



*Prepared for*

**Georgia Power Company**  
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**ASSESSMENT OF CORRECTIVE  
MEASURES REPORT  
PLANT HAMMOND ASH POND 2  
(AP-2)**

*Prepared by*

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Project Number GW6581B

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## ASSESSMENT OF CORRECTIVE MEASURES REPORT

Plant Hammond  
Ash Pond 2

June 12, 2019

A handwritten signature in black ink that reads "Herwig Goldemund".

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## LIST OF ACRONYMS

ACM	Assessment of Corrective Measures
AP	ash pond
CCR	coal combustion residuals
CFR	Code of Federal Regulations
cm/sec	centimeters per second
EPD	Environmental Protection Division
ft	feet
ft/day	feet per day
ft/ft	feet per foot
GPC	Georgia Power Company
GWPS	Groundwater Protection Standard
HAR	Hydrogeologic Assessment Report
ISS	in-situ solidification/stabilization
$K_h$	horizontal hydraulic conductivity
MNA	monitored natural attenuation
O&M	operations and maintenance
P&T	pump and treat
PE	professional engineer
PRB	permeable reactive barriers
RCRA	Resource Conservation and Recovery Act
SSL	statistically significant level
US EPA	United States Environmental Protection Agency
ZVI	zero-valent iron

## 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (US EPA) coal combustion residual (CCR) rule [40 Code of Federal Regulations (CFR) Part 257, Subpart D] and the Georgia Environmental Protection Division (EPD) Rules for Solid Waste Management 391-3-4-.10, Geosyntec Consultants, Inc. (Geosyntec) has prepared this *Assessment of Corrective Measures (ACM) Report* for Georgia Power Company (GPC) Plant Hammond (Site) Ash Pond 2 (AP-2). Pursuant to 40 CFR 257.96 and Georgia Rule 391-3-4-.10(6)(a), this ACM evaluates potential corrective measures to address statistically significant levels (SSLs) of cobalt identified in the *2018 Annual Groundwater Monitoring and Corrective Action Report* (Geosyntec, 2019), which is the target constituent for corrective measures presented in this report.

The ACM was initiated within 90 days of identifying the SSLs on January 13, 2019; and a 60-day extension until June 12, 2019, for completion of the ACM was documented on April 12, 2019. Three delineation groundwater monitoring wells, installed to assess the extent of cobalt in groundwater at AP-2, show that cobalt is horizontally and vertically delineated and contained within the property boundary. This ACM is the first step in identifying viable corrective measures to address SSLs in groundwater at the Site. Based on the results of the ACM, further evaluation may be performed, site-specific studies completed, and a corrective action plan developed and implemented pursuant to 40 CFR 257.97 and 257.98 and Georgia Rule 391-3-4-.10(6)(a).

### 1.1 Purpose

The purpose of this ACM is to begin the process of selecting corrective measure(s) for groundwater. This process is typically iterative and may be composed of multiple steps to analyze the effectiveness of corrective measures to address the potential migration of CCR constituents in groundwater at AP-2.

Once potential corrective measures are identified in this ACM, they are further evaluated using the criteria outlined in 40 CFR 257.96 (c) and Rule 391-3-4-.10(6)(a), which state that corrective measures assessment should include an analysis of the effectiveness of potential corrective measures that considers the following:

- Performance;
- Reliability;
- Ease of implementation;

- Potential impacts (including safety, cross-media, and exposure);
- The time required to begin and complete the remedy; and
- Any institutional requirements (e.g., permitting or environmental and public health requirements) that could affect implementation of the remedy.

These evaluation criteria are considered for each potential corrective measure. Further evaluation of the technologies will be required to select a corrective measure(s).

## **1.2 Site Location and Description**

Plant Hammond is located in Floyd County, Georgia, approximately 10 miles west of Rome, Georgia. The Site 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. Georgia Power has submitted a new Integrated Resource Plan to the Georgia Public Service Commission in January 2019 which calls for the decertification of Plant Hammond. All four units are included in the decertification.

AP-2 is a 21-acre surface impoundment. AP-2 is currently used as a dewatering facility for fly ash and bottom ash. Dewatered ash is excavated and transported to the nearby Huffaker Road facility, a permitted solid waste disposal location owned and operated by GPC.

## **1.3 Pond Closure**

GPC will close AP-2 through removal of the CCR material from the CCR unit. The Closure Plan submitted to Georgia EPD as part of the closure permit application package describes the closure activities and requirements in accordance with 40 CFR 257.102 and corresponding Rule 391-3-4-.10(7)(b). The Closure Plan has been summarized in the Initial Written Closure Plan and published in 2016 to GPC's webpage.

Per the Closure Plan, the sequence of closing AP-2 via removal of the CCR material generally includes: (i) sufficient dewatering and stabilization of the CCR material to facilitate its excavation and removal; (ii) removal of the CCR material and a minimum 6 inches of the residual soils underlying the CCR material in AP-2; (iii) transportation and

disposal of the removed material into the Plant Hammond Huffaker Road private industrial solid waste permitted landfill or in another permitted solid waste disposal facility, or sold to an ash marketer for beneficial re-use; and (iv) final grading and backfilling with approved on-site/off-site borrow soil to promote positive drainage of stormwater from the stabilized area.

The closure of AP-2 in the manner described above provides a source control measure that reduces the potential for migration of CCR constituents to groundwater. Corrective measures discussed in this ACM are being evaluated to address SSLs in groundwater at the compliance boundary. The compliance boundary is the unit boundary where the detection monitoring network is installed.



## 2.0 CONCEPTUAL SITE MODEL

The following section summarizes the geologic and hydrogeologic conditions at the Site as described in the AP-2 *Hydrogeologic Assessment Report* (HAR) submitted to Georgia EPD as supporting documents for the closure permit application.

### 2.1 Geology

AP-2 is located in the Valley and Ridge Physiographic Province of 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. (Golder, 2018) indicates that the Site is underlain by the lower units of the Cambrian age Conasauga Formation (Ccs1), consisting of mostly calcareous shale. Based on review of subsurface investigations at the Site, the bedrock was identified as predominantly calcareous shale and fissile black shale. AP-2 is underlain primarily by five lithologic units; (i) terrace alluvium, (ii) colluvium, (iii) residuum, (iv) partially weathered shale bedrock, and (v) unweathered shale bedrock.

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

### 2.2 Hydrology and Groundwater Flow

The uppermost aquifer at AP-2 is a regional groundwater aquifer that occurs primarily in the residuum and within the weathered and fractured bedrock. Recharge is by precipitation falling on bedrock outcrop areas and through alluvial, colluvial, and residual soils to the bedrock. Based on observations of residuum soil types and horizontal conductivity values, the movement of groundwater in the soil can be characterized as low-to moderate permeability, porous media flow. The groundwater flow in the shallow

underlying bedrock is characterized as fracture flow, and due to the preponderance of shale beneath AP-2, is expected to be very low permeability. The regional groundwater flow direction is expected to be from north to south; however, the local flow direction beneath AP-2 is predominantly east to west with an additional southwesterly component. Groundwater level data are recorded during each groundwater sampling event from the AP-2 well network, depicted on **Figure 2** and discussed in detail in Section 3.1.1. The data are used to generate potentiometric surface maps that depict the groundwater flow direction or calculate flow gradients. The potentiometric surface map representing the April 2019 groundwater level data is provided on **Figure 3**.

The representative groundwater hydraulic gradient for AP-2 is approximately 0.011 feet/foot (ft/ft), measured across the central portion of AP-2 between wells MW-18 and HGWC-17. Horizontal hydraulic conductivity ( $K_h$ ) measurements were calculated by ERM (2018) from slug test data collected in a subset of AP-2 wells and piezometers. Results were broadly grouped based on the lithology in which the wells or piezometers were screened. At AP-2, hydraulic conductivities for wells and piezometers screened in the alluvium, colluvium, and residuum ranged from  $2.22 \times 10^{-5}$  centimeters per second (cm/sec) (0.06 feet per day [ft/day]) to  $9.91 \times 10^{-4}$  cm/sec (2.81 ft/day), with a geometric mean of  $1.65 \times 10^{-4}$  cm/sec (0.47 ft/day). A groundwater flow velocity calculation was performed using the average value for  $K_h$  of 0.47 ft/day, a hydraulic gradient of 0.011 ft/ft, and an assumed effective porosity of 0.15. This calculation yielded a groundwater flow velocity of approximately 0.035 ft/day for typical AP-2 conditions. Additional details regarding the hydrogeologic conditions in vicinity of AP-2 are provided in the HAR.

### 3.0 NATURE AND EXTENT DELINEATION

The following describes monitoring-related field and assessment activities performed to date in support of (i) delineating the nature and extent of SSLs in groundwater and (ii) evaluating potential corrective measures to address them.

#### 3.1 Groundwater Monitoring & Constituents of Concern

##### 3.1.1 Groundwater Monitoring Program

In accordance with 40 CFR 257.91, a groundwater monitoring system was installed at AP-2 which (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 October 17, 2017, and the certification is maintained in the AP-2 Operating Record. The certified compliance monitoring well network for AP-2 consists of a total of 11 monitoring wells: 6 upgradient wells and 5 downgradient wells. The locations of the compliance monitoring wells are shown on **Figure 2**; well construction details are listed in **Table 1**. Groundwater is currently monitored in AP-2 wells under the assessment monitoring program pursuant to 40 CFR 257.95. Additional groundwater monitoring details are provided in the *2018 Annual Groundwater and Corrective Action Monitoring Report* (Geosyntec, 2019).

##### 3.1.2 SSLs for Appendix IV Constituents

Groundwater monitoring data collected during the semiannual monitoring events in June and October 2018 were statistically analyzed pursuant to 40 CFR 257.93(f) and in general accordance with the US EPA document *Statistical Analysis of Groundwater Data at RCRA Facilities Unified Guidance* (Unified Guidance) (US EPA, 2009). Following Federal and state rule requirements, separate groundwater protection standards (GWPS) were established for statistical comparisons of Appendix IV assessment monitoring parameters. Appendix IV GWPS are provided in **Table 2**. Appendix IV parameters detected during the semiannual monitoring event were compared to GWPS to assess if concentrations in compliance wells statistically exceeded the GWPS. Details regarding the statistical analyses are provided in the *2018 Annual Groundwater and Corrective Action Monitoring Report* (Geosyntec, 2019).

Statistical analyses of the June and October 2018 analytical data identified SSLs of cobalt in the following wells:

AP-2 (Federal and Georgia EPD CCR Rules):

- Cobalt: HGWC-15 and HGWC-18

In accordance with 40 CFR 257.95(g), a notification identifying SSLs for cobalt was prepared for AP-2 and placed in the Operating Record on November 14, 2018. Pursuant to 40 CFR 257.96, an ACM was initiated for AP-2 on January 13, 2019.

### **3.2 Field Investigation Activities**

Three additional groundwater monitoring wells were installed in 2018 to provide additional data to characterize flow conditions downgradient of AP-2 and to horizontally and vertically delineate SSLs of cobalt in groundwater at AP-2. Well MW-22 was installed for horizontal delineation and wells MW-21D and MW-23D were installed for vertical delineation. Detailed boring and well construction logs for these three new wells are provided in **Appendix A**. The locations of these three delineation wells are shown on **Figure 2** and well construction details are also provided in **Table 1**.

Pursuant to 40 CFR 257.96, groundwater in the vicinity of AP-2 continues to be monitored during the ACM phase in accordance with the assessment monitoring program established for the CCR unit in 2018. Groundwater samples were collected from the compliance wells and three delineation wells in March 2019 and analyzed for all Appendix IV parameters per 40 CFR 257.95(b). The compliance and delineation wells were sampled again in April 2019 during the first semiannual monitoring event. The groundwater analytical results from the March and April 2019 events are summarized in **Table 3**. Laboratory reports associated with the 2019 results are provided in **Appendix B**.

The 2019 analytical results reported for the horizontal delineation wells (MW-22 and HGWC-17) indicate that SSLs of cobalt in HGWC-15 and HGWC-18 are horizontally delineated and contained within the property boundary; for these wells, the cobalt concentrations are below its respective GWPS. Similarly, cobalt is vertically delineated to below the GWPS in deeper delineation wells (HGWC-21D and HGWC-23D).

The April 2019 semiannual event results reported for the compliance wells will be statistically evaluated relative to the site-specific GWPS and reported in the

corresponding semiannual groundwater monitoring report, which will be published online on August 30, 2019.

## **4.0 GROUNDWATER CORRECTIVE MEASURES**

### **4.1 Objectives of the Corrective Measures**

In evaluating the effectiveness of potential corrective measures using the criteria listed in 40 CFR 257.96(c) and referenced in Rule 391-3-4-.10(6)(a), including performance, reliability, ease of implementation, potential impacts, time required, and institutional and public health requirements, the following criteria listed in 40 CFR 257.97(b) and corresponding Rule 391-3-4-.10(6)(a) must be met by the corrective measure when selected:

- Be protective of human health and the environment;
- Attain applicable groundwater protection standards as specified pursuant to 40 CFR 257.95(h);
- Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part to the environment;
- Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems; and
- Comply with standards for management of wastes as specified in 40 CFR 257.98(d).

Corrective measures selected for evaluation herein for potential use at AP-2 are anticipated to satisfy the above criteria to varying degrees of effectiveness.

### **4.2 Summary of Corrective Measures**

The closure of AP-2 as described in Section 1.3 is a source control measure that reduces the potential for migration of CCR constituents to groundwater. Corrective measures discussed in this ACM are being evaluated to address SSLs in groundwater at and downgradient of the compliance boundary.

This section presents potential corrective measures capable of remediating the Appendix IV groundwater constituents (i.e., cobalt) at AP-2. Each corrective measure is evaluated

relative to criteria specified in 40 CFR 257.96(c) and 40 CFR 257.97(b). **Table 4** provides a comparative screening of the corrective measures discussed in Section 4.

The following potential corrective measures are considered in this ACM:

- Geochemical Approaches (In-Situ Injection)
- Hydraulic Containment (Pump and Treat)
- In-Situ Solidification/Stabilization
- Monitored Natural Attenuation
- Permeable Reactive Barrier
- Phytoremediation
- Subsurface Vertical Barrier Walls

While phytoremediation is generally considered a viable corrective measure for groundwater, the implementation of this technology at AP-2 is not a feasible option due to the lack of available area for tree plantings downgradient of the pond. Therefore, it is not retained for further evaluation in **Table 4**.

Similarly, in-situ solidification/stabilization (ISS) is generally considered a viable option for either small source areas or targeted zones within a larger footprint. However, this potential corrective measure is not an applicable technology at AP-2 since the CCR unit will be closed by removal of CCR materials from the unit. Therefore, ISS is not considered an applicable groundwater corrective measure for AP-2 and no detailed evaluation is provided in **Table 4**.

#### **4.2.1 Geochemical Approaches (In-Situ Injection)**

Cobalt can be precipitated and/or immobilized under different combinations of pH and redox conditions. A variety of pH and/or redox-altering technologies are available which can incorporate biological processes, chemical oxidants and reductants, and/or mechanical processes such as air sparging. These processes can be used to decrease the mobility of cobalt. For example, cobalt can be sorbed to iron and manganese oxides or precipitated as sparingly soluble cobalt sulfide minerals.

To understand the biogeochemical processes that would effectively immobilize cobalt in groundwater, site-specific bench-scale and pilot-scale treatability studies are needed to prepare an effective amendment to create the appropriate conditions for the precipitation and/or sorption of this constituent without mobilizing other naturally-occurring constituents. Once precipitated, these minerals are often stable even if geochemical

conditions revert back to a different redox environment. However, if not properly designed and implemented, manipulating redox conditions without forming the desired compounds may increase the mobility of naturally-occurring constituents such as iron, manganese, and arsenic.

Air sparging can be used to provide oxygen to the subsurface in an attempt to precipitate out (or make more “sorptive”) compounds that are generally more soluble and mobile under reducing conditions. This can also support the precipitation of iron and manganese oxides, which would provide additional sorption sites for constituents such as cobalt.

Furthermore, in-situ chemical oxidation (ISCO) or in-situ chemical reduction (ISCR) can be used to chemically alter the redox environment in the subsurface to affect the mobility and/or bioavailability of certain inorganic compounds.

The main limiting process in these in-situ remedial approaches is the delivery of the compounds within the area of interest. Mixing and contact with the target constituents are necessary and can be difficult in heterogeneous materials and fine-grained materials.

The attenuation of cobalt is expected to occur under both aerobic (via sorption to manganese or iron oxides) and anaerobic conditions (via formation of sulfide minerals). Therefore, in-situ injections are considered a potentially viable corrective measure to address cobalt in groundwater at AP-2, especially in smaller, more localized areas, and will be retained for further evaluation.

#### **4.2.2 Hydraulic Containment (Pump and Treat)**

Generally, hydraulic containment (or control) refers to the use of groundwater extraction to artificially induce a hydraulic gradient and capture or control the migration of impacted groundwater. One example, groundwater pump and treat (P&T), is often considered to be a viable remedial technology at many sites (US EPA, 1996). This approach uses extraction wells or trenches to capture groundwater, which may subsequently require above-ground treatment and permitted discharge to a receiving water feature or sewer system, reinjection into the aquifer, or reuse at the generating station. Groundwater P&T is often relatively slow and costly as a means to restore groundwater quality over a long-term period, but can be effective as an interim measure, or combined with another measure, to provide hydraulic containment to limit constituent migration toward a potential receptor.

Groundwater extraction for hydraulic control can often effectively address the variety of inorganic constituents encountered at CCR sites, including cobalt. Extraction



technologies also have the ability to overcome the limitations of in situ injection-based technologies (i.e., mixing and contact with affected materials, and to access impacted groundwater in lower permeability geologic formations such as fractured bedrock). Space constraints are mainly limited to the above-ground conveyance and treatment component of a P&T system since extraction wells can generally be fit into relatively tight spaces at the edge of waste or other points of compliance.

Extracted groundwater may need to be treated prior to discharge (depending on discharge permit requirements) but does have the potential to be used for irrigation (e.g., of a cover system or other vegetated areas at the Site) or dust suppression purposes. It could also be used as moisture conditioning of dry ash that is being landfilled. Therefore, P&T is a potentially viable corrective measure for cobalt in groundwater at AP-2 and will be retained for further evaluation.

#### **4.2.3 Monitored Natural Attenuation**

The US EPA defines monitored natural attenuation (MNA) as the reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods. The natural attenuation processes that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in-situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (US EPA, 2015b).

Attenuation mechanisms for inorganic constituents, such as cobalt, are either physical or chemical. Physical attenuation mechanisms such as dilution and dispersion may be appropriate as a polishing step (e.g., at the boundaries of impacted groundwater, when source control is complete, an active remedy is being used at AP-2, and appropriate land use and groundwater controls are in place). Chemical attenuation mechanisms through sorption or oxidation reduction reactions discussed in more detail below may be viable as a stand-alone corrective measure.

“MNA may, under certain conditions (e.g., through sorption or oxidation-reduction reactions), effectively reduce the dissolved concentrations and/or toxic forms of inorganic contaminants in groundwater and soil. Both metals and non-metals (including radionuclides) may be attenuated by sorption reactions such as precipitation, adsorption

on the surfaces of soil minerals, absorption into the matrix of soil minerals, or partitioning into organic matter. Oxidation-reduction (redox) reactions can transform the valence states of some inorganic contaminants to less soluble and thus less mobile forms (e.g., hexavalent uranium to tetravalent uranium) and/or to less toxic forms (e.g., hexavalent chromium to trivalent chromium)” (US EPA, 2015b). Cobalt undergoes sorption to iron and manganese oxides and, depending on specific redox conditions, it may also form sparingly soluble sulfide minerals via abiotic or biotic processes.

The US EPA uses four phases to establish whether MNA can be successfully implemented at a given site. The phases (or steps) include:

1. Demonstration that SSLs in groundwater are delineated and stable.
2. Evaluation of the mechanisms and rates of attenuation.
3. Assessment if the capacity of the aquifer is sufficient to attenuate the mass of constituents in groundwater and that the immobilized constituents are stable and will not remobilize.
4. Design of a performance monitoring program based on the mechanisms of attenuation and including a decision framework for consideration of a contingent remedy tailored to site-specific conditions should MNA not perform adequately.

Physical and chemical MNA mechanisms for cobalt, including dilution, dispersion, sorption, and precipitation can be operational without the potential for additional mass of cobalt migrating to downgradient groundwater. Even under current conditions, attenuation processes for cobalt are already occurring as evidenced by groundwater data from delineation wells. Therefore, MNA is a potentially viable corrective measure for cobalt in groundwater at AP-2 and will be retained for further evaluation.

#### **4.2.4 Permeable Reactive Barriers**

Permeable reactive barriers (PRBs) can present a viable alternative for in-situ treatment of cobalt. The technology typically involves the installation of a subsurface wall constructed with reactive media such as zero-valent iron (ZVI), biologically active media (to induce oxidizing or reducing conditions), or clays, apatite, zeolites, and/or peat moss (to promote ionic exchange and/or sorption). PRBs have proven to be effective in passively treating several inorganic constituents found at CCR sites, including arsenic, selenium, and chromium (e.g. ITRC, 2011). The use of PRBs for cobalt has been tested

(e.g., Ludwig et al., 2002), but additional site-specific testing is needed to confirm the applicability of this technology to cobalt removal from groundwater.

PRBs can be installed in downgradient locations using conventional excavation methods or one-pass trenching methods. Excavated trenches get back-filled with reactive media to create a barrier that treats dissolved constituents as they passively flow through the PRB with the groundwater (e.g., ITRC, 2011). These systems can either be constructed as continuous “walls” or as “funnel-and-gate” systems where (impermeable) slurry walls create a “funnel” that directs groundwater to permeable “treatment gates” filled with reactive materials. Since the costs for reactive materials (e.g., ZVI or similar) are generally higher than bentonite-based slurry wall construction, these configurations with a smaller treatment area help to lower construction and maintenance costs. Similar to slurry walls (see Section 4.2.5), PRBs are typically keyed into an underlying low-permeability unit such as a clay layer or bedrock.

The installation depths of a PRB unit are generally limited to about 90 ft below ground surface. The installation of a PRB generally requires more space than extraction wells, but the system does not require above-ground treatment components and therefore, the overall treatment footprint is likely to be smaller compared to a P&T system.

While additional subsurface investigations, aquifer testing, reactive media testing, and compatibility testing of groundwater and a potential slurry wall component of a PRB will be needed to further evaluate the feasibility of installing a PRB at AP-2, the technology is currently considered to be a potentially viable corrective measure to address cobalt in groundwater at AP-2 and will be retained for further evaluation.

#### **4.2.5 Subsurface Vertical Barrier Walls**

Subsurface vertical barrier walls (sometimes referred to as slurry walls) have been used for seep control and groundwater cutoff at impoundments and waste disposal units for more than three decades. In general, barrier walls are designed to provide containment; localized treatment achieved through the sorption or chemical precipitation reactions from construction of the walls are incidental to the design objective.

This approach involves placing a barrier to groundwater flow in the subsurface, frequently around the source area (or the downgradient limits of the source area), to prevent future migration of dissolved constituents in groundwater from beneath the source to downgradient areas. Barrier walls can also be used in downgradient applications to limit discharge to a surface water feature or to reduce aquifer recharge

from an adjacent surface water feature when groundwater extraction wells are placed near a surface water feature. A variety of barrier materials can be used, including cement and/or bentonite slurries or various mixtures of soil with cement or bentonite, geomembrane composite materials, or driven materials such as steel or vinyl sheet pile.

The installation of these low-permeability walls is similar to the methods described for PRBs above. In general, the applicability of slurry walls is limited by the depth of installation, which is approximately 90 ft below ground surface. However, site-specific geologic and technology-specific considerations may limit this depth to shallower installations.

Groundwater pumping is required upgradient of the barrier wall to maintain an inward hydraulic gradient. The extracted groundwater would likely require treatment in an above-ground treatment system.

While additional subsurface investigations, aquifer testing, and wall compatibility testing with the groundwater chemistry will be needed to further evaluate the feasibility as well as the placement of a barrier wall at AP-2, the technology is currently considered to be a potentially viable corrective measure to address cobalt at AP-2 and will be retained for further evaluation. However, it is more likely to be a component of a potential PRB application rather than a stand-alone corrective measure.

## **5.0 REMEDY SELECTION PROCESS**

The purpose of this ACM is to begin the process of selecting corrective measure(s) for groundwater based on further evaluation using the criteria outlined in 40 CFR 257.96 and Georgia Rule 391-3-4-.10(6)(a). The following sections present the pond closure and site management strategy, additional data gathering, schedule, reporting, and next steps.

### **5.1 Pond Closure and Site Management Strategy**

GPC plans to close AP-2 via removal of the CCR materials from the unit for off-site disposal at a permitted landfill or sold to an ash marketer for beneficial re-use. During the pond closure, temporary changes in site conditions may occur. Additionally, the site conceptual model may need to be refined and/or updated from the current understanding as more data are collected. GPC plans to proactively utilize adaptive site management to support the remedial strategy and address potential changes in site conditions as appropriate. Under an adaptive site management strategy, a remedial approach will be selected whereby: (1) a corrective measure will be installed or implemented to address current conditions; (2) the performance of the corrective measure will be monitored, evaluated, and reported semiannually; (3) the site conceptual model will be updated as more data are collected; and (4) adjustments and augmentations will be made to the corrective measure(s), as needed, to assure that performance criteria and site remedial goals are met.

### **5.2 Additional Data Gathering**

Additional data, data analysis, and site-specific evaluation are necessary to refine the conceptual site model and to further evaluate the feasibility of each corrective measure presented herein such that an appropriate groundwater corrective measure may be selected. Some of the data needed to refine the conceptual site model may be collected concurrent with routine groundwater monitoring events under the assessment monitoring program, or during supplementary sampling, if required. However, additional data collection that includes aquifer testing, groundwater modeling, material compatibility testing, bench scale studies, and pilot tests may require an estimated one to two additional years to complete. Once sufficient data are available to arrive at a focused number of corrective measures or a combination of corrective measures that would provide an effective groundwater remedy, necessary steps will be taken to implement a remedy at the Site in accordance with 40 CFR 257.98.

### **5.3 Schedule, Reporting, and Next Steps**

It is anticipated that additional data collection will begin in 2019. GPC will prepare semiannual reports to document Site groundwater conditions, results associated with additional data gathering identified in Section 5.2 and in Table 4, and the progress in selecting and designing the remedy in accordance with 40 CFR 257.97(a). The reports will be posted to GPC's website.

At least 30 days prior to the selection of remedy or remedies, a public meeting to discuss the results of the corrective measures assessment will be held pursuant to 40 CFR 257.96(e). The final remedy selection report will be developed as outlined in 40 CFR 257.97(a). Once the remedy has been selected, the implementation of the remedy will be initiated in accordance with 40 CFR 257.98.

## 6.0 REFERENCES

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# TABLES



**Table 1**  
Monitoring Well Network Summary  
Plant Hammond AP-2, Floyd County, Georgia



Well ID	Hydraulic Location	Installation Date	Northing <sup>(1)</sup>	Easting <sup>(1)</sup>	Top of Casing Elevation (ft AMSL)	Top of Screen Elevation (ft AMSL)	Bottom of Screen Elevation (ft AMSL)	Well Depth (ft bgs) <sup>(2)</sup>	Screen Interval Length
<i>Compliance Monitoring Wells</i>									
HGWA-1	Upgradient	12/3/2014	1550423.69	1940773.31	595.50	573.40	563.40	32.50	10
HGWA-2	Upgradient	12/2/2015	1549796.40	1939845.20	588.18	570.23	560.23	27.95	10
HGWA-3	Upgradient	12/2/2015	1549793.93	1939833.46	588.06	553.19	543.19	44.87	10
HGWA-4	Upgradient	12/3/2014	1549932.76	1939386.17	588.30	572.90	562.90	25.80	10
HGWA-5	Upgradient	12/10/2015	1548632.65	1937183.80	583.52	565.57	555.57	27.95	10
HGWA-6	Upgradient	12/11/2015	1548635.66	1937177.39	583.72	543.20	533.20	50.52	10
HGWC-14	Downgradient	10/16/2014	1548005.66	1938402.95	598.10	565.50	555.50	43.00	10
HGWC-15	Downgradient	10/20/2014	1547882.88	1937851.74	582.50	554.90	544.90	38.00	10
HGWC-16	Downgradient	10/21/2014	1548217.01	1937539.49	581.10	558.40	548.40	33.10	10
HGWC-17	Downgradient	10/22/2014	1548457.24	1937538.67	585.40	568.00	558.00	27.80	10
HGWC-18	Downgradient	10/22/2014	1548827.89	1937559.01	585.30	568.00	558.00	27.80	10
<i>Groundwater Level Monitoring Piezometers</i>									
MW-8	Downgradient	10/29/2014	1548174.39	1940014.36	587.37	565.50	555.50	32.27	10
MW-9	Downgradient	10/29/2014	1548136.52	1938918.59	591.67	569.90	559.90	32.17	10
MW-12	Downgradient	10/21/2014	1547862.70	1937521.75	584.33	556.90	546.90	37.83	10
MW-16	Downgradient	10/27/2014	1549110.61	1937941.31	575.22	563.20	553.20	22.42	10
MW-17	Downgradient	10/28/2014	1549168.15	1938344.56	587.67	569.90	559.90	28.17	10
MW-18	Downgradient	10/29/2014	1548988.42	1938713.61	593.07	571.90	561.90	31.57	10
<i>Delineation Monitoring Wells</i>									
MW-21D	Downgradient	11/19/2018	1547877.73	1937844.17	581.49	539.89	529.89	49.20	10
MW-22	Downgradient	11/15/2018	1547856.03	1937832.07	578.67	551.09	541.09	35.00	10
MW-23D	Downgradient	11/15/2018	1548814.63	1937556.86	584.00	531.21	521.21	60.00	10

Notes:

ft = feet

AMSL = above mean sea level

bgs = below ground surface

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

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

**Table 2**  
**Summary of Background Concentrations**  
**and Groundwater Protection Standards**  
**Plant Hammond AP-2, Floyd County, Georgia**

Analyte	Units	Background <sup>(1)</sup>	Federal GWPS <sup>(2)</sup>	State GWPS <sup>(3)</sup>
Antimony	mg/L	0.003	0.006	0.006
Arsenic	mg/L	0.005	0.01	0.01
Barium	mg/L	0.21	2	2
Beryllium	mg/L	0.003	0.004	0.004
Cadmium	mg/L	0.001	0.005	0.005
Chromium	mg/L	0.01	0.1	0.1
Cobalt	mg/L	0.029	0.029	0.029
Fluoride	mg/L	0.36	4	4
Lead	mg/L	0.005	0.015 <sup>(4)</sup>	0.005
Lithium	mg/L	Federal 0.025 <sup>(5)</sup> State 0.05	0.04	0.05
Mercury	mg/L	0.0005	0.002	0.002
Molybdenum	mg/L	0.01	0.1	0.01
Selenium	mg/L	0.01	0.05	0.05
Thallium	mg/L	0.001	0.002	0.002
Combined Radium-226/228	pCi/L	2.42	5	5

Notes:

"mg/L" = milligrams per liter

"pCi/L" = picocuries per liter

1. The background limits were used when determining the groundwater protection standard (GWPS) under 40 CFR 257.95(h) and Georgia Environmental Protection Division (EPD) Rule 391-3-4-.10(6)(a). Where two numbers are present, they denote the different background levels for each of the two semiannual monitoring events in the order that they were determined.
2. Under 40 CFR 257.95(h)(1-3) the GWPS is: (i) the maximum contaminant level (MCL) established under §§141.62 and 141.66 of this title; (ii) where an MCL has not been established a rule-specific GWPS or regional screen level (RSL) is used; or (iii) background concentration for constituents were the background concentration is higher than the MCL or rule-specified GWPS.
3. Under the existing Georgia EPD rules, the GWPS is: (i) the MCL, (ii) where the MCL is not established, the background concentration, or (iii) background concentration for constituents were the background concentration is higher than the MCL.
4. Currently, there is no Environmental Protection Agency (EPA) MCL established for lead. The value listed as GWPS is the established EPA Action Level for drinking water.
5. The background tolerance limits (TL) used to evaluate GWPS for this analyte equals half the laboratory specified reporting limit (RL). Per the SAP, and in accordance with the Unified Guidance, a non-parametric TL approach was used since the data set contained greater than 50% non-detect (ND) results for this analyte. Under this approach, the TL equals the highest value reported, for which is the laboratory RL. Since a RL may be influenced due to sample matrix interference at the time of analysis, half the RL was applied in this select case.

**Table 3**  
 Summary of Groundwater Analytical Data  
 Plant Hammond AP-2, Floyd County, Georgia

Well ID:	HGWA-1	HGWA-1	HGWA-2	HGWA-2	HGWA-3	HGWA-3	HGWA-4	HGWA-4	HGWA-5	HGWA-5	HGWA-6	HGWA-6	HGWC-14	HGWC-14	HGWC-15	HGWC-15		
Sample Date:	3/12/2019	4/2/2019	3/12/2019	4/2/2019	3/12/2019	4/1/2019	3/11/2019	4/2/2019	3/12/2019	4/2/2019	3/12/2019	4/2/2019	3/14/2019	4/3/2019	3/14/2019	4/4/2019		
Parameter <sup>(1,2,3)</sup>																		
<b>APPENDIX III</b>	<b>Boron*</b>	--	ND (0.016 J)	--	ND (0.034 J)	--	ND (0.0066 J)	--	ND (0.010 J)	--	ND (0.0052 J)	--	ND (0.013 J)	--	12.5	--	2.3	
	<b>Calcium*</b>	--	132	--	ND (22.5 J)	--	80.5	--	76.0	--	26.3	--	49.7	--	606	--	214	
	<b>Chloride*</b>	--	20.3	--	5.8	--	6.5	--	4.4	--	1.7	--	1.6	--	227	--	138	
	<b>Fluoride*</b>	ND (0.29 J)	ND (0.10 J)	ND (0.038 J)	ND (0.071 J)	ND (0.072 J)	ND (0.029 J)	ND (0.035 J)	ND	ND (0.079 J)	ND (0.12 J)	ND (0.061 J)	ND	ND (0.24 J)	0.66	ND	ND (0.066 J)	
	<b>pH*</b>	7.03	6.86	5.42	5.41	7.29	7.16	6.27	6.66	6.42	6.38	7.50	7.46	4.66	4.67	5.71	5.66	
	<b>Sulfate*</b>	--	84.3	--	48.7	--	50.4	--	4.9	--	23.8	--	35.5	--	1520	--	528	
	<b>TDS*</b>	--	452	--	133	--	284	--	230	--	144	--	238	--	2310	--	926	
<b>APPENDIX IV</b>	<b>Antimony</b>	ND	ND	ND	ND	ND	ND	ND	--	ND	--	ND	--	ND	--	ND		
	<b>Arsenic</b>	ND	ND	ND (0.00069 J)	ND	ND (0.00063 J)	ND	ND	ND	ND	ND	ND	ND	ND (0.0029 J)	ND	ND	ND (0.00017 J)	
	<b>Barium</b>	0.042	0.040	0.12	0.13	0.13	0.13	0.029	0.030	0.050	0.044	0.20	0.19	0.019	0.016	0.021	0.018	
	<b>Beryllium</b>	ND	ND	ND (0.00017 J)	ND (0.00015 J)	ND	ND	ND (0.000050 J)	ND	ND	ND	ND	ND	ND (0.00043 J)	ND (0.00027 J)	ND	ND	
	<b>Cadmium</b>	ND	ND	ND (0.00013 J)	ND (0.00015 J)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.000079 J)	0.0024	0.0018	
	<b>Chromium</b>	ND	ND	ND	ND (0.0079 J)	ND	ND	ND	0.019	ND	ND	ND	ND	ND	ND	ND	ND	
	<b>Cobalt<sup>+</sup></b>	ND	ND	0.017	0.019	ND	ND	ND	ND	ND (0.00099 J)	ND (0.0012 J)	ND	ND	0.025	0.021	0.038	0.035	
	<b>Fluoride</b>	ND (0.29 J)	ND (0.10 J)	ND (0.038 J)	ND (0.071 J)	ND (0.072 J)	ND (0.029 J)	ND (0.035 J)	ND	ND (0.079 J)	ND (0.12 J)	ND (0.061 J)	ND	ND (0.24 J)	0.66	ND	ND (0.066 J)	
	<b>Lead</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.0014 J)	ND (0.0012 J)	ND	ND (0.000072 J)
	<b>Lithium</b>	ND (0.0010 J)	ND (0.0010 J)	ND (0.0018 J)	ND (0.0018 J)	ND (0.0032 J)	ND (0.0032 J)	ND	ND (0.00098 J)	ND (0.0032 J)	ND (0.0028 J)	ND (0.011 J)	ND (0.0095 J)	ND	ND	ND	ND (0.00090 J)	
	<b>Mercury</b>	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--	ND	---	
	<b>Molybdenum</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	<b>Comb. Radium 226/228</b>	0.327 U	0.739 U	0.454 U	0.651 U	1.01 U	0.760 U	0.781 U	0.494 U	0.833 U	1.07 U	0.982 U	0.621 U	1.50	1.43 U	0.462 U	0.512 U	
<b>Selenium</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.0048 J)	ND (0.00091 J)	ND	ND (0.00021 J)		
<b>Thallium</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.00028 J)	ND (0.00028 J)	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 analytical minimum detectable concentration (MDC) (Specific to combined radium 226/228)

(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 total radium by EPA Methods 9315/9320. The pH value presented was recorded at the time of sample collection in the field.

(3) Appendix III parameters with a "\*" exhibited statistically significant increases (SSIs) over background concentrations during the October 2017 detection monitoring event. Similarly, the Appendix IV parameter with a "+" exhibited statistically significant levels (SSLs) over established Groundwater Protection Standards (GWPS) during the June and October 2018 assessment monitoring events.

(4) Well is designated a delineation monitoring well.

**Table 3**  
 Summary of Groundwater Analytical Data  
 Plant Hammond AP-2, Floyd County, Georgia

Well ID:	HGWC-16	HGWC-16	HGWC-17	HGWC-17	HGWC-18	HGWC-18	MW-21D <sup>(4)</sup>	MW-21D	MW-22 <sup>(4)</sup>	MW-22	MW-23D <sup>(4)</sup>	MW-23D	
Sample Date:	3/15/2019	4/4/2019	3/15/2019	4/5/2019	3/14/2019	4/5/2019	3/15/2019	4/4/2019	3/15/2019	4/5/2019	3/14/2019	4/5/2019	
Parameter <sup>(1,2,3)</sup>													
<b>APPENDIX III</b>	<b>Boron*</b>	--	2.1	--	5.9	--	6.4	--	5.2	--	2.1	--	3.0
	<b>Calcium*</b>	--	196	--	340	--	400	--	427	--	178	--	352
	<b>Chloride*</b>	--	76.8	--	195	--	217	--	299	--	131	--	195
	<b>Fluoride*</b>	ND	ND	ND	ND (0.16 J)	0.88	0.37	ND	ND (0.10 J)	ND	ND (0.13 J)	ND	ND (0.14 J)
	<b>pH*</b>	7.09	6.95	6.32	6.26	4.39	4.50	6.81	6.70	5.95	5.96	6.68	6.66
	<b>Sulfate*</b>	--	251	--	642	--	1030	--	915	--	392	--	585
	<b>TDS*</b>	--	704	--	1260	--	1610	--	1800	--	890	--	1400
<b>APPENDIX IV</b>	<b>Antimony</b>	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
	<b>Arsenic</b>	ND	ND (0.00010 J)	ND	ND	ND (0.0036 J)	ND(0.0015 J)	ND	ND (0.00019 J)	ND	ND	ND	ND
	<b>Barium</b>	0.13	0.11	0.029	0.022	0.029	0.021	0.090	0.075	0.044	0.036	0.082	0.061
	<b>Beryllium</b>	ND	ND	ND	ND	ND (0.0026 J)	ND (0.0022 J)	ND	ND	ND	ND	ND	ND
	<b>Cadmium</b>	ND	ND	ND	ND	0.0019	0.0017	ND	ND	ND (0.00082 J)	ND (0.00064 J)	ND	ND
	<b>Chromium</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	<b>Cobalt<sup>+</sup></b>	ND	ND (0.00028 J)	0.017	0.016	0.16	0.14	ND	ND (0.00034 J)	0.028	0.022	ND (0.0013 J)	ND (0.0012 J)
	<b>Fluoride</b>	ND	ND	ND	ND (0.16 J)	0.88	0.37	ND	ND (0.10 J)	ND	ND (0.13 J)	ND	ND (0.14 J)
	<b>Lead</b>	ND	ND (0.00016 J)	ND	ND (0.000076 J)	ND (0.0015 J)	ND (0.0015 J)	ND	ND	ND	ND	ND	ND
	<b>Lithium</b>	ND (0.0041 J)	ND (0.00032 J)	ND (0.0011 J)	ND (0.00074 J)	ND (0.011 J)	ND (0.0084 J)	ND (0.025 J)	ND (0.019 J)	ND (0.0020 J)	ND (0.0013 J)	ND (0.0028 J)	ND (0.0021 J)
	<b>Mercury</b>	ND	--	ND	--	ND	--	ND	--	ND	--	ND	--
	<b>Molybdenum</b>	ND	ND	ND	ND	ND	ND	0.045	0.033	ND	ND (0.00013 J)	ND	ND (0.0014 J)
	<b>Comb. Radium 226/228</b>	0.591 U	0.960 U	0.917 U	1.07 U	1.37 U	2.22	0.972 U	0.791 U	0.977	1.06 U	0.872 U	0.932 U
	<b>Selenium</b>	ND	ND (0.000089 J)	ND	ND (0.000093 J)	0.016	ND (0.0018 J)	ND	ND	ND	ND	ND	ND
<b>Thallium</b>	ND	ND	ND	ND (0.00013 J)	ND	ND (0.00014 J)	ND	ND	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

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(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 total radium by EPA Methods 9315/9320. The pH value presented was recorded at the time of sample collection in the field.

(3) Appendix III parameters with a "\*" exhibited statistically significant increases (SSIs) over background concentrations during the October 2017 detection monitoring event. Similarly, the Appendix IV parameter with a "+" exhibited statistically significant levels (SSLs) over established Groundwater Protection Standards (GWPS) during the June and October 2018 assessment monitoring events.

(4) Well is designated a delineation monitoring well.

