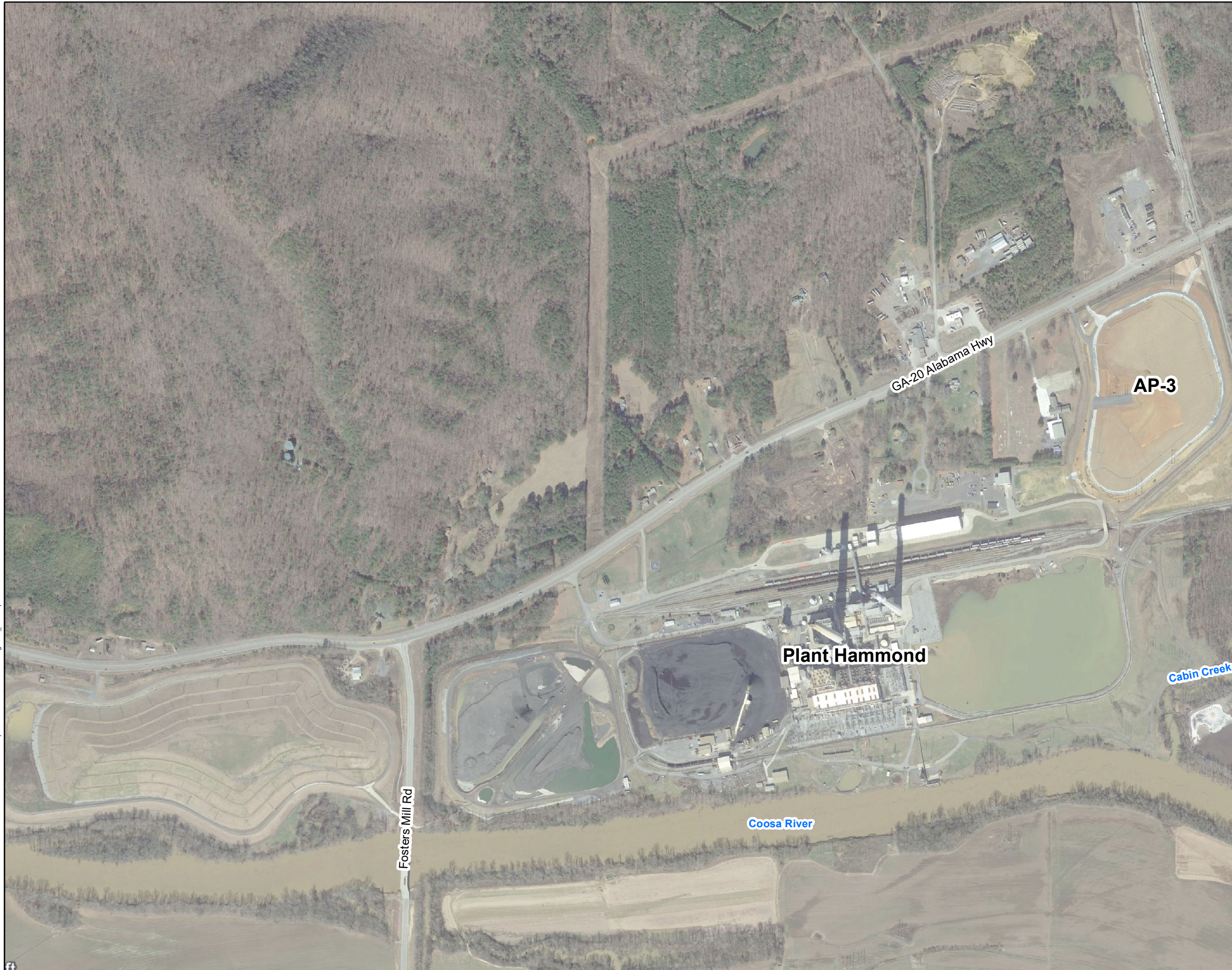
(1) Appendix III/IV parameter per 40 CFR 257 Subpart D. Parameters are reported in units of milligrams per liter (mg/L), except for pH reported as s.u. (standard units) and combined radium reported as picocuries per liter (pCi/L).

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

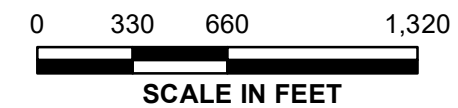
(3) The pH value presented was recorded at the time of sample collection in the field.

FIGURES

N:\GA Power\Plant Hammond GIS\mxd\Hammond2019\CCR Reports\AP-3\Second Annual\Figure 1_SiteMap.mxd 1/29/2020 10:41:52 AM



Note:
1. Aerial photograph source: Google Earth Pro, February 2018.



SITE LOCATION MAP

GEORGIA POWER COMPANY
PLANT HAMMOND AP-3
FLOYD COUNTY, GEORGIA

Prepared For:  Georgia Power

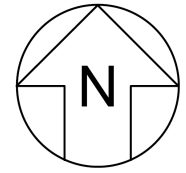
Prepared By: 

KENNESAW, GA

FEBRUARY 2020

**FIGURE
1**

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2019\CCR Reports\AP-3\Second Annual\Figure 2 WellMap.mxd 1/29/2020 10:48:13 AM



LEGEND

- + Compliance Monitoring Well
- + Groundwater Level Monitoring Piezometer



Note:
1. Aerial photograph source: Google Earth Pro, February 2018.



MONITORING WELL NETWORK MAP

GEORGIA POWER COMPANY
PLANT HAMMOND AP-3
FLOYD COUNTY, GEORGIA

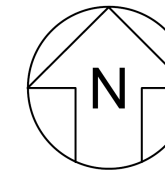
Prepared For: Georgia Power

Prepared By: Geosyntec
consultants

KENNESAW, GA FEBRUARY 2020

**FIGURE
2**

\\aro-01\pr1\S\GA Power\Plant Hammond_GW_Services\GIS\mxd\Hammond\2019\CCCR Reports\AP-3\Second Annual\Figure 3_POT Map_Aug2019_AP3.mxd 2/19/2020 12:57:02 PM



- LEGEND**
- Compliance Monitoring Well
 - Groundwater Level Monitoring 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, February 2018.



**POTENTIOMETRIC SURFACE CONTOUR
MAP - AUGUST 2019**

GEORGIA POWER COMPANY
PLANT HAMMOND AP-3
FLOYD COUNTY, GEORGIA

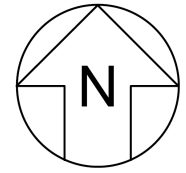
Prepared For: Georgia Power

Prepared By: Geosyntec
consultants

KENNESAW, GA FEBRUARY 2020

**FIGURE
3**

\\aro-01\pr1\S\GA Power\Plant Hammond_GW_Services\GIS\mxd\Hammond\2019\CCCR Reports\AP-3\Second Annual\Figure 4_POT Map_Oct2019_AP3.mxd 2/19/2020 12:39:41 PM

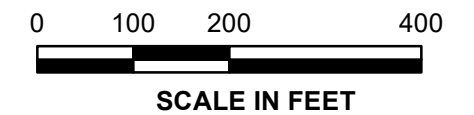


LEGEND

- Compliance Monitoring Well
- Groundwater Level Monitoring 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. Aerial photograph source: Google Earth Pro, February 2018.



**POTENTIOMETRIC SURFACE CONTOUR
MAP - OCTOBER 2019**

GEORGIA POWER COMPANY
PLANT HAMMOND AP-3
FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec
consultants

**FIGURE
4**

KENNESAW, GA FEBRUARY 2020

APPENDIX A

Well Design, Installation, and Development
Report – Addendum No.3, Plant Hammond
Ash Ponds 2 and 3 (AP-2 and AP-3)



Prepared for

Georgia Power Company
241 Ralph McGill Blvd NE
Atlanta, Georgia 30308

WELL DESIGN, INSTALLATION, AND DEVELOPMENT REPORT – ADDENDUM

No. 3

**PLANT HAMMOND ASH PONDS 2 AND 3
(AP-2 AND AP-3)**

Prepared by

Geosyntec 
consultants

engineers | scientists | innovators

1255 Roberts Boulevard, Suite 200
Kennesaw, Georgia 30144

Project Number GW6581B

January 2020



**WELL DESIGN, INSTALLATION, AND DEVELOPMENT
REPORT – ADDENDUM No. 3**

Plant Hammond
Ash Ponds 2 and 3
January 30, 2020

A handwritten signature in black ink, appearing to read "Whitney B. Law".

Whitney B. Law, P.E.
Project Manager
Geosyntec Consultants

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Appendix B	Boring and Well Construction Logs
Appendix C	Well Development Forms

LIST OF ACRONYMS

AP	Ash Pond
ASTM	American Society for Testing and Materials
CCR	coal combustion residual
CFR	Code of Federal Regulations
CFS	Civil Field Services
DO	dissolved oxygen
ft MSL	feet mean sea level
GA EPD	Georgia Environmental Protection Division
GPC	Georgia Power Company
NAD83	North America Datum of 1983
NAVD88	North American Vertical Datum of 1988
NSF	National Sanitation Foundation
ORP	oxygen reduction potential
PVC	polyvinyl chloride
SCS	Southern Company Services
TOC	top of casing
US EPA	United States Environmental Protection Agency

1. INTRODUCTION

This report provides details regarding the design, installation, and development of three wells to supplement the current groundwater monitoring system at Georgia Power Company (GPC) Plant Hammond (Site) Ash Ponds 2 and 3 (AP-2 and AP-3). Wells MW-31, MW-32, and MW-33 will be used as groundwater level monitoring piezometers. Wells MW-31 and MW-32 are associated with AP-3, while well MW-33 is associated with AP-2. The report was prepared as an addendum to the *Well Design, Installation, Development, and Decommissioning Report – Plant Hammond Ash Ponds 1 and 2* (ERM, 2017) and the *Well Design, Installation, and Development Report – Plant Hammond Ash Pond 3* (Geosyntec, 2019a) and meets the requirements promulgated in the United States Environmental Protection Agency (US EPA) coal combustion residual (CCR) rule [40 Code of Federal Regulations (CFR) Part 257, Subpart D], specifically 40 CFR §257.91(e)(1).

Plant Hammond is located in Floyd County, approximately 10 miles west of Rome, Georgia. The current groundwater monitoring systems at AP-2 and AP-3 includes wells associated with the certified CCR compliance monitoring well network and groundwater level monitoring piezometers. Additionally, AP-2 has a network of secondary groundwater delineation monitoring wells. The locations of these wells and piezometers are shown on **Figure 1** for AP-3 and **Figure 2** for AP-2. Details regarding the installation of the certified compliance well network are presented in the above referenced ERM and Geosyntec reports, whereas details regarding the installation of the delineation wells at AP-2 are provided in the initial addendum prepared by Geosyntec Consultants (Geosyntec) (Geosyntec, 2019b).

2. DRILLING AND WELL INSTALLATION

Well installation and development activities were performed according to accepted industry standards and following guidelines within the *Manual for Groundwater Monitoring* (GA EPD, 1991). Well drilling, installation, and surface completion activities were performed by Cascade Drilling Inc. (Cascade) of Midland, North Carolina under contact with, and the supervision of, Southern Company Services (SCS) Civil Field Services (CFS) personnel. In accordance with the Georgia Water Well Standards Act, the driller was required to have an insurance bond on file with the State of Georgia at the time of drilling. A copy of this bond is provided in **Appendix A**. A professional geologist (PG) registered to practice in the State of Georgia, and a geologist under the supervision of a PG, both employed with Geosyntec Consultants (Geosyntec), documented the drilling and installation efforts to record observations, soil and rock descriptions, subsurface stratigraphy, water elevations, and other field activities. Geosyntec was also responsible for the development of the newly installed wells.

AP-3 area wells MW-31 and MW-32, and AP-2 area well MW-33 were installed in November 2019. The locations of these wells are shown on **Figures 1** and **2**, respectively. Well construction details are provided in **Table 1**; boring and well construction logs are included in **Appendix B**.

2.1 Drilling Method

Sonic drilling method with continuous core collection was used for borehole advancement at MW-31. At MW-32 and MW-33, hollow-stem auger with 5-ft center [from 10 to 18.5 feet below ground surface (ft bgs)] and continuous (from 18.5 ft bgs to target depth or auger refusal) split spoon soil samplers were used for borehole advancement. At MW-32, a wireline rock coring method was used to advance borings to final depth into the bedrock. A truck-mounted TS-150 Sonic drill rig was used to install well MW-31; a CME-550 rubber tire ATV mounted drill rig installed MW-32 and MW-33 wells. To advance boreholes, the Sonic rig used a 6-inch sonic drill rod and the CME-550 used an 8-inch (OD) auger; a 4-inch drill rod was used for rock coring advancement. Care was taken so that the drilling methods did not introduce contamination of the groundwater from surface activities.

Drilling equipment was cleaned between each borehole.

2.2 Screened Interval

The wells are screened in the uppermost water bearing unit. The three new AP-2 and AP-3 wells are screened from approximately 566 to 543 feet mean sea level (ft MSL) as surveyed relative to the North American Vertical Datum 1988 (NAVD88). All wells are constructed with 10 feet of well screen.

2.3 Well Casings and Screens

The wells are constructed of 2-inch inner diameter Schedule 40 polyvinyl chloride (PVC) casing with flush-threaded fittings. Each well was installed with a 10-foot nominal length pre-packed dual-wall well screen with 0.010-inch slots. The casings and pre-packed screens arrived pre-cleaned and packaged by the manufacturer. The pre-packed well screen was constructed onsite by packing sand between slotted PVC and the well screen. Well construction materials are sufficiently durable to resist chemical and physical degradation and not interfere with the quality of groundwater samples. Casing and screens are flush-threaded. Solvent or glue was not used to construct the wells. A threaded bottom cap was attached to the bottom of the screen. The PVC products used were American Society for Testing and Materials (ASTM) and National Sanitation Foundation (NSF) rated. Well screen interval details are provided in **Table 1**.

2.4 Well Intake Design

Wells were designed and constructed to: (1) allow sufficient groundwater flow to the well for sampling; (2) minimize the passage of formation materials (turbidity) into the wells; and (3) ensure sufficient structural integrity to prevent collapse of the well. The annular space between the face of the formation and the screen was filled to minimize passage of formation materials into the wells. A filter pack of clean, well-rounded, quartz sand was installed in each well. The 0.01-inch slot size was selected to minimize the inflow of formation material without impairing influent groundwater flow.

2.5 Filter Pack

Highly Pure Quartzite of Southern Products & Silica Co. silica sand filter pack was used as the appropriate gradation for all wells. Highly Pure Quartzite meets the ASTM D5092 uniformity coefficient specification of 2.5 or less, with a uniformity coefficient of 1.6.

Filter pack material was placed within the pre-packed dual-wall well screens and in the annular space between the outside of the pre-pack screen and borehole wall to ensure an adequate thickness of filter pack material between the well and the formation. Filter pack

material placed in the annular space outside of the well screen extended approximately 2 feet above the top of screen. No bridging occurred during filter pack placement.

Upon placement of the filter pack, each well was pumped with a submersible pump to assure settlement of the filter pack. The top of filter pack depth was measured following pumping to ensure appropriate extension of filter sand above the screen. The depth of the top of the filter pack was measured and recorded on the well construction logs provided in **Appendix B**.

2.6 Annular Seal

A minimum of two feet of bentonite pellets (PelPlug time-release coated 3/8" bentonite pellets) were placed immediately above the filter pack by gravity-pouring into the annular space and hydrated per manufacture's specifications. A tremie pipe was used to probe the annular space to ensure that no bridging occurred. If any new well was installed within 15 feet of an existing well, the bentonite seal was brought above the elevation corresponding to the screen top of the nearby well. This was done to prevent grout from entering the water-bearing or screen zone. The bentonite was hydrated with potable water for a duration meeting or exceeding the manufacture's specifications prior to grouting the remaining annulus.

The annulus above the bentonite seal was grouted with Aqua Guard bentonite grout placed via tremie pipe from the top of the bentonite seal. During grouting, care was taken to assure that the bentonite seal was not disturbed by locating the base of the tremie pipe approximately 2 feet above the bentonite seal and injecting grout at low pressure/velocity. A cement apron 4-feet by 4-feet by 4-inches was poured around each well. The pad is mounded slightly outward to direct surface drainage away from the well.

2.7 Cap and Protective Casing

The well risers are fitted with a locking cap and a lockable cover. A one-quarter inch vent hole in the PVC riser pipe provides an avenue for the escape of gas. The protective cap guards the casing from damage and the locking cap serves as a security device to prevent well tampering. Bollards were installed around the four corners of the concrete pad to protect the well.

Wells are clearly marked with signs with the proper designation. A weep hole was drilled in the outer protective casing near the bottom above the concrete pad. Pea gravel was placed inside the protective casing between the riser pipe and the outer casing. Wells are

clearly marked with the proper well identification number on the stand-up casing. Construction details are documented on the well construction logs provided in **Appendix B**.

3. WELL DEVELOPMENT

Wells were developed using a combination of surging and pumping to (1) restore the natural hydraulic conductivity of the formation, and (2) to remove fine-grained sediment to ensure low-turbidity groundwater samples. Wells were alternately surged and purged until visually clear of particulates. Turbidity, pH, temperature, conductivity, oxidation-reduction potential (ORP), and dissolved oxygen (DO) measurements were recorded to ensure that each well was fully developed. The development forms are included in **Appendix C**.

All equipment and tubing placed in the well was decontaminated or disposed of between wells.

4. SURVEY

Upon completion of the well installation, the horizontal locations and vertical elevations were surveyed by CFS. The survey pin installed at each well pad was surveyed to within +/- 0.5-foot horizontal accuracy. Elevations were also measured to the nearest 0.01-foot on the top of the PVC well casing [top of casing (TOC) elevation] and ground surface adjacent to the well pad. Northings and eastings were recorded in feet relative to the North America Datum of 1983 (NAD83). Top of casing and ground surface elevations are in feet relative to NAVD88. Certified survey data are provided in the well construction tables.

5. REFERENCES

- Environmental Resources Management (ERM), 2017. *Well Design, Installation, Development, and Decommissioning Report – Plant Hammond Ash Ponds 1 and 2*. October 2017.
- Georgia Environmental Protection Division (GA EPD), Georgia Department of Natural Resources, 1991. *Manual for Groundwater Monitoring*. September 1991.
- Geosyntec Consultants, 2019a. *Well Design, Installation, and Development Report – Addendum, Plant Hammond Ash Pond 3 (AP-3)*. April 2019.
- Geosyntec Consultants, 2019b. *Well Design, Installation, and Development Report – Addendum, Plant Hammond Ash Ponds 1 and 2 (AP-1 and AP-2)*. June 2019.
- United States Environmental Protection Agency. 2015a. Federal Register. Volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. [EPA-HQ-RCRA-2009-0640; FRL-9919-44-OSWER]. RIN-2050-AE81, April 2015

TABLE

Table 1
 Summary of Well Construction Details
 Plant Hammond AP-2 and AP-3, Floyd County, Georgia

Well ID	Ash Pond	Purpose	Installation Date	Northing ⁽¹⁾	Easting ⁽¹⁾	Ground Surface Elevation ⁽²⁾ (ft MSL)	Top of Nail Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen Elevation (ft MSL)	Bottom of Screen Elevation (ft MSL)	Well Depth (ft bgs) ⁽³⁾
MW-31	3	Water Level Monitoring	11/25/2019	1550422.94	1942688.613	608.60	608.83	611.35	552.60	542.60	66.0
MW-32	3	Water Level Monitoring	11/22/2019	1551094.60	1943021.05	583.07	583.25	585.62	559.27	549.27	33.8
MW-33	2	Water Level Monitoring	11/21/2019	1547975.23	1938411.668	591.06	591.26	593.99	566.06	556.06	35.0

Notes:

ft MSL = feet mean sea level

ft bgs = feet below ground surface

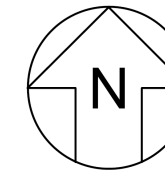
(1) Coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet.