**Table 4**  
Evaluation of Remedial Technologies  
Plant Hammond AP-2, Floyd County, Georgia

Corrective Measure	Regulatory Citation for Criteria:	40 CFR 257.96(C)(1)	
	Description	Performance	Reliability
<b>Geochemical Approaches (In-Situ Injection)</b>	Use of an injection well network, or other means of introducing reagents or air into the subsurface, to provide suitable reagents for either anaerobic or aerobic attenuation of Co. Under anaerobic conditions, Co would be attenuated within sparingly soluble sulfide minerals. Under aerobic conditions, soluble iron or manganese and oxygen (either via air sparging or through a chemical oxidant) would be injected to promote the formation of iron or manganese (oxy-) hydroxides for subsequent sorption of Co onto these mineral phases. If sufficient iron is present in groundwater, the use of air sparging alone may be considered to precipitate iron (oxy-) hydroxides for sorption. In-situ chemical oxidation (ISCO) or in-situ chemical reduction (ISCR) can be used to chemically alter the redox environment in the subsurface to affect the mobility of certain inorganic compounds, including Co. However, the main attenuation mechanism for Co is sorption, which is more dependent on pH than redox.	The effective immobilization of Co has been shown under aerobic and anaerobic conditions; however, the anaerobic approach (involving the injection of an electron donor together with iron or manganese and sulfur) requires careful study and testing. While aerobic approaches are somewhat less complex, additional aquifer characterization is needed to further evaluate these options.	Reliability dependent on permeability of the subsurface and the amount and distribution of secondary iron or manganese (oxy-) hydroxides (for aerobic approach), or electron donors and soluble iron or manganese and sulfur that can be consistently distributed (for anaerobic approach). Reliable technology if injected materials can be distributed throughout the impacted aquifer. Bench- and/or pilot-scale treatability testing programs are needed to understand the biogeochemical processes that would effectively reduce migration of Co in groundwater.
<b>Hydraulic Containment ("Pump and Treat")</b>	Hydraulic containment refers to the use of groundwater extraction to induce a hydraulic gradient for hydraulic capture or control the migration of impacted groundwater. This approach uses extraction wells or trenches to capture groundwater, which may subsequently require above-ground treatment and permitted discharge to a receiving water feature, reinjection into the groundwater, or reuse (e.g., land application, CCR conditioning, etc.). It is applicable to a variable mix of inorganic constituents, including dissolved Co.	Pump and treat (P&T) is effective at providing hydraulic control, but it is unclear whether full groundwater remediation can be achieved without further understanding attenuation mechanisms at the Site. At AP-2, implementation of the corrective measure is contingent on completing additional assessment activities (i.e. high-resolution site characterization, additional pump tests, flow modeling, and capture zone analysis). This is needed to refine the constituent distribution in the subsurface to target specific zones for pumping for improved mass recovery efficiency/ effectiveness and to further evaluate the potential remedy performance.	Generally reliable for hydraulic containment, but uncertainty exists whether groundwater remediation goals can be achieved within a reasonable time frame without further understanding attenuation mechanisms.
<b>Monitored Natural Attenuation (MNA)</b>	MNA relies on natural attenuation processes to achieve site-specific remediation objectives within a reasonable time frame relative to more active methods. Under certain conditions (e.g., through sorption, mineral precipitation or oxidation-reduction reactions), MNA effectively reduces the dissolved concentrations of inorganic constituents in groundwater. Attenuation mechanisms for inorganic constituents at CCR sites, including cobalt (Co) at AP-2, are either physical (e.g. dilution, dispersion, flushing, and related processes) or chemical (sorption or oxidation reduction reactions. Chemical attenuation processes include precipitation and sorption reactions such as adsorption on the surfaces of soil minerals, absorption into the matrix of soil minerals, or partitioning into organic matter. Further, oxidation-reduction (redox) reactions, via abiotic or biotic processes, can transform the valence states of some inorganic constituents to less soluble and thus less mobile forms. For Co, the main attenuation processes include sorption to iron and manganese oxides and formation of sparingly soluble sulfide minerals.	Physical and chemical MNA mechanisms for Co, including dilution, dispersion, sorption, and oxidation reduction reactions, can be effective at achieving groundwater protection standards (GWPS) within a reasonable time frame. Attenuation processes for Co are already occurring at the site as evidenced by data from the delineation wells. Source control will improve the mass balance such that the buffer capacity of the aquifer is unlikely to be exhausted, and the attenuation processes already at work for Co at AP-2 will further enhance ongoing MNA.	Reliable as long as the aquifer conditions that result in Co attenuation remain favorable and/or are being enhanced and sufficient attenuation capacity is present. MNA is reliable and can either be used as a stand-alone corrective measure for groundwater impacted by dissolved Co, or in combination with a second technology.
<b>Permeable Reactive Barrier</b>	Permeable reactive barrier (PRB) technology typically involves the installation of a permeable subsurface wall constructed with reactive media for the removal of constituents as groundwater passes through. Either ZVI-Carbon matrix or solid carbon (bio-barrier) are currently proposed for the concurrent removal of Co. The carbon could be composed of peat moss, mulch or another carbon source. Exact placement of the PRB is contingent on finalization of the nature and extent characterization. PRB walls are typically keyed into the bedrock. While the shallow groundwater in the residuum and fractured bedrock is connected to the groundwater in more competent bedrock, the higher permeability/conductivity of the PRB is not expected to impede groundwater flow. PRBs can also be constructed as "funnel and gate" systems, where a barrier wall directs groundwater to a smaller "treatment gate" filled with reactive media.	PRBs have been shown to effectively address Co in groundwater if the right mix of reactive materials (e.g., ZVI and carbon) is selected for removal/immobilization of the constituent. The approach is expected to achieve GWPS for Co as impacted groundwater passes through the reactive barrier. Additional testing is required to select the appropriate sorptive media mix.	Reliable groundwater corrective measure, but loss of reactivity over time may require re-installation depending on the duration of the remedy. Additional data collection, including conducting a bench and/or pilot study, is needed to better characterize current attenuation mechanisms and/or select the appropriate reactive media mix for a PRB wall.
<b>Subsurface Vertical Barrier Walls</b>	This approach involves placing a barrier to groundwater flow in the subsurface, frequently around a source area, to prevent future migration of dissolved constituents in groundwater from beneath the source to downgradient areas. In general, barrier walls are designed to provide containment; localized treatment achieved through the sorption or chemical precipitation reactions from construction of the walls are incidental to the design objective. Barrier walls can also be used in downgradient applications; to limit discharge to a surface water feature or to reduce aquifer recharge from an adjacent surface water feature when groundwater extraction wells are placed near one. A variety of barrier materials can be used, including cement and/or bentonite slurries, geomembrane composite materials, or driven materials such as steel or vinyl sheet pile. Groundwater extraction from upgradient of the barrier is required to avoid groundwater mounding behind the barrier.	Barrier walls are a proven technology for seepage control and/or groundwater cutoff at impoundments. Slurry walls are limited by the depth of installation, which is approximately 90 ft bgs. However, site-specific geologic and technology-specific considerations may limit this depth to shallower installations. Within the context of AP-2, a barrier wall might be used in conjunction with a "funnel and gate" system for a PRB rather than a stand-alone technology. As such, groundwater with Co above GWPS could either be directed to "treatment gates" for passive treatment (in a PRB) or migration of impacted groundwater could be minimized via barrier wall installation. Additional subsurface investigations, aquifer testing, and compatibility testing with site-specific groundwater will be needed.	Generally reliable as a barrier to groundwater flow; however, treatment of downgradient groundwater is incidental and not the primary objective.

**Table 4**  
Evaluation of Remedial Technologies  
Plant Hammond AP-2, Floyd County, Georgia

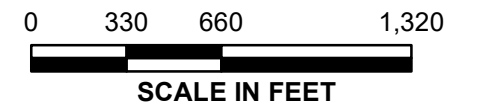
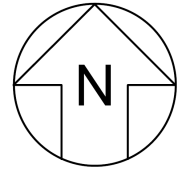
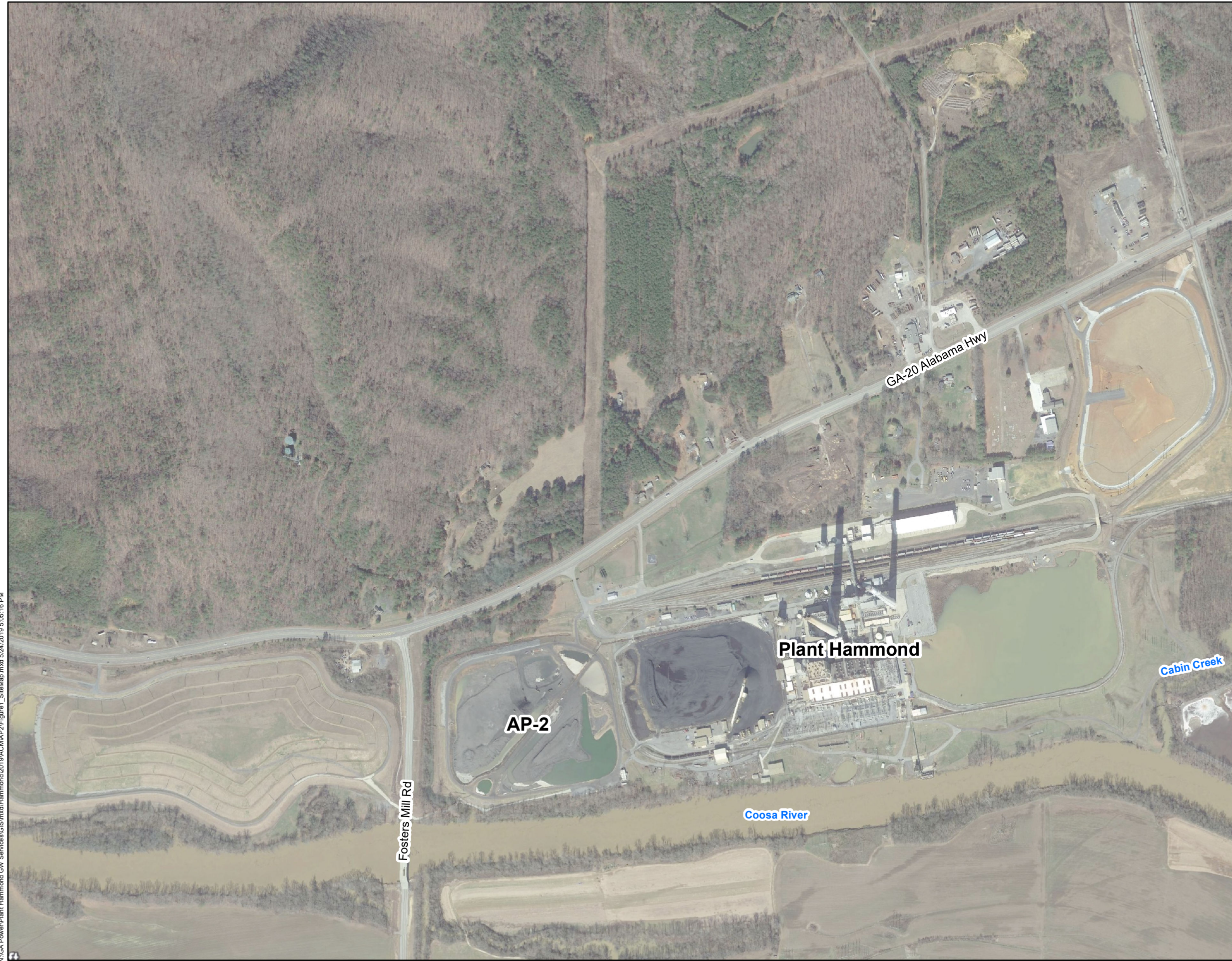
Corrective Measure	40 CFR 257.96(C)(1) Ease of Implementation	40 CFR 257.96(C)(1) Potential Impacts	40 CFR 257.96(C)(2) Time Requirement to Begin/Complete
<p align="center"><b>Geochemical Approaches (In-Situ Injection)</b></p>	<p>Moderate. Installation of injection well network or other injection infrastructure would be required. Alternative installation approaches may be considered, such as along the downgradient edge of impacted groundwater, which would function similar to a PRB application. Potential for clogging of aquifer matrix and/or injection well infrastructure. Chemical distribution during injections (i.e., radius of influence) needs to be evaluated.</p>	<p>Minimal impacts are expected if remedy works as designed, based on a thorough pre-design investigation, geochemical modeling, and bench/pilot study results. Redox-altering processes have the potential to mobilize naturally-occurring constituents as an unintended consequence if not properly studied and implemented.</p>	<p>Installation of the injection network can be accomplished relatively quickly (1 to 2 months). However, a thorough pre-design investigation, geochemical modeling, and/or bench- and/or pilot-testing will be required to obtain design parameters prior to design and construction of the corrective measure, which may take up to 24 months. Once installed, the time required to achieve GWPS within the treatment area may be relatively quick but depends on the attenuation process kinetics of each targeted constituent. The time for complete distribution of the injected materials throughout the treatment area is also variable.</p>
<p align="center"><b>Hydraulic Containment ("Pump and Treat")</b></p>	<p>Moderate. Proven approach, and supplemental installation of extraction wells/trenches is fairly straightforward. The extracted groundwater may potentially require an above-ground treatment system. A variety of sorption and precipitation approaches exist for ex-situ treatment of Co. Operation and maintenance (O&amp;M) requirements are expected to include upkeep of infrastructure components (pumps, pipes, tanks, instrumentation and controls, above-ground treatment system) and handling of treatment residuals.</p>	<p>Moderate. The main potential impacts are related to the presence and operation of an on-site above-ground water treatment facility and related infrastructure to convey and treat extracted groundwater. Pumping activity may unintentionally alter the geochemistry within the hydraulic capture zone.</p>	<p>Installation of extraction wells and/or trenches can be accomplished relatively quickly (1 to 2 months). However, additional aquifer testing, system design and installation, and permit approval may be required, which may take up to 24 months. The initiation of the approach would be contingent on the start-up of the wastewater treatment infrastructure. Hydraulic containment can be achieved relatively quickly after startup of the extraction system, but uncertainty exists with respect to the time to achieve GWPS without additional data collection to better understand attenuation mechanisms for Co.</p>
<p align="center"><b>Monitored Natural Attenuation (MNA)</b></p>	<p>Reasonably implementable with respect to infrastructure, but moderate to complex with respect to documentation. Proven approach, but additional data are needed to show that the existing attenuation capacity is sufficient to meet site objectives within a reasonable timeframe. A monitoring well network already exists to implement future groundwater monitoring efforts.</p>	<p>None. MNA relies on the natural processes active in the aquifer matrix to reduce constituent concentrations without disturbing the surface or the subsurface.</p>	<p>The infrastructure to initiate MNA is already in place. Demonstrating attenuation mechanisms and capacity can be time-consuming and can take up to 24 months. MNA is expected to be successful within a reasonable time frame following pond closure. Engineering measures will be implemented during closure of AP-2 to minimize potential impacts to the subsurface during closure activities and routine groundwater monitoring will be used to verify that groundwater impacts remain stable or decrease over time.</p>
<p align="center"><b>Permeable Reactive Barrier</b></p>	<p>Moderate to difficult. Trenching would be required to install a mix of reactive materials in the subsurface. Continuous trenching may be the most feasible construction method. Installation methods and materials are readily available. Once installed, treatment will be passive and O&amp;M requirements are minimal if replacement of the PRB is not necessary.</p>	<p>Minimal impacts are expected following the construction of the remedy. However, ZVI has the potential to create anaerobic conditions downgradient of the PRB wall that may mobilize redox-sensitive naturally-occurring constituents. These conditions need to be carefully monitored. Short-term impacts during the construction of the remedy can be mitigated through appropriate planning and health and safety measures.</p>	<p>Installation of a PRB can be accomplished relatively quickly (6 to 12 months), depending on the final location and configuration. However, bench- and/or pilot-testing would be required to obtain design parameters prior to design and construction of the remedy, which may take up to 24 months. Once installed, the time to achieve GWPS downgradient of the PRB is anticipated to be relatively quick.</p>
<p align="center"><b>Subsurface Vertical Barrier Walls</b></p>	<p>Moderate to difficult. Trenching will be required to fill in the various slurry mixes; alternatively, sheet pile installations can be accomplished without excavation of trenches. The application of barrier walls is limited by the depth of installation, which similar to PRBs, should be keyed into a low permeability layer such as a thick clay layer or bedrock. Installation methods and materials are readily available. Once installed, above-ground infrastructure to pump and treat groundwater will be required. O&amp;M requirements are expected to include upkeep of infrastructure components (pumps, pipes, tanks, instrumentation and controls, above-ground treatment system) and handling of treatment residuals.</p>	<p>Minimal impacts are expected following the construction of the remedy. Short-term impacts during the construction of the remedy can be mitigated through appropriate planning and health and safety measures. Changes to groundwater flow patterns due to installation of the barrier wall are expected, which can affect other aspects of groundwater corrective action. Pumping activity may unintentionally alter the geochemistry within the hydraulic capture zone that may result in the mobilization of other constituents that may require treatment.</p>	<p>Installation of a barrier wall can be accomplished relatively quickly (6 to 12 months), depending on the final location and configuration. However, some design phase and additional aquifer and compatibility testing will be required, which may take up to 24 months. Once installed, preventing migration of constituents dissolved in groundwater is anticipated to be relatively quick. Since this approach does not treat the downgradient area of impacted groundwater but prevents migration from a source area, it will likely have to be maintained long-term and coupled with other approaches.</p>

**Table 4**  
 Evaluation of Remedial Technologies  
 Plant Hammond AP-2, Floyd County, Georgia

Corrective Measure	40 CFR 257.96(C)(3)		Relative Costs
	Institutional Requirements	Other Env or Public Health Requirements	
Geochemical Approaches (In-Situ Injection)	Deed restrictions may be necessary until in-situ treatment has achieved GWPS. A new UIC permit (for in-situ injections) would be required to implement this corrective measure. No other institutional requirements are expected at this time.	None expected at this point. Based on downgradient sampling results near adjacent water features, there currently are no complete exposure pathways for potential receptors downgradient of AP-2. Potential for mobilization of redox-sensitive constituents exists during implementation of an anaerobic attenuation approach. Following installation, the remedy is passive.	Medium (depending on expanse of injection network required and injectate volume required per derived design parameters)
Hydraulic Containment ("Pump and Treat")	Depending on the effluent management strategy, modifications to the existing NPDES permit may be required, or obtaining a new underground injection control (UIC) permit may be needed if groundwater reinjection is chosen. In addition, deed restrictions may be required as long as groundwater conditions are above regulatory standards for unrestricted use.	Based on downgradient sampling results near adjacent water features, there currently are no complete exposure pathways for potential receptors downgradient of AP-2. Above-ground treatment components may need to be present for an extended period of time, generating residuals requiring management and disposal.	Medium to high (depending on remedy duration, complexity of above-ground treatment system, and volume of water processed)
Monitored Natural Attenuation (MNA)	MNA may require the implementation of institutional controls, such as deed restrictions, to preclude potential exposure to groundwater within the footprint of impacted groundwater until GWPS are achieved.	Little to no physical disruption to remediation areas and no adverse construction-related impacts are expected on the surrounding community. Based on downgradient sampling results near adjacent water features, there currently are no complete exposure pathways for potential receptors downgradient of AP-2.	Low to medium
Permeable Reactive Barrier	Deed restrictions may be necessary for groundwater areas upgradient of the PRB (if not installed along the waste boundary). No other institutional requirements are expected at this time.	None expected at this point. Based on downgradient sampling results near adjacent water features, there currently are no complete exposure pathways for potential receptors downgradient of AP-2. Following installation, the remedy is passive. However, certain treatment media (such as ZVI) have the potential to mobilize naturally-occurring constituents downgradient of the PRB.	Medium to high (for installation) - minimal O&M requirements if replacement is not necessary
Subsurface Vertical Barrier Walls	Deed restrictions may be necessary for groundwater areas downgradient of the barrier wall until remedial goals are met. No other institutional requirements are expected at this time.	Based on downgradient sampling results near adjacent water features, there currently are no complete exposure pathways for potential receptors downgradient of AP-2. Due to the need for groundwater extraction associated with barrier walls, above-ground treatment components may need to be present for an extended period of time, generating residuals requiring management and disposal.	Medium to high (depending on length and depth of wall, remedy duration and complexity of above-ground treatment system)

# FIGURES





**SITE LOCATION MAP**

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

Prepared For:  Georgia Power

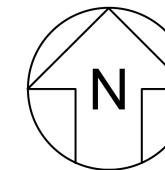
Prepared By:  Geosyntec  
 consultants

KENNESAW, GA




MAY 2019

**FIGURE  
 1**

N:\GA Power\Plant Hammond\_GW\_Services\GIS\mxd\Hammond\2019\ACMAP2\Figure1\_SiteMap.mxd 5/24/2019 5:06:16 PM



**LEGEND**

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



**MONITORING WELL NETWORK MAP**

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

Prepared For:  Georgia Power

Prepared By:  Geosyntec  
consultants

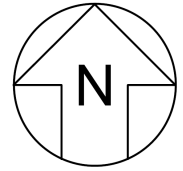
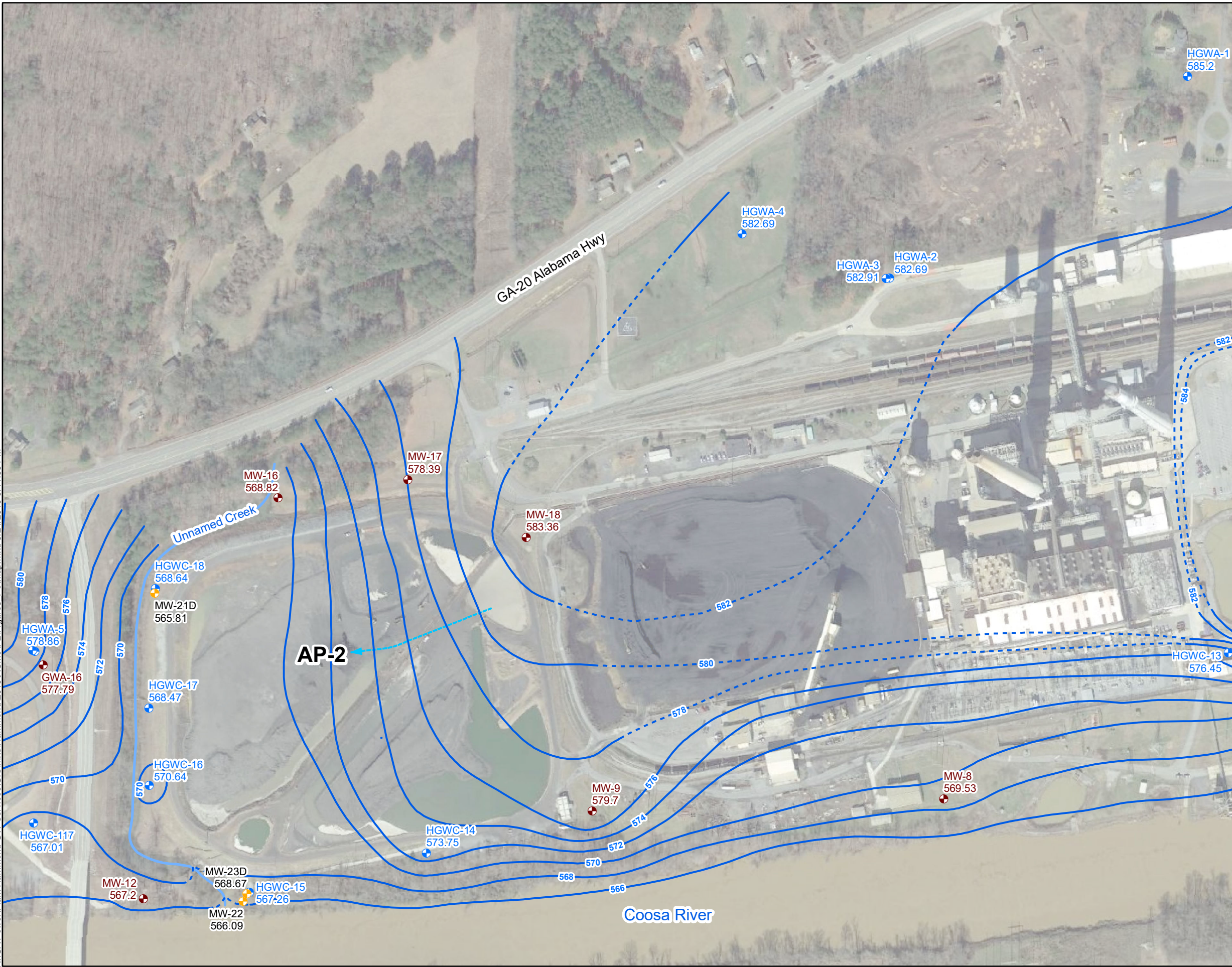
KENNESAW, GA

MAY 2019

**FIGURE**  
**2**

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2019\ACMAP2\Figure2\_WellMap\_v2.mxd 5/24/2019 6:04:41 PM

N:\GA Power\Plant Hammond GW Services\GIS\mxd\Hammond\2019\ACMAP2\Figure3 PotMap.mxd 5/24/2019 6:41:55 PM



**LEGEND**

- Compliance Monitoring Well
- Delineation Monitoring Well
- Groundwater Level Monitoring Piezometer
- Groundwater Elevation Iso-Contour (inferred where dashed)
- Approximate Groundwater Flow Direction



Note:  
 1. Water level elevation recorded on April 1, 2019. Elevation provided in feet above mean sea level (ft AMSL) in North American Vertical Datum (NAVD) 88.



SCALE IN FEET

**POTENTIOMETRIC SURFACE CONTOUR  
 MAP - APRIL 2019**

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

Prepared For: Georgia Power

Prepared By: Geosyntec  
 consultants

**FIGURE  
 3**

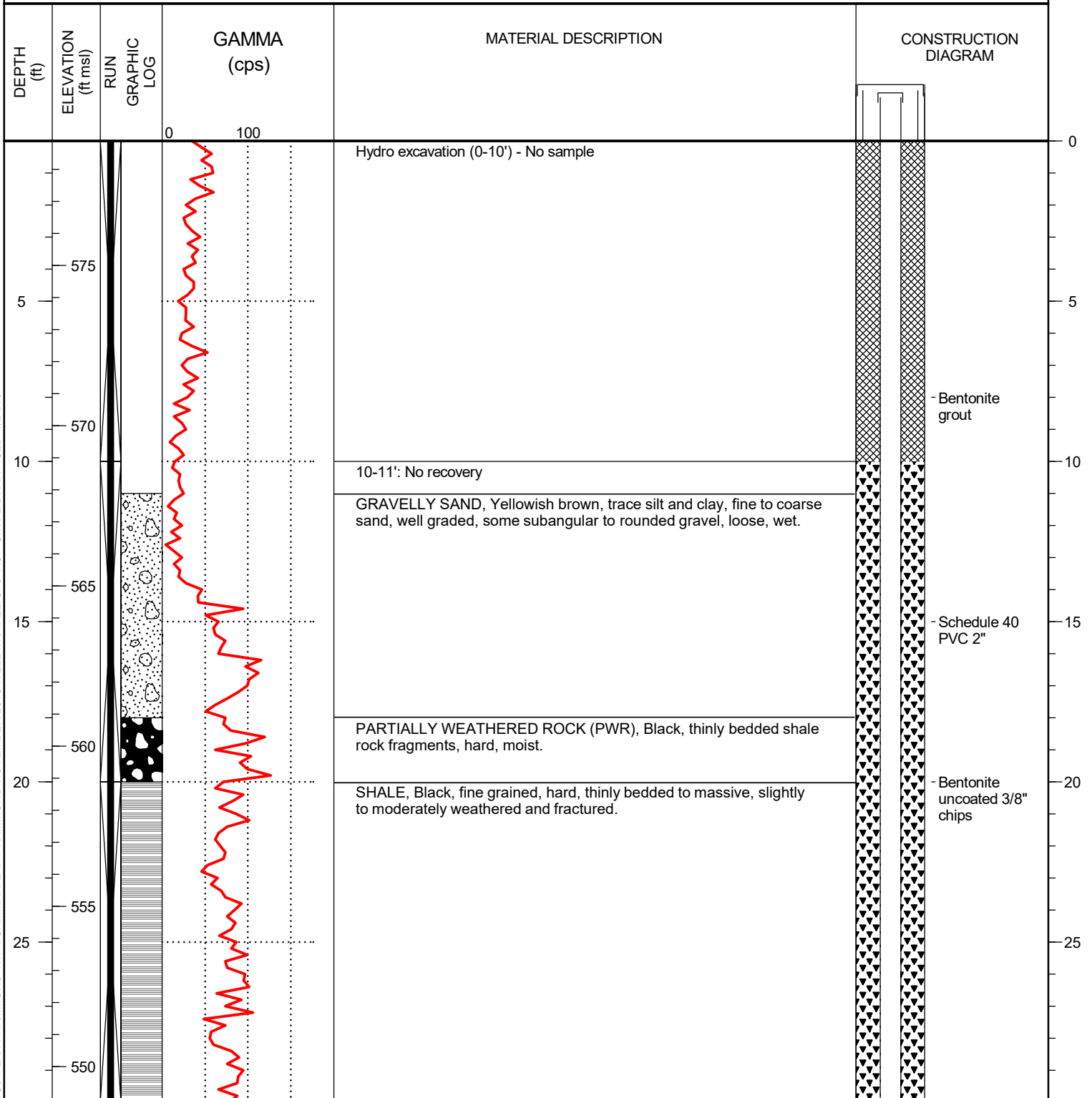
KENNESAW, GA

MAY 2019

## APPENDIX A

### Boring and Well Construction Logs

**CLIENT** Southern Company Services **PROJECT NAME** Plant Hammond Well Installation  
**PROJECT NUMBER** GW6581B **PROJECT LOCATION** Plant Hammond  
**DATE STARTED** 11/19/18 **COMPLETED** 11/19/18 **NORTHING** 1548814.63 ft **EASTING** 1937556.86ft  
**DRILLER** Cascade Drilling **GROUND ELEVATION** 578.89 ft **BORING DIAMETER** 6 in  
**DRILLING METHOD** Sonic **TOP OF CASING ELEVATION** 581.49 ft  
**SAMPLING METHOD** 4" core 6" override **GEOPHYSICAL CONTRACTOR** Geosyntec Consultants  
**RIG TYPE** Geoprobe 8140LC **LOGGED BY** N.Tilahun **CHECKED BY** J. Ivanowski



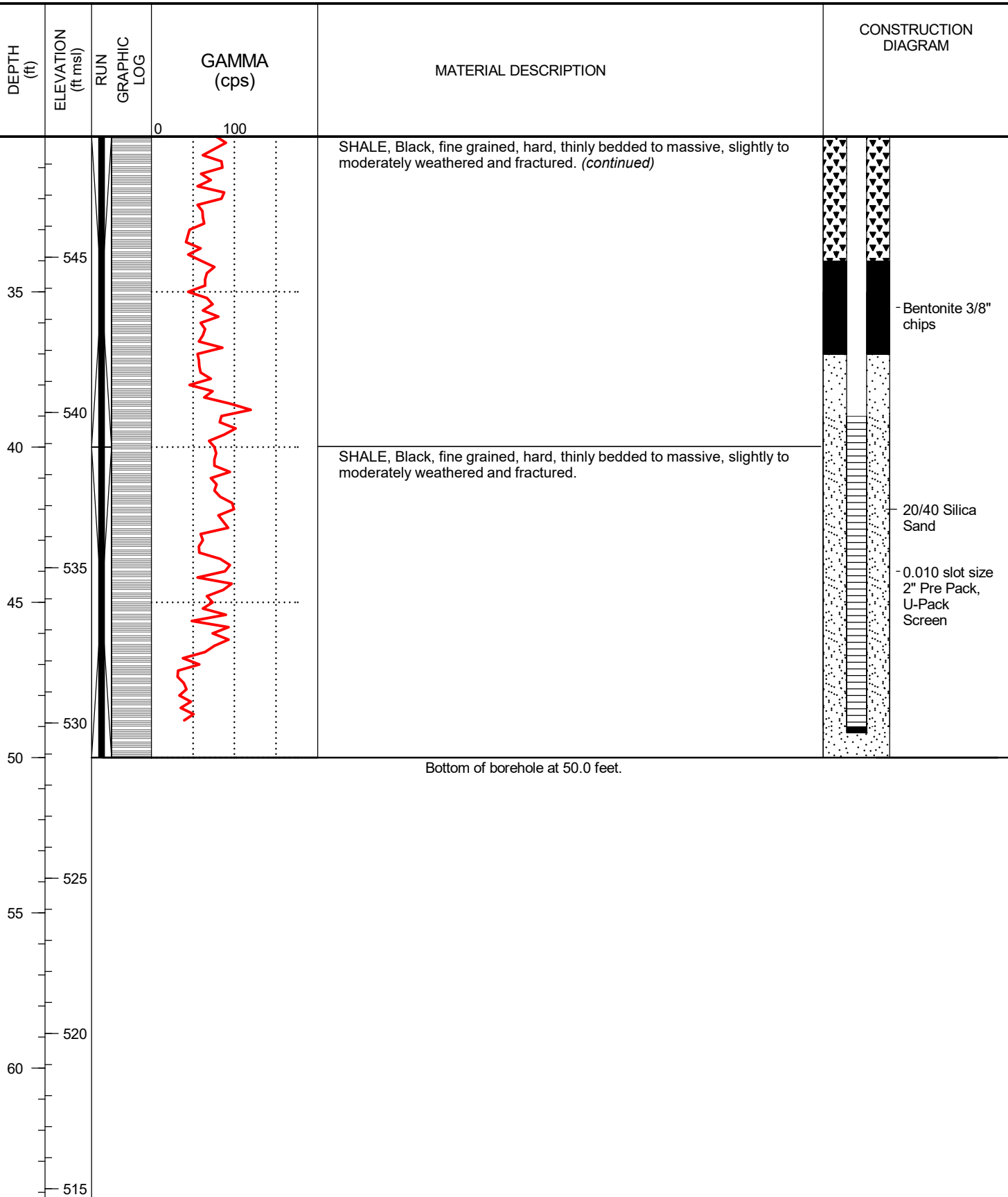
SCS PLANT HAMMOND WITH GAMMA PLANT HAMMOND NOVEMBER 2018 WELL INSTALL.GPJ ACP GINT LIBRARY.GLB 1/24/19

CLIENT Southern Company Services

PROJECT NAME Plant Hammond Well Installation

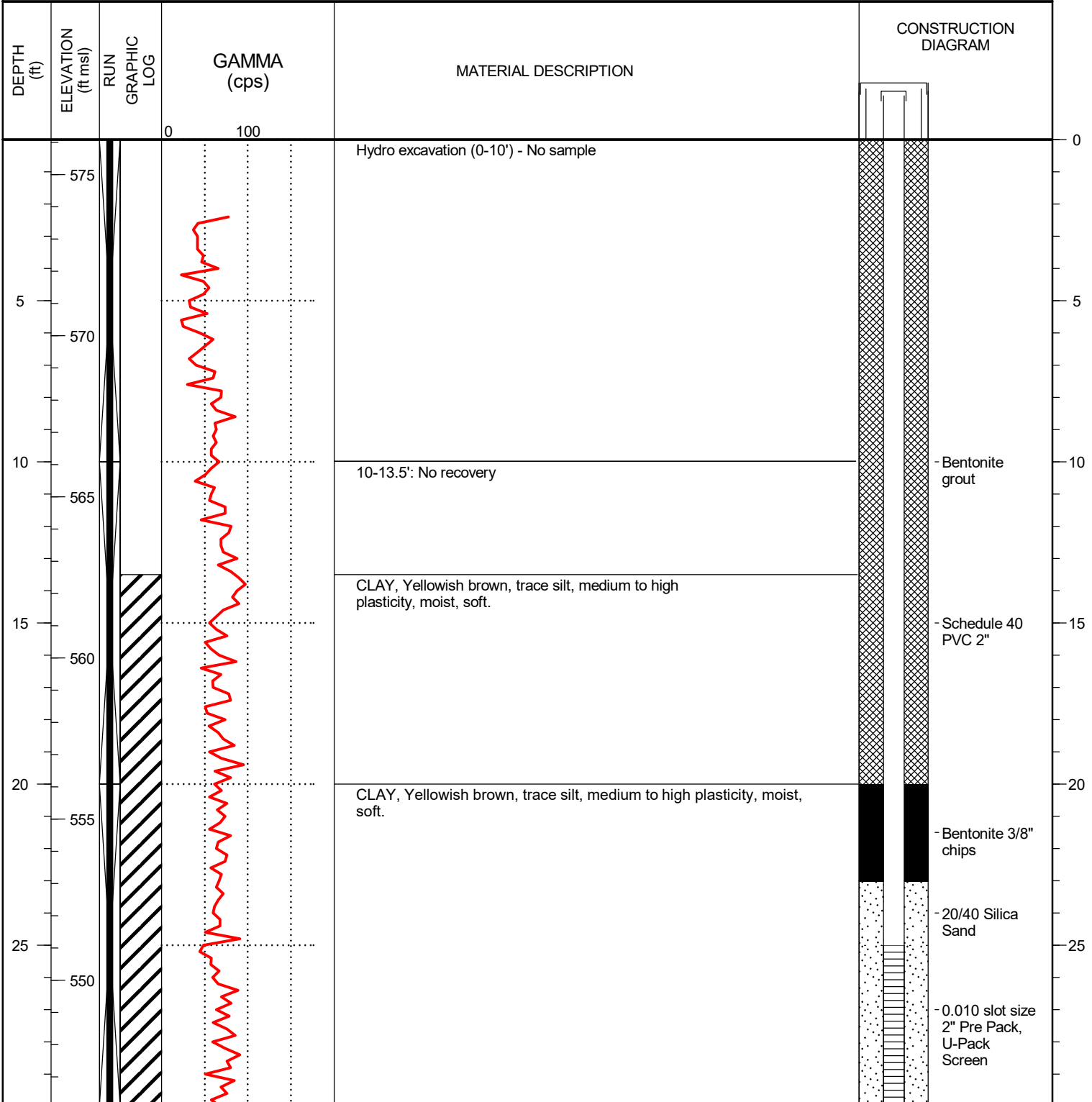
PROJECT NUMBER GW6581B

PROJECT LOCATION Plant Hammond



SCS PLANT HAMMOND WITH GAMMA PLANT HAMMOND NOVEMBER 2018 WELL INSTALL.GPJ ACP GINT LIBRARY.GLB 1/24/19

**CLIENT** Southern Company Services      **PROJECT NAME** Plant Hammond Well Installation  
**PROJECT NUMBER** GW6581B      **PROJECT LOCATION** Plant Hammond  
**DATE STARTED** 11/15/18      **COMPLETED** 11/15/18      **NORTHING** 1547856.03 ft      **EASTING** 1937832.07 ft  
**DRILLER** Cascade Drilling      **GROUND ELEVATION** 576.09 ft      **BORING DIAMETER** 6 in  
**DRILLING METHOD** Sonic      **TOP OF CASING ELEVATION** 578.67 ft  
**SAMPLING METHOD** 4" core 6" override      **GEOPHYSICAL CONTRACTOR** Geosyntec Consultants  
**RIG TYPE** Geoprobe 8140LC      **LOGGED BY** N.Tilahun      **CHECKED BY** J. Ivanowski



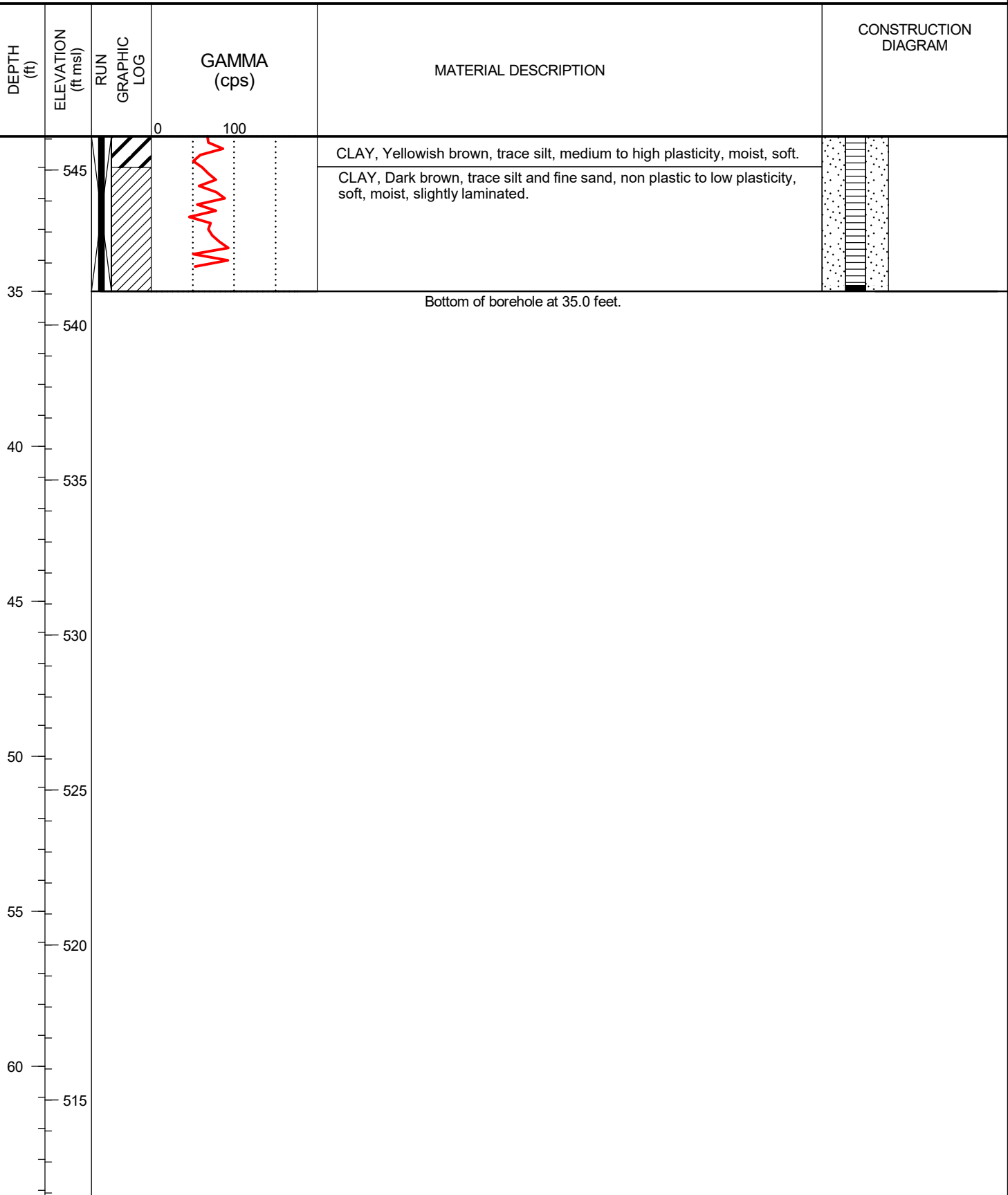
SCS PLANT HAMMOND WITH GAMMA PLANT HAMMOND NOVEMBER 2018 WELL INSTALL.GPJ ACP GINT LIBRARY.GLB 1/24/19

CLIENT Southern Company Services

PROJECT NAME Plant Hammond Well Installation

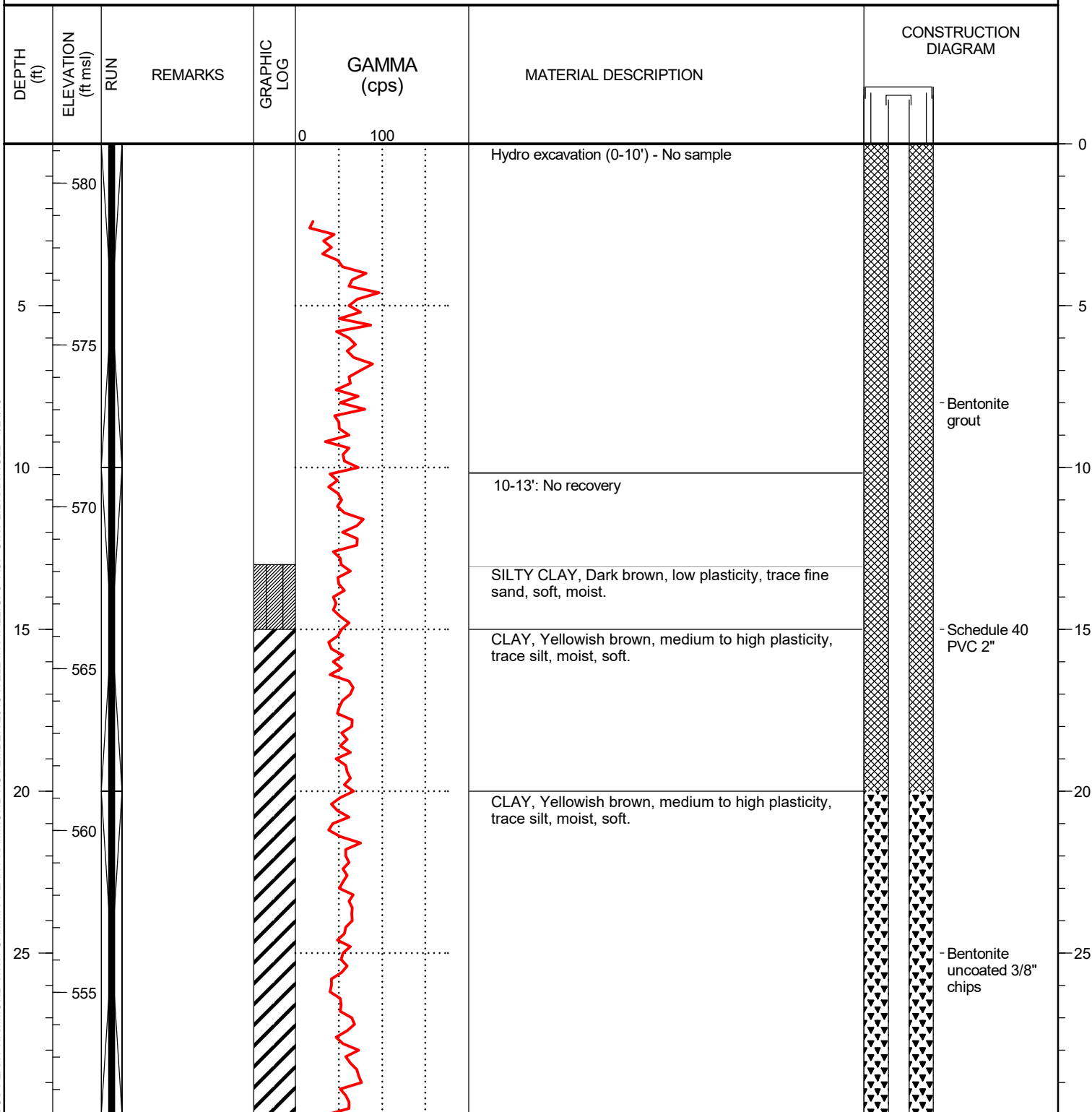
PROJECT NUMBER GW6581B

PROJECT LOCATION Plant Hammond





**CLIENT** Southern Company Services **PROJECT NAME** Plant Hammond Well Installation  
**PROJECT NUMBER** GW6581B **PROJECT LOCATION** Plant Hammond  
**DATE STARTED** 11/15/18 **COMPLETED** 11/15/18 **NORTHING** 1547877.73 ft **EASTING** 1937844.17ft  
**DRILLER** Cascade Drilling **GROUND ELEVATION** 581.21 ft **BORING DIAMETER** 6 in  
**DRILLING METHOD** Sonic **TOP OF CASING ELEVATION** 584 ft  
**SAMPLING METHOD** 4" core 6" override **GEOPHYSICAL CONTRACTOR** Geosyntec Consultants  
**RIG TYPE** Geoprobe 8140LC **LOGGED BY** N.Tilahun **CHECKED BY** J. Ivanowski



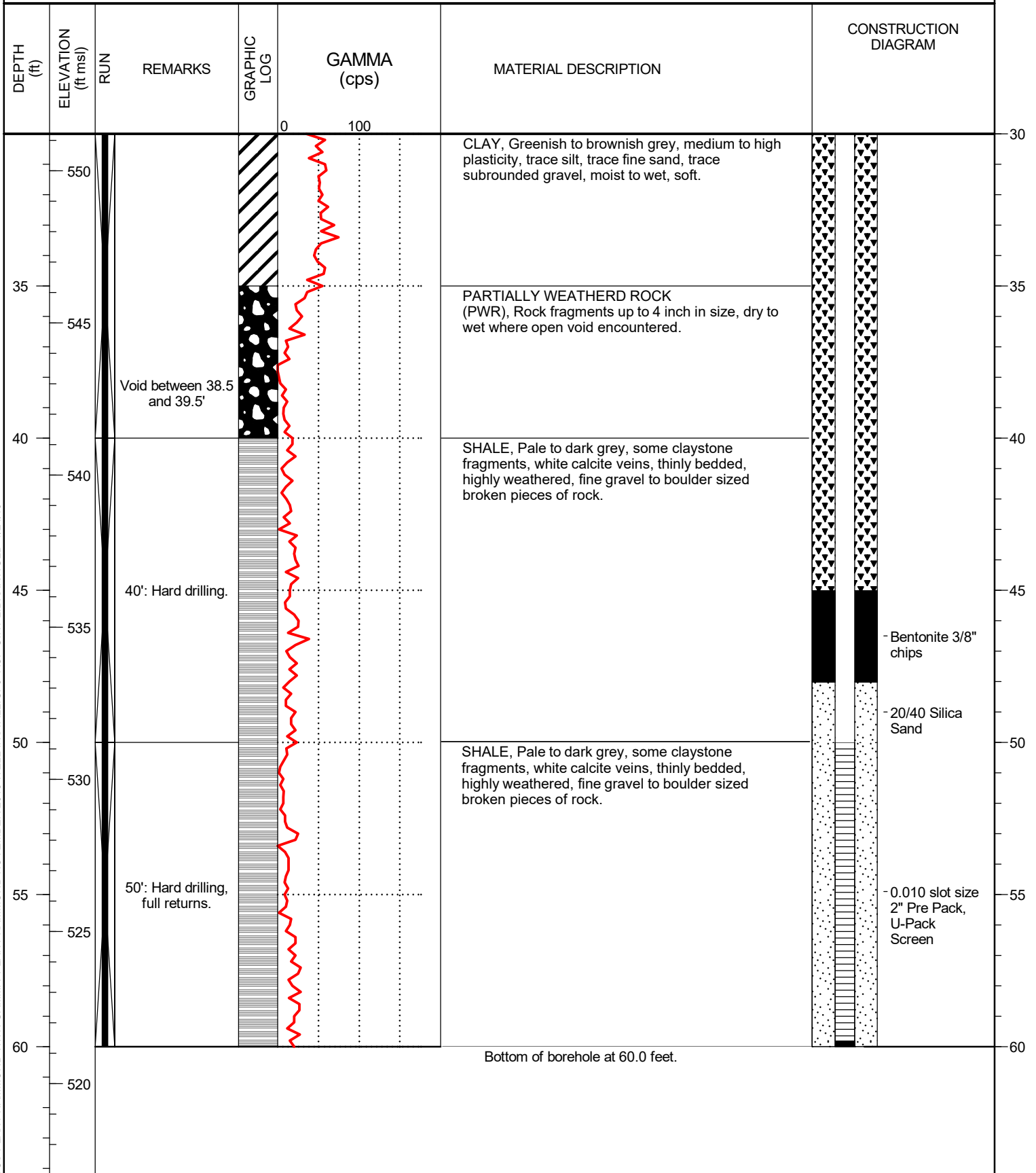
SCS PLANT HAMMOND WITH GAMMA PLANT HAMMOND NOVEMBER 2018 WELL INSTALL.GPJ ACP GINT LIBRARY.GLB 1/24/19

CLIENT Southern Company Services

PROJECT NAME Plant Hammond Well Installation

PROJECT NUMBER GW6581B

PROJECT LOCATION Plant Hammond



SCS PLANT HAMMOND WITH GAMMA PLANT HAMMOND NOVEMBER 2018 WELL INSTALL.GPJ ACP GINT LIBRARY.GLB 1/24/19

## APPENDIX B

### Laboratory Analytical Reports

Full Appendix IV  
Scan Sampling Event  
March 2019

March 20, 2019

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

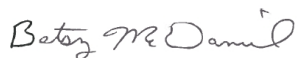
RE: Project: Plant Hammond  
Pace Project No.: 2616036

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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.: 2616036

---

### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616036

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616036001	HGWA-1	Water	03/12/19 14:31	03/13/19 14:00
2616036002	HGWA-2	Water	03/12/19 10:45	03/13/19 14:00
2616036003	HGWA-3	Water	03/12/19 10:00	03/13/19 14:00
2616036004	FB-01	Water	03/12/19 19:15	03/13/19 14:00
2616036005	EB-01	Water	03/12/19 19:50	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616036

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616036001	HGWA-1	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616036002	HGWA-2	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616036003	HGWA-3	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616036004	FB-01	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616036005	EB-01	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616036

Sample: HGWA-1		Lab ID: 2616036001		Collected: 03/12/19 14:31		Received: 03/13/19 14:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00078	1	03/14/19 14:26	03/15/19 23:24	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00057	1	03/14/19 14:26	03/15/19 23:24	7440-38-2		
Barium	<b>0.042</b>	mg/L	0.010	0.00078	1	03/14/19 14:26	03/15/19 23:24	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	03/14/19 14:26	03/15/19 23:24	7440-41-7		
Cadmium	ND	mg/L	0.0010	0.000093	1	03/14/19 14:26	03/15/19 23:24	7440-43-9		
Chromium	ND	mg/L	0.010	0.0016	1	03/14/19 14:26	03/15/19 23:24	7440-47-3		
Cobalt	ND	mg/L	0.010	0.00052	1	03/14/19 14:26	03/15/19 23:24	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	03/14/19 14:26	03/15/19 23:24	7439-92-1		
Lithium	<b>0.0010J</b>	mg/L	0.050	0.00097	1	03/14/19 14:26	03/15/19 23:24	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	03/14/19 14:26	03/15/19 23:24	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	03/14/19 14:26	03/15/19 23:24	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	03/14/19 14:26	03/15/19 23:24	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 17:47	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Fluoride	<b>0.29J</b>	mg/L	0.30	0.029	1		03/16/19 05:19	16984-48-8		

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616036

Sample: HGWA-2		Lab ID: 2616036002		Collected: 03/12/19 10:45		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 17:46	7440-36-0	
Arsenic	<b>0.00069J</b>	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 17:46	7440-38-2	B
Barium	<b>0.12</b>	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 17:46	7440-39-3	
Beryllium	<b>0.00017J</b>	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 17:46	7440-41-7	
Cadmium	<b>0.00013J</b>	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 17:46	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 17:46	7440-47-3	
Cobalt	<b>0.017</b>	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 17:46	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 17:46	7439-92-1	
Lithium	<b>0.0018J</b>	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 17:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 17:46	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 17:46	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 17:46	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 17:50	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.038J</b>	mg/L	0.30	0.029	1		03/16/19 05:42	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616036

Sample: HGWA-3		Lab ID: 2616036003		Collected: 03/12/19 10:00		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 17:51	7440-36-0	
Arsenic	<b>0.00063J</b>	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 17:51	7440-38-2	B
Barium	<b>0.13</b>	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 17:51	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 17:51	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 17:51	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 17:51	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 17:51	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 17:51	7439-92-1	
Lithium	<b>0.0032J</b>	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 17:51	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 17:51	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 17:51	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 17:51	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 17:52	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.072J</b>	mg/L	0.30	0.029	1		03/16/19 07:36	16984-48-8	

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616036

Sample: <b>FB-01</b>		Lab ID: <b>2616036004</b>		Collected: 03/12/19 19:15		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 17:57	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 17:57	7440-38-2	
Barium	ND	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 17:57	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 17:57	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 17:57	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 17:57	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 17:57	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 17:57	7439-92-1	
Lithium	ND	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 17:57	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 17:57	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 17:57	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 17:57	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 17:59	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/16/19 07:59	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616036

Sample: EB-01		Lab ID: 2616036005		Collected: 03/12/19 19:50		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 18:03	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 18:03	7440-38-2	
Barium	ND	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 18:03	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 18:03	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 18:03	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 18:03	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 18:03	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 18:03	7439-92-1	
Lithium	ND	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 18:03	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 18:03	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 18:03	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 18:03	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 18:02	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/16/19 08:22	16984-48-8	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616036

QC Batch: 24380 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 2616036001, 2616036002, 2616036003, 2616036004, 2616036005

METHOD BLANK: 109357 Matrix: Water  
Associated Lab Samples: 2616036001, 2616036002, 2616036003, 2616036004, 2616036005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000036	03/15/19 17:12	

LABORATORY CONTROL SAMPLE: 109358

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: 109378 109379

Parameter	Units	2615967001 Result	MS		MSD		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	100	102	75-125	3	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616036

QC Batch: 24312 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616036001

METHOD BLANK: 108896 Matrix: Water  
Associated Lab Samples: 2616036001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/15/19 18:30	
Arsenic	mg/L	ND	0.0050	0.00057	03/15/19 18:30	
Barium	mg/L	ND	0.010	0.00078	03/15/19 18:30	
Beryllium	mg/L	ND	0.0030	0.000050	03/15/19 18:30	
Cadmium	mg/L	ND	0.0010	0.000093	03/15/19 18:30	
Chromium	mg/L	ND	0.010	0.0016	03/15/19 18:30	
Cobalt	mg/L	ND	0.010	0.00052	03/15/19 18:30	
Lead	mg/L	ND	0.0050	0.00027	03/15/19 18:30	
Lithium	mg/L	ND	0.050	0.00097	03/15/19 18:30	
Molybdenum	mg/L	ND	0.010	0.0019	03/15/19 18:30	
Selenium	mg/L	ND	0.010	0.0014	03/15/19 18:30	
Thallium	mg/L	ND	0.0010	0.00014	03/15/19 18:30	

LABORATORY CONTROL SAMPLE: 108897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	110	80-120	
Arsenic	mg/L	0.1	0.10	102	80-120	
Barium	mg/L	0.1	0.10	104	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	102	80-120	
Chromium	mg/L	0.1	0.10	103	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	102	80-120	
Lithium	mg/L	0.1	0.10	100	80-120	
Molybdenum	mg/L	0.1	0.10	105	80-120	
Selenium	mg/L	0.1	0.11	107	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 108898 108899

Parameter	Units	2616034004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Spike Conc.						
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	112	109	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20	
Barium	mg/L	0.029	0.1	0.1	0.13	0.13	106	102	75-125	3	20	
Beryllium	mg/L	0.0024J	0.1	0.1	0.098	0.098	95	95	75-125	0	20	
Cadmium	mg/L	0.0024	0.1	0.1	0.10	0.11	102	103	75-125	1	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616036

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 108898		108899		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2616034004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chromium	mg/L	ND	0.1	0.1	0.095	0.097	95	97	75-125	2	20	
Cobalt	mg/L	0.062	0.1	0.1	0.16	0.16	99	95	75-125	2	20	
Lead	mg/L	ND	0.1	0.1	0.097	0.099	97	99	75-125	2	20	
Lithium	mg/L	0.0053J	0.1	0.1	0.099	0.10	93	95	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	106	106	75-125	0	20	
Selenium	mg/L	ND	0.1	0.1	0.11	0.10	104	102	75-125	2	20	
Thallium	mg/L	0.00025J	0.1	0.1	0.098	0.098	98	98	75-125	0	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616036

QC Batch: 24384 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616036002, 2616036003, 2616036004, 2616036005

METHOD BLANK: 109374 Matrix: Water  
Associated Lab Samples: 2616036002, 2616036003, 2616036004, 2616036005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/18/19 17:34	
Arsenic	mg/L	0.00071J	0.0050	0.00057	03/18/19 17:34	
Barium	mg/L	ND	0.010	0.00078	03/18/19 17:34	
Beryllium	mg/L	ND	0.0030	0.000050	03/18/19 17:34	
Cadmium	mg/L	ND	0.0010	0.000093	03/18/19 17:34	
Chromium	mg/L	ND	0.010	0.0016	03/18/19 17:34	
Cobalt	mg/L	ND	0.010	0.00052	03/18/19 17:34	
Lead	mg/L	ND	0.0050	0.00027	03/18/19 17:34	
Lithium	mg/L	ND	0.050	0.00097	03/18/19 17:34	
Molybdenum	mg/L	ND	0.010	0.0019	03/18/19 17:34	
Selenium	mg/L	ND	0.010	0.0014	03/18/19 17:34	
Thallium	mg/L	ND	0.0010	0.00014	03/18/19 17:34	

LABORATORY CONTROL SAMPLE: 109375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	109	80-120	
Arsenic	mg/L	0.1	0.10	104	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.11	108	80-120	
Cadmium	mg/L	0.1	0.11	105	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	104	80-120	
Lithium	mg/L	0.1	0.11	107	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.10	105	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109376 109377

Parameter	Units	2616039003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Antimony	mg/L	ND	0.1	0.11	0.1	0.11	106	107	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.11	0.1	0.10	106	103	75-125	3	20	
Barium	mg/L	0.20	0.1	0.29	0.1	0.30	95	103	75-125	2	20	
Beryllium	mg/L	ND	0.1	0.097	0.1	0.094	97	94	75-125	3	20	
Cadmium	mg/L	ND	0.1	0.10	0.1	0.10	104	101	75-125	3	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616036

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109376		109377		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616039003 Result	MS Spike Conc.	MSD Spike Conc.									
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	104	103	75-125	1	20		
Cobalt	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	3	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.096	101	95	75-125	5	20		
Lithium	mg/L	0.011J	0.1	0.1	0.11	0.10	97	91	75-125	5	20		
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	103	104	75-125	2	20		
Selenium	mg/L	ND	0.1	0.1	0.11	0.10	106	102	75-125	4	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.097	100	97	75-125	3	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616036

QC Batch: 24402 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2616036001, 2616036002, 2616036003, 2616036004, 2616036005

METHOD BLANK: 109496 Matrix: Water  
Associated Lab Samples: 2616036001, 2616036002, 2616036003, 2616036004, 2616036005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	03/15/19 20:10	

LABORATORY CONTROL SAMPLE: 109497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	10.4	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109498 109499

Parameter	Units	2616034001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.052J	10	10	10.4	10.4	103	103	90-110	0	15	

MATRIX SPIKE SAMPLE: 109500

Parameter	Units	2616034002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.082J	10	10.1	100	90-110	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616036

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### 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

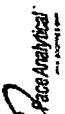
Project: Plant Hammond

Pace Project No.: 2616036

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616036001	HGWA-1	EPA 3005A	24312	EPA 6020B	24340
2616036002	HGWA-2	EPA 3005A	24384	EPA 6020B	24419
2616036003	HGWA-3	EPA 3005A	24384	EPA 6020B	24419
2616036004	FB-01	EPA 3005A	24384	EPA 6020B	24419
2616036005	EB-01	EPA 3005A	24384	EPA 6020B	24419
2616036001	HGWA-1	EPA 7470A	24380	EPA 7470A	24416
2616036002	HGWA-2	EPA 7470A	24380	EPA 7470A	24416
2616036003	HGWA-3	EPA 7470A	24380	EPA 7470A	24416
2616036004	FB-01	EPA 7470A	24380	EPA 7470A	24416
2616036005	EB-01	EPA 7470A	24380	EPA 7470A	24416
2616036001	HGWA-1	EPA 300.0	24402		
2616036002	HGWA-2	EPA 300.0	24402		
2616036003	HGWA-3	EPA 300.0	24402		
2616036004	FB-01	EPA 300.0	24402		
2616036005	EB-01	EPA 300.0	24402		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jolii Abraham / Lauren Peaty	Attention: SCSInvoices@southernco.com	Company Name: SCSInvoices@southernco.com	Alert: SCSInvoices@southernco.com	Company Name: SCSInvoices@southernco.com
Address: 2480 Maner Road Atlanta, GA 30339	Copy To: Geosyntec	Purchase Order #: SCS10348606	Address: Plant Hammond	Pace Quote: betsy.mcdaniel@pacelabs.com	Regulatory Agency: State / Location: GA
Email: jabraham@southernco.com	Project Name: Plant Hammond	Project #: <b>Standard TAT</b>	Pace Profile #: 327.4 (AP) or 328.5 (HUM)		
Phone: (404) 506-7239					
Requested Due Date: <b>Standard TAT</b>					

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES				ANALYSES TEST	Requested Analysis: Filtered (Y/N)	Residual Chlorine (Y/N)	
			START	END				H2SO4	HNO3	HCl	NaOH				Na2S2O3
1	Drinking Water	DW	3/12/19 14:10	3/12/19 14:31	913	913	3	Unpreserved							
2	Waste Water	WW													
3	Process Water	P													
4	Product	SL													
5	Solid	CL													
6	Wipe	VP													
7	Air	AR													
8	Other	OT													
9	Tissue	TS													
10															
11															
12															

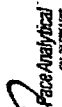
<b>ADDITIONAL COMMENTS</b>		<b>RELINQUISHER BY / AFFILIATION</b>		<b>ACCEPTED BY / AFFILIATION</b>		<b>DATE</b>		<b>TIME</b>		<b>DATE</b>		<b>TIME</b>		<b>TEMP IN C</b>		<b>Received on</b>		<b>Temp in C</b>		<b>Sealed</b>		<b>Custody</b>		<b>Cooler</b>		<b>Samples</b>		<b>Inlet</b>	
Moria McArthur		Moria McArthur		Moria McArthur		3/12/19		17:05		Moria McArthur		3/12/19		22:05		3/12/19		18:00		3/12/19		2:58		2:58		2:58		2:58	
ETS Low / base, etc		ETS Low / base, etc		ETS Low / base, etc		3/13/19		9:43		ETS Low / base, etc		3/13/19		09:44		3/13/19		09:44		3/13/19		14:00		2:58		2:58		2:58	
Moria McArthur		Moria McArthur		Moria McArthur		3/12/19		17:05		Moria McArthur		3/12/19		22:05		3/12/19		18:00		3/12/19		2:58		2:58		2:58		2:58	

NO# : 2616036

2616036

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER: Noelia Ruskus  
 SIGNATURE of SAMPLER: Noelia Ruskus

DATE Signed: 3/12/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3  
1-4-13/019

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Requested Client Information:</b>		<b>Reported Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: John Abraham / Lauren Petty	Attention: <u>scsinvoices@southernco.com</u>		Company Name:	
Address: 2480 Maner Road	Copy To: Geosyntec	Purchase Order #: <u>SCS 0548608</u>		Address:	
Atlanta, GA 30339		Project Name: <u>Plant Hammond</u>		Pace Order:	
Email: <u>jabraham@southernco.com</u>	Project #: <u>Standard TAT</u>	Pace Profile #: <u>327.4 (AP) or 328.5 (Hurf)</u>		Pace Project Manager: <u>betsey.medaniel@pacelabs.com</u>	
Phone: <u>(404)506-7239</u>	Requested Due Date: <u>Standard TAT</u>	Matrix Code (see valid codes to left)		State/Location: <u>GA</u>	
		SAMPLE TYPE (G=GRAB C=COMP)		Regulatory Agency:	

ITEM #	COLLECTED		DATE		TIME	DATE	TIME	ANALYSES TEST			Requested Analysis/Filterack (Y/N)	Received on	Ice (Y/N)	Custody (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)			
	START	END	DATE	TIME				Unpreserved	H2SO4	HNO3								HCl	NaOH	Na2S2O3
1			03/12/19	10:29	10:45	1950	1950	Y	Y	Y	Y	N	N	N	N	N	N	N	N	
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

Handwritten: GW 03/12/19

Handwritten: H6WA-2

**NO#:** 2616036

**PN:** BM      **Due Date:** 03/20/19

**CLIENT:** GAPower-CCR

RELINQUISHED BY/AFFILIATION	DATE	TIME	ACCEPTED BY/AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
<u>Grant Walker/Geosyntec</u>	<u>03/12/19</u>	<u>1950</u>	<u>Medina M Johnson</u>	<u>3/12/19</u>	<u>1950</u>	<u>2-5-7-4-7</u>
<u>Medina M Johnson</u>	<u>3/12/19</u>	<u>2205</u>	<u>Grant Walker</u>	<u>3/12/19</u>	<u>2205</u>	
<u>SCS Law/Geosyntec</u>	<u>3/12/19</u>	<u>943</u>	<u>Grant Walker</u>	<u>3/15/19</u>	<u>0943</u>	
			<u>Grant Walker</u>	<u>3/15/19</u>	<u>1400</u>	

**SAMPLER NAME AND SIGNATURE:** Grant Walker

**PRINT Name of SAMPLER:** Grant Walker

**SIGNATURE of SAMPLER:** Grant Walker

**DATE Signed:** 03/12/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

3 of 3

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Report To: Jitu Abraham / Lauren Peby  
 Address: 2480 Marner Road  
 Atlanta, GA 30339  
 Email: labraham@southemco.com  
 Phone: (404)506-7239  
 Project Name: Plant Hammond  
 Requested Due Date: STARVADA TXI

**Section B**  
**Required Project Information:**  
 Report To: Jitu Abraham / Lauren Peby  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #: STARVADA TXI

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southemco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: beisy.mcdaniel@paceciabs.com  
 Pace Profile #: 327.4 (API) or 328.5 (Huf)

**Regulatory Agency:**  
 State/Description: GA

Page: 1 of 3

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES				ANALYSES TEST	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo) sulfate by 300.0	Residual Chlorine (Y/N)
			START DATE	END DATE				H2SO4	HNO3	HCl	NaOH					
1			3/12/19 1930	3/12/19 1930	G	W16	4									
2			3/12/19 1930	3/12/19 1930	G	W16	4									
3			3/12/19 1930	3/12/19 1930	G	W16	4									
4																
5																
6																
7																
8																
9																
10																
11																
12																

**NON: 2616036**  
 PH: BM  
 Due Date: 03/20/19  
 CLIENT: GAPower-CCR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Ice (Y/N)	Custody Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
	Medina M/Johnson	3/12/19	1930	Medina M/Johnson	3/12/19	1930						
	Medina M/Johnson	3/12/19	2205	Medina M/Johnson	3/12/19	2205						
	LeBB Coors/Geosyntec	3/13/19	943	Pass	3/13/19	0944						
	Medina M/Johnson	3/13/19	1400	Medina M/Johnson	3/13/19	1400	2.5					

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: BOYAN UGHA-TICKHE  
 SIGNATURE of SAMPLER: Boyan  
 DATE Signed: 03/12/19





Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

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

**WO#: 2616036**

PM: BM

Due Date: 03/20/19

CLIENT: GAPower-CCR

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 3/13/19 MR

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

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 29, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2616037

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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.: 2616037

---

### 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  
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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616037

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616037001	HGWA-1	Water	03/12/19 14:31	03/13/19 14:00
2616037002	HGWA-2	Water	03/12/19 10:45	03/13/19 14:00
2616037003	HGWA-3	Water	03/12/19 10:00	03/13/19 14:00
2616037004	FB-01	Water	03/12/19 19:15	03/13/19 14:00
2616037005	EB-01	Water	03/12/19 19:50	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616037

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616037001	HGWA-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616037002	HGWA-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616037003	HGWA-3	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616037004	FB-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616037005	EB-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616037

**Sample: HGWA-1**      **Lab ID: 2616037001**      Collected: 03/12/19 14:31      Received: 03/13/19 14:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.263 ± 0.240 (0.452)</b> C:82% T:NA	pCi/L	03/25/19 08:34	13982-63-3	
Radium-228	EPA 9320	<b>0.0637 ± 0.372 (0.848)</b> C:72% T:83%	pCi/L	03/26/19 12:54	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.327 ± 0.612 (1.30)</b>	pCi/L	03/27/19 11:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

**Sample: HGWA-2**      **Lab ID: 2616037002**      Collected: 03/12/19 10:45      Received: 03/13/19 14:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.228 ± 0.190 (0.332)</b> C:94% T:NA	pCi/L	03/25/19 08:34	13982-63-3	
Radium-228	EPA 9320	<b>0.226 ± 0.318 (0.681)</b> C:74% T:89%	pCi/L	03/26/19 12:54	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.454 ± 0.508 (1.01)</b>	pCi/L	03/27/19 11:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

**Sample: HGWA-3**      **Lab ID: 2616037003**      Collected: 03/12/19 10:00      Received: 03/13/19 14:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.387 ± 0.232 (0.327)</b> C:90% T:NA	pCi/L	03/25/19 08:33	13982-63-3	
Radium-228	EPA 9320	<b>0.626 ± 0.376 (0.699)</b> C:78% T:84%	pCi/L	03/26/19 12:54	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.01 ± 0.608 (1.03)</b>	pCi/L	03/27/19 11:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

**Sample: FB-01**      **Lab ID: 2616037004**      Collected: 03/12/19 19:15      Received: 03/13/19 14:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.248 ± 0.204 (0.334)</b> <b>C:79% T:NA</b>	pCi/L	03/25/19 08:34	13982-63-3	
Radium-228	EPA 9320	<b>0.111 ± 0.352 (0.792)</b> <b>C:76% T:82%</b>	pCi/L	03/26/19 12:54	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.359 ± 0.556 (1.13)</b>	pCi/L	03/27/19 11:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

**Sample: EB-01**      **Lab ID: 2616037005**      Collected: 03/12/19 19:50      Received: 03/13/19 14:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.160 ± 0.197 (0.405)</b> <b>C:82% T:NA</b>	pCi/L	03/25/19 08:31	13982-63-3	
Radium-228	EPA 9320	<b>0.386 ± 0.383 (0.790)</b> <b>C:76% T:78%</b>	pCi/L	03/26/19 12:54	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.546 ± 0.580 (1.20)</b>	pCi/L	03/27/19 11:32	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

QC Batch: 334698

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616037001, 2616037002, 2616037003, 2616037004, 2616037005

METHOD BLANK: 1628718

Matrix: Water

Associated Lab Samples: 2616037001, 2616037002, 2616037003, 2616037004, 2616037005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.482 ± 0.254 (0.327) C:96% T:NA	pCi/L	03/25/19 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.

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616037

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QC Batch: 334688 Analysis Method: EPA 9320

QC Batch Method: EPA 9320 Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616037001, 2616037002, 2616037003, 2616037004, 2616037005

---

METHOD BLANK: 1628693 Matrix: Water

Associated Lab Samples: 2616037001, 2616037002, 2616037003, 2616037004, 2616037005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.978 ± 0.447 (0.755) C:76% T:82%	pCi/L	03/26/19 12:53	

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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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616037

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### 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.: 2616037

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616037001	HGWA-1	EPA 9315	334698		
2616037002	HGWA-2	EPA 9315	334698		
2616037003	HGWA-3	EPA 9315	334698		
2616037004	FB-01	EPA 9315	334698		
2616037005	EB-01	EPA 9315	334698		
2616037001	HGWA-1	EPA 9320	334688		
2616037002	HGWA-2	EPA 9320	334688		
2616037003	HGWA-3	EPA 9320	334688		
2616037004	FB-01	EPA 9320	334688		
2616037005	EB-01	EPA 9320	334688		
2616037001	HGWA-1	Total Radium Calculation	335714		
2616037002	HGWA-2	Total Radium Calculation	335714		
2616037003	HGWA-3	Total Radium Calculation	335714		
2616037004	FB-01	Total Radium Calculation	335714		
2616037005	EB-01	Total Radium Calculation	335714		

### 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.

Page: 1 of 3

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

Section B  
 Required Project Information:  
 Report To: Joju Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10948606  
 Project Name: Plant Hammond  
 Project #: TH

Section C  
 Invoice Information:  
 Attention: SCSinvoices@southernco.com  
 Company Name:  
 Address:  
 Pico Project Manager: betsy.mcdonnet@picolabs.com  
 Pico Profile #: 327.4 (AP) or 328.5 (Hudf)

Regulatory Agency: GA  
 State / Location:

ITEM #	MATRIX	CODE	COLLECTED		DATE	TIME	SAMPLER TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analytes Test	Requested Analysis Filtered (Y/N)			TEMP in C	Received on	Custody	Sealed	Cooler	Samples	Intact
			START	END							Fluoride by 300.0	App. IV Metals	Metals (As, B, Co, Mo)							
1	Drinking Water	DW	3/12/19	1410	3/12/19	1431	41	3	HCl, HNO3, H2SO4, Unpreserved	Y	Y	Y	25.8	3/12/19	Y	Y	Y	Y	Y	Y
2	Waste Water	WW																		
3	Waste Water	WW																		
4	Waste Water	WW																		
5	Waste Water	WW																		
6	Waste Water	WW																		
7	Waste Water	WW																		
8	Waste Water	WW																		
9	Waste Water	WW																		
10	Waste Water	WW																		
11	Waste Water	WW																		
12	Waste Water	WW																		

**SAMPLE ID**  
 One Character per box.  
 (A-Z, 0-9, /, -)

Sample IDs must be unique

HGWA-1

NO# : 2616037

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Noelia Mustkus ETS Low/Coast, etc	3/12/19	2205	MDA MANN	3/12/19	2205	
	3/13/19	0943		3/13/19	0944	
				3/13/19	1400	

DATE Signed: 3/12/19

SAMPLER NAME AND SIGNATURE: Noelia Mustkus

PRINT Name of SAMPLER: Noelia Mustkus

SIGNATURE of SAMPLER: Noelia Mustkus



# CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3  
we  
13/019

**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 TAT

**Section B**  
 Required Project Information:  
 Report To: Joy Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #: \_\_\_\_\_

**Section C**  
 Invoice Information:  
 Attention: scsinvoices@southernco.com  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Pace Quote: \_\_\_\_\_  
 Pace Project Manager: deisy.mcdaniel@pacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)  
 Regulatory Agency: \_\_\_\_\_  
 State / Location: GA

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	App. IV Metals	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo) sulfate by 300.0	Residual Chlorine (Y/N)
			START	END											
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															

GN 03/12/19

NO#: 2616037

PM: BM      Due Date: 04/10/19  
CLIENT: GAPower-CCR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Grant Walker / Geosyntec	03/22/19	1950	Maelia Muehler	3/12/19	1950	2.5 f y
	Maelia Muehler	3/12/17	2205	Grant Walker	3/12/19	2205	
	Geosyntec	3/13/19	943	Maelia Muehler	5.15.19	0451	
				Maelia Muehler	3/13/19	1400	

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER: Grant Walker  
 SIGNATURE of SAMPLER: Grant Walker  
 DATE Signed: 03/12/19





**CHAIN-OF-CUSTODY / Analytical Request Document**

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

3 of 3

Section A  
 Client Information:  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manner Road, Atlanta, GA 30339  
 Phone: (404)506-7239 Fax: (404)506-7239  
 Requested Due Date: 5/15/2019

Section B  
 Required Project Information:  
 Report To: Jaja Abraham / Lauren Petty  
 Copy To: Geosynlec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

Section C  
 Invoice Information:  
 Attention: SCSinvoices@southarmco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.moderate@pocoastlab.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)  
 Regulatory Agency:  
 State/Jurisdiction: GA

Page: 1 of 3

ITEM #	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES						Analytes Test Y/N	App. IV Metals	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo) Sulfate by 300.0	Residual Chlorine (Y/N)		
		START DATE TIME	END DATE TIME				H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol							Other	
1	H60A-3																			
2	F6-01																			
3	F6-01																			

ADDITIONAL COMMENTS	REQUISITIONED BY / AFFILIATION		DATE		ACCEPTED BY / AFFILIATION		DATE		SAMPLE CONDITIONS				
									Received on	Ice (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Intact (Y/N)
Media Mangan	Media Mangan	Media Mangan	3/12/19	1950	Media Mangan	Media Mangan	3/12/19	1950					
Lab Residuals	Lab Residuals	Lab Residuals	3/13/19	943	Lab Residuals	Lab Residuals	3/13/19	944					

NO#: 2616037

PM: BM Due Date: 04/10/19  
CLIENT: GAPover-CCR

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER: Bryan McGinnis  
 SIGNATURE of SAMPLER: Bryan McGinnis  
 DATE Signed: 03/12/19



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616037**

PM: **BM** Due Date: **04/10/19**

CLIENT: **GAPower-CCR**

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 3/13/19 MK

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 2.5 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments: \_\_\_\_\_

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.		
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.		
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.		
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.		
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.		
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.		
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.		
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.		
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.		
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.		
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.		
-Includes date/time/ID/Analysis Matrix:	<u>W</u>			
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.		
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<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 20, 2019

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

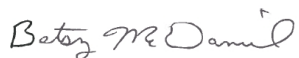
RE: Project: Plant Hammond  
Pace Project No.: 2616039

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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.: 2616039

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### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond  
Pace Project No.: 2616039

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616039001	HGWA-4	Water	03/11/19 18:11	03/13/19 14:00
2616039002	HGWA-5	Water	03/12/19 13:16	03/13/19 14:00
2616039003	HGWA-6	Water	03/12/19 13:00	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616039

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616039001	HGWA-4	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616039002	HGWA-5	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616039003	HGWA-6	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616039

Sample: HGWA-4		Lab ID: 2616039001		Collected: 03/11/19 18:11		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 18:08	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 18:08	7440-38-2	
Barium	<b>0.029</b>	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 18:08	7440-39-3	
Beryllium	<b>0.000050J</b>	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 18:08	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 18:08	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 18:08	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 18:08	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 18:08	7439-92-1	
Lithium	ND	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 18:08	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 18:08	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 18:08	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 18:08	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 18:04	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.035J</b>	mg/L	0.30	0.029	1		03/18/19 22:15	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616039

Sample: HGWA-5		Lab ID: 2616039002		Collected: 03/12/19 13:16		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 18:14	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 18:14	7440-38-2	
Barium	<b>0.050</b>	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 18:14	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 18:14	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 18:14	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 18:14	7440-47-3	
Cobalt	<b>0.00099J</b>	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 18:14	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 18:14	7439-92-1	
Lithium	<b>0.0032J</b>	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 18:14	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 18:14	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 18:14	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 18:14	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 18:06	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.079J</b>	mg/L	0.30	0.029	1		03/18/19 23:23	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616039

Sample: HGWA-6		Lab ID: 2616039003		Collected: 03/12/19 13:00		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/15/19 12:41	03/18/19 18:20	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/15/19 12:41	03/18/19 18:20	7440-38-2	
Barium	<b>0.20</b>	mg/L	0.010	0.00078	1	03/15/19 12:41	03/18/19 18:20	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/15/19 12:41	03/18/19 18:20	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/15/19 12:41	03/18/19 18:20	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/15/19 12:41	03/18/19 18:20	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/15/19 12:41	03/18/19 18:20	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/15/19 12:41	03/18/19 18:20	7439-92-1	
Lithium	<b>0.011J</b>	mg/L	0.050	0.00097	1	03/15/19 12:41	03/18/19 18:20	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/15/19 12:41	03/18/19 18:20	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/15/19 12:41	03/18/19 18:20	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/15/19 12:41	03/18/19 18:20	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/15/19 12:10	03/15/19 18:09	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.061J</b>	mg/L	0.30	0.029	1		03/18/19 23:46	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616039

QC Batch: 24380 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 2616039001, 2616039002, 2616039003

METHOD BLANK: 109357 Matrix: Water

Associated Lab Samples: 2616039001, 2616039002, 2616039003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000036	03/15/19 17:12	

LABORATORY CONTROL SAMPLE: 109358

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: 109378 109379

Parameter	Units	2615967001 Result	MS		MSD		% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0026	100	102	75-125	3	20	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616039

QC Batch: 24384 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616039001, 2616039002, 2616039003

METHOD BLANK: 109374 Matrix: Water  
Associated Lab Samples: 2616039001, 2616039002, 2616039003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/18/19 17:34	
Arsenic	mg/L	0.00071J	0.0050	0.00057	03/18/19 17:34	
Barium	mg/L	ND	0.010	0.00078	03/18/19 17:34	
Beryllium	mg/L	ND	0.0030	0.000050	03/18/19 17:34	
Cadmium	mg/L	ND	0.0010	0.000093	03/18/19 17:34	
Chromium	mg/L	ND	0.010	0.0016	03/18/19 17:34	
Cobalt	mg/L	ND	0.010	0.00052	03/18/19 17:34	
Lead	mg/L	ND	0.0050	0.00027	03/18/19 17:34	
Lithium	mg/L	ND	0.050	0.00097	03/18/19 17:34	
Molybdenum	mg/L	ND	0.010	0.0019	03/18/19 17:34	
Selenium	mg/L	ND	0.010	0.0014	03/18/19 17:34	
Thallium	mg/L	ND	0.0010	0.00014	03/18/19 17:34	

LABORATORY CONTROL SAMPLE: 109375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	109	80-120	
Arsenic	mg/L	0.1	0.10	104	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.11	108	80-120	
Cadmium	mg/L	0.1	0.11	105	80-120	
Chromium	mg/L	0.1	0.11	107	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	104	80-120	
Lithium	mg/L	0.1	0.11	107	80-120	
Molybdenum	mg/L	0.1	0.10	104	80-120	
Selenium	mg/L	0.1	0.10	105	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109376 109377

Parameter	Units	2616039003		109377		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	106	107	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.1	0.11	0.10	106	103	75-125	3	20	
Barium	mg/L	0.20	0.1	0.1	0.29	0.30	95	103	75-125	2	20	
Beryllium	mg/L	ND	0.1	0.1	0.097	0.094	97	94	75-125	3	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	104	101	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.: 2616039

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109376		109377		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2616039003 Result	MS Spike Conc.	MSD Spike Conc.								
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	104	103	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.10	0.098	101	98	75-125	3	20	
Lead	mg/L	ND	0.1	0.1	0.10	0.096	101	95	75-125	5	20	
Lithium	mg/L	0.011J	0.1	0.1	0.11	0.10	97	91	75-125	5	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	103	104	75-125	2	20	
Selenium	mg/L	ND	0.1	0.1	0.11	0.10	106	102	75-125	4	20	
Thallium	mg/L	ND	0.1	0.1	0.10	0.097	100	97	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.: 2616039

QC Batch: 24522 Analysis Method: EPA 300.0  
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 2616039001, 2616039002, 2616039003

METHOD BLANK: 110051 Matrix: Water

Associated Lab Samples: 2616039001, 2616039002, 2616039003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	03/18/19 21:29	

LABORATORY CONTROL SAMPLE: 110052

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.8	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 110053 110054

Parameter	Units	110053		110054		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2616039001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Fluoride	mg/L	0.035J	10	10	10.2	10.3	102	102	90-110	0	15

MATRIX SPIKE SAMPLE: 110055

Parameter	Units	2616039002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.079J	10	10.3	103	90-110	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616039

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### 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