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



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

FIGURES

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2020\AP2\AP3 Well Install Rpt\AP3\Figure 1 AP3WellMap.mxd 1/28/2020 7:52:26 AM



LEGEND

-  Compliance Monitoring Well
-  Groundwater Level Monitoring Piezometer

Note:
 1. Aerial photograph source: Google Earth Pro, February 2018.



MONITORING WELL NETWORK MAP

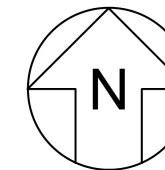
GEORGIA POWER COMPANY
 PLANT HAMMOND AP-3
 FLOYD COUNTY, GEORGIA

Prepared For:  Georgia Power

Prepared By:  Geosyntec
 consultants

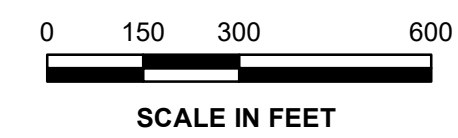
KENNESAW, GA JANUARY 2020

FIGURE
1



- LEGEND**
- Compliance Monitoring Well
 - Delineation Monitoring Well
 - Groundwater Level Monitoring Piezometer

Note:
1. Aerial photograph source: Google Earth Pro, February 2018.



MONITORING WELL NETWORK MAP

GEORGIA POWER COMPANY
PLANT HAMMOND AP-2
ROME, FLOYD COUNTY, GEORGIA

Prepared For: Georgia Power

Prepared By: Geosyntec
consultants

KENNESAW, GA JANUARY 2020

**FIGURE
2**

N:\GA Power\Plant Hammond\GIS\mxd\Hammond\2019\CCR Reports\AP-2\Second Semi-Annual\Figure 2_WellMap.mxd 1/28/2020 7:17:16 AM

APPENDIX A

Well Driller Performance Bonds

CONTINUATION
CERTIFICATE

Atlantic Specialty Insurance Company

, Surety upon

a certain Bond No. 800033976

dated effective 09/27/2017
(MONTH-DAY-YEAR)

on behalf of Ricky Davis / Cascade Drilling, L.P.
(PRINCIPAL)

and in favor of Department of Natural Resources, State of Georgia
(OBLIGEE)

Issued on 9/27/2017
Expires on 6/30/2019
Renewed on 3/4/2019
Expires on 6/30/2021

does hereby continue said bond in force for the further period

beginning on 06/30/2019
(MONTH-DAY-YEAR)

and ending on 06/30/2021
(MONTH-DAY-YEAR)

Amount of bond Thirty Thousand and 00/100 Dollars (\$30,000.00)

Description of bond Performance Bond for Water Well Contractors

Premium: \$1200.00

PROVIDED: That this continuation certificate does not create a new obligation and is executed upon the express condition and provision that the Surety's liability under said bond and this and all Continuation Certificates issued in connection therewith shall not be cumulative and that the said Surety's aggregate liability under said bond and this and all such Continuation Certificates on account of all defaults committed during the period (regardless of the number of years) said bond had been and shall be in force, shall not in any event exceed the amount of said bond as hereinbefore set forth.

Signed and dated on March 4th, 2019
(MONTH-DAY-YEAR)

Atlantic Specialty Insurance Company

By Andrew P. Larsen
Attorney-in-Fact Andrew P. Larsen

Parker, Smith & Feek, Inc.

Agent

2233 112th Ave NE Bellevue, WA 98004

Address of Agent

425-709-3600

Telephone Number of Agent

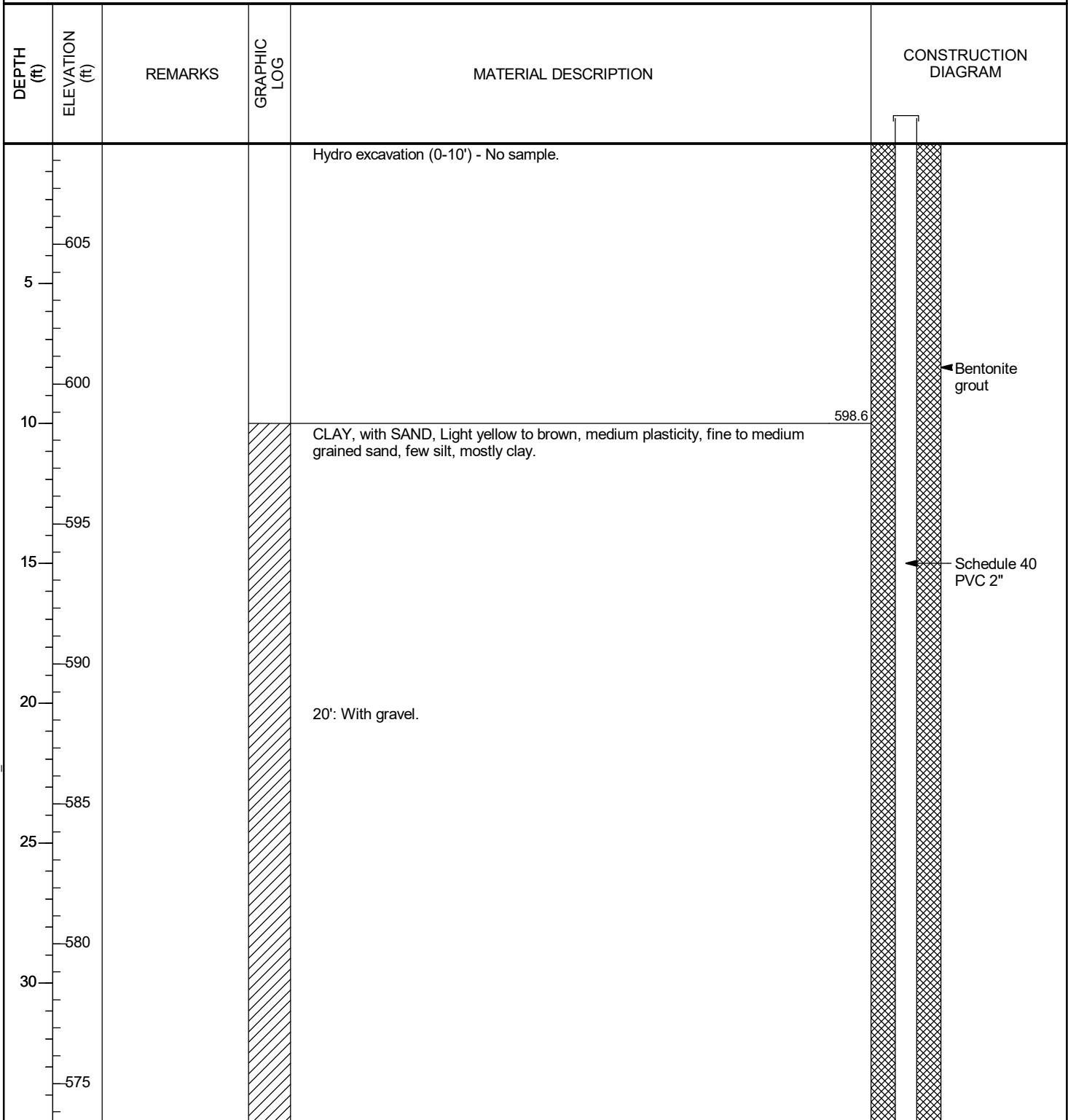


APPENDIX B

Boring and Well Construction Logs

CLIENT <u>Southern Company Services</u>	PROJECT NAME <u>Plant Hammond Well Installation</u>
PROJECT NUMBER <u>GW6581B</u>	PROJECT LOCATION <u>Plant Hammond</u>
DATE STARTED <u>11/25/19</u> COMPLETED <u>11/26/19</u>	NORTHING <u>1550422.94 ft</u> EASTING <u>1942688.61 ft</u>
DRILLER <u>SCS Field Services</u>	GROUND ELEVATION <u>608.6 ft</u> BORING DIAMETER <u>6 in</u>
DRILLING METHOD <u>Sonic</u>	TOP OF CASING ELEVATION <u>611.35 ft</u>
SAMPLING METHOD <u>Core Barrel (4")</u>	GEOPHYSICAL CONTRACTOR <u>---</u>
RIG TYPE <u>Sonic TS-150</u>	LOGGED BY <u>B. Weinmann</u> CHECKED BY <u>J. Ivanowski</u>

SCS MONITORING WELLS PLANT HAMMOND MW31 TO MW33 DECEMBER 2019.GPJ ACP GINT LIBRARY CH.GLB 1/10/20



(Continued Next Page)

CLIENT Southern Company Services **PROJECT NAME** Plant Hammond Well Installation
PROJECT NUMBER GW6581B **PROJECT LOCATION** Plant Hammond

DEPTH (ft)	ELEVATION (ft)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
35				CLAY, with SAND, Light yellow to brown, medium plasticity, fine to medium grained sand, few silt, mostly clay. (continued)	
40	570				
45	565			CLAY with SAND, light gray and yellow to red, medium plasticity, sand is fine grained, laminated, stiff, moist.	
50	560			54': With rock fragments, fine to medium grained sand, brown to gray.	
55	555			PARTIALLY WEATHERED ROCK (PWR), Gray, fine to coarse gravel sized limestone fragments and fine to medium grained sand.	
60	550				
65	545			LIMESTONE, Pale gray, limestone.	

Bottom of borehole at 66.0 feet.

← Bentonite 3/8" chips

← 20/40 Silica Sand
0.010 slot size
2" Pre Pack,
U-Pack
Screen

SCS MONITORING WELLS PLANT HAMMOND MW31 TO MW33 DECEMBER 2019.GPJ ACP GINT LIBRARY CH.GLB 1/10/20

CLIENT <u>Southern Company Services</u>	PROJECT NAME <u>Plant Hammond Well Installation</u>
PROJECT NUMBER <u>GW6581B</u>	PROJECT LOCATION <u>Plant Hammond</u>
DATE STARTED <u>11/22/19</u> COMPLETED <u>11/26/19</u>	NORTHING <u>1551094.6 ft</u> EASTING <u>1943021.05 ft</u>
DRILLER <u>SCS Field Services</u>	GROUND ELEVATION <u>583.07 ft</u> BORING DIAMETER <u>8 in</u>
DRILLING METHOD <u>HSA + Rock Coring (NQ)</u>	TOP OF CASING ELEVATION <u>585.62 ft</u>
SAMPLING METHOD <u>SPT</u>	GEOPHYSICAL CONTRACTOR <u>---</u>
RIG TYPE <u>CME 550</u>	LOGGED BY <u>N.Tilahun</u> CHECKED BY <u>J. Ivanowski</u>

SCS MONITORING WELLS PLANT HAMMOND MW31 TO MW33 DECEMBER 2019.GPJ ACP GINT LIBRARY CH.GLB 1/10/20

DEPTH (ft)	ELEVATION (ft)	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
				0-9': Hand auger.		Top soil	
5	580					GRAVELLY CLAY, Light brown, low plasticity, gravel is fine grained, angular, trace fine to coarse sand and silt, medium dense, moist. 3': Reddish brown to dark brown.	
10	575			9-28.3': Hollow stem auger.		CLAY, Brown, medium plasticity, trace fine sand and silt, firm, moist.	
15	570	89	2-2-2 (4)			CLAY, Brown, medium plasticity, trace angular gravel, few fine sand, firm, moist.	
20	565	89	0-0-0 (-)	18.5-20': Weight of hammer.		CLAY, Light brown, high plasticity, very soft, laminated, wet.	
		100	0-0-0 (-)	20-21.5': Weight of hammer.			
		100	3-2-2 (4)			From 21.5': Dark brown, with weathered limestone fragments, laminated, soft, moist to wet.	
	560	22	0-1-1 (2)				

Bentonite grout

Schedule 40 PVC 2"

Bentonite 3/8" chips

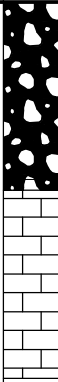
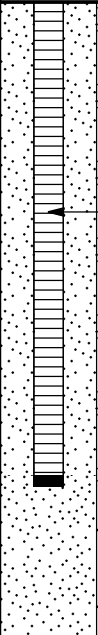
20/40 Silica Sand

CLIENT Southern Company Services

PROJECT NAME Plant Hammond Well Installation

PROJECT NUMBER GW6581B

PROJECT LOCATION Plant Hammond

DEPTH (ft)	ELEVATION (ft)	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
25		67	30-40-30 (70)	From 28.3': Coring.		PARTIALLY WEATHERED ROCK (PWR), Gray, fine to coarse gravel sized limestone fragments, very hard, wet. (continued)	
		17	50/3" (-)			LIMESTONE, Dark gray, thinly bedded, hard, slightly weathered, with light gray to white calcite filled veins.	
555		17	50/3" (-)			32 - 37': Void.	
30							0.010 slot size 2" Pre Pack, U-Pack Screen
550							
35							

Bottom of borehole at 37.0 feet.

CLIENT <u>Southern Company Services</u>	PROJECT NAME <u>Plant Hammond Well Installation</u>
PROJECT NUMBER <u>GW6581B</u>	PROJECT LOCATION <u>Plant Hammond</u>
DATE STARTED <u>11/21/19</u> COMPLETED <u>11/22/19</u>	NORTHING <u>1547975.23 ft</u> EASTING <u>1938411.67 ft</u>
DRILLER <u>SCS Field Services</u>	GROUND ELEVATION <u>591.06 ft</u> BORING DIAMETER <u>8 in</u>
DRILLING METHOD <u>HSA</u>	TOP OF CASING ELEVATION <u>593.99 ft</u>
SAMPLING METHOD <u>SPT</u>	GEOPHYSICAL CONTRACTOR <u>---</u>
RIG TYPE <u>CME 550</u>	LOGGED BY <u>N.Tilahun</u> CHECKED BY <u>J. Ivanowski</u>

SCS MONITORING WELLS PLANT HAMMOND MW31 TO MW33 DECEMBER 2019.GPJ ACP GINT LIBRARY CH.GLB 1/8/20

DEPTH (ft)	ELEVATION (ft msl)	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
590					Hydro excavation (0-10') - No sample.	
585						
10	580				10-13.5': No Sample.	
15		33	4-8-9 (17)		GRAVELLY CLAY, Brown, low to medium plasticity, gravel is angular to subangular, stiff, trace sand and silt, moist.	← Bentonite grout
					15-18.5': No sample.	← Schedule 40 PVC 2"
575						
		78	14-6-6 (12)		GRAVELLY CLAY, Brown, low to medium plasticity, gravel is angular to subangular, stiff, trace sand and silt, moist.	
					SILT, Brown, low to medium plasticity, trace fine sand, firm to stiff, with some clay, moist.	

(Continued Next Page)

CLIENT Southern Company Services **PROJECT NAME** Plant Hammond Well Installation
PROJECT NUMBER GW6581B **PROJECT LOCATION** Plant Hammond

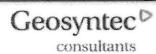
DEPTH (ft)	ELEVATION (ft msl)	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
20					SILT, Brown, low to medium plasticity, trace fine sand, firm to stiff, with some clay, moist. <i>(continued)</i> 20': Firm to stiff. 23': Firm.	<p>Bentonite 3/8" chips</p>
	570	67	5-4-5 (9)			
		100	5-4-6 (10)			
		100	3-3-3 (6)			
25					CLAY, Brown with black mottles, medium to high plasticity, trace silt, trace fine sand, stiff, wet. 27.5': Firm.	<p>20/40 Silica Sand 0.010 slot size 2" Pre Pack, U-Pack Screen</p>
	565	100	4-6-7 (13)			
		78	6-7-8 (15)			
		100	2-4-4 (8)		29': Light brown to light gray.	
30					30.5': Light brown to light gray, stiff. CLAYEY SAND, Gray to brown, fine grained, poorly graded, medium dense, moist to wet. GRAVELLY CLAY, Light brown to brown, medium to high plasticity, gravel is angular to subrounded, stiff, moist to wet.	
	560	89	4-6-6 (12)			
		100	4-5-6 (11)			
		100	4-4-7 (11)			
35						
		89	7-6-4 (10)			

Bottom of borehole at 35.0 feet.