Pace Project No.: 2616039

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616039001	HGWA-4	EPA 3005A	24384	EPA 6020B	24419
2616039002	HGWA-5	EPA 3005A	24384	EPA 6020B	24419
2616039003	HGWA-6	EPA 3005A	24384	EPA 6020B	24419
2616039001	HGWA-4	EPA 7470A	24380	EPA 7470A	24416
2616039002	HGWA-5	EPA 7470A	24380	EPA 7470A	24416
2616039003	HGWA-6	EPA 7470A	24380	EPA 7470A	24416
2616039001	HGWA-4	EPA 300.0	24522		
2616039002	HGWA-5	EPA 300.0	24522		
2616039003	HGWA-6	EPA 300.0	24522		

### 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.

1023

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

**Section B**  
**Required Project Information:**  
 Report To: Jofu Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10346606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Project Manager: betsy.mcdonnet@geosyntec.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Buff)

**Requested Analysis Filtered (Y/N)**

ITEM #	MATRIX	CODE	DATE	TIME	DATE	TIME	REQUISITED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Ice (Y/N)	Custody Sealed (Y/N)	Cooler (Y/N)	Samples In tact (Y/N)
1	Drinking Water	DW	3/11/19	1811	3/11/19	1811	MM	3/11/19	19	MM	3/11/19	2205	23					
2	Water	WT																
3	Waste Water	WW																
4	Product	P																
5	Soil/Solid	SL																
6	Oil	OL																
7	Wipes	WP																
8	Air	AR																
9	Other	OT																
10	Tissue	TS																

**MATRIX**  
 Drinking Water, Water, Waste Water, Product, Oil, Wipes, Air, Other, Tissue

**CODE**  
 DW, WT, WW, P, SL, OL, WP, AR, OT, TS

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

**ANALYSIS TEST**  
 App. IV Metals, Fluoride by 300.0, Radium 226/228, Metals (As, B, Co, Mo), Sulfate by 300.0

**PRESERVATIVES**  
 H2SO4, HNO3, HCl, NaOH, Na2SO3, Methanol, Other

**ADDITIONAL COMMENTS**  
 HgWA-4  
 3/11/19  
 NO# : 2616039

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Noelia Mustus  
 SIGNATURE of SAMPLER: Noelia Mustus  
 DATE Signed: 3/11/19



**CHAIN-OF-CUSTODY / Analytical Request Document**

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Page: 2 of 3

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jiju Abraham / Lauren Petty	Company Name: SCSInvoices@southernco.com	Attention: SCSInvoices@southernco.com	Company Name: SCSInvoices@southernco.com	Address: SCSInvoices@southernco.com
Address: 2480 Marner Road Atlanta, GA 30339	Copy To: Geosyntec	Purchase Order #: SCS103-48606	Project Name: Plant Hammond	Address: SCSInvoices@southernco.com	State / Location: GA
Email: j.abraham@southernco.com	Phone: (404)506-7239	Project #: <u>standard TAI</u>	Requested Due Date: <u>standard TAI</u>	Regulatory Agency:	Regulatory Agency:

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES				Requested Analytes Filtered (Y/N)	Residual Chlorine (Y/N)		
			START DATE	END DATE				UNPRESERVED	H2SO4	HNO3	HCl			NaOH	Na2S2O3
1	Drinking Water	DW	03/12/19 13:16	03/12/19 13:16	G-GRAB	WT	41					YYY	YY		
2	Water	WT													
3	Waste Water	WW													
4	Product	P													
5	Solid	SL													
6	Oil	OL													
7	Wipe	WP													
8	Air	AR													
9	Other	OT													
10	Teste	TS													

**W0#: 2616039**  
 PM: BM Due Date: 03/20/19  
 CLIENT: GAPower-CCR

REQUISITIONED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Grant Walker / Geosyntec	03/12/19	1450	Melia M... / ...	3/12/19	1450	
Melia M... / ...	3/12/19	2205	... / ...	3/12/19	2205	
CB Lewis / Geosyntec	3/13/19	943	... / ...	3/13/19	0944	
			M... / ...	3/13/19	1400	F

TEMP in C: 25 F

Received on: [ ]  
 Isot (Y/N): [ ]  
 Custody (Y/N): [ ]  
 Sealed (Y/N): [ ]  
 Cooler (Y/N): [ ]  
 Samples Intact (Y/N): [ ]

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: Grant Walker  
 SIGNATURE of SAMPLER: [Signature]

**DATE Signed:** 03/21/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 of 3

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manor Road, Atlanta, GA 30339  
 Phone: (404)506-7299  
 Requested Due Date: STANDARD

**Section B**  
**Required Project Information:**  
 Report To: Jolu Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #: 1A

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote: paceprojectmanager@pacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)  
 State / Location: GA  
 Regulatory Agency:

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES		ANALYSES TEST	REQUESTED ANALYSES FILTERED (Y/N)	
			START DATE	END DATE				H2SO4	HNO3		HCl	MeOH
1	Drinking Water	DW	3/12/19 13:00	3/12/19 13:00	G	01	4			Y	Y	Y
2	Waste Water	WW										
3	Product	P										
4	Soil/Solid	SL										
5	Oil	OL										
6	Wipe	WIP										
7	Air	AR										
8	Other	OT										
9	Tissue	TS										
10												
11												
12												

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

AGWA 6

03/12/19

PHX

NO# : 2616039



ADDITIONAL COMMENTS	REQUESTED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		SAMPLE CONDITIONS	
	DATE	TIME	DATE	TIME	TEMP in C	Received on Ice (Y/N)
	3/12/19	1950	Mollie Mjohan	3/12/19	1950	
	3/12/19	2205	ATBlews	3/12/19	2205	
	3/13/19	943	Pace	3/13/19	0944	
	3/13/19	400258	MJohan	3/13/19	400258	Y

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: REHABUHI UGHA TUCKER  
 SIGNATURE OF SAMPLER: [Signature]  
 DATE Signed: 3/17/19



Sample Condition Upon Receipt

Client Name: GIA POWER

Project # \_\_\_\_\_

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 2.5 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

WO#: **2616039**

PM: BM

Due Date: 03/20/19

CLIENT: GAPower-CCR

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 3/13/19 MR

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

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)

April 05, 2019

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

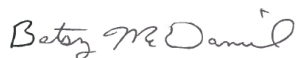
RE: Project: Plant Hammond  
Pace Project No.: 2616040

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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.: 2616040

---

### 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  
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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616040

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
2616040001	HGWA-4	Water	03/11/19 18:11	03/13/19 14:00
2616040002	HGWA-5	Water	03/12/19 13:16	03/13/19 14:00
2616040003	HGWA-6	Water	03/12/19 13:00	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616040

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616040001	HGWA-4	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616040002	HGWA-5	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616040003	HGWA-6	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616040

**Sample: HGWA-4**      **Lab ID: 2616040001**      Collected: 03/11/19 18:11      Received: 03/13/19 14:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.244 ± 0.108 (0.147)</b> C:95% T:NA	pCi/L	03/26/19 20:59	13982-63-3	
Radium-228	EPA 9320	<b>0.537 ± 0.392 (0.762)</b> C:70% T:87%	pCi/L	03/29/19 11:27	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.781 ± 0.500 (0.909)</b>	pCi/L	04/02/19 13:33	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616040

**Sample: HGWA-5**      **Lab ID: 2616040002**      Collected: 03/12/19 13:16      Received: 03/13/19 14:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.221 ± 0.187 (0.283)</b> C:92% T:NA	pCi/L	03/27/19 11:37	13982-63-3	
Radium-228	EPA 9320	<b>0.612 ± 0.339 (0.590)</b> C:73% T:85%	pCi/L	03/29/19 11:28	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.833 ± 0.526 (0.873)</b>	pCi/L	04/02/19 13:33	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616040

**Sample: HGWA-6**      **Lab ID: 2616040003**      Collected: 03/12/19 13:00      Received: 03/13/19 14:00      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.242 ± 0.237 (0.451)</b> C:91% T:NA	pCi/L	03/27/19 07:58	13982-63-3	
Radium-228	EPA 9320	<b>0.740 ± 0.412 (0.731)</b> C:71% T:79%	pCi/L	03/29/19 11:27	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.982 ± 0.649 (1.18)</b>	pCi/L	04/02/19 13:33	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616040

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QC Batch:	334703	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2616040001, 2616040002, 2616040003		

---

METHOD BLANK:	1628726	Matrix:	Water
Associated Lab Samples:	2616040001, 2616040002, 2616040003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.496 ± 0.336 (0.636) C:77% T:84%	pCi/L	03/29/19 11:27	

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.: 2616040

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QC Batch:	334701	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2616040001, 2616040002, 2616040003		

---

METHOD BLANK:	1628722	Matrix:	Water
Associated Lab Samples:	2616040001, 2616040002, 2616040003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.219 (0.286) C:97% T:NA	pCi/L	03/27/19 08:17	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616040

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### 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.: 2616040

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616040001	HGWA-4	EPA 9315	334701		
2616040002	HGWA-5	EPA 9315	334701		
2616040003	HGWA-6	EPA 9315	334701		
2616040001	HGWA-4	EPA 9320	334703		
2616040002	HGWA-5	EPA 9320	334703		
2616040003	HGWA-6	EPA 9320	334703		
2616040001	HGWA-4	Total Radium Calculation	336609		
2616040002	HGWA-5	Total Radium Calculation	336609		
2616040003	HGWA-6	Total Radium Calculation	336609		

### 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.

1 of 3

<b>Section A</b> Required Client Information: Company: Georgia Power - Coal Combustion Residuals Address: 2480 Maner Road Atlanta, GA 30339 Email: jbraham@southemco.com Phone: (404)508-7239 Requested Due Date: <u>Standard TBT</u>	<b>Section B</b> Required Project Information: Report To: Jolu Abraham / Lauren Petty Copy To: Geosyntec Purchase Order #: SCS10548606 Project Name: Plant Hammond Address: <u>2480 Maner Road</u>
<b>Section C</b> Invoice Information: Attention: SCSinvoices@southemco.com Company Name: Address: Pace Quote: <u>betsy.mcdaniel@pacelabs.com</u> Pace Project Manager: <u>betsy.mcdaniel@pacelabs.com</u> Pace Profile #: <u>327.4 (AP) or 328.5 (Huff)</u> State: <u>GA</u>	

ITEM #	MATRIX		DATE	TIME	START	END	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										App. IV Metals	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo)	Sulfate by 300.0	Residual Chlorine (Y/N)										
	CODE	TYPE							H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y	N	Y							N	Y	N	Y	N	Y	N	Y	N	Y
1	DW	G-RAB C-COMP	3/11/19	3:11 PM	3/11/19		100% 4	3																										
2	WT																																	
3	P																																	
4	SL																																	
5	WP																																	
6	AR																																	
7	OT																																	
8	TS																																	

ADDITIONAL COMMENTS Noelia Mustos B. Blaw-Geosyntec 3/13/19 943 P. 943 Noelia Mustos 3/13/19 1400 2:57 47		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: <u>Noelia Mustos</u> SIGNATURE of SAMPLER: <u>Noelia Mustos</u> DATE Signed: <u>3/11/19</u>								

NO# : 2616040

2616040



# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3  
1/11/19

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

**Section B**  
 Required Project Information:  
 Report To: Jofu Abraham / Lauren Peith  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348608  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
 Invoice Information:  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@paceciabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)  
 GA

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see void codes to left)	# OF CONTAINERS	PRESERVATIVES					ANALYSES TEST	Requested Analysis Filtered (Y/N)	TEMP in C	Received on	Cooler (Y/N)	Custody (Y/N)	Samples Intact (Y/N)	
			START DATE	END TIME				H2SO4	HNO3	HCl	Na2S2O3	Methanol								Other
1	HGWA-S	WT	3/12/19 13:16	3/12/19 13:16	G-GRAB	WT	4	Unpreserved						Y						
2														N						
3														N						
4														N						
5														N						
6														N						
7														N						
8														N						
9														N						
10														N						
11														N						
12														N						

*Handwritten:* GWA 03/12/19

**NO# : 2616040**

PM: **BM** Due Date: **04/10/19**  
CLIENT: **GA Power-CCR**

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Grant Walter / Geosyntec	3/12/19	1950	Media / Mather	3/12/19	1950	
Media / Mather	3/12/19	2205	Media / Mather	3/12/19	2205	
WB Lewis / Geosyntec	3/13/19	943	Media / Mather	3/13/19	0944	
			Media / Mather	3/13/19	1400	

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Grant Walter  
 SIGNATURE of SAMPLER: *Grant Walter*  
 DATE Signed: 03/12/19





# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 of 3  
 1/25/19  
 3/11/19

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Joju Abraham / Lauren Petty	Attention: scsinvoices@southernco.com		Company Name:	
Address: 2480 Maner Road	Copy To: Geosyniéc	Purchase Order # SCS10348606		Address:	
Atlanta, GA 30339	Project Name: Plant Hammond	Project # 574-0400-1A1		Price Profile # 327.4 (AP) or 328.5 (Huff)	
Email: j.abraham@southernco.com	Project Name: Plant Hammond	Matrix Code (see vord codes to left)		Requested/Analysis Filtered (Y/N):	
Phone: (404)506-7239	Project Name: Plant Hammond	Sample Type (G=GRAB C=COMP)		Requested/Analysis Filtered (Y/N):	
Requested Due Date: 5/14/2019	Project #:	Matrix Code (see vord codes to left)		Requested/Analysis Filtered (Y/N):	

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES					ANALYSES TEST	Metals (As, B, Co, Mo)	Fluoride by 300.0	Radium 226/228	Residual Chlorine (Y/N)	
			START DATE	END DATE			H2SO4	HNO3	HCl	NaOH	Na2S2O3						Methanol
1	Drinking Water	DW	3/12/19 13:20	3/12/19 13:20	19.50	1											
2	Waste Water	WW															
3	Product	P															
4	Solid	SL															
5	Oil	OL															
6	Wipe	WP															
7	Air	AR															
8	Other	OT															
9	Tissue	TS															
10																	
11																	
12																	

**WO#: 2616040**

PM: BM Due Date: 04/10/19  
 CLIENT: GAPower-CCR

RELEASING BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Ice	Custody	Sealed	Cooler	Samples
Matt Hoffman	3/12/19	1950	Matt Hoffman	3/12/19	1950							
ETS Leifert	3/12/19	2205	ETS Leifert	3/12/19	2205							
ETS Leifert	3/13/19	0943	M. Galman	3/13/19	0944							
				3/13/19	1400	2.5						

SAMPLER NAME AND SIGNATURE: REYJALIH UGUA TUCKER  
 PRINT Name of SAMPLER: REYJALIH UGUA TUCKER  
 SIGNATURE of SAMPLER: [Signature]  
 DATE SIGNED: 3/17/19



Sample Condition Upon Receipt

Client Name: GIA POWER

Project # \_\_\_\_\_

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

**WO#: 2616040**

PM: **BM**

Due Date: **04/10/19**

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

CLIENT: **GAPower-CCR**

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Samples on ice, cooling process has begun

Cooler Temperature 2.5 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 3/13/19 MK

Temp should be above freezing to 6°C Comments: \_\_\_\_\_

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.		
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.		
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.		
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.		
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.		
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.		
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.		
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.		
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.		
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.		
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.		
-Includes date/time/ID/Analysis Matrix:	<u>W</u>			
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.		
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<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 25, 2019

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

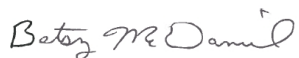
RE: Project: Plant Hammond  
Pace Project No.: 2616162

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 15, 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.: 2616162

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### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616162

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616162001	HGWC-15	Water	03/14/19 09:58	03/15/19 13:00
2616162002	FD-2	Water	03/14/19 00:00	03/15/19 13:00
2616162003	HGWC-18	Water	03/14/19 14:53	03/15/19 13:00
2616162004	MW-23D	Water	03/14/19 16:42	03/15/19 13:00
2616162005	HGWC-14	Water	03/14/19 16:41	03/15/19 13:00

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616162

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616162001	HGWC-15	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2616162002	FD-2	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2616162003	HGWC-18	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2616162004	MW-23D	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1
2616162005	HGWC-14	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	MWB	1

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616162

Sample: HGWC-15		Lab ID: 2616162001		Collected: 03/14/19 09:58		Received: 03/15/19 13:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/19/19 12:14	03/21/19 13:35	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/19/19 12:14	03/21/19 13:35	7440-38-2	
Barium	<b>0.021</b>	mg/L	0.010	0.00078	1	03/19/19 12:14	03/21/19 13:35	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/19/19 12:14	03/21/19 13:35	7440-41-7	
Cadmium	<b>0.0024</b>	mg/L	0.0010	0.000093	1	03/19/19 12:14	03/21/19 13:35	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/19/19 12:14	03/21/19 13:35	7440-47-3	
Cobalt	<b>0.038</b>	mg/L	0.010	0.00052	1	03/19/19 12:14	03/21/19 13:35	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/19/19 12:14	03/21/19 13:35	7439-92-1	
Lithium	ND	mg/L	0.050	0.00097	1	03/19/19 12:14	03/21/19 13:35	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/19/19 12:14	03/21/19 13:35	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/19/19 12:14	03/21/19 13:35	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/19/19 12:14	03/21/19 13:35	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/18/19 10:52	03/19/19 16:39	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/22/19 02:16	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616162

Sample: <b>FD-2</b>		Lab ID: <b>2616162002</b>		Collected: 03/14/19 00:00		Received: 03/15/19 13:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/19/19 12:14	03/21/19 13:41	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/19/19 12:14	03/21/19 13:41	7440-38-2	
Barium	<b>0.021</b>	mg/L	0.010	0.00078	1	03/19/19 12:14	03/21/19 13:41	7440-39-3	
Beryllium	<b>0.000063J</b>	mg/L	0.0030	0.000050	1	03/19/19 12:14	03/21/19 13:41	7440-41-7	
Cadmium	<b>0.0023</b>	mg/L	0.0010	0.000093	1	03/19/19 12:14	03/21/19 13:41	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/19/19 12:14	03/21/19 13:41	7440-47-3	
Cobalt	<b>0.040</b>	mg/L	0.010	0.00052	1	03/19/19 12:14	03/21/19 13:41	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/19/19 12:14	03/21/19 13:41	7439-92-1	
Lithium	<b>0.00099J</b>	mg/L	0.050	0.00097	1	03/19/19 12:14	03/21/19 13:41	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/19/19 12:14	03/21/19 13:41	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/19/19 12:14	03/21/19 13:41	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/19/19 12:14	03/21/19 13:41	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/18/19 10:52	03/19/19 16:41	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/22/19 04:18	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616162

Sample: HGWC-18		Lab ID: 2616162003		Collected: 03/14/19 14:53		Received: 03/15/19 13:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/19/19 12:14	03/21/19 13:46	7440-36-0	
Arsenic	<b>0.0036J</b>	mg/L	0.0050	0.00057	1	03/19/19 12:14	03/21/19 13:46	7440-38-2	
Barium	<b>0.029</b>	mg/L	0.010	0.00078	1	03/19/19 12:14	03/21/19 13:46	7440-39-3	
Beryllium	<b>0.0026J</b>	mg/L	0.0030	0.000050	1	03/19/19 12:14	03/21/19 13:46	7440-41-7	
Cadmium	<b>0.0019</b>	mg/L	0.0010	0.000093	1	03/19/19 12:14	03/21/19 13:46	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/19/19 12:14	03/21/19 13:46	7440-47-3	
Cobalt	<b>0.16</b>	mg/L	0.010	0.00052	1	03/19/19 12:14	03/21/19 13:46	7440-48-4	
Lead	<b>0.0015J</b>	mg/L	0.0050	0.00027	1	03/19/19 12:14	03/21/19 13:46	7439-92-1	
Lithium	<b>0.011J</b>	mg/L	0.050	0.00097	1	03/19/19 12:14	03/21/19 13:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/19/19 12:14	03/21/19 13:46	7439-98-7	
Selenium	<b>0.016</b>	mg/L	0.010	0.0014	1	03/19/19 12:14	03/21/19 13:46	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/19/19 12:14	03/21/19 13:46	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/18/19 10:52	03/19/19 16:44	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	<b>0.88</b>	mg/L	0.30	0.029	1		03/22/19 04:43	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616162

Sample: MW-23D		Lab ID: 2616162004		Collected: 03/14/19 16:42		Received: 03/15/19 13:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/19/19 12:14	03/21/19 13:52	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/19/19 12:14	03/21/19 13:52	7440-38-2	
Barium	<b>0.082</b>	mg/L	0.010	0.00078	1	03/19/19 12:14	03/21/19 13:52	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/19/19 12:14	03/21/19 13:52	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/19/19 12:14	03/21/19 13:52	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/19/19 12:14	03/21/19 13:52	7440-47-3	
Cobalt	<b>0.0013J</b>	mg/L	0.010	0.00052	1	03/19/19 12:14	03/21/19 13:52	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/19/19 12:14	03/21/19 13:52	7439-92-1	
Lithium	<b>0.0028J</b>	mg/L	0.050	0.00097	1	03/19/19 12:14	03/21/19 13:52	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/19/19 12:14	03/21/19 13:52	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/19/19 12:14	03/21/19 13:52	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/19/19 12:14	03/21/19 13:52	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/18/19 10:52	03/19/19 16:46	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/22/19 05:32	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616162

Sample: HGWC-14		Lab ID: 2616162005		Collected: 03/14/19 16:41		Received: 03/15/19 13:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00078	1	03/19/19 12:14	03/21/19 13:58	7440-36-0		
Arsenic	<b>0.0029J</b>	mg/L	0.0050	0.00057	1	03/19/19 12:14	03/21/19 13:58	7440-38-2		
Barium	<b>0.019</b>	mg/L	0.010	0.00078	1	03/19/19 12:14	03/21/19 13:58	7440-39-3		
Beryllium	<b>0.00043J</b>	mg/L	0.0030	0.000050	1	03/19/19 12:14	03/21/19 13:58	7440-41-7		
Cadmium	ND	mg/L	0.0010	0.000093	1	03/19/19 12:14	03/21/19 13:58	7440-43-9		
Chromium	ND	mg/L	0.010	0.0016	1	03/19/19 12:14	03/21/19 13:58	7440-47-3		
Cobalt	<b>0.025</b>	mg/L	0.010	0.00052	1	03/19/19 12:14	03/21/19 13:58	7440-48-4		
Lead	<b>0.0014J</b>	mg/L	0.0050	0.00027	1	03/19/19 12:14	03/21/19 13:58	7439-92-1		
Lithium	ND	mg/L	0.050	0.00097	1	03/19/19 12:14	03/21/19 13:58	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	03/19/19 12:14	03/21/19 13:58	7439-98-7		
Selenium	<b>0.0048J</b>	mg/L	0.010	0.0014	1	03/19/19 12:14	03/21/19 13:58	7782-49-2		
Thallium	<b>0.00028J</b>	mg/L	0.0010	0.00014	1	03/19/19 12:14	03/21/19 13:58	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.000036	1	03/18/19 10:52	03/19/19 16:49	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Fluoride	<b>0.24J</b>	mg/L	0.30	0.029	1		03/22/19 05:57	16984-48-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616162

QC Batch: 24464

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

METHOD BLANK: 109864

Matrix: Water

Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000036	03/19/19 14:39	

LABORATORY CONTROL SAMPLE: 109865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0026	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 109866

109867

Parameter	Units	2616120001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Mercury	mg/L	ND	0.0025	0.0025	0.0025	0.0025	101	102	75-125	1	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616162

QC Batch: 24597 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

METHOD BLANK: 110486 Matrix: Water  
Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/21/19 13:23	
Arsenic	mg/L	ND	0.0050	0.00057	03/21/19 13:23	
Barium	mg/L	ND	0.010	0.00078	03/21/19 13:23	
Beryllium	mg/L	ND	0.0030	0.000050	03/21/19 13:23	
Cadmium	mg/L	ND	0.0010	0.000093	03/21/19 13:23	
Chromium	mg/L	ND	0.010	0.0016	03/21/19 13:23	
Cobalt	mg/L	ND	0.010	0.00052	03/21/19 13:23	
Lead	mg/L	ND	0.0050	0.00027	03/21/19 13:23	
Lithium	mg/L	ND	0.050	0.00097	03/21/19 13:23	
Molybdenum	mg/L	ND	0.010	0.0019	03/21/19 13:23	
Selenium	mg/L	ND	0.010	0.0014	03/21/19 13:23	
Thallium	mg/L	ND	0.0010	0.00014	03/21/19 13:23	

LABORATORY CONTROL SAMPLE: 110487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	106	80-120	
Arsenic	mg/L	0.1	0.10	104	80-120	
Barium	mg/L	0.1	0.10	102	80-120	
Beryllium	mg/L	0.1	0.10	102	80-120	
Cadmium	mg/L	0.1	0.10	103	80-120	
Chromium	mg/L	0.1	0.11	106	80-120	
Cobalt	mg/L	0.1	0.10	102	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	103	80-120	
Molybdenum	mg/L	0.1	0.11	106	80-120	
Selenium	mg/L	0.1	0.11	109	80-120	
Thallium	mg/L	0.1	0.10	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 110488 110489

Parameter	Units	2616179004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Antimony	mg/L	ND	0.1	0.10	0.1	0.10	103	102	75-125	1	20	
Arsenic	mg/L	ND	0.1	0.10	0.1	0.098	100	98	75-125	3	20	
Barium	mg/L	0.010	0.1	0.11	0.1	0.11	98	98	75-125	0	20	
Beryllium	mg/L	ND	0.1	0.097	0.1	0.093	97	93	75-125	5	20	
Cadmium	mg/L	0.00015J	0.1	0.10	0.1	0.097	100	97	75-125	3	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616162

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 110488		110489		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2616179004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chromium	mg/L	ND	0.1	0.1	0.099	0.10	98	100	75-125	2	20	
Cobalt	mg/L	ND	0.1	0.1	0.094	0.094	94	94	75-125	0	20	
Lead	mg/L	ND	0.1	0.1	0.097	0.093	97	93	75-125	4	20	
Lithium	mg/L	ND	0.1	0.1	0.099	0.095	98	94	75-125	4	20	
Molybdenum	mg/L	ND	0.1	0.1	0.10	0.10	103	103	75-125	0	20	
Selenium	mg/L	ND	0.1	0.1	0.098	0.098	98	98	75-125	0	20	
Thallium	mg/L	ND	0.1	0.1	0.097	0.094	97	94	75-125	3	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616162

QC Batch: 24743 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

METHOD BLANK: 111327 Matrix: Water  
Associated Lab Samples: 2616162001, 2616162002, 2616162003, 2616162004, 2616162005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	03/21/19 21:46	

LABORATORY CONTROL SAMPLE: 111328

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	10.4	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 111329 111330

Parameter	Units	2616160010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	11.5	11.2	115	112	90-110	2	15	M1

MATRIX SPIKE SAMPLE: 111331

Parameter	Units	2616160011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L		1.6	10	13.6	120	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.: 2616162

---

### 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.: 2616162

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616162001	HGWC-15	EPA 3005A	24597	EPA 6020B	24647
2616162002	FD-2	EPA 3005A	24597	EPA 6020B	24647
2616162003	HGWC-18	EPA 3005A	24597	EPA 6020B	24647
2616162004	MW-23D	EPA 3005A	24597	EPA 6020B	24647
2616162005	HGWC-14	EPA 3005A	24597	EPA 6020B	24647
2616162001	HGWC-15	EPA 7470A	24464	EPA 7470A	24540
2616162002	FD-2	EPA 7470A	24464	EPA 7470A	24540
2616162003	HGWC-18	EPA 7470A	24464	EPA 7470A	24540
2616162004	MW-23D	EPA 7470A	24464	EPA 7470A	24540
2616162005	HGWC-14	EPA 7470A	24464	EPA 7470A	24540
2616162001	HGWC-15	EPA 300.0	24743		
2616162002	FD-2	EPA 300.0	24743		
2616162003	HGWC-18	EPA 300.0	24743		
2616162004	MW-23D	EPA 300.0	24743		
2616162005	HGWC-14	EPA 300.0	24743		

**REPORT OF LABORATORY ANALYSIS**

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W0#: 2616162

PM: 8M Due Date: 03/22/19  
 CLIENT: GAPower-CCR

Set 01  
 2 of 2

**CHAIN-OF-CUSTODY / AR**  
 The Chain-of-Custody is a LEGAL DOCUMENT

**Section A**  
 Required Client Information:  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manor Road  
 Atlanta, GA 30339  
 Email: [abraham@southhamco.com](mailto:abraham@southhamco.com)  
 Phone: (404)506-7239 Fax:   
 Requested Due Date: Standard 7M

**Section B**  
 Required Project Information:  
 Report To: Joy Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
 Invoice Information:  
 Attention: [scsinvoices@southhamco.com](mailto:scsinvoices@southhamco.com)  
 Company Name:  
 Address:  
 Pace Quote: [betsy.mcdaniel@pacelabs.com](mailto:betsy.mcdaniel@pacelabs.com)  
 Pace Project Manager:  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

**Regulatory Agency:**  
**State / Location:** GA

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analytes Test	Requested Analysis Filtered (Y/N)				Residual Chlorine (Y/N)
			START DATE	END DATE					Fluoride by 300.0	App. IV Metals	Radium 226/228	Metals (As, B, Co, Mo)	
1	Drinking Water	DW	3/14/19 16:00	3/14/19 16:11	17.4	1	H2SO4 Unpreserved	Y	Y	Y	Y	Y	2
2	Water	WT					HCl						
3	Waste Water	WW					HNO3						
4	Product	P					Na2S2O3						
5	Soil/Solid	SL					NaOH						
6	Oil	OL					Methanol						
7	Wipe	WP					Other						
8	Air	AR											
9	Other	OT											
10	Tissue	TS											

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

HGWC-14

PRINT  
 03/14/19

ADDITIONAL COMMENTS	REQUIRED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	AAA / Geo	3/14/19	18:40	Media Monitor / Geo	3/14/19	18:40	Received on (Y/N)
	Media Monitor / Geo	3/14/19	20:26	GeoSyntec / Geosyntec	3/14/19	20:26	Custody (Y/N)
	GeoSyntec / Geosyntec	3/15/19	11:29	M. RAKHMAN	3/15/19	11:29	Sealed (Y/N)
	Denise Walker / PACE	3/15/19	13:00	Denise Walker / PACE	3/15/19	13:00	Cooler (Y/N)
							Temp in C

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER:  
 SIGNATURE of SAMPLER:  
 DATE Signed: 3/14/19



Sample Condition Upon Receipt

WO#: 2616162

Client Name: GA Power - CCR

PM: BM

Due Date: 03/22/19

CLIENT: GA Power-CCR

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other Courier

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 083 Type of Ice: Wet Blue None  Samples on ice, cooling process has begun

Cooler Temperature 4.5°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 3/15/19 JW

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

Client Notification/ Resolution: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Field Data Required? Y / N

Person Contacted: \_\_\_\_\_

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)

April 02, 2019

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

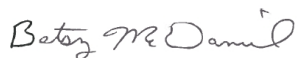
RE: Project: Plant Hammond  
Pace Project No.: 2616170

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 15, 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.: 2616170

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### 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  
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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616170

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616170001	HGWC-15	Water	03/14/19 09:58	03/15/19 13:00
2616170002	FD-2	Water	03/14/19 00:00	03/15/19 13:00
2616170003	HGWC-18	Water	03/14/19 14:53	03/15/19 13:00
2616170004	MW-23D	Water	03/14/19 16:42	03/15/19 13:00
2616170005	HGWC-14	Water	03/14/19 16:41	03/15/19 13:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616170

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616170001	HGWC-15	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2616170002	FD-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2616170003	HGWC-18	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
2616170004	MW-23D	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616170005	HGWC-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

**Sample: HGWC-15**      **Lab ID: 2616170001**      Collected: 03/14/19 09:58      Received: 03/15/19 13:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.228 ± 0.111 (0.167)</b> C:97% T:NA	pCi/L	03/26/19 21:15	13982-63-3	
Radium-228	EPA 9320	<b>0.234 ± 0.670 (1.49)</b> C:75% T:84%	pCi/L	03/27/19 19:43	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.462 ± 0.781 (1.66)</b>	pCi/L	03/28/19 15:44	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

**Sample: FD-2**      **Lab ID: 2616170002**      Collected: 03/14/19 00:00      Received: 03/15/19 13:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.151 ± 0.107 (0.183)</b> C:93% T:NA	pCi/L	03/26/19 21:15	13982-63-3	
Radium-228	EPA 9320	<b>0.743 ± 0.749 (1.56)</b> C:71% T:83%	pCi/L	03/27/19 19:43	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.894 ± 0.856 (1.74)</b>	pCi/L	03/28/19 15:44	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

**Sample: HGWC-18**      **Lab ID: 2616170003**      Collected: 03/14/19 14:53      Received: 03/15/19 13:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.35 ± 0.284 (0.199)</b> <b>C:92% T:NA</b>	pCi/L	03/26/19 18:06	13982-63-3	
Radium-228	EPA 9320	<b>0.0195 ± 0.711 (1.62)</b> <b>C:75% T:87%</b>	pCi/L	03/27/19 19:43	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.37 ± 0.995 (1.82)</b>	pCi/L	03/28/19 15:44	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

**Sample: MW-23D**      **Lab ID: 2616170004**      Collected: 03/14/19 16:42      Received: 03/15/19 13:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.328 ± 0.145 (0.217)</b> C:92% T:NA	pCi/L	03/26/19 20:59	13982-63-3	
Radium-228	EPA 9320	<b>0.544 ± 0.358 (0.673)</b> C:72% T:85%	pCi/L	03/29/19 11:27	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.872 ± 0.503 (0.890)</b>	pCi/L	04/02/19 13:32	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

**Sample: HGWC-14**      **Lab ID: 2616170005**      Collected: 03/14/19 16:41      Received: 03/15/19 13:00      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.759 ± 0.189 (0.170)</b> C:93% T:NA	pCi/L	03/26/19 20:58	13982-63-3	
Radium-228	EPA 9320	<b>0.742 ± 0.410 (0.742)</b> C:74% T:85%	pCi/L	03/29/19 11:27	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.50 ± 0.599 (0.912)</b>	pCi/L	04/02/19 13:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

---

QC Batch:	334699	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2616170001, 2616170002, 2616170003		

---

METHOD BLANK:	1628719	Matrix:	Water
Associated Lab Samples:	2616170001, 2616170002, 2616170003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.248 ± 0.200 (0.320) C:97% T:NA	pCi/L	03/27/19 09:28	

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

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

QC Batch: 334703

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616170004, 2616170005

METHOD BLANK: 1628726

Matrix: Water

Associated Lab Samples: 2616170004, 2616170005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.496 ± 0.336 (0.636) C:77% T:84%	pCi/L	03/29/19 11:27	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

---

QC Batch:	334690	Analysis Method:	EPA 9320
QC Batch Method:	EPA 9320	Analysis Description:	9320 Radium 228
Associated Lab Samples:	2616170001, 2616170002, 2616170003		

---

METHOD BLANK:	1628696	Matrix:	Water
Associated Lab Samples:	2616170001, 2616170002, 2616170003		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.646 ± 0.338 (0.565) C:74% T:86%	pCi/L	03/27/19 16:14	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616170

QC Batch: 334701

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616170004, 2616170005

METHOD BLANK: 1628722

Matrix: Water

Associated Lab Samples: 2616170004, 2616170005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.219 (0.286) C:97% T:NA	pCi/L	03/27/19 08:17	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond  
Pace Project No.: 2616170

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### 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.: 2616170

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616170001	HGWC-15	EPA 9315	334699		
2616170002	FD-2	EPA 9315	334699		
2616170003	HGWC-18	EPA 9315	334699		
2616170004	MW-23D	EPA 9315	334701		
2616170005	HGWC-14	EPA 9315	334701		
2616170001	HGWC-15	EPA 9320	334690		
2616170002	FD-2	EPA 9320	334690		
2616170003	HGWC-18	EPA 9320	334690		
2616170004	MW-23D	EPA 9320	334703		
2616170005	HGWC-14	EPA 9320	334703		
2616170001	HGWC-15	Total Radium Calculation	335993		
2616170002	FD-2	Total Radium Calculation	335993		
2616170003	HGWC-18	Total Radium Calculation	335993		
2616170004	MW-23D	Total Radium Calculation	336606		
2616170005	HGWC-14	Total Radium Calculation	336606		

### REPORT OF LABORATORY ANALYSIS

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**CHAIN-OF-CUSTODY**  
The Chain-of-Custody is a LEG/

WO#: 2616170



Set of

Page: 1 of 2

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

**Section B**  
 Required Project Information:  
 Report To: Jody Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SC-S10348506  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
 Invoice Info:  
 Attention: Sr  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

Regulatory Agency: GA  
 State / Location: GA

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	Preservatives	Analytes Test Y/N	Requested Analysis Filtered (Y/N)				TEMP in C	Received on	Ice (Y/N)	Custody	Sealed Cooler (Y/N)	Samples Intact (Y/N)
			START DATE	END DATE			START TIME	END TIME				Fluoride by 300.0	App. IV Metals	Radium 226/228	Metals (As, B, Co, Mo)						
1	Drinking Water	DW	02/14/14	02/14/14	G	WTG	18:49	19:49	4	HNO3	Y	Y	Y	Y	1						
2	Water	WT	02/14/14	02/14/14	G	WTG	19:31	19:31	4	HNO3	Y	Y	Y	Y	2						
3	Waste Water Product	WW	02/14/14	02/14/14	G	WTG	16:58	16:58	4	HNO3	Y	Y	Y	Y	3						
4	Wipe	WP	02/14/14	02/14/14	G	WTG	16:58	16:58	4	HNO3	Y	Y	Y	Y	4						
5	Air	AR																			
6	Other	OT																			
7	Tissue	TS																			

**ADDITIONAL COMMENTS:**  
 Grant Walker / Georgia Power  
 Northern of water to Georgia Power  
 3/15/19 1129  
 M. RAHMAN  
 Jenifer Walker PACE  
 3/15/19 1300

**REQUISITIONED BY / AFFILIATION:** Grant Walker / Georgia Power  
**DATE:** 3/14/19 12:48  
**ACCEPTED BY / AFFILIATION:** M. RAHMAN  
**DATE:** 3/15/19 11:29

**SAMPLER NAME AND SIGNATURE:** Grant Walker  
**PRINT Name of SAMPLER:** Grant Walker  
**SIGNATURE of SAMPLER:** Grant Walker  
**DATE Signed:** 03/14/19



WO#: 2616170

CHAIN-OF-CUSTODY  
The Chain-of-Custody is a LE

PM: 8M Due Date: 04/12/19  
CLIENT: GAPower-CCR

Set 01

Page: 2 of 2

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

**Section B**  
 Required Project Information:  
 Report To: Jolu Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS 0348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
 Invoice Info:  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@paceelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

ITEM #	MATRIX	MATRIX CODE (see valid codes to left)	COLLECTED		DATE	TIME	DATE	TIME	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP °C	Ice Received on	(Y/N)	Sealed Custody (Y/N)	Cooler (Y/N)	Samples (N)	
			START	END																	DATE
1	DW	DW	3/14/19	16:00	3/14/19	16:41	17:41	1	3	3/14/19	18:40	3/14/19	18:40	18:40							
2	WT	WT																			
3	WP	WP																			
4	SL	SL																			
5	OL	OL																			
6	WP	WP																			
7	AR	AR																			
8	OT	OT																			
9	TS	TS																			
10																					
11																					
12																					

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

HGWC-14

Requested/Analyte Filtered (Y/N)

App. IV Metals Y

Fluoride by 300.0 Y

Reduct. 226/228 Y

Metals (As, B, Co, Mo) Y

Sulfate by 300.0 Y

Residual Chlorine (Y/N) 2

Preservatives

Unpreserved

H2SO4

HNO3

HCl

NaOH

Na2SO3

Methanol

Other

Analyses Test Y

RELINQUISHED BY / AFFILIATION

MAMA / Geo

3/14/19 18:40

3/14/19 20:26

3/15/19 11:29

3/15/19 13:00

ACCEPTED BY / AFFILIATION

Marla Mufson / Geo

3/14/19 18:40

3/14/19 20:26

3/15/19 11:29

3/15/19 13:00

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: MAMA

SIGNATURE of SAMPLER: [Signature]

DATE Signed: 3/14/19



Sample Condition Upon Receipt

WO#: 2616170

Client Name: GA Power - CCR

PM: BM Due Date: 04/12/19
CLIENT: GAPower-CCR

Courier: Fed Ex UPS USPS Client Commercial Pace Other Courier

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

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used 083 Type of Ice: Wet Blue None

Cooler Temperature 4.5 C Temp should be above freezing to 6 C

Biological Tissue is Frozen: Yes No Samples on ice, cooling process has begun

Date and Initials of person examining contents: 3/15/19 JW

Table with 16 rows and 3 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: Person Contacted: Date/Time: Comments/ Resolution: Field Data Required? Y / N

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 26, 2019

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

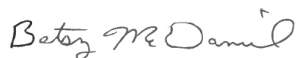
RE: Project: Plant Hammond  
Pace Project No.: 2616228

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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.: 2616228

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### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616228

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616228001	MW-22	Water	03/15/19 08:56	03/18/19 12:00
2616228002	HGWC-16	Water	03/15/19 13:52	03/18/19 12:00
2616228003	MW-21D	Water	03/15/19 11:56	03/18/19 12:00
2616228004	HGWC-17	Water	03/15/19 13:00	03/18/19 12:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616228

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616228001	MW-22	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616228002	HGWC-16	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616228003	MW-21D	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1
2616228004	HGWC-17	EPA 6020B	CSW	12
		EPA 7470A	DRB	1
		EPA 300.0	RLC	1

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616228

Sample: MW-22		Lab ID: 2616228001		Collected: 03/15/19 08:56		Received: 03/18/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00078	1	03/20/19 14:34	03/21/19 22:52	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00057	1	03/20/19 14:34	03/21/19 22:52	7440-38-2		
Barium	<b>0.044</b>	mg/L	0.010	0.00078	1	03/20/19 14:34	03/21/19 22:52	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	03/20/19 14:34	03/21/19 22:52	7440-41-7		
Cadmium	<b>0.00082J</b>	mg/L	0.0010	0.000093	1	03/20/19 14:34	03/21/19 22:52	7440-43-9		
Chromium	ND	mg/L	0.010	0.0016	1	03/20/19 14:34	03/21/19 22:52	7440-47-3		
Cobalt	<b>0.028</b>	mg/L	0.010	0.00052	1	03/20/19 14:34	03/21/19 22:52	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	03/20/19 14:34	03/21/19 22:52	7439-92-1		
Lithium	<b>0.0020J</b>	mg/L	0.050	0.00097	1	03/20/19 14:34	03/21/19 22:52	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	03/20/19 14:34	03/21/19 22:52	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	03/20/19 14:34	03/21/19 22:52	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	03/20/19 14:34	03/21/19 22:52	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.000036	1	03/25/19 08:02	03/25/19 12:56	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		03/24/19 16:04	16984-48-8		

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616228

Sample: HGWC-16		Lab ID: 2616228002		Collected: 03/15/19 13:52		Received: 03/18/19 12:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/20/19 14:34	03/21/19 22:58	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/20/19 14:34	03/21/19 22:58	7440-38-2	
Barium	<b>0.13</b>	mg/L	0.010	0.00078	1	03/20/19 14:34	03/21/19 22:58	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/20/19 14:34	03/21/19 22:58	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/20/19 14:34	03/21/19 22:58	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/20/19 14:34	03/21/19 22:58	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/20/19 14:34	03/21/19 22:58	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/20/19 14:34	03/21/19 22:58	7439-92-1	
Lithium	<b>0.0041J</b>	mg/L	0.050	0.00097	1	03/20/19 14:34	03/21/19 22:58	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/20/19 14:34	03/21/19 22:58	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/20/19 14:34	03/21/19 22:58	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/20/19 14:34	03/21/19 22:58	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/25/19 08:02	03/25/19 13:51	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/24/19 16:27	16984-48-8	

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616228

Sample: MW-21D		Lab ID: 2616228003		Collected: 03/15/19 11:56		Received: 03/18/19 12:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/20/19 14:34	03/21/19 23:04	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/20/19 14:34	03/21/19 23:04	7440-38-2	
Barium	<b>0.090</b>	mg/L	0.010	0.00078	1	03/20/19 14:34	03/21/19 23:04	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/20/19 14:34	03/21/19 23:04	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/20/19 14:34	03/21/19 23:04	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/20/19 14:34	03/21/19 23:04	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	03/20/19 14:34	03/21/19 23:04	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/20/19 14:34	03/21/19 23:04	7439-92-1	
Lithium	<b>0.025J</b>	mg/L	0.050	0.00097	1	03/20/19 14:34	03/21/19 23:04	7439-93-2	
Molybdenum	<b>0.045</b>	mg/L	0.010	0.0019	1	03/20/19 14:34	03/21/19 23:04	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/20/19 14:34	03/21/19 23:04	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/20/19 14:34	03/21/19 23:04	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/25/19 08:02	03/25/19 13:53	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/24/19 16:50	16984-48-8	

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616228

Sample: HGWC-17		Lab ID: 2616228004		Collected: 03/15/19 13:00		Received: 03/18/19 12:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	03/20/19 14:34	03/21/19 23:09	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	03/20/19 14:34	03/21/19 23:09	7440-38-2	
Barium	<b>0.029</b>	mg/L	0.010	0.00078	1	03/20/19 14:34	03/21/19 23:09	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	03/20/19 14:34	03/21/19 23:09	7440-41-7	
Cadmium	ND	mg/L	0.0010	0.000093	1	03/20/19 14:34	03/21/19 23:09	7440-43-9	
Chromium	ND	mg/L	0.010	0.0016	1	03/20/19 14:34	03/21/19 23:09	7440-47-3	
Cobalt	<b>0.017</b>	mg/L	0.010	0.00052	1	03/20/19 14:34	03/21/19 23:09	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	03/20/19 14:34	03/21/19 23:09	7439-92-1	
Lithium	<b>0.0011J</b>	mg/L	0.050	0.00097	1	03/20/19 14:34	03/21/19 23:09	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	03/20/19 14:34	03/21/19 23:09	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	03/20/19 14:34	03/21/19 23:09	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	03/20/19 14:34	03/21/19 23:09	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	mg/L	0.00050	0.000036	1	03/25/19 08:02	03/25/19 13:56	7439-97-6	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Fluoride	ND	mg/L	0.30	0.029	1		03/24/19 17:12	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616228

QC Batch: 24983

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

METHOD BLANK: 112752

Matrix: Water

Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000036	03/25/19 12:52	

LABORATORY CONTROL SAMPLE: 112753

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 112754

112755

Parameter	Units	2616228001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0024	92	95	75-125	3	20	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616228

QC Batch: 24707 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

METHOD BLANK: 111121 Matrix: Water  
Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/21/19 19:09	
Arsenic	mg/L	ND	0.0050	0.00057	03/21/19 19:09	
Barium	mg/L	ND	0.010	0.00078	03/21/19 19:09	
Beryllium	mg/L	ND	0.0030	0.000050	03/21/19 19:09	
Cadmium	mg/L	ND	0.0010	0.000093	03/21/19 19:09	
Chromium	mg/L	ND	0.010	0.0016	03/21/19 19:09	
Cobalt	mg/L	ND	0.010	0.00052	03/21/19 19:09	
Lead	mg/L	ND	0.0050	0.00027	03/21/19 19:09	
Lithium	mg/L	ND	0.050	0.00097	03/21/19 19:09	
Molybdenum	mg/L	ND	0.010	0.0019	03/21/19 19:09	
Selenium	mg/L	ND	0.010	0.0014	03/21/19 19:09	
Thallium	mg/L	ND	0.0010	0.00014	03/21/19 19:09	

LABORATORY CONTROL SAMPLE: 111122

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	104	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Cadmium	mg/L	0.1	0.10	105	80-120	
Chromium	mg/L	0.1	0.11	106	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	101	80-120	
Molybdenum	mg/L	0.1	0.11	108	80-120	
Selenium	mg/L	0.1	0.10	105	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 111123 111124

Parameter	Units	2616193001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	107	106	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	103	105	75-125	2	20	
Barium	mg/L	0.028	0.1	0.1	0.13	0.13	101	100	75-125	1	20	
Beryllium	mg/L	ND	0.1	0.1	0.10	0.098	100	98	75-125	2	20	
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616228

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 111123		111124		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		2616193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	1	20	
Cobalt	mg/L	ND	0.1	0.1	0.098	0.096	97	96	75-125	1	20	
Lead	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20	
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20	
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	107	105	75-125	1	20	
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	105	103	75-125	2	20	
Thallium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616228

QC Batch: 24985

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

METHOD BLANK: 112760

Matrix: Water

Associated Lab Samples: 2616228001, 2616228002, 2616228003, 2616228004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	03/24/19 14:11	

LABORATORY CONTROL SAMPLE: 112761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 112762 112763

Parameter	Units	2616191001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	10	10	9.0	9.5	90	95	90-110	5	15	

MATRIX SPIKE SAMPLE: 112764

Parameter	Units	2616228001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	10	10.3	103	90-110	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616228

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### 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  
Pace Project No.: 2616228

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616228001	MW-22	EPA 3005A	24707	EPA 6020B	24750
2616228002	HGWC-16	EPA 3005A	24707	EPA 6020B	24750
2616228003	MW-21D	EPA 3005A	24707	EPA 6020B	24750
2616228004	HGWC-17	EPA 3005A	24707	EPA 6020B	24750
2616228001	MW-22	EPA 7470A	24983	EPA 7470A	25042
2616228002	HGWC-16	EPA 7470A	24983	EPA 7470A	25042
2616228003	MW-21D	EPA 7470A	24983	EPA 7470A	25042
2616228004	HGWC-17	EPA 7470A	24983	EPA 7470A	25042
2616228001	MW-22	EPA 300.0	24985		
2616228002	HGWC-16	EPA 300.0	24985		
2616228003	MW-21D	EPA 300.0	24985		
2616228004	HGWC-17	EPA 300.0	24985		

### 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.

Page: 1 Of 3

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2490 Marner Road  
 Atlanta, GA 30339  
 Email: jbraham@souththermo.com  
 Phone: (404)506-7239  
 Requested Due Date: **Standard TAT**

**Section B**  
**Required Project Information:**  
 Report To: Joji Abraham / Lauren Peity  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: SCSInvoices@souththermo.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: beisy.mcdaniel@pacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huf)

Respiratory Agency:  
 State / Location: GA

ITEM #	MATRIX	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	# OF CONTAINERS	PRESERVATIVES						ANALYSES TEST	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo) Sulfate by 300.0	Residual Chlorine (Y/N)	
			START DATE	END DATE			H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol						Other
1	Drinking Water	DW	3/15/19 0835	3/18/19 0856	17	4	Unpreserved											
2	Waste Water	WW	3/17/19 1341	3/17/19 1352	10	4	Unpreserved											
3	Waste Water	WW																
4	Product	P																
5	Solid	SL																
6	Oil	OL																
7	Wipe	WP																
8	Air	AR																
9	Other	OT																
10	Tissue	TS																

**ADDITIONAL COMMENTS:**

**RELINQUISHED BY / AFFILIATION:** Grant Walter / Geosyntec 03/18/19 1455  
 Melia McPherson / Geosyntec 3/18/19 1026

**ACCEPTED BY / AFFILIATION:** Grant Walter / Geosyntec 3/18/19 1455  
 Melia McPherson / Geosyntec 3/18/19 1026

**DATE SIGNED:** 03/15/19

**DATE SIGNED:** 03/15/19

**TEMP in C:** 4.2

**Received on:** 3/18/19

**Custody (Y/N):** Y

**Sealed (Y/N):** Y

**Cooler (Y/N):** Y

**Samples (Y/N):** Y

**Inlet (Y/N):** Y

NO#: 2616228

2616228



# 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:	Johi Abraham / Lauren Petty	Attention:	SCSinvoices@southernco.com
Address:	2480 Mener Road Atlanta, GA 30339	Copy To:	Geosyntec	Company Name:	
Email:	jabraham@southernco.com	Purchase Order #:	SCS10348606	Address:	
Phone:	(404)506-7239 Fax:	Project Name:	Plant Hammond	Pace Project Manager:	betsy.moran@paceco.com
Requested Due Date:	Standard TAT	Project #:		Pace Profile #:	327.4 (AP) or 328.5 (Huff)

Page: 2 of 3

ITEM #	MATRIX	MATRIX CODE	COLLECTED		# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST	REQUESTED ANALYSES (Y/N)				Residual Chlorine (Y/N)
			START DATE	END DATE				Fluoride by 300.0	App. IV Metals	Radium 226/228	Metals (As, B, Co, Mo)	
1	MW	21D	3/15/19 11:35	3/15/19 11:56	12	Unpreserved	Y	Y	Y	Y	Y	N
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

NO#: 2616228

PN: BN Due Date: 03/25/19  
CLIENT: GAPower-CCR

RECEIVED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
BOB TUCKER	03/15/19	14:55	Abelia	3/15/19	14:55	
Abelia	3/18/19	10:26	BOB TUCKER	3/18/19	10:26	
MOHAMMAD	3/18/19	12:00	MOHAMMAD	3/18/19	12:00	

DATE SIGNED: 03/15/19  
SIGNATURE OF SAMPLER: BOB TUCKER  
PRINT NAME OF SAMPLER: BOB TUCKER



# 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 Marner Road  
 Atlanta, GA 30339  
 Email: jabraham@southemco.com  
 Phone: (404)508-7239  
 Requested Due Date: Standard TAT

**Required Project Information:**  
 Report To: Jolu Abraham / Lauren Peaty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Invoice Information:**  
 Attention: scsinvoices@southemco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: belsy.medina@opacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

**Regulatory Agency:**  
 State / Location: GA

ITEMS #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	DATE	TIME	# OF CONTAINERS	Preservatives	Analytes Test	App. IV Metals	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo)	Sulfate by 300.0	Residual Chlorine (Y/N)	Requested Analysis Filtered (Y/N)
			START	END														
1	DW	G	3/15/19	3/15/19	10:26	10:26	10:26	10:26	3	H2SO4 HNO3 HCl NaOH Na2SO3 Methanol Other	Y	Y	Y	Y	Y	Y	Y	Y
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

**ADDITIONAL COMMENTS:**  
 Maria M... 3/18/19 10:26  
 Pascal Raymond  
 M. Galman 3/18/19 12:00  
 428 9 7

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

**ACCEPTED BY / AFFILIATION:**  
 DATE: 3/15/19 TIME: 10:26  
 DATE: 3/18/19 TIME: 12:00

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: Nodia Muskus  
 SIGNATURE of SAMPLER: Nodia Muskus

**DATE Signed:** 3/15/19

WO#: 2616228

PM: 8M Due Date: 03/25/19  
 CLIENT: GAPower-CCR



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616228**

PM: **BM** Due Date: **03/25/19**  
CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 4.2 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 3/18/19 m

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: The collection time for Hg<sub>total</sub>-17 was not listed on the COC and was taken from the container labels as 13:00.

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)



April 10, 2019

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

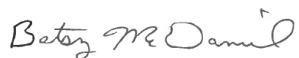
RE: Project: Plant Hammond  
Pace Project No.: 2616229

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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.: 2616229

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### 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  
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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond  
Pace Project No.: 2616229

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616229001	MW-22	Water	03/15/19 08:56	03/18/19 12:00
2616229002	HGWC-16	Water	03/15/19 13:52	03/18/19 12:00
2616229003	MW-21D	Water	03/15/19 11:56	03/18/19 12:00
2616229004	HGWC-17	Water	03/15/19 13:00	03/18/19 12:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616229

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616229001	MW-22	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616229002	HGWC-16	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616229003	MW-21D	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616229004	HGWC-17	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616229

**Sample: MW-22**      **Lab ID: 2616229001**      Collected: 03/15/19 08:56      Received: 03/18/19 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	<b>0.335 ± 0.129 (0.167)</b> C:95% T:NA	pCi/L	03/26/19 18:07	13982-63-3	
Radium-228	EPA 9320	<b>0.642 ± 0.404 (0.757)</b> C:70% T:85%	pCi/L	03/29/19 14:36	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.977 ± 0.533 (0.924)</b>	pCi/L	04/02/19 13:34	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616229

**Sample: HGWC-16**      **Lab ID: 2616229002**      Collected: 03/15/19 13:52      Received: 03/18/19 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	<b>0.401 ± 0.295 (0.524)</b> C:97% T:NA	pCi/L	03/27/19 08:02	13982-63-3	
Radium-228	EPA 9320	<b>0.190 ± 0.265 (0.565)</b> C:73% T:84%	pCi/L	03/29/19 14:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.591 ± 0.560 (1.09)</b>	pCi/L	04/02/19 13:34	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616229

**Sample: MW-21D**      **Lab ID: 2616229003**      Collected: 03/15/19 11:56      Received: 03/18/19 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	<b>0.320 ± 0.278 (0.516)</b> <b>C:88% T:NA</b>	pCi/L	03/27/19 08:02	13982-63-3	
Radium-228	EPA 9320	<b>0.652 ± 0.349 (0.612)</b> <b>C:73% T:87%</b>	pCi/L	03/29/19 14:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.972 ± 0.627 (1.13)</b>	pCi/L	04/02/19 13:34	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616229

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**Sample: HGWC-17**                      **Lab ID: 2616229004**      Collected: 03/15/19 13:00      Received: 03/18/19 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	<b>0.358 ± 0.295 (0.549)</b> C:91% T:NA	pCi/L	03/27/19 08:02	13982-63-3	
Radium-228	EPA 9320	<b>0.559 ± 0.348 (0.631)</b> C:71% T:79%	pCi/L	03/29/19 14:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.917 ± 0.643 (1.18)</b>	pCi/L	04/02/19 13:34	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616229

QC Batch: 334703

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616229001, 2616229002, 2616229003, 2616229004

METHOD BLANK: 1628726

Matrix: Water

Associated Lab Samples: 2616229001, 2616229002, 2616229003, 2616229004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.496 ± 0.336 (0.636) C:77% T:84%	pCi/L	03/29/19 11:27	

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

Pace Project No.: 2616229

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QC Batch:	334701	Analysis Method:	EPA 9315
QC Batch Method:	EPA 9315	Analysis Description:	9315 Total Radium
Associated Lab Samples:	2616229001, 2616229002, 2616229003, 2616229004		

---

METHOD BLANK:	1628722	Matrix:	Water
Associated Lab Samples:	2616229001, 2616229002, 2616229003, 2616229004		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.219 (0.286) C:97% T:NA	pCi/L	03/27/19 08:17	

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

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616229

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### 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.: 2616229

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616229001	MW-22	EPA 9315	334701		
2616229002	HGWC-16	EPA 9315	334701		
2616229003	MW-21D	EPA 9315	334701		
2616229004	HGWC-17	EPA 9315	334701		
2616229001	MW-22	EPA 9320	334703		
2616229002	HGWC-16	EPA 9320	334703		
2616229003	MW-21D	EPA 9320	334703		
2616229004	HGWC-17	EPA 9320	334703		
2616229001	MW-22	Total Radium Calculation	336613		
2616229002	HGWC-16	Total Radium Calculation	336613		
2616229003	MW-21D	Total Radium Calculation	336613		
2616229004	HGWC-17	Total Radium Calculation	336613		

### 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 | Fax: [ ]  
 Requested Due Date: **Standard RAT**

**Required Project Information:**  
 Report To: Joji Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Invoice Information:**  
 Attention: SCSInvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote: beisy.mccanell@paceolabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

Regulatory Agency: GA  
 State/Location: GA

### Section B

ITEM #	MATRIX	COODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLER NAME AND SIGNATURE		DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLER COMMENTS
			START	END			PRINT Name of SAMPLER	SIGNATURE of SAMPLER						
1	Drinking Water	DW	3/15/19 0835	3/15/19 0856	WG	WG	Grant Walter	Geosyntec	3/15/19	1455	Melicia Abraham/Geosyntec	3/15/19	1455	
2	Water	WT	3/15/19 1341	3/15/19 1352	WG	WG	Melicia Abraham/Geosyntec	Geosyntec	3/15/19	1026	Grant Walter	3/18/19	4:20	
3	Waste Water	WW												
4	Product	P												
5	Semi-solid	SL												
6	Oil	OL												
7	Wipe	WP												
8	Air	AR												
9	Other	OT												
10	Tissue	TS												

ITEM #	MATRIX	COODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLER NAME AND SIGNATURE		DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLER COMMENTS
			START	END			PRINT Name of SAMPLER	SIGNATURE of SAMPLER						
11	Drinking Water	DW												
12	Water	WT												

**Requested Analysis:** Filtered (Y/N)   
 App. IV Metals Y Y Y  
 Fluoride by 300.0 Y Y Y  
 Radium 226/228 Y Y Y  
 Metals (As, B, Co, Mo) Sulfate by 300.0  
 Residual Chlorine (Y/N) 22

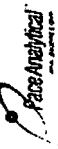
**Preservatives:** HCl, HNO3, H2SO4, Unpreserved, NaOH, Na2S2O3, Methanol, Other

**Additional Comments:**  
 MW-22  
 HGWC-16  
 (see) DEF 15/19

**Barcode:** 2616229  
**NO#:** 2616229

**TEMP in C:** [ ]  
**Received on:** 3/18/19 4:20  
**Ice (Y/N):** Y  
**Custody (Y/N):** Y  
**Cooler (Y/N):** Y  
**Samples Intact (Y/N):** Y

**DATE SIGNED:** 03/15/19  
**SIGNATURE:** Grant Walter



# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manser Road  
 Atlanta, GA 30339  
 Email: [abraham@southernmco.com](mailto:abraham@southernmco.com)  
 Phone: (404) 506-7239  
 Requested Due Date: **Standard TAT**

**Section B**  
**Required Project Information:**  
 Report To: Jiju Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10346806  
 Project Name: Plant Hammond  
 Project #: **Standard TAT**

**Section C**  
**Invoice Information:**  
 Attention: [scsinvoices@southernmco.com](mailto:scsinvoices@southernmco.com)  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: [boisyy.morand@pacelabs.com](mailto:boisyy.morand@pacelabs.com)  
 Pace Profile #: 327.4 (AP) or 328.5 (Huff)

Regulatory Agency: **GA**  
 State Abbreviation: **GA**

ITEM #	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	Preservatives	Analytical Test	Requested Analysis Filled (Y/N)	TEMP in C	Received on	Custody	Sailed	Cooler	Samples
		START	END			DATE	TIME										
1	MW-21D	3/15/19	11:35	3	3	3/15/19	11:56	3	H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other	App. IV Metals Fluoride by 300.0 Radium 226/228 Metals (As, B, Co, Mo) Sulfate by 300.0	Y	4.2	3/15/19	Y			
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

MO#: 2616229

PH: BM Due Date: 04/15/19  
CLIENT: GAPover-CCR

ADDITIONAL COMMENTS	REQUISITIONED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE COMMENTS
	BOB TUCKER	03/15/19	14:55	Malina	3/15/19	14:55	
	Malina	3/18/19	10:26	BOB TUCKER	3/18/19	10:26	
				Malina	3/18/19	12:00	

SAMPLER NAME AND SIGNATURE: **BOB TUCKER**  
 PRINT Name of SAMPLER: **BOB TUCKER**  
 SIGNATURE of SAMPLER: **[Signature]**  
 DATE Signed: **03/15/19**

# CHAIN-OF-CUSTODY / Analytical Request Document

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

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

**Section B**  
 Required Project Information:  
 Report To: Jolu Abraham / Lauren Petty  
 Copy To: Geosyntec  
 Purchase Order #: SCS10346006  
 Project Name: Plant Hammond

**Section C**  
 Invoice Information:  
 Attention: SCSinvoices@southernco.com  
 Company Name:  
 Address:  
 P.O. Box:  
 Project Manager: bely.mcdaniel@pccelabs.com  
 P.O. Profile #: 327.4 (AP) or 328.5 (HUM)  
 State: GA

ITEM #	MATRIX	MATRIX CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analytes Test	Requested Analytes	Fluoride (Y/N)	Metals (As, B, Co, Mo)	Radium 226/228	Furide by 300.0	App. IV Metals	Sulfate by 300.0	Residual Chrome (Y/N)
			START DATE	END DATE													
1	Drinking Water	DW	3/15/19	3/15/19	WT G	1026	Unpreserved	Y Y Y									
2	Waste Water	WW															
3	Waste Water Product	WP															
4	Soil/Sediment	SL															
5	Oil	OL															
6	Wipe	WP															
7	Air	AR															
8	Other	OT															
9	Tissue	TS															
10																	
11																	
12																	

NO#: 2616229

PM: BM Due Date: 04/15/19  
 CLIENT: GAPover-CCR

RECEIVED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP IN C	Received on	Is	Custody	Sealed	Cooler	Samples Intact
Noelia Muskus / Geosyntec	3/18/19	10:26	Noelia Muskus / Geosyntec	3/18/19	10:26							
Noelia Muskus / Geosyntec	3/18/19	12:00	Noelia Muskus / Geosyntec	3/18/19	12:00							

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Noelia Muskus  
 SIGNATURE of SAMPLER: Noelia Muskus  
 DATE Signed: 3/15/19



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

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

WO#: **2616229**

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

PM: **BM** Due Date: **04/15/19**  
CLIENT: **GAPower-CCR**

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 3/18/19 ml

Cooler Temperature 4.2 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: The collection time box H610X-17 was not listed on the COC and was taken from the container labels as 13:00.

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 25, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2616230

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Eben Buchanan 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.: 2616230

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### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616230

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616230001	FB-02	Water	03/15/19 14:50	03/18/19 12:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616230

---

<b>Lab ID</b>	<b>Sample ID</b>	<b>Method</b>	<b>Analysts</b>	<b>Analytes Reported</b>
<b>2616230001</b>	<b>FB-02</b>	EPA 6020B	CSW	13
		EPA 7470A	DRB	1
		EPA 300.0	RLC	2

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616230

Sample: <b>FB-02</b>		Lab ID: <b>2616230001</b>		Collected: 03/15/19 14:50		Received: 03/18/19 12:00		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Antimony	ND	mg/L	0.0030	0.00078	1	03/20/19 14:34	03/21/19 23:21	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.00057	1	03/20/19 14:34	03/21/19 23:21	7440-38-2		
Barium	ND	mg/L	0.010	0.00078	1	03/20/19 14:34	03/21/19 23:21	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	03/20/19 14:34	03/21/19 23:21	7440-41-7		
Boron	<b>0.011J</b>	mg/L	0.040	0.0039	1	03/20/19 14:34	03/21/19 23:21	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000093	1	03/20/19 14:34	03/21/19 23:21	7440-43-9		
Chromium	ND	mg/L	0.010	0.0016	1	03/20/19 14:34	03/21/19 23:21	7440-47-3		
Cobalt	ND	mg/L	0.010	0.00052	1	03/20/19 14:34	03/21/19 23:21	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	03/20/19 14:34	03/21/19 23:21	7439-92-1		
Lithium	ND	mg/L	0.050	0.00097	1	03/20/19 14:34	03/21/19 23:21	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	03/20/19 14:34	03/21/19 23:21	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	03/20/19 14:34	03/21/19 23:21	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	03/20/19 14:34	03/21/19 23:21	7440-28-0		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00050	0.000036	1	03/25/19 08:02	03/25/19 13:58	7439-97-6		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Fluoride	ND	mg/L	0.30	0.029	1		03/24/19 17:35	16984-48-8		
Sulfate	ND	mg/L	1.0	0.017	1		03/24/19 17:35	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616230

QC Batch: 24983	Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A	Analysis Description: 7470 Mercury
Associated Lab Samples: 2616230001	

METHOD BLANK: 112752 Matrix: Water  
Associated Lab Samples: 2616230001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00050	0.000036	03/25/19 12:52	

LABORATORY CONTROL SAMPLE: 112753

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0023	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 112754 112755

Parameter	Units	112754		112755		% Rec	% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		2616228001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Mercury	mg/L	ND	0.0025	0.0025	0.0023	0.0024	92	95	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.: 2616230

QC Batch: 24707 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616230001

METHOD BLANK: 111121 Matrix: Water  
Associated Lab Samples: 2616230001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	03/21/19 19:09	
Arsenic	mg/L	ND	0.0050	0.00057	03/21/19 19:09	
Barium	mg/L	ND	0.010	0.00078	03/21/19 19:09	
Beryllium	mg/L	ND	0.0030	0.000050	03/21/19 19:09	
Boron	mg/L	ND	0.040	0.0039	03/21/19 19:09	
Cadmium	mg/L	ND	0.0010	0.000093	03/21/19 19:09	
Chromium	mg/L	ND	0.010	0.0016	03/21/19 19:09	
Cobalt	mg/L	ND	0.010	0.00052	03/21/19 19:09	
Lead	mg/L	ND	0.0050	0.00027	03/21/19 19:09	
Lithium	mg/L	ND	0.050	0.00097	03/21/19 19:09	
Molybdenum	mg/L	ND	0.010	0.0019	03/21/19 19:09	
Selenium	mg/L	ND	0.010	0.0014	03/21/19 19:09	
Thallium	mg/L	ND	0.0010	0.00014	03/21/19 19:09	

LABORATORY CONTROL SAMPLE: 111122

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	104	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.099	99	80-120	
Boron	mg/L	1	1.0	100	80-120	
Cadmium	mg/L	0.1	0.10	105	80-120	
Chromium	mg/L	0.1	0.11	106	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Lead	mg/L	0.1	0.10	101	80-120	
Lithium	mg/L	0.1	0.10	101	80-120	
Molybdenum	mg/L	0.1	0.11	108	80-120	
Selenium	mg/L	0.1	0.10	105	80-120	
Thallium	mg/L	0.1	0.10	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 111123 111124

Parameter	Units	2616193001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result						
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	107	106	75-125	2	20	
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	103	105	75-125	2	20	
Barium	mg/L	0.028	0.1	0.1	0.13	0.13	101	100	75-125	1	20	

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**QUALITY CONTROL DATA**

Project: Plant Hammond

Pace Project No.: 2616230

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 111123		111124		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Beryllium	mg/L	ND	0.1	0.1	0.10	0.098	100	98	75-125	2	20		
Boron	mg/L	0.0070J	1	1	0.96	0.99	95	98	75-125	3	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	102	103	75-125	1	20		
Chromium	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	1	20		
Cobalt	mg/L	ND	0.1	0.1	0.098	0.096	97	96	75-125	1	20		
Lead	mg/L	ND	0.1	0.1	0.099	0.099	99	99	75-125	0	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.11	107	105	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	105	103	75-125	2	20		
Thallium	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616230

QC Batch: 24985

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 2616230001

METHOD BLANK: 112760

Matrix: Water

Associated Lab Samples: 2616230001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.30	0.029	03/24/19 14:11	
Sulfate	mg/L	ND	1.0	0.017	03/24/19 14:11	

LABORATORY CONTROL SAMPLE: 112761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	10	9.9	99	90-110	
Sulfate	mg/L	10	9.4	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 112762

112763

Parameter	Units	2616191001 Result	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	% Rec	% Rec							
Fluoride	mg/L	ND	10	9.0	9.5	90	95	90-110	5	15				
Sulfate	mg/L	22.0	10	28.9	29.2	69	72	90-110	1	15	M1			

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616230

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### 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.: 2616230

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616230001	FB-02	EPA 3005A	24707	EPA 6020B	24750
2616230001	FB-02	EPA 7470A	24983	EPA 7470A	25042
2616230001	FB-02	EPA 300.0	24985		

### 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 Marner Road, Atlanta, GA 30339  
 Email: jabraham@southernco.com  
 Phone: (404)506-7239  
 Requested Due Date: **Send and TAT**

**Section B**

**Report To:** Joji Abraham / Lauren Petty  
**Copy To:** Geosyntec  
**Purchase Order #:** SCS10348806  
**Project Name:** Plant Hammond  
**Project #:**

**Section C**

**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name: [Blank]  
 Address: [Blank]  
 Pace Quote: [Blank]  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327.4 (AP) or 328.5 (Luff) GA

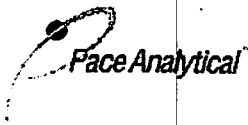
ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see void codes to left)	# OF CONTAINERS	PRESERVATIVES				ANALYSES TEST	Fluoride by 300.0	Radium 226/228	Metals (As, B, Co, Mo) Sulfate by 300.0	Residual Chlorine (Y/N)	
			START DATE TIME	END DATE TIME				H2SO4	HNO3	HCl	NaOH						Na2S2O3
1	Drinking Water	DW	9/18/19 1445	9/15/19 1400	MC		4	Unpreserved					Y	Y	Y	Y	
2	Water	WT															
3	Waste Water	WW															
4	Product	P															
5	Solid	SL															
6	Oil	OL															
7	Wipe	WP															
8	Air	AR															
9	Other	OT															
10	Tissue	TS															

**WQH: 2616230**

**2616230**

REQUISITIONED BY (AFFILIATION)	DATE	TIME	ACCEPTED BY (AFFILIATION)	DATE	TIME	SAMPLE CONDITIONS
Apelvia Muskus	9/18/19	1026	peacock	9/19	1026	
Maalman	9/18/19	1200				

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: **Noelia Muskus**  
 SIGNATURE of SAMPLER: *Noelia Muskus*  
 DATE Signed: **9/15/19**



Sample Condition Upon Receipt

Client Name: GIA Power

Project #

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 4.2 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

WO#: **2616230**

PM: BM

Due Date: 03/25/19

CLIENT: GAPower-CCR

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 3/18/19 [Signature]

Comments:

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

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)

April 10, 2019

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

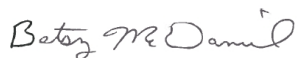
RE: Project: Plant Hammond  
Pace Project No.: 2616231

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



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.: 2616231

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### 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

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond  
Pace Project No.: 2616231

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616231001	FB-02	Water	03/15/19 14:50	03/18/19 12:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond  
Pace Project No.: 2616231

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616231001	FB-02	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616231

**Sample: FB-02**      **Lab ID: 2616231001**      Collected: 03/15/19 14:50      Received: 03/18/19 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	<b>0.285 ± 0.233 (0.397)</b> <b>C:91% T:NA</b>	pCi/L	03/27/19 08:15	13982-63-3	
Radium-228	EPA 9320	<b>0.313 ± 0.326 (0.671)</b> <b>C:70% T:84%</b>	pCi/L	03/29/19 14:37	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.598 ± 0.559 (1.07)</b>	pCi/L	04/02/19 13:34	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616231

QC Batch: 334703

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616231001

METHOD BLANK: 1628726

Matrix: Water

Associated Lab Samples: 2616231001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.496 ± 0.336 (0.636) C:77% T:84%	pCi/L	03/29/19 11:27	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616231

QC Batch: 334701

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616231001

METHOD BLANK: 1628722

Matrix: Water

Associated Lab Samples: 2616231001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.317 ± 0.219 (0.286) C:97% T:NA	pCi/L	03/27/19 08:17	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond  
Pace Project No.: 2616231

---

### 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.: 2616231

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616231001	FB-02	EPA 9315	334701		
2616231001	FB-02	EPA 9320	334703		
2616231001	FB-02	Total Radium Calculation	336613		

**REPORT OF LABORATORY ANALYSIS**

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Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616231**

PM: **BM** Due Date: **04/15/19**  
CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 4.2 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 3/18/19 mm

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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)



First Semiannual Sampling  
Event  
April 2019

April 09, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2616885

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 02, 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.: 2616885

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### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616885

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616885001	HGWA-3	Water	04/01/19 17:25	04/02/19 11:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616885

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616885001	HGWA-3	EPA 6020B	CSW	14
		SM 2540C	RLC	1
		EPA 300.0	RLC	3

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616885

Sample: HGWA-3		Lab ID: 2616885001		Collected: 04/01/19 17:25		Received: 04/02/19 11:30		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	04/05/19 14:47	04/08/19 18:46	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 14:47	04/08/19 18:46	7440-38-2	
Barium	<b>0.13</b>	mg/L	0.010	0.00078	1	04/05/19 14:47	04/08/19 18:46	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	04/05/19 14:47	04/08/19 18:46	7440-41-7	
Boron	<b>0.0066J</b>	mg/L	0.040	0.0039	1	04/05/19 14:47	04/08/19 18:46	7440-42-8	
Cadmium	ND	mg/L	0.0010	0.000093	1	04/05/19 14:47	04/08/19 18:46	7440-43-9	
Calcium	<b>80.5</b>	mg/L	25.0	0.69	50	04/05/19 14:47	04/08/19 18:52	7440-70-2	
Chromium	ND	mg/L	0.010	0.0016	1	04/05/19 14:47	04/08/19 18:46	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	04/05/19 14:47	04/08/19 18:46	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 14:47	04/08/19 18:46	7439-92-1	
Lithium	<b>0.0032J</b>	mg/L	0.050	0.00097	1	04/05/19 14:47	04/08/19 18:46	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 14:47	04/08/19 18:46	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 14:47	04/08/19 18:46	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 14:47	04/08/19 18:46	7440-28-0	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>284</b>	mg/L	25.0	10.0	1		04/04/19 17:45		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>6.5</b>	mg/L	0.25	0.024	1		04/06/19 01:13	16887-00-6	M1
Fluoride	<b>0.029J</b>	mg/L	0.30	0.029	1		04/06/19 01:13	16984-48-8	
Sulfate	<b>50.4</b>	mg/L	10.0	0.17	10		04/08/19 20:01	14808-79-8	M1

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616885

QC Batch: 25905 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616885001

METHOD BLANK: 116813 Matrix: Water  
Associated Lab Samples: 2616885001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	04/08/19 18:23	
Arsenic	mg/L	ND	0.0050	0.00057	04/08/19 18:23	
Barium	mg/L	ND	0.010	0.00078	04/08/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000050	04/08/19 18:23	
Boron	mg/L	ND	0.040	0.0039	04/08/19 18:23	
Cadmium	mg/L	ND	0.0010	0.000093	04/08/19 18:23	
Calcium	mg/L	ND	0.50	0.014	04/08/19 18:23	
Chromium	mg/L	ND	0.010	0.0016	04/08/19 18:23	
Cobalt	mg/L	ND	0.010	0.00052	04/08/19 18:23	
Lead	mg/L	ND	0.0050	0.00027	04/08/19 18:23	
Lithium	mg/L	ND	0.050	0.00097	04/08/19 18:23	
Molybdenum	mg/L	ND	0.010	0.0019	04/08/19 18:23	
Selenium	mg/L	ND	0.010	0.0014	04/08/19 18:23	
Thallium	mg/L	ND	0.0010	0.00014	04/08/19 18:23	

LABORATORY CONTROL SAMPLE: 116814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	108	80-120	
Arsenic	mg/L	0.1	0.10	103	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Boron	mg/L	1	1.0	105	80-120	
Cadmium	mg/L	0.1	0.11	109	80-120	
Calcium	mg/L	1	1.0	104	80-120	
Chromium	mg/L	0.1	0.11	108	80-120	
Cobalt	mg/L	0.1	0.11	107	80-120	
Lead	mg/L	0.1	0.10	103	80-120	
Lithium	mg/L	0.1	0.10	102	80-120	
Molybdenum	mg/L	0.1	0.11	105	80-120	
Selenium	mg/L	0.1	0.11	106	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116815 116816

Parameter	Units	2616901004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result					
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	110	107	75-125	3	20

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616885

Parameter	Units	116815		116816		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616901004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20		
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	105	100	75-125	4	20		
Beryllium	mg/L	0.00015J	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Boron	mg/L	0.63	1	1	1.6	1.6	102	101	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.11	0.10	105	105	75-125	0	20		
Calcium	mg/L	11.9J	1	1	13.1J	17.2J	129	532	75-125	27	20	M6, R1	
Chromium	mg/L	0.0030J	0.1	0.1	0.11	0.11	106	106	75-125	0	20		
Cobalt	mg/L	0.0022J	0.1	0.1	0.11	0.10	103	101	75-125	2	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	0	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616885

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QC Batch: 25772	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2616885001	

---

LABORATORY CONTROL SAMPLE: 116265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	403	101	84-108	

---

SAMPLE DUPLICATE: 116266

Parameter	Units	2616783001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	87.0	115	28	10	D6

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616885

QC Batch: 25881 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2616885001

METHOD BLANK: 116727 Matrix: Water  
Associated Lab Samples: 2616885001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.069J	0.25	0.024	04/05/19 23:23	
Fluoride	mg/L	ND	0.30	0.029	04/05/19 23:23	
Sulfate	mg/L	0.028J	1.0	0.017	04/05/19 23:23	

LABORATORY CONTROL SAMPLE: 116728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.3	103	90-110	
Fluoride	mg/L	10	10.3	103	90-110	
Sulfate	mg/L	10	10.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116729 116730

Parameter	Units	2616881001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.0	10	10	13.8	13.7	99	97	90-110	1	15	
Fluoride	mg/L	0.042J	10	10	10.0	9.9	100	99	90-110	1	15	
Sulfate	mg/L	1.7	10	10	11.4	11.4	97	96	90-110	1	15	

MATRIX SPIKE SAMPLE: 116731

Parameter	Units	2616885001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	6.5	10	15.5	89	90-110	M1
Fluoride	mg/L	0.029J	10	9.5	95	90-110	
Sulfate	mg/L	50.4	10	54.7	43	90-110	E,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.: 2616885

---

### 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

- |    |   |
|----|---|
| D6 | The precision between the sample and sample duplicate exceeded laboratory control limits.                     |
| E  | Analyte concentration exceeded the calibration range. The reported result is estimated.                       |
| 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. |
| R1 | RPD value was outside control limits.   |

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond

Pace Project No.: 2616885

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<b>Lab ID</b>	<b>Sample ID</b>	<b>QC Batch Method</b>	<b>QC Batch</b>	<b>Analytical Method</b>	<b>Analytical Batch</b>
2616885001	HGWA-3	EPA 3005A	25905	EPA 6020B	25922
2616885001	HGWA-3	SM 2540C	25772		
2616885001	HGWA-3	EPA 300.0	25881		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

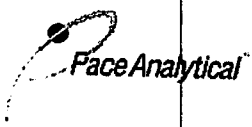
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jiju Abraham	Company Name: scsinvoices@southemco.com	Attention: scsinvoices@southemco.com	Requester/Analyst/Fielded (Y/N)	
Address: 2480 Manser Road	Copy To: Lauren Pethy, Geosyntec	Address: Atlanta, GA 30339		Requester/Analyst/Fielded (Y/N)	
Email: jbrabham@southemco.com	Purchase Order #: SCS-10348606	Project Name: Plant Hammond		Requester/Analyst/Fielded (Y/N)	
Phone: (404)506-7239	Project #: <b>STANLEY TAT</b>	Pace Profile #: 327 (AP) or 328 (Huff)		Requester/Analyst/Fielded (Y/N)	
Requested Due Date: <b>STANLEY TAT</b>				Requester/Analyst/Fielded (Y/N)	

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	UNPRESERVED	PRESERVATIVES				ANALYSES TESTED	RESIDUAL CHLORINE (Y/N)
			START	END						H2SO4	HNO3	HCl	NaOH		
1	HGWA-3	DW	4/11/19 1700	4/11/19 1725	252	WTS		3							
2		WT													
3		WW													
4		P													
5		SL													
6		WP													
7		AR													
8		OT													
9		TS													
10															
11															
12															

<b>APPENDIX COMMENTS</b>		<b>DATE</b>		<b>TIME</b>		<b>DATE</b>		<b>TIME</b>		<b>DATE</b>		<b>TIME</b>	
Appendix IV (I): Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Thallium, Lead, Lithium, Molybdenum, Selenium, Thallium		4/11/19		1700		4/11/19		1725		4/11/19		1725	
SAMPLER NAME AND SIGNATURE		DATE		TIME		DATE		TIME		DATE		TIME	
Noelia Muskus		4/11/19		1700		4/11/19		1725		4/11/19		1725	
SIGNATURE OF SAMPLER:		DATE SIGNED:		TIME		DATE		TIME		DATE		TIME	
Noelia Muskus		4/11/19		1700		4/11/19		1725		4/11/19		1725	

NO# : 2616885



Sample Condition Upon Receipt

Client Name: GIA Power

Project #

WO#: **2616885**

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

PM: **BM** Due Date: **04/09/19**

Tracking #: \_\_\_\_\_ Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

CLIENT: **GAPower-CCR**

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 2.0 Biological Tissue is Frozen: Yes No  Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/2/19 MR

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

Client Notification/ Resolution: \_\_\_\_\_

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Field Data Required? Y / N

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_ Date: \_\_\_\_\_

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

April 25, 2019

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

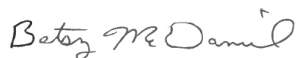
RE: Project: Plant Hammond  
Pace Project No.: 2616886

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 02, 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.: 2616886

---

### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616886

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616886001	HGWA-3	Water	04/01/19 17:25	04/02/19 11:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond  
Pace Project No.: 2616886

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616886001	HGWA-3	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616886

**Sample: HGWA-3**      **Lab ID: 2616886001**      Collected: 04/01/19 17:25      Received: 04/02/19 11:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.388 ± 0.261 (0.385)</b> C:94% T:NA	pCi/L	04/12/19 08:04	13982-63-3	
Radium-228	EPA 9320	<b>0.372 ± 0.422 (0.887)</b> C:75% T:83%	pCi/L	04/16/19 16:21	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.760 ± 0.683 (1.27)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616886

QC Batch: 337341

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616886001

METHOD BLANK: 1641952

Matrix: Water

Associated Lab Samples: 2616886001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.438 ± 0.343 (0.679) C:77% T:88%	pCi/L	04/16/19 13:06	

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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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616886

QC Batch: 337391

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616886001

METHOD BLANK: 1642068

Matrix: Water

Associated Lab Samples: 2616886001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.148 ± 0.194 (0.401) C:93% T:NA	pCi/L	04/12/19 08:12	

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.: 2616886

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### 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.: 2616886

---

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616886001	HGWA-3	EPA 9315	337391		
2616886001	HGWA-3	EPA 9320	337341		
2616886001	HGWA-3	Total Radium Calculation	338683		

### 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: jbraham@southernco.com  
 Phone: (404) 506-7239 | Fax  
 Requested Due Date: Standard TAT