APPENDIX C

Well Development Forms

WELL
DEVELOPMENT



GROUNDWATER SAMPLING LOG SHEET

Client: SCS/GA Power
 Site: Plant Hammond
 Well ID: MW-31
 Total Depth (ft): 66'
 Depth to Water (ft): 41.56
 Well Diameter (in): _____
 Well Volume (gal) = 0.041d²h: _____
 Well Volume (L) = gal * 3.785: _____

Project No.: GW6581
 Location: A7-3
 Pump Type/Model: Acme Saver
 Tubing Material: Polyethylene
 Pump Intake Depth (ft): _____
 Start/Stop Purge Time: _____
 Purge Rate (mL/min): _____
 Total Purge Volume (L): _____

Sampling Date: 12/10/19
 Sampler's Name: B. Weinmann
 Sample Collection Time: 11:46
 Sample Purge Rate (mL/min): _____
 Sample ID: _____
 Laboratory Analyses: _____

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

Purge Method: Low-Flow Well Volume Other: _____ QA/QC Collected? _____
 Sampling Method: Pump Discharge Other: _____ 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.)
1:13	7.38	865.0	158.5	2.96	14.55	10.45			35 L	Pump at 65'
1:50	7.31	793.5	88.0	8.86	14.43	14.24			66 L	Pump at 60'
1:55	7.21	778.9	23.8	10.00	15.38	8.56			70 L	Pump at 60'
2:24	7.26	742.7	73.2	2.88	14.38	28.68			93 L	Pump at 55'
2:37	7.27	782.4	65.3	3.20	14.05	11.20				Pump at 55'
2:41	7.24	764.5	56.3	2.82	15.91	8.44				Pump at 55'
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	

WELL
DEVELOPMENT

Geosyntec consultants
GROUNDWATER SAMPLING LOG SHEET

Client: GA Power Project No.: GW0581 Sampling Date: 12/11/19
 Site: Plant Hammond Location: A#-3 (across tanks) Sampler's Name: B. Weinmann
 Well ID: MW-32 Pump Type/Model: Manson Sample Collection Time: _____
 Total Depth (ft): 36.69 Tubing Material: Polystyrene Sample Purge Rate (mL/min): _____
 Depth to Water (ft): 19.39' Pump Intake Depth (ft): _____ Sample ID: _____
 Well Diameter (in): _____ Start/Stop Purge Time: _____ Laboratory Analyses: _____
 Well Volume (gal) = 0.041d²h: _____ Purge Rate (mL/min): _____ Total Purge Volume (L): _____
 Well Volume (L) = gal * 3.785: _____
 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
 Purge Method: Low-Flow Well Volume Other: _____ QA/QC Collected? _____
 Sampling Method: Pump Discharge Other: _____ 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 btoe)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
11:53	6.46	918.1	110.1	2.01	18.55	30.49			15	35' surge at start
12:02	6.97	897.5	105.6	2.22	17.61	21.77			29	33'
12:14	6.92	874.6	104.0	2.20	17.74	13.61			43	"
12:19	6.95	895.5	103.1	2.16	17.08	10.17			49	"
12:21	6.93	897.3	103.0	2.90	16.59	9.51			54	"
12:38	6.98	904.0	97.1	1.95	16.58	51.58			76	Surge at 12:25
12:44	6.99	898.6	98.0	2.02	17.01	21.81			85	"
12:49	6.92	911.3	96.5	2.19	17.21	14.47			91	"
12:53	6.91	912.9	95.5	1.97	17.48	9.75			99	"
1:02	6.99	832.4	94.5	3.23	15.96	8.02			112	" Surge at 1:08
1:21	7.00	876.2	92.3	2.77	18.00	45.00			125	"
1:28	7.03	911.5	92.9	3.89	16.56	19.49			136	"
1:34	7.00	800.2	92.4	2.83	17.57	9.44			147	
1:40	6.93	914.1	92.1	6.19	17.21	7.84			153	
1:44	6.94	918.5	91.5	2.14	16.94	5.95			160	
1:47	6.90	924.8	90.4	2.77	16.86	5.25			167	

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	
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APPENDIX B

Well Inspection Forms

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID HGWA-122
 Date, field conditions 8/22/19 clear, sunny, 84°F

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID HGWC-120
 Date, field conditions 08/21/19 cloudy, 75°

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID AGWC-121A
 Date, field conditions 08/22/19 clear, sunny, 80°F

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID HGWC-124
 Date, field conditions 08/23/19 clear, sunny, 96°F

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-1
 Permit Number _____
 Well ID AD1A-1
 Date, field conditions 08/21/19 Sunny 78°

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-1
 Permit Number _____
 Well ID MW-1
 Date, field conditions DB/21/19 sunny 70°F

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID MW-21
 Date, field conditions 08/21/19, sunny 78°F

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

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name AP-3
 Permit Number _____
 Well ID MW-23
 Date, field conditions 08/21/19, cloudy 75°F

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

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 H16WA-122
 Date, field conditions 10-21-2019

	yes	no	n/a
1 Location/Identification			
a Is the well visible and accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well properly identified with the correct well ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well in a high traffic area and does the well require protection from traffic?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Protective Casing			
a Is the protective casing free from apparent damage and able to be secured?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of degradation or deterioration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the casing have a functioning weep hole?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the well locked and is the lock in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Surface pad			
a Is the well pad in good condition (not cracked or broken)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well pad sloped away from the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well pad in complete contact with the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the pad surface clean (not covered with sediment or debris)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <i>minor debris from vegetation</i>
4 Internal casing			
a Does the cap prevent entry of foreign material into the well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well properly vented for equilibration of air pressure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the survey point clearly marked on the inner casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the depth of the well consistent with the original well log?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Sampling: Groundwater Wells Only:			
a Does well recharge adequately when purged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the well require redevelopment (low flow, turbid)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 HGWL-120
 Date, field conditions 10-22-2019 wet / cool

	yes	no	n/a
1 Location/Identification			
a Is the well visible and accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well properly identified with the correct well ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well in a high traffic area and does the well require protection from traffic?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Protective Casing			
a Is the protective casing free from apparent damage and able to be secured?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of degradation or deterioration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the casing have a functioning weep hole?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the well locked and is the lock in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Surface pad			
a Is the well pad in good condition (not cracked or broken)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well pad sloped away from the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well pad in complete contact with the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the pad surface clean (not covered with sediment or debris)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Internal casing			
a Does the cap prevent entry of foreign material into the well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well properly vented for equilibration of air pressure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the survey point clearly marked on the inner casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the depth of the well consistent with the original well log?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Sampling: Groundwater Wells Only:			
a Does well recharge adequately when purged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the well require redevelopment (low flow, turbid)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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-121A
 Date, field conditions 10/21/2019

	yes	no	n/a
1 Location/Identification			
a Is the well visible and accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well properly identified with the correct well ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well in a high traffic area and does the well require protection from traffic?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Protective Casing			
a Is the protective casing free from apparent damage and able to be secured?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of degradation or deterioration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the casing have a functioning weep hole?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the well locked and is the lock in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Surface pad			
a Is the well pad in good condition (not cracked or broken)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well pad sloped away from the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well pad in complete contact with the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the pad surface clean (not covered with sediment or debris)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Internal casing			
a Does the cap prevent entry of foreign material into the well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well properly vented for equilibration of air pressure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the survey point clearly marked on the inner casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the depth of the well consistent with the original well log?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Sampling: Groundwater Wells Only:			
a Does well recharge adequately when purged?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the well require redevelopment (low flow, turbid)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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-124
 Date, field conditions 10-21-2019

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

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name Hawthorn
 Permit Number _____
 Well ID APIA1
 Date, field conditions 10-21-2019 Overcast / Cool

	yes	no	n/a
1 Location/Identification			
a Is the well visible and accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well properly identified with the correct well ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well in a high traffic area and does the well require protection from traffic?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Protective Casing			
a Is the protective casing free from apparent damage and able to be secured?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of degradation or deterioration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Does the casing have a functioning weep hole?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the annular space between casings clear of debris and water, or filled with pea gravel/sand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the well locked and is the lock in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Surface pad			
a Is the well pad in good condition (not cracked or broken)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the well pad sloped away from the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well pad in complete contact with the protective casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the pad surface clean (not covered with sediment or debris)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <i>minor debris 10/25 from sediment, vegetation</i>
4 Internal casing			
a Does the cap prevent entry of foreign material into the well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Is the well properly vented for equilibration of air pressure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Is the survey point clearly marked on the inner casing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Is the depth of the well consistent with the original well log?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Sampling: Groundwater Wells Only:			
a Does well recharge adequately when purged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <i>Only</i>
b If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <i>WL</i>
c Does the well require redevelopment (low flow, turbid)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input checked="" type="checkbox"/> <i>10/25</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <i>10/25</i>

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 AMW-1
 Date, field conditions 10-21-2019 Overcast cool

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

WL
only

✓ NM 10/25

X NM 10/25

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

Groundwater Monitoring Well Integrity Form

Site Name Hammock
 Permit Number _____
 Well ID MW-23
 Date, field conditions 10-21-2019

- | | | yes | no | n/a |
|----------------------------------|--|-------------------------------------|--------------------------|--------------------------|
| 1 Location/Identification | | | | |
| a | Is the well visible and accessible? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b | Is the well properly identified with the correct well ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c | Is the well in a high traffic area and does the well require protection from traffic? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d | Is the drainage around the well acceptable? (no standing water, nor is well located in obvious drainage flow path) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | |
|----------------------------|---|-------------------------------------|--------------------------|--------------------------|
| 2 Protective Casing | | | | |
| a | Is the protective casing free from apparent damage and able to be secured? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b | Is the casing free of degradation or deterioration? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c | Does the casing have a functioning weep hole? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d | Is the annular space between casings clear of debris and water, or filled with pea gravel/sand? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e | Is the well locked and is the lock in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | |
|----------------------|--|-------------------------------------|--------------------------|--------------------------|
| 3 Surface pad | | | | |
| a | Is the well pad in good condition (not cracked or broken)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b | Is the well pad sloped away from the protective casing? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c | Is the well pad in complete contact with the protective casing? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e | Is the pad surface clean (not covered with sediment or debris)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | |
|--------------------------|---|-------------------------------------|--------------------------|--------------------------|
| 4 Internal casing | | | | |
| a | Does the cap prevent entry of foreign material into the well? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b | Is the casing free of kinks or bends, or any obstructions from foreign objects (such as bailers)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c | Is the well properly vented for equilibration of air pressure? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d | Is the survey point clearly marked on the inner casing? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e | Is the depth of the well consistent with the original well log? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | |
|--|---|--------------------------|--------------------------|-------------------------------------|
| 5 Sampling: Groundwater Wells Only: | | | | |
| a | Does well recharge adequately when purged? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b | If dedicated sampling equipment installed, is it in good condition and specified in the approved groundwater plan for the facility? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c | Does the well require redevelopment (low flow, turbid)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- | | | | | |
|--|-------------------------------------|--------------------------|-------------------------------------|----------------|
| 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? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <i>nl only</i> |
|--|-------------------------------------|--------------------------|-------------------------------------|----------------|

7 Corrective actions as needed, by date:

Signature and Seal of PE/PG responsible for inspection

APPENDIX C

Laboratory Analytical and Field Sampling Reports

APPENDIX C1

Laboratory Analytical Data Packages and Data Validation Reports

Laboratory Reports

March 12, 2020

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

RE: Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

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



REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092
Florida DOH Certification #: E87315
Georgia DW Inorganics Certification #: 812
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381
South Carolina Certification #: 98011001
Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622352001	HGWA-122	Water	08/22/19 10:37	08/23/19 12:00
2622352002	HGWC-121A	Water	08/22/19 13:05	08/23/19 12:00
2622352003	HGWC-120	Water	08/22/19 15:47	08/23/19 12:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622352001	HGWA-122	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622352002	HGWC-121A	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2622352003	HGWC-120	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Sample: HGWA-122		Lab ID: 2622352001		Collected: 08/22/19 10:37		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 18:11	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:11	7440-38-2	
Barium	0.044	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:11	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:11	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:11	7440-43-9	
Chromium	0.00060J	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:11	7440-47-3	B
Cobalt	ND	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:11	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:11	7439-92-1	
Lithium	ND	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:11	7439-93-2	
Molybdenum	0.0030J	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:11	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:11	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:11	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.00014	1	08/26/19 14:21	08/27/19 14:17	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	0.12J	mg/L	0.30	0.029	1		08/30/19 20:44	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Sample: HGWC-121A		Lab ID: 2622352002		Collected: 08/22/19 13:05		Received: 08/23/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/27/19 11:50	08/27/19 18:17	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:17	7440-38-2		
Barium	0.066	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:17	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:17	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:17	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:17	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:17	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:17	7439-92-1		
Lithium	0.0084J	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:17	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:17	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:17	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:17	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 14:19	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	0.20J	mg/L	0.30	0.029	1		08/30/19 21:07	16984-48-8		

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ANALYTICAL RESULTS

Project: Plant Hammond AP GW6851

Pace Project No.: 2622352

Sample: HGWC-120		Lab ID: 2622352003		Collected: 08/22/19 15:47		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 18:23	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00035	1	08/27/19 11:50	08/27/19 18:23	7440-38-2	
Barium	0.050	mg/L	0.010	0.00049	1	08/27/19 11:50	08/27/19 18:23	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000074	1	08/27/19 11:50	08/27/19 18:23	7440-41-7	
Cadmium	ND	mg/L	0.0025	0.00011	1	08/27/19 11:50	08/27/19 18:23	7440-43-9	
Chromium	0.00072J	mg/L	0.010	0.00039	1	08/27/19 11:50	08/27/19 18:23	7440-47-3	B
Cobalt	0.0028J	mg/L	0.0050	0.00030	1	08/27/19 11:50	08/27/19 18:23	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	08/27/19 11:50	08/27/19 18:23	7439-92-1	
Lithium	0.029J	mg/L	0.030	0.00078	1	08/27/19 11:50	08/27/19 18:23	7439-93-2	
Molybdenum	0.039	mg/L	0.010	0.00095	1	08/27/19 11:50	08/27/19 18:23	7439-98-7	
Selenium	ND	mg/L	0.010	0.0013	1	08/27/19 11:50	08/27/19 18:23	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000052	1	08/27/19 11:50	08/27/19 18:23	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 14:21	7439-97-6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Fluoride	0.30J	mg/L	0.30	0.029	1		08/30/19 21:30	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

QC Batch: 34265 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury
Associated Lab Samples: 2622352001, 2622352002, 2622352003

METHOD BLANK: 154112 Matrix: Water
Associated Lab Samples: 2622352001, 2622352002, 2622352003

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

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

QC Batch: 34320 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622352001, 2622352002, 2622352003

METHOD BLANK: 154347 Matrix: Water
Associated Lab Samples: 2622352001, 2622352002, 2622352003

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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622337002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
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	

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6851

Pace Project No.: 2622352

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 154349		154350		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622337002 Result	MS Spike Conc.	MSD Spike Conc.									
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		

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

QC Batch: 34533 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622352001, 2622352002, 2622352003

METHOD BLANK: 155485 Matrix: Water
Associated Lab Samples: 2622352001, 2622352002, 2622352003

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		2622319009		2622319009		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	ND	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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QUALIFIERS

Project: Plant Hammond AP GW6851

Pace Project No.: 2622352

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6851
Pace Project No.: 2622352

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622352001	HGWA-122	EPA 3005A	34320	EPA 6020B	34344
2622352002	HGWC-121A	EPA 3005A	34320	EPA 6020B	34344
2622352003	HGWC-120	EPA 3005A	34320	EPA 6020B	34344
2622352001	HGWA-122	EPA 7470A	34265	EPA 7470A	34311
2622352002	HGWC-121A	EPA 7470A	34265	EPA 7470A	34311
2622352003	HGWC-120	EPA 7470A	34265	EPA 7470A	34311
2622352001	HGWA-122	EPA 300.0	34533		
2622352002	HGWC-121A	EPA 300.0	34533		
2622352003	HGWC-120	EPA 300.0	34533		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 2622352

Client Name: GA Power CCR

PM: BM Due Date: 08/30/19 CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Face Other

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 311°C Biological Tissue is Frozen: Yes No

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

Temp should be above freezing to 6°C

Comments:

Table with 16 rows and 3 columns. Columns: Question, Yes/No/N/A checkboxes, and Item Number. Rows include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, Pace Trip Blank Lot # (if purchased).

Client Notification/ Resolution: Field Data Required? Y / N
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

September 23, 2019

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

RE: Project: Plant Hammond AP GW6851
Pace Project No.: 2622353

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

Pennsylvania Certification IDs

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

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Plant Hammond AP GW6851
Pace Project No.: 2622353

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622353001	HGWA-122	Water	08/22/19 10:37	08/23/19 12:00
2622353002	HGWC-121A	Water	08/22/19 13:05	08/23/19 12:00
2622353003	HGWC-120	Water	08/22/19 15:47	08/23/19 12:00

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SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622353001	HGWA-122	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622353002	HGWC-121A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2622353003	HGWC-120	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 GW6851

Pace Project No.: 2622353

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	0.308 ± 0.250 (0.423) C:89% T:NA	pCi/L	09/05/19 09:54	13982-63-3	
Radium-228	EPA 9320	0.886 ± 0.448 (0.773) C:72% T:79%	pCi/L	09/16/19 12:49	15262-20-1	
Total Radium	Total Radium Calculation	1.19 ± 0.698 (1.20)	pCi/L	09/17/19 14:18	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

Sample: HGWC-121A **Lab ID: 2622353002** Collected: 08/22/19 13:05 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	0.635 ± 0.316 (0.315) C:92% T:NA	pCi/L	09/05/19 09:54	13982-63-3	
Radium-228	EPA 9320	0.664 ± 0.409 (0.755) C:71% T:79%	pCi/L	09/19/19 12:11	15262-20-1	
Total Radium	Total Radium Calculation	1.30 ± 0.725 (1.07)	pCi/L	09/20/19 12:23	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

Sample: HGWC-120 **Lab ID: 2622353003** Collected: 08/22/19 15:47 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	0.845 ± 0.350 (0.295) C:98% T:NA	pCi/L	09/05/19 09:52	13982-63-3	
Radium-228	EPA 9320	0.500 ± 0.395 (0.772) C:63% T:78%	pCi/L	09/19/19 12:11	15262-20-1	
Total Radium	Total Radium Calculation	1.35 ± 0.745 (1.07)	pCi/L	09/20/19 12:23	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

QC Batch: 359490 Analysis Method: EPA 9315

QC Batch Method: EPA 9315 Analysis Description: 9315 Total Radium

Associated Lab Samples: 2622353001, 2622353002, 2622353003

METHOD BLANK: 1745579 Matrix: Water

Associated Lab Samples: 2622353001, 2622353002, 2622353003

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	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

QC Batch: 358894

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622353001

METHOD BLANK: 1742552

Matrix: Water

Associated Lab Samples: 2622353001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.862 ± 0.415 (0.695) C:79% T:75%	pCi/L	09/16/19 12:47	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

QC Batch:	358895	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2622353002, 2622353003		

METHOD BLANK:	1742554	Matrix:	Water
Associated Lab Samples:	2622353002, 2622353003		

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	

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QUALIFIERS

Project: Plant Hammond AP GW6851

Pace Project No.: 2622353

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6851
Pace Project No.: 2622353

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622353001	HGWA-122	EPA 9315	359490		
2622353002	HGWC-121A	EPA 9315	359490		
2622353003	HGWC-120	EPA 9315	359490		
2622353001	HGWA-122	EPA 9320	358894		
2622353002	HGWC-121A	EPA 9320	358895		
2622353003	HGWC-120	EPA 9320	358895		
2622353001	HGWA-122	Total Radium Calculation	361776		
2622353002	HGWC-121A	Total Radium Calculation	362430		
2622353003	HGWC-120	Total Radium Calculation	362430		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Georgia Power - Coal Combustion Residuals	Report To: Jiju Abraham / Lauren Petty	Attention: SCSInvoices@southernco.com
Address: 2480 Manser Road Allentia, GA 30339	Copy To: Geosyntrac	Company Name:
Email: jabraham@southernco.com	Purchase Order #: SCS10382775	Address:
Phone: (404)506-7239	Project Name: Plant Hammond AP	Pace Quote:
Requested Due Date: 8/28/2019	Project #: 5176851	Pace Project Manager: betsy.mcdamei@paceelabs.com
		Pace Profile #: 327.4.2

ITEM #	MATRIX	CODE	COLLECTED		DATE	TIME	# OF CONTAINERS	PRESERVATIVES							TEMP in C	Received on	Custody Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)										
			START	END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol						Other									
			DATE	TIME				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	App. IV Metals *	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)										
1	WT G	WT G	8/22/19	10:37	8/22/19	10:37	21	4	3							Y	Y	Y	N	1									
2	WT G	WT G	8/22/19	12:42	8/22/19	13:07	22	4	3							Y	Y	Y	N	2									
3	WT G	WT G	8/22/19	15:24	8/22/19	15:47	24	4	3							Y	Y	Y	N	3									
			N/A																										

ADDITIONAL COMMENTS	RELINQUISHED BY (APPLICATION)	DATE	TIME	ACCEPTED BY (APPLICATION)	DATE	TIME	TEMP in C
	Maria M. ...	8/22/19	14:55	B. ...	8/25/19	12:48	
				Charla ...	8/27/19	20:07	3.1

PRINT Name of SAMPLER: Noelia Muskus
SIGNATURE of SAMPLER: Noelia Muskus
DATE Signed: 08/22/19