**Section B**  
**Required Project Information:**  
 Report To: Joju Abraham  
 Copy To: Lauren Peety, Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoic@southernco.com  
 Company Name:  
 Address:  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com.  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 State: GA

ITEM #	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLER NAME AND SIGNATURE	DATE	TIME	DATE	TIME	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST	Y/N	RECEIVED ON	TEMP IN C	SEALED	CUSTODY	COOLER	SAMPLER			
		START	END																				
1	HGWA-3			WIG		Noelia Muskus / Geo	4/12/19	1700	4/11/19	1725	3	H2SO4 Unpreserved HNO3 HCl NaOH Na2S2O3 Methanol Other	Metals (App. III & App. IV) Metals (App. III, App. IV, D&O) Metals (App. III & D&O) TDS, Cl, F, SO4 Radium 226/228	Y									
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

NO# : 2616886

2616886

**Appendix IV (I) : Antimony, Arsenic, Barium, Bismuth, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium**

Appendix IV (I) : Antimony, Arsenic, Barium, Bismuth, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium

SAMPLER NAME AND SIGNATURE: Noelia Muskus  
 PRINT Name of SAMPLER: Noelia Muskus  
 SIGNATURE of SAMPLER: Noelia Muskus

DATE Signed: 4/11/19

Received on: 4/12/19 TEMP in C: 20.0  
 SEALED: Y CUSTODY: Y COOLER: Y SAMPLER: Y





Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616886**

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

PM: **BM** Due Date: **04/30/19**

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

CLIENT: **GAPower-CCR**

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Samples on ice, cooling process has begun

Cooler Temperature 2.0 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 4/2/19 MR

Temp should be above freezing to 6°C

Comments:

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

April 10, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2616925

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 03, 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.: 2616925

---

### Atlanta Certification IDs

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616925

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616925001	HGWA-1	Water	04/02/19 10:02	04/03/19 11:10
2616925002	HGWA-2	Water	04/02/19 13:40	04/03/19 11:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616925

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616925001	HGWA-1	EPA 6020B	CSW	14
		SM 2540C	RLC	1
		EPA 300.0	RLC	3
2616925002	HGWA-2	EPA 6020B	CSW	14
		SM 2540C	RLC	1
		EPA 300.0	RLC	3

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616925

Sample: HGWA-1		Lab ID: 2616925001		Collected: 04/02/19 10:02		Received: 04/03/19 11:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	04/05/19 14:47	04/08/19 22:29	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 14:47	04/08/19 22:29	7440-38-2	
Barium	<b>0.040</b>	mg/L	0.010	0.00078	1	04/05/19 14:47	04/08/19 22:29	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	04/05/19 14:47	04/08/19 22:29	7440-41-7	
Boron	<b>0.016J</b>	mg/L	0.040	0.0039	1	04/05/19 14:47	04/08/19 22:29	7440-42-8	
Cadmium	ND	mg/L	0.0010	0.000093	1	04/05/19 14:47	04/08/19 22:29	7440-43-9	
Calcium	<b>132</b>	mg/L	25.0	0.69	50	04/05/19 14:47	04/08/19 22:35	7440-70-2	
Chromium	ND	mg/L	0.010	0.0016	1	04/05/19 14:47	04/08/19 22:29	7440-47-3	
Cobalt	ND	mg/L	0.010	0.00052	1	04/05/19 14:47	04/08/19 22:29	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 14:47	04/08/19 22:29	7439-92-1	
Lithium	<b>0.0010J</b>	mg/L	0.050	0.00097	1	04/05/19 14:47	04/08/19 22:29	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 14:47	04/08/19 22:29	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 14:47	04/08/19 22:29	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 14:47	04/08/19 22:29	7440-28-0	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>452</b>	mg/L	25.0	10.0	1		04/08/19 15:30		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>20.3</b>	mg/L	0.25	0.024	1		04/06/19 10:16	16887-00-6	
Fluoride	<b>0.10J</b>	mg/L	0.30	0.029	1		04/06/19 10:16	16984-48-8	
Sulfate	<b>84.3</b>	mg/L	5.0	0.085	5		04/06/19 11:43	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616925

Sample: HGWA-2		Lab ID: 2616925002		Collected: 04/02/19 13:40		Received: 04/03/19 11:10		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A							
Antimony	ND	mg/L	0.0030	0.00078	1	04/05/19 14:47	04/08/19 22:52	7440-36-0	
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 14:47	04/08/19 22:52	7440-38-2	
Barium	<b>0.13</b>	mg/L	0.010	0.00078	1	04/05/19 14:47	04/08/19 22:52	7440-39-3	
Beryllium	<b>0.00015J</b>	mg/L	0.0030	0.000050	1	04/05/19 14:47	04/08/19 22:52	7440-41-7	
Boron	<b>0.034J</b>	mg/L	0.040	0.0039	1	04/05/19 14:47	04/08/19 22:52	7440-42-8	
Cadmium	<b>0.00015J</b>	mg/L	0.0010	0.000093	1	04/05/19 14:47	04/08/19 22:52	7440-43-9	
Calcium	<b>22.5J</b>	mg/L	25.0	0.69	50	04/05/19 14:47	04/08/19 22:58	7440-70-2	D3
Chromium	<b>0.0079J</b>	mg/L	0.010	0.0016	1	04/05/19 14:47	04/08/19 22:52	7440-47-3	
Cobalt	<b>0.019</b>	mg/L	0.010	0.00052	1	04/05/19 14:47	04/08/19 22:52	7440-48-4	
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 14:47	04/08/19 22:52	7439-92-1	
Lithium	<b>0.0018J</b>	mg/L	0.050	0.00097	1	04/05/19 14:47	04/08/19 22:52	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 14:47	04/08/19 22:52	7439-98-7	
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 14:47	04/08/19 22:52	7782-49-2	
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 14:47	04/08/19 22:52	7440-28-0	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>133</b>	mg/L	25.0	10.0	1		04/08/19 15:31		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5.8</b>	mg/L	0.25	0.024	1		04/06/19 10:38	16887-00-6	
Fluoride	<b>0.071J</b>	mg/L	0.30	0.029	1		04/06/19 10:38	16984-48-8	
Sulfate	<b>48.7</b>	mg/L	1.0	0.017	1		04/06/19 10:38	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616925

QC Batch: 25905 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616925001, 2616925002

METHOD BLANK: 116813 Matrix: Water  
Associated Lab Samples: 2616925001, 2616925002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00078	04/08/19 18:23	
Arsenic	mg/L	ND	0.0050	0.00057	04/08/19 18:23	
Barium	mg/L	ND	0.010	0.00078	04/08/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000050	04/08/19 18:23	
Boron	mg/L	ND	0.040	0.0039	04/08/19 18:23	
Cadmium	mg/L	ND	0.0010	0.000093	04/08/19 18:23	
Calcium	mg/L	ND	0.50	0.014	04/08/19 18:23	
Chromium	mg/L	ND	0.010	0.0016	04/08/19 18:23	
Cobalt	mg/L	ND	0.010	0.00052	04/08/19 18:23	
Lead	mg/L	ND	0.0050	0.00027	04/08/19 18:23	
Lithium	mg/L	ND	0.050	0.00097	04/08/19 18:23	
Molybdenum	mg/L	ND	0.010	0.0019	04/08/19 18:23	
Selenium	mg/L	ND	0.010	0.0014	04/08/19 18:23	
Thallium	mg/L	ND	0.0010	0.00014	04/08/19 18:23	

LABORATORY CONTROL SAMPLE: 116814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.11	108	80-120	
Arsenic	mg/L	0.1	0.10	103	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Boron	mg/L	1	1.0	105	80-120	
Cadmium	mg/L	0.1	0.11	109	80-120	
Calcium	mg/L	1	1.0	104	80-120	
Chromium	mg/L	0.1	0.11	108	80-120	
Cobalt	mg/L	0.1	0.11	107	80-120	
Lead	mg/L	0.1	0.10	103	80-120	
Lithium	mg/L	0.1	0.10	102	80-120	
Molybdenum	mg/L	0.1	0.11	105	80-120	
Selenium	mg/L	0.1	0.11	106	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116815 116816

Parameter	Units	2616901004 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	ND	0.1	0.1	0.11	0.11	110	107	75-125	3	20

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

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616925

Parameter	Units	116815		116816		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616901004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20		
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	105	100	75-125	4	20		
Beryllium	mg/L	0.00015J	0.1	0.1	0.10	0.10	100	100	75-125	0	20		
Boron	mg/L	0.63	1	1	1.6	1.6	102	101	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.11	0.10	105	105	75-125	0	20		
Calcium	mg/L	11.9J	1	1	13.1J	17.2J	129	532	75-125	27	20	M6, R1	
Chromium	mg/L	0.0030J	0.1	0.1	0.11	0.11	106	106	75-125	0	20		
Cobalt	mg/L	0.0022J	0.1	0.1	0.11	0.10	103	101	75-125	2	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	0	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616925

QC Batch: 25999

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 2616925001, 2616925002

LABORATORY CONTROL SAMPLE: 117377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	411	103	84-108	

SAMPLE DUPLICATE: 117378

Parameter	Units	2617086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	226	203	11	10	D6

SAMPLE DUPLICATE: 117379

Parameter	Units	2616901015 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	13.0J		10	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616925

QC Batch: 25881 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2616925001, 2616925002

METHOD BLANK: 116727 Matrix: Water  
Associated Lab Samples: 2616925001, 2616925002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.069J	0.25	0.024	04/05/19 23:23	
Fluoride	mg/L	ND	0.30	0.029	04/05/19 23:23	
Sulfate	mg/L	0.028J	1.0	0.017	04/05/19 23:23	

LABORATORY CONTROL SAMPLE: 116728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.3	103	90-110	
Fluoride	mg/L	10	10.3	103	90-110	
Sulfate	mg/L	10	10.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116729 116730

Parameter	Units	2616881001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.0	10	10	13.8	13.7	99	97	90-110	1	15	
Fluoride	mg/L	0.042J	10	10	10.0	9.9	100	99	90-110	1	15	
Sulfate	mg/L	1.7	10	10	11.4	11.4	97	96	90-110	1	15	

MATRIX SPIKE SAMPLE: 116731

Parameter	Units	2616885001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	6.5	10	15.5	89	90-110	M1
Fluoride	mg/L	0.029J	10	9.5	95	90-110	
Sulfate	mg/L	50.4	10	54.7	43	90-110	E,M1

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616925

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### 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

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond

Pace Project No.: 2616925

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616925001	HGWA-1	EPA 3005A	25905	EPA 6020B	25922
2616925002	HGWA-2	EPA 3005A	25905	EPA 6020B	25922
2616925001	HGWA-1	SM 2540C	25999		
2616925002	HGWA-2	SM 2540C	25999		
2616925001	HGWA-1	EPA 300.0	25881		
2616925002	HGWA-2	EPA 300.0	25881		

### 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.

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Jolu Abraham	Report To: Jolu Abraham	Company Name: pcsinvoicess@southemco.com	Attention: pcsinvoicess@southemco.com	
Address: 2480 Maner Road	Copy To: Lauren Petty, Geosyntec	Copy To: Lauren Petty, Geosyntec	Company Name:	Company Name:	
Allanta, GA 30339			Address:	Address:	
Email: j.abraham@southemco.com	Purchase Order #: SC51048606	Purchase Order #: SC51048606	Pace Quota:	Pace Quota:	
Phone: (404)506-7239	Project Name: Plant Hammond	Project Name: Plant Hammond	Pace Project Manager: belys.mcdaniel@paceelabs.com	Pace Project Manager: belys.mcdaniel@paceelabs.com	
Requested Due Date: <i>Saturday, 7/21</i>	Project #:	Project #:	Pace Profile #: 327 (AP) or 328 (Huff)	Pace Profile #: 327 (AP) or 328 (Huff)	

ITEM #	MATRIX	CODE	COLLECTED		DATE	TIME	DATE	TIME	# OF CONTAINERS	PRESERVATIVES	ANALYSES (Y/N)		Residual Chlorine (Y/N)
			START	END							MATRIX CODE (see vhid codes to left)	SAMPLE TYPE (G-GRAB C-COMP)	
1	Drinking Water	DW	04/02/19	09:48	04/02	10:02	16	5	2	3	Y	Y	Y
2	Waste Water	WT											
3	Waste Water	WW											
4	Product	P											
5	Soil/Sed	SL											
6	Oil	OL											
7	Wipe	WP											
8	Air	AR											
9	Other	OT											
10	Tissue	TS											
11													
12													

App IV (I): Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Manganese, Selenium, Thallium	Great Walter/Geosyntec	04/02/19	1745	Malia Mufson/Geosyntec	4/3/19	1745	TEMP In C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Malia Mufson/Geosyntec	4/2/19	1930	Ed Brewer/Geosyntec	4/3/19	0954				
	Ed Brewer/Geosyntec	4/3/19	0954	Malia Mufson	4/3/19	1110	1.0	Y	Y	Y

NO#: 2616925

2616925

*SN 04/10/19*



# CHAIN-OF-CUSTODY / Analytical Request Document

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

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Manor Road  
 Atlanta, GA 30339  
 Email: jbraham@southarmco.com  
 Phone: (404)506-7239  
 Requested Due Date: 2 Forward 1BT

**Section B**  
**Required Project Information:**  
 Report To: Joju Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Address:   
 Purchase Order #: 62510348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southarmco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

Page: 2 of 2

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see viald codes to left)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analytes Test	Metals (App. III & App. IV)	Metals (App. III, IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME												
1	Drinking Water	DW	4/21/19 15:10	4/21/19 15:10	G											
2	Water	WT														
3	Waste Water	WW														
4	Product	P														
5	Solid	SL														
6	Oil	OL														
7	Wipe	WP														
8	Air	AR														
9	Other	OT														
10	Tissue	TS														
SAMPLE ID			DCA		DCA		DCA		DCA		DCA		DCA		DCA	
One Character per box. (A-Z, 0-9 / . -)			4/2/2019		4/2/2019		4/2/2019		4/2/2019		4/2/2019		4/2/2019		4/2/2019	
Sample Ids must be unique			HGWA-2		HGWA-2		HGWA-2		HGWA-2		HGWA-2		HGWA-2		HGWA-2	

NO#: 2616925

2616925

ANALYTICAL ELEMENTS	REQUESTED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	RECEIVED ON	TEMP IN C	Ice (Y/N)	Custody (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
APP IV (A): Antimony, Arsenic, Barium, Dalton Anderson (609) 472/19	Maria Mphah (Geosyntec)	4/2/19	17:45	Maria Mphah (Geosyntec)	4/2/19	17:45							
Beryllium, Cadmium, Chromium, Cobalt, Muelria (609) 472/19	Geosyntec	4/2/19	19:30	Geosyntec	4/2/19	19:30							
Fluoride, Lead, Lithium, Molybdenum, Nitrate, Selenium, Thallium	Geosyntec	4/3/19	09:54	M. Rahman	4/3/19	11:00							

SAMPLER NAME AND SIGNATURE: M. Rahman  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE of SAMPLER: [Signature]  
 DATE Signed: 4/2/19



Sample Condition Upon Receipt

Client Name: GAPower

Project # \_\_\_\_\_

WO#: **2616925**

PM: **BM** Due Date: **04/10/19**

CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 23 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 4/3/19 MR

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

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)



April 25, 2019

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

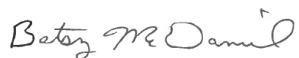
RE: Project: Plant Hammond  
Pace Project No.: 2616926

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 03, 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.: 2616926

---

### 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  
Pace Project No.: 2616926

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616926001	HGWA-1	Water	04/02/19 10:02	04/03/19 11:10
2616926002	HGWA-2	Water	04/02/19 13:40	04/03/19 11:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616926

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616926001	HGWA-1	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616926002	HGWA-2	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616926

**Sample: HGWA-1**      **Lab ID: 2616926001**      Collected: 04/02/19 10:02      Received: 04/03/19 11:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.426 ± 0.282 (0.418)</b> <b>C:85% T:NA</b>	pCi/L	04/12/19 09:46	13982-63-3	
Radium-228	EPA 9320	<b>0.313 ± 0.501 (1.09)</b> <b>C:74% T:89%</b>	pCi/L	04/16/19 19:38	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.739 ± 0.783 (1.51)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616926

**Sample: HGWA-2**      **Lab ID: 2616926002**      Collected: 04/02/19 13:40      Received: 04/03/19 11:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.472 ± 0.275 (0.348)</b> <b>C:88% T:NA</b>	pCi/L	04/12/19 09:46	13982-63-3	
Radium-228	EPA 9320	<b>0.179 ± 0.465 (1.04)</b> <b>C:77% T:89%</b>	pCi/L	04/16/19 18:32	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.651 ± 0.740 (1.39)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616926

QC Batch: 337392

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616926001, 2616926002

METHOD BLANK: 1642069

Matrix: Water

Associated Lab Samples: 2616926001, 2616926002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.117 ± 0.178 (0.382) C:94% T:NA	pCi/L	04/12/19 08:07	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616926

QC Batch: 337342

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616926001, 2616926002

METHOD BLANK: 1641953

Matrix: Water

Associated Lab Samples: 2616926001, 2616926002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.245 ± 0.294 (0.748) C:78% T:79%	pCi/L	04/16/19 16:22	

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.: 2616926

---

### 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

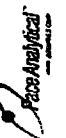
Project: Plant Hammond

Pace Project No.: 2616926

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616926001	HGWA-1	EPA 9315	337392		
2616926002	HGWA-2	EPA 9315	337392		
2616926001	HGWA-1	EPA 9320	337342		
2616926002	HGWA-2	EPA 9320	337342		
2616926001	HGWA-1	Total Radium Calculation	338683		
2616926002	HGWA-2	Total Radium Calculation	338683		

### 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: jbrahant@southernco.com  
 Phone: (404)506-7239  
 Requested Due Date: Standard TBT

**Section B**  
 Required Project Information:  
 Report To: Joju Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: SCS10348605  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
 Invoice Information:  
 Attention: sctinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Project Manager: Detsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 GA

Page: 1 of 2

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	PRESERVATIVES		ANALYSES TEST	Metals (App. III & App. IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE	END DATE			START TIME	END TIME		H2SO4	HNO3						
1	Drinking Water	DW	4/10/19	4/10/19	G-GRAB C-COMP	WT 6	16:52	16:52	3			Y	Y	Y	Y	Y	
2	Water	WT															
3	Waste Water	WW															
4	Product	P															
5	Solid	SL															
6	Oil	OL															
7	Wipe	WP															
8	Air	AR															
9	Other	OT															
10	Tissue	TS															

**APPROVED FOR COLLECTION**

App # (1): Ammonia, Arsenic, Barium Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Manganese, Selenium, Thallium

Collector: Grant Walter / Geosyntec DATE: 4/10/19 TIME: 1745

Collector: Joju Abraham / Geosyntec DATE: 4/12/19 TIME: 1930

Collector: Joju Abraham / Geosyntec DATE: 4/13/19 TIME: 0954

Collector: M. Goldman DATE: 4/13/19 TIME: 110

TEMP in C: \_\_\_\_\_

Received on \_\_\_\_\_

Ice (Y/N) \_\_\_\_\_

Custody Sealed (Y/N) \_\_\_\_\_

Cooler (Y/N) \_\_\_\_\_

Samples Inter (Y/N) \_\_\_\_\_

DATE SIGNED: 04/02/19

SIGNATURE OF SAMPLER: Grant Walter

PRINT NAME AND SIGNATURE: Grant Walter

SIGNATURE OF SAMPLER: Grant Walter

WO# : 2616926





Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616926**

PM: **BM** Due Date: **05/01/19**  
CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and initials of person examining contents: 4/3/19 MK

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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)

April 10, 2019

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

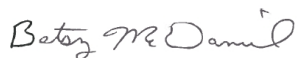
RE: Project: Plant Hammond  
Pace Project No.: 2616927

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 03, 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.: 2616927

---

### Atlanta Certification IDs

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

Pace Project No.: 2616927

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616927001	HGWA-4	Water	04/02/19 12:11	04/03/19 11:10
2616927002	HGWA-5	Water	04/02/19 10:40	04/03/19 11:10
2616927003	HGWA-6	Water	04/02/19 10:37	04/03/19 11:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616927

Lab ID	Sample ID	Method	Analysts	Analytes Reported
2616927001	HGWA-4	EPA 6020B	CSW	13
		SM 2540C	RLC	1
		EPA 300.0	RLC	3
2616927002	HGWA-5	EPA 6020B	CSW	13
		SM 2540C	RLC	1
		EPA 300.0	RLC	3
2616927003	HGWA-6	EPA 6020B	CSW	13
		SM 2540C	RLC	1
		EPA 300.0	RLC	3

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2616927

Sample: HGWA-4		Lab ID: 2616927001		Collected: 04/02/19 12:11		Received: 04/03/19 11:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 14:47	04/08/19 23:04	7440-38-2		
Barium	<b>0.030</b>	mg/L	0.010	0.00078	1	04/05/19 14:47	04/08/19 23:04	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/05/19 14:47	04/08/19 23:04	7440-41-7		
Boron	<b>0.010J</b>	mg/L	0.040	0.0039	1	04/05/19 14:47	04/08/19 23:04	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000093	1	04/05/19 14:47	04/08/19 23:04	7440-43-9		
Calcium	<b>76.0</b>	mg/L	25.0	0.69	50	04/05/19 14:47	04/08/19 23:09	7440-70-2		
Chromium	<b>0.019</b>	mg/L	0.010	0.0016	1	04/05/19 14:47	04/08/19 23:04	7440-47-3		
Cobalt	ND	mg/L	0.010	0.00052	1	04/05/19 14:47	04/08/19 23:04	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 14:47	04/08/19 23:04	7439-92-1		
Lithium	<b>0.00098J</b>	mg/L	0.050	0.00097	1	04/05/19 14:47	04/08/19 23:04	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 14:47	04/08/19 23:04	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 14:47	04/08/19 23:04	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 14:47	04/08/19 23:04	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>230</b>	mg/L	25.0	10.0	1		04/08/19 15:31			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>4.4</b>	mg/L	0.25	0.024	1		04/05/19 16:36	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		04/05/19 16:36	16984-48-8		
Sulfate	<b>4.9</b>	mg/L	1.0	0.017	1		04/05/19 16:36	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2616927

Sample: HGWA-5		Lab ID: 2616927002		Collected: 04/02/19 10:40		Received: 04/03/19 11:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 15:23	04/09/19 18:25	7440-38-2		
Barium	<b>0.044</b>	mg/L	0.010	0.00078	1	04/05/19 15:23	04/09/19 18:25	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/05/19 15:23	04/09/19 18:25	7440-41-7		
Boron	<b>0.0052J</b>	mg/L	0.040	0.0039	1	04/05/19 15:23	04/09/19 18:25	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000093	1	04/05/19 15:23	04/09/19 18:25	7440-43-9		
Calcium	<b>26.3</b>	mg/L	25.0	0.69	50	04/05/19 15:23	04/09/19 18:31	7440-70-2		
Chromium	ND	mg/L	0.010	0.0016	1	04/05/19 15:23	04/09/19 18:25	7440-47-3		
Cobalt	<b>0.0012J</b>	mg/L	0.010	0.00052	1	04/05/19 15:23	04/09/19 18:25	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 15:23	04/09/19 18:25	7439-92-1		
Lithium	<b>0.0028J</b>	mg/L	0.050	0.00097	1	04/05/19 15:23	04/09/19 18:25	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 15:23	04/09/19 18:25	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 15:23	04/09/19 18:25	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 15:23	04/09/19 18:25	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>144</b>	mg/L	25.0	10.0	1		04/08/19 15:31			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>1.7</b>	mg/L	0.25	0.024	1		04/05/19 17:49	16887-00-6		
Fluoride	<b>0.12J</b>	mg/L	0.30	0.029	1		04/05/19 17:49	16984-48-8		
Sulfate	<b>23.8</b>	mg/L	1.0	0.017	1		04/05/19 17:49	14808-79-8	M1	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2616927

Sample: HGWA-6		Lab ID: 2616927003		Collected: 04/02/19 10:37		Received: 04/03/19 11:10		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020B MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3005A								
Arsenic	ND	mg/L	0.0050	0.00057	1	04/05/19 15:23	04/09/19 18:37	7440-38-2		
Barium	<b>0.19</b>	mg/L	0.010	0.00078	1	04/05/19 15:23	04/09/19 18:37	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/05/19 15:23	04/09/19 18:37	7440-41-7		
Boron	<b>0.013J</b>	mg/L	0.040	0.0039	1	04/05/19 15:23	04/09/19 18:37	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000093	1	04/05/19 15:23	04/09/19 18:37	7440-43-9		
Calcium	<b>49.7</b>	mg/L	25.0	0.69	50	04/05/19 15:23	04/09/19 18:43	7440-70-2		
Chromium	ND	mg/L	0.010	0.0016	1	04/05/19 15:23	04/09/19 18:37	7440-47-3		
Cobalt	ND	mg/L	0.010	0.00052	1	04/05/19 15:23	04/09/19 18:37	7440-48-4		
Lead	ND	mg/L	0.0050	0.00027	1	04/05/19 15:23	04/09/19 18:37	7439-92-1		
Lithium	<b>0.0095J</b>	mg/L	0.050	0.00097	1	04/05/19 15:23	04/09/19 18:37	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.0019	1	04/05/19 15:23	04/09/19 18:37	7439-98-7		
Selenium	ND	mg/L	0.010	0.0014	1	04/05/19 15:23	04/09/19 18:37	7782-49-2		
Thallium	ND	mg/L	0.0010	0.00014	1	04/05/19 15:23	04/09/19 18:37	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>238</b>	mg/L	25.0	10.0	1		04/08/19 15:32			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>1.6</b>	mg/L	0.25	0.024	1		04/05/19 18:13	16887-00-6		
Fluoride	ND	mg/L	0.30	0.029	1		04/05/19 18:13	16984-48-8		
Sulfate	<b>35.5</b>	mg/L	1.0	0.017	1		04/05/19 18:13	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616927

QC Batch: 25905 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616927001

METHOD BLANK: 116813 Matrix: Water  
Associated Lab Samples: 2616927001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00057	04/08/19 18:23	
Barium	mg/L	ND	0.010	0.00078	04/08/19 18:23	
Beryllium	mg/L	ND	0.0030	0.000050	04/08/19 18:23	
Boron	mg/L	ND	0.040	0.0039	04/08/19 18:23	
Cadmium	mg/L	ND	0.0010	0.000093	04/08/19 18:23	
Calcium	mg/L	ND	0.50	0.014	04/08/19 18:23	
Chromium	mg/L	ND	0.010	0.0016	04/08/19 18:23	
Cobalt	mg/L	ND	0.010	0.00052	04/08/19 18:23	
Lead	mg/L	ND	0.0050	0.00027	04/08/19 18:23	
Lithium	mg/L	ND	0.050	0.00097	04/08/19 18:23	
Molybdenum	mg/L	ND	0.010	0.0019	04/08/19 18:23	
Selenium	mg/L	ND	0.010	0.0014	04/08/19 18:23	
Thallium	mg/L	ND	0.0010	0.00014	04/08/19 18:23	

LABORATORY CONTROL SAMPLE: 116814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	103	80-120	
Barium	mg/L	0.1	0.10	103	80-120	
Beryllium	mg/L	0.1	0.10	101	80-120	
Boron	mg/L	1	1.0	105	80-120	
Cadmium	mg/L	0.1	0.11	109	80-120	
Calcium	mg/L	1	1.0	104	80-120	
Chromium	mg/L	0.1	0.11	108	80-120	
Cobalt	mg/L	0.1	0.11	107	80-120	
Lead	mg/L	0.1	0.10	103	80-120	
Lithium	mg/L	0.1	0.10	102	80-120	
Molybdenum	mg/L	0.1	0.11	105	80-120	
Selenium	mg/L	0.1	0.11	106	80-120	
Thallium	mg/L	0.1	0.10	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116815 116816

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2616901004 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20	
Barium	mg/L	0.027	0.1	0.1	0.13	0.13	105	100	75-125	4	20	
Beryllium	mg/L	0.00015J	0.1	0.1	0.10	0.10	100	100	75-125	0	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616927

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116815		116816		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616901004 Result	MS Spike Conc.	MSD Spike Conc.									
Boron	mg/L	0.63	1	1	1.6	1.6	102	101	75-125	0	20		
Cadmium	mg/L	ND	0.1	0.1	0.11	0.10	105	105	75-125	0	20		
Calcium	mg/L	11.9J	1	1	13.1J	17.2J	129	532	75-125	27	20	M6,R1	
Chromium	mg/L	0.0030J	0.1	0.1	0.11	0.11	106	106	75-125	0	20		
Cobalt	mg/L	0.0022J	0.1	0.1	0.11	0.10	103	101	75-125	2	20		
Lead	mg/L	ND	0.1	0.1	0.10	0.10	102	101	75-125	0	20		
Lithium	mg/L	ND	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Molybdenum	mg/L	ND	0.1	0.1	0.11	0.10	107	103	75-125	4	20		
Selenium	mg/L	ND	0.1	0.1	0.10	0.10	101	100	75-125	1	20		
Thallium	mg/L	ND	0.1	0.1	0.10	0.10	103	102	75-125	1	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616927

QC Batch: 25906 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3005A Analysis Description: 6020B MET  
Associated Lab Samples: 2616927002, 2616927003

METHOD BLANK: 116817 Matrix: Water  
Associated Lab Samples: 2616927002, 2616927003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.00057	04/09/19 18:14	
Barium	mg/L	ND	0.010	0.00078	04/09/19 18:14	
Beryllium	mg/L	ND	0.0030	0.000050	04/09/19 18:14	
Boron	mg/L	ND	0.040	0.0039	04/09/19 18:14	
Cadmium	mg/L	ND	0.0010	0.000093	04/09/19 18:14	
Calcium	mg/L	ND	0.50	0.014	04/09/19 18:14	
Chromium	mg/L	ND	0.010	0.0016	04/09/19 18:14	
Cobalt	mg/L	ND	0.010	0.00052	04/09/19 18:14	
Lead	mg/L	ND	0.0050	0.00027	04/09/19 18:14	
Lithium	mg/L	ND	0.050	0.00097	04/09/19 18:14	
Molybdenum	mg/L	ND	0.010	0.0019	04/09/19 18:14	
Selenium	mg/L	ND	0.010	0.0014	04/09/19 18:14	
Thallium	mg/L	ND	0.0010	0.00014	04/09/19 18:14	

LABORATORY CONTROL SAMPLE: 116818

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.1	0.10	100	80-120	
Barium	mg/L	0.1	0.098	98	80-120	
Beryllium	mg/L	0.1	0.096	96	80-120	
Boron	mg/L	1	0.94	94	80-120	
Cadmium	mg/L	0.1	0.10	100	80-120	
Calcium	mg/L	1	0.97	97	80-120	
Chromium	mg/L	0.1	0.10	101	80-120	
Cobalt	mg/L	0.1	0.10	100	80-120	
Lead	mg/L	0.1	0.099	99	80-120	
Lithium	mg/L	0.1	0.096	96	80-120	
Molybdenum	mg/L	0.1	0.10	102	80-120	
Selenium	mg/L	0.1	0.10	101	80-120	
Thallium	mg/L	0.1	0.098	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116819 116820

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		2616933004 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/L	ND	0.1	0.1	0.10	0.10	102	102	75-125	0	20	
Barium	mg/L	0.072	0.1	0.1	0.18	0.18	109	105	75-125	2	20	
Beryllium	mg/L	ND	0.1	0.1	0.092	0.092	92	92	75-125	1	20	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616927

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116819		116820		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		2616933004 Result	MS Spike Conc.	MSD Spike Conc.									
Boron	mg/L	0.99	1	1	1.9	2.0	92	96	75-125	2	20		
Cadmium	mg/L	ND	0.1	0.1	0.10	0.10	104	101	75-125	3	20		
Calcium	mg/L	101	1	1	140	115	3930	1380	75-125	20	20	M6	
Chromium	mg/L	ND	0.1	0.1	0.11	0.10	105	103	75-125	2	20		
Cobalt	mg/L	0.00069J	0.1	0.1	0.10	0.10	102	100	75-125	2	20		
Lead	mg/L	ND	0.1	0.1	0.096	0.094	96	94	75-125	2	20		
Lithium	mg/L	0.0020J	0.1	0.1	0.094	0.095	91	93	75-125	2	20		
Molybdenum	mg/L	0.041	0.1	0.1	0.15	0.15	112	110	75-125	1	20		
Selenium	mg/L	ND	0.1	0.1	0.11	0.10	105	102	75-125	3	20		
Thallium	mg/L	ND	0.1	0.1	0.097	0.096	97	95	75-125	2	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2616927

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QC Batch:	25999	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples: 2616927001, 2616927002, 2616927003			

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LABORATORY CONTROL SAMPLE: 117377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	411	103	84-108	

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SAMPLE DUPLICATE: 117378

Parameter	Units	2617086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	226	203	11	10	D6

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SAMPLE DUPLICATE: 117379

Parameter	Units	2616901015 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	13.0J		10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2616927

QC Batch: 25882 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2616927001, 2616927002, 2616927003

METHOD BLANK: 116732 Matrix: Water  
Associated Lab Samples: 2616927001, 2616927002, 2616927003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.029J	0.25	0.024	04/05/19 15:47	
Fluoride	mg/L	ND	0.30	0.029	04/05/19 15:47	
Sulfate	mg/L	ND	1.0	0.017	04/05/19 15:47	

LABORATORY CONTROL SAMPLE: 116733

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.5	105	90-110	
Fluoride	mg/L	10	10.4	104	90-110	
Sulfate	mg/L	10	10.2	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 116734 116735

Parameter	Units	2616927001		116735		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	4.4	10	10	14.5	14.6	101	102	90-110	0	15
Fluoride	mg/L	ND	10	10	10.6	10.6	106	106	90-110	0	15
Sulfate	mg/L	4.9	10	10	14.3	14.4	94	95	90-110	0	15

MATRIX SPIKE SAMPLE: 116736

Parameter	Units	2616927002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1.7	10	11.3	96	90-110	
Fluoride	mg/L	0.12J	10	10.4	103	90-110	
Sulfate	mg/L	23.8	10	30.8	70	90-110 M1	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2616927

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### 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

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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.

R1 RPD value was outside control limits.

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond

Pace Project No.: 2616927

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616927001	HGWA-4	EPA 3005A	25905	EPA 6020B	25922
2616927002	HGWA-5	EPA 3005A	25906	EPA 6020B	25928
2616927003	HGWA-6	EPA 3005A	25906	EPA 6020B	25928
2616927001	HGWA-4	SM 2540C	25999		
2616927002	HGWA-5	SM 2540C	25999		
2616927003	HGWA-6	SM 2540C	25999		
2616927001	HGWA-4	EPA 300.0	25882		
2616927002	HGWA-5	EPA 300.0	25882		
2616927003	HGWA-6	EPA 300.0	25882		

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# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 3

### Section A

#### Required Client Information:

Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Mener Road  
 Atlanta, GA 30339  
 Email: jbrabham@southemco.com  
 Phone: (404)506-7239  
 Requested Due Date: Standard 180

Report To: Jolu Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Attention: scsinvoices@southemco.com

Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #: 180

Pace Project Manager: betsy.mcdaniel@paceelabs.com  
 Pace Profile #: 327 (AP) or 328 (Hurf)

### Section B

#### Invoice Information:

Company Name: Geosyntec  
 Address: 1000 Peachtree St NE, Atlanta, GA 30309

### Section C

#### Preservatives

Other	
Methanol	
Na2S2O3	
NaOH	
HCl	
HNO3	
H2SO4	
Unpreserved	
# OF CONTAINERS	3

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	ANALYSIS TESTS		RECEIVED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on	Custody	Sealed	Cooler	Samples	Intact	
			START	END			DATE	TIME		Metals (App. III & App. IV)	Metals (App. III, App. IV, D&O)											Metals (App. III & D&O)
1	Drinking Water	DW	04/02	11:52	G	WTG	04/02	12:11	3	Y	Y		4/2/19	1745	1930	1930						
2	Waste Water	WW											4/2/19	1930	1930							
3	Waste Water	WW											4/3/19	0954	0954							
4	Product	P											4/3/19	1110	1110							
5	Soil/Sediment	SL																				
6	Oil	OL																				
7	Wipe	WP																				
8	Air	AR																				
9	Other	OT																				
10	Tissue	TS																				

WOW#: 2616927

WOW#: 2616927

APR IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium

Grant Walter / Geosyntec 04/02/19 1745  
 Melisa McDaniel / Geosyntec 4/2/19 1930  
 Grant Walter / Geosyntec 4/3/19 0954  
 Melisa McDaniel 4/3/19 1110

GRANT WALTER  
 GRANT WALTER  
 GRANT WALTER

DATE SIGNED: 04/02/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

### Section A

#### Required Client Information:

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

### Section B

#### Required Project Information:

Report To: Joji Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: SCS10048606  
 Project Name: Plant Hammond  
 Project #:

### Section C

#### Invoice Information:

Attention: scsinvoic@southemco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@pacejabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS		PRESERVATIVES	ANALYSIS	METS (App. III & App. IV)	METS (App. III, App. IV, D&O)	METS (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME			SAMPLE TEMP AT COLLECTION	UNPRESERVED								
1	Drinking Water	DW	4/12/19 10:00	4/12/19 10:50	5		2	3		Y	Y	Y	Y			
2	Water	WT														
3	Waste Water	WW														
4	Product	P														
5	Solid/Solid	SL														
6	Oil	OL														
7	Wipe	WP														
8	Air	AR														
9	Other	OT														
10	Tissue	TS														

H/WA-5

*PCA*

4/12/2019

WO# : 2616927

PH: BM Due Date: 04/10/19  
 CLIENT: GAPower-CCR

CONTROL ELEMENTS	HELD BY (BY / RELATION)	DATE	TIME	ACCEPTED BY (VALIDATION)	DATE	TIME	TEMP IN C	Received on	Temp	Cooler	Custody	Samples
APP-1 (S) Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium	Dalton Anderson (SO)	4/2/19	17:45	Melicia Anderson/Geosyntec	4/2/19	17:45						
	Melicia Anderson/Geosyntec	4/12/19	19:30	GPS Run/Geosyntec	4/12/19	19:30						
	GPS Run/Geosyntec	4/13/19	09:54	GPS Run/Geosyntec	4/13/19	09:54						
	Melicia Anderson/Geosyntec	4/13/19	09:54	GPS Run/Geosyntec	4/13/19	09:54						
	Melicia Anderson/Geosyntec	4/13/19	11:10	Melicia Anderson	4/13/19	11:10						

PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE OF SAMPLER: *Dalton Anderson*  
 DATE Signed: 4/2/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

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

**Section B**  
**Required Project Information:**  
 Report To: Jolu Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southmco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYSIS TESTS	Requested Analyte(s) (Y/N)	TEMP in C	Received on Isc (Y/N)	Custody Sealed (Y/N)	Samples (Y/N)
			START DATE TIME	END DATE TIME										
1	Drinking Water	DW	4/2/19 1012	4/2/19 1037	G	W6	3	Unpreserved	Metals (App. III & App. IV) Metals (App. III, App. IV, D&O) TDS, Cl, F, SO4 Radium 226/228	Y	1			
2	Water	WT												
3	Waste Water	WW												
4	Product	P												
5	Soil/Sediment	SL												
6	Oil	OL												
7	Wipe	WP												
8	Air	AR												
9	Other	OT												
10	Tissue	TS												
<p><b>W0#: 2616927</b></p> <p>PM: BM Due Date: 04/10/19</p> <p>CLIENT: GAPower-CCR</p>														
<p>4/12/19 NM</p>														

APPROVALS	RECEIVED BY / DATE / TIME	RECEIVED BY / DATE / TIME	RECEIVED BY / DATE / TIME
Appendix IV (S): Arsenic, Barium	Maelia Muckus / Geosyntec 4/2/19 1430	Maelia Muckus / Geosyntec 4/2/19 1430	
Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium	Maelia Muckus / Geosyntec 4/3/19 0954	Maelia Muckus / Geosyntec 4/3/19 0954	
	Maelia Muckus 4/3/19 1110	Maelia Muckus 4/3/19 1110	

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Maelia Muckus  
 SIGNATURE of SAMPLER: Maelia Muckus  
 DATE Signed: 4/2/19



Sample Condition Upon Receipt

Client Name: GAPower

Project # \_\_\_\_\_

WO#: **2616927**

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

PM: **BM** Due Date: **04/10/19**  
CLIENT: **GAPower-CCR**

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used SB Type of Ice:  Wet  Blue  None

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 4/3/19 MK

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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)



April 25, 2019

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

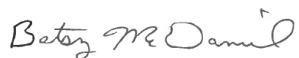
RE: Project: Plant Hammond  
Pace Project No.: 2616928

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 03, 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.: 2616928

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### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2616928

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2616928001	HGWA-4	Water	04/02/19 12:11	04/03/19 11:10
2616928002	HGWA-5	Water	04/02/19 10:40	04/03/19 11:10
2616928003	HGWA-6	Water	04/02/19 10:37	04/03/19 11:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2616928

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2616928001	HGWA-4	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616928002	HGWA-5	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2616928003	HGWA-6	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2616928

**Sample: HGWA-4**      **Lab ID: 2616928001**      Collected: 04/02/19 12:11      Received: 04/03/19 11:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.180 ± 0.184 (0.322)</b> C:91% T:NA	pCi/L	04/12/19 07:52	13982-63-3	
Radium-228	EPA 9320	<b>0.314 ± 0.440 (0.947)</b> C:74% T:84%	pCi/L	04/16/19 16:22	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.494 ± 0.624 (1.27)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616928

**Sample: HGWA-5**      **Lab ID: 2616928002**      Collected: 04/02/19 10:40      Received: 04/03/19 11:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.411 ± 0.254 (0.294)</b> C:93% T:NA	pCi/L	04/12/19 07:55	13982-63-3	
Radium-228	EPA 9320	<b>0.657 ± 0.423 (0.802)</b> C:74% T:87%	pCi/L	04/16/19 16:22	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.07 ± 0.677 (1.10)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616928

**Sample: HGWA-6**      **Lab ID: 2616928003**      Collected: 04/02/19 10:37      Received: 04/03/19 11:10      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.204 ± 0.226 (0.440)</b> <b>C:92% T:NA</b>	pCi/L	04/12/19 07:55	13982-63-3	
Radium-228	EPA 9320	<b>0.417 ± 0.365 (0.737)</b> <b>C:80% T:84%</b>	pCi/L	04/16/19 16:22	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.621 ± 0.591 (1.18)</b>	pCi/L	04/17/19 13:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616928

QC Batch: 337392

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2616928001, 2616928002, 2616928003

METHOD BLANK: 1642069

Matrix: Water

Associated Lab Samples: 2616928001, 2616928002, 2616928003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.117 ± 0.178 (0.382) C:94% T:NA	pCi/L	04/12/19 08:07	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2616928

QC Batch: 337342

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2616928001, 2616928002, 2616928003

METHOD BLANK: 1641953

Matrix: Water

Associated Lab Samples: 2616928001, 2616928002, 2616928003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.245 ± 0.294 (0.748) C:78% T:79%	pCi/L	04/16/19 16:22	