WOM#: 2622353



Sample Condition Upon Receipt

WO#: 2622353

Client Name: GA Power CCR

PM: BM

Due Date: 09/23/19

CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

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

Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used

2/4
31°C

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: 8/23/19 CAW

Temp should be above freezing to 6°C

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

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)

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.: 2622398

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

Pace Analytical Services Atlanta

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622398001	HGWC-124	Water	08/23/19 10:31	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW6581
Pace Project No.: 2622398

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2622398001	HGWC-124	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Plant Hammond AP GW6581
Pace Project No.: 2622398

Sample: HGWC-124		Lab ID: 2622398001		Collected: 08/23/19 10:31		Received: 08/26/19 18:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	08/30/19 17:53	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00035	1	08/29/19 18:05	08/30/19 17:53	7440-38-2		
Barium	0.066	mg/L	0.010	0.00049	1	08/29/19 18:05	08/30/19 17:53	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000074	1	08/29/19 18:05	08/30/19 17:53	7440-41-7		
Cadmium	ND	mg/L	0.0025	0.00011	1	08/29/19 18:05	08/30/19 17:53	7440-43-9		
Chromium	ND	mg/L	0.010	0.00039	1	08/29/19 18:05	08/30/19 17:53	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	08/29/19 18:05	08/30/19 17:53	7440-48-4		
Lead	0.000049J	mg/L	0.0050	0.000046	1	08/29/19 18:05	08/30/19 17:53	7439-92-1	B	
Lithium	0.0011J	mg/L	0.030	0.00078	1	08/29/19 18:05	08/30/19 17:53	7439-93-2		
Molybdenum	0.0014J	mg/L	0.010	0.00095	1	08/29/19 18:05	08/30/19 17:53	7439-98-7		
Selenium	ND	mg/L	0.010	0.0013	1	08/29/19 18:05	08/30/19 17:53	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000052	1	08/29/19 18:05	08/30/19 17:53	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 16:26	7439-97-6		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Fluoride	0.11J	mg/L	0.30	0.029	1		09/03/19 21:43	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

QC Batch: 34391	Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A	Analysis Description: 7470 Mercury
Associated Lab Samples: 2622398001	

METHOD BLANK: 154672 Matrix: Water

Associated Lab Samples: 2622398001

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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622398001 Result	Spike Conc.	Spike Conc.	Result						
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

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581
Pace Project No.: 2622398

QC Batch: 34496 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2622398001

METHOD BLANK: 155177 Matrix: Water
Associated Lab Samples: 2622398001

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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622479002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
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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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179		155180		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2622479002 Result	MS Spike Conc.	MSD Spike Conc.									
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

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QUALITY CONTROL DATA

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

QC Batch: 34680	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2622398001	

METHOD BLANK: 156099 Matrix: Water

Associated Lab Samples: 2622398001

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		156102		% Rec	MSD % Rec	% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
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

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QUALIFIERS

Project: Plant Hammond AP GW6581

Pace Project No.: 2622398

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW6581
Pace Project No.: 2622398

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622398001	HGWC-124	EPA 3005A	34496	EPA 6020B	34557
2622398001	HGWC-124	EPA 7470A	34391	EPA 7470A	34429
2622398001	HGWC-124	EPA 300.0	34680		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A

Required Client Information:

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

Copy To: Geosyntec
 Purchase Order #: SCS10382775
 Project Name: Plant Hammond AP
 Project #: GW4551

Section B

Required Project Information:

Report To: Jolu Abraham / Lauren Petty
 Attention: SCSInvoices@southernco.com
 Company Name: Pace Analytical
 Address: 2480 Maner Road, Atlanta, GA 30339
 Pace Quote: beissy.mcdanielle@pace labs.com
 Pace Project Manager: beissy.mcdanielle@pace labs.com
 Pace Profile #: 327.4.2

Section C

Invoice Information:

Company Name: Pace Analytical
 Address: 2480 Maner Road, Atlanta, GA 30339
 State: GA

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYST	RECEIVED ON	TEMP °C	CUSTODY	SEALED	COOLER	INTEGRITY
			START DATE	END DATE											
1	Drinking Water	DW	08/23/19	08/23/19	WTG	WTG	1	Unpreserved	N	08/23/19	1540	Y	Y	Y	Y
2	Waste Water	WW													
3	Product	P													
4	Soil/Solid	SL													
5	Oil	OL													
6	Wipe	WP													
7	Air	AR													
8	Other	OT													
9	Tissue	TS													

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)

MATRIX CODE (see valid codes to left)

OF CONTAINERS

PRESERVATIVES

ANALYST

RECEIVED ON

TEMP °C

CUSTODY

SEALED

COOLER

INTEGRITY

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

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RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

RESIDUAL CHLORINE (Y/N)

NO# : 2622398

2622398



Sample Condition Upon Receipt

WO#: 2622398

Client Name: GAPower

PM: BM

Due Date: 09/04/19

CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes 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 2.5°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 2/26/19

		Comments:
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<u>Rads</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
	<u>2/26/19</u>	Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

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

September 25, 2019

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

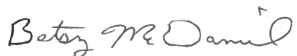
RE: Project: Plant Hammond AP GW 6581
Pace Project No.: 2622399

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622399

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Plant Hammond AP GW 6581

Pace Project No.: 2622399

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2622399001	HGWC-124	Water	08/23/19 10:31	08/26/19 18:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622399

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2622399001	HGWC-124	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond AP GW 6581

Pace Project No.: 2622399

Sample: HGWC-124 **Lab ID: 2622399001** Collected: 08/23/19 10:31 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	0.450 ± 0.217 (0.233) C:87% T:NA	pCi/L	09/09/19 08:53	13982-63-3	
Radium-228	EPA 9320	0.384 ± 0.279 (0.534) C:79% T:91%	pCi/L	09/20/19 11:53	15262-20-1	
Total Radium	Total Radium Calculation	0.834 ± 0.496 (0.767)	pCi/L	09/23/19 12:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW 6581

Pace Project No.: 2622399

QC Batch: 359966

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2622399001

METHOD BLANK: 1747390

Matrix: Water

Associated Lab Samples: 2622399001

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond AP GW 6581

Pace Project No.: 2622399

QC Batch:	359801	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2622399001		

METHOD BLANK:	1746802	Matrix:	Water
Associated Lab Samples:	2622399001		

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 GW 6581
Pace Project No.: 2622399

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond AP GW 6581
Pace Project No.: 2622399

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2622399001	HGWC-124	EPA 9315	359801		
2622399001	HGWC-124	EPA 9320	359966		
2622399001	HGWC-124	Total Radium Calculation	362632		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 2622399

Client Name: GA Power

PM: BM Due Date: 09/25/19
CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Tracking #: _____

Proj. Due Date:
Proj. Name:

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

Packing Material: Bubble Wrap Bubble Bags None Other

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

Cooler Temperature 2.5 C Biological Tissue is Frozen: Yes No
Temp should be above freezing to 6 C

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

Table with 16 rows and 2 columns. Rows include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, 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)

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



REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

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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

REPORT OF LABORATORY ANALYSIS

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	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

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	08/29/19 18:05	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

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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	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2622398001 Result	Spike Conc.	Spike Conc.	Conc.								
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

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QUALITY CONTROL DATA

Project: Plant Hammond AP
Pace Project No.: 2622400

QC Batch: 34496 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2622479002	Spike Conc.	Spike Conc.	Result							Result
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

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QUALITY CONTROL DATA

Project: Plant Hammond AP

Pace Project No.: 2622400

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 155179		155180		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2622479002 Result	MS Spike Conc.	MSD Spike Conc.								
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

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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		2622337002		2622319009		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
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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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.

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 2622400



Client Name: GAPowerCCR

PM: BM

Due Date: 09/04/1

CLIENT: GAPower-CCR

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 214
Cooler Temperature 2.8°C
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: 8/26/14

Table with 16 rows of checklist items and checkboxes. Items include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, Pace Trip Blank Lot # (if purchased).

Client Notification/ Resolution:
Person Contacted:
Date/Time:
Field Data Required? Y / N
Comments/ Resolution:

Project Manager Review:
Date:

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



REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

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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

REPORT OF LABORATORY ANALYSIS

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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

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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

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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

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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	

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REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 2622401

Face Analytical

Client Name: GAPower 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
2.8°C

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: 8/26/19 [Signature]

Temp should be above freezing to 6°C

Comments:

Table with 16 rows of checklist items and checkboxes. Items include Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, All containers needing preservation are found to be in compliance with EPA recommendation, exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Samples checked for dechlorination, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, 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)

November 19, 2019

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

RE: Project: PLANT HAMMOND RAD
Pace Project No.: 2624782

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT HAMMOND RAD
Pace Project No.: 2624782

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624782001	HGWA-122	Water	10/21/19 11:55	10/22/19 09:57
2624782002	HGWC-124	Water	10/21/19 13:35	10/22/19 09:57
2624782003	HGWC-121A	Water	10/21/19 16:50	10/22/19 09:57

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624782001	HGWA-122	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624782002	HGWC-124	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624782003	HGWC-121A	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

Sample: HGWA-122 **Lab ID: 2624782001** Collected: 10/21/19 11:55 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	0.555 ± 0.349 (0.528) C:70% T:NA	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	0.217 ± 0.359 (0.782) C:77% T:77%	pCi/L	11/12/19 12:15	15262-20-1	
Total Radium	Total Radium Calculation	0.772 ± 0.708 (1.31)	pCi/L	11/18/19 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

Sample: HGWC-124 **Lab ID: 2624782002** Collected: 10/21/19 13:35 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	0.707 ± 0.330 (0.376) C:92% T:NA	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	0.406 ± 0.425 (0.887) C:81% T:80%	pCi/L	11/12/19 12:15	15262-20-1	
Total Radium	Total Radium Calculation	1.11 ± 0.755 (1.26)	pCi/L	11/18/19 14:56	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

Sample: HGWC-121A **Lab ID: 2624782003** Collected: 10/21/19 16:50 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	0.327 ± 0.243 (0.397) C:90% T:NA	pCi/L	11/15/19 08:32	13982-63-3	
Radium-228	EPA 9320	0.0664 ± 0.338 (0.770) C:81% T:84%	pCi/L	11/12/19 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.393 ± 0.581 (1.17)	pCi/L	11/18/19 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

QC Batch: 369306

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624782001, 2624782002, 2624782003

METHOD BLANK: 1791694

Matrix: Water

Associated Lab Samples: 2624782001, 2624782002, 2624782003

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

QC Batch: 369307

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624782001, 2624782002, 2624782003

METHOD BLANK: 1791695

Matrix: Water

Associated Lab Samples: 2624782001, 2624782002, 2624782003

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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QUALIFIERS

Project: PLANT HAMMOND RAD

Pace Project No.: 2624782

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND RAD
Pace Project No.: 2624782

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624782001	HGWA-122	EPA 9315	369307		
2624782002	HGWC-124	EPA 9315	369307		
2624782003	HGWC-121A	EPA 9315	369307		
2624782001	HGWA-122	EPA 9320	369306		
2624782002	HGWC-124	EPA 9320	369306		
2624782003	HGWC-121A	EPA 9320	369306		
2624782001	HGWA-122	Total Radium Calculation	371524		
2624782002	HGWC-124	Total Radium Calculation	371524		
2624782003	HGWC-121A	Total Radium Calculation	371524		

REPORT OF LABORATORY ANALYSIS

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Face Analytical

Client: BM

Due Date: 11/19/19

MO#: 2624782

Due Date: 10/29/19

CLIENT: GPower-CR

CLIENT: GPower-CR

Counter: Fed Ex UPS Other

Tracking #: _____

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

Packing Material: Bubble Wrap Bubble Bags North Other

Thermometer Used Type of Ice: Wet Blue None

Cooler Temperature 5.8 5.8 5.8

Temp should be above freezing to 6°C

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

-Face 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/D/Analysis Matrix: Yes No N/A

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

Face Trip Blank Lot # (if purchased): _____

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Face Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Filtered volume received for Dissolved tests:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
-Includes date/time/D/Analysis Matrix:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
All containers needing preservation have been checked:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
All containers needing preservation are found to be in compliance with EPA recommendation:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	16.
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water):	<input type="checkbox"/> Yes <input type="checkbox"/> No	17.
Samples checked for dechlorination:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	18.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	19.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	20.
Trip Blank Custody Seals Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	21.
Face Trip Blank Lot # (if purchased):	_____	22.

Samples on ice, cooling process has begun Date and initials of person examining contents: _____

Comments: _____

Project Manager Review: _____

Date: _____

3000 W28

Comments/Resolution: _____

Person Contacted: _____

Date/Time: _____

Client Notification/Resolution: _____

Field Data Required? Y / N

December 13, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624784

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



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PLANT HAMMOND

Pace Project No.: 2624784

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.: 2624784

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624784001	HGWA-122	Water	10/21/19 11:55	10/22/19 09:57
2624784002	HGWC-124	Water	10/21/19 13:35	10/22/19 09:57
2624784003	HGWC-121A	Water	10/21/19 16:50	10/22/19 09:57

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624784

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624784001	HGWA-122	EPA 6020B	CSW	8
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624784002	HGWC-124	EPA 6020B	CSW	8
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624784003	HGWC-121A	EPA 6020B	CSW	8
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT HAMMOND

Pace Project No.: 2624784

Sample: HGWA-122		Lab ID: 2624784001		Collected: 10/21/19 11:55		Received: 10/22/19 09:57		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Barium	0.040	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 20:02	7440-39-3		
Boron	0.25	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 20:02	7440-42-8		
Calcium	80.8	mg/L	5.0	0.55	50	10/28/19 20:04	10/29/19 20:08	7440-70-2		
Chromium	0.00068J	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 20:02	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 20:02	7440-48-4		
Lead	0.000097J	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 20:02	7439-92-1		
Lithium	ND	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 20:02	7439-93-2		
Molybdenum	0.0049J	mg/L	0.010	0.00095	1	10/28/19 20:04	10/29/19 20:02	7439-98-7		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	296	mg/L	10.0	10.0	1		10/28/19 13:56			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	4.5	mg/L	1.0	0.024	1		10/29/19 16:32	16887-00-6		
Fluoride	0.15J	mg/L	0.30	0.029	1		10/29/19 16:32	16984-48-8		
Sulfate	45.6	mg/L	1.0	0.017	1		10/29/19 16:32	14808-79-8		

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624784

Sample: HGWC-124		Lab ID: 2624784002		Collected: 10/21/19 13:35	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							
Barium	0.075	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 20:25	7440-39-3	
Boron	0.50	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 20:25	7440-42-8	
Calcium	96.9	mg/L	5.0	0.55	50	10/28/19 20:04	10/29/19 20:31	7440-70-2	
Chromium	0.00046J	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 20:25	7440-47-3	
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 20:25	7440-48-4	
Lead	0.000049J	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 20:25	7439-92-1	
Lithium	0.0011J	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 20:25	7439-93-2	
Molybdenum	0.0013J	mg/L	0.010	0.00095	1	10/28/19 20:04	10/29/19 20:25	7439-98-7	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	357	mg/L	10.0	10.0	1		10/28/19 13:57		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	3.6	mg/L	1.0	0.024	1		10/29/19 18:20	16887-00-6	
Fluoride	0.073J	mg/L	0.30	0.029	1		10/29/19 18:20	16984-48-8	
Sulfate	78.5	mg/L	5.0	0.085	5		10/29/19 19:24	14808-79-8	

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624784

Sample: HGWC-121A		Lab ID: 2624784003		Collected: 10/21/19 16:50		Received: 10/22/19 09:57		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Barium	0.074	mg/L	0.010	0.00049	1	10/28/19 20:04	10/29/19 20:36	7440-39-3		
Boron	2.4	mg/L	0.040	0.0049	1	10/28/19 20:04	10/29/19 20:36	7440-42-8		
Calcium	173	mg/L	5.0	0.55	50	10/28/19 20:04	10/29/19 20:42	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	10/28/19 20:04	10/29/19 20:36	7440-47-3		
Cobalt	ND	mg/L	0.0050	0.00030	1	10/28/19 20:04	10/29/19 20:36	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	10/28/19 20:04	10/29/19 20:36	7439-92-1		
Lithium	0.0090J	mg/L	0.030	0.00078	1	10/28/19 20:04	10/29/19 20:36	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00095	1	10/28/19 20:04	10/29/19 20:36	7439-98-7		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	771	mg/L	10.0	10.0	1		10/28/19 13:57			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	29.9	mg/L	1.0	0.024	1		10/29/19 18:42	16887-00-6		
Fluoride	0.18J	mg/L	0.30	0.029	1		10/29/19 18:42	16984-48-8		
Sulfate	238	mg/L	10.0	0.17	10		10/29/19 20:07	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624784

QC Batch: 37696 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624784001, 2624784002, 2624784003

METHOD BLANK: 171182 Matrix: Water
Associated Lab Samples: 2624784001, 2624784002, 2624784003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/L	ND	0.010	0.00049	10/29/19 19:20	
Boron	mg/L	ND	0.040	0.0049	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	
Molybdenum	mg/L	ND	0.010	0.00095	10/29/19 19:20	

LABORATORY CONTROL SAMPLE: 171183

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.1	0.10	104	80-120	
Boron	mg/L	1	0.99	99	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	
Molybdenum	mg/L	0.1	0.10	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171184 171185

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624794002 Result	Spike Conc.	Spike Conc.	Conc.								
Barium	mg/L	0.35	0.1	0.1	0.46	0.46	108	109	75-125	0	20		
Boron	mg/L	1.1	1	1	1.9	1.9	78	81	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		
Lithium	mg/L	0.096	0.1	0.1	0.20	0.20	101	102	75-125	0	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	109	110	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

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624784

QC Batch: 37730 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624784001, 2624784002, 2624784003

METHOD BLANK: 171248 Matrix: Water
Associated Lab Samples: 2624784001, 2624784002, 2624784003

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

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.: 2624784

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND

Pace Project No.: 2624784

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624784001	HGWA-122	EPA 3005A	37696	EPA 6020B	37751
2624784002	HGWC-124	EPA 3005A	37696	EPA 6020B	37751
2624784003	HGWC-121A	EPA 3005A	37696	EPA 6020B	37751
2624784001	HGWA-122	SM 2540C	37642		
2624784002	HGWC-124	SM 2540C	37642		
2624784003	HGWC-121A	SM 2540C	37642		
2624784001	HGWA-122	EPA 300.0	37730		
2624784002	HGWC-124	EPA 300.0	37730		
2624784003	HGWC-121A	EPA 300.0	37730		

REPORT OF LABORATORY ANALYSIS

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Section A

Section B

Required Client Information:
 Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Marner Road
 Atlanta, GA 30339
 Email: jlabraham@southtarrco.com
 Phone: (404)506-7239
 Requested Due Date: STANDARD TAT

Required Project Information:
 Report To: Jim Abraham
 Copy To: Lauren Pully, Geosyntec
 Purchase Order #: SCS10382775
 Project Name: Plant Hammond
 Project #: 6W6581

Attention: acshroves@southtarrco.com
 Company Name:
 Address:
 Pace Quote:
 Pace Project Manager: betsy.mcdaniel@pacelabs.com
 Pace Profile #: 327 (AP)

GA

WO#: 2624782

2624782

est C
 lds m

WO#: 2624784

2624784

Page: 1 of 1

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 /, -) Sample IDs must be unique	MATRIX	CODE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							App. III Metals (1)	App. IV Metals (2, AP-3)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
				START DATE	END DATE			H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other					
HGW-122		Drinking Water	DW	10/21/19	11:55	4	1	3											
HWC-124		Waste Water	WW	10/21/19	13:18	4	1	3											
HWC-121A		Process Water	PW	10/21/19	16:34	4	1	3											

MATRIX	CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	App. III Metals (1)	App. IV Metals (2, AP-3)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
Drinking Water	DW			10/21/19	11:55	10/21/19	11:55	4	1	3								Y	Y	Y	Y	
Waste Water	WW			10/21/19	13:18	10/21/19	13:35	4	1	3								Y	Y	Y	Y	
Process Water	PW			10/21/19	16:34	10/21/19	16:00	4	1	3								Y	Y	Y	Y	

PRINT Name of SAMPLER: Dan Gibbs
SIGNATURE of SAMPLER: [Signature]
DATE Signed: 10-21-2019

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

Face Analytical

Client #:

PM: BM

Due Date: 11/19/19

MO#: 2624782

CLIENT: GRPower-CCR

M: BM

CLIENT: GRPower-CCR

Due Date: 10/29/19

IO#: 2624784

Counter: Fed Ex UPS Other

Tracking #:

Custody Seal on Cooler/Box Present: yes no

Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags North Other

Thermometer Used Yes No

Cooler Temperature: 5.8

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: _____

Samples on ice, cooling process has begun

Biological Tissue Is Frozen: Yes No

Type of Ice: Wet Blue None

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

-Face 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/D/Analysis Matrix: Yes No N/A

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

Initial when completed

Lot # of added preservative

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

Face Trip Blank Lot # (if purchased):

Client Notification/Resolution:

Person Contacted:

Date/Time:

Comments/Resolution:

3000 W28

Project Manager Review:

Date:

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

November 21, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624785

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



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624785

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PLANT HAMMOND

Pace Project No.: 2624785

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624785001	HGWC-120	Water	10/22/19 08:39	10/24/19 10:07
2624785002	FD-01	Water	10/22/19 00:00	10/24/19 10:07

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND

Pace Project No.: 2624785

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2624785001	HGWC-120	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2624785002	FD-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PLANT HAMMOND

Pace Project No.: 2624785

Sample: HGWC-120 **Lab ID: 2624785001** Collected: 10/22/19 08:39 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	0.760 ± 0.379 (0.563) C:89% T:NA	pCi/L	11/15/19 07:35	13982-63-3	
Radium-228	EPA 9320	-0.382 ± 0.393 (0.996) C:80% T:84%	pCi/L	11/12/19 17:47	15262-20-1	
Total Radium	Total Radium Calculation	0.760 ± 0.772 (1.56)	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.: 2624785

Sample: FD-01 **Lab ID: 2624785002** Collected: 10/22/19 00:00 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	0.420 ± 0.252 (0.346) C:92% T:NA	pCi/L	11/15/19 10:17	13982-63-3	
Radium-228	EPA 9320	0.485 ± 0.505 (1.05) C:78% T:81%	pCi/L	11/12/19 17:49	15262-20-1	
Total Radium	Total Radium Calculation	0.905 ± 0.757 (1.40)	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.: 2624785

QC Batch: 369310

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2624785001, 2624785002

METHOD BLANK: 1791698

Matrix: Water

Associated Lab Samples: 2624785001, 2624785002

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND

Pace Project No.: 2624785

QC Batch: 369311

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2624785001, 2624785002

METHOD BLANK: 1791699

Matrix: Water

Associated Lab Samples: 2624785001, 2624785002

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.: 2624785

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND

Pace Project No.: 2624785

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624785001	HGWC-120	EPA 9315	369310		
2624785002	FD-01	EPA 9315	369310		
2624785001	HGWC-120	EPA 9320	369311		
2624785002	FD-01	EPA 9320	369311		
2624785001	HGWC-120	Total Radium Calculation	371617		
2624785002	FD-01	Total Radium Calculation	371617		

REPORT OF LABORATORY ANALYSIS

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WO#: 2624786

WO#: 2624785



2624786

2624785

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
 Requested Due Date: 5/20/14

Section B

Required Project Information:

Report To: Jugu Abraham
 Copy To: Lauren Petty, Geosynlec
 Purchase Order #: SCS10382715
 Project Name: Plant Hammond
 Project #: 61453

Invoice Information:

Attention: scalvoices@southernco.com
 Company Name:
 Address:
 Paces Project Manager: betsy.mcdaniel@pacelabs.com
 Pace Profile #: 327 (AP)

Regulatory Agency

State / Location
GA

ITEM #	MATRIX	MATRIX CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	PRESERVATIVES				ANALYSES TEST	Residual: Chlorine (Y/N)	Received on	Ice (Y/N)	Cooled (Y/N)	Sealed (Y/N)	Samples Intact (Y/N)
			START DATE	START TIME		END DATE	END TIME		H2SO4	HNO3	HCl	NaOH							
1	HWAC-120	DW	10/22/14	08:12	G	10/22/14	08:59	41											
2	FD-04	WP	10/22/14		G	10/22/14		41											
3		WT																	
4		WW																	
5		P																	
6		SL																	
7		OL																	
8		WP																	
9		AS																	
10		OT																	
11		IS																	
12																			

GDG

10-22-2014

RECEIVED BY / AFFILIATION

DATE

TIME

ACCEPTED BY / AFFILIATION

DATE

TIME

SAMPLE CONDITION

(1) App III Metals = B, Ca
 (2) AP-3 App IV Metals = B, Cr, Co, Pb, Li, Mo

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Dai GBB
 SIGNATURE of SAMPLER: [Signature]

DATE Signed: 10-22-2014



WO#: 2624786

WO#: 2624785

Client: PM: BM Due Date: 10/31/19 CLIENT: GAPower-CCR

Client: PM: BM Due Date: 11/21/19 CLIENT: GAPower-CCR

Courier: Fed Ex UPS U.S. Mail Other

Tracking #: _____

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

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____

Date: _____

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

December 13, 2019

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

RE: Project: PLANT HAMMOND
Pace Project No.: 2624786

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



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: PLANT HAMMOND
Pace Project No.: 2624786

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

This report shall not be reproduced, except in full,
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SAMPLE SUMMARY

Project: PLANT HAMMOND

Pace Project No.: 2624786

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2624786001	HGWC-120	Water	10/22/19 08:39	10/24/19 10:07
2624786002	FD-01	Water	10/22/19 00:00	10/24/19 10:07

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PLANT HAMMOND
Pace Project No.: 2624786

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2624786001	HGWC-120	EPA 6020B	CSW	8
		SM 2540C	MZP	1
		EPA 300.0	MWB	3
2624786002	FD-01	EPA 6020B	CSW	8
		SM 2540C	MZP	1
		EPA 300.0	MWB	3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624786

Sample: HGWC-120		Lab ID: 2624786001		Collected: 10/22/19 08:39		Received: 10/24/19 10:07		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Barium	0.051	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 02:27	7440-39-3	
Boron	1.0	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 02:27	7440-42-8	
Calcium	171	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 02:32	7440-70-2	
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 02:27	7440-47-3	
Cobalt	0.0031J	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 02:27	7440-48-4	
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 02:27	7439-92-1	
Lithium	0.030J	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:20	7439-93-2	
Molybdenum	0.040	mg/L	0.010	0.00095	1	11/01/19 16:00	11/04/19 02:27	7439-98-7	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	693	mg/L	10.0	10.0	1		10/29/19 13:02		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	3.4	mg/L	1.0	0.024	1		10/31/19 07:37	16887-00-6	
Fluoride	0.53	mg/L	0.30	0.029	1		10/31/19 07:37	16984-48-8	
Sulfate	266	mg/L	10.0	0.17	10		10/31/19 09:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PLANT HAMMOND
Pace Project No.: 2624786

Sample: FD-01		Lab ID: 2624786002		Collected: 10/22/19 00:00	Received: 10/24/19 10:07	Matrix: Water				
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Barium	0.052	mg/L	0.010	0.00049	1	11/01/19 16:00	11/04/19 02:38	7440-39-3		
Boron	1.0	mg/L	0.040	0.0049	1	11/01/19 16:00	11/04/19 02:38	7440-42-8		
Calcium	176	mg/L	5.0	0.55	50	11/01/19 16:00	11/04/19 02:44	7440-70-2		
Chromium	ND	mg/L	0.010	0.00039	1	11/01/19 16:00	11/04/19 02:38	7440-47-3		
Cobalt	0.0032J	mg/L	0.0050	0.00030	1	11/01/19 16:00	11/04/19 02:38	7440-48-4		
Lead	ND	mg/L	0.0050	0.000046	1	11/01/19 16:00	11/04/19 02:38	7439-92-1		
Lithium	0.030J	mg/L	0.030	0.00078	1	11/01/19 16:00	11/04/19 13:25	7439-93-2		
Molybdenum	0.041	mg/L	0.010	0.00095	1	11/01/19 16:00	11/04/19 02:38	7439-98-7		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	709	mg/L	10.0	10.0	1		10/29/19 13:03			
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0								
Chloride	3.2	mg/L	1.0	0.024	1		10/31/19 05:44	16887-00-6		
Fluoride	0.56	mg/L	0.30	0.029	1		10/31/19 05:44	16984-48-8		
Sulfate	240	mg/L	20.0	0.34	20		10/31/19 17:13	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624786

QC Batch: 38024 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A Analysis Description: 6020B MET
Associated Lab Samples: 2624786001, 2624786002

METHOD BLANK: 172889 Matrix: Water
Associated Lab Samples: 2624786001, 2624786002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/L	ND	0.010	0.00049	11/04/19 01:12	
Boron	mg/L	0.0059J	0.040	0.0049	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	

LABORATORY CONTROL SAMPLE: 172890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.1	0.10	103	80-120	
Boron	mg/L	1	1.2	116	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	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891 172892

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2624772007 Result	Spike Conc.	Spike Conc.	MS Result								
Barium	mg/L	0.22	0.1	0.1	0.32	0.31	99	98	75-125	0	20		
Boron	mg/L	3.8	1	1	5.1	5.2	85	95	75-125	2	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		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624786

QC Batch: 37734	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2624786001, 2624786002	

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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624786

QC Batch: 37858 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624786001

METHOD BLANK: 171795 Matrix: Water
Associated Lab Samples: 2624786001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.032J	1.0	0.024	10/30/19 20:37	
Fluoride	mg/L	ND	0.30	0.029	10/30/19 20:37	
Sulfate	mg/L	0.36J	1.0	0.017	10/30/19 20:37	

LABORATORY CONTROL SAMPLE: 171796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.7	107	90-110	
Fluoride	mg/L	10	10.9	109	90-110	
Sulfate	mg/L	10	10.9	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 171797 171798

Parameter	Units	2624403001		171797		171798		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	123	100	100	328	328	205	205	90-110	0	15	M6
Fluoride	mg/L	1.0	100	100	107	106	106	105	90-110	0	15	

MATRIX SPIKE SAMPLE: 171799

Parameter	Units	2624685004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	18.0	10	26.2	82	90-110	M1
Fluoride	mg/L	0.20J	10	10.9	107	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624786

QC Batch: 37870 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 2624786002

METHOD BLANK: 171906 Matrix: Water
Associated Lab Samples: 2624786002

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		171909		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	3.2	10	13.0	13.2	97	100	90-110	2	15	
Fluoride	mg/L	0.56	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

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QUALIFIERS

Project: PLANT HAMMOND

Pace Project No.: 2624786

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PLANT HAMMOND
Pace Project No.: 2624786

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2624786001	HGWC-120	EPA 3005A	38024	EPA 6020B	38049
2624786002	FD-01	EPA 3005A	38024	EPA 6020B	38049
2624786001	HGWC-120	SM 2540C	37734		
2624786002	FD-01	SM 2540C	37734		
2624786001	HGWC-120	EPA 300.0	37858		
2624786002	FD-01	EPA 300.0	37870		

REPORT OF LABORATORY ANALYSIS

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WO#: 2624786

WO#: 2624785



2624786

2624785

Section A
Required Client Information:
 Company: Georgia Power - Coal Combustion Residuals
 Address: 2480 Maner Road
 Atlanta, GA 30339
 Email: jabraham@southernco.com
 Phone: (404) 506-7339
 Requested Due Date: 5/20/19

Section B
Required Project Information:
 Report To: Jugu Abraham
 Copy To: Lauren Petty, Geosynlec
 Purchase Order #: SCS10382715
 Project Name: Plant Hammond
 Project #: 64658

Invoice Information:
 Attention: scalvoices@southernco.com
 Company Name: Address:
 Pease Project Manager: beisy.mcdanell@peacelabs.com
 Pease Profile #: 327 (AP)
 State / Location: GA

Page: 1 of 1

ITEM #	MATRIX CODE (see valid codes to left)	COLLECTED		DATE	TIME	DATE	TIME	RECEIVED BY/AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Cooled (Y/N)	Sealed (Y/N)	Samples Intact (Y/N)
		START	END												
1	HWAC-120	10/22/19	08:12	10/22/19	08:59	10/22/19	18:00	Shad Kudva / GCS	10/22	19:00					
2	FD-06	10/22/19	10:00	10/22/19	10:00	10/22/19	2:00	Shad Kudva / GCS	10/24	16:07	51.3	Y	Y	Y	Y
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															

ADDITIONAL COMMENTS:
 (1) App III Metals = B, Ca
 (2) AP-3 App IV Metals = B, Cr, Co, Pb, Li, Mo

SAMPLE NAME AND SIGNATURE:
 PRINT Name of SAMPLER: Shad Kudva
 SIGNATURE OF SAMPLER: [Signature]
 DATE Signed: 10-22-2019



WO#: 2624786

WO#: 2624785

Client: PM: BM Due Date: 10/31/19 CLIENT: GAPower-CCR

Client: PM: BM Due Date: 11/21/19 CLIENT: GAPower-CCR

Courier: Fed Ex UPS U.S. Mail Other

Tracking #: _____

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

3000 W28

Project Manager Review: _____

Date: _____

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

November 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



REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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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	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: PLANT HAMMOND

Pace Project No.: 2624802

QC Batch: 369310

Analysis Method: EPA 9315

QC Batch 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	

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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	

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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

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Section A
Required Client Information:

Company: Georgia Power - Coal Combustion Residuals
Address: 2480 Maner Road
Atlanta, GA 30339
Phone: (404)506-7239
Email: jphairman@scsinc.com
Requested Due Date: 5/1/14

Section B
Required Project Information:

Report To: Joyi Azehin
Copy To: Lauren Peilly, Geosynic
Purchase Order #: SCS10382775
Project Name: Plant Hammond
Project #: GCR6581

WO#: 2624803

WO#: 2624802

Attention: kchivvillad@scsinc.com
Company Name: Address:
Pace Quote
Pace Project Manager: betsy.mcdaniel@scsinc.com
Pace Profile #: 327 (AP)
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)		DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Y/N	Residual Chlorine (Y/N)
		DW	WW										
1	FB-01	SW	WT	5/6	10/24	17:00	17:10	5	1	H2SO4	App III Metals (1)	N	N
2										HNO3	App IV Metals (2, AP-4)	N	N
3										HCl	TDS, Cl, F, SO4	N	N
4										NaOH	Radium 226/228	N	N
5										Na2S2O3			
6										Methanol			
7										Other			
8													
9													
10													
11													
12													

Handwritten notes:
10-22-2014
DGS

ADDITIONAL COMMENTS	HELPED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) App III Metals - 8-Ca	Daw GIBBS / Geosynic	10/24	1800	Daw GIBBS / Geosynic	10/22	1800	Y
(2, AP-4) App IV Metals - As, Ba, Be, Cd, Cr, Co, Pb, U, Mo	Daw GIBBS / Geosynic	10/22	2000	Daw GIBBS / Geosynic	10/22	1800	Y

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Daw GIBBS
 SIGNATURE of SAMPLER: *[Signature]*
 DATE Signed: 10/22/2014

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

Sample Condition Upon Receipt

Pace Analytical

Cli

WO# : 2624803

IO# : 2624802

Courier: Fed Ex UPS
Tracking #: _____

PM: BM Due Date: 10/31/19
CLIENT: GAPower-CCR

: BM Due Date: 11/21/19
CLIENT: GAPower-CCR

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

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used JRC 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: _____

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

Client Notification/ Resolution: _____ Field Data Required? Y / N
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ Date: _____

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

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



REPORT OF LABORATORY ANALYSIS

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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

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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

REPORT OF LABORATORY ANALYSIS

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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			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
6020B MET ICPMS		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00027	1	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

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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	171216		171217		% Rec Limits	RPD	Max RPD	Qual
		2624786001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result				
Mercury	mg/L				0.0027	0.0025	6	20	

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 38024 Analysis Method: EPA 6020B
QC Batch Method: EPA 3005A 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		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.11	0.10	106	104	75-125	2	20	

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 172891												172892	
Parameter	Units	2624772007	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	RPD	RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits				
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		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND

Pace Project No.: 2624803

QC Batch: 37735	Analysis Method: SM 2540C
QC Batch 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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PLANT HAMMOND
Pace Project No.: 2624803

QC Batch: 37870 Analysis Method: EPA 300.0
QC Batch 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		171909		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	3.2	10	13.0	13.2	97	100	90-110	2	15	
Fluoride	mg/L	0.56	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

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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.

REPORT OF LABORATORY ANALYSIS

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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		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Pace Analytical

Cli

WO# : 2624803

IO# : 2624802

Courier: Fed Ex UPS
Tracking #: _____

PM: BM Due Date: 10/31/19
CLIENT: GAPower-CCR

: BM Due Date: 11/21/19
CLIENT: GAPower-CCR

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

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used THC 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: _____

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

Client Notification/ Resolution: _____ Field Data Required? Y / N
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

3000 W28

Project Manager Review: _____ Date: _____

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

Data Validation Reports

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 (°C). 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.

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 0-6°C. 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 ($RER(2\sigma) < 3$) 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.

* * * * *

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.

APPENDIX C2
Field Data Sheets

Product Name: Low-Flow System

Date: 2019-08-22 10:48:03

Project Information:

Operator Name Noelia Muskus
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length ft
Pump placement from TOC ft

Well Information:

Well ID HGWA-122
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 15.42 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 3.75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	10:08:43	300.06	21.37	6.48	414.22	0.38	15.44	5.68	92.97
Last 5	10:13:43	600.01	21.28	6.51	418.78	0.29	15.44	5.38	84.64
Last 5	10:18:43	899.99	21.29	6.51	424.67	0.25	15.44	5.10	79.25
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.09	0.03	4.56			-0.30	-8.33
Variance 2			0.01	0.00	5.89			-0.28	-5.39

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 = 27.76 ft.