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.: 2616928

---

### 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.: 2616928

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2616928001	HGWA-4	EPA 9315	337392		
2616928002	HGWA-5	EPA 9315	337392		
2616928003	HGWA-6	EPA 9315	337392		
2616928001	HGWA-4	EPA 9320	337342		
2616928002	HGWA-5	EPA 9320	337342		
2616928003	HGWA-6	EPA 9320	337342		
2616928001	HGWA-4	Total Radium Calculation	338683		
2616928002	HGWA-5	Total Radium Calculation	338683		
2616928003	HGWA-6	Total Radium Calculation	338683		

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY / Analytical Request Document

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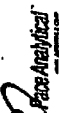
<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Georgia Power - Coal Combustion Residuals	Report To: Johi Abraham	Attention: scs@paceanalytical.com	Company Name:	Address:	City/State/Zip:
Address: 2480 Mancor Road	Copy To: Lauren Petty, Geosynisc	Purchase Order #: SCST0348606	Project Name: Plant Hammond	Pace Project Manager: betty.mcdaniel@paceanalytical.com	State: GA
Atlanta, GA 30339	Email: jabraham@paceanalytical.com	Project #:			
Phone: (404) 506-7239	Requested Due Date: <b>Standard TBH</b>				
Fax:					

ITEM #	MATRIX	MATRIX CODE	COLLECTED		DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST	RECEIVED BY (AFFILIATION)	DATE	TIME	RECEIVED ON	TEMP IN C	Ice (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)																														
			START	END																																													
1	HGWA-4	WTG	04/02 11:52	04/02 12:11	04/02	12:11	5	2	3	Unpreserved	NaOH	Na2S2O3	Methanol	Other	Metals (App. III & App. IV)	Metals (App. III, App. IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)																													
2																																																	
3																																																	
4																																																	
5																																																	
6																																																	
7																																																	
8																																																	
9																																																	
10																																																	
11																																																	
12																																																	

WO#: 2616928

ADDITIONAL COMMENTS	RELINQUISHED BY (AFFILIATION)	DATE	TIME	ACCEPTED BY (AFFILIATION)	DATE	TIME
App IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium	Grant Walter/Geosynisc	04/02/19	1745	Melissa McPherson	4/2/19	1745
	Melissa McPherson/Geosynisc	4/2/19	1930	Grant Walter/Geosynisc	4/2/19	1930
	Grant Walter/Geosynisc	4/3/19	0954	Melissa McPherson	4/3/19	0954
	Melissa McPherson	4/3/19	1110			

SAMPLER NAME AND SIGNATURE: **Grant Walter**  
 PRINT NAME OF SAMPLER: **Grant Walter**  
 SIGNATURE OF SAMPLER: *[Signature]*  
 DATE SIGNED: **04/02/19**



# CHAIN-OF-CUSTODY / Analytical Request Document

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

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

**Section B**  
**Required Project Information:**  
 Report To: Jiju Abraham  
 Copy To: Lauren Peaty, Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoic@southernco.com  
 Company Name:  
 Address:  
 Pace Quote: betsy.mcdama@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 GA

ITEM #	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES	ANALYSES TESTED (Y/N)	METHANOL	OTHER	RESIDUAL CHLORINE (Y/N)
			START DATE TIME	END DATE TIME							
1	H2NA-5	G	4/2/19 10:00	4/2/19 10:40	5	2	3	Y	Y	Y	Y
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

**NO# : 2616928**

PM: BM Due Date: 05/01/19  
 CLIENT: GAPover-CCR

DATE	TIME	RECEIVED BY / AFFILIATION	DATE	TIME	RECEIVED BY / AFFILIATION	TEMP in C	Received on	Sealed	Cooler	Samples
4/2/19	17:05	Melina Anderson (SO) / Geosyntec	4/2/19	17:45	Melina Anderson / Geosyntec					
4/2/19	19:30	Scott Lane / Geosyntec	4/2/19	19:30	Scott Lane / Geosyntec					
4/3/19	09:54	MOA Luman / Geosyntec	4/3/19	11:00	MOA Luman / Geosyntec					

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE of SAMPLER: *[Signature]* DATE Signed: 4/2/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

**Section A**  
**Required Client Information:**  
 Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Mamer Road  
 Atlanta, GA 30339  
 Email: jbrabham@southhamco.com  
 Phone: (404)506-7239  
 Requested Due Date: Standard TAT

**Section B**  
**Required Project Information:**  
 Report To: Joji Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southhamco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.medaniel@paceilabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-RAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	UNPRESERVED	PRESERVATIVES				ANALYSES TEST	RECEIVED ON	TEMP IN C	RECEIVED IN
			START DATE	END DATE					H2SO4	HNO3	HCl	NaOH				
1	Drinking Water	DW	4/21/19	10/21/19	G	W1	5	2	3							
2	Water	WT														
3	Waste Water	WW														
4	Product	P														
5	Solid/Solid	SL														
6	Oil	OL														
7	Wipe	WP														
8	Air	AR														
9	Other	OT														
10	Tissue	TS														

**ADDITIONAL COMMENTS:** Appendix IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium

**RELINQUISHED BY / AFFIRMATION:** Noelia Muskus / Geosyntec  
 DATE: 4/21/19  
 TIME: 09:54

**RECEIVED BY / AFFIRMATION:** Noelia Muskus / Pace  
 DATE: 4/21/19  
 TIME: 09:54

**SIGNATURE OF SAMPLER:** Noelia Muskus  
**SIGNATURE OF ANALYST:** Noelia Muskus  
**DATE SIGNED:** 4/21/19

**TEMP IN C:** 1.0  
**RECEIVED IN:** 7

W0#: 2616928  
PM: BM  
Due Date: 05/01/19  
CLIENT: GAPower-CCR



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2616928**

PM: **BM**

Due Date: **05/01/19**

CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.0 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and initials of person examining contents: 4/3/19 MK

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

Client Notification/ Resolution: \_\_\_\_\_

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Field Data Required? Y / N

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)

April 13, 2019

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

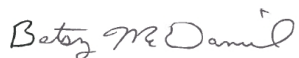
RE: Project: Plant Hammond  
Pace Project No.: 2617072

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 05, 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.: 2617072

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### Atlanta Certification IDs

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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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617072

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617072001	HGWC-15	Water	04/04/19 10:44	04/05/19 11:20
2617072002	HGWC-16	Water	04/04/19 12:52	04/05/19 11:20
2617072003	MW-21D	Water	04/04/19 15:38	04/05/19 11:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617072

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617072001	HGWC-15	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617072002	HGWC-16	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	MWB, RLC	3	PASI-GA
2617072003	MW-21D	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	MWB, RLC	3	PASI-GA

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2617072

Sample: HGWC-15		Lab ID: 2617072001		Collected: 04/04/19 10:44		Received: 04/05/19 11:20		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	<b>0.00017J</b>	mg/L	0.0050	0.000060	1	04/09/19 10:55	04/10/19 01:03	7440-38-2		
Barium	<b>0.018</b>	mg/L	0.010	0.000060	1	04/09/19 10:55	04/10/19 01:03	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/09/19 10:55	04/10/19 01:03	7440-41-7		
Boron	<b>2.3</b>	mg/L	2.0	0.051	20	04/09/19 10:55	04/11/19 19:01	7440-42-8	M6	
Cadmium	<b>0.0018</b>	mg/L	0.0010	0.000070	1	04/09/19 10:55	04/10/19 01:03	7440-43-9		
Calcium	<b>214</b>	mg/L	25.0	1.0	50	04/09/19 10:55	04/11/19 01:44	7440-70-2	M6	
Chromium	ND	mg/L	0.010	0.00042	1	04/09/19 10:55	04/10/19 01:03	7440-47-3		
Cobalt	<b>0.035</b>	mg/L	0.010	0.000050	1	04/09/19 10:55	04/10/19 01:03	7440-48-4		
Lead	<b>0.000072J</b>	mg/L	0.0050	0.000050	1	04/09/19 10:55	04/10/19 01:03	7439-92-1		
Lithium	<b>0.00090J</b>	mg/L	0.050	0.00042	1	04/09/19 10:55	04/10/19 01:03	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/09/19 10:55	04/10/19 01:03	7439-98-7		
Selenium	<b>0.00021J</b>	mg/L	0.010	0.000080	1	04/09/19 10:55	04/10/19 01:03	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000060	1	04/09/19 10:55	04/10/19 01:03	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>926</b>	mg/L	25.0	10.0	1		04/11/19 19:35			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>138</b>	mg/L	5.0	0.48	20		04/10/19 08:46	16887-00-6		
Fluoride	<b>0.066J</b>	mg/L	0.30	0.029	1		04/09/19 22:04	16984-48-8		
Sulfate	<b>528</b>	mg/L	20.0	0.34	20		04/10/19 08:46	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617072

Sample: HGWC-16		Lab ID: 2617072002		Collected: 04/04/19 12:52		Received: 04/05/19 11:20		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A							
Arsenic	<b>0.00010J</b>	mg/L	0.0050	0.000060	1	04/09/19 10:55	04/10/19 01:21	7440-38-2	
Barium	<b>0.11</b>	mg/L	0.010	0.000060	1	04/09/19 10:55	04/10/19 01:21	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	04/09/19 10:55	04/10/19 01:21	7440-41-7	
Boron	<b>2.1</b>	mg/L	2.0	0.051	20	04/09/19 10:55	04/11/19 19:49	7440-42-8	
Cadmium	ND	mg/L	0.0010	0.000070	1	04/09/19 10:55	04/10/19 01:21	7440-43-9	
Calcium	<b>196</b>	mg/L	10.0	0.41	20	04/09/19 10:55	04/11/19 19:49	7440-70-2	
Chromium	ND	mg/L	0.010	0.00042	1	04/09/19 10:55	04/10/19 01:21	7440-47-3	
Cobalt	<b>0.00028J</b>	mg/L	0.010	0.000050	1	04/09/19 10:55	04/10/19 01:21	7440-48-4	
Lead	<b>0.00016J</b>	mg/L	0.0050	0.000050	1	04/09/19 10:55	04/10/19 01:21	7439-92-1	
Lithium	<b>0.0032J</b>	mg/L	0.050	0.00042	1	04/09/19 10:55	04/10/19 01:21	7439-93-2	
Molybdenum	ND	mg/L	0.010	0.00010	1	04/09/19 10:55	04/10/19 01:21	7439-98-7	
Selenium	<b>0.000089J</b>	mg/L	0.010	0.000080	1	04/09/19 10:55	04/10/19 01:21	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000060	1	04/09/19 10:55	04/10/19 01:21	7440-28-0	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>704</b>	mg/L	25.0	10.0	1		04/11/19 19:35		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>76.8</b>	mg/L	1.2	0.12	5		04/10/19 09:09	16887-00-6	
Fluoride	ND	mg/L	0.30	0.029	1		04/09/19 22:27	16984-48-8	
Sulfate	<b>251</b>	mg/L	10.0	0.17	10		04/12/19 18:43	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2617072

Sample: MW-21D		Lab ID: 2617072003		Collected: 04/04/19 15:38		Received: 04/05/19 11:20		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	<b>0.00019J</b>	mg/L	0.0050	0.000060	1	04/09/19 10:55	04/10/19 01:25	7440-38-2		
Barium	<b>0.075</b>	mg/L	0.010	0.000060	1	04/09/19 10:55	04/10/19 01:25	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/09/19 10:55	04/10/19 01:25	7440-41-7		
Boron	<b>5.2</b>	mg/L	5.0	0.13	50	04/09/19 10:55	04/11/19 19:52	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000070	1	04/09/19 10:55	04/10/19 01:25	7440-43-9		
Calcium	<b>427</b>	mg/L	25.0	1.0	50	04/09/19 10:55	04/11/19 19:52	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/09/19 10:55	04/10/19 01:25	7440-47-3		
Cobalt	<b>0.00034J</b>	mg/L	0.010	0.000050	1	04/09/19 10:55	04/10/19 01:25	7440-48-4		
Lead	ND	mg/L	0.0050	0.000050	1	04/09/19 10:55	04/10/19 01:25	7439-92-1		
Lithium	<b>0.019J</b>	mg/L	0.050	0.00042	1	04/09/19 10:55	04/10/19 01:25	7439-93-2		
Molybdenum	<b>0.033</b>	mg/L	0.010	0.00010	1	04/09/19 10:55	04/10/19 01:25	7439-98-7		
Selenium	ND	mg/L	0.010	0.000080	1	04/09/19 10:55	04/10/19 01:25	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000060	1	04/09/19 10:55	04/10/19 01:25	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>1800</b>	mg/L	25.0	10.0	1		04/11/19 19:35			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>299</b>	mg/L	25.0	2.4	100		04/12/19 19:06	16887-00-6	B	
Fluoride	<b>0.10J</b>	mg/L	0.30	0.029	1		04/09/19 22:50	16984-48-8		
Sulfate	<b>915</b>	mg/L	100	1.7	100		04/12/19 19:06	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617072

QC Batch: 468126 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
Associated Lab Samples: 2617072001, 2617072002, 2617072003

METHOD BLANK: 2543175 Matrix: Water  
Associated Lab Samples: 2617072001, 2617072002, 2617072003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.000060	04/11/19 00:58	
Barium	mg/L	ND	0.010	0.000060	04/11/19 00:58	
Beryllium	mg/L	ND	0.0030	0.000050	04/10/19 00:56	
Boron	mg/L	ND	0.10	0.0026	04/11/19 00:58	
Cadmium	mg/L	ND	0.0010	0.000070	04/11/19 00:58	
Calcium	mg/L	ND	0.50	0.021	04/11/19 00:58	
Chromium	mg/L	ND	0.010	0.00042	04/11/19 00:58	
Cobalt	mg/L	ND	0.010	0.000050	04/11/19 00:58	
Lead	mg/L	ND	0.0050	0.000050	04/11/19 00:58	
Lithium	mg/L	ND	0.050	0.00042	04/11/19 00:58	
Molybdenum	mg/L	ND	0.010	0.00010	04/11/19 00:58	
Selenium	mg/L	ND	0.010	0.000080	04/11/19 00:58	
Thallium	mg/L	ND	0.0010	0.000060	04/11/19 00:58	

LABORATORY CONTROL SAMPLE: 2543176

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.01	0.0099	99	80-120	
Barium	mg/L	0.05	0.049	98	80-120	
Beryllium	mg/L	0.01	0.0095	95	80-120	
Boron	mg/L	0.05	0.047J	94	80-120	
Cadmium	mg/L	0.01	0.010	101	80-120	
Calcium	mg/L	0.62	0.63	101	80-120	
Chromium	mg/L	0.05	0.050	99	80-120	
Cobalt	mg/L	0.01	0.010J	100	80-120	
Lead	mg/L	0.05	0.050	100	80-120	
Lithium	mg/L	0.05	0.050J	100	80-120	
Molybdenum	mg/L	0.05	0.051	102	80-120	
Selenium	mg/L	0.05	0.050	99	80-120	
Thallium	mg/L	0.01	0.0099	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2543177 2543178

Parameter	Units	2617072001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Result						
Arsenic	mg/L	0.00017J	0.01	0.010	0.010	102	99	75-125	3	20		
Barium	mg/L	0.018	0.05	0.069	0.068	101	99	75-125	1	20		
Beryllium	mg/L	ND	0.01	0.0088	0.0084	87	84	75-125	4	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617072

Parameter	Units	2543177		2543178		MS % Rec	MSD % Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Boron	mg/L	2.3	0.05	0.05	2.4	2.4	205	248	75-125	1	20	M6
Cadmium	mg/L	0.0018	0.01	0.01	0.012	0.011	97	96	75-125	1	20	
Calcium	mg/L	214	0.62	0.62	218	216	575	271	75-125	1	20	M6
Chromium	mg/L	ND	0.05	0.05	0.050	0.049	99	98	75-125	1	20	
Cobalt	mg/L	0.035	0.01	0.01	0.044	0.044	97	94	75-125	1	20	
Lead	mg/L	0.000072J	0.05	0.05	0.052	0.051	103	102	75-125	1	20	
Lithium	mg/L	0.00090J	0.05	0.05	0.046J	0.045J	90	88	75-125	2	20	
Molybdenum	mg/L	ND	0.05	0.05	0.052	0.052	104	103	75-125	1	20	
Selenium	mg/L	0.00021J	0.05	0.05	0.050	0.049	99	97	75-125	2	20	
Thallium	mg/L	ND	0.01	0.01	0.010	0.010	104	102	75-125	1	20	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617072

QC Batch: 26061 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2617072001, 2617072002, 2617072003

METHOD BLANK: 117670 Matrix: Water  
Associated Lab Samples: 2617072001, 2617072002, 2617072003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.31	0.25	0.024	04/09/19 19:01	
Fluoride	mg/L	ND	0.30	0.029	04/09/19 19:01	
Sulfate	mg/L	ND	1.0	0.017	04/09/19 19:01	

LABORATORY CONTROL SAMPLE: 117671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.1	101	90-110	
Fluoride	mg/L	10	9.4	94	90-110	
Sulfate	mg/L	10	10.8	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 117672 117673

Parameter	Units	2617069001		2617069002		2617069003		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chloride	mg/L	6.9	10	10	16.0	16.1	91	92	90-110	1	15
Fluoride	mg/L	0.042J	10	10	9.0	9.1	89	91	90-110	2	15 M1
Sulfate	mg/L	358	10	10	224	224	-1340	-1330	90-110	0	15 M1

MATRIX SPIKE SAMPLE: 117674

Parameter	Units	2617069002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7.2	10	16.3	91	90-110	
Fluoride	mg/L	0.045J	10	9.3	92	90-110	
Sulfate	mg/L	369	10	226	-1430	90-110 M1	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617072

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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.: 2617072

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617072001	HGWC-15	EPA 3010A	468126	EPA 6020B	468248
2617072002	HGWC-16	EPA 3010A	468126	EPA 6020B	468248
2617072003	MW-21D	EPA 3010A	468126	EPA 6020B	468248
2617072001	HGWC-15	SM 2540C	26251		
2617072002	HGWC-16	SM 2540C	26251		
2617072003	MW-21D	SM 2540C	26251		
2617072001	HGWC-15	EPA 300.0	26061		
2617072002	HGWC-16	EPA 300.0	26061		
2617072003	MW-21D	EPA 300.0	26061		

### 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: jbraham@gepower.com  
 Phone: (404)506-7239  
 Requested Due Date:

**Section B**  
**Required Project Information:**  
 Report To: Joey Abraham  
 Copy To: Lauren Petty, Geosynetics  
 Purchase Order #: SCS10246806  
 Project Name: Plant Hammond  
 Project #:

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Quote:  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huf)

ITEM #	MATRIX CODE Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	MATRIX TYPE (see valid codes to left) (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analytical Lab	Metals (App. III & App. IV) Metals (App. III, App. IV, D&O) Metals (App. III & D&O) TDS, Cl, F, SO4 Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME						
1	HGWC-16	WT G	4/19/19 12:30	4/19/19 12:57	1804	2	H2SO4 Unpreserved	Y	Y	
2	MW-21D	WT G	4/19/19 15:30	4/19/19 15:50	1804	2	H2SO4 Unpreserved	Y	Y	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

**WOH: 2617072**  
 PH: BM Due Date: 04/12/19  
 CLIENT: GAPower-CCR

REQUISITION #	DATE	TIME	ACCEPTEDEVALUATION	DATE	TIME	SAMPLE CONDITIONS
APP III + IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt's Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium	4-4-19	1804	1804	4-4-19	1804	
	4-4-19	2030	1830	4-4-19	2038	
	4-5-19	0833	0833	4-5-19	0933	
	4-5-19	1120	1120	4-5-19	1120	

**RECEIVED BY (NAME AND SIGNATURE)**  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE OF SAMPLER: *[Signature]*  
 DATE SIGNED: 4/4/2019



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

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

**WO#: 2617072**

PM: **BM** Due Date: **04/12/19**  
CLIENT: **GAPower-CCR**

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Samples on ice, cooling process has begun

Cooler Temperature 1.2 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 4/5/19 MK

Temp should be above freezing to 6°C

Comments:

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

April 29, 2019

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

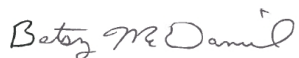
RE: Project: Plant Hammond  
Pace Project No.: 2617073

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 05, 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.: 2617073

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### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617073

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617073001	HGWC-15	Water	04/04/19 10:44	04/05/19 11:20
2617073002	HGWC-16	Water	04/04/19 12:52	04/05/19 11:20
2617073003	MW-21D	Water	04/04/19 15:38	04/05/19 11:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617073

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617073001	HGWC-15	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617073002	HGWC-16	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617073003	MW-21D	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2617073

**Sample: HGWC-15**      **Lab ID: 2617073001**      Collected: 04/04/19 10:44      Received: 04/05/19 11:20      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.122 ± 0.231 (0.531)</b> <b>C:92% T:NA</b>	pCi/L	04/17/19 08:36	13982-63-3	
Radium-228	EPA 9320	<b>0.390 ± 0.335 (0.679)</b> <b>C:83% T:87%</b>	pCi/L	04/18/19 12:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.512 ± 0.566 (1.21)</b>	pCi/L	04/22/19 11:17	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617073

**Sample: HGWC-16**      **Lab ID: 2617073002**      Collected: 04/04/19 12:52      Received: 04/05/19 11:20      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.217 ± 0.246 (0.484)</b> C:77% T:NA	pCi/L	04/17/19 08:36	13982-63-3	
Radium-228	EPA 9320	<b>0.743 ± 0.401 (0.730)</b> C:86% T:79%	pCi/L	04/18/19 12:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.960 ± 0.647 (1.21)</b>	pCi/L	04/22/19 11:17	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617073

**Sample: MW-21D**      **Lab ID: 2617073003**      Collected: 04/04/19 15:38      Received: 04/05/19 11:20      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.276 ± 0.222 (0.361)</b> C:95% T:NA	pCi/L	04/17/19 08:36	13982-63-3	
Radium-228	EPA 9320	<b>0.515 ± 0.378 (0.745)</b> C:85% T:80%	pCi/L	04/18/19 12:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.791 ± 0.600 (1.11)</b>	pCi/L	04/22/19 11:17	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617073

QC Batch: 337917

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2617073001, 2617073002, 2617073003

METHOD BLANK: 1644525

Matrix: Water

Associated Lab Samples: 2617073001, 2617073002, 2617073003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.221 ± 0.211 (0.378) C:90% T:NA	pCi/L	04/17/19 08:36	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617073

QC Batch: 337911

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2617073001, 2617073002, 2617073003

METHOD BLANK: 1644521

Matrix: Water

Associated Lab Samples: 2617073001, 2617073002, 2617073003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.526 ± 0.315 (0.569) C:87% T:76%	pCi/L	04/18/19 12:31	

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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## QUALIFIERS

Project: Plant Hammond  
Pace Project No.: 2617073

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### 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.: 2617073

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617073001	HGWC-15	EPA 9315	337917		
2617073002	HGWC-16	EPA 9315	337917		
2617073003	MW-21D	EPA 9315	337917		
2617073001	HGWC-15	EPA 9320	337911		
2617073002	HGWC-16	EPA 9320	337911		
2617073003	MW-21D	EPA 9320	337911		
2617073001	HGWC-15	Total Radium Calculation	339290		
2617073002	HGWC-16	Total Radium Calculation	339290		
2617073003	MW-21D	Total Radium Calculation	339290		

### 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.

Page: 2 of 2

### Section A

#### Required Client Information:

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

### Section B

#### Required Project Information:

Report To: Job: Abraham  
 Copy To: Lauren Peity, Geosyntec  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #:

### Section C

#### Invoice Information:

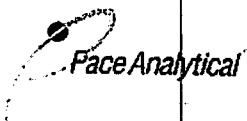
Attention: scsinvoices@southernco.com  
 Company Name:  
 Address:  
 Pace Project Manager: betsy.medaniel@papelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST Y/N	Metals (App. III & App. IV)	Metals (App. III, App. IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME											
1	Drinking Water	DW	4/19 12:30	4/19 12:57	G-RAB	AS 6	3	Unpreserved		Y					
2	Waste Water	WW	4/19 15:19	4/19 15:51	G-RAB	AS 6	3	Unpreserved		Y					
3	Product Soil/Sed	P SL													
4	Oil	OL													
5	Wipe	WP													
6	Air	AR													
7	Other	OT													
8	Tissue	TS													
9															
10															
11															
12															

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP IN C	Received on	Sealed	Cooler	Samples Intact
APP III + IV (S): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Manganese, Selenium, Thallium	4-4-19	1804	Dalton Anderson (Geo)	4-4-19	1804					
	4-4-19	2038	Geo	4-4-19	2038					
	4-5-19	0933	Geo	4-5-19	0933					
	4-5-19	1120	MGA MANAN	4-5-19	1120	1.2				

NOH: 2617073  
 PH: BM Due Date: 05/03/19  
 CLIENT: GAPower-CCR

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE OF SAMPLER: *[Signature]*  
 DATE SIGNED: 4/4/2019



Sample Condition Upon Receipt

Client Name: GIA Power

Project # \_\_\_\_\_

WO#: **2617073**

PM: **BM**

Due Date: **05/03/19**

CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.2 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/5/19 MK

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

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)

May 01, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2617150

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 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.

This revised report replaces the one issued on 4/15/2019. The report has been revised to correct metals units per consultant request. No other changes have been made to this 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.: 2617150

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### Atlanta Certification IDs

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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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617150

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617150001	MW-22	Water	04/05/19 09:59	04/08/19 15:30
2617150002	MW-23D	Water	04/05/19 11:33	04/08/19 15:30
2617150003	HGWC-14	Water	04/05/19 12:52	04/08/19 15:30
2617150004	HGWC-17	Water	04/05/19 12:25	04/08/19 15:30
2617150005	HGWC-18	Water	04/05/19 14:25	04/08/19 15:30

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617150

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617150001	MW-22	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617150002	MW-23D	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617150003	HGWC-14	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617150004	HGWC-17	EPA 6020B	JMW1, SER	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617150005	HGWC-18	EPA 6020B	JMW1	13	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617150

Sample: MW-22		Lab ID: 2617150001		Collected: 04/05/19 09:59		Received: 04/08/19 15:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	ND	mg/L	0.10	0.0012	20	04/10/19 19:59	04/11/19 21:28	7440-38-2	D3	
Barium	<b>0.036</b>	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 07:51	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 07:51	7440-41-7		
Boron	<b>2.1</b>	mg/L	2.0	0.051	20	04/10/19 19:59	04/11/19 21:28	7440-42-8		
Cadmium	<b>0.00064J</b>	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 07:51	7440-43-9		
Calcium	<b>178</b>	mg/L	10.0	0.41	20	04/10/19 19:59	04/11/19 21:28	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 07:51	7440-47-3		
Cobalt	<b>0.022</b>	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 07:51	7440-48-4		
Lead	ND	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 07:51	7439-92-1	BC	
Lithium	<b>0.0013J</b>	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 07:51	7439-93-2		
Molybdenum	<b>0.00013J</b>	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 07:51	7439-98-7		
Selenium	ND	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 07:51	7782-49-2		
Thallium	ND	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 07:51	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>890</b>	mg/L	25.0	10.0	1		04/11/19 20:53			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>131</b>	mg/L	6.2	0.60	25		04/15/19 19:25	16887-00-6		
Fluoride	<b>0.13J</b>	mg/L	0.30	0.029	1		04/10/19 22:49	16984-48-8		
Sulfate	<b>392</b>	mg/L	25.0	0.42	25		04/15/19 19:25	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2617150

Sample: MW-23D      Lab ID: 2617150002      Collected: 04/05/19 11:33      Received: 04/08/19 15:30      Matrix: Water									
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Arsenic	ND	mg/L	0.10	0.0012	20	04/10/19 19:59	04/11/19 21:35	7440-38-2	D3
Barium	<b>0.061</b>	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 07:58	7440-39-3	
Beryllium	ND	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 07:58	7440-41-7	
Boron	<b>3.0</b>	mg/L	2.0	0.051	20	04/10/19 19:59	04/11/19 21:35	7440-42-8	
Cadmium	ND	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 07:58	7440-43-9	
Calcium	<b>352</b>	mg/L	25.0	1.0	50	04/10/19 19:59	04/15/19 11:07	7440-70-2	
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 07:58	7440-47-3	
Cobalt	<b>0.0012J</b>	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 07:58	7440-48-4	
Lead	ND	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 07:58	7439-92-1	BC
Lithium	<b>0.0021J</b>	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 07:58	7439-93-2	
Molybdenum	<b>0.0014J</b>	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 07:58	7439-98-7	
Selenium	ND	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 07:58	7782-49-2	
Thallium	ND	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 07:58	7440-28-0	
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	<b>1400</b>	mg/L	25.0	10.0	1		04/11/19 20:53		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	<b>195</b>	mg/L	6.2	0.60	25		04/15/19 19:48	16887-00-6	
Fluoride	<b>0.14J</b>	mg/L	0.30	0.029	1		04/10/19 23:10	16984-48-8	
Sulfate	<b>585</b>	mg/L	25.0	0.42	25		04/15/19 19:48	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617150

Sample: HGWC-14		Lab ID: 2617150003		Collected: 04/05/19 12:52		Received: 04/08/19 15:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	ND	mg/L	0.10	0.0012	20	04/10/19 19:59	04/11/19 21:42	7440-38-2	D3	
Barium	<b>0.016</b>	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 08:05	7440-39-3		
Beryllium	<b>0.00027J</b>	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 08:05	7440-41-7		
Boron	<b>12.5</b>	mg/L	5.0	0.13	50	04/10/19 19:59	04/15/19 11:11	7440-42-8		
Cadmium	<b>0.000079J</b>	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 08:05	7440-43-9		
Calcium	<b>606</b>	mg/L	50.0	2.1	100	04/10/19 19:59	04/15/19 11:39	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 08:05	7440-47-3		
Cobalt	<b>0.021</b>	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 08:05	7440-48-4		
Lead	<b>0.0012J</b>	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 08:05	7439-92-1	BC	
Lithium	ND	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 08:05	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 08:05	7439-98-7		
Selenium	<b>0.00091J</b>	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 08:05	7782-49-2		
Thallium	<b>0.00028J</b>	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 08:05	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>2310</b>	mg/L	25.0	10.0	1		04/11/19 20:53			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>227</b>	mg/L	5.0	0.48	20		04/15/19 20:11	16887-00-6		
Fluoride	<b>0.66</b>	mg/L	0.30	0.029	1		04/10/19 23:31	16984-48-8		
Sulfate	<b>1520</b>	mg/L	50.0	0.85	50		04/15/19 20:34	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2617150

Sample: HGWC-17		Lab ID: 2617150004		Collected: 04/05/19 12:25		Received: 04/08/19 15:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	ND	mg/L	0.10	0.0012	20	04/10/19 19:59	04/11/19 21:49	7440-38-2	D3	
Barium	<b>0.022</b>	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 08:12	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 08:12	7440-41-7		
Boron	<b>5.9</b>	mg/L	2.0	0.051	20	04/10/19 19:59	04/11/19 21:49	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 08:12	7440-43-9		
Calcium	<b>340</b>	mg/L	25.0	1.0	50	04/10/19 19:59	04/15/19 11:14	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 08:12	7440-47-3		
Cobalt	<b>0.016</b>	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 08:12	7440-48-4		
Lead	<b>0.000076J</b>	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 08:12	7439-92-1	BC	
Lithium	<b>0.00074J</b>	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 08:12	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 08:12	7439-98-7		
Selenium	<b>0.000093J</b>	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 08:12	7782-49-2		
Thallium	<b>0.00013J</b>	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 08:12	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>1260</b>	mg/L	25.0	10.0	1		04/11/19 20:53			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>195</b>	mg/L	6.2	0.60	25		04/15/19 20:56	16887-00-6		
Fluoride	<b>0.16J</b>	mg/L	0.30	0.029	1		04/10/19 23:52	16984-48-8		
Sulfate	<b>642</b>	mg/L	25.0	0.42	25		04/15/19 20:56	14808-79-8		

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## ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617150

Sample: HGWC-18		Lab ID: 2617150005		Collected: 04/05/19 14:25		Received: 04/08/19 15:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Arsenic	<b>0.0015J</b>	mg/L	0.10	0.0012	20	04/10/19 19:59	04/11/19 22:23	7440-38-2	D3	
Barium	<b>0.021</b>	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 08:20	7440-39-3		
Beryllium	<b>0.0022J</b>	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 08:20	7440-41-7		
Boron	<b>6.4</b>	mg/L	2.0	0.051	20	04/10/19 19:59	04/11/19 22:23	7440-42-8		
Cadmium	<b>0.0017</b>	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 08:20	7440-43-9		
Calcium	<b>400</b>	mg/L	25.0	1.0	50	04/10/19 19:59	04/15/19 11:18	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 08:20	7440-47-3		
Cobalt	<b>0.14</b>	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 08:20	7440-48-4		
Lead	<b>0.0015J</b>	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 08:20	7439-92-1	BC	
Lithium	<b>0.0084J</b>	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 08:20	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 08:20	7439-98-7		
Selenium	<b>0.0018J</b>	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 08:20	7782-49-2		
Thallium	<b>0.00014J</b>	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 08:20	7440-28-0		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>1610</b>	mg/L	25.0	10.0	1		04/11/19 20:54			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>217</b>	mg/L	12.5	1.2	50		04/15/19 21:19	16887-00-6		
Fluoride	<b>0.37</b>	mg/L	0.30	0.029	1		04/11/19 00:12	16984-48-8		
Sulfate	<b>1030</b>	mg/L	50.0	0.85	50		04/15/19 21:19	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: Plant Hammond

Pace Project No.: 2617150

QC Batch: 468616 Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A Analysis Description: 6020 MET

Associated Lab Samples: 2617150001, 2617150002, 2617150003, 2617150004, 2617150005

METHOD BLANK: 2545217 Matrix: Water

Associated Lab Samples: 2617150001, 2617150002, 2617150003, 2617150004, 2617150005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.0050	0.000060	04/11/19 20:31	
Barium	mg/L	ND	0.010	0.000060	04/11/19 20:31	
Beryllium	mg/L	ND	0.0030	0.000050	04/11/19 20:31	
Boron	mg/L	ND	0.10	0.0026	04/11/19 20:31	
Cadmium	mg/L	ND	0.0010	0.000070	04/11/19 20:31	
Calcium	mg/L	ND	0.50	0.021	04/11/19 20:31	
Chromium	mg/L	ND	0.010	0.00042	04/11/19 20:31	
Cobalt	mg/L	ND	0.010	0.000050	04/11/19 20:31	
Lead	mg/L	ND	0.0050	0.000050	04/11/19 20:31	
Lithium	mg/L	ND	0.050	0.00042	04/11/19 20:31	
Molybdenum	mg/L	ND	0.010	0.00010	04/11/19 20:31	
Selenium	mg/L	ND	0.010	0.000080	04/11/19 20:31	
Thallium	mg/L	ND	0.0010	0.000060	04/11/19 20:31	

LABORATORY CONTROL SAMPLE: 2545218

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.01	0.0099	99	80-120	
Barium	mg/L	0.05	0.049	97	80-120	
Beryllium	mg/L	0.01	0.010	103	80-120	
Boron	mg/L	0.05	0.052J	104	80-120	
Cadmium	mg/L	0.01	0.010	100	80-120	
Calcium	mg/L	0.62	0.64	102	80-120	
Chromium	mg/L	0.05	0.050	101	80-120	
Cobalt	mg/L	0.01	0.010	101	80-120	
Lead	mg/L	0.05	0.050	100	80-120	
Lithium	mg/L	0.05	0.052	105	80-120	
Molybdenum	mg/L	0.05	0.050	100	80-120	
Selenium	mg/L	0.05	0.050	100	80-120	
Thallium	mg/L	0.01	0.010	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2545219 2545220

Parameter	Units	92424526001 Result	MS Spike Conc.	MSD Spike Conc.	2545219		2545220		% Rec Limits	RPD	Max RPD	Qual
					MS Result	MSD Result	MS % Rec	MSD % Rec				
Arsenic	mg/L	ND	0.01	0.01	0.0094	0.0092	94	92	75-125	2	20	
Barium	mg/L	6.0 ug/L	0.05	0.05	0.053	0.054	95	95	75-125	0	20	
Beryllium	mg/L	0.34 ug/L	0.01	0.01	0.0098	0.0098	95	94	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.: 2617150

Parameter	Units	2545219		2545220		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Boron	mg/L	4.0J ug/L	0.05	0.05	0.053J	0.055J	97	101	75-125	3	20		
Cadmium	mg/L	ND	0.01	0.01	0.010	0.0099	100	98	75-125	2	20		
Calcium	mg/L	5980 ug/L	0.62	0.62	6.5	6.5	87	81	75-125	1	20		
Chromium	mg/L	1.4 ug/L	0.05	0.05	0.050	0.050	98	98	75-125	0	20		
Cobalt	mg/L	0.91 ug/L	0.01	0.01	0.011	0.011	98	98	75-125	0	20		
Lead	mg/L	3.1 ug/L	0.05	0.05	0.050	0.049	93	92	75-125	1	20		
Lithium	mg/L	3.8 ug/L	0.05	0.05	0.048J	0.050	89	93	75-125	4	20		
Molybdenum	mg/L	0.14J ug/L	0.05	0.05	0.049	0.049	99	98	75-125	1	20		
Selenium	mg/L	ND	0.05	0.05	0.048	0.047	96	94	75-125	2	20		
Thallium	mg/L	ND	0.01	0.01	0.0099	0.0098	99	98	75-125	1	20		

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

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617150

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QC Batch: 26252 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 2617150001, 2617150002, 2617150003, 2617150004, 2617150005

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LABORATORY CONTROL SAMPLE: 118510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	408	102	84-108	

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SAMPLE DUPLICATE: 118512

Parameter	Units	2617150003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2310	2380	3	10	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617150

QC Batch: 26135 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2617150001, 2617150002, 2617150003, 2617150004, 2617150005

METHOD BLANK: 117979 Matrix: Water  
Associated Lab Samples: 2617150001, 2617150002, 2617150003, 2617150004, 2617150005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.064J	0.25	0.024	04/10/19 21:47	
Fluoride	mg/L	ND	0.30	0.029	04/10/19 21:47	
Sulfate	mg/L	ND	1.0	0.017	04/10/19 21:47	

LABORATORY CONTROL SAMPLE: 117980

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.2	102	90-110	
Fluoride	mg/L	10	10.0	100	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 117981 117982

Parameter	Units	2617207001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Chloride	mg/L	0.25J	10	10	9.9	10	96	97	90-110	1	15	
Fluoride	mg/L	ND	10	10	9.5	9.6	95	96	90-110	1	15	
Sulfate	mg/L	0.13J	10	10	9.5	9.6	94	94	90-110	1	15	

MATRIX SPIKE SAMPLE: 117983

Parameter	Units	2617150001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	131	10	10.5	-1210	90-110	
Fluoride	mg/L	0.13J	10	9.4	93	90-110	
Sulfate	mg/L	392	10	13.7	-3780	90-110	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617150

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

BC The same analyte was detected in an associated blank at a concentration above 1/2 the reporting limit but below the laboratory reporting limit.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond  
Pace Project No.: 2617150

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617150001	MW-22	EPA 3010A	468616	EPA 6020B	468672
2617150002	MW-23D	EPA 3010A	468616	EPA 6020B	468672
2617150003	HGWC-14	EPA 3010A	468616	EPA 6020B	468672
2617150004	HGWC-17	EPA 3010A	468616	EPA 6020B	468672
2617150005	HGWC-18	EPA 3010A	468616	EPA 6020B	468672
2617150001	MW-22	SM 2540C	26252		
2617150002	MW-23D	SM 2540C	26252		
2617150003	HGWC-14	SM 2540C	26252		
2617150004	HGWC-17	SM 2540C	26252		
2617150005	HGWC-18	SM 2540C	26252		
2617150001	MW-22	EPA 300.0	26135		
2617150002	MW-23D	EPA 300.0	26135		
2617150003	HGWC-14	EPA 300.0	26135		
2617150004	HGWC-17	EPA 300.0	26135		
2617150005	HGWC-18	EPA 300.0	26135		

### 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: jabrahem@southernco.com  
 Phone: (404) 506-7239 Fax: \_\_\_\_\_

**Section B** Required Project Information: Report To: Joji Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: 6CS10348606  
 Project Name: Plant Hammond  
 Project #: \_\_\_\_\_

**Section C** Invoice Information: Attention: scsinvoices@southernco.com  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)

Regulatory/Agency: \_\_\_\_\_  
 State/Location: GA

Page: 1 of 2

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	PRESERVATIVES		ANALYSES TEST	Metals (App. III & App. IV)	Metals (App. III & App. IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME			UNPRESERVED	H2SO4							
1	MW	DW	4/15/19	4/15/19	G				Y						
2	MW	WT	4/15/19	4/15/19	G				Y						
3	H2O	WT	4/15/19	4/15/19	G				Y						

APPROVAL COMMENTS	REQUISITION #	DATE	TIME	ACCEPTED BY / APPROVAL	DATE	TIME	RECEIVED ON	TEMP IN C	Is (Y/N)	Custody (Y/N)	Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)
APPROX. 30% TOXIC, BARIUM, POTASSIUM, CADMIUM, CHROMIUM, LEAD, MANGANESE, COBALT, LITHIUM, MICKLETON, COPPER, THALLIUM	6745	4/15/19	1945	Maria M. Johnson / Geosyntec	4/15/19	1945							
	6745	4/15/19	1945	Maria M. Johnson / Geosyntec	4/15/19	1945							
	1116	4/15/19	1116	Maria M. Johnson / Geosyntec	4/15/19	1530							

NO#: 2617150

2617150



# 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@southemco.com  
 Phone: (404) 506-7239  
 Fax: [ ]  
 Requested Due Date: [ ]

**Section B**  
**Required Project Information:**  
 Report To: Joji Abraham  
 Copy To: Lauren Peaty, Geosyntec  
 Atlanta, GA 30339  
 Purchase Order #: SCS10348606  
 Project Name: Plant Hammond  
 Project #: [ ]

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southemco.com  
 Address: [ ]  
 Company Name: [ ]  
 Pace Project Manager: betsy.mcdaniel@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 GA

Page: 2 of 2

ITEM #	MATRIX	CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST	METS (App. III & App. IV)	METS (App. III, IV, D&O)	TDS, Cl, F, SO4	Radium 226/228	Residual Chlorine (Y/N)
			START DATE TIME	END DATE TIME										
1	Drinking Water	DW	4/15/19 12:00	4/15/19 12:00	B	W	3	Unpreserved	Y	Y	Y	Y		
2	Waste Water	WW	4/15/19 14:00	4/15/19 14:00	S	W	3	Unpreserved	Y	Y	Y	Y		
3	Waste Water	WW												
4	Product	P												
5	Solid	SL												
6	Oil	OL												
7	Wipe	WP												
8	Air	AR												
9	Other	OT												
10	Tissue	TS												