Grab Samples

HGWA-122
Grab

Product Name: Low-Flow System

Date: 2019-08-22 16:07:52

Project Information:

Operator Name Noelia Muskus
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED MP50
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length ft

Pump placement from TOC ft

Well Information:

Well ID HGWC-120
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 40.96 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.485 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 10 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	15:01:13	1199.99	21.96	6.83	946.74	0.49	40.96	1.13	-4.55
Last 5	15:06:13	1499.98	22.53	6.82	948.05	0.63	40.96	0.92	-4.46
Last 5	15:11:13	1799.97	23.29	6.80	949.53	0.24	40.96	0.77	-4.50
Last 5	15:16:13	2099.96	23.34	6.80	943.75	0.32	40.96	0.65	-3.64
Last 5	15:21:13	2399.95	23.54	6.79	941.95	0.25	40.96	0.54	-3.17
Variance 0			0.76	-0.02	1.49			-0.15	-0.04
Variance 1			0.05	-0.00	-5.78			-0.12	0.86
Variance 2			0.20	-0.01	-1.81			-0.11	0.46

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 = 61.56 ft.

Grab Samples

HGWC-120
Grab

Product Name: Low-Flow System

Date: 2019-08-22 13:12:04

Project Information:

Operator Name Noelia Muskus
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length ft

Pump placement from TOC ft

Well Information:

Well ID HGWC-121A
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 18.46 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 7.25 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:19:53	600.04	22.54	6.77	1140.80	0.97	18.53	1.14	10.55
Last 5	12:24:53	900.00	22.35	6.77	1140.10	0.72	18.53	0.99	14.66
Last 5	12:29:53	1199.99	22.38	6.77	1144.02	0.45	18.53	0.87	15.30
Last 5	12:34:53	1499.98	22.59	6.77	1146.89	0.36	18.53	0.83	17.09
Last 5	12:39:53	1799.97	21.96	6.77	1138.39	0.35	18.53	0.82	19.07
Variance 0			0.03	-0.01	3.92			-0.12	0.64
Variance 1			0.21	-0.00	2.87			-0.04	1.79
Variance 2			-0.63	0.00	-8.50			-0.02	1.99

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 = 41.41 ft.

Grab Samples

HGWC-121A
Grab

Product Name: Low-Flow System

Date: 2019-08-23 10:47:25

Project Information:

Operator Name Noelia Muskus
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 613229
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type Alexis
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length ft

Pump placement from TOC ft

Well Information:

Well ID HGWC-124
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 17.42 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.09 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 10 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	09:48:11	1499.98	20.52	7.05	572.23	0.36	17.87	2.19	53.32
Last 5	09:53:11	1799.97	20.57	7.04	574.59	0.47	17.87	1.50	50.98
Last 5	09:58:11	2099.96	20.04	7.04	580.56	0.50	17.86	2.70	49.68
Last 5	10:03:12	2400.95	20.30	7.04	576.90	0.35	17.86	2.62	46.62
Last 5	10:08:12	2700.94	20.62	7.02	578.83	0.32	17.85	2.49	45.48
Variance 0			-0.54	-0.00	5.96			1.20	-1.30
Variance 1			0.27	0.00	-3.65			-0.07	-3.05
Variance 2			0.32	-0.02	1.92			-0.13	-1.14

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 = 35.28 ft.

Grab Samples

HGWC-124
Grab

Product Name: Low-Flow System

Date: 2019-10-21 11:58:50

Project Information:

Operator Name Dan Gibbs
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 497259
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED MP50
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length 23.52 ft

Pump placement from TOC 23.52 ft

Well Information:

Well ID HGWA-122
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 16.96 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.5899797 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	11:11:45	1199.89	19.83	6.65	462.32	10.57	16.96	0.43	-124.48
Last 5	11:16:45	1499.89	19.95	6.66	464.74	5.33	16.96	0.40	-124.36
Last 5	11:21:45	1799.88	19.89	6.67	466.85	4.59	16.96	0.40	-124.30
Last 5	11:26:45	2099.87	20.07	6.68	467.28	3.47	16.96	0.41	-124.82
Last 5	11:31:45	2399.86	19.98	6.69	467.77	2.49	16.96	0.41	-124.68
Variance 0			-0.06	0.01	2.11			0.00	0.06
Variance 1			0.18	0.01	0.43			0.00	-0.52
Variance 2			-0.09	0.01	0.49			0.00	0.14

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 = 27.78'

Grab Samples

HGWA-122
Grab

Product Name: Low-Flow System

Date: 2019-10-22 08:49:38

Project Information:

Operator Name Dan Gibbs
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 497259
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED MP50
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length 62.55 ft

Pump placement from TOC 62.55 ft

Well Information:

Well ID HGWC-120
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 41.65 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.7641872 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	07:57:31	300.08	18.49	6.83	960.89	3.25	41.65	1.33	-153.03
Last 5	08:02:31	600.01	18.24	6.76	966.79	4.98	41.65	0.50	-151.47
Last 5	08:07:31	900.00	18.11	6.75	966.59	2.83	41.65	0.30	-152.17
Last 5	08:12:31	1199.99	18.12	6.74	962.97	2.34	41.65	0.22	-152.92
Last 5	08:17:31	1499.98	18.04	6.74	962.03	1.59	41.65	0.18	-153.62
Variance 0			-0.13	-0.01	-0.20			-0.20	-0.70
Variance 1			0.01	-0.00	-3.63			-0.08	-0.75
Variance 2			-0.08	-0.00	-0.94			-0.04	-0.70

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 = 61.58'

Grab Samples

HGWC-120
Grab

Product Name: Low-Flow System

Date: 2019-10-21 16:51:12

Project Information:

Operator Name Dan Gibbs
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 497259
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED MP50
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length 33.16 ft

Pump placement from TOC 33.16 ft

Well Information:

Well ID HGWC-121A
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 19.33 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.6330071 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	16:19:33	300.02	20.12	6.76	1091.30	3.69	19.39	0.43	-134.49
Last 5	16:24:33	600.00	19.92	6.75	1094.87	2.62	19.39	0.41	-135.63
Last 5	16:29:33	900.00	19.83	6.74	1099.44	2.18	19.39	0.37	-136.43
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-0.20	-0.01	3.57			-0.02	-1.14
Variance 2			-0.09	-0.01	4.57			-0.04	-0.80

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 = 41.45'

Grab Samples

HGWC-121A
Grab

Product Name: Low-Flow System

Date: 2019-10-21 13:42:22

Project Information:

Operator Name Dan Gibbs
Company Name Geosyntec Consultants
Project Name GP-Plant Hammond
Site Name Plant Hammond
Latitude 0° 0' 0"
Longitude 0° 0' 0"
Sonde SN 497259
Turbidity Make/Model LaMotte 2020we

Pump Information:

Pump Model/Type QED MP50
Tubing Type polyethylene
Tubing Diameter 0.17 in
Tubing Length 30.52 ft

Pump placement from TOC 30.52 ft

Well Information:

Well ID HGWC-124
Well diameter 2 in
Well Total Depth ft
Screen Length 10 ft
Depth to Water 17.93 ft

Pumping Information:

Final Pumping Rate 200 mL/min
Total System Volume 0.6212237 L
Calculated Sample Rate 300 sec
Stabilization Drawdown 3.6 in
Total Volume Pumped 8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond μ S/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.5	+/- 0.1	+/- 5%	+/- 10		+/- 10%	+/- 10
Last 5	12:53:37	1199.99	19.31	7.08	566.67	8.97	18.34	0.29	-123.91
Last 5	12:58:37	1499.98	19.36	7.08	567.97	6.48	18.34	0.24	-123.51
Last 5	13:03:37	1799.97	19.69	7.07	568.14	4.45	18.34	0.23	-123.98
Last 5	13:08:37	2099.96	19.67	7.06	570.37	4.02	18.34	0.21	-123.92
Last 5	13:13:37	2399.95	19.99	7.05	572.49	3.97	18.34	0.18	-124.67
Variance 0			0.34	-0.01	0.17			-0.01	-0.47
Variance 1			-0.02	-0.01	2.23			-0.01	0.06
Variance 2			0.33	-0.02	2.12			-0.03	-0.75

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 = 35.31'

Grab Samples

HGWC-124
Grab

APPENDIX D

Statistical Analyses

Table D-1
 Assessment Monitoring Interwell Prediction Limit Comparison
 Plant Hammond AP-3, Floyd County, Georgia

Parameter	Well ID	Upper PL	Lower PL	Oct 21-22, 2019
Purpose of Sampling Event:				Assessment
Boron (mg/L)	HGWC-120	0.36	-	1.0
Boron (mg/L)	HGWC-121A	0.36	-	2.4
Boron (mg/L)	HGWC-124	0.36	-	0.50
Calcium (mg/L)	HGWC-120	91.0	-	171
Calcium (mg/L)	HGWC-121A	91.0	-	173
Calcium (mg/L)	HGWC-124	91.0	-	96.9
Chloride (mg/L)	HGWC-120	4.5	-	3.4
Chloride (mg/L)	HGWC-121A	4.5	-	29.9
Chloride (mg/L)	HGWC-124	4.5	-	3.6
Fluoride (mg/L)	HGWC-120	0.25	-	0.53
Fluoride (mg/L)	HGWC-121A	0.25	-	0.18 J
Fluoride (mg/L)	HGWC-124	0.25	-	0.073 J
pH (s.u.)	HGWC-120	6.9	6.3	6.7
pH (s.u.)	HGWC-121A	6.9	6.3	6.7
pH (s.u.)	HGWC-124	6.9	6.3	7.1
Sulfate (mg/L)	HGWC-120	51.6	-	266
Sulfate (mg/L)	HGWC-121A	51.6	-	238
Sulfate (mg/L)	HGWC-124	51.6	-	78.5
TDS (mg/L)	HGWC-120	360	-	693
TDS (mg/L)	HGWC-121A	360	-	771
TDS (mg/L)	HGWC-124	360	-	357

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 Detection Limit (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 using interwell statistics.

(2) The pH value presented was recorded at the time of sample collection in the field. This is the only 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-3 Printed 1/29/2020, 3:04 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	HGWC-120	0.3634	n/a	10/22/2019	1	Yes	11	0	No	0.002505	Param 1 of 2
Boron (mg/L)	HGWC-121A	0.3634	n/a	10/21/2019	2.4	Yes	11	0	No	0.002505	Param 1 of 2
Boron (mg/L)	HGWC-124	0.3634	n/a	10/21/2019	0.5	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-120	91.03	n/a	10/22/2019	171	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-121A	91.03	n/a	10/21/2019	173	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-124	91.03	n/a	10/21/2019	96.9	Yes	11	0	No	0.002505	Param 1 of 2
Chloride (mg/L)	HGWC-121A	4.5	n/a	10/21/2019	29.9	Yes	11	0	n/a	0.01166	NP (normality) 1 of 2
Fluoride (mg/L)	HGWC-120	0.2549	n/a	10/22/2019	0.53	Yes	12	0	No	0.002505	Param 1 of 2
pH (s.u.)	HGWC-124	6.909	6.329	10/21/2019	7.05	Yes	11	0	No	0.001253	Param 1 of 2
Sulfate (mg/L)	HGWC-120	51.55	n/a	10/22/2019	266	Yes	11	0	x^5	0.002505	Param 1 of 2
Sulfate (mg/L)	HGWC-121A	51.55	n/a	10/21/2019	238	Yes	11	0	x^5	0.002505	Param 1 of 2
Sulfate (mg/L)	HGWC-124	51.55	n/a	10/21/2019	78.5	Yes	11	0	x^5	0.002505	Param 1 of 2
Total Dissolved Solids (mg/L)	HGWC-120	360.1	n/a	10/22/2019	693	Yes	10	0	No	0.002505	Param 1 of 2
Total Dissolved Solids (mg/L)	HGWC-121A	360.1	n/a	10/21/2019	771	Yes	10	0	No	0.002505	Param 1 of 2

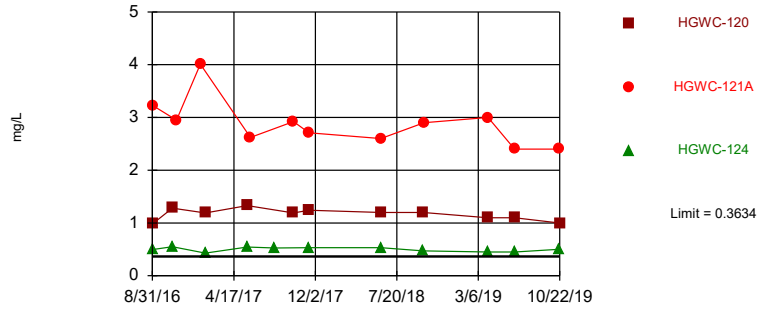
Interwell Prediction Limit - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-3 Printed 1/29/2020, 3:04 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	HGWC-120	0.3634	n/a	10/22/2019	1	Yes	11	0	No	0.002505	Param 1 of 2
Boron (mg/L)	HGWC-121A	0.3634	n/a	10/21/2019	2.4	Yes	11	0	No	0.002505	Param 1 of 2
Boron (mg/L)	HGWC-124	0.3634	n/a	10/21/2019	0.5	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-120	91.03	n/a	10/22/2019	171	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-121A	91.03	n/a	10/21/2019	173	Yes	11	0	No	0.002505	Param 1 of 2
Calcium (mg/L)	HGWC-124	91.03	n/a	10/21/2019	96.9	Yes	11	0	No	0.002505	Param 1 of 2
Chloride (mg/L)	HGWC-120	4.5	n/a	10/22/2019	3.4	No	11	0	n/a	0.01166	NP (normality) 1 of 2
Chloride (mg/L)	HGWC-121A	4.5	n/a	10/21/2019	29.9	Yes	11	0	n/a	0.01166	NP (normality) 1 of 2
Chloride (mg/L)	HGWC-124	4.5	n/a	10/21/2019	3.6	No	11	0	n/a	0.01166	NP (normality) 1 of 2
Fluoride (mg/L)	HGWC-120	0.2549	n/a	10/22/2019	0.53	Yes	12	0	No	0.002505	Param 1 of 2
Fluoride (mg/L)	HGWC-121A	0.2549	n/a	10/21/2019	0.18	No	12	0	No	0.002505	Param 1 of 2
Fluoride (mg/L)	HGWC-124	0.2549	n/a	10/21/2019	0.073	No	12	0	No	0.002505	Param 1 of 2
pH (s.u.)	HGWC-120	6.909	6.329	10/22/2019	6.74	No	11	0	No	0.001253	Param 1 of 2
pH (s.u.)	HGWC-121A	6.909	6.329	10/21/2019	6.74	No	11	0	No	0.001253	Param 1 of 2
pH (s.u.)	HGWC-124	6.909	6.329	10/21/2019	7.05	Yes	11	0	No	0.001253	Param 1 of 2
Sulfate (mg/L)	HGWC-120	51.55	n/a	10/22/2019	266	Yes	11	0	x^5	0.002505	Param 1 of 2
Sulfate (mg/L)	HGWC-121A	51.55	n/a	10/21/2019	238	Yes	11	0	x^5	0.002505	Param 1 of 2
Sulfate (mg/L)	HGWC-124	51.55	n/a	10/21/2019	78.5	Yes	11	0	x^5	0.002505	Param 1 of 2
Total Dissolved Solids (mg/L)	HGWC-120	360.1	n/a	10/22/2019	693	Yes	10	0	No	0.002505	Param 1 of 2
Total Dissolved Solids (mg/L)	HGWC-121A	360.1	n/a	10/21/2019	771	Yes	10	0	No	0.002505	Param 1 of 2
Total Dissolved Solids (mg/L)	HGWC-124	360.1	n/a	10/21/2019	357	No	10	0	No	0.002505	Param 1 of 2

Exceeds Limit: HGWC-120, HGWC-121A, HGWC-124

Prediction Limit
Interwell Parametric

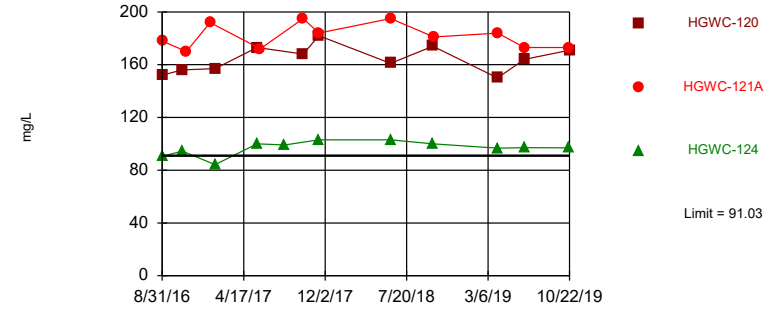


Background Data Summary: Mean=0.272, Std. Dev.=0.04241, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9514, critical = 0.792. Kappa = 2.155 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Constituent: Boron Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Exceeds Limit: HGWC-120, HGWC-121A, HGWC-124

Prediction Limit
Interwell Parametric

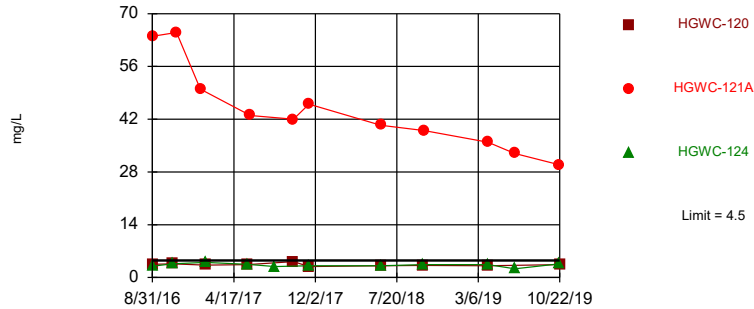


Background Data Summary: Mean=74.16, Std. Dev.=7.826, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9762, critical = 0.792. Kappa = 2.155 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Constituent: Calcium Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Exceeds Limit: HGWC-121A

Prediction Limit
Interwell Non-parametric

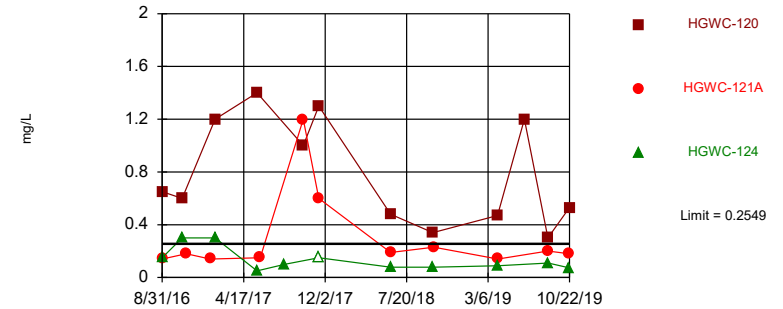


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 11 background values. Annual per-constituent alpha = 0.06795. Individual comparison alpha = 0.01166 (1 of 2). Comparing 3 points to limit.

Constituent: Chloride Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Exceeds Limit: HGWC-120

Prediction Limit
Interwell Parametric

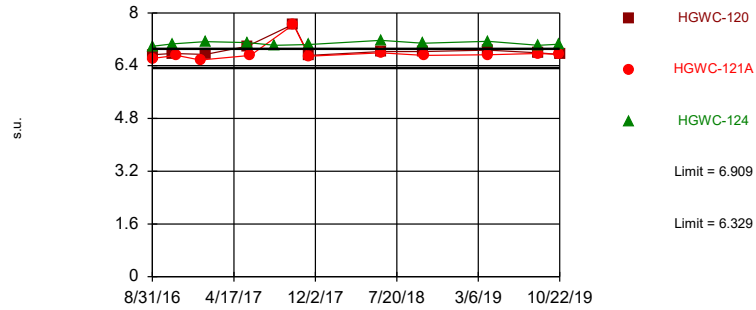


Background Data Summary: Mean=0.1508, Std. Dev.=0.04963, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9256, critical = 0.805. Kappa = 2.096 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Constituent: Fluoride Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Exceeds Limits: HGWC-124

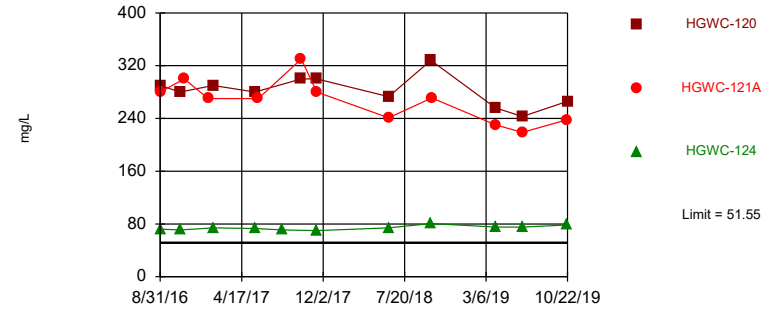
Prediction Limit
Interwell Parametric



Background Data Summary: Mean=6.619, Std. Dev.=0.1346, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9554, critical = 0.792. Kappa = 2.155 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001253. Comparing 3 points to limit.

Exceeds Limit: HGWC-120, HGWC-121A, HGWC-124

Prediction Limit
Interwell Parametric



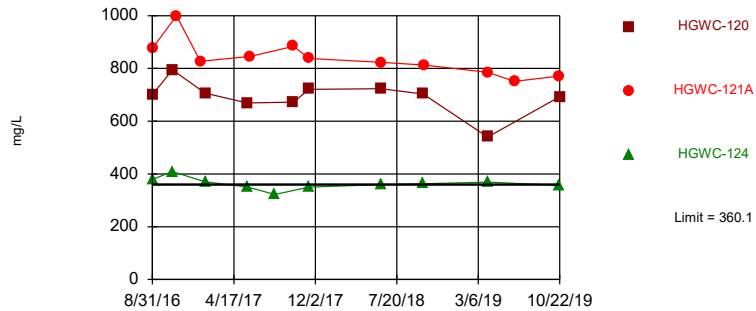
Background Data Summary (based on x*5 transformation): Mean=2.4e8, Std. Dev.=5.9e7, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8006, critical = 0.792. Kappa = 2.155 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Constituent: pH Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Constituent: Sulfate Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Exceeds Limit: HGWC-120, HGWC-121A

Prediction Limit
Interwell Parametric



Background Data Summary: Mean=272.8, Std. Dev.=39.42, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8188, critical = 0.781. Kappa = 2.214 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.002505. Comparing 3 points to limit.

Constituent: Total Dissolved Solids Analysis Run 1/29/2020 2:58 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Intrawell Prediction Limit - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-3 Printed 1/29/2020, 2:48 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bq.N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
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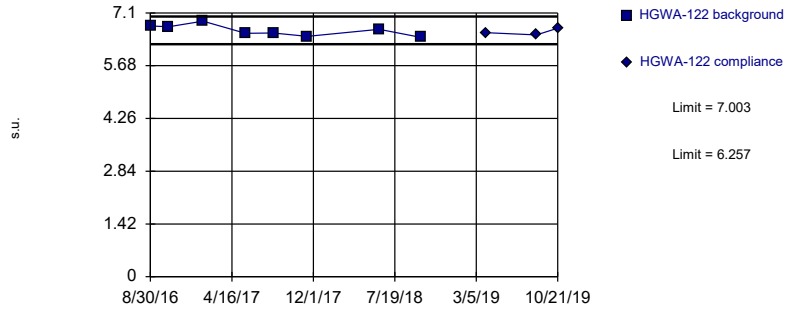
Intrawell Prediction Limit - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-3 Printed 1/29/2020, 2:48 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg.N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
pH (s.u.)	HGWA-122	7.003	6.257	10/21/2019	6.69	No	8	0	No	0.001253	Param Intra 1 of 2
pH (s.u.)	HGWC-120	7.66	6.71	10/22/2019	6.74	No	8	0	n/a	0.04288	NP Intra (normality) 1 of 2
pH (s.u.)	HGWC-121A	7.65	6.57	10/21/2019	6.74	No	8	0	n/a	0.04288	NP Intra (normality) 1 of 2
pH (s.u.)	HGWC-124	7.219	6.929	10/21/2019	7.05	No	8	0	No	0.001253	Param Intra 1 of 2

Within Limits

Prediction Limit
Intrawell Parametric

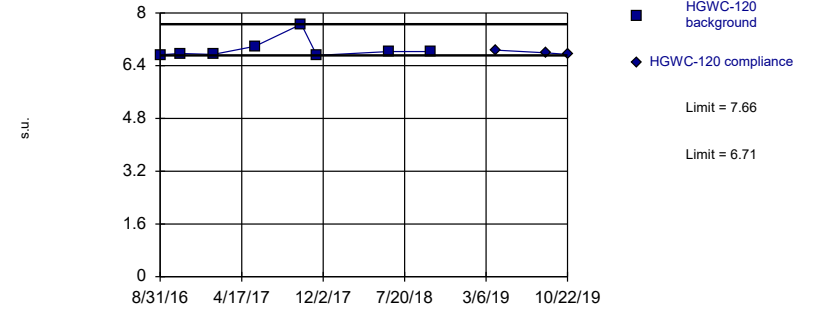


Background Data Summary: Mean=6.63, Std. Dev.=0.1516, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.955, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Constituent: pH Analysis Run 1/29/2020 2:46 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Within Limits

Prediction Limit
Intrawell Non-parametric

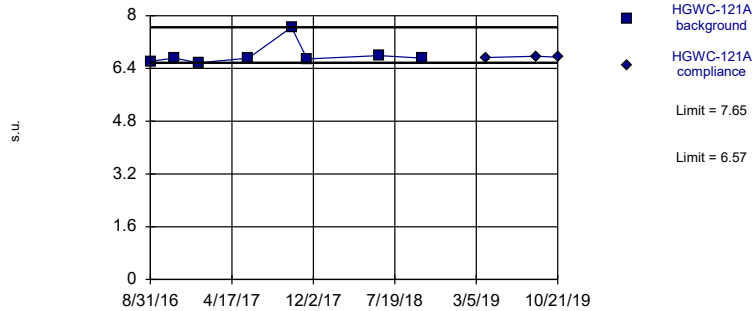


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2).

Constituent: pH Analysis Run 1/29/2020 2:46 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Within Limits

Prediction Limit
Intrawell Non-parametric

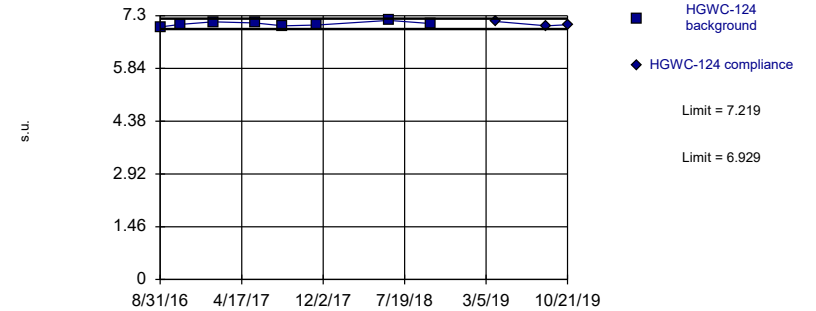


Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 8 background values. Well-constituent pair annual alpha = 0.08484. Individual comparison alpha = 0.04288 (1 of 2).

Constituent: pH Analysis Run 1/29/2020 2:46 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Within Limits

Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=7.074, Std. Dev.=0.05902, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9892, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Constituent: pH Analysis Run 1/29/2020 2:46 AM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Trend Test - Significant Results

Hammond AP Client: Georgia Power Data: Hammond AP-3 Printed 2/10/2020, 11:22 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Chloride (mg/L)	HGWA-122 (bg)	0.2475	46	34	Yes	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-121A	-8.258	-49	-34	Yes	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-121A	-37.73	-41	-34	Yes	11	0	n/a	n/a	0.01	NP

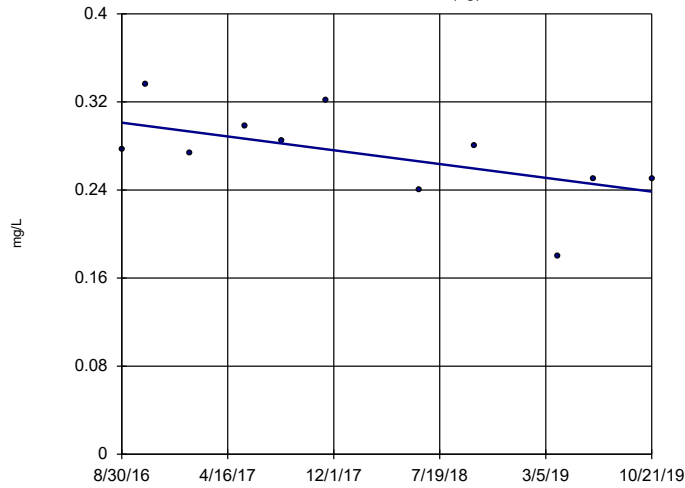
Trend Test - All Results

Hammond AP Client: Georgia Power Data: Hammond AP-3 Printed 2/10/2020, 11:22 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Boron (mg/L)	HGWA-122 (bg)	-0.01993	-22	-34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-120	-0.05273	-16	-34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-121A	-0.1988	-28	-34	No	11	0	n/a	n/a	0.01	NP
Boron (mg/L)	HGWC-124	-0.01605	-16	-34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWA-122 (bg)	-2.43	-7	-34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-120	3.925	15	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-121A	0	0	34	No	11	0	n/a	n/a	0.01	NP
Calcium (mg/L)	HGWC-124	0.9834	11	34	No	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWA-122 (bg)	0.2475	46	34	Yes	11	0	n/a	n/a	0.01	NP
Chloride (mg/L)	HGWC-121A	-8.258	-49	-34	Yes	11	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	HGWA-122 (bg)	0	-3	-38	No	12	0	n/a	n/a	0.01	NP
Fluoride (mg/L)	HGWC-120	-0.1016	-21	-38	No	12	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWA-122 (bg)	-0.06942	-17	-34	No	11	0	n/a	n/a	0.01	NP
pH (s.u.)	HGWC-124	0.01007	6	34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWA-122 (bg)	-1.132	-27	-34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-120	-8.778	-16	-34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-121A	-20.99	-29	-34	No	11	0	n/a	n/a	0.01	NP
Sulfate (mg/L)	HGWC-124	1.626	27	34	No	11	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWA-122 (bg)	-4.614	-7	-30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-120	-14.48	-9	-30	No	10	0	n/a	n/a	0.01	NP
Total Dissolved Solids (mg/L)	HGWC-121A	-37.73	-41	-34	Yes	11	0	n/a	n/a	0.01	NP

Sen's Slope Estimator

HGWA-122 (bg)

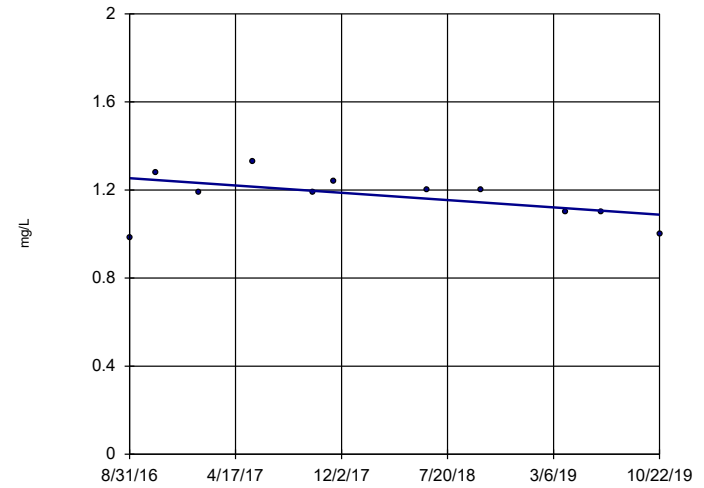


n = 11
Slope = -0.01993
units per year.
Mann-Kendall
statistic = -22
critical = -34
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Boron Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-120

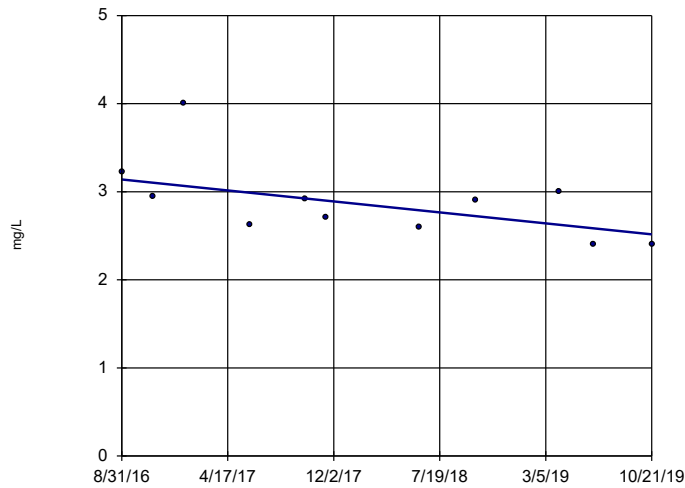


n = 11
Slope = -0.05273
units per year.
Mann-Kendall
statistic = -16
critical = -34
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Boron Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-121A

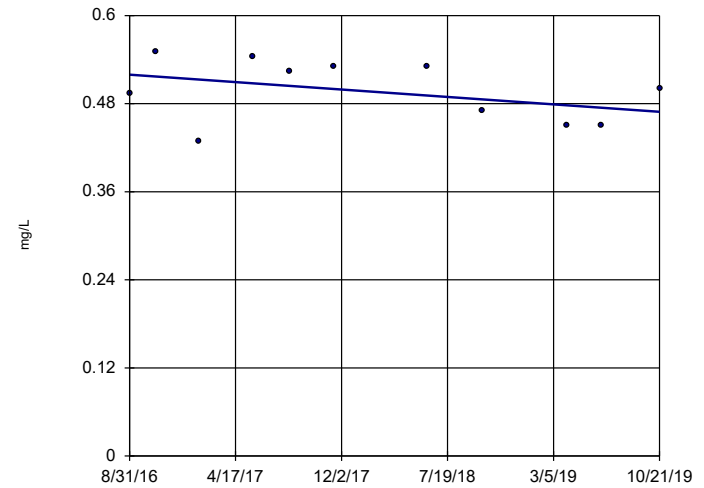


n = 11
Slope = -0.1988
units per year.
Mann-Kendall
statistic = -28
critical = -34
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Boron Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-124

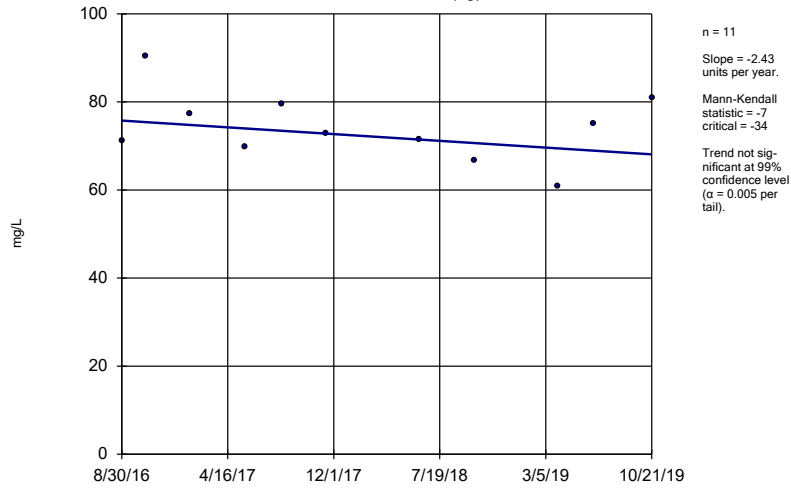


n = 11
Slope = -0.01605
units per year.
Mann-Kendall
statistic = -16
critical = -34
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Boron Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

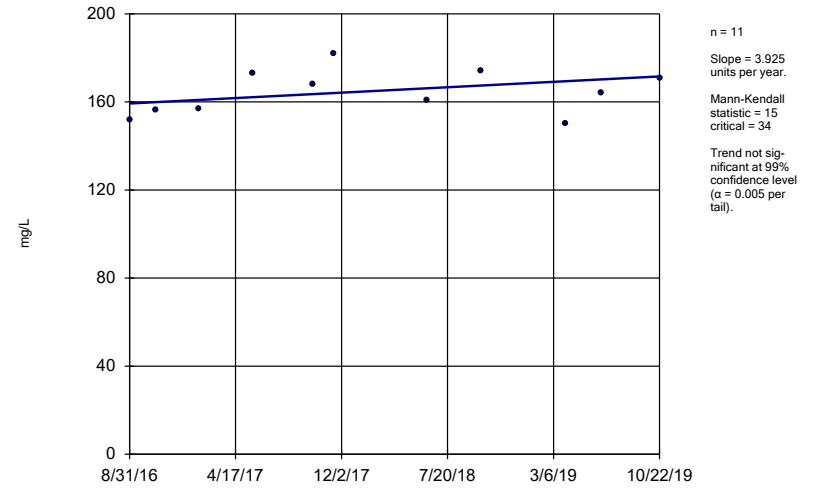
HGWA-122 (bg)