DCA 4/15/19

**WQH#: 2617150**

PM: BH Due Date: 04/15/19  
 CLIENT: GAPOWER-CCR

ADDITIONAL COMMENTS	RELINQUISHED BY/AFFILIATION	DATE	TIME	COLLECTED BY/AFFILIATION	DATE	TIME	TEMP IN C	Received on Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
APP III + IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium	Dalton Anderson (GSP)	4/15/19	1743	Melicia Johnson/Geosyntec	4/15/19	1743				
	Melicia Johnson/Geosyntec	4/15/19	1945	W. Lane/Geosyntec	4/15/19	1945				
	W. Lane/Geosyntec	4/15/19	1116	Melicia Johnson/Geosyntec	4/15/19	1116				

DATE Signed: 4/15/19  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE of SAMPLER: [Signature]

**Sample Condition Upon Receipt**



Client Name: GTA Power

Project # \_\_\_\_\_

**WO#: 2617150**

PM: **BM**

Due Date: **04/15/19**

CLIENT: **GAPower-CCR**

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

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.1 Biological Tissue is Frozen: Yes No

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/8/19 MR

Temp should be above freezing to 6°C Comments:

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

May 01, 2019

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


RE: Project: Plant Hammond  
Pace Project No.: 2617152

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 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.: 2617152

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### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617152

Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617152001	MW-22	Water	04/05/19 09:59	04/08/19 15:30
2617152002	MW-23D	Water	04/05/19 11:33	04/08/19 15:30
2617152003	HGWC-14	Water	04/05/19 12:52	04/08/19 15:30
2617152004	HGWC-17	Water	04/05/19 12:25	04/08/19 15:30
2617152005	HGWC-18	Water	04/05/19 14:25	04/08/19 15:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617152

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617152001	MW-22	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617152002	MW-23D	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617152003	HGWC-14	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617152004	HGWC-17	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617152005	HGWC-18	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2617152

**Sample: MW-22**      **Lab ID: 2617152001**      Collected: 04/05/19 09:59      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.381 ± 0.272 (0.444)</b> C:93% T:NA	pCi/L	04/18/19 08:05	13982-63-3	
Radium-228	EPA 9320	<b>0.674 ± 0.557 (1.13)</b> C:81% T:73%	pCi/L	04/18/19 15:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.06 ± 0.829 (1.57)</b>	pCi/L	04/22/19 11:27	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617152

**Sample: MW-23D**      **Lab ID: 2617152002**      Collected: 04/05/19 11:33      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.524 ± 0.328 (0.520)</b> <b>C:92% T:NA</b>	pCi/L	04/18/19 08:05	13982-63-3	
Radium-228	EPA 9320	<b>0.408 ± 0.470 (0.992)</b> <b>C:83% T:71%</b>	pCi/L	04/18/19 15:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.932 ± 0.798 (1.51)</b>	pCi/L	04/22/19 11:27	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617152

**Sample: HGWC-14**      **Lab ID: 2617152003**      Collected: 04/05/19 12:52      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.689 ± 0.372 (0.571)</b> C:97% T:NA	pCi/L	04/18/19 08:06	13982-63-3	
Radium-228	EPA 9320	<b>0.740 ± 0.491 (0.955)</b> C:84% T:73%	pCi/L	04/18/19 15:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.43 ± 0.863 (1.53)</b>	pCi/L	04/22/19 11:27	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617152

**Sample: HGWC-17**      **Lab ID: 2617152004**      Collected: 04/05/19 12:25      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.275 ± 0.261 (0.500)</b> C:96% T:NA	pCi/L	04/18/19 08:05	13982-63-3	
Radium-228	EPA 9320	<b>0.793 ± 0.521 (1.02)</b> C:81% T:75%	pCi/L	04/18/19 15:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.07 ± 0.782 (1.52)</b>	pCi/L	04/22/19 11:27	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617152

**Sample: HGWC-18**      **Lab ID: 2617152005**      Collected: 04/05/19 14:25      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.13 ± 0.443 (0.451)</b> <b>C:92% T:NA</b>	pCi/L	04/18/19 08:06	13982-63-3	
Radium-228	EPA 9320	<b>1.09 ± 0.540 (0.976)</b> <b>C:85% T:80%</b>	pCi/L	04/18/19 15:33	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.22 ± 0.983 (1.43)</b>	pCi/L	04/22/19 11:27	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617152

QC Batch: 337915

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2617152001, 2617152002, 2617152003, 2617152004, 2617152005

METHOD BLANK: 1644524

Matrix: Water

Associated Lab Samples: 2617152001, 2617152002, 2617152003, 2617152004, 2617152005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.664 ± 0.303 (0.504) C:90% T:91%	pCi/L	04/18/19 12:31	

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

Pace Project No.: 2617152

QC Batch: 337923

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2617152001, 2617152002, 2617152003, 2617152004, 2617152005

METHOD BLANK: 1644541

Matrix: Water

Associated Lab Samples: 2617152001, 2617152002, 2617152003, 2617152004, 2617152005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.170 ± 0.213 (0.439) C:94% T:NA	pCi/L	04/18/19 08:05	

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.: 2617152

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### 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.: 2617152

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617152001	MW-22	EPA 9315	337923		
2617152002	MW-23D	EPA 9315	337923		
2617152003	HGWC-14	EPA 9315	337923		
2617152004	HGWC-17	EPA 9315	337923		
2617152005	HGWC-18	EPA 9315	337923		
2617152001	MW-22	EPA 9320	337915		
2617152002	MW-23D	EPA 9320	337915		
2617152003	HGWC-14	EPA 9320	337915		
2617152004	HGWC-17	EPA 9320	337915		
2617152005	HGWC-18	EPA 9320	337915		
2617152001	MW-22	Total Radium Calculation	339294		
2617152002	MW-23D	Total Radium Calculation	339294		
2617152003	HGWC-14	Total Radium Calculation	339294		
2617152004	HGWC-17	Total Radium Calculation	339294		
2617152005	HGWC-18	Total Radium Calculation	339294		

### 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.

Page: 1 of 2

### Section A

#### Required Client Information:

Company: Georgia Power - Coal Combustion Residuals  
 Address: 2480 Warner Road  
 Atlanta, GA 30339  
 Email: jbraham@southemco.com  
 Phone: (404)506-7239  
 Fax:  
 Requested Due Date:

### Section B

#### Required Project Information:

Report To: Joji Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: SCS10346606  
 Project Name: Plant Hammond  
 Project #:

### Section C

#### Invoice Information:

Attention: scsinvoices@southemco.com  
 Company Name:  
 Address:  
 Pace-Quake:  
 Pace Project Manager: beisy.mcdaniel@paceqlabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 Regulatory Agency:  
 State / Location: GA

ITEM #	MATRIX	MATRIX CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES		ANALYSES TEST	Y/N	Requested Analysis/Filtered (Y/N)	TEMP in C	Received on	Ice (Y/N)	Custody Sealed (Y/N)	Cooler (Y/N)	Samples Intact (Y/N)	
			START DATE	END DATE				UNPRESERVED	H2SO4										HNO3
1	Drinking Water	DW																	
2	Water	WT																	
3	Waste Water	WW																	
4	Product	P																	
5	Solid	SL																	
6	Oil	OL																	
7	Wipe	WP																	
8	Air	AR																	
9	Other	OT																	
10	Tissue	TS																	
11																			
12																			

ID# : 2617152  

 2617152

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Mollie Mendenhall/Geosyntec	4/5/19	1743	Mollie Mendenhall/Geosyntec	4/5/19	1743	
	Geosyntec	4/5/19	1945	Geosyntec	4/5/19	1945	
	Mollie Mendenhall/Geosyntec	4/8/19	1115	Mollie Mendenhall/Geosyntec	4/8/19	1115	
	Mollie Mendenhall/Geosyntec	4/8/19	1540	Mollie Mendenhall/Geosyntec	4/8/19	1540	



# 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 Marner Road  
 Atlanta, GA 30339  
 Email: jbraham@southernco.com  
 Phone: (404)506-7239  
 Fax: [ ]  
 Requested Due Date: [ ]

**Section B**  
**Required Project Information:**  
 Report To: Joju Abraham  
 Copy To: Lauren Petty, Geosyntec  
 Purchase Order #: 90910348606  
 Project Name: Plant Hammond  
 Project #: [ ]

**Section C**  
**Invoice Information:**  
 Attention: scsinvoices@southernco.com  
 Company Name: [ ]  
 Address: [ ]  
 Pace Project Manager: betsy.mcdanue@pacelabs.com  
 Pace Profile #: 327 (AP) or 328 (Huff)  
 Regulatory Agency: [ ]  
 State/Loc: GA

ITEM #	MATRIX	MATRIX CODE	COLLECTED		SAMPLE TYPE (G-GRAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	PRESERVATIVES	ANALYSES TEST	Y/N	REQUESTED ANALYSES: FILTRATED (Y/N)						Residual Chlorine (Y/N)		
			START DATE	END DATE							Metals (App. III & App. M)	Metals (App. III, App. IV, D&O)	Metals (App. III & D&O)	TDS, Cl, F, SO4	Radium 226/228				
1	Drinking Water	DW	4/15/19 12:00	4/15/19 12:00	52		HNO3												
2	Waste Water	WW	4/15/19 14:00	4/15/19 14:00	52		H2SO4												
3	Product	P					Unpreserved												
4	Soil/Solid	SL					NaOH												
5	Oil	OL					HCl												
6	Wipe	WP																	
7	Air	AR																	
8	Other	OT																	
9	Tissue	TS																	
10																			
11																			
12																			

**ADDITIONAL COMMENTS:**  
 APP III & IV (3): Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Molybdenum, Selenium, Thallium

**RELEASING BY / AFFILIATION:**  
 Dalton Anderson (DCA) 4/15/19  
 Mollie McMahon/Geosyntec 4/15/19  
 Lauren Petty/Geosyntec 4/15/19

**ACCEPTED BY / AFFILIATION:**  
 Mollie McMahon/Geosyntec 4/15/19  
 Dalton Anderson 4/15/19

**TEMP IN C:** 11.7  
**Received on:** 4/15/19  
**Ice (Y/N):** [ ]  
**Custody Sealed (Y/N):** [ ]  
**Samples Intact (Y/N):** [ ]

**SAMPLER NAME AND SIGNATURE:**  
 PRINT Name of SAMPLER: Dalton Anderson  
 SIGNATURE of SAMPLER: [Signature]  
 DATE Signed: 4/15/19

NO#: 2617152

2617152



Sample Condition Upon Receipt

Client Name: GTA Power

Project # \_\_\_\_\_

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

WO#: **2617152**

PM: **BM** Due Date: **05/06/19**  
CLIENT: **GAPower-CCR**

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.1 Biological Tissue is Frozen: Yes No  
Temp should be above freezing to 6°C

Samples on ice, cooling process has begun  
Date and Initials of person examining contents: 4/8/19 MR

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

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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)

May 01, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2617148

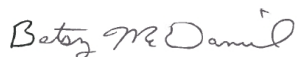
Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 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.

This revised report replaces the one issued on 4/16/2019. The report has been revised to correct metals units per consultant request. No other changes have been made to this 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.: 2617148

---

### Atlanta Certification IDs

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

---

### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617148

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
2617148001	FB-01	Water	04/05/19 08:50	04/08/19 15:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond  
Pace Project No.: 2617148

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617148001	FB-01	EPA 6020B	SER	19	PASI-A
		EPA 7470A	RDT	1	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617148

Sample: FB-01		Lab ID: 2617148001		Collected: 04/05/19 08:50		Received: 04/08/19 15:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Antimony	ND	mg/L	0.0030	0.00011	1	04/16/19 07:51	04/16/19 18:55	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.000060	1	04/16/19 07:51	04/16/19 18:55	7440-38-2		
Barium	<b>0.000078J</b>	mg/L	0.010	0.000060	1	04/16/19 07:51	04/16/19 18:55	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/16/19 07:51	04/16/19 18:55	7440-41-7		
Boron	ND	mg/L	0.10	0.0026	1	04/16/19 07:51	04/16/19 18:55	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000070	1	04/16/19 07:51	04/16/19 18:55	7440-43-9		
Calcium	<b>0.024J</b>	mg/L	0.50	0.021	1	04/16/19 07:51	04/16/19 18:55	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/16/19 07:51	04/16/19 18:55	7440-47-3		
Cobalt	ND	mg/L	0.010	0.000050	1	04/16/19 07:51	04/16/19 18:55	7440-48-4		
Copper	ND	mg/L	0.025	0.00023	1	04/16/19 07:51	04/16/19 18:55	7440-50-8		
Lead	ND	mg/L	0.0050	0.000050	1	04/16/19 07:51	04/16/19 18:55	7439-92-1		
Lithium	ND	mg/L	0.050	0.00042	1	04/16/19 07:51	04/16/19 18:55	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/16/19 07:51	04/16/19 18:55	7439-98-7		
Nickel	ND	mg/L	0.010	0.00011	1	04/16/19 07:51	04/16/19 18:55	7440-02-0		
Selenium	ND	mg/L	0.010	0.000080	1	04/16/19 07:51	04/16/19 18:55	7782-49-2		
Silver	ND	mg/L	0.010	0.000050	1	04/16/19 07:51	04/16/19 18:55	7440-22-4		
Thallium	ND	mg/L	0.0010	0.000060	1	04/16/19 07:51	04/16/19 18:55	7440-28-0		
Vanadium	ND	mg/L	0.010	0.00012	1	04/16/19 07:51	04/16/19 18:55	7440-62-2		
Zinc	<b>0.017</b>	mg/L	0.010	0.0011	1	04/16/19 07:51	04/16/19 18:55	7440-66-6	C0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00020	0.00010	1	04/11/19 21:25	04/15/19 18:37	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	25.0	10.0	1		04/11/19 20:53			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.11J</b>	mg/L	0.25	0.024	1		04/10/19 22:29	16887-00-6	B	
Fluoride	ND	mg/L	0.30	0.029	1		04/10/19 22:29	16984-48-8		
Sulfate	<b>0.069J</b>	mg/L	1.0	0.017	1		04/10/19 22:29	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617148

QC Batch: 468895

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 2617148001

METHOD BLANK: 2546716

Matrix: Water

Associated Lab Samples: 2617148001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.00010	04/15/19 18:06	

LABORATORY CONTROL SAMPLE: 2546717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0021	83	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2546718 2546719

Parameter	Units	92424398001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Mercury	mg/L	ND	0.0025	0.0019	0.0025	0.0019	77	77	75-125	0	25	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617148

QC Batch: 469500 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
Associated Lab Samples: 2617148001

METHOD BLANK: 2549697 Matrix: Water  
Associated Lab Samples: 2617148001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00011	04/16/19 18:48	
Arsenic	mg/L	ND	0.0050	0.000060	04/16/19 18:48	
Barium	mg/L	ND	0.010	0.000060	04/16/19 18:48	
Beryllium	mg/L	ND	0.0030	0.000050	04/16/19 18:48	
Boron	mg/L	ND	0.10	0.0026	04/16/19 18:48	
Cadmium	mg/L	ND	0.0010	0.000070	04/16/19 18:48	
Calcium	mg/L	ND	0.50	0.021	04/16/19 18:48	
Chromium	mg/L	ND	0.010	0.00042	04/16/19 18:48	
Cobalt	mg/L	ND	0.010	0.000050	04/16/19 18:48	
Copper	mg/L	ND	0.025	0.00023	04/16/19 18:48	
Lead	mg/L	ND	0.0050	0.000050	04/16/19 18:48	
Lithium	mg/L	ND	0.050	0.00042	04/16/19 18:48	
Molybdenum	mg/L	ND	0.010	0.00010	04/16/19 18:48	
Nickel	mg/L	ND	0.010	0.00011	04/16/19 18:48	
Selenium	mg/L	ND	0.010	0.000080	04/16/19 18:48	
Silver	mg/L	ND	0.010	0.000050	04/16/19 18:48	
Thallium	mg/L	ND	0.0010	0.000060	04/16/19 18:48	
Vanadium	mg/L	ND	0.010	0.00012	04/16/19 18:48	
Zinc	mg/L	ND	0.010	0.0011	04/16/19 18:48	

LABORATORY CONTROL SAMPLE: 2549698

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.098	98	80-120	
Arsenic	mg/L	0.01	0.0096	96	80-120	
Barium	mg/L	0.05	0.049	98	80-120	
Beryllium	mg/L	0.01	0.0096	96	80-120	
Boron	mg/L	0.05	0.048J	95	80-120	
Cadmium	mg/L	0.01	0.0099	99	80-120	
Calcium	mg/L	0.62	0.64	103	80-120	
Chromium	mg/L	0.05	0.048	97	80-120	
Cobalt	mg/L	0.01	0.0098J	98	80-120	
Copper	mg/L	0.05	0.049	98	80-120	
Lead	mg/L	0.05	0.050	99	80-120	
Lithium	mg/L	0.05	0.049J	98	80-120	
Molybdenum	mg/L	0.05	0.049	98	80-120	
Nickel	mg/L	0.05	0.049	97	80-120	
Selenium	mg/L	0.05	0.050	100	80-120	
Silver	mg/L	0.025	0.025	99	80-120	
Thallium	mg/L	0.01	0.010	100	80-120	

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**QUALITY CONTROL DATA**

Project: Plant Hammond

Pace Project No.: 2617148

LABORATORY CONTROL SAMPLE: 2549698

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vanadium	mg/L	0.05	0.049	98	80-120	
Zinc	mg/L	0.05	0.049	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2549699 2549700

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		2617148001 Result	Spike Conc.	Spike Conc.	MS Result						
Antimony	mg/L	ND	0.1	0.1	0.099	0.098	99	98	75-125	1	20
Arsenic	mg/L	ND	0.01	0.01	0.0098	0.0097	98	97	75-125	1	20
Barium	mg/L	0.000078J	0.05	0.05	0.049	0.050	99	99	75-125	0	20
Beryllium	mg/L	ND	0.01	0.01	0.0097	0.0097	97	97	75-125	0	20
Boron	mg/L	ND	0.05	0.05	0.049J	0.050J	93	95	75-125	2	20
Cadmium	mg/L	ND	0.01	0.01	0.010	0.0099	100	99	75-125	1	20
Calcium	mg/L	0.024J	0.62	0.62	0.65	0.65	100	101	75-125	1	20
Chromium	mg/L	ND	0.05	0.05	0.050	0.049	99	97	75-125	2	20
Cobalt	mg/L	ND	0.01	0.01	0.010J	0.0099J	100	98	75-125	1	20
Copper	mg/L	ND	0.05	0.05	0.050	0.050	101	99	75-125	2	20
Lead	mg/L	ND	0.05	0.05	0.050	0.050	100	99	75-125	1	20
Lithium	mg/L	ND	0.05	0.05	0.050J	0.048J	99	96	75-125	4	20
Molybdenum	mg/L	ND	0.05	0.05	0.050	0.050	100	99	75-125	1	20
Nickel	mg/L	ND	0.05	0.05	0.050	0.049	100	98	75-125	1	20
Selenium	mg/L	ND	0.05	0.05	0.050	0.050	101	100	75-125	1	20
Silver	mg/L	ND	0.025	0.025	0.025	0.025	100	100	75-125	0	20
Thallium	mg/L	ND	0.01	0.01	0.010	0.0099	100	99	75-125	1	20
Vanadium	mg/L	ND	0.05	0.05	0.050	0.049	99	98	75-125	1	20
Zinc	mg/L	0.017	0.05	0.05	0.067	0.066	99	98	75-125	1	20

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**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617148

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QC Batch: 26252	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2617148001	

---

LABORATORY CONTROL SAMPLE: 118510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	408	102	84-108	

---

SAMPLE DUPLICATE: 118512

Parameter	Units	2617150003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2310	2380	3	10	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617148

QC Batch: 26135 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2617148001

METHOD BLANK: 117979 Matrix: Water  
Associated Lab Samples: 2617148001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.064J	0.25	0.024	04/10/19 21:47	
Fluoride	mg/L	ND	0.30	0.029	04/10/19 21:47	
Sulfate	mg/L	ND	1.0	0.017	04/10/19 21:47	

LABORATORY CONTROL SAMPLE: 117980

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.2	102	90-110	
Fluoride	mg/L	10	10.0	100	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 117981 117982

Parameter	Units	2617207001 Result	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	0.25J	10	10	9.9	10	96	97	90-110	1	15		
Fluoride	mg/L	ND	10	10	9.5	9.6	95	96	90-110	1	15		
Sulfate	mg/L	0.13J	10	10	9.5	9.6	94	94	90-110	1	15		

MATRIX SPIKE SAMPLE: 117983

Parameter	Units	2617150001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	131	10	10.5	-1210	90-110	
Fluoride	mg/L	0.13J	10	9.4	93	90-110	
Sulfate	mg/L	392	10	13.7	-3780	90-110	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617148

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

C0 Result confirmed by second analysis.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Plant Hammond

Pace Project No.: 2617148

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617148001	FB-01	EPA 3010A	469500	EPA 6020B	469558
2617148001	FB-01	EPA 7470A	468895	EPA 7470A	468941
2617148001	FB-01	SM 2540C	26252		
2617148001	FB-01	EPA 300.0	26135		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: GTA Power

Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

Tracking #: \_\_\_\_\_

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.1

Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

WO#: **2617148**

PM: **BM** Due Date: **04/15/19**

CLIENT: **GAPower-CCR**

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/8/19 MR

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

Client Notification/Resolution: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Field Data Required? Y / N

Person Contacted: \_\_\_\_\_

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)

May 01, 2019

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

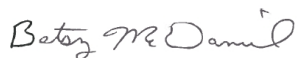
RE: Project: Plant Hammond  
Pace Project No.: 2617149

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 08, 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.: 2617149

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### 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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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617149

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
2617149001	FB-01	Water	04/05/19 08:50	04/08/19 15:30

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond  
Pace Project No.: 2617149

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617149001	FB-01	EPA 9315	LAL	1	PASI-PA
		EPA 9320	JLW	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.: 2617149

**Sample: FB-01**      **Lab ID: 2617149001**      Collected: 04/05/19 08:50      Received: 04/08/19 15:30      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.114 ± 0.161 (0.330)</b> <b>C:92% T:NA</b>	pCi/L	04/18/19 08:25	13982-63-3	
Radium-228	EPA 9320	<b>0.160 ± 0.258 (0.561)</b> <b>C:88% T:76%</b>	pCi/L	04/18/19 12:31	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.274 ± 0.419 (0.891)</b>	pCi/L	04/22/19 11:27	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617149

QC Batch: 337915

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2617149001

METHOD BLANK: 1644524

Matrix: Water

Associated Lab Samples: 2617149001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.664 ± 0.303 (0.504) C:90% T:91%	pCi/L	04/18/19 12:31	

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

Pace Project No.: 2617149

QC Batch: 337923

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2617149001

METHOD BLANK: 1644541

Matrix: Water

Associated Lab Samples: 2617149001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.170 ± 0.213 (0.439) C:94% T:NA	pCi/L	04/18/19 08:05	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617149

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### 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.: 2617149

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<b>Lab ID</b>	<b>Sample ID</b>	<b>QC Batch Method</b>	<b>QC Batch</b>	<b>Analytical Method</b>	<b>Analytical Batch</b>
2617149001	FB-01	EPA 9315	337923		
2617149001	FB-01	EPA 9320	337915		
2617149001	FB-01	Total Radium Calculation	339294		

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**Sample Condition Upon Receipt**



Client Name: GTA Power

Project # \_\_\_\_\_

**WO#: 2617149**

PM: **BM** Due Date: **05/06/19**  
 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 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 1.1 Biological Tissue is Frozen: Yes No  Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/8/19 MB

Temp should be above freezing to 6°C Comments: \_\_\_\_\_

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



May 03, 2019

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

RE: Project: Plant Hammond  
Pace Project No.: 2617207

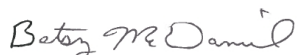
Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 09, 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.

This revised report replaces the one issued on 4/16/2019. The report has been revised to correct metals units per consultant request. No other changes have been made to this 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.: 2617207

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### Atlanta Certification IDs

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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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617207

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617207001	FB-02	Water	04/08/19 17:45	04/09/19 13:30
2617207002	EB-01	Water	04/08/19 18:00	04/09/19 13:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617207

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617207001	FB-02	EPA 6020B	JMW1	19	PASI-A
		EPA 7470A	RDT	1	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA
2617207002	EB-01	EPA 6020B	JMW1	19	PASI-A
		EPA 7470A	RDT	1	PASI-A
		SM 2540C	RLC	1	PASI-GA
		EPA 300.0	RLC	3	PASI-GA

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond  
Pace Project No.: 2617207

Sample: <b>FB-02</b>		Lab ID: <b>2617207001</b>		Collected: 04/08/19 17:45		Received: 04/09/19 13:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Antimony	ND	mg/L	0.0030	0.00011	1	04/10/19 19:59	04/12/19 01:04	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.000060	1	04/10/19 19:59	04/12/19 01:04	7440-38-2		
Barium	ND	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 01:04	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 01:04	7440-41-7		
Boron	ND	mg/L	0.10	0.0026	1	04/10/19 19:59	04/12/19 01:04	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 01:04	7440-43-9		
Calcium	ND	mg/L	0.50	0.021	1	04/10/19 19:59	04/12/19 01:04	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 01:04	7440-47-3		
Cobalt	ND	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 01:04	7440-48-4		
Copper	ND	mg/L	0.025	0.00023	1	04/10/19 19:59	04/12/19 01:04	7440-50-8		
Lead	ND	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 01:04	7439-92-1		
Lithium	ND	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 01:04	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 01:04	7439-98-7		
Nickel	ND	mg/L	0.010	0.00011	1	04/10/19 19:59	04/12/19 01:04	7440-02-0		
Selenium	ND	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 01:04	7782-49-2		
Silver	ND	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 01:04	7440-22-4		
Thallium	ND	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 01:04	7440-28-0		
Vanadium	ND	mg/L	0.010	0.00012	1	04/10/19 19:59	04/12/19 01:04	7440-62-2		
Zinc	ND	mg/L	0.010	0.0011	1	04/10/19 19:59	04/12/19 01:04	7440-66-6		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00020	0.00010	1	04/11/19 21:25	04/15/19 18:39	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>14.0J</b>	mg/L	25.0	10.0	1		04/11/19 20:54			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.25J</b>	mg/L	0.25	0.024	1		04/11/19 00:54	16887-00-6	B	
Fluoride	ND	mg/L	0.30	0.029	1		04/11/19 00:54	16984-48-8		
Sulfate	<b>0.13J</b>	mg/L	1.0	0.017	1		04/11/19 00:54	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Plant Hammond

Pace Project No.: 2617207

Sample: EB-01		Lab ID: 2617207002		Collected: 04/08/19 18:00		Received: 04/09/19 13:30		Matrix: Water		
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual	
			Limit	MDL	DF					
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A								
Antimony	ND	mg/L	0.0030	0.00011	1	04/10/19 19:59	04/12/19 01:08	7440-36-0		
Arsenic	ND	mg/L	0.0050	0.000060	1	04/10/19 19:59	04/12/19 01:08	7440-38-2		
Barium	ND	mg/L	0.010	0.000060	1	04/10/19 19:59	04/12/19 01:08	7440-39-3		
Beryllium	ND	mg/L	0.0030	0.000050	1	04/10/19 19:59	04/12/19 01:08	7440-41-7		
Boron	ND	mg/L	0.10	0.0026	1	04/10/19 19:59	04/12/19 01:08	7440-42-8		
Cadmium	ND	mg/L	0.0010	0.000070	1	04/10/19 19:59	04/12/19 01:08	7440-43-9		
Calcium	ND	mg/L	0.50	0.021	1	04/10/19 19:59	04/12/19 01:08	7440-70-2		
Chromium	ND	mg/L	0.010	0.00042	1	04/10/19 19:59	04/12/19 01:08	7440-47-3		
Cobalt	ND	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 01:08	7440-48-4		
Copper	ND	mg/L	0.025	0.00023	1	04/10/19 19:59	04/12/19 01:08	7440-50-8		
Lead	ND	mg/L	0.0050	0.000050	1	04/10/19 19:59	04/12/19 01:08	7439-92-1		
Lithium	ND	mg/L	0.050	0.00042	1	04/10/19 19:59	04/12/19 01:08	7439-93-2		
Molybdenum	ND	mg/L	0.010	0.00010	1	04/10/19 19:59	04/12/19 01:08	7439-98-7		
Nickel	ND	mg/L	0.010	0.00011	1	04/10/19 19:59	04/12/19 01:08	7440-02-0		
Selenium	ND	mg/L	0.010	0.000080	1	04/10/19 19:59	04/12/19 01:08	7782-49-2		
Silver	ND	mg/L	0.010	0.000050	1	04/10/19 19:59	04/12/19 01:08	7440-22-4		
Thallium	ND	mg/L	0.0010	0.000060	1	04/10/19 19:59	04/12/19 01:08	7440-28-0		
Vanadium	ND	mg/L	0.010	0.00012	1	04/10/19 19:59	04/12/19 01:08	7440-62-2		
Zinc	ND	mg/L	0.010	0.0011	1	04/10/19 19:59	04/12/19 01:08	7440-66-6		
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A								
Mercury	ND	mg/L	0.00020	0.00010	1	04/11/19 21:25	04/15/19 18:41	7439-97-6		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C								
Total Dissolved Solids	<b>12.0J</b>	mg/L	25.0	10.0	1		04/11/19 20:54			
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0								
Chloride	<b>0.22J</b>	mg/L	0.25	0.024	1		04/11/19 03:19	16887-00-6	B	
Fluoride	ND	mg/L	0.30	0.029	1		04/11/19 03:19	16984-48-8		
Sulfate	<b>0.38J</b>	mg/L	1.0	0.017	1		04/11/19 03:19	14808-79-8		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617207

QC Batch: 468895      Analysis Method: EPA 7470A  
 QC Batch Method: EPA 7470A      Analysis Description: 7470 Mercury  
 Associated Lab Samples: 2617207001, 2617207002

METHOD BLANK: 2546716      Matrix: Water

Associated Lab Samples: 2617207001, 2617207002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	0.00010	04/15/19 18:06	

LABORATORY CONTROL SAMPLE: 2546717

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.0025	0.0021	83	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2546718      2546719

Parameter	Units	92424398001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Mercury	mg/L	ND	0.0025	0.0019	0.0025	0.0019	77	77	75-125	0	25	

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.: 2617207

QC Batch: 468622 Analysis Method: EPA 6020B

QC Batch Method: EPA 3010A Analysis Description: 6020 MET

Associated Lab Samples: 2617207001, 2617207002

METHOD BLANK: 2545263 Matrix: Water

Associated Lab Samples: 2617207001, 2617207002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	mg/L	ND	0.0030	0.00011	04/11/19 20:42	
Arsenic	mg/L	ND	0.0050	0.000060	04/11/19 20:42	
Barium	mg/L	ND	0.010	0.000060	04/11/19 20:42	
Beryllium	mg/L	ND	0.0030	0.000050	04/11/19 20:42	
Boron	mg/L	ND	0.10	0.0026	04/11/19 20:42	
Cadmium	mg/L	ND	0.0010	0.000070	04/11/19 20:42	
Calcium	mg/L	ND	0.50	0.021	04/11/19 20:42	
Chromium	mg/L	ND	0.010	0.00042	04/11/19 20:42	
Cobalt	mg/L	ND	0.010	0.000050	04/11/19 20:42	
Copper	mg/L	ND	0.025	0.00023	04/11/19 20:42	
Lead	mg/L	ND	0.0050	0.000050	04/11/19 20:42	
Lithium	mg/L	ND	0.050	0.00042	04/11/19 20:42	
Molybdenum	mg/L	ND	0.010	0.00010	04/11/19 20:42	
Nickel	mg/L	ND	0.010	0.00011	04/11/19 20:42	
Selenium	mg/L	ND	0.010	0.000080	04/11/19 20:42	
Silver	mg/L	ND	0.010	0.000050	04/11/19 20:42	
Thallium	mg/L	ND	0.0010	0.000060	04/11/19 20:42	
Vanadium	mg/L	ND	0.010	0.00012	04/11/19 20:42	
Zinc	mg/L	ND	0.010	0.0011	04/11/19 20:42	

LABORATORY CONTROL SAMPLE: 2545264

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.1	0.10	100	80-120	
Arsenic	mg/L	0.01	0.0099	99	80-120	
Barium	mg/L	0.05	0.049	99	80-120	
Beryllium	mg/L	0.01	0.010	104	80-120	
Boron	mg/L	0.05	0.052J	104	80-120	
Cadmium	mg/L	0.01	0.010	102	80-120	
Calcium	mg/L	0.62	0.64	102	80-120	
Chromium	mg/L	0.05	0.051	102	80-120	
Cobalt	mg/L	0.01	0.010	102	80-120	
Copper	mg/L	0.05	0.051	103	80-120	
Lead	mg/L	0.05	0.050	100	80-120	
Lithium	mg/L	0.05	0.050	100	80-120	
Molybdenum	mg/L	0.05	0.051	102	80-120	
Nickel	mg/L	0.05	0.051	102	80-120	
Selenium	mg/L	0.05	0.051	101	80-120	
Silver	mg/L	0.025	0.025	102	80-120	
Thallium	mg/L	0.01	0.010	100	80-120	

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617207

LABORATORY CONTROL SAMPLE: 2545264

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vanadium	mg/L	0.05	0.051	101	80-120	
Zinc	mg/L	0.05	0.051	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2545265 2545266

Parameter	Units	2545265		2545266		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Antimony	mg/L	0.1	0.1	0.099	0.099	99	99	75-125	0	20		
Arsenic	mg/L	0.01	0.01	0.0091J	0.0089J	91	89	75-125	2	20		
Barium	mg/L	0.05	0.05	0.085	0.085	85	85	75-125	0	20		
Beryllium	mg/L	0.01	0.01	0.0086	0.0089	86	89	75-125	4	20		
Boron	mg/L	1.0J	0.05	0.05	1.0J	67	48	75-125	1	20	M6	
Cadmium	mg/L	0.01	0.01	0.011	0.011	99	99	75-125	0	20		
Calcium	mg/L	70.0	0.62	0.62	71.3	74.8	207	759	75-125	5	20	M6
Chromium	mg/L	0.05	0.05	0.048	0.048	96	95	75-125	1	20		
Cobalt	mg/L	0.01	0.01	0.015	0.015	97	96	75-125	1	20		
Copper	mg/L	0.05	0.05	0.049	0.048	98	97	75-125	1	20		
Lead	mg/L	0.05	0.05	0.048	0.048	96	96	75-125	0	20		
Lithium	mg/L	0.05	0.05	0.043J	0.044J	82	85	75-125	3	20		
Molybdenum	mg/L	0.05	0.05	0.050	0.049	99	99	75-125	1	20		
Nickel	mg/L	0.05	0.05	0.051	0.051	96	96	75-125	0	20		
Selenium	mg/L	0.05	0.05	0.044	0.044	89	88	75-125	1	20		
Silver	mg/L	0.025	0.025	0.023	0.023	92	91	75-125	1	20		
Thallium	mg/L	0.01	0.01	0.0096	0.0096	96	96	75-125	0	20		
Vanadium	mg/L	0.05	0.05	0.050	0.050	100	100	75-125	0	20		
Zinc	mg/L	0.05	0.05	0.047	0.047	86	86	75-125	0	20		

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### QUALITY CONTROL DATA

Project: Plant Hammond

Pace Project No.: 2617207

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QC Batch: 26252	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 2617207001, 2617207002	

---

LABORATORY CONTROL SAMPLE: 118510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	400	408	102	84-108	

---

SAMPLE DUPLICATE: 118512

Parameter	Units	2617150003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2310	2380	3	10	

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### QUALITY CONTROL DATA

Project: Plant Hammond  
Pace Project No.: 2617207

QC Batch: 26135 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 2617207001, 2617207002

METHOD BLANK: 117979 Matrix: Water  
Associated Lab Samples: 2617207001, 2617207002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.064J	0.25	0.024	04/10/19 21:47	
Fluoride	mg/L	ND	0.30	0.029	04/10/19 21:47	
Sulfate	mg/L	ND	1.0	0.017	04/10/19 21:47	

LABORATORY CONTROL SAMPLE: 117980

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.2	102	90-110	
Fluoride	mg/L	10	10.0	100	90-110	
Sulfate	mg/L	10	9.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 117981 117982

Parameter	Units	2617207001 Result	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	% Rec	% Rec							
Chloride	mg/L	0.25J	10	10	9.9	10	96	97	90-110	1	15			
Fluoride	mg/L	ND	10	10	9.5	9.6	95	96	90-110	1	15			
Sulfate	mg/L	0.13J	10	10	9.5	9.6	94	94	90-110	1	15			

MATRIX SPIKE SAMPLE: 117983

Parameter	Units	2617150001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	131	10	10.5	-1210	90-110	
Fluoride	mg/L	0.13J	10	9.4	93	90-110	
Sulfate	mg/L	392	10	13.7	-3780	90-110	

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617207

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-GA Pace Analytical Services - Atlanta, GA

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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.: 2617207

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617207001	FB-02	EPA 3010A	468622	EPA 6020B	468673
2617207002	EB-01	EPA 3010A	468622	EPA 6020B	468673
2617207001	FB-02	EPA 7470A	468895	EPA 7470A	468941
2617207002	EB-01	EPA 7470A	468895	EPA 7470A	468941
2617207001	FB-02	SM 2540C	26252		
2617207002	EB-01	SM 2540C	26252		
2617207001	FB-02	EPA 300.0	26135		
2617207002	EB-01	EPA 300.0	26135		

### REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt**



Client Name: GIA Power

Project # \_\_\_\_\_

**WO#: 2617207**

PM: **BM** Due Date: **04/16/19**  
 CLIENT: **GAPower-CCR**

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other

Tracking #: \_\_\_\_\_

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Cooler Temperature 0.7 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Samples on ice, cooling process has begun

Date and Initials of person examining contents: 4/9/19 MK

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

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

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)

May 01, 2019

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

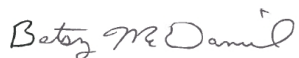
RE: Project: Plant Hammond  
Pace Project No.: 2617208

Dear Joju Abraham:

Enclosed are the analytical results for sample(s) received by the laboratory on April 09, 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.: 2617208

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### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Plant Hammond

Pace Project No.: 2617208

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
2617208001	FB-02	Water	04/08/19 17:45	04/09/19 13:30
2617208002	EB-01	Water	04/08/19 18:00	04/09/19 13:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Plant Hammond

Pace Project No.: 2617208

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2617208001	FB-02	EPA 9315	JJY	1	PASI-PA
		EPA 9320	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
2617208002	EB-01	EPA 9315	JJY	1	PASI-PA
		EPA 9320	JLW	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.: 2617208

**Sample: FB-02**      **Lab ID: 2617208001**      Collected: 04/08/19 17:45      Received: 04/09/19 13:30      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.170 ± 0.1000 (0.159)</b> C:93% T:NA	pCi/L	04/22/19 21:19	13982-63-3	
Radium-228	EPA 9320	<b>0.521 ± 0.334 (0.615)</b> C:78% T:79%	pCi/L	04/25/19 14:16	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.691 ± 0.434 (0.774)</b>	pCi/L	04/26/19 09:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617208

**Sample: EB-01**      **Lab ID: 2617208002**      Collected: 04/08/19 18:00      Received: 04/09/19 13:30      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.108 ± 0.128 (0.243)</b> C:87% T:NA	pCi/L	04/22/19 21:19	13982-63-3	
Radium-228	EPA 9320	<b>0.370 ± 0.318 (0.634)</b> C:81% T:75%	pCi/L	04/25/19 14:16	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.478 ± 0.446 (0.877)</b>	pCi/L	04/26/19 09:32	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617208

QC Batch: 338631

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 2617208001, 2617208002

METHOD BLANK: 1648339

Matrix: Water

Associated Lab Samples: 2617208001, 2617208002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.146 ± 0.0893 (0.139) C:90% T:NA	pCi/L	04/22/19 21:19	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: Plant Hammond

Pace Project No.: 2617208

QC Batch: 338745

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 2617208001, 2617208002

METHOD BLANK: 1648702

Matrix: Water

Associated Lab Samples: 2617208001, 2617208002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.552 ± 0.362 (0.681) C:81% T:74%	pCi/L	04/25/19 11:04	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Plant Hammond

Pace Project No.: 2617208

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### 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.: 2617208

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2617208001	FB-02	EPA 9315	338631		
2617208002	EB-01	EPA 9315	338631		
2617208001	FB-02	EPA 9320	338745		
2617208002	EB-01	EPA 9320	338745		
2617208001	FB-02	Total Radium Calculation	340066		
2617208002	EB-01	Total Radium Calculation	340066		

**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		Section B		Section C	
Required Client Information:		Required Project Information:		Invoice Information:	
Company:	Georgia Power - Coal Combustion Residuals	Report To:	Joy Abraham	Attention:	sesinvoic@scouthernco.com
Address:	2480 Manner Road Atlanta, GA 30339	Copy To:	Lauron Peby, Geosyntec	Company Name:	
Email:	jabraham@scouthernco.com	Purchase Order #:	9C5T0348666	Address:	
Phone:	(404)506-7239	Project Name:	Plant Hammond	Pace Project Manager:	betsy.mcdaniel@pacelabs.com
Requested Due Date:	Standard TX	Project #:		Pace Profile #:	327 (AP) or 328 (Huff)
Regulatory Agency:		State Location:		GA	

Page: 1 of 1

ITEM #	MATRIX CODE DW Drinking Water WT Waste Water P Product SL Soil/Solid OI Oil WI Wipe AR Air OT Other TS Tissue	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		DATE	TIME	SAMPLE TEMP AT COLLECTION	PRESERVATIVES	ANALYSES TEST	REQUESTED ANALYSIS FILTERED (Y/N)	RESIDUAL CHLORINE (Y/N)
			START	END							
1		WT 6	4/8/19 1340	4/8/19 1345	19	5	2	3			
2	FB -02	WT 6	4/8/19 1355	4/8/19 1800	19	5	2	3			
3	EB -01										
4											
5											
6											
7											
8											
9											
10											
11											
12											

ADDITIONAL COMMENTS:	RELINQUISHED BY / AFFILIATION:	DATE:	TIME:	RECEIVED BY / AFFILIATION:	DATE:	TIME:	TEMP IN C	Received on	Sealed	Cooler	Samples
	Noelia Munson Geosyntec	4/8/19	2010	EB Low / Geosyntec	4/8/19	2210					
	EBB Low / Geosyntec	4/9/19	1127	1 Pore	4/9/19	1127					
				Noelia Munson	4/9/19	1330	0.7				
SAMPLER NAME AND SIGNATURE:		PRINT NAME of SAMPLER:		SIGNATURE of SAMPLER:		DATE SIGNED:					
		Noelia Munson		Noelia Munson		4/8/19					

WO#: 2617208

**Sample Condition Upon Receipt**



Client Name: GIA Power

Project # \_\_\_\_\_

**WO#: 2617208**

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

PM: BM Due Date: 05/07/19

Tracking #: \_\_\_\_\_

CLIENT: GAPower-CCR

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

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 83 Type of Ice:  Wet  Blue  None

Samples on ice, cooling process has begun

Cooler Temperature 0.7 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 4/9/19 NR

Temp should be above freezing to 6°C Comments: \_\_\_\_\_

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