Constituent: Calcium Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

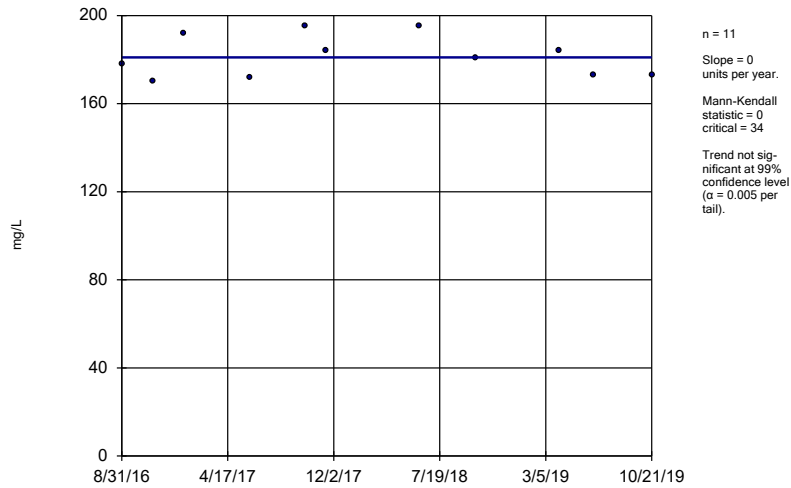
HGWC-120



Constituent: Calcium Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

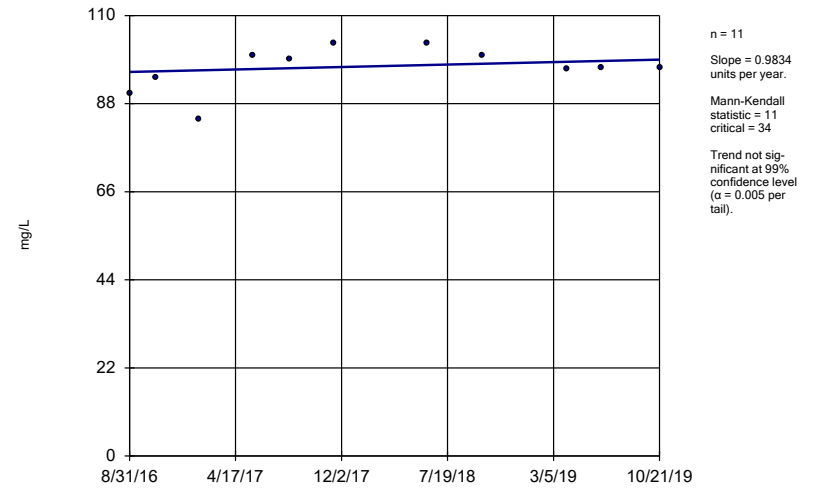
HGWC-121A



Constituent: Calcium Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

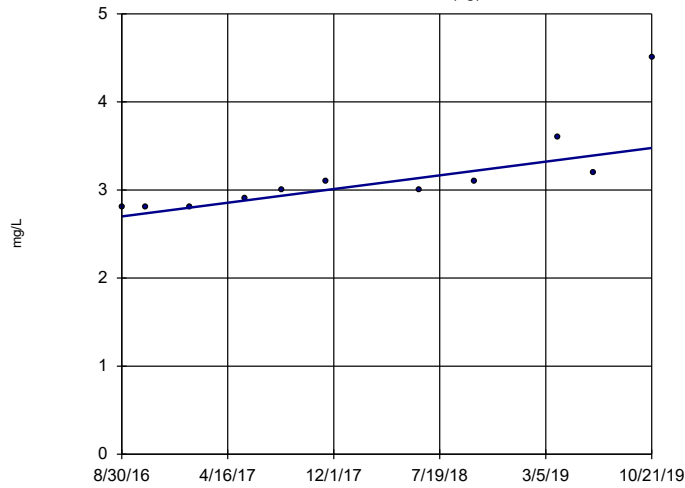
HGWC-124



Constituent: Calcium Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWA-122 (bg)

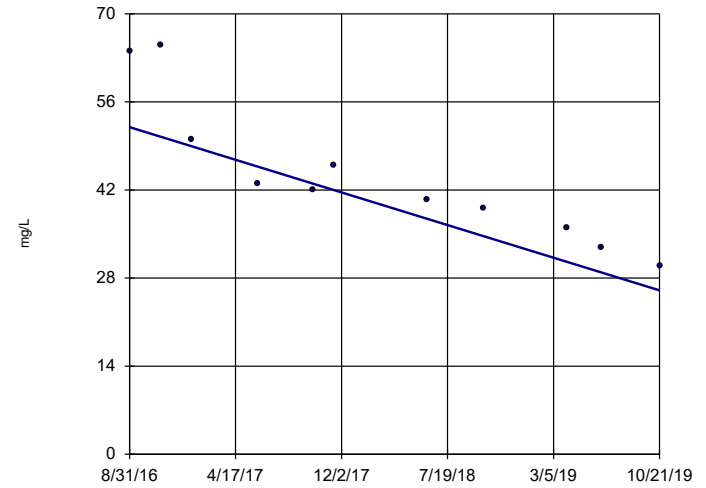


n = 11
 Slope = 0.2475
 units per year.
 Mann-Kendall
 statistic = 46
 critical = 34
 Increasing trend
 significant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Chloride Analysis Run 2/10/2020 11:20 PM
 Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-121A

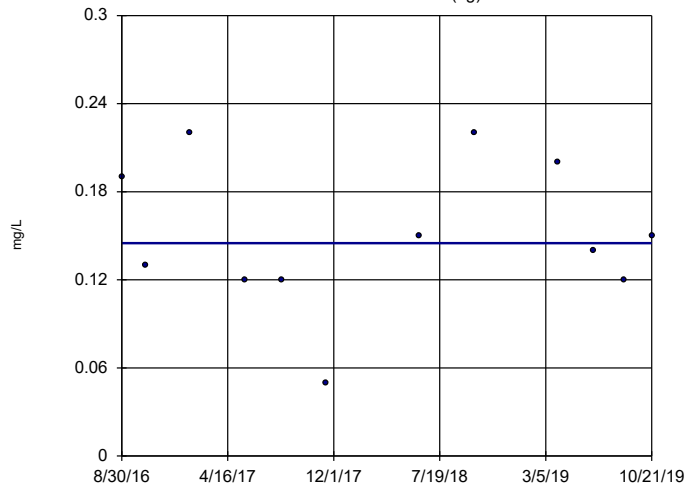


n = 11
 Slope = -8.258
 units per year.
 Mann-Kendall
 statistic = -49
 critical = -34
 Decreasing trend
 significant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Chloride Analysis Run 2/10/2020 11:20 PM
 Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWA-122 (bg)

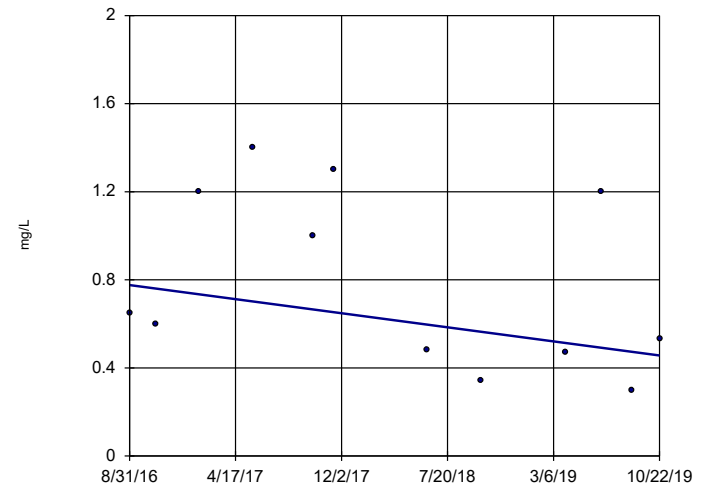


n = 12
 Slope = 0
 units per year.
 Mann-Kendall
 statistic = -3
 critical = -38
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Fluoride Analysis Run 2/10/2020 11:20 PM
 Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-120

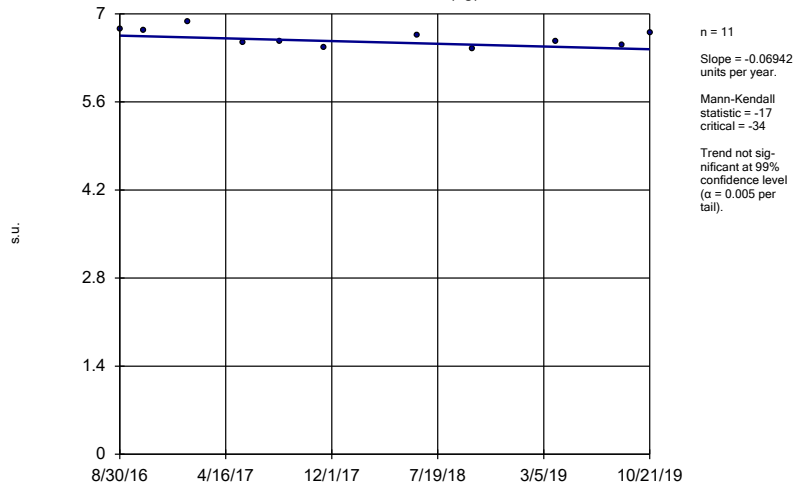


n = 12
 Slope = -0.1016
 units per year.
 Mann-Kendall
 statistic = -21
 critical = -38
 Trend not sig-
 nificant at 99%
 confidence level
 ($\alpha = 0.005$ per
 tail).

Constituent: Fluoride Analysis Run 2/10/2020 11:20 PM
 Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

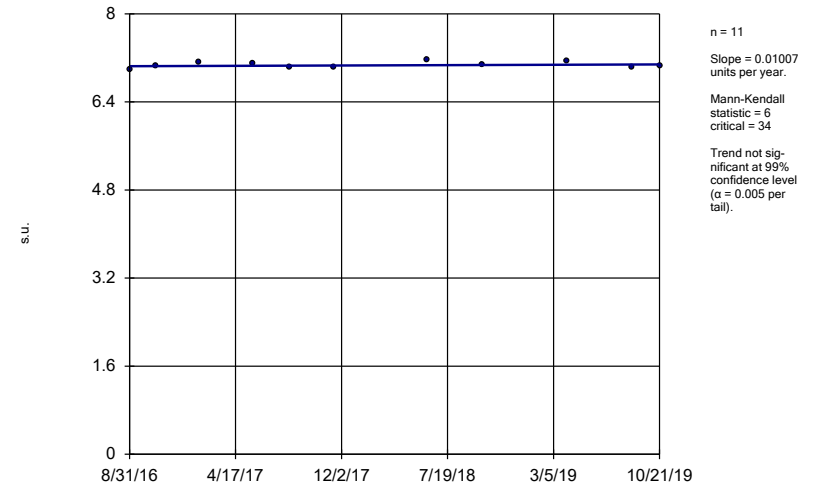
HGWA-122 (bg)



Constituent: pH Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

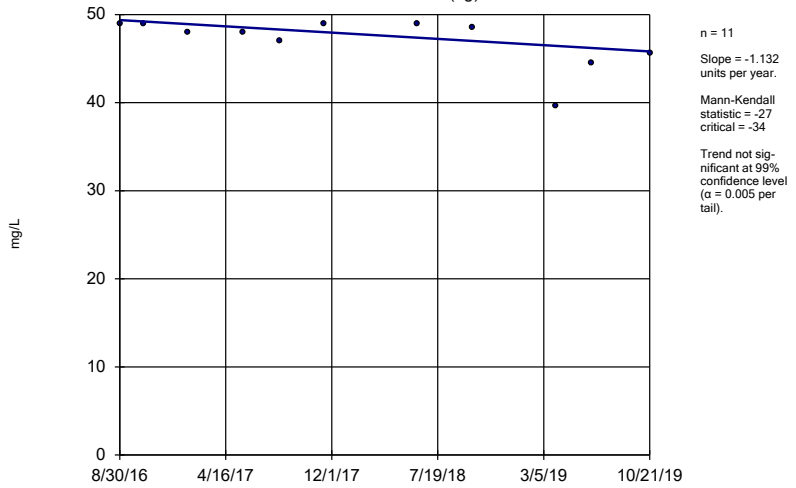
HGWC-124



Constituent: pH Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

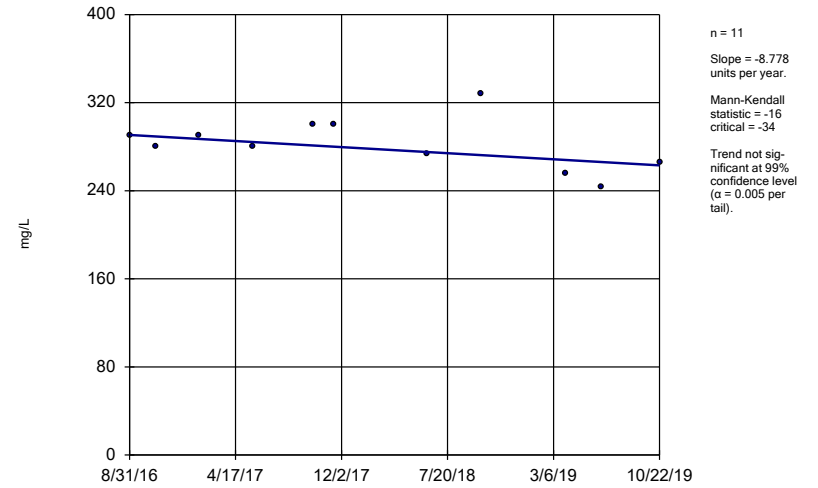
HGWA-122 (bg)



Constituent: Sulfate Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

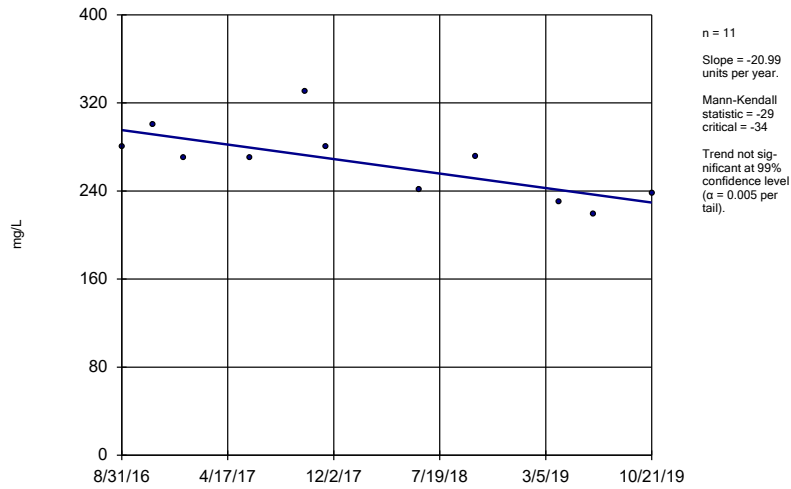
HGWC-120



Constituent: Sulfate Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

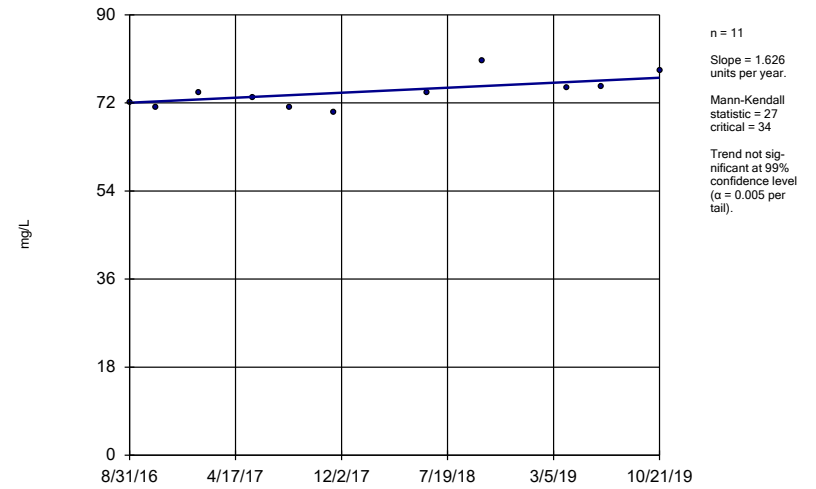
HGWC-121A



Constituent: Sulfate Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

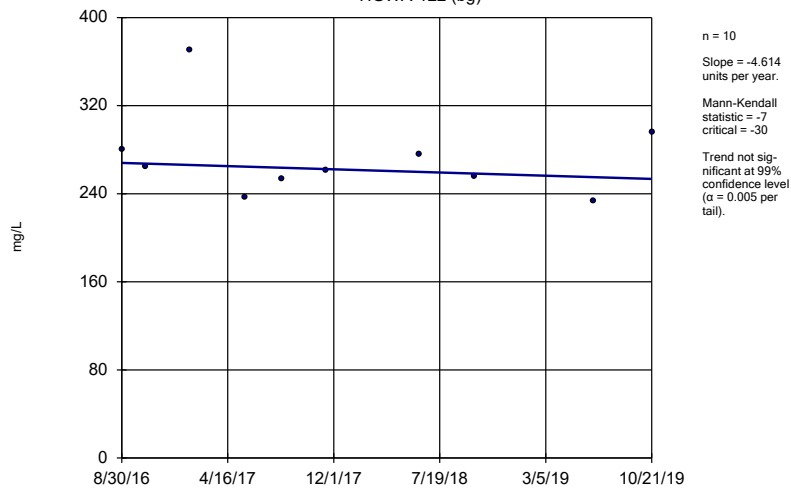
HGWC-124



Constituent: Sulfate Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

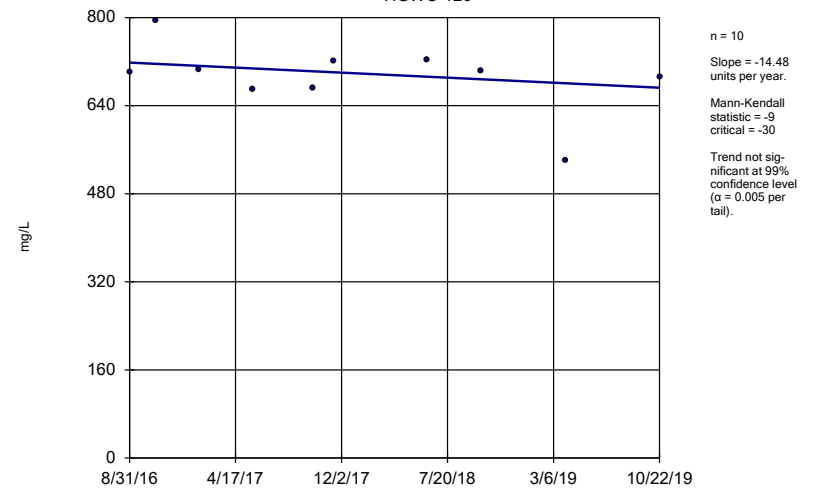
HGWA-122 (bg)



Constituent: Total Dissolved Solids Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

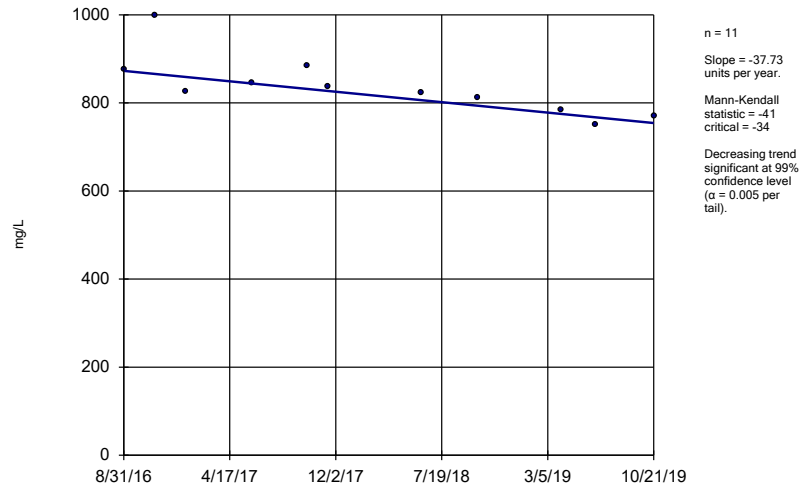
HGWC-120



Constituent: Total Dissolved Solids Analysis Run 2/10/2020 11:20 PM
Hammond AP Client: Georgia Power Data: Hammond AP-3

Sen's Slope Estimator

HGWC-121A



Constituent: Total Dissolved Solids Analysis Run 2/10/2020 11:20 PM

Hammond AP Client: Georgia Power Data: Hammond AP-3